

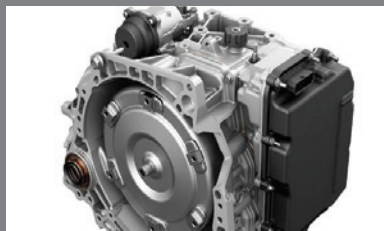
## The Blackwings Take Flight



**New CT4-V Blackwing and CT5-V Blackwing  
are most track-capable Cadillacs ever**

The 2022 Cadillac CT4-V Blackwing and CT5-V Blackwing are, simply put, the most track-capable Cadillacs ever. Boasting power, handling, refinement and luxury that leverage a Cadillac racing history that began in 1949, the Blackwing models were developed to excel in driver engagement and performance.

CONTINUED ON PAGE 2



**9T65 Transmission  
Replacement Program  
Ending Soon**

see page 7

<i>The Blackwings Take Flight</i>	1
<i>VT40 CVT Transmission Slipping Condition</i>	6
<i>Fuse Block or Junction Block Terminal Retention</i>	8
<i>Inoperative Steering Wheel Thumbwheel Select Control Reset</i>	9
<i>New Inserts Address Rear Leaf Spring Sounds</i>	10
<i>9th Gear Operation on 9-Speed Transmissions</i>	11



# The Blackwings Take Flight



CT4-V Blackwing

Based on the precision dynamics of the CT4-V and CT5-V, the Blackwing models are capable of delivering extreme performance. The CT4-V Blackwing has an estimated top track speed of 189 mph while the CT5-V Blackwing has an estimated top track speed of over 200 mph.

Both Blackwing models went through intensive track validation to ensure consistent performance in challenging conditions, including:

- 24-hour continuous track testing with the available automatic transmission, available carbon fiber aero package, aluminum wheels and available carbon ceramic brake package
- 12-hour continuous track testing with the standard manual transmission, available carbon fiber aero package, aluminum wheels and available carbon ceramic brake package

## POWERFUL PERFORMANCE

The CT5-V Blackwing features the 6.2L supercharged V8 engine (RPO LT4), which generates 668 horsepower and 659 lb.-ft. of torque. Each engine is hand-built at GM's Bowling Green Assembly facility and includes a signed engine builder's plate.



Signed engine builder's plate



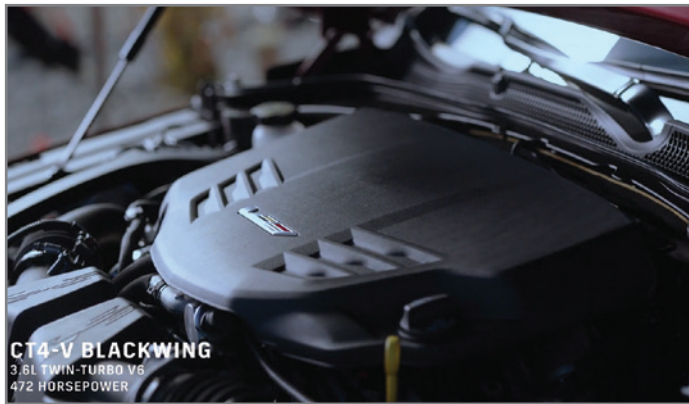
CT5-V Blackwing

The cast aluminum engine block is a cam-in-block, deep skirt, 90-degree V-configuration. The cylinder heads are cast aluminum and have pressed-in-place powdered metal valve guides and valve seats. The lightweight pistons are forged aluminum with a recessed top and barrel-shaped skirt. The piston pins are a full floating design and are treated with a thin, very hard, DLC (Diamond Like Coating) coating that reduces friction and protects the piston pin from wear.

The structural dry-sump oil pan is cast aluminum. It incorporates an oil filter mounting boss, drain plug openings, oil pump screen, and internal oil passages. An external oil cooler assembly is mounted directly to the left side of the oil pan.

The compact, high-output 1.7L four-lobe Eaton supercharger uses small-diameter rotors that enable boost to be generated earlier in the RPM band for instantaneous response. The lower intake manifold housing has an integrated intercooler to enhance the effectiveness of the supercharger.

The 3.6L twin-turbo V6 engine (RPO LF4) in the CT4-V Blackwing produces 472 horsepower and 445 lb.-ft. of torque. The cylinder block is unique to the LF4 engine due to the need for specific



3.6L twin-turbo V6 engine

CONTINUED ON PAGE 3

turbocharger oil and coolant connections and PCV flow, and is constructed of aluminum alloy by precision sand-casting with cast-in-place iron cylinder liners.

The twin turbochargers are controlled by solenoid-controlled vacuum-actuated wastegate and recirculation valves. The valves manage the engine's boost pressure and torque response for consistent performance across the RPM band. The wastegates regulate the boost pressure of the engine by providing a bypass path for the exhaust.

## TWO TRANSMISSION OPTIONS

A Tremec 6-speed manual transmission is standard on both models; a 10-speed automatic with paddle-shifters is available.

The standard Tremec 6-speed (RPO MG9) manual transmission incorporates an aluminum case and fully synchronized gearing with an enhanced synchronizer cone arrangement.

The transmission features Active Rev Matching – adjusting engine speed to match anticipated downshifts automatically – and No Lift Shifting – enabling gear shifts without releasing the accelerator pedal, and allowing the turbos to remain spooled for faster lap times.



The interior is designed for optimal driver ergonomics.

Clutch and brake pedals are positioned for optimal driver ergonomics while shorter shifter ratios than previous generations provide more precise shifts.

The 10L80 10-speed automatic transmission (RPO MHU) uses four planetary gear sets, two brake clutches and four rotating clutches. The shift-by-wire system of the Electronic Transmission Range Selector (ETRS) eliminates the shift cable and helps reduce noise and vibration.

The automatic transmission also offers Tap Shift/Manual Mode, enabling the driver to use the integrated magnesium paddle shifters to select a gear and hold it until selecting the next gear, up or down.



Tap Shift/Manual Mode is activated using the integrated magnesium paddle shifters.

Pushing performance further is the Dynamic Performance Mode, which is calibrated specifically for the V-Series Blackwings to deliver track-focused shift patterns. The system automatically activates when high-g forces are experienced in Sport or Track mode.

An Electronic Limited Slip Rear Differential is standard on both models and features a light-weight aluminum housing and enhancements designed to improve track performance. The system increases road grip by automatically allocating torque to the rear wheel with the most traction during hard cornering.

## BRAKES AND SUSPENSION

Both V-Series Blackwing models feature advanced high-performance braking systems. The CT5-V Blackwing uses 15.67 x 1.42-inch (398 X 36 mm) front rotors and 14.7 x 1.1-inch (373.5 x 28 mm) rear rotors and the CT4-V Blackwing uses 14.96 x 1.34-inch (380 X 34 mm) front rotors and 13.4 x 1.1-inch (340.5 x 28 mm) rear rotors.

The CT5-V Blackwing also offers an available lightweight carbon-ceramic brake package featuring cross-drilled rotors, which provide enhanced durability and heat management under extreme conditions while reducing unsprung mass and rotating mass.

The Michelin Pilot Sport 4S tires were developed exclusively for the V-Series Blackwing models for a balance of track capability and road comfort. The mold shape of each tire has been specifically engineered for Blackwing models to optimize contact with the road and deliver outstanding wet traction, street and track durability, and rolling resistance.

The performance tires are mounted to forged aluminum alloy wheels with staggered widths, front to rear. The forged wheels are stronger and lighter than conventional cast aluminum.





Forged aluminum alloy wheels

Enhancements to the Macpherson strut front suspension and five-link independent rear suspension include stiffer spring rates, unique hollow stabilizer bars and higher-rate bushings that provide a driving experience that isolates the driver from road imperfections.

Providing a further balance between daily-driving comfort and high-performance track capability is the Magnetic Ride Control 4.0 system, which features Blackwing-specific tuning. New accelerometers and an inertial measurement unit transmit and process changes in road conditions four times faster than the previous generation system. Plus, the secondary temperature maps compensate for changes in damper fluid temperature for more consistent performance.

To achieve even greater performance on the track, the customizable integrated digital gauge cluster offers Custom Launch Control and Performance Traction Management settings.



Aerodynamic elements, such as mid-body panels, direct airflow around the vehicle.



Available carbon fiber packages further reduce lift.

## INTERIOR TECHNOLOGY

There are three levels of premium interiors, each with unique trim, appointments and technologies, which offer functionality, finish and refinement, including available carbon fiber seatbacks and trim components.



Three levels of premium interiors are available.



Custom Launch Control and Performance Traction Management settings

## AERODYNAMIC DESIGN

The functional exterior design elements of the Blackwing models add to their performance capabilities on the track as well. The specific grilles, rear spoiler, front splitter, mid-body panels, rear diffuser, fender vents, and rocker extensions help reduce lift on a track or support propulsion system cooling.

Available carbon fiber packages further reduce lift on a track, compared to the models' respective standard aero packages — including a 214 percent reduction in lift on the CT4-V Blackwing.

The CT5-V Blackwing features standard Surround Vision with recording and a Head-Up Display (HUD). The HUD is themed to match each of the three display personas, including different notifications, such as a tachometer reading on the Sport setting and shift lights with the Track setting.

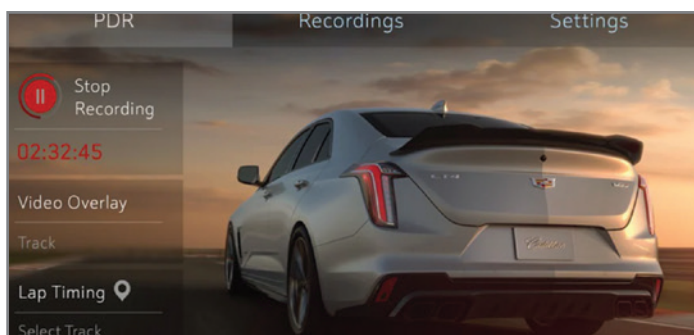
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Adding to the sights and sounds for the driver to enjoy are an available premium AKG audio system with 14 speakers (CT4-V Blackwing) or 15 speakers (CT5-V Blackwing) and a configurable instrument cluster with a 12-inch-diagonal HD display. The instrument cluster includes unique V-Series Blackwing graphics and customizable performance settings, such as a Track screen with performance timers for 0-60 mph, quarter-mile acceleration, lap timer and more.



The instrument cluster includes customizable performance settings.

In addition, the available second-generation Performance Data Recorder provides improved recording capabilities and new levels of driving analysis. It allows drivers to record every aspect of their driving, including real-time audio and front camera video, as well as 34 channels of performance data for detailed analysis.



The Performance Data Recorder provides new levels of driving analysis.

## LIMITED EDITION MATTE PAINT FINISH

A limited production run of the 2022 CT4-V Blackwing and CT5-V Blackwing feature a low-gloss matte Dark Emerald Frost paint finish (RPO G7W). The matte finish is completely unique from other automotive paints and requires specific care. It uses a distinct coating that diffuses and absorbs light to create a unique “flat” finish. The result is an appearance that distinguishes itself. While the clear topcoat chemistry is the same high quality clear used for high gloss vehicles, special care must be taken to preserve the unique low gloss appearance.



Low-gloss matte Dark Emerald Front paint finish

To maintain appearance of the matte finish, do not rub the paint surface, only wipe lightly. Rubbing the finish will create bright spots and an uneven appearance. Refer to the updated PDI form before washing or servicing vehicles with the matte finish. Liquid car wash soap and water as well as mild, non-abrasive bug/tar removers are the only cleaning materials that should be used to clean the low-gloss matte paint. For more information on care instructions for the unique matte finish, refer to Bulletin #15-NA-034

**TIP:** A Dark Emerald Frost delivery packet will be shipped to the dealership that includes instructions for the PDI process, paint care tips and a Customer Care Guide. The paint care guidelines must be reviewed with the customer at the time of delivery.

## LIFTING THE VEHICLE

The vehicle should be lifted so that the hoist pads and/or lift arms do not contact the rocker panel molding. The hoist pad must be located in the designated area.

In the front location, place the lift pads on the rocker outer panel weld flange. In the rear location, place the lift pads on the rocker outer panel rear cradle brace. Care should be taken to ensure the hoist pad is inside the rocker panel molding cut out area (notch) to prevent damage to the vehicle.

## LEARN MORE

For more information about the new Blackwing models, two new model launch courses are available to Cadillac dealerships (U.S.):

- 10322.60W 2022 Cadillac CT4-V Blackwing New Model Launch
- 10322.63W 2022 Cadillac CT5-V Blackwing New Model Launch

Both courses are two hour WBT courses that cover 12 service areas. The courses are available through the Center of Learning.

► Thanks to Blake Streling



# VT40 CVT

## Transmission Slipping Condition

There may be a slipping condition, a loss of forward gear and/or an illuminated Check Engine light on some 2019-2021 Malibu and 2020-2021 Trailblazer and Encore GX models equipped with the VT40 CVT automatic transmission (RPO MRG). DTC P2714 (Transmission Control Solenoid Valve 4 Stuck Off) also may be set in the Transmission Control Module (TCM).

These intermittent conditions may be caused by the clutch regulator valve sticking in the valve body, damage to the forward clutch piston, and/or wear in the primary pulley bearing bore causing damage to the case.

### TRANSMISSION FLUID TEMPERATURE

Before beginning diagnosis, verify the transmission fluid is at the proper level following the procedure in the appropriate Service Information. The transmission fluid temperature must be between 140°-176°F (60°-80°C) to properly check the fluid level and to perform the diagnostic procedures.

### TEST DRIVE

If the fluid level is correct, with the transmission at operating temperature, drive the vehicle to determine if there is a slip or lack of engagement in Drive. If there is no slip in Drive, clear the DTCs and drive the vehicle again. If the DTC does not immediately reset and there is no slip condition or no loss of drive felt, perform 3 to 4 wide-open throttle accelerations. If the DTC does not reset, replace the valve body (not the solenoid valve body) and re-evaluate operation.

### INTERNAL TRANSMISSION COMPONENTS

If DTC P2714 resets, check if there is no forward motion but Reverse is operational; a slip under heavy acceleration; or if the DTC or the concern is repeatable.

In addition, check for a drop in primary and secondary pulley pressure due to a leak. Primary and secondary pulley pressure drop during an Auto Stop event. The pressure during an Auto Stop event should be around 400 kPa. If the pressure is below 300 kPa, there may be a piston seal leak.

If there is a loss of drive, slipping, the fluid has a burnt odor, or any of the other listed indicators are present, disassemble the transmission and inspect the edges of the forward clutch piston for damage.

If the forward clutch piston is damaged, replace it along with the forward clutch fiber plates and the forward clutch steel plates as needed.

If the forward clutch piston is not damaged, inspect the pump for signs of internal wear. Wear may be found internal to the primary pulley bearing bore.

Any signs of wear may indicate that the primary pulley bearing has spun in the bore and is allowing the turbine shaft to become off center. If this occurs, there may be a pressure leak and the transmission may need to be replaced.



Damage along the side of the forward clutch piston



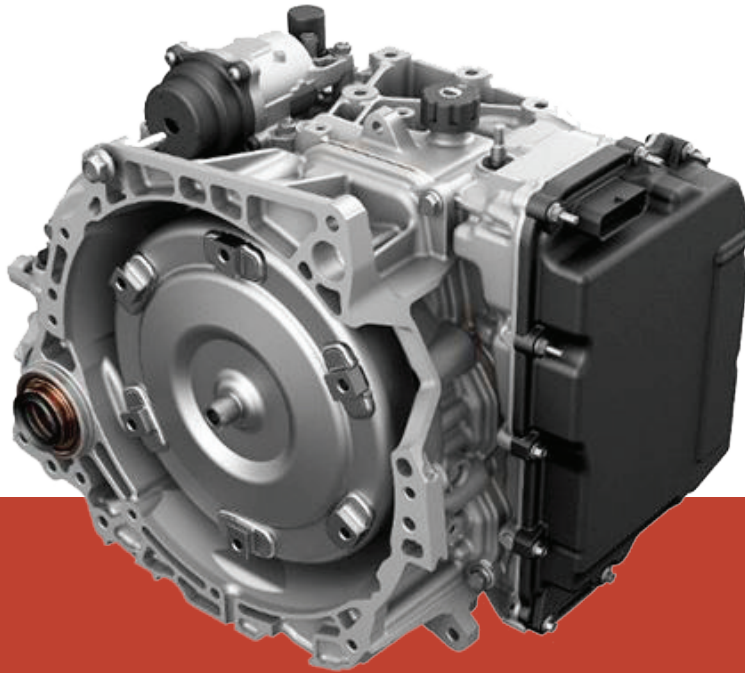
Inspect the pump for signs of internal wear.

**TIP:** The primary pulley bearing is installed on the inside of the case on the primary pulley, which cannot be accessed for inspection. Inspection of the pump for DTC P2714 and no concern found with the Forward Clutch Piston is critical to proper diagnosis.

Refer to #PIP5819 for additional information and part numbers.

► Thanks to Bill Alley

# 9T65 Transmission Replacement Program Ending Soon



The pilot replacement program (U.S.) for the 9T65 9-speed automatic transmission (RPO M3V, M3W) on 2018-2021 Enclave, Traverse; 2019-2021 Blazer; and 2020-2021 Acadia, XT5, and XT6 models, which began in July 2020, will be ending soon.

The program 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). All of the program details are covered in the latest version of Bulletin #20-NA-136.

The program applies only to vehicles sold in the U.S. with less than 18,000 miles and less than 18 months from date of delivery (DOD). Feedback during the program for replacing the 9T65 transmission instead of making internal repairs has shown a reduction in repeat repairs for transmission replacements as well as increased quality control for returned transmission inspections. Transmission assemblies replaced during the program are requested by the Warranty Parts Center for engineering analysis.

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 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 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.

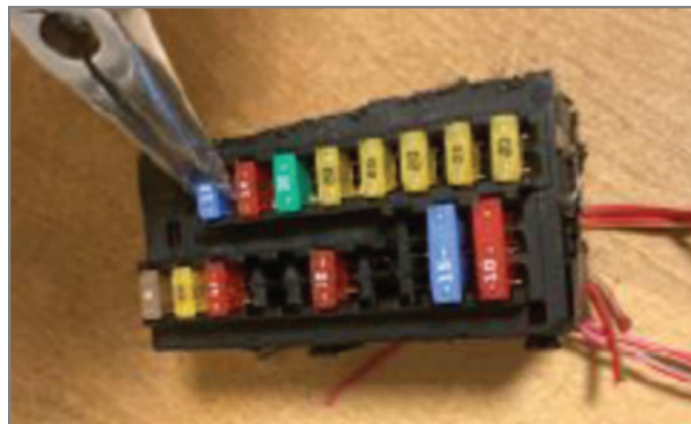
Look for more details soon about the results of the program as well as new transmission repair information once the pilot program has been completed.

► Thanks to Mark Kevnick

# Fuse Block or Junction Block Terminal Retention

Some 2020-2021 Corvettes may experience several electrical concerns related to terminal retention issues at the instrument panel wiring harness fuse block (located at the passenger's side of the instrument panel) or the body wiring harness junction block (located at the rear compartment closeout panel between the seats). The locking feature of the electrical center may not retain the terminal, resulting in the electrical concerns.

After verifying the condition at either the instrument panel wiring harness fuse block or body wiring harness junction block, remove the block and identify the correct fuse that requires rework. Remove it from the block.



Remove the fuse from the block.

Locate the damaged pocket position and remove the terminal from the damaged cavity. Ensure that the wire is separate from the other wires.



Remove the terminal from the damaged cavity.



Instrument panel wiring harness fuse block



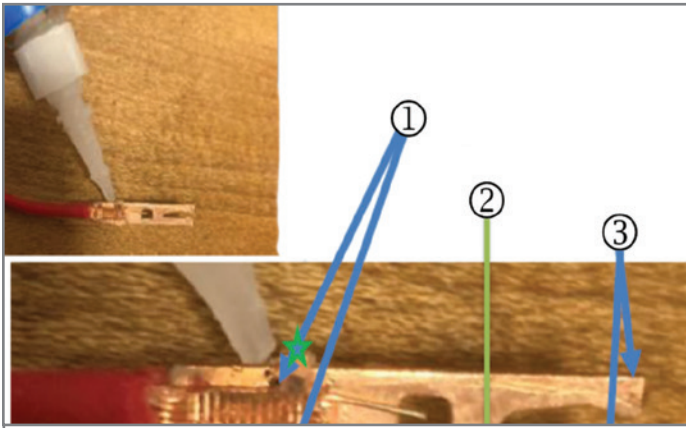
Body wiring harness junction block

With the terminal removed from the block, apply a 1.0 mm bead of adhesive to the terminal retention ears at two locations on each side as shown. Adhesive must not be applied above the green line, especially in the tuning fork area of the terminal.

With the adhesive applied at the four locations (two on each side) of the terminal, insert the terminal into the original cavity until fully seated. Hold it in place for 60 seconds. Allow the adhesive on the terminal to cure in place for 15 minutes.

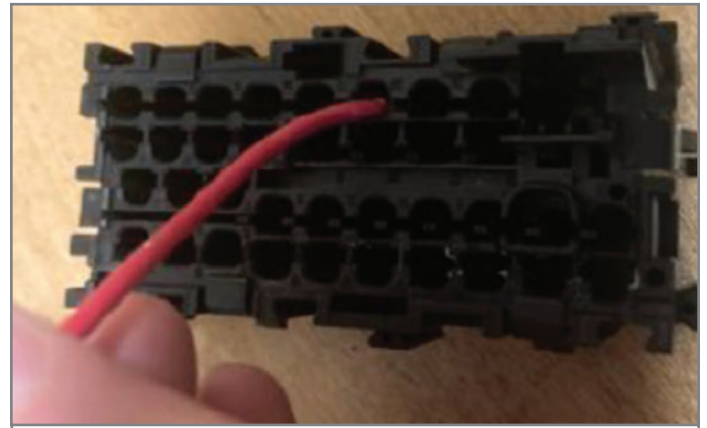
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Apply adhesive on the retention ears (#1). Do not apply adhesive above the green line (#2), especially on the tuning fork area (#3).

Once cured, hold the terminal firmly in place when inserting the proper fuse and then reinstall the fuse block or junction block.



Insert the terminal into the original cavity until fully seated.

For complete repair information and part numbers, refer to Bulletin #21-NA-174.

► Thanks to Jeff Strausser

# Inoperative Steering Wheel Thumbwheel Select Control Reset

The Driver Information Center (DIC) thumbwheel control on the right side of the steering wheel on some 2021 Corvettes may not work when selecting any Information tiles, radio stations, or Tire Pressure Monitoring or Oil Life system resets. The thumbwheel control is used to move through and select several instrument cluster menus and features. The thumbwheel control is rotated to scroll through information on the instrument cluster and is pressed to select various features.

To reset the selection operation of the thumbwheel control, start the vehicle and wait for the Buckle Seat Belt message to time out on the Driver Information Center on the instrument cluster.



The thumbwheel control is used to move through and select several instrument cluster menus and features.

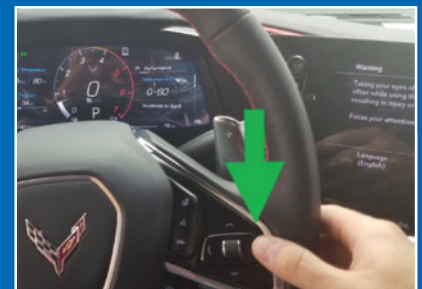
Press the right arrow on the steering wheel control until the DIC screen displays "Press ✓ to Simplify Display."

Next, press the thumbwheel until the DIC screen displays "Push any button to continue."

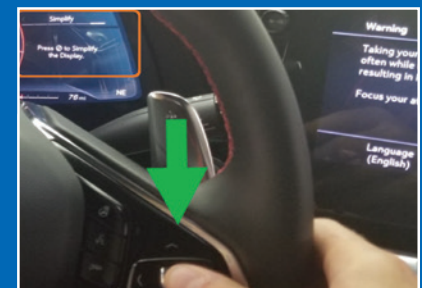
Press the thumbwheel again until the DIC screen displays "Press ✓ to Simplify Display." again. Once this message is displayed, turn off the vehicle.

Refer to #21-NA-185 for additional information.

► Thanks to Jeff Strausser



Right arrow on the steering wheel control



Thumbwheel control

# New Inserts

## ADDRESS REAR LEAF SPRING Sounds

A squeak or clunk sound from the rear leaf springs may be heard on some 2015-2021 Silverado 2500HD/3500HD and Sierra 2500HD/3500HD models. The sound may be caused by the spring insert interacting with the leaf spring. Keep in mind that some noise is a normal characteristic of leaf spring suspensions when travelling over rough roads or bumps.

To help reduce excessive leaf spring noise, a new insert with a graining pattern is available. Replace the rear leaf spring inserts using a plastic trim tool or plastic wedge in between the leaf springs.

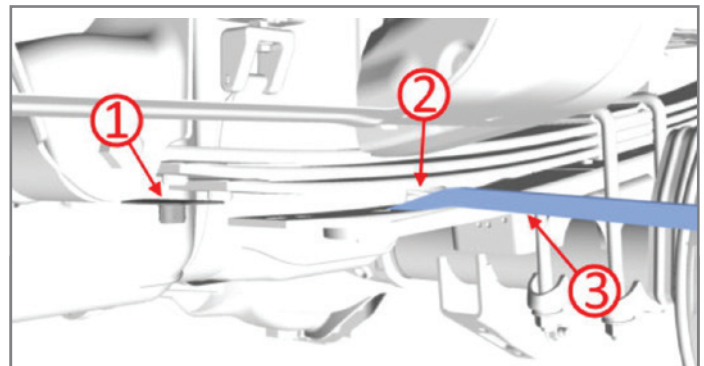


New inserts with a graining pattern

**TIP:** New spring tip inserts have a break-in period of up to 1,000 miles (1,610 km), so some noise can be expected after the new inserts are installed. Also, these inserts are designed to work without any lubricant.

Follow the service procedure in the appropriate Service Information to install the new inserts. The bolt that secures the clip to the spring alignment bracket must be removed to relieve spring tension.

Do not chip the painted coating on the springs when performing the repair. A rag should be placed in the area where contact with the spring may occur.



Place a rag where contact with the spring may occur (#2) before using a plastic trim tool (#3) to separate the rear springs.

Use a plastic trim tool, plastic wedge or equivalent to separate the rear springs. Clean any dirt or grease from between the leaf spring using a rag and degreaser before replacing the inserts for the left and right side springs.

There is no need to adhere or modify the inserts as removal of the spring clip allows for proper access.

For additional information and part numbers, refer to Bulletin #21-NA-138.

► Thanks to Kevin Minor and Scott Lewiston



Clean between the leaf spring before replacing the inserts.



# 9th Gear Operation on 9-Speed Transmissions

Transmission operation on some 2018-2022 Terrain; 2019-2022 XT4; 2020-2022 Encore GX, XT5, XT6, Acadia; and 2021-2022 Envision and Trailblazer models may not be fully understood by owners, especially at highway speeds. These models feature the 9T45, 9T50, or 9T60 9-speed transmission (RPO M3F, M3G, M3H, M3T, M3U). In some cases, drivers may feel that the transmission doesn't shift into 9th gear or maintain 9th gear operation as expected.



The 9-speed transmissions shift to 9th gear when it is most efficient to do so.

The 9-speed transmissions use all nine gears when it is most efficient to do so. The vehicle's control system senses the operating conditions and determines the correct gear to deliver optimum performance and fuel economy.

The control calibration is tailored for each vehicle application and engine type. For example, optimal fuel economy during highway driving may actually be achieved in 8th gear rather than 9th gear

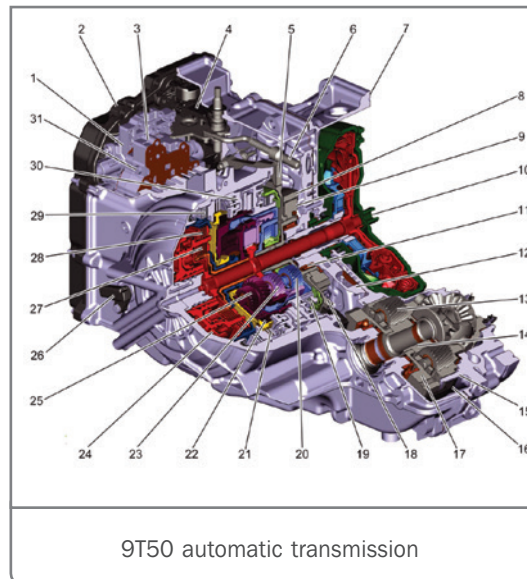
depending on a number of factors, including vehicle speed, engine load and throttle input. 9th gear is engaged when appropriate.

Replacing transmission components or complete assemblies

will not change the shifting operation of the transmission. To ensure 9th gear is operating properly, verify 9th gear is not being commanded on a test drive. Next, use GDS2 to manually command 9th gear. If achieved, the vehicle system is operating correctly.

For additional information, refer to Bulletin #21-NA-181.

► Thanks to Mark Kevnick



9T50 automatic transmission

## TECH LINK

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