



Service Bulletin

Bulletin No.: 23-NA-010

Date: February, 2023

INFORMATION

Subject: 2023 Chevrolet Colorado and GMC Canyon New Model Features

Brand:	Model:	Model Year:		VIN:		Engine:	Transmission:
		from	to	from	to		
Chevrolet	Colorado	2023	2023				
GMC	Canyon						

Involved Region or Country	
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Overview

Important: Service agents must comply with all International, Federal, State, Provincial, and/or Local laws applicable to the activities it performs under this bulletin, including but not limited to handling, deploying, preparing, classifying, packaging, marking, labeling, and shipping dangerous goods. In the event of a conflict between the procedures set forth in this bulletin and the laws that apply to your dealership, you must follow those applicable laws.



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GMC Canyon Features



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- All Canyons are Short Bed Crew Cabs (22MY 80%+)
- 2WD Only Offered on Elevation – Stronger 4WD Mix
- Elevation Standard Trim Removed

This purpose of this bulletin is to introduce the redesigned 2023 Chevrolet Colorado and GMC Canyon. The bulletin will help the Service Department Personnel become familiar with the engines, transmission, brake system and some of the other vehicle systems.



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- Standard LED Lighting Across the Lineup
- Completely Re-Designed Front End & Grille
- New Hood Design Optimized for Driver Visibility
- Standard Off-Road Cut-Outs & No Air Dam
- Much Stronger Approach Angle, Ground Clearance



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- 11.3" Center Touchscreen Standard on all Models
- Up to 10 Available Camera Views Including First-In-Class Front and Rear Underbody

Chevrolet Colorado Features



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- High Clearance Bumper & Wide, Pronounced Fenders
- First Time Offering Sunroof
- Standard ALL TERRAIN TIRES, 33" MT ON AT4X
- NEW 2.7L TURBO HIGH-OUTPUT ENGINE



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- Class-leading 10 camera views including class-exclusive underbody camera
- Class-leading 11.3" standard center touchscreen & fully digital instrument cluster
- Suite of Trailering & Off-Road Apps
- Powerful and durable 2.7L Turbo Engine
- New 8-speed Transmission
- Four distinct interiors with unique colorways and executions



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- Rugged and sporty exterior design with ingenious new bed functionality built-in
- More leveled stance in body lines and trim
- Proud hood profile, high grille, and slim lamps for a strong look
- 3 distinct chassis setups
- Designed for up to 33" OD tires



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- Class-leading standard 11.3" center touchscreen
- Segment-first fully digital instrument cluster
- Segment-first electronic parking brake
- Piano key toggle switch bank
- Friction hinge on center console armrest ensures armrest will stay open at any angle while customers retrieve items from storage area below

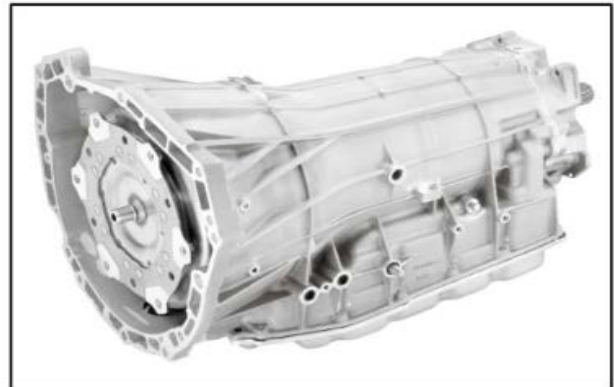
Engine

- Good / Better / Best approach provides large bandwidth within one engine family
- Enhanced smoothness and sound management
- High-Output variant offers 430 lb.-ft. of torque, projected to be best in class gas torque rating
- Lower mass than outgoing 3.6L V6 but more horsepower
- Active thermal management with Electric water pump keeps engine structure and turbo cool even in the most extreme conditions

	Horsepower	Torque	Max Towing (LBS)
2.7L Turbo	237		3,500
2.7L Turbo Plus	310	391 LB-FT	7,700
2.7L Turbo High-Output	310	430 LB-FT	7,700 (6,000 LBS on ZR2)

Transmission

Overview



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The 2023 Chevrolet Colorado and GMC Canyon offer two transmissions.

- 8L45 (N8R) eight-speed automatic transmission
- 8L80 (MFC) eight-speed automatic transmission

8L45/8L80 (N8R/MFC) Automatic Transmission

The 8L45/8L80 (N8R/MFC) operates with a combination of mechanical and electrical components. The electrical components are in the lower part of the valve body assembly. The mechanical components are a torque converter, planetary gear set, pump, clutches, and bands.

The mechanical components of the 8L45/8L80 (N8R/MFC) transmission are as follows:

- Torque converter with an electronically controlled capacity clutch
- Binary vane-type fluid pump assembly
- 1-5-6-7 clutch assembly
- 2-3-4-6-8 and 4-5-6-7-8 reverse clutch assembly
- Direct/overdrive internal gear assembly
- Direct/overdrive carrier assembly
- Input internal gear assembly
- Input carrier assembly
- Input sun gear assembly
- Reaction internal gear and 1-2-3-4-5 reverse hub assembly
- Reaction carrier assembly with output internal gear assembly
- Output carrier assembly
- Output shaft

The electrical components are part of the valve body assembly. Control valve body assembly component are as follows:

- Input and output speed sensor assembly
- Manual shift shaft position switch
- Control solenoid valve body assembly, which contains the following components:
 - Eight transmission control solenoids
 - TCC control solenoid
 - Default control solenoid
 - 1–2–3–4–5 reverse boost solenoid

Internal Mode Switch

The internal mode switch contains six separate switches in one assembly. One mechanical switch circuit is for the PARK/NEUTRAL position switch, which is used for engine starting. The other five electronic switches are called the transmission range switches and are used to indicate the gear position that the vehicle operator has selected. The internal mode switch assembly is mounted on the interior left side of the transmission case.

The PARK/NEUTRAL position switch indicates to the ECM whether the vehicle is in PARK/NEUTRAL or in a drive gear range. With the ignition ON, the ECM provides 12 volts on the PARK/NEUTRAL signal circuit to the PARK/NEUTRAL position switch. A separate ground wire from the PARK/NEUTRAL position switch to the chassis ground completes the circuit.

When the gear shift lever is in PARK or NEUTRAL, the switch closes and drops the voltage on the signal circuit to zero volts. In this state, the engine will start and run.

In REVERSE or DRIVE range, the PARK/NEUTRAL position switch opens; 12 volts are then present on the signal circuit, which will inhibit engine starting.

The internal mode switch indicates to the Transmission Control Module (TCM), which gear position the vehicle operator has selected. The internal mode switch has five separate Hall-effect switches. Each switch is supplied with a 9-volt reference circuit, and a signal circuit from the TCM.

Binary Pump

The vane-type binary pump design with a fixed displacement incorporates two inlet ports and two discharge ports. The output from a fixed displacement pump varies depending upon the speed of the turning pump. A binary pump may use the output from either one or both discharge ports.

At low speeds, both ports supply pressurized fluid to the transmission to meet demand. Higher speeds require a lower displacement, and only one discharge port supplies pressurized fluid. The fluid from the other discharge port recirculates to the suction side. This reduces the losses in the system and improves the overall efficiency of the transmission. Binary pumps also respond more quickly to a reduction in engine speed.

Stand Alone Transmission Control Module

The TCM for the 8L45/8L80 (N8R/MFC) transmission is a stand-alone controller mounted to the vehicle. The TCM has one 66-way connector to interface with the vehicle's electrical system, transmission assembly, and other vehicle control modules. The TCM sends and receives various input and output signals from several switches and sensors that are internal and external to the transmission. The TCM is part of a network of other control modules on the vehicle. The network of control modules share information with one another over a common serial data communications line.

Based on the calibrations and input information, the TCM will always have final authority of when to allow an upshift or downshift, whether in Manual mode operation or in the DRIVE position for automatic shifting.

Shift Lock Control System

If equipped, the automatic transmission shift lock control system is a safety device that prevents an inadvertent shift out of PARK. The driver must press the brake pedal before moving the PARK lever out of the PARK position. The system consists of the following components:

- Automatic transmission park lock solenoid
- BCM
- ECM

The BCM controls the voltage to the park lock control solenoid through a dedicated circuit. The following conditions must be met before the BCM supplies voltage to the park lock solenoid:

- Ignition is in the ON position
- ECM sends an input via serial data to the BCM, indicating that the transmission is in the PARK position
- BCM receives input from the brake pedal position switch to determine when the brake pedal is applied

Because the park lock control solenoid is permanently grounded, the BCM supplies voltage to the automatic transmission park lock control solenoid, unlocking the park lever and allowing the driver to move the park lever out of the PARK position as the solenoid energizes. When the brake pedal is not applied, the BCM turns the control voltage output of the park lock control solenoid OFF, de-energizing the park lock control solenoid. The de-energized solenoid mechanically locks the park lever in the PARK position.

Driveline

The 2023 Chevrolet Colorado and GMC Canyon driveline uses a Rear-Wheel Drive (RWD) configuration with a longitudinally mounted engine and transmission. In Four-Wheel Drive (4WD) vehicles, a transfer case directs power to the front and rear axles or to the rear axle only, depending on driver selection. Two-Wheel Drive (2WD) vehicles do not use a transfer case. In 2WD vehicles, power transfers directly from the transmission to the rear axle to propel the vehicle.

Two-Speed Automatic Transfer Case

The 3025 (NQH) transfer case is a two-speed, automatic, active transfer case. A four-mode shift control switch is located on the center console. The switch provides the driver with an Auto 4WD position and three manual mode/range positions:

- Auto 4WD
- 4HI – 4WD high range
- 4LO – 4WD low range, 2.72:1 gear ratio reduction
- 2HI – 2WD high range

To command a shift, the driver turns the switch to the new desired range. The actual 4x4 shift request is only made after the button is released. The transfer case mode is always displayed in the instrument cluster.

The driver may use any of the mode/range positions while driving the vehicle. However, the transfer case will not allow a shift into or out of 4LO unless the following criteria have been met:

- The ignition switch is in RUN.
- The automatic transmission is in NEUTRAL.
- The vehicle speed is below 5 km/h (3 MPH).

Auto 4WD

The Auto 4WD position allows the capability of an active transfer case, which provides the benefits of an on-demand torque biasing wet clutch and easy vehicle tuning through software calibrations.

In Auto 4WD mode, the Transfer Case Shift Control Module monitors rear wheel slip speed based on the inputs from the wheel speed sensors and/or the vehicle speed sensor. When the vehicle experiences a rear wheel slip condition, the Transfer Case Shift Control Module sends a Pulse-Width Modulated (PWM) signal to an electronic motor, which rotates the transfer case control actuator shaft, thus applying a clutch. The clutch is designed to deliver a variable amount of torque, which is normally delivered to the rear wheels, and transfers it to the front wheels. Torque to the front wheels increases until the front wheel speed sensor matches that of the rear wheel speed sensors and/or the vehicle speed sensor. Torque to the front wheels is then decreased. The process repeats if rear wheel slip is detected again.

One-Speed Automatic Transfer Case

The 3015 (NPO) transfer case is a one-speed automatic, active transfer case that provides two modes: Auto 4WD and 2HI. When the ignition is in the RUN or propulsion modes, the Transfer Case Shift Control Module monitors the transfer case shift control switch to determine if the driver desires a new mode position. At a turn of the transfer case shift control switch, the lamp of the new desired position begins flashing to inform the driver that the Transfer Case Shift Control Module has received the request for a new mode position. The lamp continues to flash until all shifting criteria have been met and the new mode position has engaged. When the mode position is fully active, the switch indicator lamp for the new position remains ON.

During normal driving situations, the transfer case can operate in the Auto 4WD mode. In the Auto 4WD mode, the Transfer Case Shift Control Module monitors rear wheel slip speed based on the inputs from the wheel speed sensors and/or vehicle speed sensor. When the vehicle experiences a rear wheel slip condition, the Transfer Case Shift Control Module sends a PWM signal to the transfer case 2WD or 4WD actuator assembly. This actuator rotates the transfer case control actuator shaft, which applies the clutch, delivering a variable amount of torque to the front wheels. Torque increases to the front wheels until the front wheel speed sensor values equal that of the rear wheel speed sensors and/or vehicle speed sensor.

The MP 3015 TC transfer case has the added feature of also providing the driver with a manual mode position, 2HI – 2WD HI.

Front Axle Electronic Locking Differential

The electronic locking differential functions as an open differential when not engaged while providing the capability to fully lock the differential based on driver request and vehicle engagement conditions. Locking of the front differential provides 100% of the available torque to both ends of the axle, forcing the left and right wheels to rotate at the same speed. For the front axle differential lock actuator to energize, the vehicle must be operating under the following conditions:

- The transfer case 4LO range is engaged
- The rear axle differential lock is engaged
- Hill Descent Control is not active

The Normal/Off-road mode switch provides an input to the Body Control Module (BCM), which sends the selected vehicle mode to the Integrated Chassis Control Module through the high speed GMLAN. The Integrated Chassis Control Module uses this message to determine front locker engagement/disengagement based upon vehicle speed:

- Normal/Off-road mode engagement is allowed if the vehicle speed is less than 30 km/h (19 MPH).

In addition to engagement/disengagement of the differentials, the mode switch signal is used to disable functions of the Antilock Braking System (ABS) and Electronic Stability Control (ESC) when the front axle is locked in Normal mode.

The momentary Front Lock switch provides an Integrated Chassis Control Module input to energize the front axle differential lock high control and low control relays. The relays provide power to energize an electromagnetic actuator within the front differential. As the electromagnet is energized, torque is created on a drag plate, which actuates a ramping mechanism. The ramping mechanism translates this rotational force into the axial motion of a locking mechanism. The locking mechanism engages the differential side gear, which locks side gear rotation to the differential housing, providing a fully locked differential.

The Integrated Chassis Control Module uses wheel speed sensor signals from the Electronic Brake Control Module (EBCM) and a steering angle sensor signal from the Power Steering Control Module to determine if the axle is locked. The Integrated Chassis Control Module will illuminate the front axle lock switch indicator and send a Front Axle Locked indicator request to the BCM. The BCM then transfers this message request to the instrument panel cluster to display a front axle locked state on the Off-road screen on the driver information center.

The front axle will remain in the locked position until one of the following events occurs:

- There is a driver request to disengage
- The rear axle differential lock is disengaged
- Vehicle speed is greater than 40 km/h (25 MPH) in Normal mode
- Vehicle speed is greater than 56 km/h (35 MPH) in Off-road mode
- The transfer case is shifted into 4HI
- There is an ABS or ESC event in Off-road mode and vehicle speed is greater than 40 km/h (25 MPH)

When the locking differential is deactivated, the Integrated Chassis Control Module will de-energize the front axle differential lock high control and low control relays. With the electromagnetic actuator deenergized, a series of return springs within the differential lock assembly forces the locking mechanism to disengage and the differential again operates as a fully open differential.

Rear Axle

Rear axles for this vehicle consist of the following primary components:

- Axle Shaft – Left
- Axle Shaft – Right
- Differential
- Differential Drive Pinion Gear
- Differential Drive Ring Gear
- Rear Axle Housing

The rear axle is a semi-floating axle. The semi-floating axle has C-clips inside the differential that retain the axle shafts into the axle housing and differential. The rear axle can be identified by the stamping on the right-side axle tube. The rear axle may also be identified by the ring gear size. The ring gear sizes include 218 - 241mm (8.60-, 9.50 in), and 247mm (9.76-in) axles. The rear axle differential can be an open differential or limited slip/locking differential.

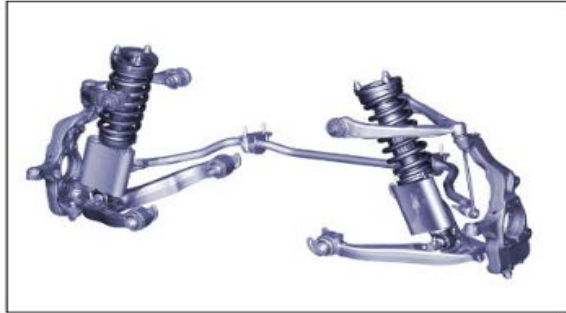
Suspension

The 2023 Chevrolet Colorado and GMC Canyon have a fully independent coil-over-shock front suspension with a stabilizer bar to enhance vehicle stability. The corrosion-resistant, two-stage, rear leaf springs are tuned for noise reduction. An available continuously dampening suspension control system enhances vehicle ride by controlling suspension damping forces at each corner of the vehicle. The suspension control system has an interactive driver control system that offers five selectable modes of operation.

The 2023 Canyon comes standard with an off-road suspension package featuring an ultra-wide track and 51 mm (2 in) factory lift for Elevation, AT4 and Denali trims have a standard 76 mm (3 in) factory lift on AT4X. The AT4X has also has the latest Multimatic DSSV dampers.

The Colorado Trail Boss features a 52 mm (2 in) lifted suspension and wide chassis that produce more ground clearance and a 3-inch wider front track than WT and LT models for enhanced off-road driving capability. The ZR2 incorporates a high-performance, 76, (3 in) lifted suspension and upgraded Multimatic DSSV dampers.

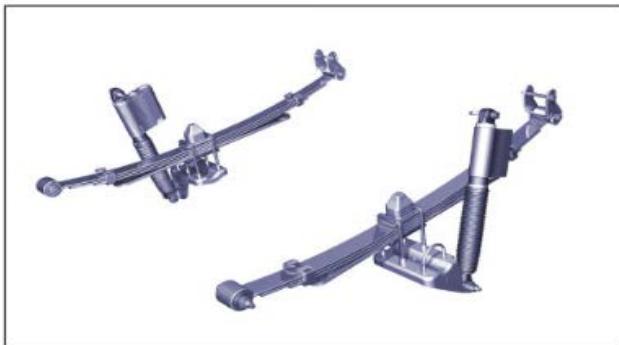
Front Suspension



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The independent suspension design of the front suspension enables each wheel to compensate for uneven road surfaces without affecting the opposing wheel. Each front wheel connects to the frame with steering knuckles, ball joint assemblies, and upper and lower control arms. This design allows each front wheel to compensate for changes in the road surface without affecting the opposite wheel.

Rear Suspension



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The rear suspension has a solid axle design that uses multi-leaf springs secured to the axle assembly with U-bolts. The forward end of the leaf springs is secured directly to the frame, while the rear of the springs is secured to the frame using a shackle with a bushing, which allows the spring to change position while it expands and contracts.

Driver Mode Control



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Driver Mode Control allows the driver to select different suspension, handling, and performance characteristics. If equipped, driver mode control may have the following modes:

- Normal
- Off-Road
- Tow/Haul
- Terrain
- Baja

Drive mode availability and affected vehicle subsystems are dependent upon vehicle trim level, region, and optional features.

All modes, except Normal mode, display a unique and persistent indicator on the instrument cluster when selected. When entering a mode, there is an information icon on the infotainment screen. Select the information icon to get more information and helpful hints on the selected mode.

Standard/Normal Mode

Standard/Normal Mode is the default mode for the vehicle and the mode used for normal city and highway driving. This is the setting the vehicle will default to every time it is started unless Tow/Haul mode has been activated within the last four hours.

Tow/Haul Mode

Use Tow/Haul Mode when hauling heavy loads for increased performance and vehicle control. Tow/Haul Mode adjusts the transmission shift pattern, steering, and Trailer Sway Control, if equipped.

If the vehicle is turned off while in Tow/Haul Mode and restarted within four hours, Tow/Haul Mode will remain active. Otherwise, the vehicle will start in Standard/Normal Mode.

If the vehicle has a diesel engine, exhaust braking is automatically activated when Tow/Haul Mode is selected. The system will command downshifts and use the turbocharger on the engine to reduce vehicle speed when the brake is applied. The normal tow/haul shift pattern will return when the vehicle is on a low grade or when the accelerator pedal is pressed.

Off-Road Mode

Off-road mode is for recreational driving to improve driving at moderate speeds on grass, gravel, dirt, unpaved roads, or deep snow. If equipped, this mode modifies:

- Steering
- Pedal Map
- Transmission Shift Points
- 4WD AUTO
- Antilock Brake System (ABS)
- Electronic Stability Control
- Traction Control System Performance

Terrain Mode

Use this mode when traveling on challenging road conditions at lower speeds, such as a two-track, difficult terrain, or rock crawling. This mode allows for one pedal driving which automatically applies the vehicle brakes when the accelerator pedal position is decreased. This can also be used for pulling a boat out of the water on a trailer.

Terrain mode functions when the vehicle is in 4HI or 4LO and in D (DRIVE), R (REVERSE), or L (LOW). When the vehicle is in L (LOW), the lower the gear, the more aggressive the braking.

The vehicle uses more aggressive braking calibrations for the above drive states when it is in 4HI compared to 4LO.

When in Terrain Mode, the vehicle shifts automatically, but holds a lower gear longer to maximize engine torque. This is done so vehicle momentum is not lost when driving up a hill. This mode modifies steering, pedal map, transmission shift points, Antilock Braking System (ABS), Electronic Suspension Control, and Traction Control System performance for better control at lower speeds and over rough terrain.

Baja Mode (ZR2)

Baja mode is for off-road recreational driving at higher speeds. This mode is designed for hard packed sand, dirt, and gravel surfaces that support high speed driving. Baja mode can be activated in all transfer case states.

Baja mode adjusts the steering, pedal map, four-wheel drive auto, transmission shift points, ABS, ESC, and TCS performance to maximize response at higher vehicle speeds. If enabled, the rear lockers will remain locked at all speeds.

Baja mode optimizes ABS performance to decrease stopping distances for deformable or loose surfaces. When entering Baja mode, a pop-up appears on the center infotainment screen to confirm that Baja mode can modify ESC. When you select Switch to Baja, Baja mode remains active and reduces ESC for optimal drive mode performance. When you select Cancel or nothing is chosen, the vehicle remains in Baja mode, but ESC will not change.

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