

Cadillac CT6 PLUG-IN Delivers Efficient Performance



The new 2017 Cadillac CT6 PLUG-IN is a new type of hybrid vehicle that delivers added performance with an efficient powertrain. The turbocharged 2.0L 4-cylinder engine (RPO LTG) and hybrid electric variable transmission (RPO MRD) combine with a lithium-ion high-voltage battery to offer a hybrid powertrain capable of 31 miles (50 km) of electric range and a 0-60 mph (0-97 km/h) time of 5.2 seconds.

EV Mode

The CT6 PLUG-IN works to provide the most efficient use of both propulsion power sources — the 2.0L turbocharged engine and the high voltage battery. When fully charged, the high voltage battery is the dominant propulsion power source and the engine will turn on occasionally to provide supplemental power. The EV Operation Gauge on the instrument cluster indicates when the engine will turn on.



EV operation gauge

The vehicle operates in EV mode under light or moderate driving conditions for approximately 31 miles (50 km)

CONTENTS

Cadillac CT6 PLUG-IN Delivers Efficient Performance	1
Misfire Conditions	4
Static Sound on Outbound Bluetooth Calls	4
Using the Audio Diagnostic Tracks on a USB Drive	5
Installing Cruze Air Deflectors during PDI	5
Duramax Diesel Hesitation and Other Conditions	6
Malibu ECM Reprogramming	6
Service Know How	6



Customer Care and Aftersales

Cadillac CT6 PLUG-IN Delivers Efficient Performance - continued from page 1

and up to speeds of 78 mph (126 km/h). Under aggressive acceleration, the engine will turn on to assist the high voltage battery. The engine will turn off and EV operation will resume once the vehicle is driven under light or moderate driving conditions again.

When the high voltage battery is depleted, the engine is the dominant propulsion power source and the high voltage battery will provide only supplemental propulsion power. The Total Power Gauge shows the current source of power.

The high voltage battery will store enough energy to provide some hybrid/EV driving or supplemental power. Full EV driving can only resume if the vehicle is plugged in to charge. The Battery Gauge shows the high voltage battery state of charge. When the gauge reads empty, the vehicle should be plugged in to charge the high voltage battery and to allow maximum EV operation again.

Drive Motor Battery System

TIP: Technicians must be fully trained to service the CT6 PLUG-IN. This includes completing all hybrid training. Technicians also must follow all safety procedures and have Personal Protective Equipment (PPE) and up to date certified Class 0 HV Isolation Gloves.



High voltage battery location

The high voltage hybrid/EV battery is installed from beneath the vehicle, into the rear storage compartment. The battery energy control module, a current sensor, and the high voltage contactors are located within the hybrid battery assembly.

The high voltage battery contains 192 individual lithium-ion cells. Every two cells are welded together in parallel for a total of 96

cell groups, which are electrically connected in series. The battery cell groups are joined to form three distinct sections. The battery sections also contain two temperature sensors. Diagnostics and system status are communicated from the battery energy control module to the hybrid powertrain control module 2 through serial data.

Parts Restrictions

The following components are on TAC Restriction to assist the dealership during diagnosis as well as to gather valuable feedback:

- Drive Motor Battery (high voltage battery)
- Hybrid Powertrain Control Module 2 (HPCM2)
- 4EL70 Hybrid Transmission
- CT6 Drive Motor Power Inverter Control Module (PIM)
- Accessory Power Module (APM)
- Drive Motor Battery Charger (OBCM) and Charge Receptacle

Cooling Systems

The CT6 PLUG-IN is equipped with three fully independent cooling systems.

The hybrid/EV electronics cooling system is dedicated to cooling the power electronics components — including the power inverter module, battery charger, and the power module — using the auxiliary radiator, engine control module inputs, radiator fans and hybrid/EV electronics coolant pump.

The high voltage battery is cooled and heated with pre-mixed DEX-COOL. Only use GM pre-mixed DEXCOOL, as it contains deionized water required for the high voltage battery and power electronics cooling systems. Use of any other coolant could result in potential Loss of Isolation DTCs.

A refrigerant/coolant heat exchanger (chiller) and the A/C compressor cools down the high voltage battery. A high voltage heater inside the high voltage battery can also heat the coolant entering the high voltage battery when needed.

The passenger compartment heater system uses the engine radiator, the auxiliary heater coolant pump, passenger compartment heater coolant control valve, high voltage coolant heater control module and a heater core to provide warm cabin air.

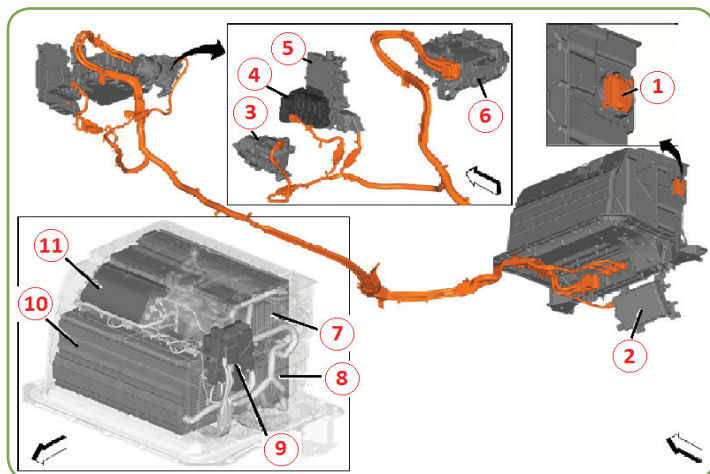
2.0L Turbocharged Engine

The 2.0L turbocharged 4-cylinder engine is designed for greater efficiency and power. The turbocharger generates up to 20 pounds (138 kPa) of boost and its twin-scroll design helps optimize the usable power from the engine. The engine produces 265 horsepower and 295 lb.-ft. of torque.

Electric Variable Transmission

The new 4EL70 transmission is a fully automatic, rear wheel drive, electric variable transmission (EVT). It includes an input shaft, three stationary and two rotating friction clutch assemblies, a hydraulic pressurization and control system, an electric fluid pump, three planetary gear sets, and two electric drive motors. An external torque dampener, bolted to the engine crankshaft, is splined to the transmission input shaft.

The hydraulic system includes a high pressure electric fluid pump driven by an electric motor supplied with high-voltage current from



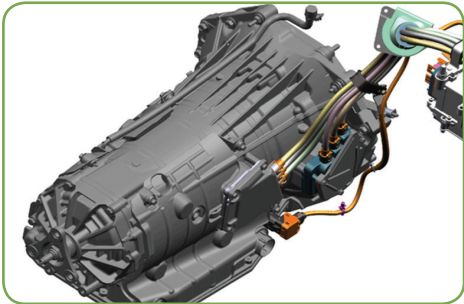
1. S15 Manual Service Disconnect
2. T18 Battery Charger
3. K10 Coolant Heater Control Module
4. K1 14V Power Module
5. T6 Power Inverter Module
6. G1 A/C Compressor
7. C4B Hybrid/EV Battery Section 2
8. C4C Hybrid/EV Battery Section 3
9. A28 Hybrid/EV Battery Contactor Assembly
10. C4A Hybrid/EV Battery Section 1
11. K16 Battery Energy Control Module

continued on page 3

Cadillac CT6 PLUG-IN Delivers Efficient Performance - continued from page 2

the power inverter module. The electric pump maintains working pressure and control of the clutches when the engine is on and when the engine is off.

The three planetary gear sets, electric motor-generators, and other clutches together provide all-electric propulsion, electric variable hybrid transmission ratios, and fixed mechanical transmission ratios.



4EL70 transmission

Regen-on-Demand™

The Regen-on-Demand system enables the driver to control energy regeneration using the steering wheel paddles. Regenerative braking takes some of the energy from the slowing vehicle and turns it back into electrical energy, which is stored in the high voltage battery.

Regen on Demand allows the driver to increase the amount of deceleration provided by regenerative braking by pressing the paddles on the back of the steering wheel. It can be used during sporty driving and when descending hills to slow the vehicle. It also enables one-footed driving using the accelerator pedal and the selected deceleration level, which can be convenient in stop-and-go traffic. Select a deceleration level from M4 (fastest) to M1 (slowest) using the shift lever and the paddles to adjust the creep speed.

Information Displays

Several information displays are available on the infotainment system that provide an overview of hybrid operation. Select the Green Leaf Energy icon on the infotainment Home page and then touch the Flow, Charging, or Info icon.

The Power Flow screen indicates the current system operating conditions, showing the power flow between the high voltage battery and engine through the transmission.



Power Flow screen

The Charging screens show the Charge Limit and Charge Mode status.

The Energy Info screens show the energy use (electric and gasoline) since the last time the high voltage battery was fully charged as well as how the energy was used.

High Voltage Battery Charging

The high voltage battery pack capacity is 18.4 kWh, but by design, only approximately 75% of the battery is usable to power the vehicle. The battery pack requires approximately 13–17 kWh to fully recharge, depending on temperature and battery condition.

The minimum electrical circuit requirements for charging the vehicle are 120 volts/15 amps or 240 volts/20 amps. The charging times vary, but it will take approximately 4.5 hours to fully charge using a

240 V, 16 A charging station or approximately 20 hours using the default setting of 120 V, 8 A with the portable charge cord. The vehicle can be programmed for three charging modes: Immediately, Delay Charge Based on Departure Time, and Delay (Electric Rate and Departure Time).

Charging settings also can be saved for the vehicle's home location. These settings will be used whenever the vehicle is parked at its home location. The settings can be changed in the Energy menu by selecting Settings on the infotainment system.



Charging indicator

The charging indicator on top of the instrument panel shows the current state of the charging process.

- **Short Flashing Green Light** – The vehicle is plugged in but the battery is not fully charged. The flash rate increases from one to four flashes as the battery charges.
- **Long Flashing Green Light** – The vehicle is plugged in but the battery is not yet fully charged. Battery charging is in Delay Mode.
- **Solid Green Light** – The vehicle is plugged in. The battery is fully charged.
- **Solid Yellow Light** – The vehicle is plugged in but not charging.
- **No Light** – The vehicle is not plugged in or there is an issue with the portable charge cord or the electrical outlet.

Refueling

To fill the fuel tank, press the fuel door button on the driver's door. The Wait to Refuel message will display on the Driver Information Center. When the Ready to Refuel message is displayed, the fuel door will unlock. Press and release the rear edge of the fuel door to open it.

Special Tools

The following new tools were released for the CT6 PLUG-IN.

Tool Number	Description
EL-50332-335	High Voltage Cable — Battery Pack
EL-50332-340	High Voltage Cable — OBCM
EL-50332-345	High Voltage Cable — ACCM
EL-50332-350	PHEV Depowering Software
EL-51102	High Voltage Battery Lift Bar Tilter
EL-51102-30	High Voltage Battery Lift Bar Eye-Bolt Kit
EL-51102-50	High Voltage Battery Lift Bar Straps
EL-51865	Fixture, Battery Pack Support (Loan Tool Program)
DT-52039	GRE Transmission Tool Kit (Loan Tool Program)

🙏 Thanks to Sherman Dixon, Blake Streling, and Keith Newbury

Misfire Conditions

A misfire condition may be present on some 2016-2017 ATS, CTS, Camaro; 2017 LaCrosse, Colorado, Canyon, Acadia, and XT5 models equipped with the 3.6L V6 engine (RPOs LGX, LGZ) and 2016-2017 CT6 models equipped with the 3.6L V6 engine (RPO LGX) or 3.0L V6 engine (RPO LGW). DTC P0300 (Engine Misfire Detected) or a DTC for a specific cylinder (P0301-P0306) may be set or stored in history.

If this is the first time the vehicle has had a misfire condition, there are several items to check, depending on the model.

2016-2017 All Gen 2 HFFV6 Vehicles

If this is the first time DTC P0300, P0302 or P0305 is set in history, replace the Rocker Arm Oil Control Valve (OCV). After OCV replacement, command the oil pump to high pressure mode to ensure misfires do not return.

If misfires continue, review the misfire diagnostic information for the ignition and injection systems in the appropriate Service Information. If no cause is found, remove the cam cover on the affected cylinder bank and inspect for a rocker concern. To ensure that the rocker is working as designed, turn the engine over by hand and check that all rockers open. Replace and/or repair the rockers and lifters as needed.

2017 Lacrosse

If this is the first time DTC P0300 or P0304 is set in history on Cylinder 4, clear the DTCs and drive the vehicle in the same conditions the customer described to set the code originally. If the condition is verified, do not replace any parts at this time. GM Engineering is working on a repair.



LaCrosse 3.6L V6

2017 XT5

If this is the first time DTC P0300 or P0306 is set in history on Cylinder 6, clear the DTCs and drive the vehicle under the same conditions the customer described to set the code originally. If conditions are unknown (this applies to XT5 models only), the misfire may occur by driving, from a cold start, one to three miles to a highway, and then applying heavy acceleration to merge into traffic.

If the condition is verified, do not replace any parts at this time. GM Engineering is currently evaluating this condition.

🙏 Thanks to Aron Wilson

Static Sound on Outbound Bluetooth Calls

On some 2017 Colorado and Canyon models equipped with the color radio with the 7-inch screen (RPO IOB), a buzz or static sound may be heard during the first 5-20 seconds of an outbound Bluetooth call. Only the person receiving the call, not the occupant of the vehicle, hears the sound.

The buzz sound may be similar to the noise of a foghorn. In addition, the sound may occur only with the engine running, and may also be affected by placing the vehicle in gear.

If this condition is found, pair a phone to the vehicle, start the engine, and place a Bluetooth call to verify the person receiving the call hears the buzz sound during the first 5-20 seconds of the call.

If the sound is confirmed, command the generator off with GDS2 to determine if the sound is temporarily eliminated. If it is, do not replace any parts. GM Engineering is currently evaluating this condition.

🙏 Thanks to Jamie Parkhurst



Radio with 7-inch screen

Using the Audio Diagnostic Tracks on a USB Drive

An audio system speaker malfunction may have several possible causes. One way to test speaker function is by using the audio diagnostic tracks on the EL-50334-6 Audio System Diagnostic CD or J-39916-CD Diagnostic CD.

Improper speaker mounting or loose trim, for example, may cause an audible buzz or distortion. During diagnosis, inspect the speaker and the surrounding interior trim for proper and secure mounting. Using the audio tracks on the audio diagnostic CD can help duplicate conditions and isolate components that react differently to various tones.

The audio tracks provide test tones for:

- Bass/subwoofer test
- Mid-range speaker tests
- Door tweeter test
- All speaker test
- Speaker buzz and rattle test
- Noise diagnosis

For use in vehicles that no longer have a CD player, the test tones on the CD can be copied to a USB drive or other device to use during testing. The test tones on the EL-50334-6 CD and J-39916-CD also can be downloaded from gmtoolsandequipment.com.

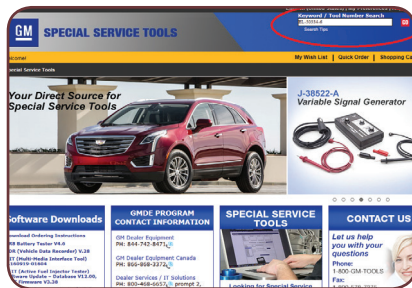
Download Files

To download the audio files:

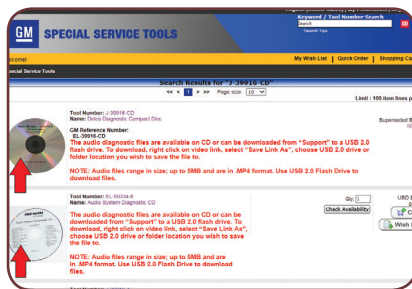
1. Enter the tool number EL-50334-6 or J-39916-CD in the Search box on the home page of gmtoolsandequipment.com. Click GO.
2. Click the CD image to display the Support tab.
3. Click the Support tab to view the available files.
4. To download, right click on desired video link and select "Save link as..." or "Save target as..."
5. Choose the USB drive or folder location to save the file.

TIP: Audio files range in size; up to 5MB and are in .MP4 format. Use a USB 2.0 drive to download the files.

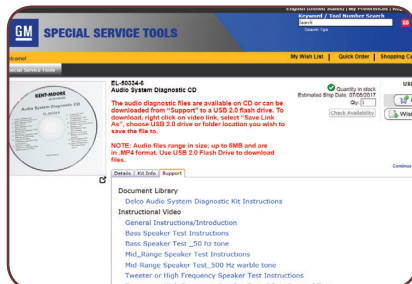
Thanks to Chuck Berecz



Enter the tool number in the Search box.



Click the CD image to display the Support tab.

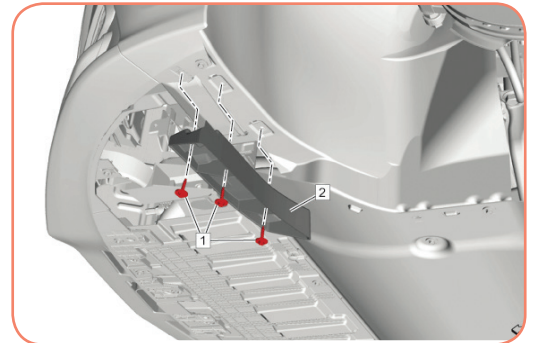


Files are listed under the Support tab.

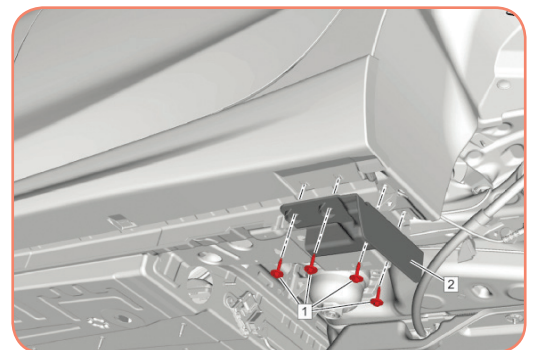
Installing Cruze Air Deflectors during PDI

The wheelhouse liner may be coming into contact with the tire on some 2016-2018 Cruze models. If this condition is found, verify that all four underbody tire air deflectors are properly installed in front of the front tires and rear tires. The deflectors are a structural part of the wheelhouse liner and damage may occur if the vehicle is operated without the deflectors or if the deflectors are not installed correctly.

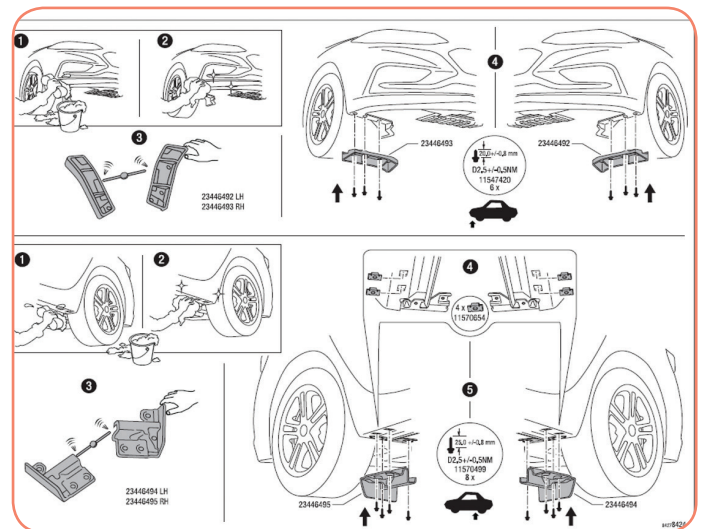
The four air deflectors are shipped with the vehicle for installation during the Pre-Delivery Inspection (PDI). One air deflector should be installed in front of each tire. There are different air deflectors for the front tires and rear tires. Make sure the underbody is clean before installing the deflectors.



Front Tire Front Air Deflector



Rear Tire Front Air Deflector



Front air deflector installation (top) and rear air deflector installation (bottom)

Thanks to Bill Taylor

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:

John Meade
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@5by5dzign.com

Fax number:

1-248-729-4704

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.

Copyright© 2017 General Motors
All rights reserved.

Duramax Diesel Hesitation and Other Conditions

Some 2017 Silverado and Sierra models equipped with the Duramax Diesel 6.6L V8 engine (RPO L5P) may have a hesitation, bump, harsh shifts or other related conditions. Any of the following DTCs may be set: P0097, P0128, P0181, P0263, P0266, P0269, P0272, P0275, P0278, P0281, P0284, P040C, P040D, P041C, P041D, P0483, P054F, P10D1, P11CC, P22FE, P24C7, P2635, P2636, or P2BAA.

If these conditions are found, reprogram the Engine Control Module (ECM) and Transmission Control Module (TCM) with the latest calibrations available using the Service Programming System (SPS). Both the ECM and TCM must be updated to the latest software. Not updating both modules may result in additional undesired vehicle performance.

If the ECM and TCM have the latest calibrations, follow the diagnostic procedures for the set DTC in the appropriate Service Information.

☺ Thanks to John Stempnik



Duramax 6.6L V8 engine.

Malibu ECM Reprogramming

The Check Engine MIL may be illuminated and DTC P2097 (Post Catalyst Fuel Trim System High Limit) may be set on some 2016-2017 Malibus equipped with the 1.5L 4-cylinder turbocharged engine (RPO LfV).

If this condition is found, reprogram the Engine Control Module (ECM) with the latest calibrations available using the Service Programming System (SPS). If the vehicle has the latest calibrations in the ECM, follow the diagnostic procedures for DTC P2097 in the appropriate Service Information.

☺ Thanks to Raymond Haglund



1.5L engine.

Service Know-How

10217.06V Emerging Issues – June 8, 2017

The latest service topics from Brand Quality and Engineering are reviewed, including the prop shaft removal procedure on the 2017 LaCrosse and sound concerns on the Tremec 7-speed manual transmission on the 2017 Corvette Z06.

To view Emerging Issues seminars:

- Log in to www.centerlearning.com
 - Select Resources > Video on Demand > GM STC > Search Videos; or
 - Select Catalog to search for the course number, and then select View > Take or Continue Course

