



# LIBERTY

with IntelliBrake™ Technology

## OWNER'S MANUAL

10049626-A

ISSUED JULY 2023



# OWNER'S MANUAL

**2024 +**

 ELiTE Lithium

**LIBERTY**

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## MANUFACTURER INFORMATION

Textron Specialized Vehicles, Inc.  
1451 Marvin Griffin Road  
Augusta, Georgia, USA 30906-3852

1-800-774-3946 Technical Assistance & Warranty  
1-888-438-3946 Service Parts  
011-706-798-4311 International

[www.ezgo.com](http://www.ezgo.com)

## **WELCOME**

Thank you for purchasing this vehicle. Before driving your new vehicle, read this owner's manual to familiarize yourself with safe driving practices, operation, features and controls.

This manual contains instructions for minor maintenance only. Information about major repairs can be found in the service manual. Your dealer has thorough knowledge of your vehicle and wants your total satisfaction with your purchase. We recommend you return to your dealership for all of your service needs during, and after the warranty period.

Repair or replacement parts can be purchased from your dealer or through the manufacturer's parts and accessories department.

**These are original instructions as defined by 2006/42/EC.**

**The manufacturer maintains the right to change the design of the vehicle without responsibility to make the changes on units purchased before changes were made. The information in this manual can change without notice.**

**All information in this owner's manual is based on the latest product information at the time of publication. Due to constant improvements in the design and quality of production components, some discrepancies may be found between your vehicle and the information presented in this publication. The content in this publication is intended for reference use only. The manufacturer is not liable for omissions or inaccuracies. Any reprinting or reuse of the content in this publication, whether whole or in part, is expressly prohibited.**

**Printed in USA**

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### INTRODUCTION

The following symbols appear throughout this manual and on vehicle labels. Your safety is involved when these symbols are used. Become familiar with their meanings before reading the manual.



**DANGER** *indicates a hazardous situation that, if not avoided, WILL result in death or serious injury.*



**WARNING** *indicates a hazardous situation that, if not avoided, COULD result in death or serious injury.*



**CAUTION** *indicates a hazardous situation that, if not avoided, COULD result in minor or moderate injury.*



**NOTICE** *provides key information by clarifying instructions.*



The PROHIBITION SAFETY SIGN indicates an action NOT to take in order to avoid a hazard.



The MANDATORY ACTION SIGN indicates an action that NEEDS to be taken to avoid a hazard.



**WARNING** *Failure to comply with warnings in this manual can result in severe injury or death.*

*Read this entire manual carefully before operating the vehicle. Do not attempt to operate the vehicle until you have thorough knowledge of the controls and features.*

*Regular inspections and maintenance, along with good operating techniques, will help ensure your safe enjoyment of the capabilities and reliability of this vehicle.*

This vehicle was designed and manufactured in the United States of America (USA). The standards and specifications in the following information originate in the USA unless otherwise indicated.

## **INTRODUCTION**

### **MANUFACTURER'S INTENDED USE**

This vehicle is designed and manufactured for off road use only. Use on public streets, roads, or highways is illegal in most areas and increases the risk of an accident involving other vehicles and people. This vehicle does not meet FMVSS (Federal Motor Vehicle Safety Standards) for public street, road, or highway use.

Check all laws and regulations before choosing an area to operate your vehicle.

As manufactured, this vehicle meets or exceeds ANSI/OPEI Z-135 Personal Transport Vehicles and SAE J2258 Light Utility Vehicles standards, and its top speed is set at 19.5 mph (31 kph). In the factory configuration, it is intended to be used on designated roadways, or within closed communities where permitted by law or by regulatory authority rules.

This vehicle has been designed so that certain authorized service professionals are capable of setting the vehicle's maximum level-ground speed to 25 mph (40 kph). When the maximum speed is set between 20 and 25 mph (32 to 40 kph), it complies with the requirements of SAE J2258 (so long as no other changes or modifications have been made to the vehicle), but does not meet ANSI/OPEI Z-135. In any configuration where the maximum speed exceeds 20 mph (32 kph), it is only permitted to be used off-road, on private property, or on private roadways where allowed. This vehicle does not meet State or Federal LSV (Low Speed Vehicle) requirements and cannot be used on public roadways of any kind when the maximum speed setting exceeds 20 mph (32 kph).

### **WARRANTY AND REGISTRATION**

All information, including coverage, limitations, exclusions and how to obtain warranty service is included in the literature package with the purchase of the vehicle. It can also be obtained from your dealer.

Register your new vehicle at [www.ezgo.com](http://www.ezgo.com).

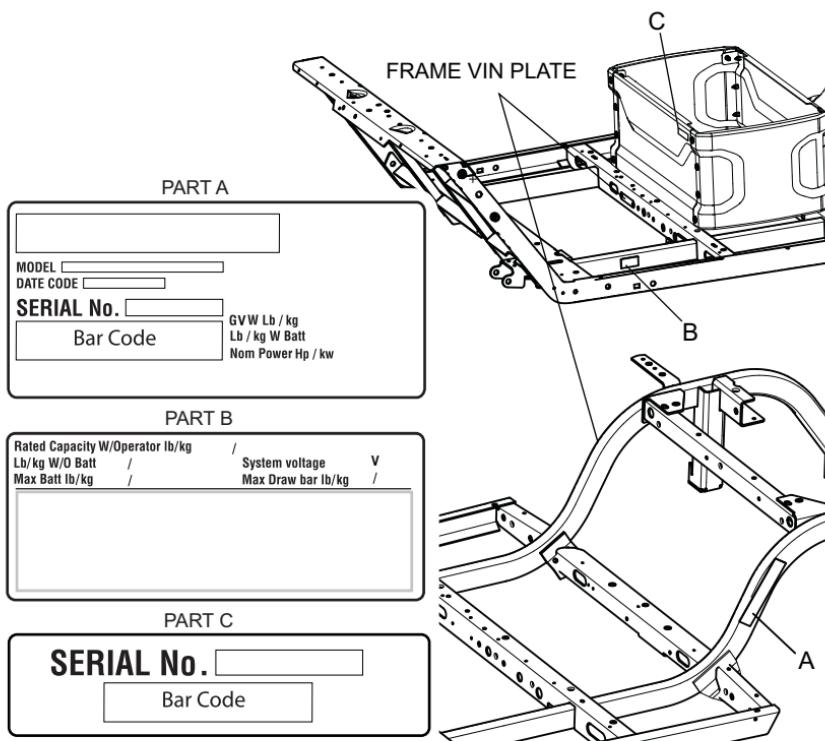
Use Original Equipment Manufacturer (OEM) approved parts to keep the vehicle warranty effective.

Tampering with or adjusting the controller to allow the vehicle to operate above factory specifications will void the vehicle warranty.

### **BATTERY PROLONGED STORAGE**

See BATTERY PROLONGED STORAGE on page 55 for safety information and storage procedure.

## VEHICLE IDENTIFICATION NUMBERS



Record the vehicle identification numbers in the spaces provided below. These identification numbers are required when ordering parts.

Vehicle Model Number	
Frame PIN	

## PARTS AND SERVICE MANUALS

The following manuals can be purchased through your dealer:

- service manual
- parts manual

## INTRODUCTION

*This page intentionally left blank.*

## SAFETY

### OWNER RESPONSIBILITY

Improper use, maintenance, or modification of this vehicle can lead to serious injury or death.



Require proper use of your vehicle. Do not allow anyone to operate your vehicle or ride as a passenger unless they are properly instructed and you are sure they are willing to ride responsibly. To prevent unauthorized use, always remove the key when the vehicle is not in use.

For questions about the vehicle or the material in this manual, see the contact information on page 1 or the back of this publication.

### Unauthorized Use



This vehicle is for adult use only. Anyone below the age of 16 is not permitted to operate the vehicle.



Anyone who does not have a valid driver's license is not permitted to operate the vehicle.

Operator must fit the vehicle. Be sure the operator is able to:

- sit with their back against the seat
- have both feet flat on the floor and reach pedals
- have both hands on the steering wheel



### Operating without Instruction



Operation of this vehicle without proper instruction increases the risk of an accident. The operator must understand how to operate the vehicle correctly in different situations and on different types of roads.

All operators must read and understand the owner's manual and all warning and instruction labels before operating the vehicle.

## SAFETY

### Alcohol or Drugs



Operation of the vehicle during or after consuming alcohol or drugs can adversely affect operator judgment, reaction time, balance and perception.

Never drink alcohol or use drugs or medications before or during operation of the vehicle.

### Passengers

It is the responsibility of the owner and/or operator to make sure passengers meet the qualifications required to ride in the vehicle.

All passengers must fit the vehicle. Passengers must be able to:

- sit with their back against the seat
- have both feet flat on the floor



### MAXIMUM WEIGHT CAPACITY



***Exceeding weight capacities can cause loss of vehicle control and possible injury or death.***

Maximum Vehicle Weight Capacity	800 lb (363 kg)
---------------------------------	-----------------

Do not exceed the maximum vehicle weight capacity (includes weight of operator, passengers, cargo, and accessories and trailer tongue weight).

### TIRE PRESSURE



***Improper or uneven tire pressure can cause loss of vehicle control and possible injury or death.***

Maintaining correct tire inflation pressure is essential for safe vehicle operation. Inflation pressure can vary within the recommended range to suit the condition of the terrain.

TIRE PRESSURE RANGE	TERRAIN CONDITIONS	RECOMMENDATION
18-22 psi (124-152 kPa)	Hard surfaces or pavement	Inflate to higher pressure within the range; never exceed maximum pressure indicated.
	Soft terrain or turf	Inflate to lower pressure within the range to reduce potential damage to the terrain or turf.

## OPERATOR SAFETY

Safe and responsible use of this vehicle is necessary to prevent dangerous conditions for the operator, passengers and other people within the area of operation. This section of the manual provides information on safe operation of the vehicle. Make sure to read, understand and comply with all of this information to decrease the risk of personal injury or death.

### ⚠ WARNING

***Failure to operate this vehicle as instructed can cause collision, loss of control or rollover resulting in severe injury or death. Follow all safety warnings in this manual. See the OPERATION section beginning on page 31 for operating procedures and additional safety information.***

- Read this entire manual and all product labels carefully. Follow the safety information and operating procedures described.
- Operate the vehicle responsibly to prevent dangerous conditions for all occupants and people in the area of operation.
- Do not drive with passengers until you have a minimum of two hours driving experience on this vehicle.
- Keep feet, legs, hands, and arms inside the vehicle at all times.
- The driver must keep both hands on the steering wheel and feet on the floor or pedals.
- Inspect the vehicle before each use to make sure it is in safe operating condition. Perform the PRE-RIDE INSPECTION on page 32.
- A damaged vehicle or a vehicle that is not functioning properly is dangerous and must not be operated until repairs are made.
- Always have the vehicle checked by an authorized dealer if it is involved in an accident.
- Always put the key switch in the OFF position before exiting the vehicle.
- Remove the key when the vehicle is not in use to prevent accidental starting or unauthorized use by unqualified drivers.
- Do not drive on excessively steep hills. Drive slowly and deliberately. Use the brake to limit speed and maintain control. Sudden braking or turning can cause loss of vehicle control. Drive straight down hills; do not drive across hills.
- Operate only in approved areas. Follow all applicable safety rules for the area.
- Before driving in reverse, make sure the area behind the vehicle is clear. Accelerate slowly and avoid making sharp turns.
- Make sure the direction selector is in the correct position before pressing the accelerator pedal.
- Decrease speed before and during turns.
- Decrease speed when driving on wet or slippery surfaces.
- Bring the vehicle to a complete stop before moving the direction selector.



## SAFETY

- Do not exceed cargo or vehicle weight capacities. Do not exceed occupant capacity. See VEHICLE SPECIFICATIONS on page 61 for the vehicle load and seat capacity.
- If there is a risk of lightning, leave the vehicle and look for a safe location to wait until the lightning has stopped.

Additional information about safety is included throughout this manual or can be obtained from your dealer.

### Before Operating

Perform the PRE-RIDE INSPECTION on page 32 before each use to ensure the vehicle is in safe operating condition. Failure to inspect and confirm that the vehicle is safe to operate increases the risk of an accident.

### LOAD OPERATION

The weight of cargo and occupants affects vehicle operation. Carefully calculate how the vehicle is loaded and how to safely operate it. Follow the instructions in this manual for loading guidelines and tire pressure.

Do not exceed vehicle weight capacities specified on page 14. As passenger weight increases, cargo weight needs to be adjusted to ensure the maximum weight capacity is not exceeded.

Tire pressure must be adjusted to accommodate the load being carried. See Tire Pressure on page 14 for specifications.

Drive slowly and carefully to maintain control of the vehicle if driving under any of the following conditions:

- passenger and/or cargo exceeds half the maximum weight capacity
- driving over obstacles
- towing
- climbing a hill

### REVERSE OPERATION

Make sure the area behind the vehicle is clear before operating in reverse. When clear and safe to operate in reverse, accelerate slowly and avoid making sharp turns.

Refer to REVERSE OPERATION on page 38 for operational information.

### DAMAGED VEHICLE

Driving a damaged vehicle is not safe. If the vehicle has been involved in any type of accident, have it inspected by a qualified service dealer to verify that it is safe for operation.

## MAXIMUM SPEED

Maximum speed operation increases the risk of loss of control.

- Always drive at a speed that is appropriate for the terrain, visibility, operating conditions, and your skill and experience level.
- Use the brake to limit speed and maintain control of the vehicle.

## TURNING

Improper or careless turning can cause loss of traction, loss of control, accident, or rollover.

- Do not turn quickly or at sharp angles.
- Do not turn at high speeds.
- Practice turning at slow speeds before attempting to turn at faster speeds.

## UPHILL OPERATION

Do not drive up hills that are too steep for the vehicle or your driving abilities. Loss of vehicle control can result from driving up hills incorrectly.

Refer to UPHILL OPERATION on page 38 for operational information.

## DOWNSHILL OPERATION

Use the brake to limit speed and maintain control. Loss of vehicle control or rollover can result from driving downhill incorrectly.

Refer to DOWNSHILL OPERATION on page 38 for operational information.

## TIRES

Operating the vehicle with incorrect tires or incorrect/uneven tire pressure can cause loss of control or an accident. Always use the size and type of tires specified for the vehicle.

See VEHICLE SPECIFICATIONS on page 61 for tire type and size.

Always maintain correct and even tire pressure as specified. See Tire Pressure on page 14.

## SLIPPERY TERRAIN

Driving on rough, wet, or loose terrain increases the risk of loss of traction or control and accident or rollover. Drive slowly and use correct turning procedures when operating on slippery surfaces.

Refer to Slippery Surfaces on page 37 for operational information.

## BATTERY CHARGING

Charging should be done when ambient temperatures are between 40°F and 110°F (4°C and 42°C). The battery pack can be charged or topped off after every use.

The battery management system (BMS) makes sure charging occurs at the proper rate for the battery temperature. When the battery charger is connected to the vehicle, the BMS determines the charge rate based on the battery temperature. The charger operates at the rates shown in the following table.

Charge Rate	Temperature
NO charging	below 14° F (-10°C) or above 140° F (60°C)
Pre-charge (charge at reduced rate, 6 amps)	between 14°F (-10°C) and 41°F (5°C) between 104°F (40°C) and 140°F (60°C)
Full charging	between 41°F (5°C) and 113°F (45°C)

The BMS adjusts the charge rate based on the temperature of the batteries.

Use only the OEM approved Lithium-Ion battery charger.

- Turn the key to the OFF position and remove it from the switch.
- Inspect the charger cord for cracks, frayed wires or loose connections; replace if damaged.
- Inspect the vehicle charger receptacle and charger plug for dirt, debris or damage. Clean if necessary and replace immediately if damage is found.
- Connect the charger to a wall receptacle. Do not use a multi-plug adapter or power strip. Do not connect anything else to the same receptacle.
- Connect the charger to the vehicle receptacle.



When finished charging, disconnect the charger cord from the vehicle. If disconnecting before the charge cycle is complete, disconnect from the wall receptacle first, then disconnect the charger cord from the vehicle.

## BATTERY DISPOSAL

See BATTERY DISPOSAL on page 54 for safety and disposal information.

## VEHICLE LIFTING

- The vehicle must be on a firm and level surface.
- Be constantly aware that the vehicle is not stable during the lifting process.
- Make sure the vehicle is stable on jack stands before getting underneath.
- Never get under a vehicle while it is on a jack only.
- Put wheel chocks in front of and behind the wheels that are not being lifted.
- Do not allow anyone on the vehicle when it's being lifted or on jack stands.

Refer to LIFTING THE VEHICLE on page 44 for procedures and additional safety information.

## VEHICLE MODIFICATION



**WARNING** *Removing components from the vehicle can change the designed handling characteristics and present a significant safety risk.*

- Do not install accessories not approved by the manufacturer.
- Do not modify the vehicle to increase speed or power.

Any modifications or installation of accessories not approved by the manufacturer can create a safety hazard and increase the risk of injury.

The warranty will be terminated if the vehicle is modified to increase vehicle speed or power.

The warranty may be terminated if original (or equivalent) replacement parts are not installed on the vehicle.

If the vehicle has been modified in any way, familiarize yourself with the function and effect on the handling characteristics of the vehicle.

## MAINTENANCE SAFETY

Routine and scheduled maintenance is necessary to keep the vehicle in safe and reliable condition. This section provides safety information for performing maintenance. Read, understand and comply with all of this information to decrease the risk of personal injury or death.



**WARNING** *Serious injury or death can occur if you do not follow the instructions and procedures provided.*

- Read entire manual and all product labels carefully. Follow the procedures and comply with the safety information while performing service or maintenance.
- Use specified tools and safety equipment when performing vehicle maintenance.
- Remove all jewelry.
- Do not allow loose clothing or hair to contact moving parts.
- Do not touch hot objects.
- If lifting is required, follow the procedures and safety information on page 44.
- Lift and support the drive wheels on jack stands before performing any service to the powertrain while the motor is in operation.
- Make sure the vehicle is stable on jack stands before getting underneath.
- Never get under a vehicle while it is on a jack only.
- Wear eye protection.

## **SAFETY**

- Wear a face shield when working around battery packs.
- Be careful when working around battery packs, using solvents, or compressed air.
- Use insulated tools within the battery area to prevent blowing the internal BMS fuse.
- To prevent risk of battery explosion, keep all flammable materials, open flames or sparks away from the battery packs.
- Be constantly aware that some components are heavy, spring loaded, corrosive, explosive, can cause high amperage or get extremely hot.
- Keep hands, face, feet and body away from any area that can expose them to injury if an unexpected situation occurs.
- After service is complete, test the vehicle in an area that is free from vehicle and pedestrian traffic.

## SAFETY LABELS

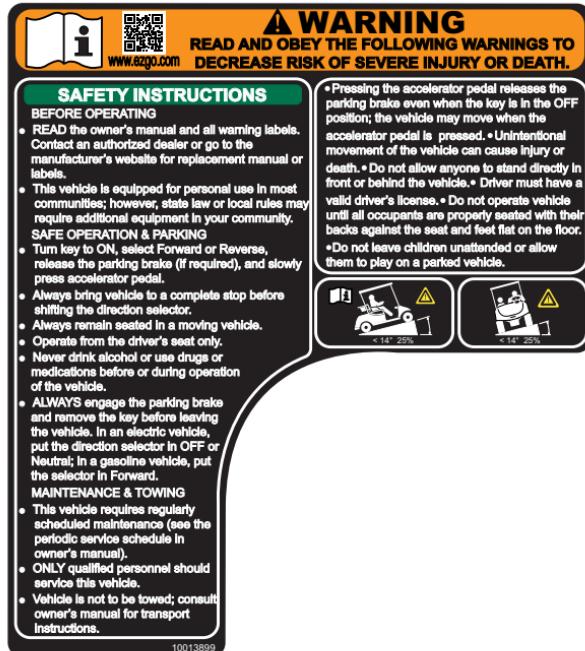
Safety and warning labels are on the vehicle for your protection. Read carefully and comply with all instructions on the labels. If any label shown in this manual is different from the label on your vehicle, always follow the instructions on the vehicle label.

If a label comes off or becomes illegible, contact your dealer for a replacement. Label part numbers are provided here, printed on the label, or can be obtained from your dealer.

## OPERATION

Located on the dash panel.

P/N 10013899



## SAFETY LABELS

### OPERATION (CE)

Located on the dash panel.

P/N 651654



### RUN/TOW SWITCH OPERATION

Located on the run/tow switch.

P/N 10006303



### PATENT NOTICE

Located inside the driver's side dash storage compartment.

P/N 10005569



## ELECTRIC SHOCK (CE)

Located on the controller splash shield.

P/N 71415G01



## BATTERY WARNING

Located on the battery cover.

**SAMSUNG SDI  
Composite module Li-ion battery**

Minimum Capacity	54.66Ah @56.7V Charging	Nominal Voltage	50.34V
------------------	-------------------------	-----------------	--------

**Caution**

- 1. Do not expose battery to temperature below -30°C(-22°F) above 60°C(140°F).
- 2. Do not disassemble or mistreat battery. Do not crush.
- 3. Do not drop or subject it to impact.
- 4. Use only OEM approved charger.
- 5. Failure to follow these instructions may present risk of explosion, fire or high temperatures.
- 6. Recommended torque for stud assembly is 24.5Nm on M12, 9.1Nm on M8 and refer to the application note for detail.

## MAINTENANCE TOWING

Located on the bagwell closeout bracket.

P/N 10049683

**WARNING** Failure to follow these instructions can result in SERIOUS INJURY or DEATH

**IF VEHICLE IS INOPERABLE AND NEEDS TO BE MOVED:**

- Turn the ignition key to the 'N' position and 'chock' tires to prevent inadvertent movement.
- Flip the RUN-TOW switch to the 'TOW' position and move vehicle to the desired location and park it properly on level ground and chock tires immediately.
- Turn the ignition key to the OFF position, remove key and perform required procedures following all Safety Guidelines as outlined in your service manual.

10049683

## BRAKE RELEASE

Located on the bagwell closeout bracket.

P/N 609694

**WARNING** Failure to follow these instructions can result in SERIOUS INJURY or DEATH

**THIS PROCEDURE SHOULD ONLY BE TO CLEAR VEHICLE FROM AN UNSAFE AREA AND BE PERFORMED ONLY BY QUALIFIED TRAINED PERSONNEL**

**In Case Of Total Power Loss And The 'Run-low' Switch DOES NOT Release The Brake To Move The Vehicle:**

- Turn the ignition key to the 'OFF' position and 'chock' tires to prevent inadvertent movement.
- Identify the Auxiliary Power line (3) and remove the Weather Pack Seal (4) from the connector.
- Identify the Primary Power line (1) connector and disconnect the line (2).
- Connect the Primary Power line (1) connector to the Auxiliary Power line (3) and release the brake. **THIS WILL CAUSE THE VEHICLE TO MOVE IMMEDIATELY IF NOT ON LEVEL GROUND.**
- Move vehicle to desired location and park it properly on level ground, chock tires, IMMEDIATELY DISCONNECT AUXILIARY POWER AND RECONNECT PRIMARY POWER (1, 2) FOR SAFETY AND TO AVOID BATTERY DRAIN.
- Reconnect the Weather Pack Seal (4) to the Auxiliary Power line (3) and perform required service procedures following all Safety guidelines as outlined in your repair manual.

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## SAFETY LABELS

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## FEATURES AND CONTROLS

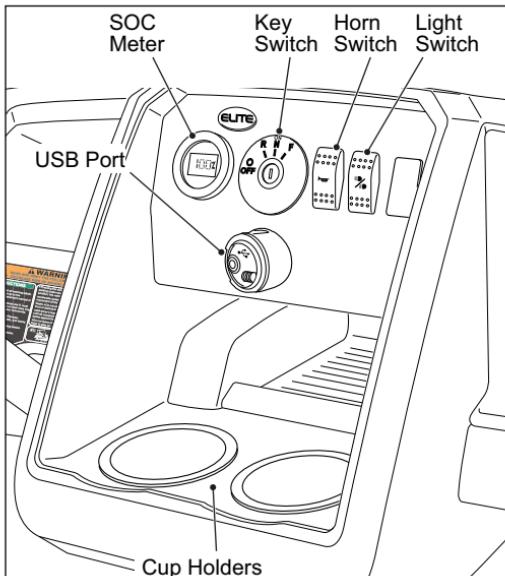
### NOTICE

*Some accessories continue to operate with the key in the OFF position. Leaving these accessories activated after the vehicle is shut down can cause battery discharge.*

### KEY SWITCH / DIRECTION SELECTOR

The four-position switch controls the basic electrical system of the vehicle.

- OFF:  
vehicle is disabled
- R:  
activates electronics and accessory power and puts the vehicle in reverse
- N:  
activates electronics and accessory power and puts the vehicle in neutral
- F:  
activates electronics and accessory power and puts the vehicle in forward



### HEADLIGHT SWITCH

The LED headlight switch is a three-position switch.

- upper – low beam
- middle – daytime running lights
- lower – off

### STATE OF CHARGE (SOC) METER

The SOC meter indicates the amount of usable power in the batteries.

- 100% – full charge
- 0% – no charge
- LOWBAT – immediate charge required

The meter functions as a speedometer and hour meter when the vehicle is in motion.

### HORN SWITCH

The horn switch is the red toggle switch on the console. The horn activates when the top of the switch is pressed.

### CUP HOLDERS

The vehicle has a center cup holder that will accommodate two beverage containers. Another cup holder is located to the left of the steering column and will accommodate a larger beverage container.

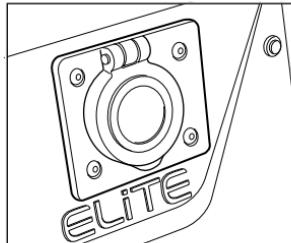
### USB PORT

**NOTICE** Excessive use of accessories that are connected to the USB port can cause battery discharge.

The USB port supplies power for electronic devices via a USB cable when the key switch in any position other than OFF.

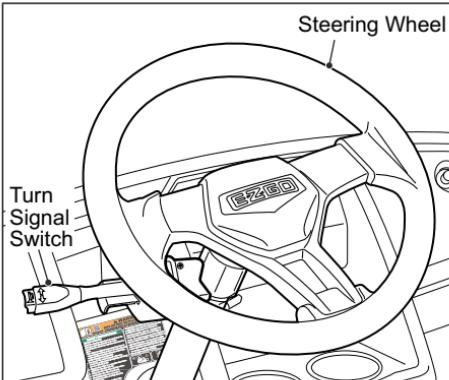
### BATTERY CHARGER PORT

The battery charger port is located on the panel below the rear seat. The port connects the vehicle to a power source to recharge battery packs.



### STEERING WHEEL

The steering wheel allows the driver to control the direction of travel.



### TURN SIGNAL

The optional turn signal switch is located on the steering column and is used to activate the turn signals.

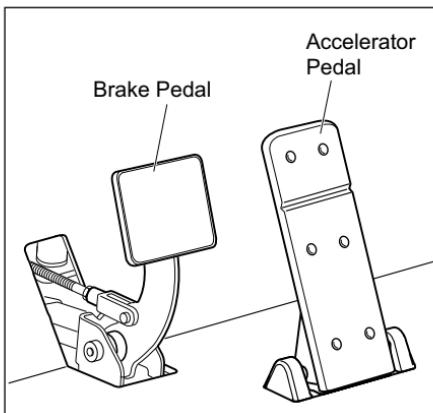
## BRAKE PEDAL

The brake pedal is the left pedal on the floorboard and controls braking function.

The brake pedal allows the operator to slow the speed or bring the vehicle to a complete stop by pressing the pedal.

## PARKING BRAKE

The vehicle is equipped with an electronic parking brake (Intelli-Brake™) that is activated when the vehicle is stopped. The parking brake releases when the vehicle is in the F or R position and the accelerator pedal is pressed.



## ACCELERATOR PEDAL

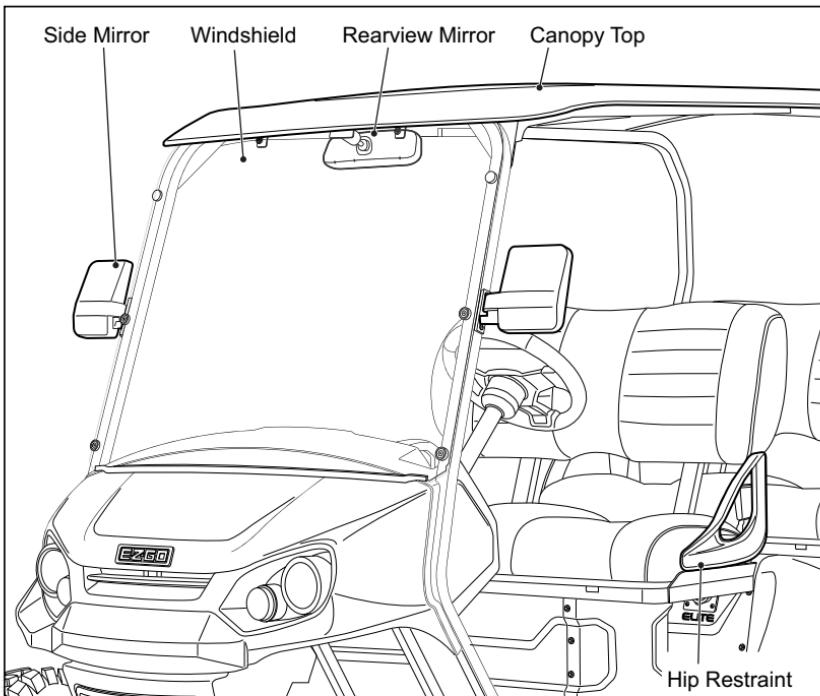
The accelerator pedal is the right pedal on the floorboard. It activates the electric motor and controls the acceleration of the vehicle.

Pressure applied to the accelerator pedal increases vehicle speed.

## GLOVE BOX / STORAGE COMPARTMENTS

The glove box provides storage space for small items. Glove boxes may be equipped with optional shelves and/or doors.

## FEATURES / CONTROLS



### REARVIEW MIRROR

The optional rearview mirror is mounted to the upper bar of the front strut and can be adjusted for optimum visibility.

Adjust mirror before each use for clear rear and side views. Be sure to check blind spots before merging or operating in reverse.

### SIDE MIRRORS

The optional side mirrors are adjustable for optimum visibility to surroundings during operation.

Adjust mirror before each use for clear rear and side views. Be sure to check blind spots before merging or operating in reverse.

### HIP RESTRAINTS

The hip restraints are designed to help keep the occupants properly positioned in the event of unexpected vehicle movement. All passengers must be seated and holding onto the hip restraints during vehicle operation.

### SEATS

Each bench seat is designed for two occupants.

The seats can be pivoted forward or completely removed to access components underneath.

### CANOPY TOP AND WINDSHIELD

#### ⚠ CAUTION

*To prevent damage to the vehicle, do not hold on to the canopy top struts while the vehicle is moving.*

The optional canopy top and windshield enhances the riding experience. The canopy mounts to the vehicle struts and allows water to drain from the front strut. The canopy top and windshield provides some protection from the elements. but do not keep occupants dry from heavy rain or provide protection from storms.

#### ⚠ WARNING

*If there is a risk of lightning, leave the vehicle and look for a safe location to wait until the lightning has stopped.*

*The canopy top does not provide protection from roll-over or falling objects.*

Avoid cleaning the windshield with abrasive materials.

## FEATURES / CONTROLS

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## OPERATION

### NOTICE

Some accessories continue to operate with the key in the OFF position. Leaving these accessories activated after the vehicle is shut down can cause battery discharge.

### ⚠ CAUTION

**To prevent damage to the vehicle, do not hold on to the canopy top struts while the vehicle is moving.**

## SAFETY

### ⚠ WARNING

**Failure to operate this vehicle as instructed can cause collision, loss of control or rollover resulting in severe injury or death. Follow all operation procedures in this section. Read and comply with all safety information in the SAFETY section starting on page 13.**

## BEFORE INITIAL USE

To prepare the new vehicle for operation, complete the following:

- Check for possible leaks that may have developed during shipment of the vehicle.
- Charge batteries.
- Perform the pre-ride inspection (page 32).
- Burnish brake pads using the following procedure.

### Burnishing Brakes

Brake pads must be burnished to achieve full braking effectiveness. Braking distance will be extended until the brake pads are properly burnished.

### ⚠ WARNING

**Do not attempt sudden stops or put yourself in a situation where a sudden stop might be required until the brake pads are properly burnished.**

This procedure must be performed on a level, paved surface in a safe area with little to no loose gravel or other hazardous environmental conditions.

Use the following procedure to properly burnish the brakes:

1. Drive forward at a minimum of 14 mph and quickly stop the vehicle. Do not lock the brakes or cause the vehicle to skid.
2. Check that the area behind the vehicle is clear and change the direction selector to R. Accelerate to a maximum speed of 6 mph and quickly stop the vehicle without locking the brakes.
3. Alternate between the forward and reverse procedure ten times to complete the procedure.

## PRE-RIDE INSPECTION

To decrease the risk of an accident, inspect and verify that the vehicle is in safe operating condition before each use. Check the items in the table to help ensure safe and reliable operation.



Item	Remark	Page
Battery pack	Check charge level.	56
Brake system/pedal travel	Check for proper operation.	52
Parking brake (e-brake)	Ensure vehicle will not roll when the key is off.	—
Front suspension	Inspect. Lubricate if necessary. Check for loose or missing hardware.	—
Rear suspension	Inspect. Lubricate if necessary. Check for loose or missing hardware.	—
Steering	Check for smooth and free operation.	—
Tires	Check condition and pressure.	47
Wheel hardware	Check for loose or missing hardware.	—
Frame hardware	Check for loose or missing hardware.	—
Fluid leakage	Inspect vehicle for leaks.	—
Switches	Check operation.	—
Reverse warning alarm	Check operation.	—
Headlights	Check operation.	50
Brake light / tail lights	Check operation.	50

## BATTERY CHARGER

The charger should be operated in accordance with the charger manufacturer's instructions. See APPENDIX on page 67. Always place the charger outside the vehicle before and during the charging cycle. Never charge batteries in a hazardous environment.



***Risk of electric shock. Connect the charger power cord to an outlet that is correctly installed and connected to an electrical ground according to all codes and regulations. A grounded outlet is necessary to decrease the risk of electric shock – do not use ground adapters or replace the plug. Do not touch parts of output connector or battery terminals that do not have insulation.***

**DANGER**

*Disconnect the AC plug before you make or break the connections to a battery that is charging. Do not open or disassemble the charger. Do not operate the charger if the AC cord is damaged. All repair work must be done by qualified personnel.*

Refer to the charger manufacturer User's Guide for operation, maintenance and troubleshooting information. See APPENDIX on page 67.

**WARNING**

*To prevent over-heating that can cause damage to the charger and possible fire, keep the air fins clear. Install portable chargers on a platform above the ground to allow maximum air flow around and below the charger.*

*The power AC cord has a plug with a ground post. Do not remove, cut or bend the ground post.*

### Off Board Charger

The off board or portable charger must have a dedicated 15 amp AC circuit. The charger should be placed in an area that permits good air flow around and under the charger. Read and follow the operation instructions supplied by the manufacturer with the charger.

1. Park the vehicle in a well ventilated area, turn the key switch to the OFF position, and remove it from the vehicle.
2. Connect the AC cord to a dedicated 15 amp AC outlet to activate the charger.
3. Plug the charger cord into the charge receptacle on the vehicle.
4. Unplug and properly store the cord when the charging cycle is complete.



The battery charger will test the temperature of the battery pack. If the temperature is too hot or too cold, the charger will shut down. If the battery pack temperature is within the safe to charge range, the charger will operate.

### On Board Charger

The on board charger (if equipped) is located under the rear seat. It is wired directly to the batteries.

1. Park the vehicle in a well ventilated area, turn the key switch to the OFF position, and remove it from the vehicle.
2. Plug the charger cord into a dedicated 15 amp AC outlet to activate the charger.
3. Unplug and properly store the cord when the charging cycle is complete.



### PERFORMANCE FEATURES

#### NOTICE

*The vehicle operates when the run/tow switch is in the RUN position.*

*The speed of the motor is sensed and controlled by the controller.*

#### Speed Control

##### ⚠ WARNING

***The speed control system is not an alternative for the brake. Use the brake to control speed and decrease the risk of injury.***

Speed control system vehicles are equipped with a regenerative motor control system.

Example: If all of the following events occur:

- the vehicle is being driven down a slope
- the vehicle attempts to exceed the specified top speed with the accelerator pedal pressed **or** released

the regenerative brake will limit the speed of the vehicle to the specified top speed, but the warning tone will **not** activate. When the regenerative braking system is activated by this sequence of occurrences, the motor generates power which is returned to the batteries.

If the operator tries to override the electronic brake feature by moving the key switch to another position, the warning beeper activates and the vehicle rapidly decelerates.

#### Pedal-Up Braking

Pedal-up braking is regenerative braking that occurs when the accelerator pedal is released.

Example: If all of the following events occur:

- The vehicle is being driven down a slope
- The accelerator pedal is released for more than one second

the pedal-up braking decreases speed to 8 mph (13 kph), then the vehicle freely moves without the accelerator pressed, between 8 and 3 mph (5 kph), or the accelerator pedal is applied. The warning beeper will not activate.

When pedal-up braking is activated by this sequence of occurrences, the motor generates power which is returned to the batteries.

#### Anti-Stall Feature

Anti-Stall protection prevents motor damage if the vehicle is stalled against an object or on a hill.

Example: If all of the following events occur:

- the system senses that the accelerator pedal is pressed (power applied to motor)
- the motor is stopped long enough that additional time can cause damage to the motor

the Anti-Stall feature will interrupt power to the motor. To restore power to the motor, cycle the key switch to the OFF position and then back to the ON position.

### High Pedal Disable Feature

High Pedal Disable prevents acceleration of the vehicle if the direction selector is changed or the key is turned on while the accelerator is pressed.

### Diagnostic Mode Feature

With some electrical system failures, the Diagnostic Mode feature defaults to a mode that allows the vehicle to operate at a decreased speed. If this feature activates on your vehicle, contact your dealer.

## STARTING AND STOPPING THE VEHICLE

All vehicles have an '*interlock system*' that disables the controller and prevents operation of the vehicle while the charger is connected. Remove the charger plug from the receptacle and correctly store the cord before moving the vehicle.

1. Sit in the driver's seat.
2. Press and hold the brake pedal.
3. Insert the key and turn to desired direction of travel.

#### NOTICE

*When in the R position, a warning alarm will activate to indicate that the vehicle is ready to run in reverse.*

4. Slowly press the accelerator pedal to start the motor.
5. When the accelerator pedal is released, the motor decreases the speed of the vehicle. To stop the vehicle more quickly, press the brake pedal.
6. Remove the key from the switch before exiting the vehicle.



### Starting on a Hill

The IntelliBrake™ (parking brake) will activate automatically when the vehicle stops. To start the vehicle on a hill, press the accelerator pedal and the parking break will release.

### ACCELERATING

**NOTICE**

*Practice acceleration and deceleration to become familiar with the vehicle's handling characteristics.*

**⚠ WARNING**

***Accidental movement of the accelerator pedal can cause the vehicle to suddenly move and cause severe injury or death. Make sure the key is in the OFF position any time the vehicle is parked.***

1. Insert the key and turn to desired direction of travel.
2. Apply slow, steady pressure to the accelerator pedal to gradually increase vehicle speed.
3. Release the accelerator pedal to decrease vehicle speed.

### BRAKING

**NOTICE**

*Practice slowing and stopping using the brake to become familiar with the vehicle's handling characteristics.*

**⚠ WARNING**

***If towing a trailer, the weight of the load will increase the braking distance required to slow or stop the vehicle. Not allowing for increased braking distance under load can cause an accident or injury.***

1. Release the accelerator pedal completely.
2. Press the pedal to slow or completely stop the vehicle.

### Coasting

The vehicle has a braking feature (pedal-up) that decreases speed when the accelerator pedal is released. The feature continues to decrease speed until the vehicle stops. If needed, press brake to decrease speed or stop quickly.

Do not allow the vehicle to coast at speeds that are above the maximum recommended speed. Apply constant brake pressure when descending a hill to control the speed of the vehicle.

### DRIVING PROCEDURE

1. Perform the pre-ride inspection. See page 32.
2. Sit in the driver's seat.
3. Check surroundings and determine the path of travel.
4. Press the brake pedal.
5. Insert the key and turn to desired direction of travel.
6. With both hands on the steering wheel, release the brake and immediately apply gradual and steady pressure to the accelerator pedal.

## DRIVING WITH PASSENGERS

- All passengers must fit the vehicle. Passengers must be able to:
  - sit with their back against the seat
  - have both feet flat on the floor
- Do not allow more than three passengers in the vehicle.
- Do not allow a passenger to ride anywhere on the vehicle except the passenger seats.
- Do not drive with a passenger until you have at least two hours of experience driving this vehicle.
- Travel at speeds appropriate for your skills, your passenger's skills and the operating conditions. Avoid unexpected or aggressive maneuvers that could cause discomfort or injury to a passenger.
- Since handling characteristics can change with the added weight of passenger(s), allow more time and distance for braking.



## SLIPPERY SURFACES

### **⚠ WARNING**

*Skidding or sliding can cause loss of vehicle control.*

*Skidding or sliding can cause rollover if tires have lost traction, then regain traction suddenly.*

*When operating on slippery surfaces, drive at reduced speed to maintain control of the vehicle.*

When operating in conditions such as ice, water, muddy trails, loose gravel or freezing temperatures, follow these guidelines:

- Do not operate on excessively rough, slippery or loose terrain.
- Slow down before entering potentially slippery areas.
- Maintain a high level of alertness, carefully evaluate the path of travel and avoid quick, sharp turns.
- Correct a skid by turning the steering wheel in the direction of the skid.
- Never apply the brakes during a skid.



### UPHILL OPERATION

When driving up a hill, follow these guidelines:

- Avoid excessively steep hills.
- Drive straight up the hill.
- Drive at a steady rate of acceleration and speed.
- Do not drive over the crest of a hill at high speed since there is little or no visibility to what's on the other side of the hill.

#### Stalling on a Hill

A rollover can result from stalling or rolling backward while climbing a hill.

Drive uphill at a constant speed.

If your vehicle completely stalls while climbing a hill:

1. Apply the brakes.
2. Verify that the area behind you is clear.
3. Turn the key switch to the R (reverse) position.
4. Use steady accelerator pressure to control the speed and allow the vehicle to slowly roll straight downhill.

### DOWNHILL OPERATION

#### ⚠ WARNING

*If towing a trailer, the weight of the load will increase the braking distance required to slow or stop the vehicle. Not allowing for increased braking distance under load can cause an accident or injury.*

When driving down a hill, follow these guidelines:

- Apply light and constant pressure to the brakes to maintain speed and control of the vehicle.
- Avoid excessively steep hills.
- Drive straight down the hill.
- Never drive down hills with excessively slippery or loose surfaces.

### REVERSE OPERATION

When driving in reverse, follow these guidelines:

- Check that the area behind the vehicle is clear.
- Check that left and right fields of vision are clear.
- Do not back down a steep hill.
- Drive slowly.
- Press the brakes lightly for stopping.
- Accelerate slow and steady.
- Avoid turning at sharp angles.

## PARKING THE VEHICLE

### **⚠ WARNING**

*To avoid unintentional movement of the vehicle that could result in severe injury, vehicle damage or damage to surrounding objects, park the vehicle on a flat surface. If parking on an incline is unavoidable, chock the wheels to keep the vehicle from rolling.*

### **NOTICE**

*When parking the vehicle in cold climates (0°C, 32°F), the car should be stored in an enclosed garage.*

1. Press the brake to stop the vehicle.
2. Turn the key switch to the OFF position.
3. Remove the key from the vehicle to prevent unauthorized use.
4. If parking on an incline, chock the wheels on the downhill end to prevent the vehicle from rolling.



## TOWING

### **⚠ WARNING**

*Attach a trailer to the tow hitch only. Attaching the trailer at any other location can cause a loss of vehicle control.*

*Do not attach unapproved accessories to the hitch receiver. Towing and hitch mounted accessories can change the performance qualities of the vehicle and cause dangerous handling characteristics, possible rollover, or vehicle damage.*

*Do not attempt to tow with a vehicle not equipped with rear hitch.*

When towing a load, follow these guidelines:

- Do not tow more than the recommended towing weight shown in the following table.

VEHICLE TOWING (0% - 20% GRADE)	
Maximum Vehicle Weight Capacity	800 lbs (362.9 kg)
Maximum Gross Trailer Weight	500 lbs (226.8 kg)

- Do not exceed the maximum vehicle weight capacity (includes weight of operator, passenger, cargo, accessories, and trailer tongue weight).
- The range of motion of the trailer is limited by the ball and hitch. Do not tow a trailer on rough terrain.

## **OPERATION**

- Drive slowly and carefully. Towing may negatively impact vehicle handling, stability, braking, battery range, durability, and performance. Do not tow a trailer more than 19.5 MPH (31.4 km/h).
- Towing a load increases braking distances required for slowing or stopping the vehicle.
- Do not attach unapproved accessories to the hitch receiver.
- Trailer tongue weight must be between 8% and 12% of the gross trailer weight for safe towing.
- Avoid parking on an incline.
- Do not operate on a grade exceeding 20%.
- Always secure the cargo.

## MAINTENANCE

To prevent serious injury or death, follow the procedures and comply with the safety information in this section while performing service or maintenance.

### **WARNING**

***Use specified tools and safety equipment.***

***Remove all jewelry.***

***Do not allow loose clothing or hair to contact moving parts.***

***Do not touch hot objects.***

***Make sure the key switch is in the OFF position and the run/tow switch is in the RUN position.***

***Disconnect the negative battery terminal to prevent accidental operation.***

***If lifting is required, follow the procedures and safety information on page 44.***

***Wear eye protection.***

***Wear a face shield when working around the battery packs.***

***Be careful when working around battery packs, using solvents, or compressed air.***

***Use insulated tools within the battery area to prevent blowing the internal BMS fuse.***

***To prevent risk of battery explosion, keep all flammable materials, open flames or sparks away from the battery packs.***

***Be constantly aware that some components are heavy, spring loaded, corrosive, explosive, can cause high amperage or get extremely hot.***

***Keep hands, face, feet and body away from any area that can expose them to injury if an unexpected situation occurs.***

***After service is complete, test the vehicle in an area that is free from vehicle and pedestrian traffic.***

## MAINTENANCE

### ⚠ CAUTION

*To decrease the risk of damage to the controller or motor, move the run/tow switch to the TOW position before towing the vehicle.*

*After connecting a battery or any other wires, wait a minimum of 30 seconds before moving the switch to the RUN position.*

## SCHEDULED MAINTENANCE

Consistent inspection, adjustment, and lubrication of some components are necessary to maintain the vehicle so that it remains in safe and reliable condition. Refer to the SCHEDULED MAINTENANCE CHART on page 42 for detailed requirements.

Inspect, clean, lubricate, adjust, and replace parts as necessary. Use OEM or equivalent replacement parts. Record the maintenance items performed along with details in the MAINTENANCE LOG on page 63.

### NOTICE

*Service and adjustments are important for safe and reliable vehicle operation. If not familiar with service and adjustment procedures, have a certified dealer perform the operations.*

## SCHEDULED MAINTENANCE CHART

Perform all services at the maintenance interval reached first.

ITEM	INTERVAL (perform at interval that comes first)		REMARKS	PAGE
	HOURS	CALENDAR		
Overall vehicle condition	Pre-ride		Inspect.	
Battery Module	Daily		Charge daily after use.	56
Steering	Pre-ride		Check for smooth and free operation.	
Front suspension	Pre-ride		Inspect. Check for leaks and loose or missing hardware.	
Rear suspension	Pre-ride		Inspect. Check for leaks and loose or missing hardware.	
Tires	Pre-ride		Check condition and pressure.	48
Wheel lug nuts	Pre-ride		Check for loose or missing.	49
Accelerator	Pre-ride		Check for smooth operation.	
Brake system	Pre-ride		Check for smooth operation and acceptable stopping distance.	52
Frame hardware	Pre-ride		Check for loose or missing.	

ITEM	INTERVAL (perform at interval that comes first)		REMARKS	PAGE
	HOURS	CALENDAR		
Headlights and tail-lights	Pre-ride		Check operation. Replace LED assemblies as needed.	50
Reverse warning alarm	Pre-ride		Check operation.	
Switches	Pre-ride		Check operation.	
Fluid leakages	Pre-ride		Inspect entire vehicle for leaks.	
Parking brake (e-brake)	Pre-ride		Check for correct hold on flat ground and inclines.	
Brake pads	10	Monthly	Inspect. Replace as needed.	
Charger receptacle	20	Monthly	Clean connections.	
Accelerator	20	Monthly	Check for smooth operation.	
Wiring	20	Monthly	Inspect for loose connections, broken or missing insulation.	
Steering	20	Monthly	Check for excess play, loose or missing hardware.	
Tie rods	20	Monthly	Check for excess play, bent rods, loose or missing hardware.	
Front suspension	20	Monthly	Inspect strut for leaks. Check hubs and kingpins, for excessive play, worn bushings, loose or missing hardware.	
Rear axle	20	Monthly	Check for leakage; add oil as required.	
Brakes	20	Monthly	Check for smooth operation and acceptable stopping distance.	
Hydraulic brake fluid	20	Monthly	Check fluid level.	53
General lubrication	50	3 Months	Lubricate all fittings, pivots, cables, etc. where required.	44
Front wheel alignment	60	3 Months	Check for unusual tire wear.	
Rear Suspension	60	3 Months	Check for shock oil leakage, worn bushings, loose or missing hardware.	
Hydraulic brake fluid	100	1 Year	Replace fluid.	Dealer
Rear axle	500	5 years	Replace fluid.	
Motor coupling	20,000 Amp Hours	5 years	Add anti-seize compound (approx. 1 tbsp).	

### RECOMMENDED LUBRICANTS AND FLUIDS

Check and lubricate all components at the intervals shown in the SCHEDULED MAINTENANCE CHART beginning on page 42.

Item	Capacity	Lubricants/Fluids	Notes
Rear axle oil	25 oz. (0.7 L)	Mobil 424	P/N 603967
Rear axle oil	2.0 oz (59 mL)	Friction Modifier	P/N 611242
Grease fittings		Universal joint grease or equivalent	Do not exceed 3 pumps of grease in each fitting.

### REPLACEMENT OF MAINTENANCE ITEMS

These items or their equivalents can be purchased through an authorized dealer, directly from the manufacturer or any other qualified source.

Item	Part Number
58V, 10A Mini Fuse	636455G22
32V, 15A Mini Fuse	636455G13
32V, 5A Mini Fuse	636455G10
32V, 10A Mini Fuse	636455G12
Throttle Resistor	662004
12V, 20A Relay	643691
LED Headlight Assembly	651411G03
LED Tail Light Assembly	10014910

### LIFTING THE VEHICLE



**WARNING** *Read and comply with all of the following warnings and lifting procedures to prevent the possibility of the vehicle falling and causing serious injury or death.*

For some maintenance procedures, it is necessary to lift the vehicle. To safely lift the vehicle, it is important follow the procedures and safety information provided.

**⚠ WARNING**

*The vehicle must be on a firm and level surface.*

*Be constantly aware that the vehicle is not stable during the lifting process.*

*Place jack and jack stands only in areas indicated.*

*Make sure the vehicle is stable on jack stands before getting underneath.*

*Never get under a vehicle while it is on a jack only.*

*Put wheel chocks in front of and behind the wheels that are not being lifted.*

*Do not allow anyone on the vehicle when it's being lifted or on jack stands.*

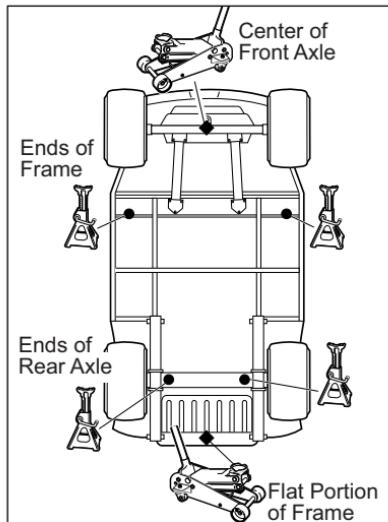
*Lift and support the drive wheels on jack stands before performing any service to the powertrain while the motor is in operation.*

**Tools**

- jack
- jack stands (4)
- wheel chocks

**Lifting Front**

1. Chock the rear wheels to keep the vehicle from rolling backward.
2. Put a jack under the center of the front axle.
3. Raise the vehicle with the jack.
4. Install jack stands under the front frame cross member as shown.
5. Lower the vehicle until it rests on the jack stands.
6. Remove the jack.
7. Confirm that the vehicle is stable on the jack stands before proceeding with any service.



### Lifting Rear

1. Chock the front wheels to keep the vehicle from rolling forward.
2. Put a jack under the center of the receiver hitch.
3. Raise the vehicle with the jack.
4. Install jack stands under each end of the rear axle.
5. Lower the vehicle until it rests on the jack stands.
6. Remove the jack.
7. Confirm that the vehicle is stable on the jack stands before proceeding with any service.

### Lowering Vehicle

1. Make sure chocks are still in place on any wheels that remain on the ground.
2. Put the jack in the same location that was used to raise the vehicle.
3. Raise the vehicle enough to remove the jack stands. Remove the jack stands from underneath the vehicle.
4. Slowly lower the vehicle to the ground and remove the jack.

## VEHICLE CLEANING AND CARE

Keeping your vehicle clean is not only beneficial to its appearance, but can also help extend the life of various components.

### Washing the Vehicle



***Do not use a pressure washer to wash the vehicle. High water pressure can damage vehicle components.***

***To prevent potential damage to electronic components, do not spray with water.***

***Some products, including insect repellents and chemicals, will damage plastic surfaces. Do not allow these types of products to contact the vehicle.***

- Use an automotive type cleaner or mild soap to wash the vehicle. Harsh cleaners can scratch the finish.
- Use clean or new cloths and pads for washing. Reused cloths and pads can contain dirt particles that will scratch the finish.
- Inspect all grease fittings for dirt intrusion or lack of grease after washing. Apply grease as required to maintain proper function.
- Use a sponge or soft brush and a soap/water solution to clean the vinyl seats. Rinse with clean water.
- Use an automotive type wash cloth to wash the body of the vehicle. To prevent the soap from drying on the vehicle, rinse with clean water frequently.

- Clean the windshield with water and a clean cloth. Remove small scratches with a plastic polish.
- Clean the bottom of the vehicle where mud or dirt can collect. Loosen any packed sediment to help with removal. Be careful not to damage the paint.
- Dry the vehicle with a chamois before the water dries to prevent water spots.

## Polishing the Vehicle

- Do not use medium to heavy duty compounds on the finish. Use wax that is for clear coat automotive finishes only. Do not apply wax or polish to matte finish surfaces.
- Use clean or new cloths and pads for polishing. Old or reused cloths and pads can contain dirt particles that will scratch the finish.

## TIRES

Follow the tire maintenance procedures as instructed in this manual and on the labels on the vehicle.

Always use the approved size and type of replacement tires. See Specifications on page 61 for the proper tire type and size.



***Worn, improperly inflated, improperly sized, or incorrectly installed tires will affect vehicle handling and could cause an accident resulting in severe injury or death.***

***Inflate all tires to the same pressure. Operating with unequal or incorrect pressure can adversely affect steering and handling and could cause an accident resulting in severe injury or death.***

***To decrease the risk of tire explosion, do not exceed the tire inflation rating on the tire sidewall. Make sure the tires are properly inflated at all times of operation. See Tire Pressure on page 48.***

***To decrease the risk of tire explosion, inflate small amounts of air into the tire at intervals to allow the bead to seat properly. Because of the low volume of the small tires, over inflation can occur in seconds. Never exceed the tire inflation pressure rating on the tire sidewall when seating a bead. Protect face and eyes when removing a valve core.***

***When removing wheels, use only sockets made for impact wrenches to decrease the risk of injury by a broken socket.***

## MAINTENANCE

### ⚠ WARNING

***Do not use tires with a low rated pressure. Do not use tires that have a recommended tire inflation pressure less than the tire inflation pressure recommended in the following table.***

***Do not over inflate the tires. Excess pressure can cause the tire to separate from the wheel or cause a tire explosion.***

### Tire Pressure

Maintaining correct tire inflation pressure is essential for safe vehicle operation. You can vary the inflation pressure, within the recommended range to suit the condition of the terrain.

TIRE PRESSURE RANGE	TERRAIN CONDITIONS	RECOMMENDATION
18-22 psi (124-152 kPa)	Hard surfaces or pavement	Inflate to higher pressure within the range; never exceed maximum pressure indicated.
	Soft terrain or turf	Inflate to lower pressure within the range to reduce potential damage to the terrain or turf.

### Tire Repair

#### Tools

- Lug wrench, 3/4"
- Impact wrench
- Impact socket, 3/4"
- Torque wrench, ft.lbs.

### NOTICE

*Tire plug tools and plugs are available at automotive outlets. The tire does not have to be removed from the wheel to install the tire plug.*

Use a tire plug to repair small holes in the tread part of the tire. For large holes or holes/cuts in the tire sidewall, the tire must be replaced.

1. Remove the wheel from the vehicle. See Wheel Removal on page 49.
2. Locate the leak in the tire.
  - a. If the tire is very low or flat, fully inflate the tire.
  - b. Brush soapy water over the surface of the tire. Air bubbles will be visible where the air is leaking from the tire.
  - c. Mark the hole with chalk.
3. Install the plug according to the manufacturer's instructions.
4. Install the wheel on the vehicle. See Wheel Installation on page 49.
5. Fully inflate the tire. See Tire Pressure on page 48.

## Tire Replacement

Tire replacement requires a tire mounting machine, and must be done by a qualified tire center or an authorized dealer.

## WHEELS

### **⚠ WARNING**

*Worn, improperly inflated, improper sized, or incorrectly installed tires will affect vehicle handling and could cause an accident resulting in severe injury or death.*

### **⚠ CAUTION**

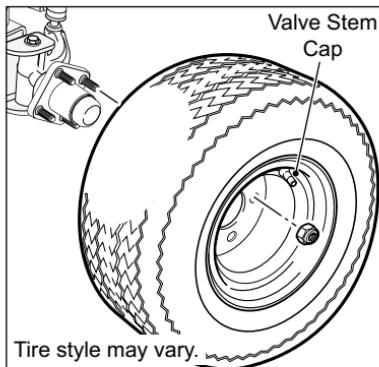
*To decrease risk of component damage, do not tighten the lug nuts to more than the torque specified below.*

### Wheel Removal

#### Tools

- lug wrench, 3/4"
- impact wrench
- impact socket, 3/4"
- torque wrench, ft.lbs.

1. Lift the vehicle. See LIFTING THE VEHICLE on page 44.
2. Remove the lug nuts.
3. Remove the tire from the vehicle.



### Wheel Installation

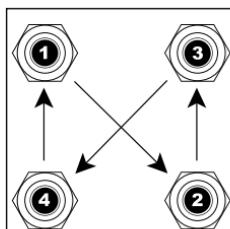
Lug Nut Torque	65 - 85 ft.lbs. (88 - 115 Nm)
----------------	-------------------------------

### **NOTICE**

*To decrease the risk of component damage, do not tighten the lug nuts to more than the specified torque.*

*Always install lug nuts using a cross sequence pattern to ensure even seating of the wheel against the hub.*

1. Install the wheel on the hub with lug nuts. Make sure the valve stem is to the outside.
2. Finger tighten the lug nuts.
3. Using the cross tightening pattern shown, tighten lug nuts to 65 - 85 ft.lbs. (88 - 115 Nm). Tighten in increments of 20 ft.lbs. (27 Nm).



### LIGHTS

Clean the lights frequently to maximize visibility.

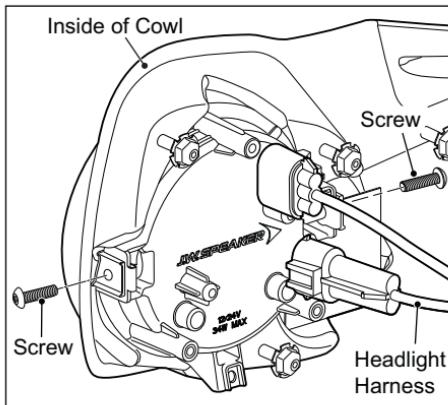
#### ⚠ WARNING

***Do not operate vehicle at night or in low light if any lights are not properly and fully functioning. Poor lighting reduces visibility that could cause an accident resulting in severe injury or death.***

***Since light components can get hot during operation, allow lights to cool before servicing to prevent burns to the skin.***

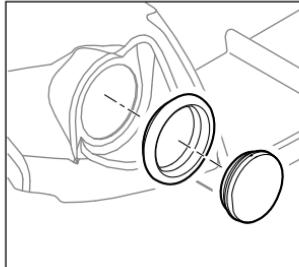
#### Headlight Replacement

1. Disconnect the headlight harness from the headlight.
2. Remove the screws securing the headlight assembly to the headlight bezel.
3. Remove the headlight assembly and install the new one with screws.
4. Connect the harness to the headlight assembly.



#### Tail Light/Brake Light Replacement

1. Disconnect the tail light harness from the tail light.
2. Press the tail light assembly out of the grommet by pushing on the back of the assembly.
3. Press the new tail light assembly into the grommet.
4. Connect the harness to the tail light assembly.

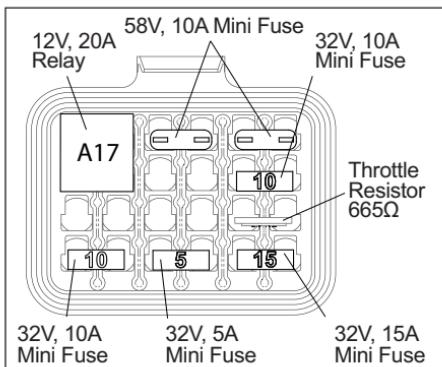


## FUSE REPLACEMENT

### NOTICE

*Have the vehicle inspected by your dealer if fuses continue to blow after they have been replaced.*

1. Lift the rear seat bottom to access the PDM.
2. Open the PDM to access the fuses.
3. Remove the old fuse and replace with a new fuse of the same type and size.
4. Fuses are available from a local dealer or the manufacturer.



## CONTROLLER SYSTEM TEST

At monthly intervals, test the controller by allowing the vehicle to roll down an incline with the accelerator pedal released. Braking force should be felt at approximately 2 mph (3 kph) indicating that the system is functioning. If vehicle speed continues to rise, apply the brake and have vehicle inspected by a trained mechanic.

## REAR AXLE

The only maintenance necessary for the first five years is the inspection of the rear axle for lubricant leakage. Unless leakage is visible, the lubricant needs to be replaced after five years. Refer to the vehicle service manual for the fluid replacement procedure or take to your dealer.

Change the axle oil at the intervals indicated in the SCHEDULED MAINTENANCE CHART on page 42.

### Checking the Lubricant Level

Clean the area around the check/fill plug and remove the plug. The correct lubricant level is just below the bottom of the threaded hole. If lubricant is low, add as required. Add slowly until lubricant starts to seep from the hole. Install the check/fill plug. In the event that the lubricant is to be replaced, the oil pan must be removed or the oil siphoned through the check/fill hole.

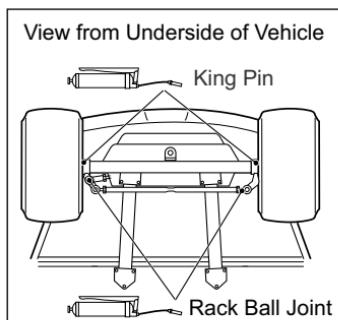
### LUBRICATION

#### ⚠ CAUTION

*Do not use more than three pumps of grease in a grease fitting at any one time. Excess grease can cause grease seals to fail, or allow grease into areas that could damage components.*

*Pumping more than three pumps of grease in a grease fitting could damage grease seals and cause premature bearing failure.*

Lubricate components at the intervals indicated in the SCHEDULED MAINTENANCE CHART on page 42.



### HYDRAULIC BRAKES

#### ⚠ WARNING

*Always inspect the pedal travel before operating a vehicle to confirm some brake function is present.*

#### Hydraulic Brake Fluid

#### ⚠ WARNING

*When adding or changing brake fluid, always use brake fluid from an unopened bottle. After opening a bottle of brake fluid, discard the unused portion. Do not store or use from an opened bottle. Brake fluid rapidly absorbs moisture from the air. The moisture causes the boiling temperature of the brake fluid to drop. This can lead to premature brake fade and the risk of accident that can result in severe injury or death.*

In addition to the scheduled maintenance interval for changing the brake fluid, the brake fluid must also be changed in the following conditions:

- fluid becomes contaminated
- fluid level falls BELOW the MIN mark
- the type/brand of fluid in reservoir is unknown

Replace the fluid according to instructions in the vehicle service manual or take to your dealer.

## Check Brake Fluid Level

**NOTICE**

*The brake fluid reservoir is under the cowl at the passenger's side front wheel.*

1. Park vehicle on a level surface.
2. Check the brake fluid level at the reservoir. The fluid level should be between the upper MAX and lower MIN lines.
3. If the level is below the MAX line, add brake fluid:
  - a. Clean any dirt and debris from around the reservoir cap.
  - b. Remove cap from reservoir.
  - c. Add fluid until it reaches the MAX line.
  - d. Reinstall cap.
  - e. Clean any spilled brake fluid from the area.
  - f. Dispose of any unused fluid.
4. Press and hold the brake pedal fully down for a few seconds.
5. Check for fluid leakage around the fittings.

## LITHIUM-ION BATTERY PACK

Charge the battery pack using only the OEM approved Lithium-Ion battery charger.

There is no maintenance required for the lithium battery pack(s) in your vehicle.

**⚠ WARNING**

*Improper handling of batteries and electrical components can result in serious injury or death.*

*Do not remove the battery pack cover. Do not attempt to remove batteries or battery cables. Do not use the battery pack without the control module installed. All battery and electrical service must be performed by an authorized service facility.*

*All tools used in or around the battery pack area should be insulated. Do not intentionally cause a short to the power terminal (P+, P-, B+, B-) with a metallic object.*

*Do not cut, tear or remove the seal tape. Do not disassemble or modify the design, including the electrical circuit, of the battery pack or control module.*

### **⚠ WARNING**

*To prevent the risk of battery explosion, keep all flammable materials, open flames or sparks away from the batteries. Do not leave the battery pack near a fire or heat source. Do not throw Lithium-Ion batteries into a fire. Do not apply heat to any part of the battery pack or battery management module with a soldering iron. Do not place the battery pack in a microwave oven, dryer or high-pressure container.*

*Make sure the key switch is in the OFF position and the run/tow switch is in the RUN before starting any type of work on the vehicle.*

*Do not attempt to operate the vehicle or charge the battery pack at temperatures above 140°F (60°C).*

*Do not immerse or throw the battery pack in water. Do not pressure wash the battery pack.*

*Do not puncture the battery pack or control module. Do not strike the battery pack with a hammer or heavy weight. Do not step or stand on the battery pack. Do not throw or drop the battery pack on hard surfaces.*

*If the battery pack terminals are contaminated or dirty, clean with a dry cloth before using.*

*Keep the battery pack and control module away from static electricity.*

## BATTERY DISPOSAL

### **NOTICE**

*When Li-ion batteries are put into a municipal/household recycling bin, they are taken to a municipal recovery facility (MRF) that is typically equipped to recycle only household paper, plastic, metal and glass. At an MRF, Li-ion batteries may be damaged or crushed during processing and can become a fire hazard.*



*The chasing arrow symbol on Li-ion batteries means they are recyclable at specialized battery recyclers; it does NOT mean Li-ion batteries can be put in the municipal/household recycling bin.*

**⚠ WARNING**

*Do not dispose of Li-ion batteries in household or shop garbage/recycling bins. They can cause fires during transport or at landfills and recyclers.*

*Before recycling or shipping battery pack, make sure that the battery pack terminals are insulated.*



Always recycle Lithium-ion batteries:

- Contact the distributor or manufacturer for information on returning or recycling used or damaged battery packs.
- Contact local or state environmental department for disposal information.

## BATTERY CHARGER MAINTENANCE

The battery charger is designed to completely charge battery packs. The automatic charger determines the correct length of charge for the battery set and turns off when the batteries are charged. Always refer to the instructions supplied with the charger. See APPENDIX for complete charger information.

## BATTERY PROLONGED STORAGE

**⚠ CAUTION**

*Improper storage may damage, destroy or cause permanent loss of battery capacity. Do not exceed storage time or temperature limits. Batteries must be charged to the correct level before storage. Storing fully depleted batteries will make them permanently unusable.*

### Storage Preparation

The optimum storage temperature range is between 65°F and 82°F (18°C and 28°C).

- Charge the battery module based on climate during storage period.
  - In cold climates, fully charge the battery module. Make sure that the charging operation is complete and there are no faults displayed on the charger. The green light on the charger should be on, indicating the charge cycle is complete.
  - In hot climates, store the vehicle with a 30% to 50% charge of battery pack capacity.
- Turn the key to the OFF position and remove it from the key switch.
- Make sure the tow/run switch is in the RUN position.
- Turn off all accessories.



## MAINTENANCE

The storage time for properly charged Lithium-Ion batteries supplied with this vehicle varies based on the ambient temperature.

TEMPERATURE	LENGTH OF STORAGE TIME
-22°F to -4°F (-30°C to -20°C)	One month at 100% battery charge, all accessories turned off.
-4°F to 113°F (-20°C to 45°C)	Six months at 100% battery charge, all accessories turned off.
113°F to 140°F (45°C to 60°C)	One month at 30% - 50% charge, all accessories turned off.

### Setting State of Charge (SOC)

The SOC meter or the hand held programmer can be used to determine the state of charge of the battery module.

- SOC is below 30%:
  - Charge until SOC reaches 50%.
  - Disconnect the charger from the AC power source first, then from the charging receptacle on the vehicle to stop the charge cycle.
- SOC is above 50%:
  - operate vehicle until SOC is below 50%.

### During Storage

Check the SOC every 30 days. If below 30%, charge the battery module until the SOC reaches 50%.

### Extreme Low Temperature Storage

If the ambient temperature is below -4°F (-20°C) DO NOT:

- turn key to F or R
- drive vehicle
- tow vehicle
- charge vehicle
- operate accessories
- operate lights

### Returning Vehicle to Service

At the end of the storage period, charge the battery module to 100% before operating the vehicle.

Before charging the vehicle be sure that the ambient temperature is between 14°F (-10°C) and 113°F (45°C) and the vehicle has had time to adjust to the temperature.

## BATTERY FAULT DIAGNOSIS

See APPENDIX for complete charger information.

## TRANSPORTING THE VEHICLE

### ⚠ WARNING

*Do not ride or allow other people on a vehicle being transported on a trailer or being towed with another vehicle.*

### Hauling the Vehicle

### ⚠ WARNING

*Loose cargo or vehicle components can fly off when the vehicle is being transported. Secure or remove all cargo. Inspect the vehicle for loose components prior to transport.*

*Do not allow anyone to ride in a vehicle being transported on a trailer. Remove the windshield before you transport a vehicle on a trailer.*

- If the vehicle is being hauled on a trailer or truck below highway speeds, check that canopy top hardware is tight and there are no cracks in the canopy top at the mounting points.
  - The rated capacity of the hauling trailer or truck must be more than the weight of the vehicle and load plus 1000 lbs. (454 kg). See VEHICLE SPECIFICATIONS on page 61 for the weight of the vehicle.
- 
1. Drive the vehicle onto the trailer or truck.
  2. Ensure the electric parking brake is engaged.
  3. Turn the key to the OFF position. To prevent loss of the key, remove it from the ignition switch.
  4. Secure the seats.
  5. Secure the vehicle to the trailer or truck with tie downs, straps or ropes.



## MAINTENANCE

### Towing the Vehicle

#### NOTICE

*This vehicle is equipped with an IntelliBrake™ for parking. When the vehicle is stopped, the parking brake is automatically set. The IntelliBrake™ is released when the vehicle is in F (forward) or R (reverse) and the accelerator is pressed. The IntelliBrake™ is also released when the run/tow switch is in the TOW or P (on European Models) position with the key switch turned to N (neutral). The IntelliBrake™ must be manually released in cases of total power loss using the procedure below.*

#### WARNING

*Only tow the vehicle for recovery purposes. Before towing, turn the key switch to N and move the run/tow switch to the TOW position. Ensure brakes and steering are operable.*

*Always have a person driving the vehicle to steer and operate brakes when it is being towed. Do not tow the vehicle above 5 mph (8 kph). Failure to abide by these instructions could cause harm to vehicle and persons involved.*

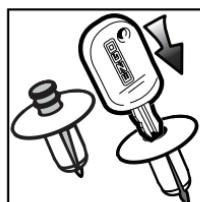
#### NOTICE

*This vehicle is equipped with an automatic parking brake. When the vehicle is stopped, the parking brake is automatically set. The IntelliBrake™ releases when the vehicle is in F or R and the accelerator is pressed. The IntelliBrake™ is also released when the run/tow switch is in the TOW position with the key in N.*

### Manual Release of IntelliBrake™

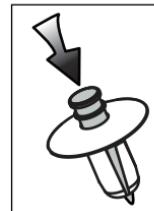
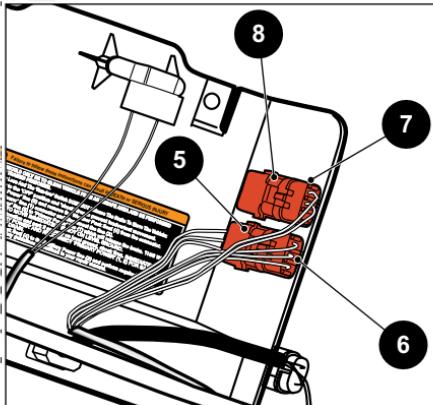
In case of total power loss and the run/tow switch does not release the IntelliBrake™, use the instructions under the controller splash shield. Chock the tires to prevent the vehicle from moving when the brake is released.

To access the instructions, remove three re-usable plastic rivets that secure the controller splash shield to the body and controller. Press the center of the rivet with the vehicle key. When the center pin goes into position, the rivet can be removed. Remove remaining rivets, then turn the splash shield over to read the instructions.



Make sure the key switch is in the OFF position and chock the tires to prevent the vehicle from moving; then do the following:

1. Locate the 'Auxiliary Power' line (7) and remove the weather pack seal (8) from the connector.
2. Locate the 'Primary Power' line connector (5) and disconnect it from line (6).
3. Connect the 'Auxiliary Power' line (7) to the 'Primary Power' line (5).
4. Turn the key switch to the N position, which releases the brakes. If the tires are not chocked and the vehicle is not on flat ground, the vehicle will move immediately.
5. Move the vehicle to desired, safe location, turn the key switch to the OFF position and chock the tires immediately.
6. Disconnect the 'Auxiliary Power' line (7) from the 'Primary Power' line (5).
7. Connect the 'Primary Power' line (5) to line (6).
8. Replace the weather pack seal (8) on the 'Auxiliary Power' line connector (7).
9. To reinstall the controller splash shield, position the splash shield by aligning the mounting holes with the holes in the body, push the center pin of each rivet upward so that the top of the pin is above the rivet head.
10. Place a rivet in each mounting hole of the controller splash shield and push down on the center pin until the top of the pin is flush with the rivet head.



## MAINTENANCE

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## VEHICLE SPECIFICATIONS

## LIBERTY

Overall Length	106.25 in (270 cm)
Overall Width	46 in (117 cm)
Overall Height (no Canopy)	52.5 in (133 cm)
Overall Height (with Canopy)	75.62 in (192 cm)
Wheel Base	77.62 in (197 cm)
Front Wheel Track	38 in (97 cm)
Rear Wheel Track	39 in (99 cm)
Ground Clearance at Differential	7.25 in (18 cm)
Turning Radius	12.85 ft (3.92 m)
Power Source	39.2 - 56.7V Li-ion Battery
Motor Type	AC Induction
HP Peak	11.7 hp (8.7 kW)
HP Continuous	4.4 hp (3.3 kW)
Electrical System	48 V primary, 12 V auxiliary
Battery Quantity and Type	Single, 56.7V Li-Ion Composite Module (Standard Config)
Key or Pedal Start	Pedal
Battery Charger	56.7V 350 W Domestic Charger, 3 m charging cord
Speed Controller	Curtis 1206 AC Controller
Speed (Level Ground)	25 mph (40.2 kph)
Drivetrain	Motor Shaft Direct Drive
Transaxle	Clutch type limited-slip differential with helical gears
Gear Selection	Dash Mounted FNR/key switch
Rear Axle Ratio	16.99:1 (Forward)
Seating Capacity	4-Person
Dry Weight (without battery pack)	966 lb (437 kg)
Curb Weight	1040 lb (471 kg)
Dash / IP Storage Capacity	1123 in <sup>3</sup> (18403 cm <sup>3</sup> )
Vehicle Load Capacity	800 lb (363 kg)
Towing Capacity	500 lb (227 kg)
Outside Clearance Circle	23.9 ft (7.30 m)
Steering	Self-compensating reduction rack and pinion
Front/Rear Suspension	Leaf springs with hydraulic shock absorbers
Brakes	4-wheel hydraulic
Parking Brake	IntelliBrake™ Automatic Electro-Magnetic

## SPECIFICATIONS

Front and Rear Tires	Kruizer KF17 23x7.50R14
Frame	Welded steel with DuraShield™ e-coat and powder coat
Front Body and Finish	Injection Molded TPO
Rear Body and Finish	Thermoform ABS
<i>**Some items shown may be optional equipment**</i>	

## MAINTENANCE LOG

## **RECORDS**

## MAINTENANCE LOG

## **Maintenance Log**

## **MAINTENANCE LOG**

## APPENDIX

## QuiQ CHARGER



## 1 kW Industrial Battery Charger

## QuiQ Charger - E-Z-GO Product Manual

This manual contains important safety and operating instructions for versions of the Delta-Q QuiQ (Model nos. 913-4830-E3/-E3B/E5/-E5B) installed on E-Z-GO brand vehicles. Please read this information before using your QuiQ Charger. For manufacturer contact information and technical support resources, please visit [delta-q.com/support](http://delta-q.com/support)

**SAVE THESE IMPORTANT SAFETY INSTRUCTIONS - This manual contains important safety and operating instructions - read before using charger.**

**Warning**

Charge only 48 Volt Lithium-Ion type batteries activated by Samsung SDI. Other types of batteries may burst causing personal injury and damage. Never charge a frozen battery. Study the battery manufacturer's specific precautions.

**Danger**

Risk of electric shock. Connect charger power cord to an outlet that has been properly installed and grounded in accordance with all local codes and ordinances. A grounded outlet is required to reduce risk of electric shock – do not use ground adapters or modify plug. Do not touch uninsulated portions of output connector or uninsulated battery terminals. Disconnect the charger from either the AC supply or from the golf cart, before making or breaking the connections to the battery. Do not open or disassemble charger. Do not operate this charger if the AC supply cord is damaged or if the charger has received a sharp blow, been dropped, or is damaged in any way – refer all repair work to the manufacturer, or qualified personnel. This charger is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge on electrical systems and battery charging, unless they have been given supervision or instruction concerning use of the charger by a person responsible for their safety. Children should be supervised to ensure that they do not play with the charger.



**INFORMATIONS IMPORTANTES DE SÉCURITÉ Ce manuel contient des instructions importantes concernant la sécurité et le fonctionnement.**

**Attention**

Recharger uniquement les batteries de type Lithium-Ion 48V activées par Samsung SDI. Autres types de batteries pourraient exploser causant des blessures corporelles et des dommages. Ne jamais charger une batterie gelée. Prendre connaissance des mesures de précaution spécifiées par le fabricant de la batterie.

**Danger**

Risque de décharge électrique. Ne pas toucher les parties non isolées du connecteur de sortie ou les bornes non isolées de la batterie. Toujours connecter le chargeur à une prise de courant mise à la terre. Déconnectez la source AC avant de faire ou défaire les connexions à la batterie en charge. Ne pas utiliser le chargeur si le cordon d'alimentation AC est endommagé ou si le chargeur est abîmé suite à une chute ou autre incident. Ne pas ouvrir ni désassembler le chargeur – référer toute réparation aux personnes qualifiées. Cet appareil n'est pas destiné à un usage par des personnes (dont les enfants) avec des déficiences motrices, sensorielles ou mentales réduites, ou ayant une expérience et des connaissances insuffisantes, à moins qu'elles sont sous la supervision ou reçoivent les instructions sur l'utilisation de l'appareil d'un répondant garant de leur sécurité. Les enfants devraient être surveillés afin qu'il ne jouent en aucun temps avec l'appareil.

## Maintenance Instructions

1. Do not expose charger to high pressure water spray when cleaning vehicle.
2. The enclosure of the charger meets IP66, making it dust-tight and protected against powerful water jets. The AC connection is rated to IP20, which is not protected against water. Protect the AC connection if used in wet or dusty environments.
3. If the detachable input power supply cord set is damaged, replace with a cord that is appropriate for your region:
  - + This charger is provided with a cord set for connection to outlets operating at nominal 120 Volts (or 240 Volts as appropriate). If the input plug does not fit the power outlet, contact Delta-Q Technologies for the proper cord set terminating in an attachment plug of the proper configuration for the power outlet.
  - + 'North America: UL or CSA listed / approved detachable cord, 3 conductor, 16AWG minimum and rated SJT; terminated in a grounding type IEC 60320 C14 plug rated 250V, 13A minimum
  - + For all other regions: Safety approved detachable cord, 3 conductor, 1.5mm<sup>2</sup> minimum, rated appropriately for industrial use. The cord set must be terminated on one end with a grounding type input connector appropriate for use in the country of destination and, on the other end, an output grounding type IEC 60320 C14 plug.

## Operating Instructions

**CAUTION:** Charger enclosure may be hot during charging. Use hand protection if handling the charger while charging.

- ⊕ Extension cords must be 3-wire cord no longer than 30m(100') at 10AWG or 7.5m(25') at 16AWG per UL guidelines.
- ⊕ Only connect ONE QuiQ charger to a single 15A circuit or the circuit may become overloaded.

- Ammeter**  
Displays scale of output current
- ⊕ If only ammeter and AC Indicator LEDs are lit: Less than 80% state of charge
  - ⊕ If flashing: Output has been reduced due to high internal charger temperature.



### Charger 10-LED Display

#### Charge Indicator (Orange Light)

- ⊕ If solid: Greater than 80% state of charge
- ⊕ If off: Less than 80% state of charge or pre-charge

#### Charge Completion Indicator (Green Light)

- ⊕ If solid: Charging is complete

#### AC Indicator (Orange Light)

- ⊕ If solid: AC power is present.
- ⊕ If flashing: Low AC voltage. Check electrical source and cord length.

#### Fault Indicator (Red Light)

- ⊕ Charger error. Refer to troubleshooting information below.



### Receptacle Display

LED	Indication
Solid	Charge complete
Long flash	Greater than 80% state of charge
Short flash	Less than 80% state of charge
Off	See charger for indications.

## Troubleshooting Instructions

If a fault occurs, count the number of red flashes between pauses and refer to the table below.

Flashes	Cause	Solution
① * * ②	Charger unable to apply wake-up pulse	Refer cart to service department
① * * * ②	Charge timeout	Possible BMS error - refer cart to service department
① * * * * ②	BMS fault	Refer cart to service department
① * * * * * ②	Charger shutdown due to high internal temperature.	Ensure sufficient cooling airflow. Reset the charger by interrupting AC power for 15+ seconds.
① * * * * * * ②	Internal charger fault	Reset the charger by interrupting AC power for 15+ seconds. Return to service department if fault persists.

Note: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

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 **WARNING**

Operating, servicing and maintaining a passenger vehicle or off-road vehicle can expose you to chemicals including phthalates and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, wear gloves and wash your hands frequently when servicing your vehicle.

For more information go to [www.P65Warnings.ca.gov/passenger-vehicle](http://www.P65Warnings.ca.gov/passenger-vehicle).



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