



Service Bulletin

File in Section: -

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INFORMATION

Subject: 2017 GMC Acadia New Model Features

Attention: United States, Canada and Mexico. This Bulletin also applies to Export vehicles. Export Countries Include: Afghanistan, Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, UAE and Yemen.

Brand:	Model:	Model Year:		VIN:		Engine:	Transmission:
		From:	To:	From:	To:		
GMC	Acadia	2017	2017	All	All	Gasoline, 4 Cylinder, L4, 2.5L, DI, DOHC, DCVCP, VVT — RPO LCV Gasoline, 6 Cylinder, V6, 3.6L, DI, DOHC, VVT, GEN 2 — RPO LGX	Hydra-Matic™ 6T50, Automatic, 6-Speed, GEN 3, VAR 1 — RPO M2D Hydra-Matic™ 6T70, Automatic, 6-Speed, AWD, GEN 2 — RPO M7U Hydra-Matic™ 6T70, Automatic, 6-Speed, FWD, GEN 2 — RPO M7W

Overview



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Acadia Denali

Bulletin Purpose

This is a special bulletin to introduce the 2017 GMC Acadia. The purpose of this bulletin is to help the Service Department Personnel become familiar with some of the vehicle's new features and to describe some of the action they will need to take to service this vehicle.

Trim Levels

The 2017 Acadia is available in the following trim levels: (some trim levels are not available in Canada)

- Acadia SL FWD
- Acadia SLE-1 FWD
- Acadia SLE-2 AWD
- Acadia SLT-1 FWD
- Acadia SLT-2 AWD
- Acadia All Terrain AWD, available on SLE-2 or SLT-1
- Acadia Denali FWD
- Acadia Denali AWD

Overview

The all-new 2017 Acadia is a reimagined crossover aimed at the heart of the midsize segment, designed to offer great versatility and refinement, with more advanced safety technologies. The new Acadia offers more efficient powertrains, while continuing to offer three rows of seating on most models. The premium Acadia Denali returns, along with a new All Terrain model offering enhanced off-road capability. The Acadia offers customers a midsize crossover positioned between the compact Terrain and full-size Yukon. Depending on the model, it is available with five, six or seven passenger seating, while offering greater maneuverability than the first-generation. The body structure incorporates press-hardened, high-strength steels, which allowed thinner components in some areas offering comparable or better crash performance than conventional materials. They also help reduce the base model curb weight by approximately 700 pounds (318 kg), compared to the current model. New splayed front frame rails also contribute to crashworthiness. They flare outward to provide effective folding and crushing performance during small overlap frontal crash situations.

Vehicle Highlights

Some of the vehicle highlights are:

A new 2.5L 4 cylinder engine is standard, and is bolstered by GMC's first application of Engine Auto Stop/Start technology, which enhances efficiency in stop-and-go driving. The 2.5L is mated to the Hydra-Matic™ 6T50 6-speed automatic transmission.

A new available V6 3.6L engine is more powerful and efficient than the current model, while offering 4,000 pounds (1,814 kg) estimated trailering capability with the available towing package. The 3.6L is mated to the Hydra-Matic™ 6T70 6-speed automatic transmission.

Both of the engines feature direct injection (DI) and variable valve timing (VVT), and both are mated to Hydra-Matic™ 6-speed automatic transmissions and an electronically controlled drive mode selector.

A split folding second row seat improves on the original Smart Slide feature of the current model. It offers greater flexibility, including the capability of the curbside seat sliding and tilting forward even with a forward facing child seat in place. The driver side section tips and slides forward for easier access to the third row.

The 50/50-split, 2-passenger third row seat folds flat for a completely flat load floor behind the second row and when the second row is also folded, there's 79 cubic feet (2,237 liters) of cargo room. Levers at the rear of the vehicle make it easier to fold the second and third row seats. All three rows offer USB charge ports for compatible electronic devices.

The rear of the center console features a unique pull out storage drawer. It is accessible to rear seat passengers and allows items such as electronic devices and small toys to be stored out of sight for greater security and reduced clutter.

A new standard **rear seat alert** that can remind the driver when an item may have been left in the second and third row seats.

HID lamps on the Denali and halogen projectors on the other models.

Active safety features are designed to help make drivers more aware of their surroundings and potential crash situations. They are available depending on the model.

An available Tow Vision Trailering system helps make hitching easier by employing a rear vision camera (RVC), with dynamic guidelines, to help line up the Acadia's hitch with the trailer, as well as offering views of the trailer while driving.

Available hands-free power liftgate.

Capless refueling system.

The Acadia has available phone integration technology through GMC's available IntelliLink® system. It offers support for Apple® CarPlay™ and Android™ Auto and requires a compatible smartphone. An available OnStar® 4G LTE Wi-Fi hotspot provides a mobile hub for drivers and passengers to stay connected. The hotspot is ON whenever the vehicle is ON and comes with a three-month/three-gigabyte data trial (United States and Canada).

Acadia All Terrain Model



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Acadia All Terrain

The new Acadia All Terrain model matches distinctive design elements with enhanced off-road-driving ability. At the heart of the Acadia All Terrain's capability is the 3.6L V6 matched with an advanced AWD system with Active Twin Clutch, which optimizes traction for every condition it encounters. And while it is engineered for optimal performance in wet, snowy and icy conditions, it also provides enhanced stability in dry conditions. It also has a specific All Terrain mode in place of the Off-Road mode on the drive mode selector, which works with the model's exclusive AWD system to offer enhanced hill-climb capability. All Terrain models are distinguished from the rest of the Acadia lineup with a body-color grille surround, black chrome trim and unique wheels. Inside is exclusive 5 passenger seating (2+3), dynamic All Terrain interior accents and covered storage bins in the rear cargo floor in place of a third row seat.

Some additional features include:

- Enhanced off-road/multi-terrain capabilities.
- All Terrain option on Traction Mode Selector.
- Hill Descent Control.
- Premium performance on snow, mud or deep sand surfaces.

Chassis and Driving Dynamics Features

Chassis and driving dynamics features include:

- MacPherson strut front suspension.
- Five-link rear suspension.
- Rack mounted electric power steering system.
- Four-wheel disc brakes with Duralife rotors.
- Electronic park brake.
- Available electronically controlled continuous damping system (Denali).

New Available Safety Features

The following safety features are new and available on the 2017 Acadia:

- Lane Keep Assist.
- Front Park Assist.
- Front Pedestrian Braking
- Forward Automatic Braking.
- Lane Change Alert.
- Safety Alert Seat.
- Surround Vision.
- IntelliBeam: Available IntelliBeam technology automatically turns high-beam headlamps ON and OFF according to surrounding traffic conditions.

Brakes

This vehicle is equipped with a TRW EBC460 brake system. The electronic brake control module (EBCM) and the brake pressure modulator are serviced separately. The brake pressure modulator uses a four circuit configuration to control hydraulic pressure to each wheel independently.

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

- **Antilock Brake System:** When wheel slip is detected during a brake application, an ABS event occurs. During ABS braking, hydraulic pressure in the individual wheel circuits is controlled to prevent any wheel from slipping. A separate hydraulic line and specific solenoid valves are provided for each wheel. The ABS can decrease, hold, or increase hydraulic pressure to each wheel. The ABS does not, however, increase hydraulic pressure above the amount which is transmitted by the master cylinder during braking.
- **Cornering Brake Control:** Cornering brake control is a slip control function that is intended to improve the vehicle's lateral/yaw stability during combined braking and cornering situations. The EBCM will reduce the brake pressure to the inside wheels by commanding the appropriate solenoid valves ON and OFF.
- **Dynamic Rear Proportioning:** The dynamic rear proportioning is a control system that replaces the mechanical proportioning valve. Under certain driving conditions the electronic brake control module will reduce the rear wheel brake pressure by commanding the appropriate solenoid valves ON and OFF.
- **Hill Descent Control System:** The hill descent control system allows a smooth and controlled hill descent in rough terrain without the driver needing to touch the brake pedal. The vehicle will automatically decelerate to a low speed and remain at that speed while activated. Some noise or vibration from the brake system may be apparent when the system is active. The descent control system may be activated, if equipped, by pressing the button on the console. To activate, press the button when traveling at speeds less than 30 mph (48 km/h). To deactivate, press the button on the console, the brake pedal, or the accelerator. Descent control enables the vehicle to descend using the ABS to control each wheel's speed. If the vehicle accelerates without driver input, the system automatically applies the brakes to slow the vehicle down to the desired speed.
- **Hill Hold Start Assist:** The hill hold start assist allows the driver to launch the vehicle without a roll back while moving the foot from the brake pedal to the accelerator pedal. The EBCM calculates the brake pressure, which is needed to hold the vehicle on an incline and locks that pressure for a certain time by commanding the appropriate solenoid valves ON and OFF when the brake pedal is released. Hill hold start assist is activated when the EBCM determines that the driver wishes to move the vehicle up-hill, either backwards or forwards.
- **Hydraulic Brake Assist:** The brake assist function is designed to support the driver in emergency braking situations. The EBCM receives inputs from the brake pressure sensor. When the EBCM senses an emergency braking situation, the EBCM will actively increase the brake pressure to a specific maximum.
- **Intelligent Brake Assist:** The intelligent brake assist function is designed to provide limited braking to help prevent front and rear low speed collisions. The EBCM receives inputs from the brake pedal position sensor, wheel speed sensors, short range radar and ultrasonic sensors to detect a collision. When the EBCM senses a possible collision, it will actively increase the hydraulic brake pressure to apply the brakes.
- **Optimized Hydraulic Braking System:** With some engines the EBCM monitors the vacuum in the brake booster with a vacuum sensor and controls a brake booster vacuum pump depending on vacuum sensor input. It also has a hydraulic brake boost feature which supplements the brake system to maintain consistent brake performance under conditions of low brake booster vacuum. Low brake booster vacuum conditions can include initial start up after the vehicle has been parked for several hours, very frequent brake stops, or high altitude driving. The hydraulic brake boost system activates only during a brake apply under low vacuum conditions. In this case the EBCM will actively increase and control the hydraulic brake pressure by turning the pump motor ON and the appropriate solenoid valves ON and OFF. When hydraulic brake boost is active, a series of rapid pulsations is felt in the brake pedal.
- **Stability Control:** Electronic stability control provides added stability during aggressive maneuvers. Yaw rate is the rate of rotation about the vehicle's vertical axis. The stability control is activated when the EBCM determines that the desired yaw rate does not match the actual yaw rate as measured by the yaw rate sensor. The difference between the desired yaw rate and the actual yaw rate is the yaw rate error, which is a measurement of over steer or under steer. When a yaw rate error is detected, the EBCM attempts to correct the vehicle's yaw motion by applying brake pressure to one or more of the wheels. The amount of brake pressure which is applied varies, depending on the correction required.
- **Traction Control:** When drive wheel slip is noted, the EBCM will enter traction control mode. First, the EBCM requests the engine control module (ECM) to reduce the amount of torque to the drive wheels via a serial data message. The ECM reduces torque to the drive wheels and reports the amount of delivered torque. If the engine torque reduction does not reduce drive wheel slip, the EBCM will actively apply the brakes on the slipping drive wheel. During traction control braking, hydraulic pressure in each drive wheel circuit is controlled to prevent the drive wheels

from slipping. The EBCM commands the pump motor and appropriate solenoid valves **ON** and **OFF** to apply brake pressure to the slipping wheel.

- **Trailer Brake Control System:** A trailer brake control system is used to control the amount of trailer braking power that is made available to trailers with brakes that require a controlled output electrical signal for actuation. The trailer brake control system determines the trailer brake type (Electric Brake or Electric Over Hydraulic Brake) automatically.
- **Trailer Sway Control:** The trailer sway control will detect any vehicle yaw instability, caused by an attached trailer. When instability is detected, the EBCM attempts to correct the vehicle's yaw motion by applying brake pressure to one or more of the wheels. The engine torque may also be reduced, if it is necessary to slow down the vehicle.

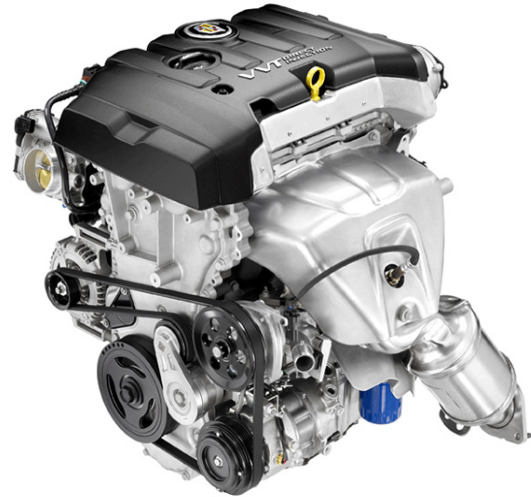
Duralife Ferritic Nitro Carburized Rotors

The vehicle is equipped with Duralife ferritic nitro carburized (FNC) brake rotors and low drag brake calipers. Application of the FNC technology involves an additional manufacturing process that heats the rotors at 1,040°F (560°C) for up to 24 hours in a giant oven. Inside the nitrogen-rich atmosphere, nitrogen atoms bond to the surface of the steel rotor, hardening and strengthening the rotor. This hardened layer allows the rotor to wear slower and reduces rotor corrosion.

Engines

2.5L L4 Engine — RPO LCV

GM's versatile and technologically advanced Ecotec engine family expands with a new, larger 2.5L variant. It is based on a new generation of large-displacement four-cylinder engines, which was designed for greater efficiency. GM proprietary computational fluid dynamics (CFD) analysis techniques were used to develop an all-new combustion system with a higher compression ratio. The new combustion system features improved knock resistance and higher flowing intake and exhaust ports in the cylinder head which help increase efficiency, power, and torque. The new Ecotec also has increased authority cam phasing to minimize any compromise between efficiency, performance, emissions, and driveability. Like the current generation of technically advanced Ecotec engines, the 2.5L also features a high pressure direct injection fuel system, dual overhead camshafts with continuously variable valve timing, electronic throttle control, and pistons with jet-spray oil cooling. When equipped with this engine, the vehicle has Active Grille Shutters.



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Shown is a typical view of the 2.5L L4 engine.

Engine Component Description and Operation

- **Acoustic Intake Manifold Cover:** The 2.5L uses a composite plastic lightweight intake manifold. But plastic conducts noise, so engineers wrapped the intake with a clamshell-like isolating cover. It has a sound absorbing “blanket” on the inside that snugs against the intake to provide isolation, and the cover has a visually clean outer layer, which works as a noise barrier.
- **Cam Driven High Pressure Fuel Pump:** A cam driven high pressure fuel pump provides the fuel pressure required of the direct injection (DI) system in the Ecotec 2.5L. The engine mounted fuel pump is augmented by a conventional electrically operated supply pump in the fuel tank. The fuel delivery system features a high-pressure stainless steel feed line and a pressure-regulated fuel rail, without a conventional fuel return line from the engine to the tank. Fuel pressure varies from about 750 psi (5,171 kPa) at idle to 2,250 psi (15,513 kPa) at wide-open throttle.
- **Camshaft Drive with Inverted Tooth Chain:** Like the drive chain for the balance shafts, the camshaft drive chain uses a premium, inverted tooth design that is significantly quieter than a roller type chain. As its name implies, an inverted tooth chain has teeth on its links – two-pin rolling pivot joints – that essentially wrap around the gear sprocket to take up virtually all the tension. This allows for smoother meshing of the chain links to the sprocket teeth, the cause of most noise in chain drive systems. The chain to sprocket tooth impact is greatly reduced with the inverted tooth design (also known as a silent chain drive), which virtually eliminates noise and enhances durability.
- **Cylinder Block:** The Ecotec 2.5L's sand-cast cylinder block is a superior refinement of previous Ecotec engine block castings. It is dimensionally similar with previous variants, while providing

excellent structural support, as well as enabling greater control of noise, vibration and harshness. The main bearing bulkheads, which support the crank bearing, as well as the cylinder bore walls, have been significantly strengthened to support increased engine loads. Also, refinements to the oil distribution system enable improved oil flow throughout the engine; and an expansion of the coolant jacket, along with the use of cast-in-place bore liners, allows more precise bore roundness and improves the block's ability to dissipate heat.

- **Cylinder Head and Valves:** The Ecotec 2.5L has a 356T6 aluminum cylinder head that is cast with advanced semi-permanent mold technology. This provides excellent strength, reduced machining and optimal port flow. There is no need for heat treatment to the casting, which reduces residual stress and, consequently, enhances the engine's durability. The cylinder head is designed specifically for direct injection into each combustion chamber. This is accomplished by positioning an injector under the intake port of each cylinder, so it protrudes into the chamber. The combustion chambers and ports are optimized for direct injection and high port flow. The cylinder head includes premium valve seat, valve guide and valve materials. They were selected for minimum wear while operating in more severe conditions associated with direct injection. These premium materials, along with a hydraulic lash-adjusting lifter, ensure good durability without required lash adjustments. The cylinder head also has integral cast oil passages that feed a set of internal oil control valves that activate cam phasers, enabling variable valve timing.
- **Direct Injection:** Direct injection (DI) moves the point where fuel feeds into an engine closer to the point where it ignites, enabling greater combustion efficiency. It fosters a more complete burn of the fuel in the air-fuel mixture, and operates at a lower temperature than conventional port injection. This allows the mixture to be leaner (less fuel and more air), so less fuel is required to produce the equivalent horsepower of a conventional, port-injection fuel system. DI also delivers reduced emissions, particularly cold start emissions, by about 25 percent. The fuel system operates at pressures as high as 2,250 psi (15,513 kPa) compared to about 60 psi (414 kPa) in conventional port-injected engines.
- **DOHC with Continuously Variable Valve Timing:** Overhead cams are the most direct, efficient means of operating the valves, while four valves per cylinder increase airflow in and out of the engine. This arrangement is integrated on the Ecotec 2.5L's lightweight aluminum cylinder head. Both the intake and exhaust cams have hydraulically operated vane-type phasers that are managed by a solenoid and directed by the engine control module (ECM). The phasers turn the camshaft relative to the drive sprocket, allowing intake and exhaust valve timing to be adjusted independently. Cam phasing changes the timing of valve operation as conditions such as rpm and engine load vary. It allows an outstanding balance of smooth torque delivery over a broad rpm range, high specific output and good specific fuel consumption. Cam phasing also provides another effective tool for controlling exhaust emissions. Because it manages valve overlap at optimum levels, it eliminates the need for a separate exhaust gas recirculation (EGR) system.
- **Forged Steel Crankshaft:** Engineers selected a forged steel crankshaft for the 2.5L because, along with its strength and durability, it is stiffer than a conventional cast iron crankshaft. That reduces noise and vibration at mid- and high-rpm levels, enhancing the engine's smoothness.
- **Four-Wheel Drive Oil Pan:** The oil filter for the LCV truck applications is now on the right hand side of the oil pan. The oil pan has specially integrated oil passages cast into the pan to transport oil to and from the oil filter. In addition, the oil pan features a deep rear sump allowing for clearance to the front axle.
- **In-Pan Oil Pump Assembly:** Another significant change from previous Ecotec engines is the relocation of the oil pump assembly from the front of the crankshaft to within the oil pan, where it is driven by the second balance shaft. This reduces noise from the front cover area, an aluminum intensive area that radiates noise and provides a small drag torque to ensure quiet balance shaft gear operation. Also the oil-sump location minimizes the potential for pump cavitation noise.
- **Iron Main Bearing Cap Inserts:** Iron inserts are cast into the 2.5L aluminum cylinder block bedplate, enhancing the structure at the main bearings, for greater smoothness and quietness. The bedplate provides stiffness to the bottom of the cylinder block and incorporates the main bearing caps, the components used to secure the crankshaft within the block. The iron insert material ensures close main bearing tolerances over a wide range of engine operating temperatures, for quieter engine lower end noise.
- **Isolated Fuel Rail:** The isolated fuel rail helps achieve overall quietness. The fuel rail is a tube like component that supplies gasoline to the DI injectors. To reduce the noise associated with this efficiency enhancing system, the injectors are suspended and the fuel rail is attached to the cylinder head with rubber isolated, compression limiting mounting provisions.
- **Relocated Balance Shafts:** The 2.5L's balance shafts which are commonly used in four cylinder engines to reduce vibration are located in a cassette in the oil pan. It's a move from previous Ecotec engines' cylinder block-mounted shafts, which helps reduce noise through three key design features: a shorter, quieter drive chain, precision shaft-to-shaft reversing gears and light drag torque from driving the oil pump. The short drive chain eliminates the previous long, winding "bushed" chain that included driving the water pump. It uses a premium inverted tooth chain design instead of a conventional roller-type chain, for quieter performance. The shaft-to-shaft

reversing gear set allows the drive gears of the shafts to mesh directly, eliminating the need for a chain to “back drive” the second shaft, which must rotate in the opposite direction of the first shaft. The second shaft also drives the oil pump, providing a light drag torque to preload the reversing gear teeth for smooth, rattle free and quiet operation.

- **Structural Camshaft Cover:** As a cast aluminum part mounted on the very top of the engine assembly, the camshaft cover can be a significant source of noise. That’s not the case with the 2.5L, due to a new, structural cover design that is stiffer and mounts more rigidly to the engine. It features increased ribbing and additional attachment bolts down the center, all of which increase the cover’s stiffness to help push the engine’s sound frequency above 2,000 hertz. It also enables excellent oil sealing for valvetrain oil control passages integrated within the cover.
- **Structural Front Cover:** Similar to the structural camshaft cover, the front cover which covers both the camshaft drive system and balancer drive systems, was designed with extra ribbing and secured with extra fasteners, including a new row of attachments down the middle of the cover. Like the camshaft cover, the result is a stiffer, more rigid, quieter cover that contributes to reduced engine noise.
- **Two Piece Oil Pan:** When it came to the oil pan, engineers faced a conundrum: Aluminum provides stiffening structure to an engine, but it radiates noise. Stamped steel, on the other hand, radiates less noise, but doesn’t offer the structural benefits needed for a stiff powertrain assembly. Their solution was to combine the materials to create a unique, two piece oil pan that features a stiff aluminum upper section to support the engine’s structure, maintaining the Ecotec engine’s signature full perimeter transmission mounting surface and a stamped steel lower section to provide greater overall sound performance.
- **Two-Stage Thermostat:** The coolant thermostat’s operating point is electronically controlled to optimize engine temperatures during different phases of operation to enhance fuel efficiency. The engine control module monitors sensors and controls the thermostat based on mapping that takes into account the wide range of engine operating conditions, including temperature and load. The thermostat opens partially at 194°F (90°C) and fully opens at 221°F (105°C).
- **Two-Stage Variable Displacement Oil Pump:** The variable-flow oiling system helps maximize fuel efficiency. Rather than the linear operation of a conventional fixed-flow pump, it is accomplished with a crankshaft-driven oil pump that matches the oil supply to the engine load. The engine’s variable-flow pump changes its capacity based on the engine’s demand for oil. This prevents using energy to pump oil that is not required for proper engine operation. An engine oil cooler helps maintain optimum oil temperatures. It has a heat exchanger incorporated into the oil filter housing.

Coolant to the heat exchanger is provided by the engine’s coolant circuit. The design optimizes oil cooling with a minimal pressure loss. During cold starting, the system also enables faster heating of the engine oil for an earlier reduction of internal engine friction.

- **Vacuum Pump:** A cam driven vacuum pump ensures the availability of vacuum under all conditions, especially under boost, when the engine produces the opposite of vacuum. The pump is mounted at the rear of the cylinder head and is driven by the exhaust camshaft via a flexible coupling.

Engine Specifications

- **Displacement:** 2.5L (150 cubic inches)
- **Bore x Stroke :** 3.46 inches (88.0 mm) x 3.976 inches (101.0 mm)
- **Compression Ratio:** 11.3:1
- **Horsepower:** 194 Horsepower (145 kW) @ 6,300 RPM (SAE Certified)
- **Maximum Engine Speed:** 6,850 RPM
- **Torque:** 190 lb-ft (258 Nm) @ 4400 RPM (SAE Certified)
- **Valves:** 2 intake and 2 exhaust valves per cylinder
- **Valve Lifters:** Hydraulic roller finger follower
- **Recommended Fuel:** Regular unleaded

3.6L V6 Engine — RPO LGX

The V6 3.6L engine ushers in new benchmarks for efficiency, refinement and durability. The clean-sheet engine redesign represents the fourth generation of GM’s acclaimed DOHC V6 engine family and incorporates Active Fuel Management (AFM) also known as cylinder deactivation technology to enhance fuel economy. The 3.6L also advances performance and fuel economy by optimizing technologies introduced on previous generations, including direct injection (DI) and continuously variable valve timing (VVT).



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Shown are typical views of the 3.6L V6 Engine.

Engine Component Description and Operation

- **Active Fuel Management System:** The Active Fuel Management System (AFM) consists of the camshafts, valves, the switching roller finger followers (SRFF), also known as the valve switching rocker arm, the dual feed hydraulic lash adjusters and the oil control valve (OCV) which is also known as the valve rocker arm oil control valve.

Depending on engine RPM, the ECM sends a signal to the OCV commanding it either **ON** or **OFF**.

With the AFM system **ON**, the OCV directs oil to the dual feed hydraulic lash adjuster unlatching the switching roller finger followers creating zero lift and not allowing the valves to open on cylinders two and five. AFM is active at this time. With the AFM system **OFF**, the OCV is not active and no oil is directed to the dual feed hydraulic lash adjuster. The switching roller finger followers operate as normal rocker arms. AFM is inactive at this time.

- **Camshaft Drive System:** The camshaft drive system consists of two timing drive chains driven by the crankshaft which drives the respective cylinder head's intake and exhaust camshaft position actuators. Cushioned actuator chain sprockets have been added contributing to quieter engine operation. The timing drive chains use moveable timing drive chain guides and a hydraulic-actuated tensioner. The tensioner minimizes timing drive chain noise and provides accurate valve action by keeping slack out of the timing drive chains and continuously adjusting for timing drive chain wear. The tensioner incorporates a plunger that adjusts out with wear allowing only a minimal amount of backlash. The tensioners are sealed to the head or block using a rubber coated steel gasket. The gasket traps an adequate oil reserve to ensure quiet start-up.
- **Camshaft Position Actuator System:** The engine incorporates a camshaft position actuator for each intake and exhaust camshaft. Camshaft phasing changes valve timing as engine operating conditions vary. Dual camshaft phasing allows the further optimization of performance, fuel economy and emissions without compromising overall engine response and driveability. Variable valve timing also contributes to a reduction in exhaust emissions. It optimizes exhaust and inlet valve overlap and eliminates the need for an exhaust gas recirculation (EGR) system.

The camshaft position actuator is a hydraulic vane-type actuator that changes the camshaft lobe timing relative to the camshaft drive sprocket. Engine oil is directed by a camshaft position actuator oil control valve to the appropriate passages in the camshaft position actuator. Oil acting on the vane in the camshaft position actuator rotates the camshaft relative to the sprocket. At idle, both camshafts are at the default or "home" position. At this position, the exhaust camshaft is fully advanced and the intake is fully retarded to minimize valve overlap for smooth idle. In addition, this engine has intermediate park technology, which incorporates an intermediate-lock intake variable valve timing cam phaser, allowing the cams to be parked at the most favorable position for cold starting. Under other engine operating conditions, the camshaft position actuator is controlled by the engine control module (ECM) to deliver optimal intake and exhaust valve timing for performance, driveability and fuel economy. The camshaft position actuator incorporates an integral trigger wheel, which is sensed by the camshaft position sensor mounted in the front cover, to accurately determine the

position of each camshaft. The exhaust camshaft position actuator has a different internal configuration than the intake camshaft position actuator since the exhaust camshaft position actuator phases in the opposite direction relative to the inlet camshaft position actuator.

The camshaft position actuator oil control valve (OCV) directs oil from the oil feed in the head to the appropriate camshaft position actuator oil passages. There is one OCV for each camshaft position actuator. The OCV is sealed and mounted to the front cover. The ported end of the OCV is inserted into the cylinder head with a sliding fit. A filter screen protects each OCV oil port from any contamination in the oil supply.

- **Cooling System:** This engine has a targeted cooling system which sends coolant simultaneously to each water jacket in the heads and block. This new, parallel-flow design maximizes heat extraction in the area of the upper deck, intake and exhaust valve bridges in the heads and integrated exhaust manifold with a minimal amount of coolant. The result is more even and consistent cooling, which enhances performance, and faster engine warm up, which improves cold-start efficiency and reduces emissions.
- **Connecting Rods and Pistons:** The connecting rods are sinter-forged with a high copper content and have press-in-place piston pin bushings. The connecting rods and rod cap are aligned by dowel pins retained in the cap. The cast aluminum pistons incorporate a polymer-coated skirt to reduce friction. The pistons are unique to the LGX both for compression ratio and combustion efficiency. The piston uses two low tension compression rings and one multi-piece oil control ring.
- **Crankshaft:** The crankshaft is a hardened, forged steel design with 4 main bearings. Crankshaft thrust is controlled by the upper portion of the number 3 main bearing. The crankshaft position reluctor wheel is pressed onto the rear of the crankshaft in front of the rear main journal. A micro encapsulated adhesive is used on the reluctor wheel to aid retention. This crankshaft is internally balanced.
- **Cylinder Block:** Stronger, stiffer aluminum block with increased structure in the bulkheads for superior rigidity.
- **Cylinder Heads:** The cylinder heads are a two piece design consisting of a head and a camshaft carrier which are cast aluminum with powdered metal valve seat inserts and valve guides. The two piece design allows for the Active Fuel Management (AFM) System. The cylinder heads also feature integrated exhaust manifolds; the exhaust manifolds are incorporated into the head casting. Two intake valves and two exhaust valves are actuated by roller finger followers pivoting on a stationary hydraulic lash adjuster (SHLA). In the LGX engine, the valves and seats are constructed with specialized materials and coatings, and the exhaust valves are sodium filled for robustness.

The cylinder heads also feature a “high-tumble” port design, and are sealed with LGX specific head gaskets. The head gaskets are also specific to the LH and RH sides.

Separate exhaust and intake camshafts are supported by bearings machined into the camshaft carrier. The front camshaft bearing cap is used as a thrust control surface for each camshaft. Each spark plug is shielded by a tube that is pressed into the cylinder head. Each spark plug ignition coil is also mounted through the spark plug tube. The LGX engine uses specific spark plugs and a different spark plug gap from other HFV6 engines. The engine coolant temperature (ECT) sensor is mounted in the thermostat housing near the flywheel end of the engine. With direct injection, the high pressure injectors are located in machined bores below the intake ports. A stainless steel, high pressure fuel rail is attached to the intake side of the head. The LGX engine has unique higher-flow injectors and fuel pump. The cylinder head has a larger bore for the new larger diameter fuel pump follower that operates the higher-flow pump. The fuel injectors are retained to the fuel rail in a new “twist-lock” retention scheme that does not require special tools for service.

- **Fuel Injectors and Spark Plugs:** The injector angle was changed to 24 degrees from 22 degrees to reduce emissions and oil dilution. A smaller 12 mm spark plug, down from 14 mm, enables the plug to be located closer to the center of the combustion chamber. This improves the flames propagation and increases light load efficiency.
- **Oiling System:** The LGX engine contains a dual-pressure control and variable-displacement vane pump that enhances efficiency by optimizing oil pressure as a function of engine speed. The oil pump is located beneath the cylinder block inside the oil pan, contributing to the engines smoother and quieter operation. The oiling system components differ depending on the engine being in a transverse or longitudinal orientation. The LGX has unique oil pans depending on orientation, with the pans being separated into an upper (traditional aluminum) and lower (stamped steel) pan. This configuration helps with noise and mass concerns. It also affords some serviceability improvements through not needing to remove the entire upper pan for some service procedures; the procedures can be performed through removing the lower pan. The LGX oil pans contain oil level switches as do nearly all HFV6 applications. The oil level switch is normally open and closes at oil levels above minimum requirements.
- **Right and Left Bank Designation:** Right hand (RH) and left hand (LH) designation throughout the engine mechanical section are viewed from the rear, flywheel side, of the engine or from inside the vehicle. These banks are also referred to as Bank 1 (RH) and Bank 2 (LH).
- **Vacuum Pump:** The engine utilizes a mechanical vacuum pump to provide a vacuum source for the braking system. The vacuum pump is integrated

into the oil pump assembly located in the oil pan. Both vacuum pump and oil pump are part of a common assembly, referred to as a tandem pump. Neither pump is serviceable individually. If either the oil pump or vacuum pump are defective, replace the entire tandem pump assembly.

Engine Specifications

- **Displacement:** 3.6 L (222 cubic inches)
- **Bore x Stroke :** 3.74 inches (95 mm) x 3.377 inches (85.8 mm)
- **Compression Ratio:** 10.2:1
- **Horsepower:** 310 horsepower (231 kW) @ 6,600 RPM (Estimate)
- **Maximum Engine Speed:** 7,200 RPM
- **Torque:** 271 lb-ft (367 Nm) @ 5,000 RPM (Estimate)
- **Valves:** 2 intake and 2 exhaust valves per cylinder
- **Recommended Fuel:** Regular unleaded

Engine Oil — dexos®



3512027



3511747

Ask for and use engine oils that meet the dexos® specification. Engine oils that have been approved by GM as meeting the dexos® specification are marked with either of the dexos1® approved logos that are shown. For additional information, visit this General Motors website: <http://www.gmdexos.com>

Viscosity Grade

2.5L L4 Engine: Use ACDelco® dexos®1 SAE 5W-20 viscosity grade engine oil. SAE 0W-20 viscosity grade may be used as an alternative. An oil of this viscosity grade will provide easier cold starting for the engine at extremely low temperatures.

3.6L V6 Engine: Use ACDelco® dexos®1 SAE 5W-30 viscosity grade engine oil. In an area of extreme cold, where the temperature falls below -20°F (-29°C) use SAE 0W-30 viscosity grade engine oil. An oil of this viscosity grade will provide easier cold starting for the engine at extremely low temperatures.

Engine Oil Life System

The vehicle features GM's engine oil life system, which better protects engines by recommending oil changes based on a computer software algorithm using actual engine operating conditions and can save the vehicle owner money by avoiding unnecessary oil changes.

Engine Auto Stop/Start — 2.5L

A fuel-saving Engine Auto Stop/Start system has been integrated with the 2.5L engine. While driving, when the brake pedal is applied and the vehicle is at a complete stop, the Engine Auto Stop/Start system may turn the engine **OFF**, depending on operating conditions. When the engine is **OFF**, the tachometer will read **AUTO STOP**. Upon releasing the brake pedal or applying the accelerator pedal, the engine will restart. After parking the vehicle and turning the engine **OFF**, the tachometer will read **OFF**.

An upgraded starter motor and advanced battery technology support the increased number of engine starts. The starter motor has a high performance

electric motor and stronger pinion engagement mechanism. The starter motor has also been re-designed to reduce the noise on startup. Advanced battery technology ensures it can handle frequent charge and discharge cycles. An intelligent battery sensor module monitors the state of charge and health of the battery. Battery state of charge and health are used by the ECM to determine if the Stop/Start function may be performed.

The engine may remain running or restart if:

- A minimum vehicle speed is not reached.
- The engine or transmission is not at the required operating temperature.
- The outside (ambient) temperature is not in the required operating range.
- The shift lever is in any gear other than **D** (Drive).
- The battery charge is low.
- The current settings for the climate control (HVAC) or defog system have not been reached.
- The **AUTO STOP** time is greater than 2 minutes.

Instrument Panel Cluster — Driver Information Center

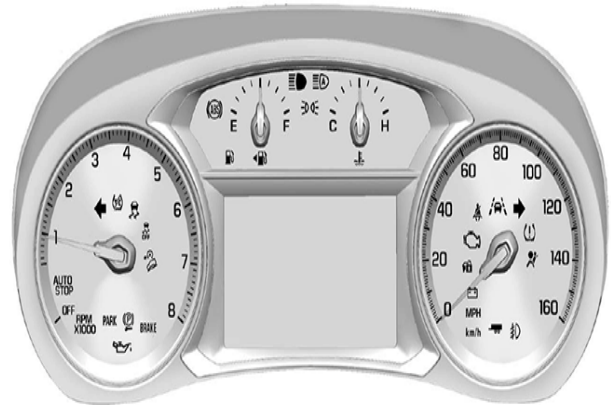
Instrument Panel Cluster - Base



4489046

The instrument panel cluster (IPC) - Base, comes standard with an array of gauges. The IPC provides the driver with important vehicle information at a glance. The base cluster consists of a speedometer, tachometer, temperature gauge, oil pressure warning light, battery voltage warning light and fuel gauge with the DIC in the lower middle.

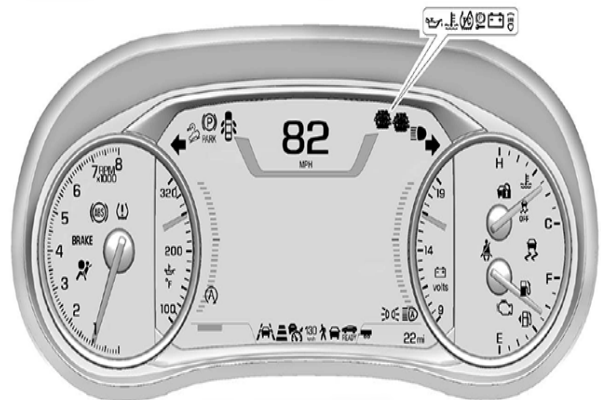
Instrument Panel Cluster - Midlevel



4489057

The IPC - Midlevel, comes standard with an array of gauges. The IPC provides the driver with important vehicle information at a glance. The midlevel cluster consists of a speedometer, tachometer, temperature gauge, oil pressure warning light, battery voltage warning light and fuel gauge with the DIC in the lower middle.

Instrument Panel Cluster - Uplevel (English Standard Theme)



4489124



4495817



4497790

The Uplevel cluster consists of a digital speedometer, tachometer, temperature gauge, oil pressure gauge, battery voltage gauge and fuel gauge with an interactive display area in the center of the instrument cluster. There are other lamps and indicators near each of the turn signal indicator lamps and at the bottom of the IPC.

OnStar® with 4G LTE and Wi-Fi (Not Available in All Exported Countries)

With OnStar® 4G LTE and Wi-Fi, up to seven devices such as smartphones, tablets and laptops can be connected to high-speed Internet through the vehicle's built-in Wi-Fi hotspot.

To retrieve the SSID and password for the hotspot, press the OnStar® Voice Command button on the overhead console or rearview mirror, wait for the prompt, and then say "Wi-Fi Settings." The information will be displayed on the screen.

The powerful OnStar® connection also enables improved access to existing OnStar® safety and security services, including the ability to transmit voice and data simultaneously. That means 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.

For assistance, press the blue OnStar® button or call 1-888-4-ONSTAR (1-888-466-7827).

Radio with IntelliLink®

Radio — 7 Inch Diagonal Color Touch

Offered as the base radio, the 7 inch (178 mm) diagonal color touch radio with IntelliLink® capacitive touch display make the drive an inspired experience. Apple® CarPlay™ and Android™ Auto compatibility with compatible smartphone.

This radio features:

- Simple, affordable method of connectivity.
- Relies on customer's brought-in media.
- Physical buttons and knobs.
- Icon based user interface.
- Wi-Fi signal type, strength display and connection settings.

Radio — 8 Inch Diagonal Color Touch



4489640

The 8 inch (203 mm) diagonal color touch radio with IntelliLink® capacitive touch display make the drive an inspired experience. Apple® CarPlay™ and Android™ Auto compatibility with compatible smartphone.

This radio features:

- Blend of embedded and customer brought-in media functionality.
- Fast accurate voice recognition including partial name.
- Gesture recognition.
- Customizable options.

- Wi-Fi signal type, strength display and connection settings.
- Available navigation. (Not all countries).

Bluetooth® System

Before using a Bluetooth® enabled device in the vehicle, it must be paired with the in-vehicle Bluetooth® system. The pairing process is disabled when the vehicle is moving. Not all devices will support all functions. Bluetooth® streaming audio is available with the IntelliLink® system.

Portable Audio Devices

A USB port is located at the front of the center console. An Apple® iPod®, iPhone®, MP3 Player, a USB flash drive or a USB mass storage device can be connected to the USB port. Compatible devices connected to the USB port can be controlled by the audio system. Not all devices may be supported. Use the audio controls and audio steering wheel controls to access various functions.

Safety — Airbag System

Airbag Readiness Light

This light illuminates and stays **ON** if there is an electrical problem with the airbag system. The system check includes the airbag sensors, passenger sensing system, the pretensioners, the airbag modules, the wiring, and the crash sensing and diagnostic module (SDM). The airbag readiness light turns **ON** for several seconds when the vehicle is started. If the light does not turn **ON** and then **OFF**, have it repaired immediately.

Airbag Locations

All vehicle airbags have the word AIRBAG on the trim or on a label near the deployment opening. The airbags are located in the following positions:

- A frontal airbag for the driver.
- A frontal airbag for the front outboard passenger.
- A knee airbag for the driver.
- A front center airbag for the driver and front outboard passenger.
- Seat-mounted side impact airbag for the driver.
- Seat-mounted side impact airbag for the front outboard passenger.
- A roof-rail airbag for the driver and for the second and third row passengers seated directly behind the driver.
- A roof-rail airbag for the front outboard passenger and the second and third row passengers seated directly behind the front outboard passenger.

Safety — Driving/Parking Assistance Systems

If equipped, these systems *may* help the driver to park and/or to avoid other vehicles, objects, pedestrians and animals.

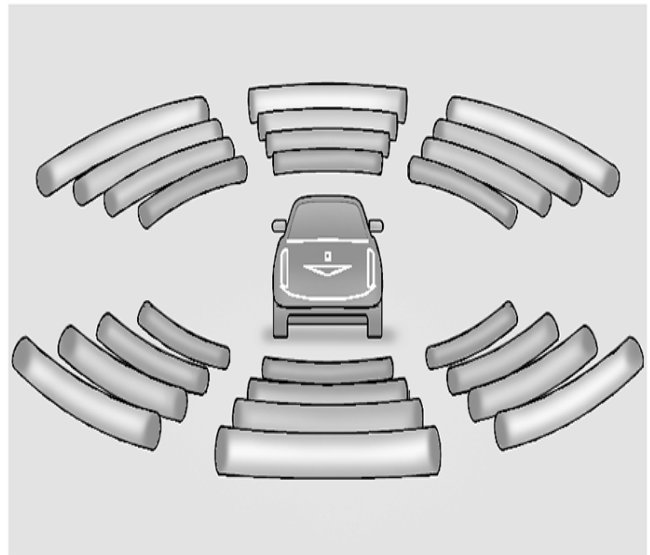
- **Active Tow:** This feature displays a single, centered guideline on the camera display to assist with aligning a vehicle's hitch bar with a trailer coupler. Select the trailer guidance line button, then align the trailer guidance line over the trailer coupler. Continuously steer the vehicle to keep the guidance line centered on the coupler when backing. RVC Parking Assist overlays will not display when the trailer guidance line is active.
- **Adaptive Cruise Control:** Adaptive Cruise Control (ACC), it allows the driver to select the cruise control set speed and following gap. The following gap is the following time between your vehicle and a vehicle detected directly ahead in your path, moving in the same direction. If no vehicle is detected in your path, ACC works like regular cruise control. Turning **OFF** the TCS or StabiliTrak® system will disengage the cruise control.
- **Forward Automatic Braking:** If the vehicle has FCA, it also has Forward Automatic Braking (FAB), which includes Intelligent Brake Assist (IBA). When the system detects a vehicle ahead in your path that is traveling in the same direction that you may be about to crash into, it can provide a boost to braking or automatically brake the vehicle. This can help avoid or lessen the severity of crashes when driving in a forward gear. Depending on the situation, the vehicle may automatically brake moderately or hard. This forward automatic braking can only occur if a vehicle is detected. This is shown by the FCA vehicle ahead indicator being illuminated.
- **Forward Collision Alert:** The Forward Collision Alert (FCA) system may help to avoid or reduce the harm caused by front-end crashes. When approaching a vehicle ahead too quickly, FCA provides a red flashing alert on the windshield and rapidly beeps or pulses the driver seat. FCA also lights an amber visual alert if following another vehicle much too closely. FCA detects vehicles within a distance of approximately 197 ft (60 m) and operates at speeds above 25 mph (40 km/h). If the vehicle has Adaptive Cruise Control (ACC), it can detect vehicles to distances of approximately 360 ft (110 m) and operates at all speeds.



4490977

- Front Pedestrian Braking:** The Front Pedestrian Braking (FPB) system may help avoid or reduce the harm caused by front end crashes with nearby pedestrians when driving in a forward gear. FPB displays an amber pedestrian indicator when a nearby pedestrian is detected directly ahead. When approaching a detected pedestrian too quickly, FPB provides a red flashing alert on the windshield and rapidly beeps or pulses the driver Safety Alert Seat. FPB can provide a boost to braking or automatically brake the vehicle. The FPB system can detect and alert to pedestrians in a forward gear at speeds between 5 mph (8 km/h) and 50 mph (80 km/h). During daytime driving, the system detects pedestrians up to a distance of approximately 131 ft (40 m). If FPB detects it is about to crash into a pedestrian directly ahead, and the brakes have not been applied, FPB may automatically brake moderately or hard. During nighttime driving, system performance is very limited.
- Front Vision Camera:** The Front Vision Camera provides a view of the area in front of the vehicle. The view displays after shifting from **R** to a forward gear, or by touching CAMERA in the infotainment display, and when the vehicle is moving forward slower than 5 mph (8 km/h). The Front Vision Camera also displays when the Parking Assist system detects an object within 12 in (30 cm).
- Lane Change Alert:** The Lane Change Alert (LCA) system provides outside side mirror alerts to help the driver avoid crashing into a moving vehicle detected in their side blind spot (or zone) or a vehicle that is rapidly approaching their blind spot during a lane change maneuver.
- Lane Departure Warning:** Lane Departure Warning (LDW) may help avoid crashes due to unintentional lane departures. It may provide a warning if the vehicle is crossing a detected lane marking without using a turn signal in the lane departure direction. This system is part of the Lane Keep Assist (LKA) system.

- Lane Keep Assist:** Lane Keep Assist (LKA) may assist the driver by gently turning the steering wheel if the vehicle approaches a detected lane marking without using a turn signal in that direction. It may also provide a Lane Departure Warning (LDW) system alert as the lane marking is crossed. The LKA system will not assist or provide an LDW alert if it detects that the driver is actively steering.



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- Parking Assist:** With RPA, and if equipped with FPA, as the vehicle moves at speeds of less than 5 mph (8 km/h) the sensors on the bumpers may detect objects up to 8 ft (2.5 m) behind the vehicle and 4 ft (1.2 m) in front of the vehicle within a zone 10 in (25 cm) high off the ground and below bumper level. The Parking Assist system does not detect children, pedestrians, bicyclists, animals, or objects located below the bumper or that are too close or too far from the vehicle. The instrument cluster may have a parking assist display with bars that show “distance to object” and object location information for the Parking Assist system. As the object gets closer, more bars light up and the bars change color from yellow to amber to red.
- Rear Cross Traffic Alert:** Rear Cross Traffic Alert (RCTA) displays a red warning triangle with a left or right pointing arrow on the RVC screen to warn of traffic coming from the left or right. This system detects objects coming from up to 65 ft (20 m) from the left or right side of the vehicle. When an object is detected, either three beeps sound from the left or right or three Safety Alert Seat pulses occur on the left or right side, depending on the direction of the detected vehicle. Use caution while backing up when towing a trailer, as the RCTA detection zones that extend out from the back of the vehicle do not move further back when a trailer is towed.
- Rear Parking Assist :** Rear Parking Assist (RPA) uses sensors on the rear bumper to assist with parking and avoiding objects while in **R** (Reverse). It operates at speeds less than 5 mph

(8 km/h). RPA may display a warning triangle on the Rear Vision Camera screen and a graphic on the instrument cluster to provide the object distance. In addition, multiple beeps or seat pulses may occur if very close to an object.

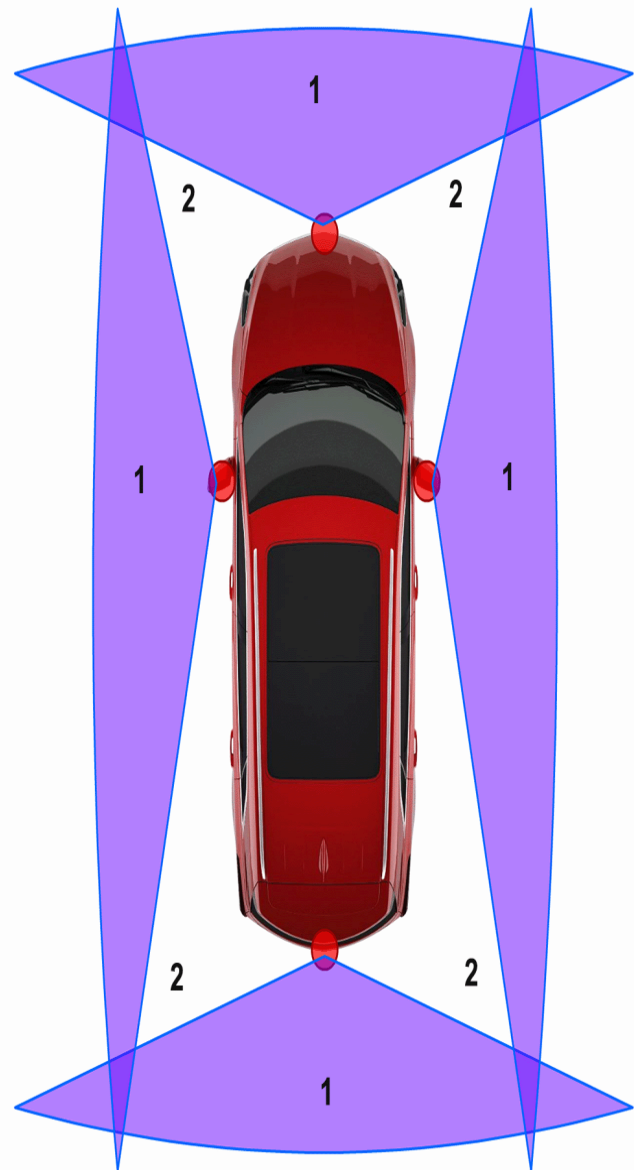
- **Rear Vision Camera:** When the vehicle is shifted into **R** (Reverse), the Rear Vision Camera (RVC) displays an image of the area behind the vehicle in the infotainment display. The previous screen displays when the vehicle is shifted out of **R** after a short delay. To return to the previous screen sooner, press a button on the infotainment display, shift into **P** (Park), or reach a vehicle speed of 5 mph (8 km/h). Select Front or Rear Camera on the camera screen to view the front or rear camera views. Select Guidance Lines on the camera screen to enable or disable the guidance lines.
- **Safety Alert Seat:** The Safety Alert Seat provides the driver the option of getting haptic seat-bottom vibration crash avoidance alerts or beeping. To change from one to the other, see “Comfort and Convenience” under Vehicle Personalization in the Owner Manual.
- **Side Blind Zone Alert:** The Side Blind Zone Alert (SBZA) system is a lane changing aid that assists drivers with avoiding crashes that occur with moving vehicles in the SBZA (or spot) areas. When the vehicle is in a forward gear, the left or right side mirror display will light up if a moving vehicle is detected in that blind zone. If the turn signal is activated and a vehicle is also detected on the same side, the display will flash as an extra warning not to change lanes. This system is part of the LCA system.

Safety — Surround Vision

Surround Vision

Notice: The Surround Vision cameras have blind spots and will not display all objects near the corners of the vehicle. Folding side mirrors that are out of position will not display the surround view correctly.

Surround Vision displays an image of the area surrounding the vehicle, along with the front or rear camera views in the center stack. The front camera is in the grille or near the front emblem, the side cameras are on the bottom of the outside rearview mirrors, and the rear camera is above the license plate.



4451337

1 = Areas displayed by the Surround Vision cameras.

2 = Areas not displayed by the Surround Vision cameras.

Steering

The Acadia is equipped with a belt driven electric power steering system which reduces the amount of effort needed to steer the vehicle by utilizing the power steering control module to control the power steering motor to maneuver the steering rack. The power steering control module uses input from the torque sensor, motor rotational sensor, battery voltage circuit and GMLAN serial data circuit to determine the level of motor assist. Vehicle speed and engine speed from the GMLAN serial data circuit is also used to adjust the amount of steering assist needed to steer the vehicle. At low speeds more assist is provided for easy turning during parking maneuvers. At higher speeds less assist is provided for improved road feel and directional stability.

The belt driven electronic power steering system consists of the following components:

- A belt drive and a ball nut mechanism.
- A power pack which contains the power steering control module, its sensors, and the power steering motor.
- A torque sensor.
- The steering gear (rack and pinion).

Suspension

Front Suspension

The Acadia is equipped with a MacPherson strut front suspension. The front suspension absorbs the impact of the tires travelling over irregular road surfaces and dissipates this energy throughout the suspension system. This process isolates the vehicle occupants from the road surface. The rate at which the suspension dissipates the energy and the amount of energy that is absorbed is how the suspension defines the vehicle's ride characteristics. Ride characteristics are designed into the suspension system and are not adjustable. The suspension system must allow for the vertical movement of the tire and wheel assembly as the vehicle travels over irregular road surfaces while maintaining the tire's horizontal relationship to the road.

Rear Suspension

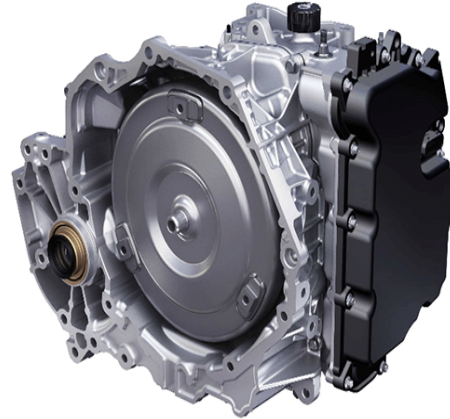
The Acadia is equipped with an independent 5-link rear suspension. The rear suspension maintains the relationship of the rear axle to the body and controls the torque reaction on acceleration and braking. Rear suspension adjustment is achieved through adjustable toe links and lower control arms. The rear coil springs are retained between the body and the lower control arm. Rubber insulators isolate the coil spring at both top and bottom. The rear suspension consists of 2 shock absorbers attached to the lower control arm and the reinforced body areas.

Electronic Suspension Control System (Available SLT-2 and Denali)

The electronic suspension control system individually controls the damping force of each of the 4 shock absorbers in order to keep the vehicle body as calm as possible. Changes of the damping forces can be accomplished within milliseconds. Suspension characteristics can be changed at any time by activating the Sport mode or Tour mode. The Continuous Damping Control (CDC) system provides superior vehicle ride and handling under a variety of passenger and loading conditions. The system is fully automatic and uses a computer controller to continuously monitor vehicle speed, wheel to body position, lift/dive, and steering position of the vehicle. The controller then sends signals to each shock absorber to independently adjust the damping level to provide the optimum vehicle ride.

Transmissions

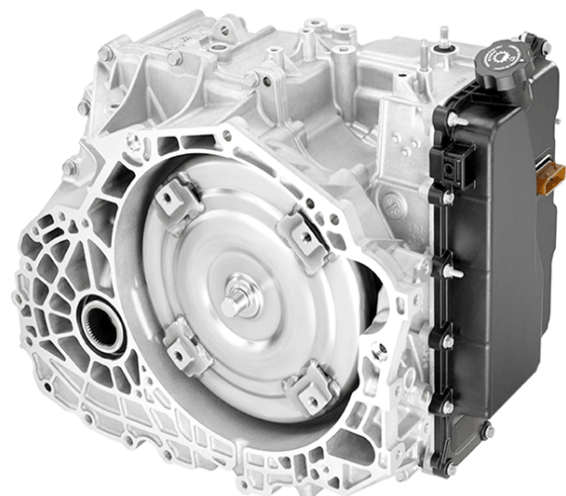
HydraMatic™ 6T50 Automatic 6-Speed FWD with Start/Stop — RPO M2D



4492387

The HydraMatic™ 6T50 is a 6-speed, front wheel drive, electronically controlled, automatic overdrive transaxle with an electronically controlled torque converter clutch and a surge accumulator for the start/stop system. This transmission features Gen 3 upgrades implemented to enhance efficiency. The pump, for example, has been moved off-axis, which allows better sealing of the torque converter, reducing pump flow demands to enhance fuel economy. Additionally, the pump is now a binary vane-type, which allows lower power consumption during times of lower flow demands and at higher engine speeds. This transmission is used with the 2.5L engine.

HydraMatic™ 6T70 Automatic 6-Speed AWD — RPO M7U



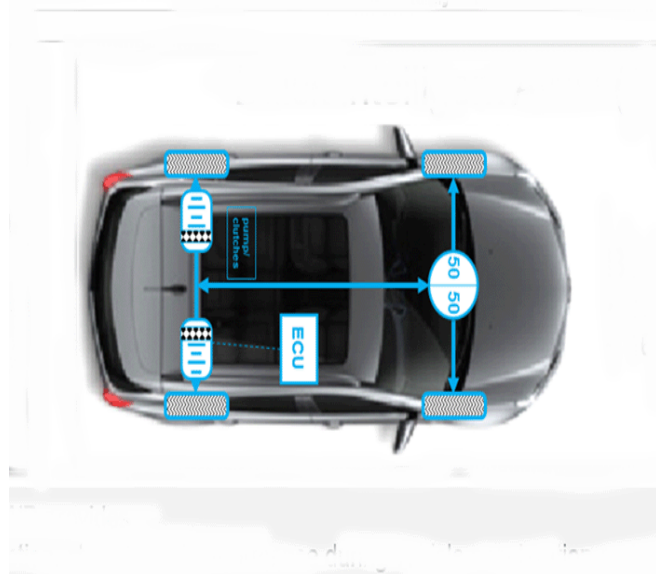
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The HydraMatic™ 6T70 transmission is part of GM's family of technically advanced, fuel saving 6-speed automatics designed to optimize efficiency while delivering exceptional smoothness and an excellent feeling of performance. Because of the wide ratio spread, first gear is a very high ratio, which provides brisk acceleration from a stop. Sixth gear is an overdrive ratio, which keeps the engine revolutions as low as possible for highway cruising, reducing engine friction losses and improving fuel economy. Instead of "folding" the transmission around the end of a transversely mounted engine (which has been one of the dominant GM transaxle design conventions), the 6T70 contains all of the gearing in line with the crankshaft centerline of the engine. The advantages of this layout can translate to a shorter overall vehicle length, more interior room and lower powertrain height. This transmission is used with the 3.6L engine.

HydraMatic™ 6T70 Automatic 6-Speed FWD — RPO M7W

The HydraMatic™ 6T70 transmission is part of GM's family of technically advanced, fuel saving 6-speed automatics designed to optimize efficiency while delivering exceptional smoothness and an excellent feeling of performance. Because of the wide ratio spread, first gear is a very high ratio, which provides brisk acceleration from a stop. Sixth gear is an overdrive ratio, which keeps the engine revolutions as low as possible for highway cruising, reducing engine friction losses and improving fuel economy. Instead of "folding" the transmission around the end of a transversely mounted engine (which has been one of the dominant GM transaxle design conventions), the 6T70 contains all of the gearing in line with the crankshaft centerline of the engine. The advantages of this layout can translate to a shorter overall vehicle length, more interior room and lower powertrain height. This transmission is used with the 3.6L engine.

AWD with Active Twin Clutch — Acadia All-Terrain



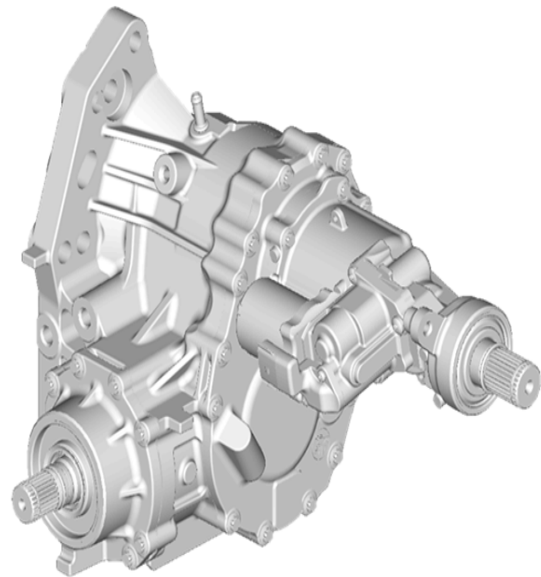
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The AWD system with Active Twin Clutch delivers greater handling, stability and driver confidence by preemptively and electronically splitting torque between the rear wheels to provide additional control versus a 50/50 split in a single clutch system.

It provides the following benefits:

- Specific All-Terrain mode in place of the Off-Road mode on the drive mode selector.
- Enhanced traction, stability and performance during vehicle acceleration and cornering during dry normal conditions.
- Optimal handling and improved traction in wet/snowy/icy conditions.
- Improved vehicle response when road traction is not uniform, such as when the right side of the vehicle is on ice and the left side is on dry pavement.
- Active Twin Clutch with active torque bias has increased capability to add stability across all driving conditions.
- A fuel economy benefit is realized by not pushing torque when it is not needed.

Power Transfer Unit



4492842

The GKN model 761 power transfer unit (PTU) is positioned in the right side of the vehicle and in model dependent applications is bolted to the transmission via an adapter plate. The primary function of the PTU is to receive power from the transmission and transfer it through the propeller shaft to the rear differential using helical and hypoid gear sets. The PTU housing, cover, extension housing, and rear output shaft housing are a cast aluminum design. Gear tooth clearances and bearing preloads are maintained by shims located behind the bearing races. The housings, internal gears, and bearings are not serviceable components. If housing, gear set, or bearing damage occurs, the assembly must be replaced. The PTU fluid is fill-for-life with no maintenance fluid change intervals required.

The disconnect-design PTU has the ability to internally engage and send power and torque to the rear propeller shaft, activating AWD mode. Shifting is performed by a PTU mounted actuator motor, internal linear and rotary cams, and shift collar. The actuator motor operates as directed by the rear differential clutch control module to perform the shifting operations.

During normal driving situations, the PTU operates in FWD mode with no rotation of the rear propeller shaft. The rear differential clutch control module monitors wheel slip based on the inputs from the wheel speed sensors and vehicle speed sensor. When the vehicle experiences a wheel slip condition, the control module sends a pulse width modulated (PWM) signal to the PTU actuator motor. The actuator motor rotates the worm gear and rotary cam, moving the shift collar to engage AWD and propeller shaft rotation. AWD mode will remain active until the slip condition has stopped. The process would repeat if wheel slip is detected again.

Drive Mode Control

The Drive Mode Control has the following Modes: Front-Wheel Drive (FWD), Sport, All-Wheel Drive (AWD), Snow/Ice, Tow/Haul, and Off-Road or All Terrain. Rotate the Drive Mode Control knob on the center console to select a mode. Continue turning the knob through the available modes as needed.

The various modes function as follows:

- **FWD** : Vehicle is in FWD Mode. Use this mode during normal driving conditions.
- **Sport** : Sport Mode improves vehicle handling and acceleration on dry pavement. When active, Sport Mode modifies steering efforts, transmission shifting, AWD torque, and suspension tuning (when equipped with Continuous Damping Control). For AWD vehicles, choosing Sport Mode also engages AWD Mode.
- **AWD (AWD Vehicles Only)** : AWD Mode provides drive torque to all four wheels. Select AWD to improve traction and control on slippery road surfaces, such as gravel, sand, wet pavement, snow, and ice. When in AWD Mode, the AWD Mode indicator will illuminate.
- **Snow/Ice (FWD Vehicles Only)** : Snow/Ice Mode improves vehicle acceleration on snow and ice covered roads.
- **Tow Haul** : Available when the vehicle is in FWD or AWD Mode. Use this mode to assist in maintaining desired vehicle speeds when driving on downhill grades by using the engine and transmission to slow the vehicle.
- **Off-Road (AWD Only) or All-Terrain**: Vehicle is in AWD Mode. Use this mode for off-road recreational driving. Off-Road optimizes traction in off-road conditions (gravel, sand, mud). All Terrain functions like Off-Road mode, but adds enhanced hill climbing capability & unique tuning.

Drive Mode Control Knob FWD



4493985

1. Normal 2x4 FWD
2. Snow
3. Sport
4. Trailer/Tow (If equipped - not shown) (Shown on Drive Mode Control Knob AWD)

Drive Mode Control Knob AWD



4494523

1. Normal 2x4 FWD (AWD Disconnect)
2. 4x4 AWD
3. Sport
4. Off-Road or All-Terrain (Depending on model)
5. Trailer/Tow (If equipped)

Towing the Vehicle — Recreational Vehicle Towing

Towing the Vehicle

Have the vehicle towed on a flatbed car carrier. **Never** use a sling type lift or damage will occur. Use ramps to help reduce approach angles if necessary. A towed vehicle should have its drive wheels **off** the ground.

Dinghy Towing — 2.5L

This vehicle was not designed or intended to be dinghy towed.

Dinghy Towing — AWD 3.6L

If the vehicle is all-wheel drive, it can be dinghy towed from the front. These vehicles can also be towed by placing them on a platform trailer with all four wheels **off** of the ground. These vehicles cannot be towed using a dolly.

Dinghy Towing — FWD 3.6L

If the vehicle is front-wheel drive, it can be dinghy towed from the front. These vehicles may also be towed by putting the front wheels on a dolly.

Trailer Towing

The Acadia base towing capacity is 2,000 lbs (907 kg). Vehicles equipped with the Trailer Towing Package have a towing capacity of 5,200 lbs (2,359 kg). Use the Tow/Haul mode when pulling a heavy trailer to reduce the frequency of transmission shifts and improve the control of vehicle speed.

Special Tools

The following new tools were released for the 2017 Acadia:

Special Tools — Tool Number and Description

Tool Number	Description
DT-47791-B	Converter Seal Driver
DT-49131	Seal Staking Tool
EN-42385-70	Head Bolt Thread Repair Torque Plate
EN-44226-5	Crankshaft Protector Button
EN-46335-A	Valve Spring Compressor (On-vehicle)
EN-49941	Piston Pin Retainer Remover
EN-51333	Timing Chain Retainer Set
EN-51766	Rear Seal Installation Pilot
DT-51329-A	Driveshaft Remover
DT-51834	Seal Installer, RH Input & Pinion Cassette
DT-51835	Seal Installer, LH Input & IDS Cassette

Training Courses

The majority of the systems found on this vehicle are taught in GM's core curriculum from a conceptual theory and operation perspective. The North American technical training core curriculum structure is system based.

To access **all** of the available training courses in the United States, visit the following website:

www.centerlearning.com

In Canada, Go to **GM GlobalConnect** and select **Centre of Learning**

Training Course Name or System — Course Number and Description

Course Name or System	Course Number and Description
New Model Feature 2017 GMC Acadia New Model Features	#10317.40W — 2017 GMC Acadia New Model Features (U.S. and Can)
Engine Gasoline, 4 Cylinder L4, 2.5L, DI, DOHC, VVT, DCVCP — RPO LCV Gasoline, 6 Cylinder, V6, 3.6L, DI, DOHC, VVT — RPO LGX	#16440.17D-V — Engines: New and Updates for RPOs LCV, LTG, LL0 (United States Only) #16043.16H — Gen 2 Overhaul/Repair Certification (Canada Only)

Training Course Name or System — Course Number and Description (cont'd)

Course Name or System	Course Number and Description
	#16440.20D — Engines: New and Updates for RPOs LF4, LGX, LGW, L3A, LV7, LE2 and LWN (United States Only)
<p align="center">Transmission</p> <p>HydraMatic™ 6T50, 6T70 6-Speed Automatic Transmissions — RPO M2D, M7U and M7W</p>	<p>#17440.12D — Transmissions New & Updates: HydraMatic 6T40/45 (U.S. only)</p> <p>#17440.13D-R2 — Transmissions New & Updates: 6T70/6T75, 6L50/6L80/6L90, 4L60/4L70 (U.S. only)</p> <p>#17036.16H – 6T70 Transmission Overhaul & Service (Can only)</p> <p>#17036.01V – 6T40/45 Unit Repair (Can only)</p>
<p>Safety Systems Forward Collision Alert / Lane Departure Warning and Rear Vision Camera</p>	#22048.42W1-W3 GM Safety Systems 1-3 (United States and Canada)

Version Information

Version	1
Modified	—

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