Service Bulletin

Bulletin No.: 21-NA-295
Date: December, 2021

INFORMATION

Subject: 2022 GMC HUMMER EV New Model Features

Brand:	Model:	Model Year:		VIN:		Engine:	Transmission / Drive Units:
		from	to	from	to		
GMC	HUMMER EV	2022	2022				**Front**: Fully Automatic, Front Wheel Drive Transaxle, Variable Speed 80F – RPO S8L with Electronic Locker and Park Lock Actuator **Rear**: Fully Automatic, Rear Wheel Drive, Variable Speed, 79R – RPO P79 with Electronic Torque Vectoring

Involved Region or Country	North America

Bulletin Purpose

The purpose of this bulletin is to help the Service and Sales Personnel become familiar with the all-new 2022 GMC HUMMER EV.

2022 GMC HUMMER EV Highlights

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The first-ever HUMMER EV is an all-electric supertruck that generates mind-blowing horsepower, torque and acceleration, while letting customers forge any path with its incredible off-road capability. All this is combined with the vastly reduced noise and zero emissions inherent in the operation of an EV.

HUMMER EV ups the capability ante with advanced, tactical off-road features that tackle tough terrain in very surprising ways. Extract Mode, for example, impressively raises the vehicle nearly 6 inches to get up and over obstacles, while CrabWalk as its name implies lets the truck mimic the diagonal movements of a crab by turning all four wheels in the same direction in unison. Camera technologies integrated throughout the vehicle provide up to 18 views including 2 underbody cameras to give customers a view of all the action.

This off-road beast is also superfast on the road with Watts to Freedom. This unique feature enables the peak horsepower and torque production that helps propel HUMMER EV from 0 mph to 60 mph in about 3 seconds. The brains behind all this brawn is an Ultium-powered propulsion system which is capable of quick, 800-volt DC fast charging at up to 350 kW, adding almost 100 GM-estimated miles in just 10 minutes to take the adventure further.

While off-roaders tend to be hands-on drivers, when on road, they can be hands off with the next generation of Super Cruise which is enhanced from the 21MY version. HUMMER EV will be the first GMC model to offer the feature. Super Cruise will deliver the convenience of hands-free driving under compatible conditions on more roads and, while trailering all made easier with the inclusion of automatic lane changing capability.

Inside, HUMMER EV creatively fuses luxury, technology, and capability for a customer experience that's truly unmatched. The Infinity Roof with Modular Sky Panels is powerful proof. It offers a totally immersive experience that puts drivers in the middle of every moment, with four roof panels and a front I-bar that can be easily removed to let in the world.

The 2022 HUMMER EV comes fully loaded in a special Edition 1 package. The truck consists of a huge list of standard Driver's Assistance Technologies such as Super Cruise, Adaptive Cruise, IntelliBeam Headlights, Forward Collision Alert, Following Distance Indicator, Front and Rear Park Assist, Enhanced Automatic Parking Assist, HD Surround Vision, Enhanced Automatic Emergency Braking, Front Pedestrian Alert, Reverse Automatic Braking, Lane Keep Assist with Lane Departure, Lane Change Alert with Side Blind Zone Alert, Rear Cross Traffic Alert, Reverse Automatic Braking, Rear Camera Mirror, Safety Alert Seat, Traffic Sign Recognition, and Trailer Side Blind Zone Alert. There are many more options that will be covered later in the bulletin.

Flat Floor — Flat Underbody on GM's All New Modular Architecture

The architecture represents the third major generation of GM's dedicated electric propulsion technology. However, unlike the previous generations, this new architecture is not a specific vehicle platform. Rather it's a global platform that's flexible enough to build a wide range of trucks, SUVs, crossovers, cars and commercial vehicles.

Because HUMMER EV's architecture and Ultium batteries were simultaneously engineered, its propulsion system cleverly doubles as part of the vehicle's structure. Large-scale, high-energy Ultium battery cells are the system's key building blocks. They're stacked vertically and mounted beneath the passenger compartment for optimized weight distribution and a lower center of gravity, which helps improve overall handling.

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The battery cells are housed within modules. The modules are contained within battery pack enclosures that have stiffening ribs to increase torsional rigidity. Added torsional rigidity allows for more suspension travel, needed when tackling tough off-road terrains.

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Two high-strength structural shear plates connect the battery pack lower enclosure to the front and rear suspension cradles for added strength and stiffness.

The shear plates are essentially structural lattice shells that enclose the battery and connect the front and rear chassis. For HUMMER EV, the shear plates work together to provide all-around protection for the battery pack modules.

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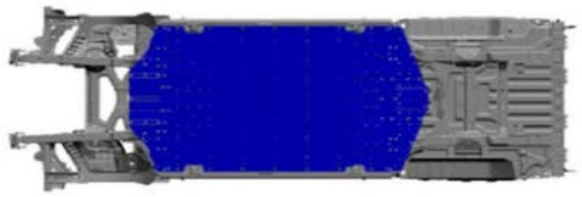

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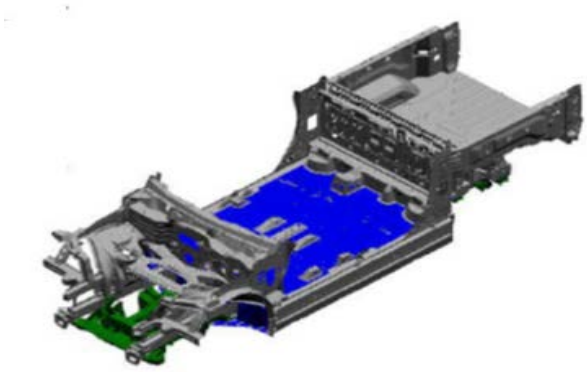

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The lower shear plate (upper left) acts as an aerodynamic underbody panel, while the upper shear plate enables a smooth, continuous floor panel for an uninterrupted passenger compartment space.

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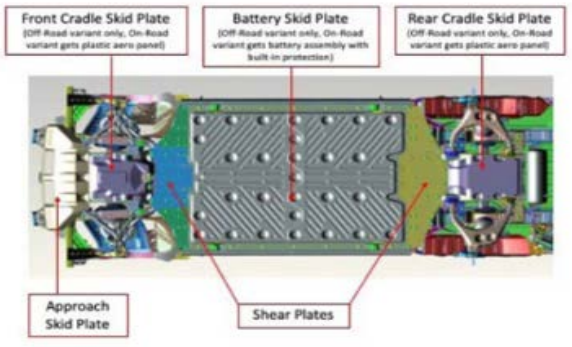

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HUMMER EV off-road variants add an underbody skid plate to the area of the battery tray not already covered by the shear plates. They'll also have a skid plate on the front and rear cradle for added protection against gravel, dirt and other loose items that can be drummed up when driving through off-road environments. All models will have an approach skid plate.

Propulsion

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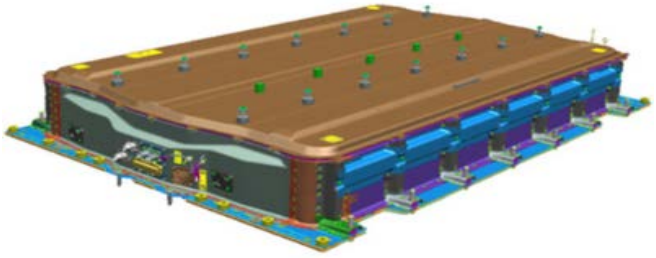

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HUMMER EV is underpinned by GM's all-new Ultium battery system, which combines a proprietary new cell chemistry, smart modules with wireless Battery Management Systems and advanced thermal management.

Two layers of battery cell modules combine to produce a pack with up to 200 kWh of available energy. The pack utilizes a flexible, high-voltage architecture that enables 800-volt DC fast charging, the quickest form of charging. For HUMMER EV, it can put range back into

the vehicle at a rate of almost 100 GM-estimated miles in 10 minutes, which means more time on the road instead of at a charging station.

The battery system, in tandem with 3 propulsion motors on the initial model, offer customers up to 1,000 horsepower and an impressive 11,500 lb.-ft. of torque. It's even more remarkable considering HUMMER EV is a full-size truck.

Designed in-house, the drive units were engineered to enable a high-travel suspension required for off-roading and torque vectoring, a technology that can vary the torque to each wheel for improved handling and stability. Packaging requirements, such as the need to accommodate the frunk, also drove design.

The truck is also loaded with smart propulsion features like Regen on Demand and One-Pedal Driving, which give customers ultimate control over the electric drive experience. Plus, BEV Heat, an innovative heat pump thermal system, allows for energy to transfer between the battery/power electronics and the cabin, using every watt possible to maximize range while improving cabin comfort. Responsiveness and performance typically associated with high-performance coupes, combined with superior off-road capability and loads of features, will give drivers confidence to go anywhere, no matter the terrain."

Propulsion – A Deeper Dive Into Ultium

Two layers of battery cells modules combine to produce a pack with up to 200kWh of available energy.

The Ultium cell is a NCMA (Nickel, Cobalt, Manganese, and Aluminum) type chemistry with majority of the cell comprised of Nickel. These cells are configured in 3 parallel strings of 8. The cell groups are electrically joined in series to form the Cell Module Assembly (CMA) also known as a high voltage battery section. The pack contains 24 CMAs, each CMA is identical, although uniquely serialized, and contains a non-serviceable Hybrid/EV Battery Interface Control Module with wireless transmitter/receiver.

Each K112 Hybrid/EV Battery Interface Control Module monitors the temperature, current and voltage of its respective cell groups. Each K112 Hybrid/EV Battery Interface Control Module is also responsible for balancing the voltage of each cell group via internal resistance circuits. Each K112 Hybrid/EV Battery Interface Control Module communicates wireless with the K291 Hybrid Electric Vehicle Battery Pack Communication Module which is also located within the battery pack. The K291 Hybrid Electric Vehicle Battery Pack Communication Module in turn communicates with the vehicle mounted K16A Battery Energy Control Module (BECM) via wired communication circuits. The K16A BECM is the host controller for all battery diagnostics and system status.

The hybrid/EV battery pack is assembled in two layers. The CMAs in each layer are configured in series, essentially operating like two battery packs in one assembly. The total voltage per layer is about 400V. Under normal operating conditions these two layers operate electrically in parallel with each other. If conditions allow, the high voltage contactors can be configured such that each layer is wired in series to facilitate 800V charging. The vehicle utilizes two battery energy control modules. The primary K16A BECM controls and monitors most battery pack operation. The secondary K16B Battery Energy Control Module 2 (BECM 2) controls the series charging contactors and performs additional support functions.

Propulsion – A Deeper Dive Into Drive Units

The front Drive Unit (Single Motor RPO: S8L) is capable of 270kW. The rear Drive Unit (Dual Motor RPO: P79) is capable of 492kW peak output.

The front Drive Unit has a fixed gear ratio of 13:3:1 and the rear Drive Unit motors work independently of each other with a fixed gear ratio of 10:5:1. All three drive motors are identical, each producing roughly 380 lb.-ft. of torque. Full torque is available from just above zero vehicle speed to roughly 35 mph. When multiplied through front and rear Drive Unit gear ratios, this combines to more than 11,500 lb. – ft. of torque available at the wheels, which represents the true capability of the propulsion system.

Propulsion – A Deeper Dive Into Vehicle Charging

Level 1: 120 Volt, 8-12 Amps is capable of charging approximately 1.4 - 2.1 miles per hour of charge.

The dual-mode drive motor battery charger cable provided with the vehicle features a standard household alternating current (AC) electrical plug on one end and a plug designed to interface with the vehicle's hybrid/EV battery charger receptacle on the other end. The dual-mode drive motor battery charger cable features a charge current interrupt device with AC power and fault indicators. Two types of household electrical plugs are included. One will interface with a standard 120V receptacle for level 1 charging. The other will interface with a 220–240V receptacle for level 2 charging.

Level 2: 240 Volt / 11.5kW / 32-48 Amps is capable of charging approximately 11.5-17 miles per hour of charge.

An optional level 2 home charge station is available for customers who want to reduce the amount of time needed to recharge. The optional charge station connects only to a 220–240V power supply and typically is permanently mounted at the customer's location. The optional charge station features the same plug on the vehicle end as the drive motor battery charger cable. Level 1 and level 2 AC charge current is converted by the on-vehicle T18 Battery Charger Module to direct current (DC) to charge the hybrid/EV battery pack

Level 3: Up to 800V / 350kW capable of charging 100 miles in 10 minutes (Peak). Up to 173 miles in 20 minutes and up to 238 miles in 30 minutes.

Level 3 direct current (DC) fast charge allows charging using DC current supplied directly to the drive motor battery, bypassing the on-vehicle battery charging. Level 3 chargers are typically only found in a

commercial/public location as they are cost-prohibitive for individual vehicle owners. Level 3 charging includes a locking device on the receptacle to prevent removal while large amounts of current is flowing. The hybrid/EV battery pack is assembled with two layers of cell module assemblies, essentially operating like two 400V DC battery packs in one assembly. Under normal operating conditions these two layers operate electrically in parallel with each other and charge at 400V. If conditions allow, the high voltage contactors can be configured such that each layer is wired in series to facilitate level 3 charging at 800V.

Propulsion – Power Electronics & Additional Information

Accessory DC Power Control Module

The 14 V power module, also called the accessory DC power control module, is sub-component contained within the T18 Battery Charger module which is bolted to the front-top of the rear drive motor(s) mounting structure. The 14V power module is an electronic device that takes the place of the generator on a traditional vehicle. On a hybrid or electric vehicle, the 14V power module converts high voltage (400 V) direct current (DC) to low voltage (12V-15.5V) DC for accessory electrical operation, and to charge the 12V battery.

Drive Motor Power Inverter Module(s)

The Drive Motor Control Module, often referred to as the Drive Motor Generator Power Inverter Module, converts high voltage direct current (DC) electrical energy to 3 phase alternating current (AC) electrical energy. The Drive Motor Control Module operates the Drive Motor based upon hybrid/EV powertrain control module commands. The vehicle contains more than one Drive Motor Control Module. The Drive Motor Control Module is located on the top of front transmission. The Drive Motor Control Module 2 is located on the top of right-side rear transmission (right side is a dual motor option), and the Drive Motor Control Module 3 is located on the top of the left side rear transmission.

Battery Energy Control Module(s)

The vehicle utilizes two Battery Energy Control Modules. The primary BECM controls and monitors most battery pack operation. The secondary Battery Energy Control Module 2 (BECM 2) controls the series charging contactors and performs additional support functions.

Hybrid/Electric Vehicle Battery Interface Control Module

There is 24 CMAs as mentioned above. Each CMA contains a Hybrid/EV Battery Interface Control Module Each Hybrid/EV Battery Interface Control monitors the temperature, current and voltage of its respective cell groups. Each Hybrid/EV Battery Interface Control Module is also responsible for balancing the voltage of each cell group via internal resistance circuits. Each Hybrid/EV Battery Interface Control Module communicates wireless with the Hybrid Electric Vehicle Battery Pack Communication Module which is also located within the battery pack.

Hybrid/Electric Vehicle Battery Pack Communication Module

The Hybrid Electric Vehicle Battery Pack Communication Module communicates with the vehicle mounted Battery Energy Control Module (BECM) via wired communication circuits. The BECM is the host controller for all battery diagnostics and system status.

Battery Charger

The Battery Charger, also known as the Drive Motor Power Distribution Control Module, contains several micro-processors, two separate high voltage (HV) chargers, serviceable high voltage fuses and a 14V Power Module. One of the internal high voltage chargers is used while charging with a 120V AC charge source, and both are used with a 230/240V AC charge source. The Battery Charger is mounted in the rear of the vehicle, above the electric drive transmission.

IPE (Integrated Power Electronics)

One key strategy for this next generation Electric Propulsion Architecture was to integrate components together where it made sense. This saves cost, mass, assembly, and inventory management effort. The IPE is a perfect example of our efforts to integrate Power Electronics. We have combined the Accessory DC Power Control Module and Battery Charger into one assembly. On the Bolt EV these were two separate pieces of hardware. Further, we have two voltage ranges of IPE to flex across all the HV Battery variants that we use in the Ultium system. The IPE is located on the rear cradle in front of the Rear Drive Unit. Cradle removal required to service.

Electronic Drive Units

FRONT: Front - S8L: 5831057

REAR: Rear - P79: 5832351

Note:

The Power Electronics utilized in this vehicle contain several modules which communicate together to provide vehicle propulsion. Due to the complexity of this system It is recommended to review our published training courses within Center of Learning and searching GMC Hummer EV. You can also view additional resources via Global Connect – Center of Learning – Focused Learning (Product) - GMC, Trucks, Hummer EV - Job Aids & Charging Station.

Infotainment System Overview w/ Google Built In

The all-new infotainment system is android based and brings to the customer integrated GM applications and services at the push of a button. For the full experience, customers must be ‘connected’ to enjoy Google Maps, which allows for a multi-screen integration between the vehicle’s cluster and radio display. Google Voice is another experience that the customer must be connected in order to use. This feature allows the

customer to have custom voice control for vehicle functions such as HVAC controls and vehicle health. If the customer does not have a connected package, they can still enjoy wireless projection through Android Auto or Apple CarPlay. The customer will, however, still be able to use the in-vehicle Off-Road App and in-vehicle Energy App without a service plan.

For a personalized experience in creating a new profile for the vehicle, it is recommended to use the Setup Wizard which will walk the customer through the steps of setting up the infotainment system and personalizing to the customer's liking. This will need to be completed while the customer is in PARK. Up to 7 user profiles can be stored in the vehicle, not including the guest profile.

It is optional if the customer wants to sign into their Google Account. If they choose to do so, this will bring additional personalization to the vehicle that is tied to certain apps that the customer may use, such as Google Calendar and certain Google Maps features. The customer's GM Account is a separate account from Google, and this will allow the customer to access other vehicle services such as myGMC or myChevrolet mobile app.

For more information, refer to Global Connect and navigate to the Dealer In-Vehicle Technology Library / Infotainment Systems, RPO Code: IOK. You will find many fact filled documents with information on the new GMC Google Built-In features.

Trim Level Overview

The HUMMER EV Edition 1 is fully equipped with all available options. Below is a summary of all standard and available features on the HUMMER EV Edition 1.

Mechanical Features

Electric Propulsion	CrabWalk
3-Motor e4WD	Automatic Vehicle Hold
+ Single Front DU	Adaptive 4-Corner Air Suspension
+ Dual Rear DU	Extract Mode (late availability)
+ ~1000 HP	Adaptive Ride Control
+ 11,500 lb ft of torque	4-wheel antilock disc brakes with blended regenerative capability
+ 0-60 mph in ~ 3.5 seconds	StabiliTrak electronic stability control system with Traction Control
11.5-kW onboard AC charging module	Front and rear tow hooks
800V DC fast charge (up to 350 kW)	Tire inflator kit
Electronic Precision Shift	Class 3 trailer hitch provisions
Drive Mode Control (My Mode, Normal, Off-Road, Terrain, and Tow/ Haul Mode)	Prograde Trailering System
One-Pedal Driving with selectable levels	Integrated trailer brake controller
Regen on Demand	+ Hitch Guidance with Hitch View
Electronic parking brake	
Keyless Open and Start	+ In-vehicle trailering app
Independent front and rear suspension	+ Indicator trailering information
Electric 4-Wheel Steering	

Interior Features

Synth-leather perforated front bucket seats	Infinity Roof with modular Sky Panels (opaque with 4 frunk storage bags and removable I-bar)
Synth-leather shifter	Decorative sill plates
12-way power front seats including 4-way lumbar	Full, removable rubber floor with carpet inserts (over vinyl flooring)
Heated/ventilated front seats	Front and second-row assist handles
Heated second-row outboard seats	12.3-inch diagonal digital Driver Information Center, reconfigurable
60/40 split-folding second-row seats	13.4-inch diagonal HD touchscreen center stack display
Memory settings (seats, mirrors, steering wheel)	SiriusXM Satellite Radio
Auto heated synth-leather steering wheel	4G LTE Wi-Fi Hotspot capable
Power tilt/telescoping steering column	Wireless Charging
Remote Start/scheduled preconditioning	Wireless Apple CarPlay and Android Auto capable
Universal Home Remote	Navigation powered by Google
Tri-zone automatic climate control	Bose 14-speaker audio system with Electric Vehicle Sound Enhancement
OnStar & GMC Connected Services	12V DC power outlet in console
Rear Seat Reminder	110V power outlet, 400w (rear of console)
Express-Down windows (front/ rear doors) with one-button all-down function	4 USB ports (2 front power/data, 2 rear power)
Power rear drop glass	Edition 1 badging

Exterior Features

MultiPro Tailgate (w/power release)	Deep-tinted rear, side glass
LED exterior lighting (headlamps with charge status, taillamps, DRLs)	Black upper body appearance
LED front signature lighting	Roof docks/accessory points (front, mid & rear for accessories & roof cross rails)
Approach/departure lighting	Antenna, black, roof-mounted shark fin
Rear charge port illuminated charge status	Power hood, lit frunk compartment with roof panel storage & 12V DC power outlet
110V power outlet, 400w – rear bed	Tonneau cover (vinyl roll-up)
Rainsense front wipers	Heated, power-folding outside mirrors with puddle lamps and auto-dimming driver mirror

Driver Assistance Technologies

Super Cruise (3 years for 22MY)	Reverse Automatic Braking
Adaptive Cruise Control	Lane Keep Assist with Lane Departure
IntelliBeam headlamps	Lane Change Alert with Side Blind Zone Alert
Forward Collision Alert	Rear Cross Traffic Braking
Following Distance Indicator	Rear Pedestrian Alert
Front and Rear Park Assist	Reverse Automatic Braking
Enhanced Automatic Parking Assist	Rear Camera Mirror
HD Surround Vision	Safety Alert Seat
Enhanced Automatic Emergency Braking	Traffic Sign Recognition
Front Pedestrian Braking	Trailer Side Blind Zone Alert

Extreme Off-Road Package

18-inch aluminum wheels with 35-inch MT tires	Rock sliders with steps
Underbody armor/skid plates (front drive unit, Ultium battery, rear drive unit)	Rubber flooring with rubber inserts
Front e-Locker and Virtual Rear Lockers	UltraVision Cameras with Front- and Rear-Facing Underbody Cameras (Includes Wash System)
Ball spline half shafts	

Service Technical College Technician Training Requirements

The HUMMER EV is an all new EV that is new to GMC Technicians. There are multiple system-based courses to provide general EV knowledge and skills. In addition, there are multiple HUMMER EV specific training courses. ALL courses MUST be completed before a technician is allowed to work on the HUMMER EV. The following pages highlight the coursework required:

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Additional Product Feature/Function Training Materials

The GMC Marketing and Sales team has created a number of educational and informative product training documents that reside on Global Connect. Please take some time and log into Global Connect and navigate to the Dealer In-Vehicle Technology Library / Electric Vehicles / GMC EV. In addition, there are more function and feature how-to document by navigating to “Center of Learning” / Product / GMC / Trucks / HUMMER EV / Job Aids or Charging Station. These informative product feature how-to guides will provide you in-depth knowledge on the all new HUMMER EV.

Available In-Vehicle Technology Feature Guides

GMC 4-Wheel Steer Feature Guide	GMC In-Vehicle Energy App Feature Guide
GMC 12-Inch Diagonal Reconfigurable Digital Drivers Information Center Guide	GMC Locking Differentials Feature Guide
GMC Air Down Mode Feature Guide	GMC Front Seat Video Player Feature Guide
GMC Crab Walk Feature Guide	GMC Off-Road Feature Guide
GMC DC Fast Charging Feature Guide	GMC One-Pedal Driving and Regen on Demand Feature Guide
GMC Driver Mode Control Feature Guide	GMC UltraVision Feature Guide
GMC eTrunk Feature Guide	Dual Level Charge Cord Feature Guide
GMC EV Charging Feature Guide	Infinity Roof with Modular Sky Panels Feature Guide
GMC Extract Mode Feature Guide	On-Screen Auxiliary Switches Feature Guide
GMC Google Built-In Feature Guide	Google Built-In FAQ
Google Play FAQ	GMC Watts To Freedom Guide

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