2014/15 Extended Range Electric Van

SUPPLEMENTAL OWNER MANUAL

Contents

INTRODUCTION

This supplement contains information specific to the unique components of the van. It does not explain everything you need to know about the van. Read this supplement along with the GM Owner's Manual to learn more about features and controls.

Reading and understanding this manual is very important in the safe operation of the Extended Range Electric Vehicle (eREV).

Information about your van can be located using the Table of Contents in the front of this manual. Find your topic of interest from the list and refer to the page number where it can be found.

Warnings, Cautions, and Notices

Warning messages found on van labels and in this manual describe hazards and what to do to avoid or reduce them.

Notice: This means there is something that could result in property or van damage. This would not be covered by the van's warranty.

The following labels may also be present:

WARNING: This indicates a hazard that could result in serious injury or death.

CAUTION: This indicates a hazard that could result in damage to components.

A circle with a slash through it is a safety symbol. It means *do not*, *do not do this*, or *do not let this happen*.

HIGH VOLTAGE SAFETY

WARNING: The Extended Range Electric van has a standard 12 volt battery and a high voltage battery. Only VIA Motors approved service technicians, with the proper knowledge and tools, should inspect, test, or replace the high voltage battery or any other high voltage component.

See a VIA Motors service provider if the high voltage battery needs service. The 12 volt battery cables, located in the engine compartment, are clearly labeled. In emergency situations, first responders can cut those cables, and the cables at the top of the low voltage fuse center, as indicated on the emergency personnel label on the top left side of the grille, to disable the high voltage battery system. All high voltage wiring is clad in orange conduit.

Operators of the van should not touch, cut or disconnect the orange colored high voltage cables under any circumstances The high voltage cables should only be handled by VIA Motors service technicians.

High Voltage in Event of an Accident

Airbag deployment, rollover, or high voltage isolation fault may shut off power to the drivetrain.

GENERAL SAFETY INFORMATION

WARNING: Always place the van in P (Park), and apply the parking brake before exiting the van. Never leave the ignition in the ON position without engaging park.

WARNING: Do not park over materials that can burn. This includes papers, leaves and dry grass.

WARNING: Other safety warnings are included in the GM Owner's Manual provided with the van. This supplement includes only warnings that pertain to the VIA specific components.

In The Event Of An Accident

If the high voltage battery becomes disabled after a crash, the system must be inspected by a VIA Motors approved service technician. Contact your closest VIA Motors service provider for repair.

Battery Replacement

There are two batteries in the van: The standard 12 volt battery and a high voltage battery. To replace the 12 volt battery, contact your GM dealer for the proper replacement. Only VIA Motors approved service technicians with the proper equipment and training should test, inspect or replace the high voltage battery.

Battery Service

WARNING: Do not attempt to service high voltage components on your van. Serious injury, death or van damage may result. Service and repair of high voltage components should be performed by VIA Motors approved service technicians with the proper equipment and training.

WARNING: Do not leave the van in neutral unattended while it is running.

If the shift lever is not fully in P (Park) with the parking brake firmly set, the van could move. Serious personal injury and damage to components can result.

If you must leave the van with the propulsion system on for any reason, first make sure the shift lever is in P (Park) and the parking brake is firmly set.

FACTORS AFFECTING PERFORMANCE

Adding Electronics to the Van

The Extended Range Electric van is designed to operate with the factory installed electronics. Adding or altering electrical parts or accessories may change the way the van operates.

Contact a VIA Motors service provider before adding any electrical or mechanical equipment. Failure to do so may cause your van to not perform properly. Any damage resulting from this action would not be covered by the van warranty.

Out of Fuel/Engine Unavailable

If an engine malfunction occurs or there is no fuel in the fuel tank, the van will operate in battery electric mode until the battery is depleted. Once the battery has reached less than 20%, acceleration response will be affected. Use caution and do not drive aggressively.

When the malfunction is corrected or the van is refueled, the engine will be available again for normal operation. You may notice the next time the ignition is turned ON, the van will perform a self-test and clear any malfunction messages that may have been displayed.

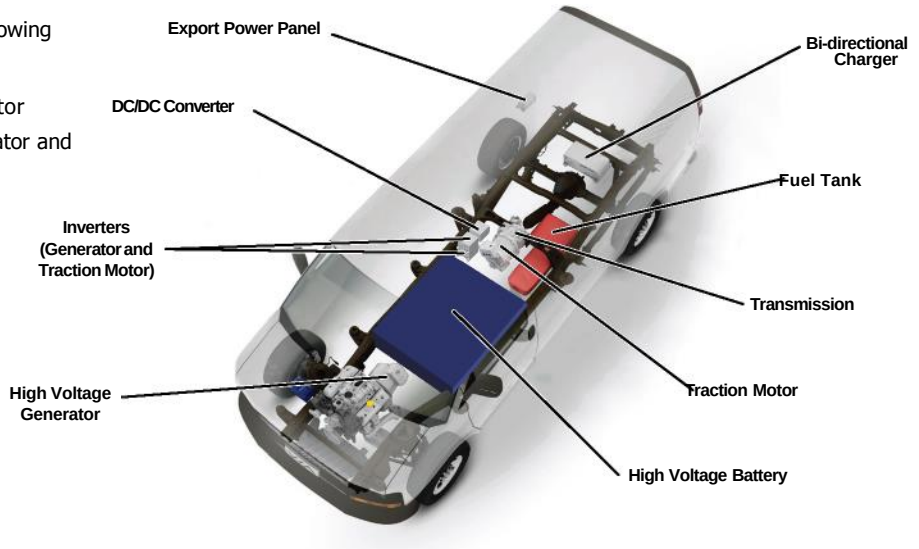
Cold Temperature Affects Battery Range

Cold temperatures of approximately 20ºF (-7ºC) will cause the high voltage battery to lose its charge faster. In the event of cold weather below 40°F (4.5°C), the van must be plugged in overnight. A temperature sensor will automatically activate a system warming cycle that will maintain the battery and other components at an acceptable level.

VEHICLE COMPONENTS

The van is comprised of the following major components:

- High Voltage Generator
- Two Inverters (generator and traction motor)
- DC/DC Converter
- Export Power Panel
- Bi-directional Charger
- Fuel Tank
- Transmission
- Traction Motor
- High Voltage Battery



WARNING LIGHTS , GAUGES, AND INDICATORS

All other instrument cluster features operate as described in the GM Owner's Manual.

Generator kW Gauge

The Generator kW gauge displays the output of the engine mounted high voltage generator. It also shows that high voltage output, during Export Power mode, is activated. The output will vary based on demand.

Malfunction Indicator

The malfunction indicator lamp illuminates (amber) when the van is placed in ON/RUN, as a bulb check to show it is working. If it does not, have the van serviced by your VIA Motors service provider. If the malfunction indicator lamp illuminates for more than 15 seconds on startup or while the engine is running, this indicates that the OBD II system has detected a problem and diagnosis and service might be required.

Power kW Gauge

The Power kW gauge has a dual purpose. It displays power usage on the blue scale and regenerative power (regen charging) on the green scale. While accelerating or driving the blue scale will display power usage. When coasting or braking the green scale will display regen power recovery. Early braking and light acceleration will result in the best battery and fuel usage.

System Overheating Indicator

This indicator illuminates or blinks (amber) when either the power electronics cooling system or the generator/ traction motor cooling system has an over-temperature condition. It only illuminates in extreme conditions. As a protective measure, performance may be reduced automatically. In the unlikely event the issue persists, it may be necessary to stop driving. The indicator also means the van should be serviced soon.

Battery % Gauge

The Battery % gauge indicates the remaining charge in the high voltage battery. When the EVSE is connected and charging is complete, the gauge should indicate 100%. As the van is driven in full electric mode, the percentage will reduce until the engine starts. At that point the engine mounted high voltage generator will supply output to maintain the high voltage battery at 20% SOC, and to operate the traction motor in order to propel the van.

Ready to Drive

The "Ready to Drive" indicator will illuminate (green) when the van is ready to drive. It is used while in the battery electric mode startup to indicate all necessary systems are functioning and the van is ready to drive. The indicator will illuminate as long as the van is active.

Note: If the vehicle state of charge indicates 90% after fully charging the vehicle the vapor canister requires purging. When the vehicle is powered up the engine/generator, (**A**uxiliary **P**ower **U**nit), will start and engage even though the state of charge is above 20%. The APU will continue to operate for approximately 15 to 30 minutes depending on driving conditions until the canister purge is complete. The system will then resume normal operation.

Note: Wait until the "Ready to Drive" light illuminates before driving.

Engaging reverse or drive before the light comes on may cause performance issues.

If the ready to drive light flashes and the vehicle is equipped with a export power panel the key has been left on in the panel and must be turned off and removed before the vehicle can be driven.

Note: The Operator is not permitted to transition directly from Drive mode into Charge or Export-Power modes without cycling the vehicle ignition key and waiting approximately 45 seconds.

EXPORT POWER PANEL (OPTIONAL)

The export power panel has two 240 volt outlets that are located behind a door at the right or left side of the van.

Locate the door, press in at the bottom, and release. This will allow access to the outlets. By unlocking the system using the power export barrel key provided with the van, two 30A 240VAC outlets (one 3 prong, one 4 prong) can be utilized. There is 14.4kW total available power between both connectors.

VIA approved splitters (A) allow two 120 volt connections from the 240 volt four pronged plug.

CAUTION: Using other than VIA approved splitters may cause personal injury or equipment damage. Use only VIA approved splitters.

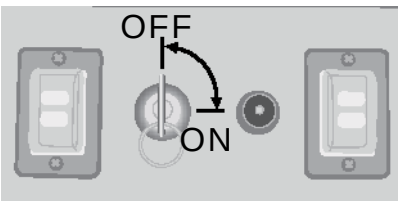
Export power may be used until the high voltage battery reaches a low level (around 22%). At that point a warning buzzer starts beeping slowly. At 19.5% the buzzer beeps faster. At 18.5% the buzzer beeps very fast and the export power will switch off at 18%. In order to continue, insert the van key into the ignition (not the power export panel key) and turn to the On/Run position. Make sure the gear selector is in P (Park) with the park brake set and the vehicle is in a well ventilated area. Start the engine to drive the high voltage generator. Export power will resume until the van runs low on fuel. Again, an alarm will sound and the van should be driven to a fuel source. After refueling, export power panel usage may be resumed.

240 Volt Circuit Breakers

If a circuit breaker is tripped, it will have to be reset. Before resetting the circuit, make sure that everything that was plugged into the export power panel is unplugged and turned off. Reset the circuit breaker, slowly plug everything back in, and turn it on. If the circuit breaker trips again after you begin plugging things in and turning them on, you know you have overloaded the circuit.

Key Switch

The export power panel features a barrel key lock that will help prevent unwanted use of the outlets. It is a two position switch, that can be removed in either the ON or OFF position. Wait at least 45 seconds after turning off the ignition before engaging export power. If the power panel is not in use, the key switch should be in the OFF position, and the key removed from the lock.



Display

The export power panel displays the following information:

APU = Internal combustion engine/generator OFF or ON

VIA export power = OFF or ON

Volts AC

Available Watts (W)

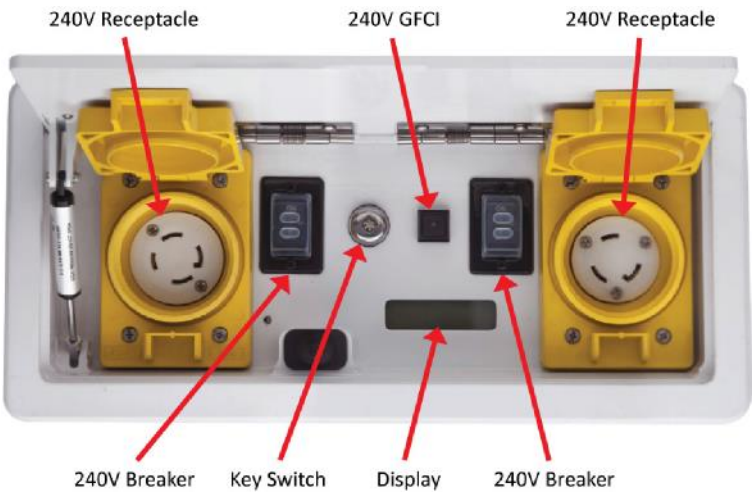
Export Power Safety

CAUTION: Make sure the van is in a well ventilated area before allowing the engine to start.

CAUTION: The export power key must be in the off position for the van to drive.

CAUTION: Remove tools and power tools and close cover before driving away.

Export Power Panel Component View



CLIMATE CONTROLS

The climate controls operate in the same manner as outlined in the GM Owner's Manual.

In battery electric mode, when the heater is selected, coolant is warmed by a high voltage inline heater to provide cabin heat and defrost. In extended range electric mode, engine generated heat assists in warming. The front heater control must be on in the heat position to enable rear heat on a passenger van.

The high voltage air conditioning compressor is electrically driven and operates in the same manner in both battery electric and extended range electric modes. Compressor operation may be heard during full electric operation as the compressor cycles on and off. This is a normal condition.

DRIVING INFORMATION

If the Van is Stuck

Slowly and cautiously spin the wheels to free the van when stuck in sand, mud, ice, or snow. If stuck too severely for the traction control system to free the van, turn the traction system off and use the rocking method. See Traction Control/Electronic Stability Control in the GM Owner's Manual.

WARNING: If the van's tires spin at a high speed, they can explode, and you or others could be injured. The van could also overheat or cause other damage.
Spin the wheels as little as possible and avoid going above 35 mph (56 km/h).

How to Rock the Van

CAUTION: Always depress the brake pedal when moving from **P** to **D** or **N**.

Turn the steering wheel left and right to clear the area around the front wheels. Turn off any traction control system. To prevent electric drive unit wear, wait until the wheels stop spinning before shifting gears. Shift back and forth between R (Reverse) and D (Drive), spinning the wheels as little as possible. Release the accelerator pedal while shifting, and press lightly on the accelerator pedal when the traction motor is engaged. Slowly spinning the wheels in the forward and reverse direction causes a rocking motion that could free the van. If that does not get the van out after a few tries, it may need to be towed.

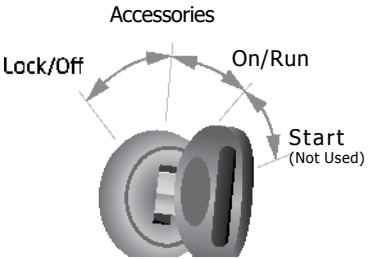
STARTING AND OPERATING

Ignition Positions

The ignition switch is turned forward with the gear selector in the P (Park) position to engage the system. In the battery electric mode the engine will not start, but auxiliary equipment may be heard. In the extended range electric mode (the high voltage battery is at 20%) the engine will start. In either mode the van performance is the same.

There are 4 positions on the ignition switch. The positions are as follows:

A. Stopping the engine/Lock/Off
B. Accessories
C. On/Run
D. Start (Not Used)



A. Stopping the engine/Lock/Off

When the van is stopped, turn the ignition switch to Lock/Off to deactivate the system.

B. Accessories

In this position, the radio, wipers and other accessories may be used without the drive system engaged.

C. On/Run

This position is used to activate the system.

D. Start

This position is not used.

Power Steering

Your van has an electric power steering pump. The power steering fluid should be checked and topped off at regular intervals. The system requires Texaco Havoline® PSF9109 transmission fluid. See the GM Owner's Manual on how to check the power steering fluid. If power steering assist is lost due to a system malfunction, the steering will still operate but may require increased effort.

See your VIA Motors service provider if diagnosis or repair is needed.

Starting the Van

To start the van:

Insert the key into the ignition switch at position **A** (Lock/Off), make sure the gear selector is in the **P** (Park) position.

Firmly press down on the brake, turn the ignition switch forward to position **C** (On/Run).

Wait for the "Ready to Drive" indicator to illuminate, then shift into the preferred **PRND21** selection and proceed.

Shifting the Van

P R N D 2 1

The Extended Range Electric van is powered by the traction motor. The gear selector on the steering column is actually a directional and park selection device. It functions as follows:

Park: The **P** or *park* position uses an electrically operated device, a parking pawl, that locks up the drivetrain to prevent movement while parked. This takes a small amount of time to engage and disengage. It should always be used in conjunction with the parking brake. *Park* will not engage if the van is moving. Care should be taken to allow engagement of park, before leaving the van. The 12 volt battery is needed to engage the park position. The ignition should be left in the on position and park engaged before turning the vehicle off and removing the key. If park (P) is not engaged within 300 seconds of turning the key to the off position the park pawl will not engage.

Reverse: The **R** or *reverse* selection will cause the van to back up. Make sure the van is completely stopped before making the next selection.

Neutral: The **N** or *neutral* selection will remove energy to the traction motor. The van may roll if left in this position.

Drive: The **D** or *drive* selection is the normal operating position. This will allow the van to go forward. You will not feel gear change as speed increases because the van is direct drive.

Position 2: This positions operates the same as **D** or *drive*.

Position 1: This position is a power assist function. The APU is enabled and provides additional power during low battery temperature/state of charge, large hill climb or other conditions where the power from the high voltage battery is insufficient to operate the vehicle at the requested level.

Drive **(D)** is the preferred position for normal operation.

Parking The Van

With the van at a complete stop, and your foot on the brake pedal, apply the parking brake, place the van in the **P** (Park) position on the gear selector, and turn the key towards you to position **A** (Lock/Off). Allow the electric park motor to engage. At this point the key may be removed.

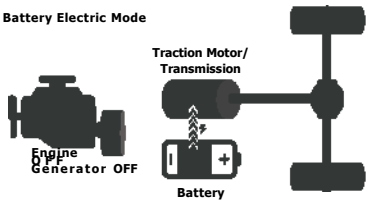
ELECTRIC VAN OPERATING MODES

The Extended Range Electric Van has two modes for driving.

- Battery Electric Mode
- Extended Range Electric Mode

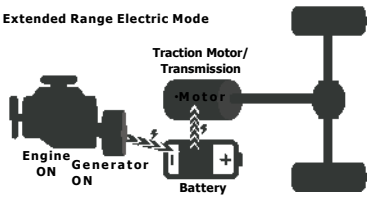
In both modes, the van is propelled by the traction motor. The traction motor uses electrical energy from the high voltage battery to drive the wheels. The level of performance when in battery electric mode is the same as extended range electric mode.

Battery Electric Mode



If the high voltage battery is fully charged, the van will operate using the high voltage battery for an initial period (approximately 35 miles (56 km)). The engine will not start until the battery reaches a low level (20%) state of charge (SOC). During this time, van operation is quiet, no fuel is used and no tailpipe emissions are produced.

Extended Range Electric Mode



When the battery charge falls to a low level, approximately 20% SOC, the van switches to extended range electric mode and the gasoline-powered internal combustion engine will start automatically. The sound of the engine may be heard during operation.

The engine is connected to a high voltage generator which produces electricity. The generator output supplies power to maintain the high voltage battery at a 20% SOC and to operate the traction motor.

Engine RPM does not correspond directly to van speed or acceleration.

Engine Can Start Automatically

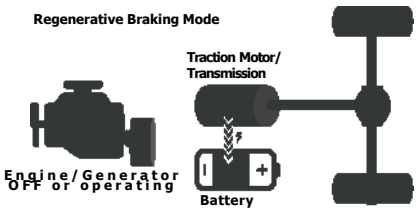
The inverter/controller module monitors van information to determine when the engine must run. When the van is turned on, the engine may start under any of the following conditions:

- High voltage battery has a low charge.
- High voltage battery temperature is out of acceptable range.
- Any time the key is on and the battery reaches 20%.

Vapor Canister Purge

If the van has been used in battery electric mode or used such that the engine has not started for 5 days, the engine will automatically come on after the battery is at or below 90% to purge the vapor canister. The engine will run for approximately 15 to 30 minutes depending on driving conditions to purge the canister then resume normal operation.

REGENERATIVE (REGEN) BRAKING MODE



Regenerative (Regen) braking enables the traction motor to operate as a generator when coasting or braking. This provides energy to recharge the high voltage battery. Regen will not occur if the ABS system is inoperative. Repair the ABS system if required.

Both the hydraulic brakes and drive motor provide braking. The braking system is computer controlled and blends the regenerative braking with the conventional hydraulic disc brakes to meet any requirements for deceleration.

Because the controller applies the hydraulic brakes through its high pressure accumulator, you may occasionally hear the motor driven pump when it recharges the system. This is normal.

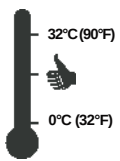
In the event of a controller problem, the brake pedal may be harder to push and the stopping distance may be longer.

CHARGING

Charge regularly for best performance

Regular charging of the high voltage battery is an important part of maintaining an extended range van. Charging not only ensures you can operate your van the next time you need it, regular charging will maximize the life of the high voltage battery. The high voltage battery may be charged using a charging station or either Level 1 or 2 Electric Vehicle Supply Equipment (EVSE) units.

The van should not be kept in extreme temperatures (below 0°C [32°F] and above 32°C [90°F]) for long periods without being plugged in or driven. This will also help maximize the life of the high voltage battery.



Extreme Weather Will Slow Charging and Reduce Battery Capacity

Extreme temperatures will affect the performance and charging of the high voltage battery in the following ways:

- The battery will take longer to reach a full charge
- The battery will lose its charge faster in cold weather

Long Periods Between Use May Require Additional Charging

If the van is not driven within several days of a charge, the battery will lose a portion of its charge. This is a normal condition. To ensure optimal driving range, keep the van connected to the EVSE when not in use.

Maximizing Energy Efficiency

Use the following tips to help achieve better energy efficiency and extend driving range:

- Any unnecessary fast acceleration and deceleration should be avoided.
- To achieve maximum electric range, drive the van at 50 mph (80 km/h) and below. Driving at higher speeds reduces energy efficiency and diminishes the electric range considerably.
- When possible, plan ahead for deceleration and coast whenever possible.

CHARGING EQUIPMENT

Electric Vehicle Supply Equipment (EVSE)

The Electric Vehicle Supply Equipment (EVSE) is used to deliver electrical energy from the premises wiring to the van.

A Level 1 (120 volt) or Level 2 (240 volt/20 amp) EVSE is provided with your van. A Level 1 EVSE can be used with a normal 120 volt AC outlet. Higher voltage Level 2 charging stations may be used for a more rapid charge.

CAUTION: Do not use an EVSE with a worn or damaged AC outlet. The outlet can start a fire or cause burns. Serious personal injury and damage to components can result.

Use of an extension cord with an EVSE is not recommended. An extension cord can increase the risk of electric shock, resulting in serious personal injury.

If using an extension cord cannot be avoided, make sure the extension cord meets the following criteria:

- GFCI protected
- 12 or 14 gauge, 3 conductor
- Rated for outdoor

Electrical Requirements

Select an AC outlet specifically for charging your van. It must be a grounded, dedicated, 20 amp or greater, three-prong wall plug. Make sure no other major appliances are connected to the same circuit. If other large loads are included in the charging circuit, the circuit breaker could become overloaded and trip.

The minimum requirements for circuits used to charge this van are:

- Level 1 - 120 volt / 16 amp
- Level 2 - 240 volt / 20 amp

Using the Level 2 (240 volt) EVSE or other charging equipment with a rating of at least 240 volt/20 amp will provide a faster charging time. Larger capacity EVSE units require higher minimum circuits.

Periodically inspect the EVSE handle and the charge port on the van for corrosion or damage. Closing the charge port and properly storing the EVSE handle will limit environmental damage and ensure clean contacts.

Damaged Contacts

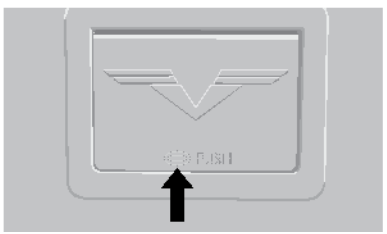
Clean Contacts

PLUG-IN-CHARGING

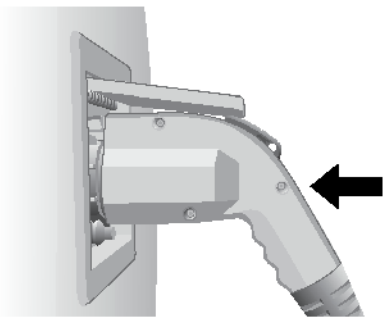
Charging Procedure

This section explains the process for charging the high voltage battery.

1. Park on a level surface inside a garage or protected area, if possible.
2. Turn the van off. Turn off Export Power if it is in use.
3. Wait at least 30 seconds.
4. Open the charge port cover located at the left front (driver side) by pressing in and releasing.

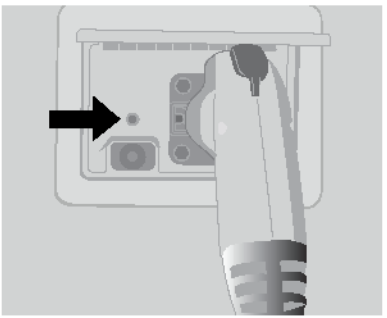


5. Align the EVSE handle with the charge port, and push in until a click is heard. Make sure the EVSE handle is completely inserted and properly seated to ensure a safe connection.

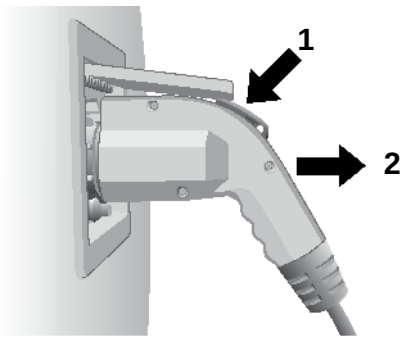


6. Charge Port LEDs indicate the charging status as follows:

Blinking green: Charge in progress
Solid green: Charging complete
Solid red: Charging fault



7. When the vehicle is ready for use depress the button on the EVSE handle and remove it from the charge port. Close the charge port cover.



Note: When the van is started, the "Battery % Gauge" should indicate 100%, when fully charged.

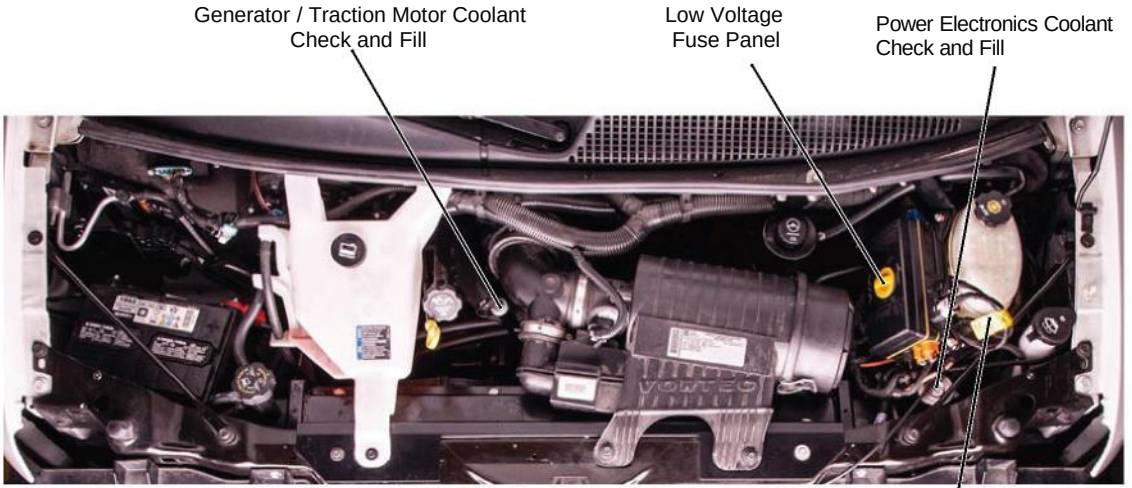
Note: Even when fully charged, the EVSE should remain plugged in. This will help ensure the high voltage battery is within optimal temperature range and maximize the battery life and cell balancing.

Charging times will vary based on EVSE type, temperature and initial state of charge.

For EVSE equipment operation, refer to the manufacturer's instructions.

VEHICLE CARE

Engine Compartment Overview



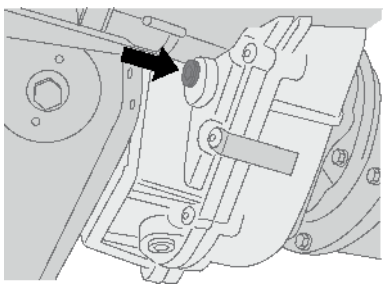
*For other fluids and components not shown here, see the GM Owner's Manual.

Checking Fluid

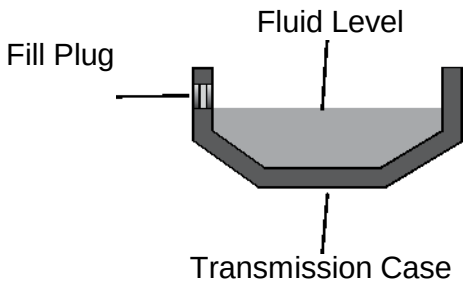
For fluids not covered in this section, see the GM Owner's Manual.

Checking the Transmission Fluid

The transmission is located under the van, in front of the rear axle. The fill plug must be removed in order to check or add fluid.



To get an accurate reading, the van should be on a level surface. The proper fluid level is even with the bottom of the fill plug hole. If fluid is needed, use only DEXRON®-VI Automatic Transmission Fluid.

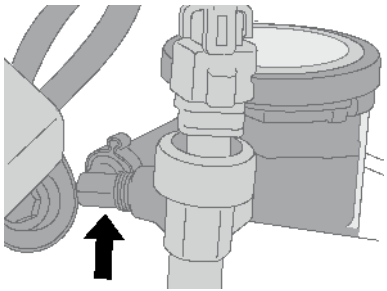


Power Electronics Coolant

WARNING: Steam and scalding liquids from a hot cooling system can blow out and burn you badly. Never turn the cap when the cooling system, including the power electronics coolant tank pressure cap, is hot. Wait for the cooling system and reservoir tank pressure cap to cool.

The power electronics coolant tank is located under the hood, on the left side next to the low voltage fuse center.

1. Remove the power electronics coolant tank pressure cap when the cooling system is no longer pressurized.
2. Keep turning the pressure cap, but now push down as you turn it. Remove the pressure cap.
3. Fill the reservoir with the proper mixture of 50% DEX-COOL® and deionized water, 1/2 inch below the bleed fitting.



4 Replace the pressure cap.

Generator/Traction Motor Cooling Fluid

Checking the fluid level on the dipstick:

1. Flip the handle up, pull out the dipstick, and wipe it with a clean rag or paper towel.
2. Push it back in all the way, wait three seconds, and pull it back out again.
3. Check both sides of the dipstick, and read the lower level. The fluid level must be between the 2 indicators on the dipstick. Be sure to keep the dipstick pointed down to get an accurate reading.
4. If the fluid level is in the acceptable range, push the dipstick back in all the way, then flip the handle down to lock the dipstick in place.

To add fluid:

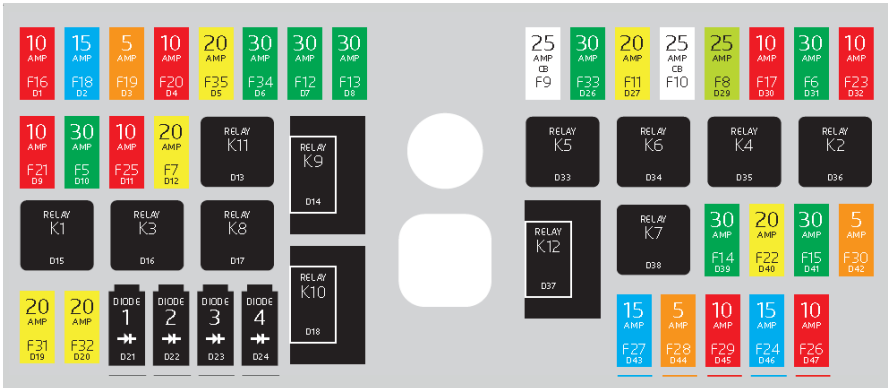
Using a clean funnel, add fluid down the dipstick tube only after checking the fluid while it is cold. If the fluid level is low, add only enough of the proper fluid to bring the level up to the middle range of the dipstick. If fluid is needed, use only DEXRON®-VI Automatic Transmission Fluid. It does not take much fluid, generally less than 0.5 L (1 pt.). Do not overfill.

LOW VOLTAGE FUSE CENTER

Replacing Fuses

Fuses and circuit breakers protect the van wiring circuits from damage. If the metal bar within the fuse is broken or melted replace the fuse with a fuse of identical size and rating.

The supplemental low voltage fuse center is located under the hood on the left side. The fuse/relay/circuit breaker locations are inscribed on the cover.



FUSES

F5 CORE WAKE (30A)
F6 IGN WAKE (30A)
F7 CHG WAKE (20A)
F8 ENG IGN (25A)
F11 CABIN HEATER (20A)
F12 FAN 1 (30A)
F13 FAN 2 (30A)
F14 EPT W.PUMP (30A)
F15 PARK PAWL (30A)
F16 CHARGER (10A)
F17 TRAK INV (10A)
F18 ESS (15A)
F19 EVSE WAKE (5A)
F20 HMI (10A)
F21 A/C (10A)
F22 SPARE (20A)
F23 HCU (10A)
F24 ESS2 (15A)
F25 OBD (10A)
F26 GENE INV (10A)
F27 SPARE (15A)
F28 HEATER (5A)
F29 PTC PUMP (10A)
F30 VACUUM PUMP (5A)
F31 DRVP1 (20A)
F32 DRVP2 (20A)
F33 ESS COOL (30A)
F34 SPARE (30A)
F35 SPARE (20A)

RELAYS

K1 CORE WAKE
K2 IGN WAKE
K3 CHG WAKE
K4 ENG IGN
K5 GENE OIL
K6 TRAC OIL
K7 CABIN HEATER
K8 SPARE
K9 FAN 2
KI0 FAN 1
K11 SPARE
K12 ESS COOLER

DIODES

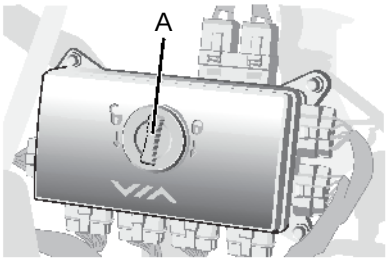
D1 EXP (6A)
D2 IGN (6A)
D3 EVSE (6A)
D4 DIAG (6A)

CIRCUIT BREAKERS

F9 GENE OIL (25A)
F10 TRAC OIL (25A)

Removing the Fuse Cover

To remove the fuse cover, turn the knob (A) counterclockwise. Always replace the cover after servicing.



Towing the Van

If the van cannot be driven, tow it using a flatbed truck so all four wheels are off the ground (this is the preferred method) or use a tow truck equipped with a wheel lift and tow the van from the rear.

CAUTION: The van must not be towed with the rear wheels on the ground other than removal from off road conditions. Doing so will cause the traction motor to generate high voltage power, resulting in risk of injury to persons or damage to the van.

VEHICLE MAINTENANCE

Service Checks

WARNING: Do not perform service on the high voltage battery components, or any other high voltage component. Serious personal injury and damage to components can result. Service must only be performed by a VIA Motors service technician trained in the repair of high voltage systems.

WARNING: Avoid contact with high voltage components (identified by labels and orange wrapped cable or wiring). Do not attempt to remove, disassemble, test or alter any high voltage system components. Do not open wiring to test or repair. Exposure to high voltage can cause shock, burns, and even death.

CAUTION: MAINTENANCE SHOULD BE PERFORMED BY A VIA MOTORS SERVICE TECHNICIAN

Scheduled Maintenance

It is important to have all recommended maintenance checks and inspections performed at the scheduled intervals to ensure the van remains in top operating condition. Use of the recommended fluids and lubricants is also important to ensure performance of components. If damage occurs due to lack of scheduled maintenance, repairs may not be covered by the warranty.

The van owner is responsible for ensuring maintenance is performed. VIA Motors recommends you have procedures performed by a VIA Motors service technician.

Tire Pressure

Tires	English	Metric
Front	70 PSI	483 kPa
Rear	80 PSI	552 kPa
Wheel Nut Torque	140 ft lb	190 N•m

Maintenance Information

Owner's checks and services (monthly):

Check the Power Electronics coolant. See Power Electronics Coolant on page 24.

Check the Generator/Traction Motor cooling fluid. See Generator/Traction Motor Cooling Fluid on page 24.

Engine Oil Change:

When the CHANGE ENGINE OIL SOON message displays, have the engine oil and filter changed within the next 600 mi/1 000 km. If driven under the best conditions, the engine oil life system may not indicate the need for service for up to a year. The engine oil and filter must be changed at least once a year and the oil life system must be reset. Your trained dealer technician can perform this work.

The fluids listed below are specific to the VIA van and can be obtained from your VIA Motors service provider. The fluids must be changed at the mileage listed. See the GM Owner's Manual for the other fluids and lubricants and maintenance schedules recommended for the van.

Maintenance Schedule

Service	25,000 mi/40,000 km	50,000 mi/80,000 km	75,000 mi/120,000 km	100,000 mi/160,000 km	125,000 mi/200,000 km	150,000 mi/240,000 km
Generator/Traction Motor Coolant		X		X		X
Power Electronics Coolant						X
Generator and Traction Motor Coolant Filters	X	X	X	X	X	X
Visually inspect the accessory drive belt (*)						X
Internal Combustion Engine Coolant (**)						X
Internal Combustion Engine Oil	When the "CHANGE OIL SOON" message displays, or, once a year; whichever comes first.					

* Or every 10 years, whichever comes first. Inspect for fraying, excessive cracking or damage. Replace if needed.
** Or every 5 years, whichever comes first.

Recommended Fluids and Lubricants

Usage	Fluid/Lubricant
Transmission Fluid	DEXRON®-VI Automatic Transmission Fluid
Power Electronics Coolant	50/50 mixture of deionized water and DEX-COOL® Coolant
Generator/Traction Motor Cooling Fluid	DEXRON®-VI Automatic Transmission Fluid
Power Steering Fluid	Texaco Havoline® PSF9109 Transmission Fluid

The fluids listed above are specific to the VIA van and can be obtained from your VIA Motors service provider. The fluids must be changed at the mileage listed on the maintenance schedule. See the GM Owner's Manual for the other fluids and lubricants and maintenance schedules recommended for the van.

Maintenance Records

After the scheduled services are performed, record the date, odometer reading, who performed the service, and the type of services performed in the boxes provided. Retain all maintenance receipts.

Maintenance Record

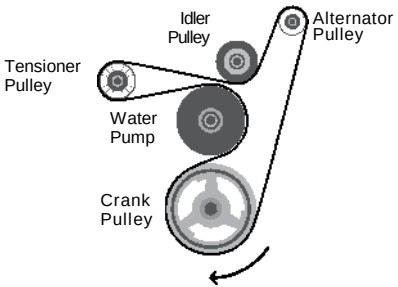
Date	Odometer	Serviced By	Services Performed

Maintenance Record

Date	Odometer	Serviced By	Services Performed

Technical Data

Engine Drive Belt Routing:



Capacities and Specifications:

Application Engine Oil with Filter	Metric 5.7 L	English 6 qt
Fuel Tank	64 L	17 gal
Generator/Traction Motor Cooling System	10 L	10.5 qt
Power Electronics Coolant	7.5 L	2 gal
Transmission	1.4 L	1.5 qt

All capacities are approximate. When adding, be sure to fill to the approximate level, as recommended in this manual.

Gasoline Requirements

Actions to take based on changes in summer blend vs. winter blend fuels:

EPA Gasoline Requirements

Due to EPA requirements that gasoline has a different RVP (Reed Vapor Pressure) for summer and winter use, fuel in vehicles that run primarily in the electric battery mode should run in the extended range electric mode until the fuel level drops to 1/4 tank. This should be done sometime after June 1 to use up the winter blend fuel, then again after September 15 to use up the summer blend fuel. At this point refill the vehicle with the proper blend of fuel for the season. This will allow proper internal combustion engine efficiency and maintain the proper emission performance.

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