Bulletin No.: PI1529

Date: Aug-2015

Service Bulletin

PRELIMINARY INFORMATION

Subject: 2016 Cadillac CTS-V New Model Features

Models: 2016 Cadillac CTS-V Sedan
Equipped with V8, 6.2L, DI, AFM, VVT, ALUM, Supercharged Gasoline Engine — RPO LT4
Equipped with Hydra-Matic™ 8L90 8-Speed Automatic Transmission — RPO M5U

Attention: This PI also applies to Export vehicles.

Bulletin Purpose

2016 CTS-V Sedan.

The purpose of this bulletin is to help the Service and Sales Personnel become familiar with the new model features of the 2016 Cadillac CTS-V Sedan.

CTS-V Sedan Overview

The 2016 CTS-V is the centerpiece of Cadillac's growing product line, building on the V-Series legacy and leveraging the strength of the award-winning CTS architecture to deliver the most capable V-Series ever. It is a luxury sedan with sophisticated road manners and unprecedented performance, with true track capability straight from the factory.

The 2016 CTS-V introduces a new supercharged 6.2L V8 engine, SAE certified at 640 horsepower (477 kW) and 630 lb-ft of torque (855 Nm). It's backed by Cadillac's paddle-shift eight speed automatic transmission featuring launch control and Performance Algorithm Shifting. A standard electronic limited-slip differential (eLSD) supports optimal traction and enables maximum corner exit acceleration. The CTS-V is capable of 0-60 mph (0-100 km/h) performance in 3.7 seconds and a top speed of 200 mph (322 km/h).

Depending on the global region, the A/C system may use R-1234yf or R-134a refrigerant.

Track-honed design, chassis and suspension elements complement the supercharged powertrain and elevate CTS-V's capability, performance and driver control to new thresholds, while enabling track driving without modifications or special procedures.

Key performance technologies include:

- An interior with high-performance seats and ergonomics focused on the driver's interfaces with key features for performance driving.

- Four driver selectable driving modes.

- Standard carbon fiber hood and available carbon fiber package, including carbon fiber splitter, hood vent, rear spoiler and rear diffuser for greater aerodynamic performance.
- Performance Traction Management includes segment exclusive performance specification traction and stability calibrations.
- Brembo high-performance brake system developed to provide durability, consistency and the capability for track-day performance straight from the factory.
- Third-generation Magnetic Ride Control.
- Michelin® Pilot® Super Sport summer-only tri-compound tires.
- Structural stiffness increased by nearly 20 percent for higher cornering loads.
- The available Performance Data Recorder allows drivers to record high-definition video, with data overlays, of their driving experiences on and off the track, enabling sharing on social media.
- Cadillac CUE enhancements, including phone integration capability – with Apple® CarPlay™ and Android™ Auto capability. Android™ Auto capability to b offered later in the 2016 model year.

dexos® Engine Oil

dexos® licensed products are easy to identify. Simply look for one of the dexos® icons shown above on the front label and the 11-digit alphanumeric dexos® license number on the back label. As long as an oil package displays one of these two markings, the engine oil is an authentic, licensed dexos® product and is recommended for use in GM vehicles.

Refer to this General Motors website for information about the different licensed brands that are currently available: **http://www.gmdexos.com**

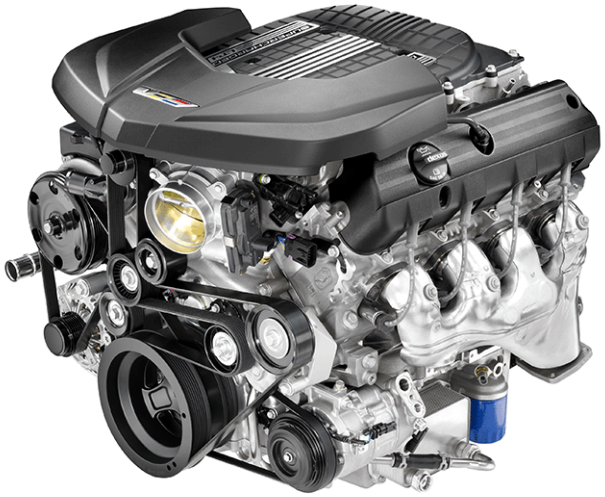
Recommended Viscosity for Street Driving

Use dexos1® 5W-30 oil. In an area of extreme cold, where the temperature falls below −20°F (−29°C), a 0W-30 oil may be used.

Recommended Viscosity for Competitive Driving

Use dexos2™ 0W-40 or 5W40 oil. Change the oil back to dexos1® 5W30 after the track event.

6.2L LT4 Supercharged Engine



Some of the highlights of the 6.2L LT4 supercharged engine are:

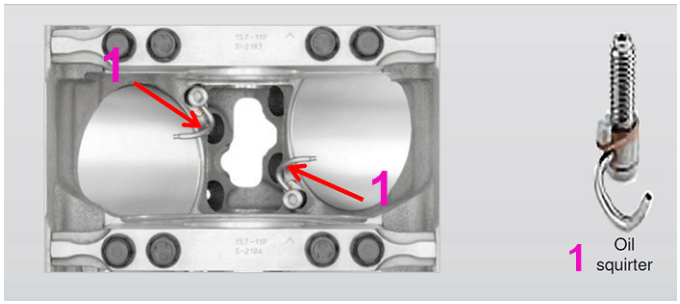
- **Power Output:** SAE certified at 640 horsepower (477 kW) and 630 lb-ft of torque (855 Nm). Maximum engine speed is 6,600 RPM.
- **Induction System:** Supercharged.
- **Crankshaft:** Forged MV steel crankshaft.
  - Supported by 5 bearings. The center main bearing contains the thrust bearing.
  - Pressed on crank reluctor ring.
  - Splined crankshaft sprocket, uses a key and keyway.
- **Cylinder Head Material:** Rotocast A356T6 aluminum cylinder heads that are stronger and handle heat better than conventional aluminum heads.
- **Valvetrain:** Overhead valve, two valves per cylinder. Roller rocker arms - each rocker is retained using a single bolt.
- **Valve Type:** Lightweight 54 mm solid titanium intake valves and 40.4 mm sodium-filled exhaust valves.
- **Camshaft Type:** Hydraulic roller.
- **Camshaft:** Camshaft is supported by 5 bearings pressed into the block.
  - Tri-lobe forward of the rear journal to operate the high pressure fuel pump.
  - Retaining plate mounted to the front of the engine block to maintain camshaft position.
- **Camshaft Position Actuator and Solenoid Valve:** The camshaft position actuator assembly (2) is mounted to the front of the camshaft and is retained

by the camshaft position actuator solenoid valve (1).

- It is driven by the crankshaft sprocket using the camshaft timing chain.
- Hydraulically operated to change angle of camshaft relative to crankshaft position.

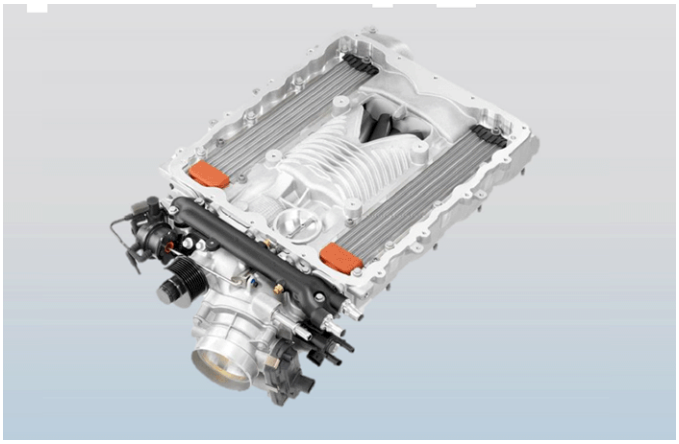
- **Engine Block Material - Construction:** Cast aluminum cam-in-block, deep skirt 90° V with 5 crankshaft main bearing caps. Each of the main bearing caps have 4-vertical M 10 and 2-horizontal M 8 mounting bolts.
- **Compression Ratio:** 10:1
- **Fuel Delivery:** Direct Injection.

- **Pistons and Connecting Rods:** Forged aluminum pistons (1) with internal ribs, graphite coated skirt (3) and full floating piston pins. Piston and pin services as an assembly. The connecting rods (2) are high-strength powder-metal steel. Fractured at the journal then machined for proper clearance.



- **Lubrication System:** Wet sump, including engine block underside oil-spray squirters (1). There are eight squirters and each one sprays oil on the underside of a piston and the surrounding cylinder wall. The benefits are:
  - Reduces piston temperature.
  - Dampens noise.
- **Recommended Fuel:** Premium fuel is required.

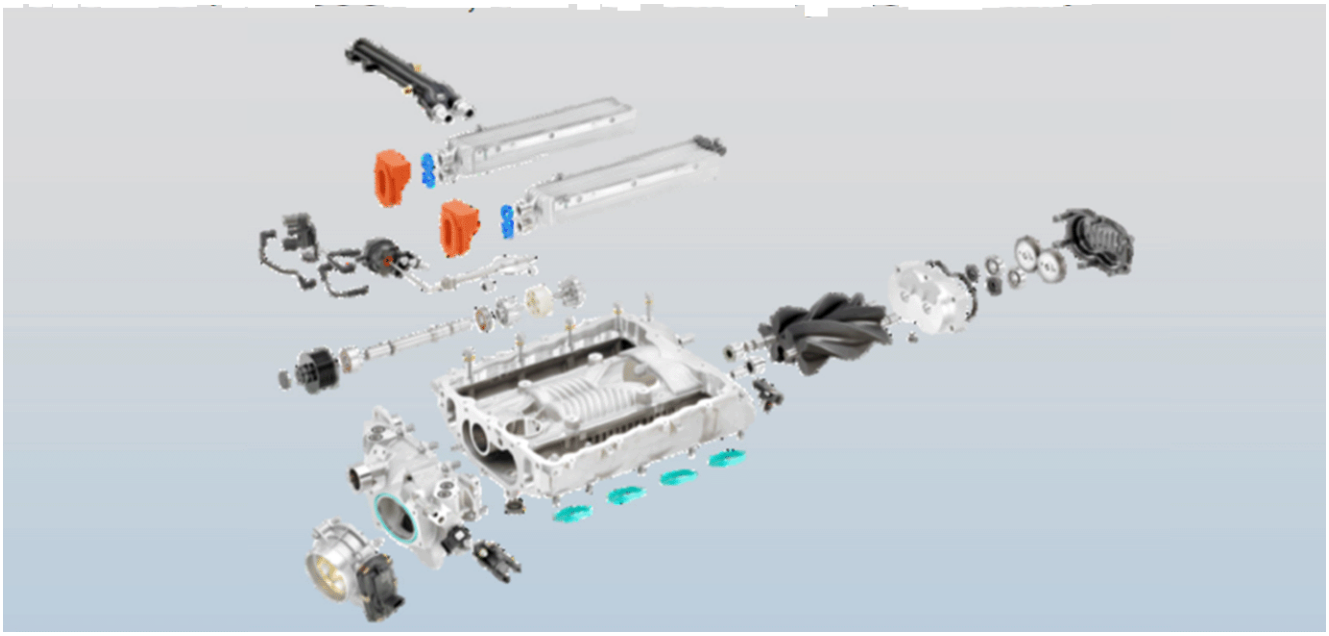
Supercharger and Components



The power behind the new CTS-V's capability is an all new, more powerful 6.2L supercharged V8 engine that makes more power more efficiently than the previous Cadillac supercharged engine. It employs a more efficient, more compact 1.7L supercharger that increases the air pressure and density in the intake manifold to a maximum pressure boost of 9.7 psi (66.9 kPa). The boost pressure is controlled using a bypass valve.

The supercharger's rotors are smaller in diameter than the previous supercharged engine, allowing higher maximum rpm and a quicker spin up that enables power enhancing boost to be generated earlier in the rpm band. That boost is achieved more efficiently using a more direct discharge port that creates less turbulence, reducing heat and speeding airflow into the engine. The supercharger's rotors are smaller in diameter than the previous supercharged engine, allowing higher maximum rpm – and quicker "spin up" that enables power-enhancing boost to be generated earlier in the rpm band. That boost is achieved more efficiently via a more direct discharge port that creates less turbulence, reducing heat and speeding airflow into the engine.

Supercharger Components



Components of the supercharger are:

- Roots type supercharger.
  - Consists of two counter rotating rotors.
  - Rotors are timed using two precision spur gears.
- Intercooler is integrated into lower intake manifold.
  - Air to liquid intercooler uses conventional coolant.
  - Intercooler cooling system is separate from the engine cooling system.
  - Uses two intercoolers, one for each cylinder bank.

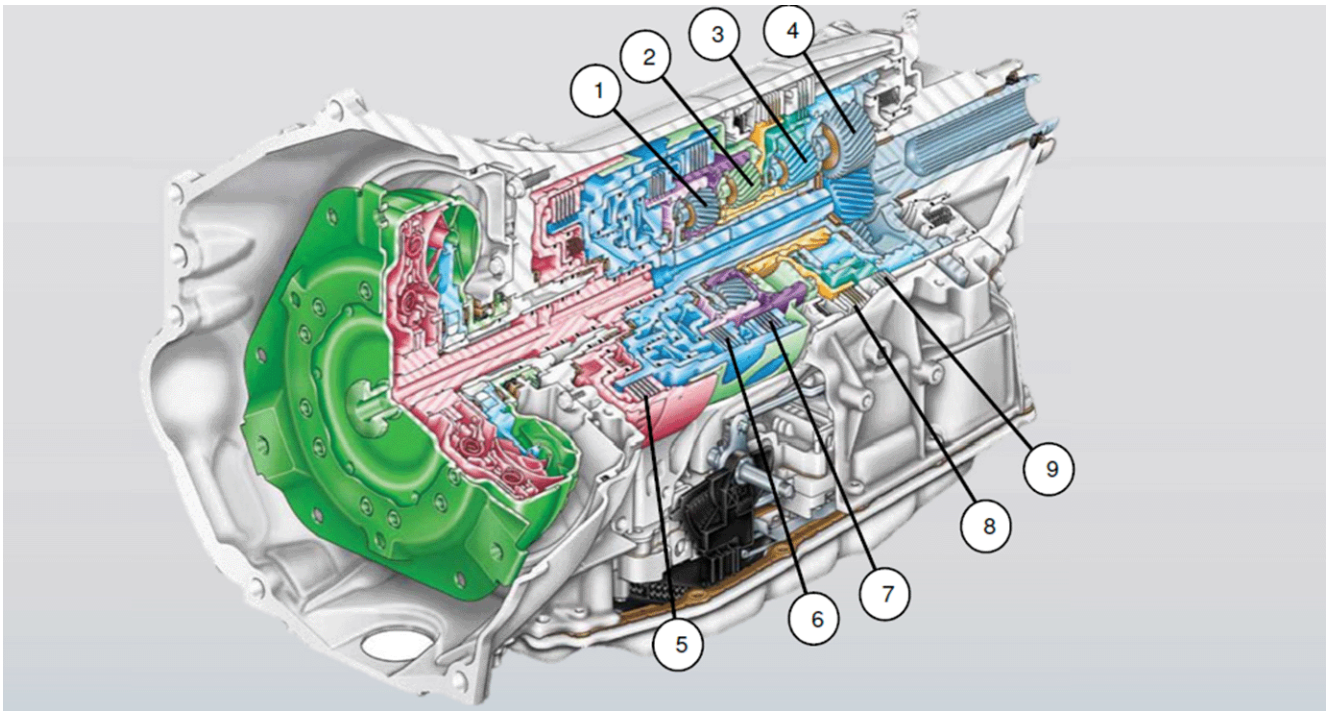
Bypass Valve

The bypass valve is normally open.

- The bypass valve is controlled by the boost control solenoid.
- The boost control solenoid is normally open and routes boost pressure from the manifold to open the bypass valve.
- Under most conditions the ECM commands 99-100 % duty cycle for the boost control solenoid, closing the solenoid.
- With the solenoid closed only inlet vacuum controls the position of the bypass valve.

Transmission

Hydra-Matic™ 8L90 8-Speed Automatic Transmission



1. Direct / Overdrive Gear.
2. Input Gear.
3. Reaction Gear.
4. Output Gear.
5. 1-3-5-6-7 Clutch.
6. 4-5-6-7-8 Reverse Clutch.
7. 2-3-4-6-8 Clutch.
8. 1-2-7-8 Reverse Clutch.
9. 1-2-3-4-5 Reverse Clutch.

- **Operation:** The Hydra-Matic™ 8L90 8-speed automatic transmission uses 5 clutches to direct power flow through the transmission. There are no sprags or roller clutches. Each gear range has 3 clutches applied. During shifts, the TCM commands one clutch off and applies a different clutch. The clutch control solenoids control the application and release of the clutches.

- **Internal Mode Switch:** The transmission manual shift shaft switch assembly detects the angular position of the shift selector shaft. The 5 inputs to the transmission control module (TCM) from the transmission manual shift shaft switch assembly indicate the transmission gear selector lever position. This information is used for engine controls, as well as determining the transmission shift patterns. The state of each input is available for display on the scan tool.
- **Remote Mounted Fluid Pump:** The Hydra-Matic™ 8L90 8-speed automatic transmission has a fluid pump mounted to the valve body and is chain driven. Moving the fluid pump off the input shaft helps keep the length of the transmission similar to the Hydra-Matic™ 6L80 and Hydra-Matic™ 6L90.

Brembo High Performance Brake System

A Brembo high performance brake system provides durability, consistency and the capability for track-day performance. The system includes Ferritic Nitrocarburizing (FNC) process for corrosion resistance on the Duralife® 15.35-inch-diameter (390 mm) x 1.41- inch (36 mm) vented and directional front rotors with staggered six-piston calipers and the Duralife® 14.37-inch-diameter (365 mm) x 1.10-inch (28 mm) vented rear rotors with four-piston calipers.

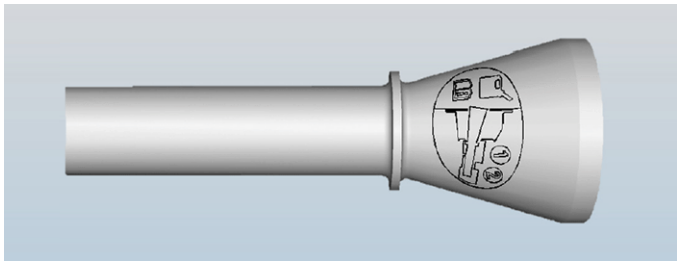
Capless Fuel System

Notice:

- **Insert the refueling nozzle slowly and WAIT for any hiss noise to stop PRIOR to starting to add fuel. The filling nozzle MUST be fully inserted and latched.**
- **After initial shutoff, DO NOT partially remove the nozzle to add more fuel as this will result in fuel spillage. Overfilling the fuel tank by more than three clicks of a standard fill nozzle may cause vehicle performance issues including engine stalling and damage to the fuel system and fuel spills.**

The benefits of a capless fuel system are:

- No fuel cap to remove when refueling, eliminating lost fuel caps.
- Eliminates false diagnostic trouble codes being set by a loose fuel cap and setting an illuminated malfunction indicator lamp (MIL).



- A funnel adapter must be used when adding gasoline from a portable gas can. The capless funnel adapter is stored under the carpet in the trunk.

Magnetic Ride Control — Driver Mode Control — Suspension — Tires

Magnetic Ride Control

- The CTS-V also features third-generation Magnetic Ride Control and Performance Traction Management. Magnetic Ride Control “reads” the road a thousand times per second, sending data to magneto-rheological fluid-filled dampers that can independently control the damping characteristics of all four dampers. Third-generation improvements enable a 40-percent faster damping response with integrated chassis controls. In fact, at 60 mph

(97 km/h), the third-generation magnetic ride control system calculates the optimal damping force for every inch of the road.

There are three driver selectable magnetic ride control modes:

- Touring
- Sport
- Track

Driver Mode Control

There are four driver mode controls available:

- Tour Mode:
  - Normal city and highway driving.
  - Smooth soft ride.
- Sport Mode: Provides more controlled response.
- Track Mode:
  - Provides maximum vehicle handling.
  - Competitive driving mode or performance traction management may be accessed through this mode.
- Snow/Ice Mode:
  - Provides more traction in slippery conditions.
  - Not intended to be used when a vehicle is stuck in sand, mud, ice, snow or gravel.

Front Suspension

A revised multi-link double-pivot MacPherson-strut front suspension with the elastomer bushings replaced by cross-axis ball joints, higher spring rates and a stiffer stabilizer bar.

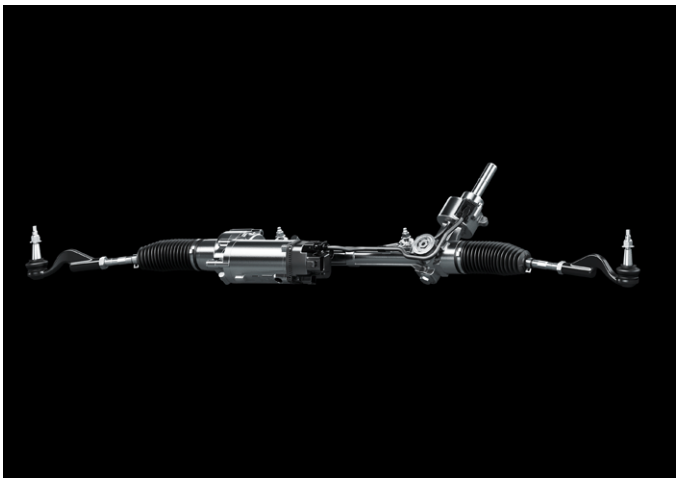
Rear Suspension

A five-link rear suspension with stiffer bushings, new cradle mounts, higher spring rates and a stiffer stabilizer bar.

Tires

A key component of the car's dual-purpose performance are the Michelin® Pilot® Super Sport summer-only tires developed specifically for the CTS-V. The 265/35-19 front tires and 295/30-19 rear tires feature three unique rubber compounds in the tread that delivers excellent grip in performance driving situations, and also delivers excellent ride quality characteristics and extended tread wear.

ZF Steering Systems Servotronic II



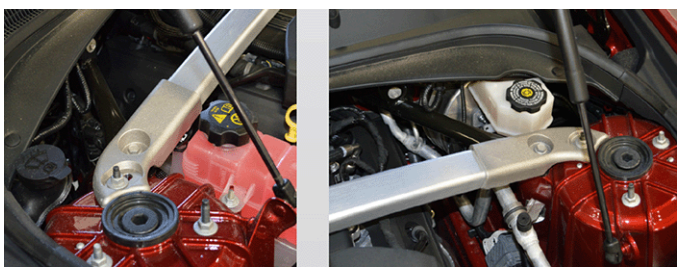
The ZF Steering Systems Servotronic II variable-ratio electric power steering gear, with increased system stiffness offers an improved feeling of precision and greater driver feedback.

The belt-driven electric power steering system includes:

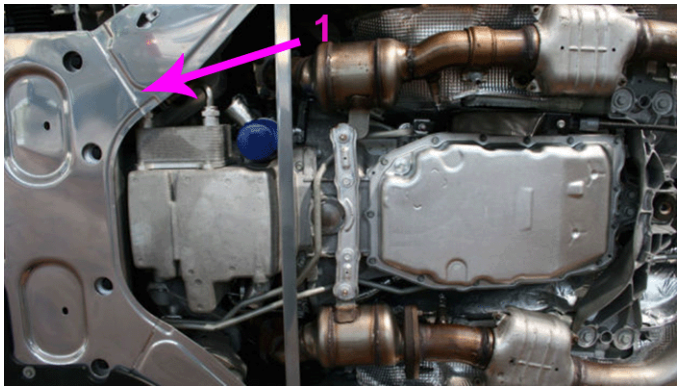
- Integrated electromechanical power steering unit.
- Steering gear.

Structure

The structural stiffness of the vehicle has been increased using the following components:



- V-braces for the engine compartment.
- Strengthened rocker bulkhead.
- Stronger rear cradle to rocker braces.



- Aluminum shear panel (1) at the front of the chassis. It helps keep the front of the vehicle from yawing around and triangulates and stiffens the entire front end.

High Performance Seats

Available 16-way adjustable RECARO front seats and ergonomics that focus on the driver's interfaces with key features for performance driving.

Performance Data Recorder

The performance data recorder has four different displays, Touring, Sport, Track and Timing.

- The Performance Data Recorder which is controlled via CUE's color touch screen and its recordings can be viewed on the CUE screen or on a personal computer when the vehicle is **parked.**

- The HD video is from a frontview camera mounted in front of the inside rearview mirror.
- Vehicle data is collected from the GMLAN system.
- SD data card required to record data. The slot is located on the left side of glove compartment. SD card must be class 10 and formatted for FAT32.
- Recording time varies based on memory card capacity, about 13 hours on a 32 GB card.
- PDR uses a discreet GPS antenna.

Power Outlets

- The vehicle has three 12 volt accessory power outlets:
  - Inside the center console storage in front of the armrest cover.
  - Inside the storage area under the armrest cover.
  - On the rear of the center console, if equipped.
- A 110/120 volt AC power outlet. If equipped, this power outlet is inside the center console. It can be used to plug in electrical equipment that uses a maximum limit of 150 watts.
- A 230 volt AC power outlet for Africa, Middle East, parts of South America, South East Asia and Russia.

OnStar® 4G LTE Connectivity with Built-in Wi-Fi Hotspot

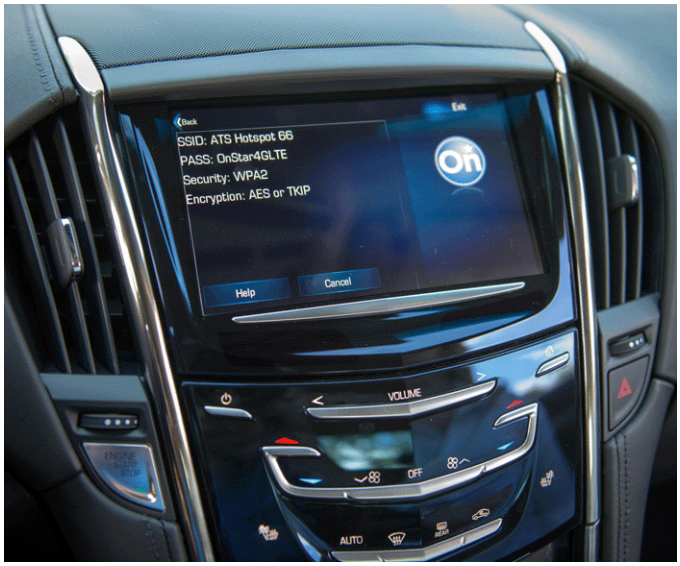
OnStar® 4G LTE with built-in Wi-Fi Hotspot will support up to seven mobile devices such as smartphones, tablets, and laptops, so they can be connected to high speed Internet allowing passengers to access the content they want. OnStar® with 4G LTE offers a strong, reliable signal, and it’s built-in, so it’s easy to use. Plus, it’s connected to your vehicle battery, so you’re always fully charged for the adventure ahead.

The most powerful OnStar® connection ever also enables improved access to existing OnStar® safety and security services, including the ability to transmit voice and data simultaneously. That means that OnStar® advisors can run a diagnostic check without ever leaving the call, making customer interactions quicker and more seamless. It’s the most comprehensive in-vehicle safety and connectivity system available.

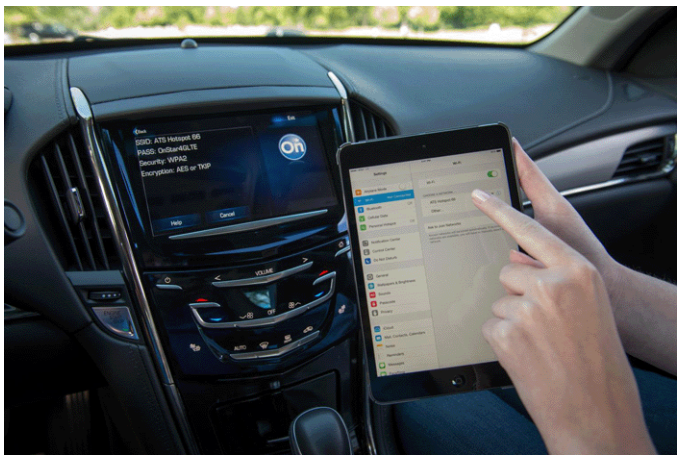
Connecting to a Wireless Network Using OnStar® — Service Set Identifier (SSID) and Password (PASS)

The Service Set Identifier (SSID) also known as a Network Name or Wi-Fi Hotspot is used to uniquely identify any given wireless network. It is the IP address for a wireless network. To connect to a wireless network, perform the following actions:

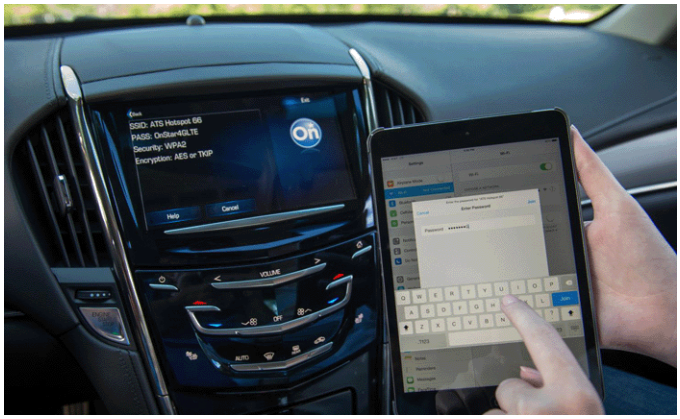
1. To get the OnStar® Wi-Fi Service Set Identifier (SSID) and Password (PASS) also known as the Encryption Key, press the Voice Command button on the CUE Infotainment screen and say or select: **Wi-Fi settings.**



2. OnStar® will display the SSID and PASS information also known as a Profile on the CUE Infotainment screen.



3. The screen of the device to be connected will ask you to select a network. Select the SSID (Hotspot) that is displayed.



4. The screen of the device to be connected will ask you to enter the password. Enter the PASS that is displayed.
5. Perform Step 3 and Step 4 for any other devices to be connected to the wireless network.

Wireless Inductive Smartphone Charging System

The wireless inductive charging system for smartphones is compatible with Powermat and other in-phone wireless charging technologies. This convenient feature eliminates the need for charging cords. An increasing number of smartphones have wireless charging either embedded or as an option. To charge a compatible device using the wireless inductive charging system, the device is simply placed on the rubberized pad.

The system is capable of charging the batteries of many aftermarket devices, including cell phones, PDAs, pagers, MP3 players, etc.

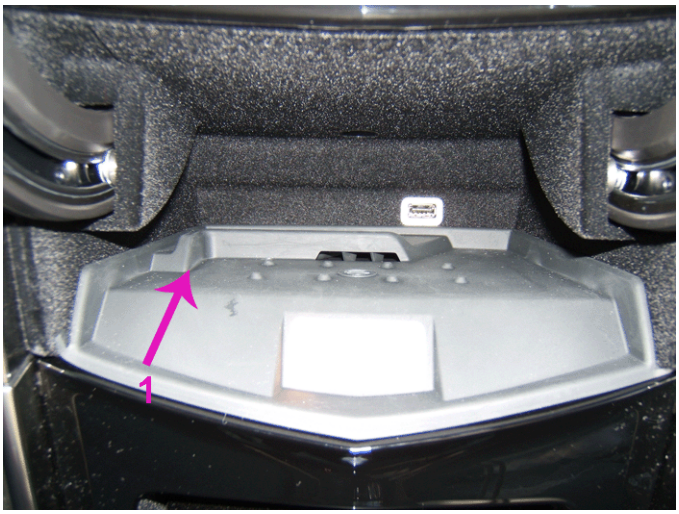
A compatible device is one that is compliant with the Power Matters Alliance (PMA) or Wireless Power Consortium's (WPC) Qi Standard, meaning that it is equipped with a PMA or Qi wireless charge ***"receiver"*** that will work with the charge ***"transmitter"*** installed in the vehicle. A device may use built-in charging circuitry or an adapter (an external plug-in device which contains the charging circuitry).

When the Interruptible Retained Accessory Power (RAP) relay is closed (when the vehicle ignition is in **Run** or **Accessory** position), the system is able to detect the device, establish communications with the device to confirm it is a compatible device, and then deliver charging power to the device via the wireless interface.

If a non-compatible device or metallic foreign object is detected, the system will not transfer power. The charger monitors its internal temperature and will shut down if the charger temperature exceeds 185°F (85°C).

The BCM will detect that the device battery is charging and send a serial data message to the infotainment touch screen, which will indicate a device is currently charging. When the battery charging symbol is toggling **ON** and **OFF**, it indicates a thermal limit has been reached and the device will not charge. Charging may also be interrupted while driving over rough conditions. Reposition the mobile device to continue charging.

Wireless Inductive Charging Surface Location — Typical View



The charging surface (1) is located inside the storage bin behind the motorized center stack instrument panel faceplate.

Charging a Device

1. Raise the motorized center instrument panel faceplate.
2. Remove **ALL** objects from the charging surface.

Notice: There is a charging coil located in the center of the charging surface and the mobile device has a charging coil typically near the center of the device. These coils must be aligned in order for charging to proceed.

3. With the device face up, place it on the charging surface. Align the device with the left rear corner.

Notice: Pandora radio (shown) is not available in Canada.

4. Ensure that the battery charging symbol status has changed from (1) to (2) as shown and is illuminated on the Cadillac CUE touch screen, indicating the device is charging. If necessary, move it around slightly until the battery charging symbol illuminates.

   ⇒ If the battery charging symbol does not illuminate, verify the device is properly positioned on the charging surface. It may be necessary to rotate it 180 degrees to help establish a connection. The use of a protective case may require more precise placement or it may inhibit charging. If necessary, remove the case.

To check for phone or other device compatibility, Go to www.gmtotalconnect.com. or in Canada, Go to www.gmtotalconnect.ca (English) or www.connexiontotalegm.ca (French).

Wireless Inductive Phone Charging System Diagnostics

For mobile device wireless charging system concerns, refer to the: Available Product Training Table in this Bulletin.

Available Product Training

The majority of the systems found on the CTS-V Sedan are taught in GM's core curriculum from a conceptual theory and operation perspective. The North America training structure is system based.

To access **all** of the available training courses visit the following website:

- **In the United States go to > www.centerlearning.com**
- **In Canada go to > GM GlobalConnect and select: Centre of Learning**

The following training courses are new for this vehicle/RPO content or have been updated within the past year.

Training Course Name or System — Course Number and Description

Course Name or System	Course Number and Description
ENGINE: ENGINE-GAS, 8 CYL, 6.2L,DI, SC, AFM, VVT, ALUM — RPO LT4	#16440.19D Engines: New and Updates — RPO LT4 and L0A
TRANSMISSION: TRANSMISSION-AUTO 8 SPD, 8L90 — RPO M5U	#17440.15D Transmissions: New and Updates for 8L90 Automatic Transmission — RPO M5U
DRIVER'S INTERFACE: CRUISE CONTROL-AUTOMATIC, ELECTRONIC CONTROL-MANUAL SHIFT, AUTOMATIC TRANSMISSION — RPO KB7 PEDALS-SPORTY, ALLOY — RPO JF5	#10316.93W 2016 Cadillac CTS-V #22048.42W3 GM Safety Systems 3 #22048.42W3-R2 GM Safety Systems 3
CHASSIS: CHASSIS-CONTINOUSLY VARIABLE REAL TIME DAMPING MAGNETO RHEOLOGICAL — RPO F55 AXLE POSITRACTION-LIMITED SLIP, ELECTRONIC — RPO G96 POWER STEERING-PREMIUM RACK ELEC. (RACK EPS).	#13044.20W GM Chassis Control Systems #14041.18W3 Propshaft and Rear Axle Operation, Diagnosis and Service 3 #13041.15W2 GM Steering Systems 2
INFOTAINMENT: RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY, EMBEDDED NAVIGATION — RPO IO6 CHARGER-INDUCTIVE PORTABLE WIRELESS DEVICE — RPO K4C	#19047.13W2 Entertainment Systems 2 #19047.13W3-R2 Entertainment Systems 3 #19047.23D MOST Network Diagnostics and Infotainment System Programming #10316.93W 2016 Cadillac CTS-V
DRIVER'S INFORMATION: COMMUNICATION EQUIP-MOBILE INTERNET CONNECTIVITY — RPO VV4 (Requires OnStar® GEN 10) RECORDER-VEHICLE PERFORMANCE — RPO UQT	#19040.39W OnStar® Systems 2 #10316.93W 2016 Cadillac CTS-V

Special Tool

The following tool was released for the MY2016 CTS-V with the 6.2L Supercharged Engine — RPO LT4:

Special Tool Number	Special Tool Description
#EN-51767	Stretchy Belt Installer

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these 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 bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.

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