

All-New Cadillac CT5 Debuts



with Style, Performance & Technology

As the newest luxury sedan in the Cadillac lineup, the all-new 2020 CT5 has been designed with a number of performance and technology features, and wrapped in a stylish fastback profile, that build on Cadillac's award-winning legacy. Available with rear-wheel drive or all-wheel drive, the CT5 is based on the global Alpha vehicle architecture.

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The CT5 is equipped with an all-new vehicle electronic system — the Next Generation Digital Vehicle Platform — capable of managing up to 4.5 terabytes of data processing power per hour. It provides more rapid communications within the vehicle itself and to outside sources due to Ethernet connections of 100Mbps, 1Gbps and 10Gbps.

POWERTRAIN FEATURES

At launch, the model range will include Luxury, Premium Luxury and Sport models. The 2.0L twin-scroll turbo 4-cylinder engine (RPO LSY) is standard and generates an estimated 237 horsepower and 258 lb.-ft. of torque.

Later in the model year, the available 3.0L twin-turbo V6 engine (RPO LGY), which produces 360 horsepower and 405 lb.-ft. of torque, will be offered on Premium Luxury and V-Series models.

The turbocharged 2.0L DOHC, VVT 4-cylinder engine uses a twin-scroll turbocharger to help reduce turbo lag, with Active Fuel Management (AFM), Spark Ignited Direct Injection (SIDI) and Engine Stop/Start technology helping to improve fuel economy.

The 2.0L 4-cylinder engine features a Sliding Cam System (SCS) that enables the Engine Control Module (ECM) to change the camshaft lift profile of the intake and exhaust camshafts while the engine is running. The SCS uses four intake camshaft profile actuators and two exhaust camshaft profile actuators that vary the Camshaft Lift Profile Sleeve position axially on the camshaft in response to electrical commands from the ECM. Each camshaft has two profile sleeves with different height cam lobes and each camshaft has a detent ball and spring under each sleeve that helps hold the profile sleeve into position.

The SCS profile actuator solenoids push out an actuator guide pin into the shifting groove machined into the Camshaft Lift Profile Sleeve. When the guide pin engages the sleeve, it causes it to shift axially on the camshaft, causing unique-sized cam lobes to be placed over the intake and exhaust valves and modify valve lift and duration.

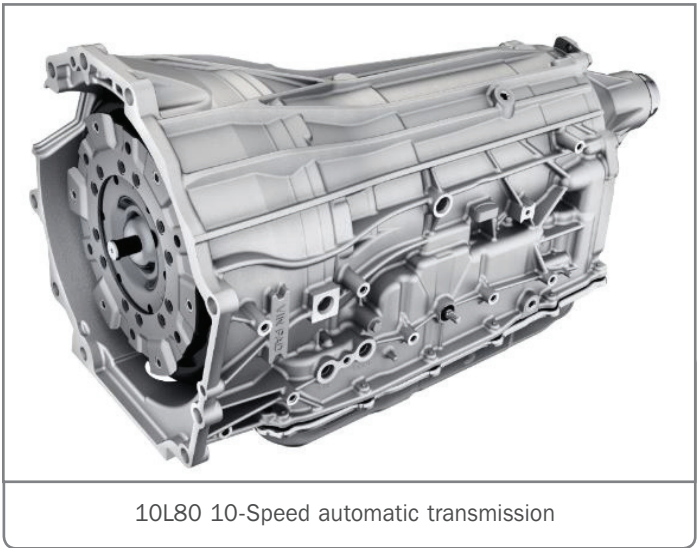
The cylinder block of the 2.0L engine is constructed of aluminum alloy by high-pressure die casting with four cast-in-place iron cylinder liners arranged in-line.



2.0L twin-scroll turbo engine

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Within the engine block structural extension is the oil pump and the balance shafts. The balance shafts are driven by the balance chain. The oil pump assembly is driven by the balancer shaft assembly. The oil pump, which has variable flow capability to optimize oil flow to engine components as needed, uses a circular vane arrangement and the actuation of an oil control valve assembly commanded by the ECM.



The 2.0L turbocharged engine requires dexos1® approved – GEN 2 full synthetic SAE 0W-20 viscosity grade engine oil.

The fuel system is an electronic returnless on-demand design. An electric purge pump is mounted on the engine, which is designed to help comply with the most stringent emissions regulations. The electric purge pump manages the purge of vapors from the fuel tank. Compared with a traditional solenoid valve to purge emissions, the electric purge pump provides greater control over the timing and amount of purge.



Both the 4-cylinder and V6 engines are paired to the Hydra-Matic® 10L80 10-Speed automatic transmission (RPO MHS). The ten speed ratios are generated using four simple planetary gearsets, two brake clutches, and four rotating clutches. The resultant on-axis transmission architecture uses a squashed torque converter, an off-axis pump and four close-coupled gearsets.

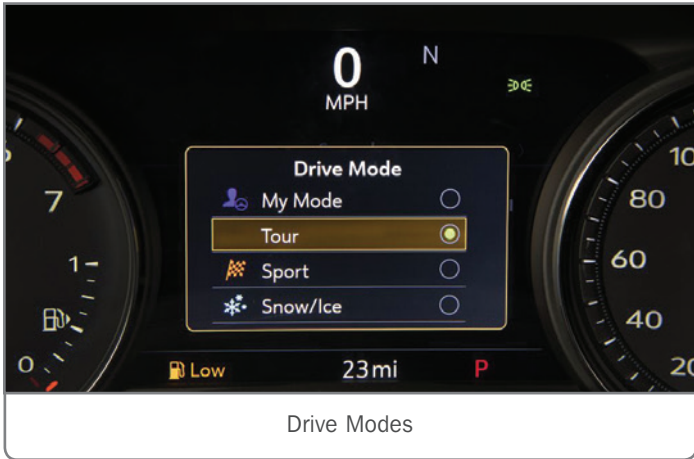
Gears are selected using the Electronic Precision Shift system, where the Electronic Transmission Range Select lever selects the range by electronic control rather than by mechanical means.

ALL-WHEEL DRIVE

The Borg Warner™ Model BW-4475 transfer case is a 1-speed active design. The transfer case allows vehicle speed-dependent flexible clutch preload torque levels for enhanced system performance. An on-demand torque-biasing friction clutch is tuned through software calibrations.

The system has its own control module integrated with the vehicle chassis control system via the vehicle’s CAN bus. The torque split between the front and rear axle is not fixed and the system has the ability to transfer up to 100% of available torque to the front axle as needed.

DRIVER MODE CONTROL



The Driver Mode Control allows the driver to personalize the driving experience by selecting one of three pre-optimized selectable Drive Modes: Tour, Sport, Snow/Ice, and My Mode. My Mode enables the configuration of vehicle sub-systems, including steering, powertrain, braking, engine sound and other tuning. The modes are selected by pressing the Drive Mode button on the center console.

All-New Cadillac CT5 continued

CHASSIS FEATURES

Chassis and driving dynamics features on the new CT5 include a standard Bosch premium electric, rack-mounted power steering system, eBoost brakes, and ZF MVS passive dampers as well as Brembo brakes on Sport models.



CT5 Sport model

Depending on options, the following vehicle performance enhancement systems are provided:

- ABS
- Adaptive Cruise Control
- Bi-directional WSS
- Brake Drying/Cleaning
- Collision Imminent Braking
- Dynamic Rear Proportioning
- Electronic Stability Control
- Engine Drag Control
- Extended Hill Hold Start Assist
- Panic Brake Assist
- Teen Mode Support
- Traction Control
- Trailer Sway Control

Driveline Damping is required on vehicles with Engine Stability Control (ESC), Stop/Start functionality and an automatic transmission. It maintains brake pressure to dampen driveline acceleration

disturbance as the engine is restarted and holds brake pressure to retard or prevent the vehicle from rolling. It's used for driver comfort and also to extend vehicle hold on a steep grade.

At all four corners of the CT5 are 18-inch alloy wheels on the Luxury model, while Premium Luxury and Sport models are equipped with 19-inch wheels.

INFOTAINMENT SYSTEMS

The 1080dp high-definition full-color 10-inch-diagonal touchscreen is mounted high within the instrument panel for visibility.



10-inch-diagonal touchscreen

There are two available audio systems. The Premium Audio System consists of nine speakers located in the center of the instrument panel, in each door, and in the rear package shelf.

The Bose Performance Series System consists of 15 premium speakers located in the center of the instrument panel, in each A-pillar, in each door, and in the rear package shelf.

Both systems feature Engine Sound Enhancement (ESE) to accentuate natural powertrain and exhaust system sounds and deliver them to the cabin at the right levels during the correct times, such as during engine start or spirited acceleration. It uses the infotainment system microphones, tachometer input, software integrated into the Amplifier/Active Noise Cancellation Module, and the vehicle speakers to determine and generate the correct frequencies needed to modify the sound and play it back through the speakers. The engineering and science behind ESE are rooted in orders, or sound frequencies, that are generated by the engine.

CONTINUED ON PAGE 5

ESE amplifies certain orders to achieve the desired sounds. Adding more orders produces a richer, more complex and pleasing sound. Sound levels are based on engine speed as ESE activates at approximately 3,000rpm when the engine is moving into its optimal power band and on accelerator pedal position.

SAFETY FEATURES

Depending on equipment, the CT5 offers an array of standard and available safety, driver awareness and driver assistance technologies.



The CT5 features eight airbags.

Driver awareness technologies include standard Safety Alert Seat (SAS) and the available Rear Camera Mirror with zoom and tilt adjustment.

Driver assistance technologies may include: Adaptive Cruise Control, Automatic Emergency Braking (AEB), Forward Collision Alert (FCA), Front Pedestrian Braking (FPB), Lane Change Alert (LCA), Lane Departure Warning (LDW), Lane Keep Assist (LKA) and Side Blind Zone Alert (SBZA).

In addition, parking or backing assistance technologies may include: Automatic Parking Assist with Braking, Backing Warning System, Front Park Assist (FPA), Rear Cross Traffic Alert (RCTA), Rear Park Assist (RPA), Rear Vision Camera (RVC), Reverse Automatic Braking (RAB) and Surround Vision.

The CT5 also is equipped with eight airbags to help protect occupants and features advanced sensing technology to help detect the type and severity of the collision that has occurred in order to

ensure that the airbags inflate as quickly as needed. The sensing system includes four acceleration-based sensors at the front of the vehicle and on either side of the vehicle and two pressure-based sensors inside the front doors.

HANDS-FREE DECKLID



Hand-free decklid target projection

CT5 also features an available hands-free power-release decklid. The hands-free decklid uses a motion sensor with a Cadillac crest target projection that allows owners to activate the trunk release by kicking their foot under the left side of the rear bumper

FLATBED TOWING

A flatbed car carrier is recommended to transport a disabled vehicle. The transmission must be in Neutral when moving the vehicle. If the vehicle is equipped with a tow eye, only use the tow eye to pull the vehicle onto a flatbed car carrier from a flat road surface. Do not use the tow eye to pull the vehicle from snow, mud, or sand.

For additional information on the all-new 2020 CT5, refer to Bulletin #19-NA-247.

► Thanks to Blake Streling and Tom Renno

End of Windows 7 Support Fast Approaching

Techline computers in GM dealerships running a Windows 7 Professional operating system (OS) must be replaced by December 31, 2019 in order to receive assistance from the Techline Customer Support Center (TCSC) in 2020.

All dealer-facing GM applications will end support for Windows 7 on December 31, 2019 due to Microsoft no longer providing operating system updates or security patches. Microsoft has announced that it will end support for Windows 7 on January 14, 2020.



REPLACE OR UPGRADE YOUR PC?

When replacing a Techline computer, refer to the "Better" or "Best" columns for recommended computer specifications in the latest GM Dealer Infrastructure Guidelines (DIG). New Techline Connect users will be required to have Windows 10 Professional, 8GB RAM or more and 100 GB free Hard Drive space to install the application.

U.S. Dealerships: To view the latest DIG as well as computers for purchase, go to gmdesolutions.com and select the Dealer Services tab. Once you've input your BAC and zip code, select Techline IT Solutions from the Dealer Services menu.

Canadian Dealerships: The latest DIG can be found in the Dealer Security and Information Technology App on GM GlobalConnect.

GM Dealer Equipment also continues to offer a Windows 10 Upgrade & Diagnostic Bundle promotion that includes a new standard or GM-configured laptop along with an MDI 2 diagnostic tool.

If you're considering upgrading a PC that is currently running Windows 7 to Windows 10, an upgrade is only recommended if the PC processor is 6th generation or newer. Lower than 6th generation PCs must be replaced.

To check the processor system on your current PC, select Start at the bottom of the screen, and then right-click on Computer, followed by a left click on Properties. The generation of the processor is the first number after i7, i5, or i3. For example, if the processor is an i3-5005U, the number 5 listed after i3 indicates that the Intel Core i3-5005U processor is the 5th generation. Since this processor is lower than the 6th generation, it's recommended that it be replaced and not upgraded to Windows 10.

Control Panel Home

View basic information about your computer

Windows edition
Windows 7 Professional
Copyright © 2009 Microsoft Corporation. All rights reserved.
Service Pack 1
Get more features with a new edition of Windows 7

System

Processor: Intel(R) Core(TM) i3-5005U CPU @ 2.00GHz

Installed memory (RAM): 4.00 GB (3.74 GB usable)

System type: 64-bit Operating System

Pen and Touch: No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings

Computer name: Shop03-PC
Full computer name: Shop03-PC
Computer description:
Workgroup: WORKGROUP

Windows activation

Windows is activated
Product ID: 00171-0EM-8992671-00437

Intel® Core™ i3-5005U processor

Example: 5 = 5th Gen

Processor (CPU) Generation / Processeur (CPU) Génération

Check the first number after i7, i5, or i3 to determine the processor generation.

► Thanks to Lisa Scott

UPDATE:

Rattle Sound near Front of Engine

The 2019 XT4 may have a rattle sound heard near the front of the 2.0L 4-cylinder engine (RPO LSY) due to a stuck or collapsed timing chain tensioner and, as a result, a loose timing chain. DTCs P0011 (Intake Camshaft Position System Performance), P0014 (Exhaust Camshaft Position System Performance), P0016 (Intake Camshaft Position Not Plausible), and/or P0017 (Exhaust Camshaft Position Not Plausible) may be set.

A stuck or collapsed timing chain tensioner may cause damage to the oil control valve assemblies in either camshaft sprocket bolt. If a rattle sound is heard near the front of the engine, remove the camshaft position actuator valve solenoids and check for a missing, out of position, or damaged camshaft position actuator valve snap ring.



Inspect the camshaft position actuator valve snap rings.

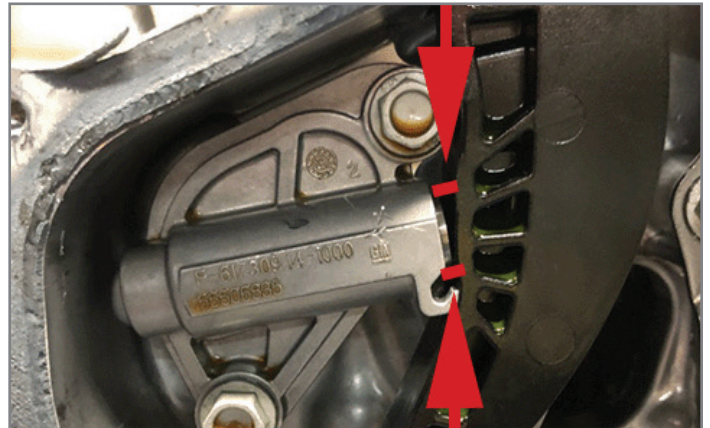
SNAP RING

If the snap ring for either camshaft sprocket bolt is missing, out of position or damaged, replace both camshaft sprocket bolts and perform the timing chain tensioner/guide inspections listed below.

If both snap rings are in the correct position, perform the following timing chain tensioner and guide inspections.

TIMING CHAIN TENSIONER

If the rattle sound is heard near the front of the engine, remove the lower engine front cover assembly and inspect the timing chain tensioner. A stuck timing chain tensioner plunger will allow an air gap to be present between the tensioner plunger and the timing chain guide.



Air gap between the tensioner plunger and the timing chain guide

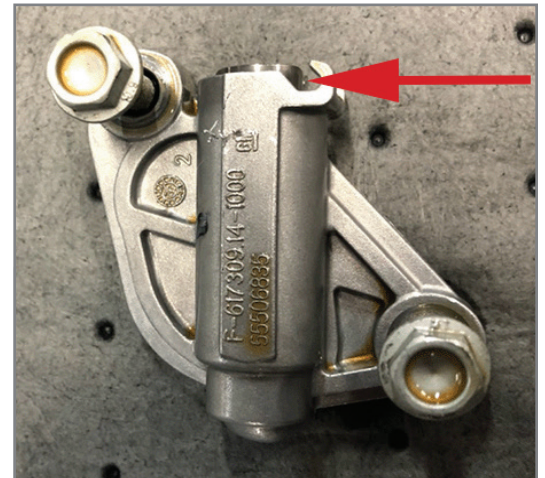
When viewing the timing chain tensioner removed from the engine, the plunger can be seen stuck in the body of the tensioner.

If these conditions are found, replace the timing chain

tensioner following the appropriate Service Information. Also inspect the three timing chain guides for any excessive wear or damage. Replace any damaged timing chain guides if necessary.

For additional information, refer to #PIP5652A.

► Thanks to Raymond Haglund



Plunger stuck in the body of the tensioner



Location Masking

ON 2019-2020 GM VEHICLES

Location masking on some 2019-2020 GM models equipped with Infotainment 3 Systems (RPO IOR, IOS, IOU, IOT) allows owners to disable the location services feature in their vehicle. By turning location services on or off, owners are able to control the amount of data that is being sent from their vehicle. However, if the location services feature is turned off, it has implications for other connected services that owners may believe are not working properly.

On Infotainment 3 Systems, the default setting is Location Services On in the infotainment system Privacy Settings menu. Owners can enable or disable the location services feature in two ways:

- In the Settings menu, go to System > Privacy > Location Services and select On or Off.
- Press and hold the white button next to the blue OnStar button in the overhead console.

LOCATION SERVICES ICON

To easily determine if the location services feature is on or off, look for the white Location Services icon in the status bar on the Home screen of the infotainment system. The icon is located next to the clock and outside temperature in the lower-right corner of the screen.

When Location Services are on, the icon will be present without a circle around it. If Location Services are off, the icon will be circled in red with a slash through it.

CONNECTED SERVICES

If the location services feature is turned off, certain functions that require data about the vehicle's location may not operate as intended or expected by the owner. As a result, the vehicle may be brought to the dealership for service.

If there is a concern about the proper operation of any of the following connected services-related systems, check if the location services feature is disabled in the Privacy Settings on the infotainment system.

- Connected navigation services, if equipped and active, will not work with location services turned off. The system will operate as a non-connected navigation system.
- Speech recognition may not offer full functionality.
- OnStar Advisors will be unable to provide Turn-by-Turn Navigation services.
- Users may receive error messages from the myChevrolet, myBuick, myGMC or myCadillac mobile app when trying to use the Vehicle Locate feature.
- Some features of Smart Driver may be inoperable or not work properly, such as the score being replaced by dashes.

Location masking does not impact emergency services, such as Automatic Crash Notification and Stolen Vehicle Assistance.

TIP: If there is a connectivity or audio concern, also check to see if Text Telephone (TTY) is enabled. OnStar offers in-vehicle TTY services. TTY functionality may appear to be an audio issue if not properly identified.

► Thanks to Jeremy Richardson

Engine Air Leak from PCV Tube

Some 2019-2020 Silverado 1500 and Sierra 1500 models equipped with the 5.3L V8 engine (RPO L84) may have a rough idle, lean running concern, or an air leak sound from the Positive Crankcase Ventilation (PCV) system. DTCs P0171 (Fuel Trim System Lean Bank 1) and/or P0174 (Fuel Trim System Lean Bank 2) may be set. These conditions may be caused by an incorrectly installed or damaged foul air PCV tube.

If these conditions are present on a vehicle, check to see if the foul air PCV tube is installed and seated correctly. If the tube is installed correct, perform a smoke test using the GE-52250 Variable Pressure Leak Detector (Power Smoke Diagnostic Leak Detector) or equivalent to confirm there are not any leaks.

TIP: The GE-52250 is not currently an essential tool, but it is available through the GM Loan Tool Program. Refer to Bulletin 16-NA-158 for more information about the Loan Tool Program.

If no smoke is detected, pull on the PCV tube ends at the rocker cover or intake manifold to ensure each tube is seated. If a tube is not fully seated, secure the connection by pressing the tube in until it clicks.

If smoke is detected at the rocker cover or intake manifold, remove and reinstall the same PCV tube, ensuring that both latches click to that the tube is fully seated. Repeat the smoke test to verify the condition. If the leak is still present, remove the tube and inspect the O-ring seals. Look for any damage or missing O-ring seals. Replace the tube if any damage is found.

If the tube is cracked, or there is damage at any other location other than at the rocker cover or intake manifold, remove and replace the damaged tube with a new tube.

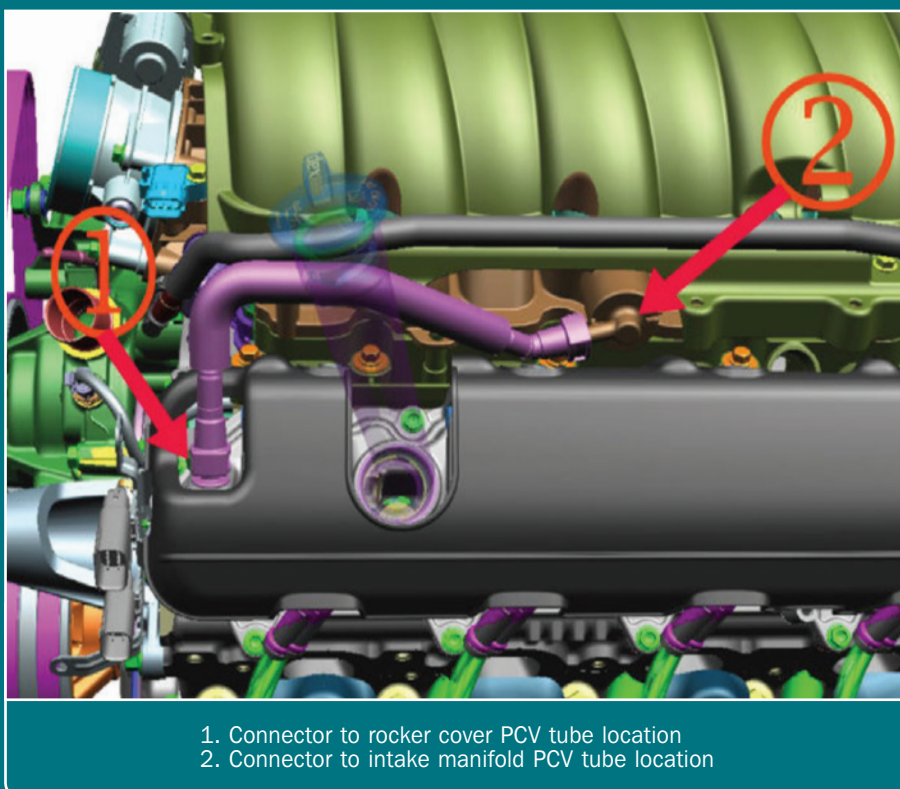
After completing repairs, clear the DTCs, start the vehicle and idle for five minutes. Turn off the engine and repeat idling the engine for another five minutes.

If the condition is still present or the DTCs return, follow the appropriate Service Information to continue with diagnosis.

If the condition is not present and the DTCs do not return, the PCV tube was not correctly seated during assembly.

For additional information, refer to #PIP5686A.

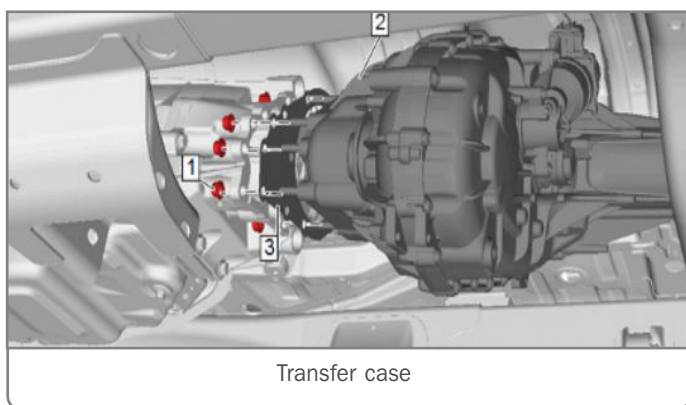
► Thanks to Raymond Haglund



1. Connector to rocker cover PCV tube location
2. Connector to intake manifold PCV tube location

Transfer Case NVH Issue During Coast Down

A transfer case noise, vibration and harshness (NVH) concern may be found on some 2020 Silverado 2500HD/3500HD and Sierra 2500HD/3500HD models equipped transfer cases RPO NQF (Electric Shift Cont, Two Speed Transfer Case) or NQH (Active, Two Speed, Switch Activated Transfer Case). In some instances, a clunk sound may be heard during a coast-down event.



The NVH condition may be the result of a misalignment between the transmission output shaft and the transfer case input. The misalignment could cause the transfer case shift collar to slip out of engagement.

If these conditions are evident, road test the vehicle up to 40 mph (64 km/h) on a smooth, flat road. Allow the vehicle to coast in Drive to below 10 mph (16 km/h), without using the brakes, and listen and feel for any bumps or clunk sounds from under the vehicle. Repeat these steps at least eight times in order to verify the condition.

If the sound is verified to be from the transfer case, the transmission output shaft may be misaligned. It will be necessary to disconnect and reconnect the transfer case to the transmission.

MISALIGNMENT CORRECTION

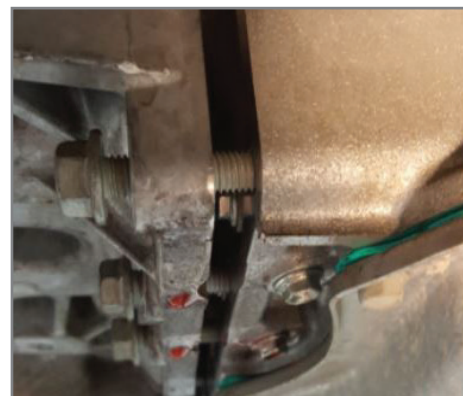
Remove the three transmission mount nuts, the rubber hose from the transmission crossmember, and the transmission crossmember. Also remove the transmission mount from the transmission and discard the mount bolts.

Loosen all 12 transfer case bolts, but do not remove the bolts. It may be helpful to use a screw jack to raise and lower the transmission for better access to all of the bolts.

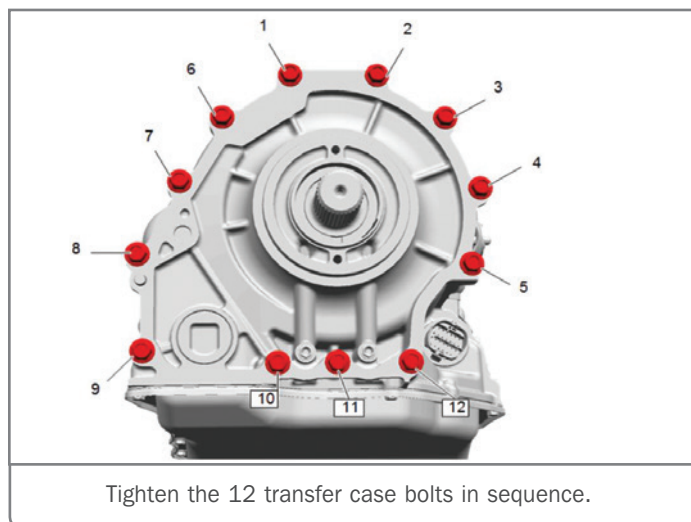
With the bolts loosened, slide the transfer case rearward so there is a minimum gap of 1/2 inch (13 mm), but not more than 1 inch (25 mm). Next, slide the transfer case forward until it is contacting the transmission again.

TIP: When tightening bolts 10, 11, and 12 in the sequence, remove the bolts and clean the threads on each bolt and in the transmission with brake cleaner, and then blow out the hole with compressed air to ensure there is no fluid left in it. Failure to do this may lead to stripped threads.

Be sure to use two new bolts when installing the transmission mount on the transmission.



Slide the transfer case rearward and then forward until it is contacting the transmission again.



Reinstall the transmission mount nuts and the rubber hose to the transmission crossmember.

Refer to Bulletin #19-NA-216 for additional information.

► Thanks to Kevin Minor

Sunroof/Sunshade Motor Initialization

An inoperative sunroof and/or sunshade (RPO C3U) may be found on some 2018-2020 Equinox and Terrain models. The inoperative condition may be the result of the sunroof programming losing initialization.

Before replacing any parts or making any repairs to the sunroof, perform the Sunroof Motor/Actuator Initialization/Tech Process using the sunroof/sunshade open and close switches. Refer to Sunroof/Sunshade Motor Initialization in the appropriate Service Information.

INITIALIZATION PROCEDURE

Initialization refers to the sunroof system learning the reference location of the hard stop. Initialization should be performed the first time the system is powered, if the sunroof/sunshade has lost calibration or has a false reversal, if the motor assembly has been removed or replaced, or if the glass is adjusted after sunroof/sunshade initialization has already been completed.

Until the motor assembly has been initialized, the express-open and express-close switch inputs and manual open inputs are disregarded.

When performing the initialization procedure:

- The sunroof motor should be calibrated before the sunshade motor.
- If the initialization fails, disconnect the battery to reset the sunroof and sunshade motors. Wait one minute before reconnecting the battery.



Use the sunroof switches to perform the initialization procedure.

- If a sunroof or sunshade switch is held for more than 10 seconds after the glass or sunshade has completed its learn cycle, the sunroof can set a "stuck switch" fault code. Perform the battery disconnection procedure.
- The control module provides obstacle blockage detection. If the initialization is not carried out completely, the sunshade may stop and reverse slightly when it gets to the location where it needs to push down the windscreen.

If sunroof operation does not function normally after initialization, continue with the recommended diagnostics in the Service Information.

► Thanks to Rob Smith

TECH LINK

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