

EPIC CARTS

— BY **ICON** —

Owner's Manual

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SAFETY INFORMATION

This manual has been designed to assist in maintaining the vehicle in accordance with procedures developed by the manufacturer. Adherence to these procedures and troubleshooting tips will ensure the best possible service from the product. To reduce the chance of personal injury or property damage, the following must be carefully observed:

GENERAL

Good common sense and prudent driving practices do more to prevent accidents and injury than all of the warnings and instructions combined. The manufacturer strongly suggests that all users and maintenance personnel read this entire manual paying particular attention to the CAUTIONS and WARNINGS contained there in.

EPIC CART reserves the right to make design changes without obligation to make these changes on units previously sold and the information contained in this manual is subject to change without notice.

EPIC CART is not liable for errors in this manual or for incidental or consequential or consequential damages that result from the use of the material in this manual.

These vehicles are designed and manufactured for off-road use. Some communities may permit these vehicles to be operated on their streets on a limited basis and in accordance with local ordinances.

With electric powered vehicles, be sure that all electrical accessories are grounded directly to the battery (-) post. **Never use the chassis or body as a ground connection.**

Refer to GENERAL SPECIFICATIONS for vehicle seating capacity.

Never modify the vehicle in any way that will alter the weight distribution of the vehicle, decrease its stability or increase the speed beyond the factory specification. Such modifications can cause serious personal injury or death.

Vehicles that are capable of higher speeds must limit their speed to no more than the speed of other vehicles when used in various environment. Additionally, speed should be further moderated by the environmental conditions, terrain and common sense.

GENERAL OPERATION

Always:

- Use the vehicle in a responsible manner and maintain the vehicle in safe operating condition.
- Read and observe all warnings and operation instruction labels affixed to the vehicle.
- Follow all safety rules established in the area where the vehicle is being operated.
- Reduce speed to compensate for poor terrain or conditions.
- Apply service brake to control speed on steep grades.

SAFETY INFORMATION

- Maintain adequate distance between vehicles.
- Reduce speed in wet areas.
- Use extreme caution when approaching sharp or blind turns.
- Use extreme caution when driving over loose terrain.
- Use extreme caution in areas where pedestrians are present.

MAINTENANCE

Always:

- Maintain the vehicle in accordance with the manufacturer's periodic service schedule.
- Ensure that repairs are performed by those that are trained and qualified to do so.
- Follow the manufacturer's maintenance procedures for the vehicle. Be sure to disable the vehicle before performing any maintenance. Disabling includes removing the key from the key switch and removal of a battery wire.
- Insulate any tools used within the battery area in order to prevent sparks or battery explosion caused by shorting the battery terminals or associated wiring. Remove the batteries or cover exposed terminals with an insulating material.
- Check the polarity of each battery terminal and be sure to rewire the batteries correctly.
- Use specified replacement parts. Never use replacement parts of lesser quality.
- Use recommended tools.
- Determine that tools and procedures not specifically recommended by the manufacturer will not compromise the safety of personnel nor jeopardize the safe operation of the vehicle.
- Support the vehicle using wheel chocks and jack stands. Never get under a vehicle that is supported by a jack. Lift the vehicle in accordance with the manufacturer's instructions.
- Maintain the vehicle in an area away from exposed flame or persons who are smoking.
- Be aware that a vehicle that is not performing as designed is a potential hazard and must not be operated.
- Test driving the vehicle after any repairs or maintenance. All tests must be conducted in a safe area that is free of both vehicular and pedestrian traffic.
- Replace damaged or missing warning, caution or information labels.
- Keep complete records of the maintenance history of the vehicle.
- Every time the vehicle travels 1865 miles, or every 90 days, it is necessary to do front wheel alignment maintenance. This will help with even wear and tear of the tires.

Use extreme caution and, if unsure as to the potential for injury, refer the repair or maintenance to a qualified mechanic.

FOR THE USER

1. GENERAL SAFETY PRACTICES

1.1 Introduction

Like other machines, EPIC CART can cause injury if improperly used or maintained. Part II contains broad safety practices applicable to EPIC CART operations. Before operation, the user shall establish such additional specific safety practices as may reasonably be required for safe operation.

SAFETY INFORMATION

1.2 Nameplates, Markings, Capacity, and Modifications

- 1.2.1 The user shall maintain in a legible condition all nameplates, warnings and instructions which are supplied by the manufacturer.
- 1.2.2 The user shall not perform any modification or addition which affects capacity or safe operation, or make any change not in accordance with the owner's manual without the manufacturer's prior written authorization. Where authorized modifications have been made, the user shall ensure that capacity, operation, warning and maintenance instruction plates, tags or decals are changed accordingly.

1.3 Changing and Charging Storage Batteries for Electric Personnel and Burden Carriers

- 1.3.1 The user shall require battery changing and charging facilities and procedures to be in accordance with appropriate paragraphs.
- 1.3.2 The user shall periodically inspect facilities and review procedures to be certain that appropriate paragraphs, are strictly complied with and shall familiarize carrier operators with it.

2. OPERATING SAFETY RULES AND PRACTICES

2.1 General

- 2.1.1 Safeguard the pedestrians at all times. Do not drive EPIC CART in a manner that would endanger anyone.
- 2.1.2 Riding on the EPIC CART by persons other than the operator is authorized only on personnel seat provided by the manufacturer.
- 2.1.3 When a EPIC CART is to be left unattended, stop it, apply the parking brake, stop the engine or turn off power, turn off the control or ignition circuit, and remove the key if provided. Block the wheels if machine is on an incline.
- 2.1.4 Use only approved EPIC CART in hazardous locations, as defined in the appropriate safety standards.
- 2.1.5 Operators shall not add to, or modify, the EPIC CART.

2.2 Driving

- 2.2.1 Observe all traffic regulations, including authorized speed limits. Under normal traffic conditions keep to the right. Maintain a safe distance, based on speed of travel, from a vehicle ahead; and keep the EPIC CART under control at all times.
- 2.2.2 Do not pass another vehicle traveling in the same direction at intersections, blind spots, or at other dangerous locations.
- 2.2.3 Keep a clear view of the path of travel, observe other traffic and personnel, and maintain a safe clearance.
- 2.2.4 Slow down or stop, as conditions dictate, and activate the sound-producing warning device at cross aisles and when visibility is obstructed at other locations.
- 2.2.5 Ascend or descend grades slowly.
- 2.2.6 Under all driving conditions the EPIC CART shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
- 2.2.7 Do not indulge in dangerous activities, such as stunt driving or horseplay.
- 2.2.8 Avoid running over loose objects, potholes, and bumps.
- 2.2.9 To negotiate turns, reduce speed to improve stability, then turn hand steering wheel or tiller in a smooth, sweeping motion.
- 2.2.10 It is recommended that the slope of the road does not exceed 25%, the top of the slope and the slope must be smooth and transitioned to prevent the bottom of the vehicle and the pavement collision. When the slope is more than 25%, the signage is recommended. At this point, you must drive the vehicle very carefully.

SAFETY INFORMATION

2.3 Loading

- 2.3.1 At the beginning of each shift during which the EPIC CART will be used, the operator shall check the EPIC CART condition and inspect the tires, warning devices, lights, battery, speed and directional controllers, brakes, and steering mechanism. If the EPIC CART is found to be in need of repair or in any way unsafe, the matter shall be reported immediately to the designated authority and the EPIC CART shall not be operated until it has been restored to safe operating condition.
- 2.3.2 Do not make repairs or adjustments unless specifically authorized to do so.
- 2.3.3 Do not operate a EPIC CART with a leak in the battery.
- 2.3.4 Do not use open flames for checking electrolyte level in storage battery.

3. MAINTENANCE PRACTICES

3.1 Introduction

- 3.1.1 Carriers may become hazardous if maintenance is neglected. Therefore, maintenance facilities trained personnel, and procedures shall be providing such facilities may be on or off the premises.

3.2 Maintenance Procedures

- 3.2.1 Maintenance and inspection of all EPIC CART shall be performed in conformance with the manufacturer's recommendations and the following practices.
 - (a) A scheduled preventive maintenance, lubrication, and inspection system shall be followed.
 - (b) Only qualified and authorized personnel shall be permitted to maintain, repair, adjust, and inspect carriers.
 - (c) Block chassis before working underneath it.
 - (d) Operation to check performance of the EPIC CART shall be conducted in an authorized area where safe clearance exists.
 - (e) Before commencing operation of the EPIC CART, follow the manufacturer's instructions and recommended procedures.
 - (f) Avoid fire hazards and have fire protection equipment present in the work area. Do not use an open flame to check level or leakage of battery electrolyte.
 - (g) Properly ventilate the work area.
 - (h) Brakes, steering mechanisms, speed and directional control mechanisms, warning devices, lights, governors, guards, and safety devices shall be inspected regularly and maintained in a safe operating condition.
 - (i) Special EPIC CART or devices designed and approved for hazardous area operation shall be inspected to ensure that maintenance preserves the original approved safe operating features.
 - (j) Carriers shall be kept in a clean condition to minimize fire hazards and facilitate detection of loose or defective parts.
 - (k) Modification and additions which affect capacity and safe machine operation shall not be performed by the customer or user without manufacturer's prior written authorization; where authorized modifications have been made, the user shall ensure that capacity, operation, warning, and maintenance instruction plates, tags, or decals are changed accordingly.
 - (l) Care shall be taken to ensure that all replacement parts are interchangeable with the original parts and of a quality at least equal to that provided in the original equipment.

MAINTENANCE AND OPERATIONS

1. GENERAL SAFETY PRACTICES

1.1 Introduction

SAFETY INFORMATION

Like other machines, EPIC CART can cause injury if improperly used or maintained. This section contains broad safety practices recommended for safe EPIC CART operations. Before operation, the controlling party should establish such additional specific safety practices as may be reasonably required for safe operations.

Experience has shown that EPIC CART which comply with the provisions stated in part II of this standard are safe when properly operated in accordance with the safety and operation is enhanced when the EPIC CART are operated within a specific set of operation instructions, safety rules and practices established to meet actual operating terrain and conditions.

The safety information contained in part II is intended to provide the controlling party with basic safety information and to encourage the controlling party to implement a EPIC CART safety program.

It is suggested and recommended that Part II be reprinted in the EPIC CART manufacturer's operation and service manuals to encourage safe operations and practices at the controlling party's facility.

1.2 Safety Survey

The controlling party shall perform a safety survey periodically, and as conditions warrant to their premises, to identify areas where EPIC CART should not be operated and to identify possible hazards.

1.2.1 Wet and Loose Terrain

Wet grassy areas and loose terrain may cause a EPIC CART to lose traction and may affect stability. Wet areas and loose terrain shall be chained or roped off to prevent EPIC CART operations or be identified by a suitable warning not to operate EPIC CART in this area due to wet and loose terrain.

1.2.2 Sharp Turns, Blind Corners, Bridge Approaches

Sharp turns, blind spots, bridge approaches and other potentially hazardous areas shall be either chained or roped off to prevent EPIC CART operations or identified with a suitable warning to the operator of the nature of the hazard and stating the proper precautions to be taken to avoid the hazard.

2. MAINTENANCE

2.1 Introduction

2.1.1 EPIC CARTs may become hazardous if maintenance is neglected or improperly performed. Therefore, maintenance facilities, trained personnel and procedures in accordance with the manufacturer's recommendations should be provided by the controlling party.

2.2 Preventive Maintenance

A regularly scheduled inspection and preventive maintenance program in accordance with the manufacturer's recommendations should be established.

2.2.1 Personnel

Only qualified, trained and authorized personnel shall be permitted to inspect, adjust and maintain EPIC CART.

2.2.2 Parts and materials

Only manufacturer's recommended replacement parts and materials shall be used.

2.2.3 Ventilation

Maintenance and storage areas shall be properly ventilated to avoid fire hazards in accordance with applicable fire codes and ordinances.

2.2.4 Maintenance Safety Procedures

All maintenance shall be performed in accordance with the manufacturer's recommended safety procedures as

SAFETY INFORMATION

outlined in the manufacturers operation and service manuals. The following list of recommended safety procedures are general in nature and in no way supersede the manufacturer's specific instructions.

- 2.2.4.1 Following manufacturer's instructions for immobilizing EPIC CART before beginning any maintenance.
- 2.2.4.2 Block chassis before working underneath EPIC CART.
- 2.2.4.3 Before performing any maintenance on an electric EPIC CART, disable the electrical system in accordance with the manufacturer's instructions.
- 2.2.4.4 Use only properly insulated tools when working on electrically powered EPIC CART or around batteries.
- 2.2.4.5 The controlling party shall not perform any modification or addition which affects capacity or safe operation, or make any change not in accordance with owner's manual without the manufacturers prior written authorization. Where authorized modifications have been made, the controlling party shall ensure that capacity, operation, warning and maintenance instruction plates, tags or decals are changed accordingly.

3. OPERATING SAFETY RULES AND PRACTICES

3.1 Operator Qualifications

- 3.1.1 Only authorized persons shall be allowed to operate EPIC CART, it is recommended that no persons be allowed to operate EPIC CART except those persons who possess a valid motor vehicle drivers license.
- 3.1.2 The controlling party shall display the operation and safety instructions as recommended by the EPIC CART manufacturers and the safety rules in a conspicuous place near the EPIC CART rental area or EPIC CART pick-up area. It is also recommended, as with all motor vehicles, that the warning "Do not operate EPIC CART when under the influence of alcohol or drugs." Be posted in a conspicuous location.

OPERATION INFORMATION

OPERATE INSTRUCTION

Read all of manual to become thoroughly familiar with this vehicle. Pay particular attention to all Notes, Cautions and Warnings

Thank you for purchasing this vehicle. Before driving the vehicle, we ask you to spend some time reading this Owner's Manual. This guide contains the information that will assist you in maintaining this highly reliable vehicle.

This vehicle has been designed and manufactured as a "World Vehicle". Some countries have individual requirements to comply with their specifications: therefore, some sections may not apply in your country.

Most of the service procedures in this guide can be accomplished using common automotive hand tools.

BEFORE INITIAL USE

Read, understand and follow the safety label on the dashboard panel. Be sure you understand how to operate the vehicle, its equipment and how to use it safely. Maintaining good performance depends to a large extent on the operator.

Before a new vehicle is put into operation, the items shown in the INITIAL SERVICE CHART must be performed (Ref Fig.1).

Vehicle batteries must be fully charged before initial use. Check for correct tire inflation. See GENERAL SPECIFICARIONS.

Determine and record braking distance required to stop vehicle for future brake performance tests.

Remove the protective clear plastic, which protect the seat bottom and back rest during shipping, before placing the vehicle in service.

ITEM	SERVICE OPERATION
Batteries	Charge batteries
Seats	Remove protective plastic covering
Brakes	Check operation and adjust if necessary
	Establish acceptable stopping distance
Tires	Check air pressure (see SPECIFICATIONS)
On Board Charger	-

Fig.1 Initial Service Chart

WARNING To prevent overheating that may cause serious damage to the charger and create the potential for fire, do not block or obstruct the airways.

OPERATION INFORMATION

The On Board chargers are coming with the vehicle. Located under the seat pop to prevent rain and sunshine.

CONTROLS AND INDICATORS

Vehicle controls and indicators consist of:

- | | | |
|-------------------------------|----------------------------------|----------------------|
| 1. Hazard Switch Button; | 2. Headlights Switch Button; | |
| 3. Hi/Low Speed Switch Button | 4. Forward/Reverse Switch Button | |
| 5. Ignition Switch | 6. Tee Holder | 7. Locked Door Panel |
| 8. 7 inch speedometers | 9. Combination Switch | 10. Steering wheel |

KEY SWITCH

Located on the dash panel, this switch enables the basic electrical system of the vehicle to be turned on and off by turning the key. To prevent inadvertent operation of the vehicle when left unattended, the key should be turned to the 'OFF' position and removed (Ref Fig 2).

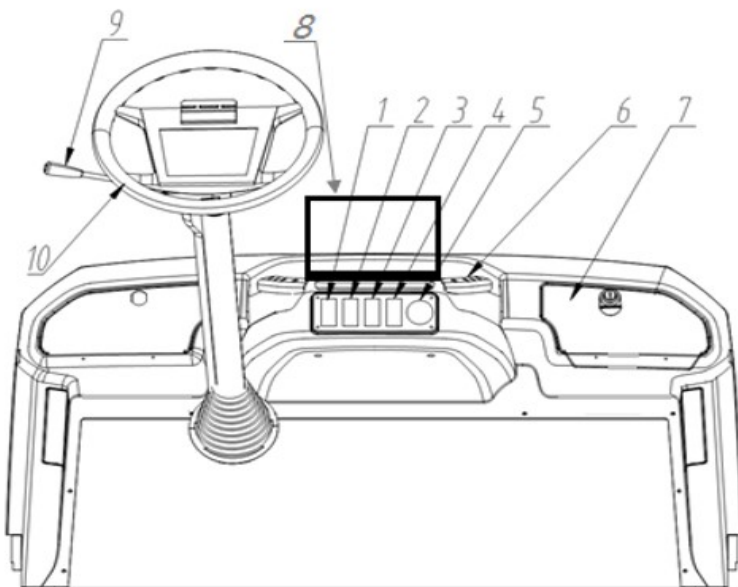
DIRECTION SELECTOR

WARNING To prevent loss of control, do not move direction selector while the vehicle is in motion. Moving the selector will result in a sudden slowing of the vehicle and the beeping of a warning device.

Located on the dash panel, this switch permits the selection of either 'FWD' (forward), 'REV' (reverse) or neutral (the position between forward and reverse). Vehicle should be left in neutral when unattended (Ref Fig.2).

BATTERY POWER DISPLAY

Located on the dash, the speedometer indicates the amount of usable power in the batteries (Ref Fig.2). it's a Multifunction speedometers, integrated with back-up camera.



OPERATION INFORMATION

ACCELERATOR PEDAL

WARNING Unintentional movement of the accelerator pedal will release the park brake and may cause the vehicle to move which could result in severe injury or death.

With the key switch 'ON', depressing the accelerator pedal starts the motor. When the pedal is released, the motor will stop (Ref Fig 3). To stop the vehicle more quickly, depress the service brake.

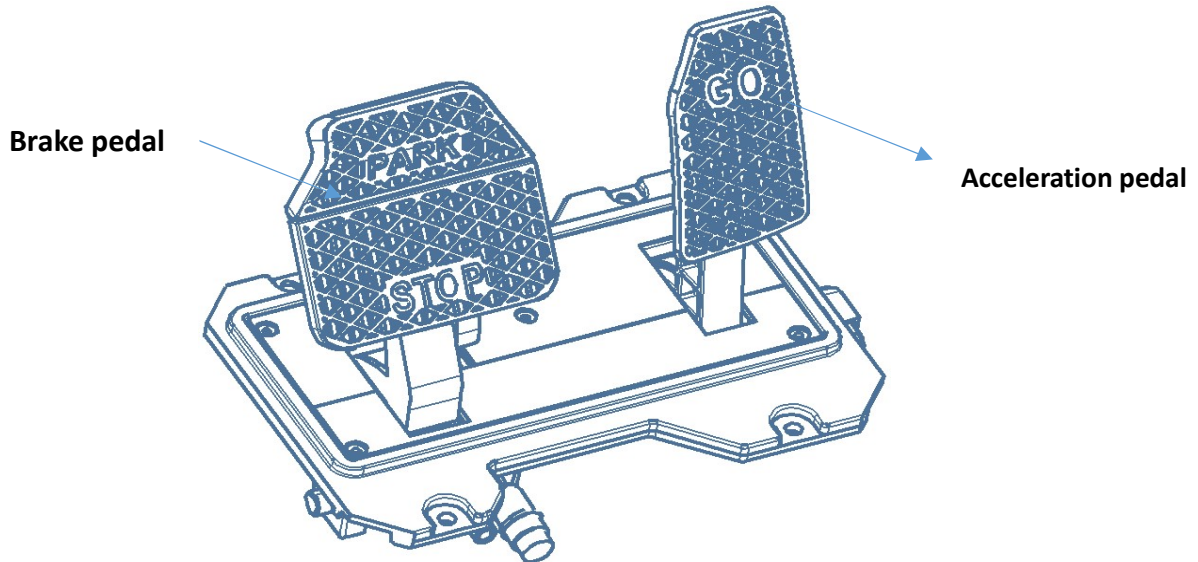


Fig 3

If key switch is 'ON' and park brake is set, depressing the accelerator inadvertently will release the park brake and will cause the vehicle to move which could cause severe injury or death.

Depressing the accelerator pedal will release the park brake if it is engaged. This is a feature to assure the vehicle is not driven with the park brake engaged. Depressing the accelerator pedal is not the preferred method of releasing the park brake.

NOTE: Depressing the lower section of the brake pedals the preferred method of releasing the park brake to assure the longest service life of brake components.

Parking Brake

The brake pedal (Fig 3) do not have parking brake function, EPIC Cart use EMB for parking, its operated by the magnetic system to control the brake pad.

There is one EMB Switch located on the controller box, the EMB is 3 way switch;

“ON”, stands for the cart at normal running status, when you release the accelerator pedal or stop on the hill , the EMB will be engage , the cart will stop

“OFF”, stands for the cart park in the garage and whole cart no power somsumption, just keep very little current to the EMB, So cart will not roll down in the garage.

“Manual EMB”, stands for the cart will be able to be towed, the EMB has release;

OPERATION INFORMATION

HORN

The horn is operated by pushing the horn button located on (Ref Fig.4)



Fig. 4

OPERATING THE VEHICLE

CAUTION Improper use of the vehicle or the lack of proper maintenance may result in damage or decreased performance.

Read and understand the following warnings before attempting to operate the vehicle.

WARNING to reduce the possibility of severe injury or death resulting from loss of vehicle control, the following warnings must be observed:

When driving vehicle, consider the terrain, traffic conditions and the environmental factors which effect the terrain and the ability to control the vehicle.

Use extra care and reduced speed when driving on poor surfaces, such as loose dirt, wet grass, gravel, etc.

Stay in designated areas and avoid extremely rough terrain.

Maintain a safe speed when driving down hill. Use service brake to control speed when traveling down an incline. A sudden stop or change of direction may result in loss of control.

Slow down before and during turns. All turns should be made at reduced speed.

OPERATION INFORMATION

WARNING To reduce the possibility of severe injury or death resulting from improper vehicle operation, the following warnings must be observed:

Refer to GENERAL SPECIFICATIONS for seating capacity.

Depressing accelerator pedal will release foot operated park brake and may cause inadvertent vehicle movement. Turn the key to the 'OFF' position whenever the vehicle is parked.

To prevent inadvertent movement when the vehicle is to be left unattended, engage the park brake, move direction selector to forward position, turn key to 'OFF' position and remove key.

Make sure that the direction selector is in correct position before attempting to start the vehicle.

Always bring the vehicle to a complete stop before shifting the direction selector.

Do not take vehicle out of 'gear' while in motion (coast).

Check the area behind the vehicle before operating in reverse.

All occupants must be seated. Keep entire body inside vehicle and hold on while vehicle is in motion.

The lifespan, the reliability of the work and the economic efficiency of the use of EPIC Lifted Cart, all depend to a large extent on the running-in at the initial stage of use. The running-in mileage is 800 kilometers. If conditions permit, it is best to extend it to 1500Km.

The new cart must go through a running-in before it is officially used. During the running-in period, it should run at a lower speed. Generally, it cannot be fully loaded and absolutely cannot be operated with overload. The purpose of running-in is to allow the parts and components to perform a stage of running-in, improve its surface quality and matching accuracy, and avoid early wear and tear of the vehicle.

The following regulations shall be complied with during the integration period

- Avoid fast starting, rapid growth and unnecessary tight braking.
- During the running-in period, the vehicle speed must be strictly controlled within 25 Mph.
- Frequently check whether the battery, electric control, and motor connection wires are loose due to heat. Frequently check the temperature of the reducer, rear axle, wheel hub and brake drum. If there is overheating (greater than 60° C), check and eliminate the fault.
- When the break-in mileage reaches 500 miles, check the tightness of the steering system, front suspension and wheel nuts, and tighten if necessary. After the running-in period, the user should place the lubricating oil and rear axle gear oil during the shifting period.
- During the running-in period, the battery cannot be deeply discharged. After the break-in expires, the battery is not allowed to be over-discharged. Over-discharge will quickly damage the battery.

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● If the vehicle mileage is less than 60% of the rated continuous mileage when the vehicle is used for the first time, please stop using the vehicle and notify the company's after-sales department as soon as possible to find out the reason. The vehicle is used for more than one month, and the company is no longer responsible for the compensation of the entire battery pack. Within half a year, due to battery manufacturing quality problems, the company promises quality warranty for damaged batteries.

VEHICLE CLEANING AND CARE

VECHILE CLEANING

WARNING To reduce the possibility of severe injury or vehicle damage, read and understand all instructions supplied by manufacturer of pressure washer.

CAUTION When pressure washing exterior of vehicle, do not use pressure in excess of standard requirement. To reduce the possibility of cosmetic damage, do not use any abrasive or reactive solvents

It is important that proper techniques and cleaning materials be used. Using excessive water pressure may cause severe injury to operator or bystander, damage to seals, plastics, seat material, body finish or electrical system. Do not use pressure in excess of standard requirement to wash exterior of vehicle.

Clean windshield with lots of water and a clean cloth. Minor scratches may be removed using a commercial plastic polish.

Normal cleaning of vinyl seats and plastic or rubber trim requires the use of a mild soap solution applied with a sponge or soft brush and wipe with a damp cloth.

The painted surfaces of the vehicle provide attractive appearance and durable protection. Frequent washing with lukewarm or cold water and mild detergent is required to preserve the painted surface.

Occasional cleaning and waxing with non-abrasive products designed for 'clear coat' automotive finishes will enhance the appearance and durability of the painted surfaces.

Corrosive materials used as fertilizers or for dust control can collect on the underbody of the vehicle. These materials will cause corrosion of underbody parts unless flushed occasionally with plain water. Thoroughly clean any areas where mud or other debris can collect. Sediment packed in closed areas should be loosened to ease its removal, taking care not to chip or otherwise damage paint.

Lubrication maintenance

- The brake fluid of electric vehicles is checked once a month, and if there is a shortage of fuel, it must be added in time (the lack of fuel will affect driving safety).
- Grease for the front wheel hub, front wheel bearing, brake pedal linkage, and steering system will be refilled once next year. The oil product model 3# general lithium-based grease.
- The transmission gear oil is replaced once a year. Users can choose gear oils with different viscosity levels

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according to the atmospheric temperature in the region.

GL-4 90 (used in southern or northern summer) GL-80W/90 (severe cold area or northern winter, -35°C or below)

● Change the gear oil once a year for the rear axle. The oil model is GL-5 90 (used in summer in the south or north) or GL-5 80W/90 (in severe cold areas or winter in the north, -35°C or below) gear oil. It is 1.2 liters.

When replacing, first unscrew the oil drain plug, drain the gear oil, clean and install the oil drain plug, and then add new gear oil from the filling hole.

Battery Replacement

Remove battery hold downs and cables. Lift out batteries with a commercially available lifting device.

If the batteries have been cleaned and any acid in the battery rack area neutralized as recommended, no corrosion to the battery racks or surrounding area should be present. Any corrosion found should be immediately removed with a putty knife and a wire brush. The area should be washed with a solution of sodium bicarbonate (baking soda) and water and thoroughly dried before priming and painting with a corrosion resistant paint.

The batteries should be placed into the battery racks and the battery hold downs tightened to 45 - 55 in. lbs. (5 - 6 Nm) torque, to prevent movement but not tight enough to cause distortion of the battery cases.

Inspect all wires and terminals. Clean any corrosion from the battery terminals or the wire terminals with a solution of sodium bicarbonate (baking soda) and brush clean if required.

WARNING To prevent battery explosion that could result in severe personal injury or death, extreme care must be used with aerosol containers of battery terminal protectant. Insulate the metal container to prevent the metal can from contacting battery terminals which could result in an explosion.

Use care to connect the battery wires as shown (Ref Fig. 5). Tighten the battery post hardware to 50 70 in. lbs. (6 - 8 Nm) torque. Protect the battery terminals and battery wire terminals with a commercially available protective coating.

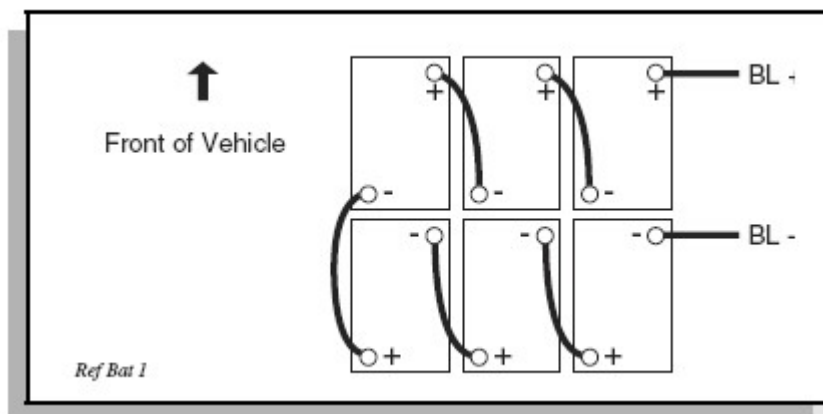


Fig.5

Prolonged Storage

OPERATION INFORMATION

CAUTION Battery charger, controller and other electronic devices need to be disconnected since they will contribute to the premature discharge of batteries.

During periods of storage, the batteries will need attention to keep them maintained and prevent discharge.

In high temperatures the chemical reaction is faster, while low temperatures cause the chemical reaction to slow down. A vehicle that is stored at 90° F (32° C) will lose .002 of specific gravity each day. If a fully charged battery has a specific gravity of 1.275, and the battery is allowed to sit unused, it will become partially discharged. When it reaches 1.240, which it will do in less than twenty days, it should be recharged. If a battery is left in a discharged state, sulfating takes place on and within the plates. This condition is not reversible and will cause permanent damage to the battery. In order to prevent damage, the battery should be recharged. A hydrometer can be used to determine the specific gravity and therefore the state of charge of a battery.

In winter conditions, the battery must be fully charged to prevent the possibility of freezing (Ref Fig. 29 on page 23). A fully charged battery will not freeze in temperatures above -75° F (-60° C). Although the chemical reaction is slowed in cold temperatures, the battery must be stored fully charged, and disconnected from any circuit that could discharge the battery. For portable chargers, disconnect the charging plug from the vehicle receptacle. The batteries must be cleaned and all deposits neutralized and removed from the battery case to prevent self discharge. The batteries should be tested or recharged at thirty day minimum intervals.

BATTERY CHARGING

The battery charger is designed to fully charge the battery set. If the batteries are severely deep cycled, some automatic battery chargers contain an electronic module that may not activate and the battery charger will not function. Automatic chargers will determine the correct duration of charge to the battery set and will shut off when the battery set is fully charged. Always refer to the instructions of the specific charger used.

Before charging, the following should be observed:

CAUTION Do not overfill batteries. The charging cycle will expel electrolyte and result in component damage.

- The electrolyte level in all cells must be at the recommended level and cover the plates.

OPERATION INFORMATION

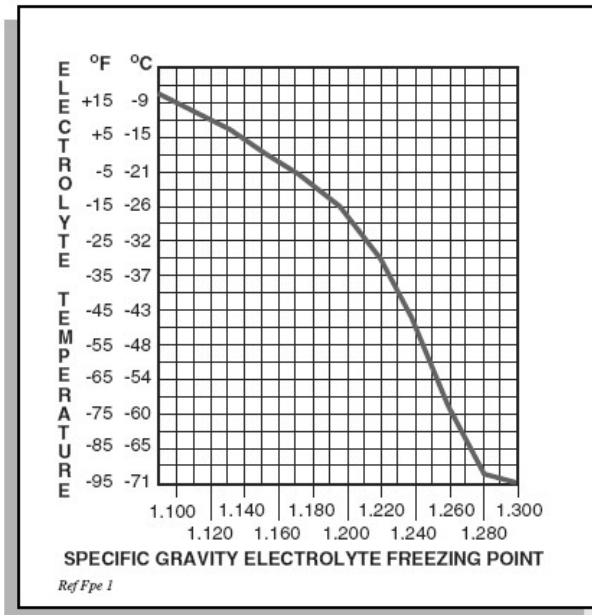


Fig. 6

- The charging must take place in an area that is well ventilated and capable of removing the hydrogen gas that is generated by the charging process. A **minimum** of five air exchanges per hour is recommended.
- The charging connector components are in good condition and free from dirt or debris.
- The charger connector is fully inserted into the vehicle receptacle.
- The charger connector/cord set is protected from damage and is located in an area to prevent injury that may result from personnel running over or tripping over the cord set.
- The charger is automatically turned off during the connect/disconnect cycle and therefore no electrical arc is generated at the DC plug/receptacle contacts.

NOTE In our chargers, there is a jiggle switch inside charger receptacle. The switch is part of the interlock system that prevents the vehicle from being driven when the charger plug is inserted in the vehicle charging receptacle. (Fig 7)

Fig. 7

TROUBLESHOOTING

In general, troubleshooting will be done for two distinct reasons. First, a battery that performs poorly and is outside of the manufacturers specification should be identified in order to replace it under the terms of the manufacturer's warranty. Different manufacturers have different requirements. Consult the battery manufacturer or a manufacturer representative for specific requirements.

The second reason is to determine why a particular vehicle does not perform adequately. Performance problems may result in a vehicle that runs slowly or in a vehicle that is unable to operate for the time required.

A new battery must mature before it will develop its maximum capacity. Maturing may take up to 100 charge/discharge cycles. After the maturing phase, the older a battery gets, the lower the capacity. The only way

OPERATION INFORMATION

to determine the capacity of a battery is to perform a load test using a discharge machine following manufacturer's recommendations.

A cost effective way to identify a poorly performing battery is to use a hydrometer to identify a battery in a set with a lower than normal specific gravity. Once the particular cell or cells that are the problem are identified, the suspect battery can be removed and replaced. At this point there is nothing that can be done to salvage the battery; however, the individual battery should be replaced with a good battery of the same brand, type and approximate age.

Hydrometer

A hydrometer is used to test the state of charge of a battery cell (Ref Fig. 8). This is performed by measuring the density of the electrolyte, which is accomplished by measuring the specific gravity of the electrolyte. The greater the concentration of sulfuric acid, the more dense the electrolyte becomes. The higher the density, the higher the state of charge.

WARNING To prevent battery explosion that could result in severe personal injury or death, never insert a metal thermometer into a battery. Use a hydrometer with a built in thermometer

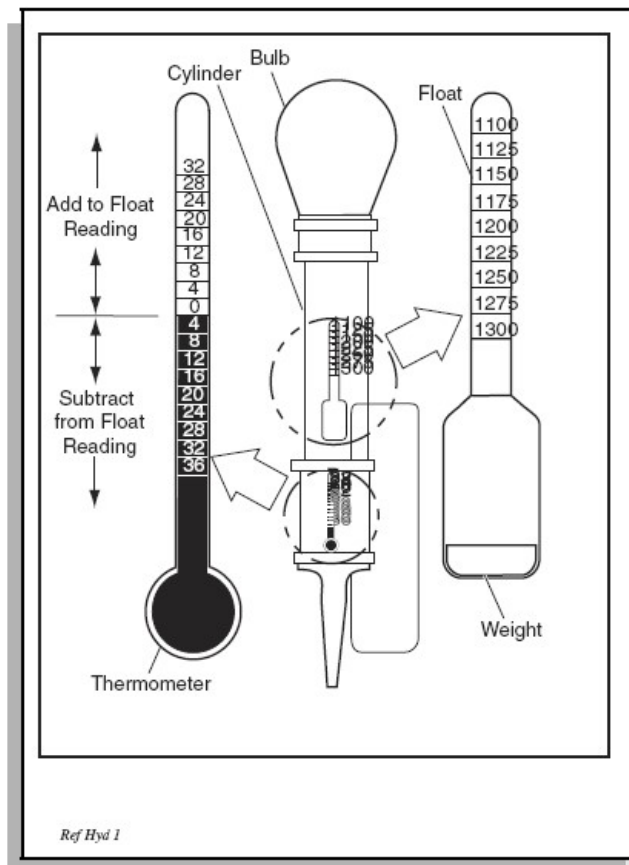


Fig.8

Specific gravity is the measurement of a liquid that is compared to a baseline. The baseline is water which is assigned a base number of 1.000. The concentration of sulfuric acid to water in a new golf car battery is 1.280 which means that the electrolyte weighs 1.280 times the weight of the same volume of water. A fully charged

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battery will test at 1.275 -1.280 while a discharged battery will read in the 1.140 range.

NOTE Do not perform a hydrometer test on a battery that has just been watered. The battery must go through at least one charge and discharge cycle in order to permit the water to adequately mix with the electrolyte.

The temperature of the electrolyte is important since the hydrometer reading must be corrected to 80° F (27° C). High quality hydrometers are equipped with an internal thermometer that will measure the temperature of the electrolyte and will include a conversion scale to correct the float reading. It is important to recognize that the electrolyte temperature is significantly different from the ambient temperature if the vehicle has been operated.

Using A Hydrometer

1. Draw electrolyte into the hydrometer several times to permit the thermometer to adjust to the electrolyte temperature and note the reading. Examine the color of the electrolyte. A brown or gray coloration indicates a problem with the battery and is a sign that the battery is nearing the end of its life.

2. Draw the minimum quantity of electrolyte into the hydrometer to permit the float to float freely without contacting the top or bottom of the cylinder.

3. Hold the hydrometer in a vertical position at eye level and note the reading where the electrolyte meets the scale on the float.

4. $\rho_{25^{\circ}\text{C}} = \rho_t + 0.0007 (t - 25)$

$\rho_{25^{\circ}\text{C}}$ ——— 25°C electrolyte specific gravity ;

ρ_t ——— $t^{\circ}\text{C}$ electrolyte specific gravity;

5. Test each cell and note the readings (corrected to 80° Fig. 30 Hydrometer F or 27° C). A variation of fifty points between any two cell readings (example 1.250 -1.200) indicates a problem with the low reading cell(s).

As a battery ages the specific gravity of the electrolyte will decrease at full charge. This is not a reason to replace the battery, providing all cells are within fifty points of each other.

Since the hydrometer test is in response to a vehicle exhibiting a performance problem, the vehicle should be recharged and the test repeated. If the results indicate a weak cell, the battery or batteries should be removed and replaced with a good battery of the same brand, type and approximate age.

BATTERY MAINTENANCE

Our experience shows that the key to achieving optimum performance and long life is a solid battery maintenance program using the simple procedures outlined here.

Equipment:

We recommend the following equipment for use in battery care and maintenance:

Recommended Equipment:

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- ◆ Wrench
- ◆ Distilled Water
- ◆ Voltmeter
- ◆ Hydrometer
- ◆ Thermometer
- ◆ Post Cleaner
- ◆ Baking Soda
- ◆ Vaseline
- ◆ Goggles & Gloves

CAUTION: Always wear protective clothing, gloves, and goggles
When handling batteries, electrolyte, and charging your battery.



Battery care and maintenance

This car uses a high-quality battery pack specially designed for electric vehicle as its power source. It has the characteristics of large current, large capacity and long duration. Correct maintenance is essential to maintain good performance and improve battery life. It is essential for daily maintenance. Please pay attention to the following:

- The upper part of the battery is the power output terminal. It should be kept clean and dry. There should be no debris or a lot of dust on it. Otherwise, leakage or short circuit will easily occur, which is extremely harmful to the battery, and it will also shorten the battery life or even burn the battery. .
- ▲ Note: Tap water is strictly prohibited from entering the battery during washing.
- Regularly check and adjust the height of the battery electrolyte level. Check once every 6-7 days in summer and every 10-13 days in winter. The standard liquid level is 10-15mm higher than the battery plate, and the electrolyte level is found to be lower than the specified height. At the same time, the battery refill or distilled water specified by the manufacturer should be added, and mineral water, tap water, well water, river water, etc. are strictly prohibited.
- The connection of the battery must be good, especially for a new car. After 2-3 days of use, the connector should be fully reinforced, and then the battery connector should be fully inspected once a week. Treat loose and discolored patina joints. High heat is generated due to poor contact of the joints, and the pole is damaged or cremated, causing hydrogen explosion.
- ▲ Note: Excessive tightening force will also cause damage to the battery pole.
- After the battery is discharged, the battery must be charged on the same day. It is not allowed to charge the battery every other day or more than 24 hours, otherwise the service life of the battery will be affected. For batteries that have been stored for a long time and are under-charged, they should be charged separately.
- Do not allow any harmful impurities to fall into the battery, and the appliances for water replenishment should be kept clean to avoid bringing impurities into the battery.
- When the ambient temperature is 0-4°C, the density of the electrolyte after fully charged is 1.28-1.29g/cm³.

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If the density of the electrolyte after fully charged is greater than 1.30g/cm³, it is very likely that the battery additive contains dilute sulfuric acid, The abnormally high density of this electrolyte will cause the battery plates to fall off, and the battery will quickly be damaged. In this case, use pure distilled water to adjust the density of the electrolyte to the normal value, and the battery discharges up to 80% (at this time, the electrolyte density of the battery is 1.13-1.15g/cm³.) It can only walk 3-5 kilometers. It should be charged immediately. If the battery is over-discharged due to continued use, the battery will be damaged very quickly if it is often operated in a "deficient" state.

- If the vehicle is not used for a long time, the battery should be fully charged and stored, and charged at least once a month. The charging time is 24 hours. A safe charge and discharge can be performed when conditions permit, and an equalization charge can be performed before reuse

- Replacement of battery

When the service life of the battery is close to completion, the electric capacity will drop sharply, and the continued mileage of the vehicle cannot meet the needs. At this time, the battery should be replaced in time. Consult the manufacturer for the method of battery replacement.

6.3 Charging the battery pack

- Please use the smart charger equipped with this car to charge the battery to ensure the service life of the battery

- When charging, the key switch must be off.

- The charger will generate a certain amount of heat during the working process. When using it, the charger must be placed a little higher from the ground so that the air can flow under and around the charger to take away the heat.

- Do not block or obstruct the air passage of the charger's cooling holes. Excessive temperature will seriously damage the charger and may cause a fire. If you use the charger outdoors, beware of rain and sun.

- Avoid overcharging the battery. Overcharging will cause the electrolyte solution to drain from the battery. The discharged electrolyte solution can damage the storage capacity of the car and the battery.

- It is strictly forbidden to charge the battery in direct sunlight. Do not charge the vehicle immediately after the vehicle has been used, especially when the temperature is high. Wait for the battery to cool before charging, so as not to cause the maintenance-free battery to swell or the flooded battery to lose water too quickly.

- When charging, first confirm whether the AC power supply is consistent with the input power indicated by the charger. After confirmation, connect the input end of the charger to an AC socket of rated voltage, and connect the output end to the charging socket of the car. Reliable plugging is required, The green indicator light is on to indicate that the charging is complete. The charger will automatically cut off the power after charging to prevent overcharging.

- ▲ Pay attention to being supervised while charging

WARNING

- ◆ Do not smoke near batteries.

- ◆ Do not overtighten terminals. Doing so can result post breakage, post meltdown, or fire.

- ◆ When the AC power plug is not unplugged, the plug on the electric vehicle cannot be unplugged, otherwise an electric arc will occur and the plug will be damaged.

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Specific Gravity Testing

1. Do not add water at this time.
2. Washing hydrometer with deionized water firstly.
3. Fill and drain the hydrometer 2 to 4 times before pulling out a sample.
4. There should be enough sample electrolyte in the hydrometer to completely support the float.
5. Take a reading, record it, and return the electrolyte back to the cell.
6. Check electrolyte specific gravity for each cell, testing one cell g temperature by thermometer (often from mid-cell) ;
7. Check all cells in the battery, repeating the steps above.
8. Replace the vent caps and wipe off any electrolyte that might have been spilled.
9. $\rho_{25^{\circ}\text{C}} = \rho_t + 0.0007 (t - 25)$
 $\rho_{25^{\circ}\text{C}}$ ——— 25°C electrolyte specific gravity ;
 ρ_t ——— $t^{\circ}\text{C}$ electrolyte specific gravity.
10. Check the state of charge using Table on the next page.

The readings should be at or above the specification of $1.280 \pm 0.01 \text{g/cm}^3$.

If any specific gravity readings register low, then follow the steps below:

1. Check and record voltage level(s).
2. Put battery(s) on a complete charge.
3. Take specific gravity readings again.

If any specific gravity readings still register low then follow the steps below.

1. Check voltage level(s).
2. Perform charging. Refer to the charging section for the proper procedure.
3. Take specific gravity readings again.

If any specific gravity reading still registers lower than the specification of $1.280 \pm 0.01 \text{g/cm}^3$ then one or more of the following conditions may exist:

1. The battery is old and approaching the end of its life.
2. The battery was left in a state of discharge too long.
3. Electrolyte was lost due to spillage or overflow.
4. A weak or bad cell is developing.
5. Battery was watered excessively previous to testing.

Batteries in conditions 1 - 5 should be taken to a specialist for further evaluation or retired from service.

NOTE

- ◆ Do not smoke near batteries.
- ◆ Do not overtighten terminals. Doing so can result in post breakage, post meltdown, or fire.

NOTE electrolyte specific gravity is 1.10g/cm^3 under full charging, if can not test or not air bubble in cell during of charging, then short circuit happened.

Open-Circuit Voltage Test

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For accurate voltage readings, batteries must remain idle (no charging, no discharging) for at least 6 hrs, preferably 24 hrs.

1. Disconnect all loads from the batteries.
2. Measure the voltage using a DC voltmeter.
3. Check the state of charge with Table 1.
4. Charge the battery if it registers 0% to 70% charged.

If battery registers below the Table 1 values, the following conditions may exist:

1. The battery was left in a state of discharge too long.
2. The battery has a bad cell.

Batteries in these conditions should be taken to a specialist for further evaluation or retired from service.

Watering (Flooded batteries only)

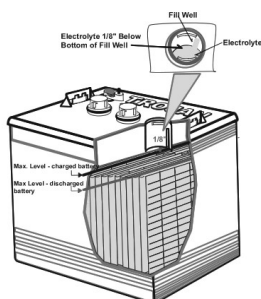
Flooded batteries need water. More importantly, watering must be done at the right time and in the right amount or else the battery's performance and longevity suffers.

Water should always be added after fully charging the battery. Prior to charging, there should be enough water to cover the plates. If the battery has been discharged (partially or fully), the water level should also be above the plates.

Keeping the water at the correct level after a full charge will prevent having to worry about the water level at a different state of charge.

1. Do not let the plates get exposed to air.
2. Do not fill the water all the way up to the cap.
3. Do not use water with a high mineral content.
4. Use distilled or deionized water only.

CAUTION The electrolyte is a solution of acid and water so skin contact should be avoided.



Procedure:

1. Open the vent caps and look inside the fill wells. Check electrolyte level; the minimum level is at the top of

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the plates.

2. If there is no electrolyte visible, add just enough distilled/deionized water to cover the plates.
3. Replace and tighten all water vent caps.
4. Put batteries on a complete charge before adding any additional water (refer to the Charging section).
5. Once charging is completed, remove the vent caps and check the electrolyte level.
6. Add water until the electrolyte level is 1/8" below the bottom of the fill well.
7. Clean, replace, and tighten all vent caps.

WARNING Never add acid to a battery.

CHARGING

Charging batteries properly requires administering the right amount of current at the right voltage. Most charging equipment automatically regulates these values. Some chargers allow the user to set these values. For proper charging, refer to the instructions that came with your charging equipment.

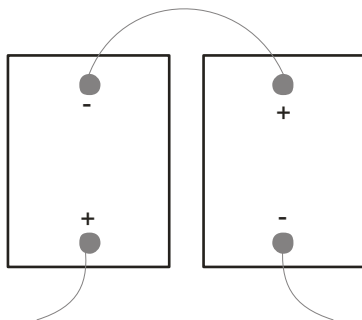
Important things to remember:

1. Become familiar with and follow the instructions issued by the charger manufacturer.
2. Batteries should be charged after each period of use.
3. Lead acid batteries do not develop a memory and need not be fully discharged before recharging.
4. Charge only in well-ventilated area. Keep sparks or flames away from a charging battery.
5. Verify charger voltage settings are correct .
6. Check electrolyte level.(See Watering section).
7. Tighten all vent caps before charging.
8. Do not overcharging or undercharging the batteries.
9. Do not charge a frozen battery.
10. Avoid charging at temperatures above 48°C.

How To Increase System Power

Two or more batteries can be easily connected to boost your system's voltage and/or capacity. There are three methods to obtain additional voltage and/or capacity, as described below:

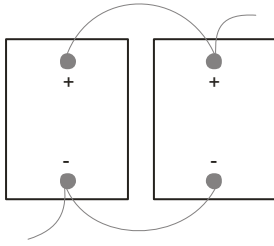
To increase voltage, connect batteries in series.



Battery System:12 Volt,226 AH Using Two DT106 Deep Cycle Batteries(6 Volts,226AH)

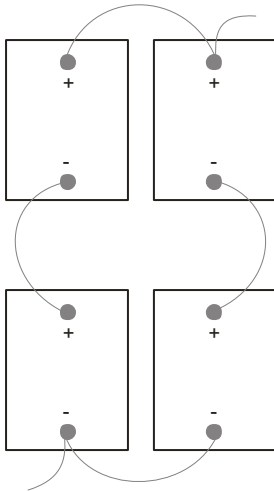
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To increase amp-hour capacity, connect batteries in parallel.



Battery System: 6 Volt, 452 AH Using Two DT106 Deep Cycle Batteries (6 Volts, 226AH)

To increase both voltage and amp-hour capacity, Connect batteries in series/parallel.



Battery System: 12 Volt, 452 AH Using Four DT106 Deep Cycle Batteries (6 Volts, 226 AH)

NOTE These systems can also be configured using 12-volt batteries. It is not recommended that you mix batteries of different voltages within the same system.

CLEANING

Batteries seem to attract dust, dirt, and grime. Keeping them clean will help one spot trouble signs if they appear and avoid problems associated with grime.

1. Check that all vent caps are tightly in place.
2. Clean the battery top with a cloth or brush and a solution of baking soda and water.
 - ◆ When cleaning, do not allow any cleaning solution, or other foreign matter to get inside the battery.
3. Rinse with water and dry with a clean cloth.
4. Clean battery terminals and the inside of cable clamps using a post and clamp cleaner.
 - ◆ Clean terminals will have a bright metallic shine.
5. Reconnect the clamps to the terminals and thinly coat them with petroleum jelly (Vaseline) to prevent corrosion.
6. Keep the area around batteries clean and dry.

STORAGE

Periods of inactivity can be extremely harmful to lead acid batteries. When placing a battery into storage, follow the recommendations below to insure that the battery remains healthy and ready for use.

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The most important things to avoid:

1. Freezing: Avoid locations where freezing temperature is expected. Keeping a battery at a high state of charge will also prevent freezing. (See Table2)
2. Heat: Avoid direct exposure to heat sources, such as radiators or space heaters. Temperatures above 80°F accelerate the battery's self-discharge characteristics.

Procedure:

1. Completely charge the battery before storing.
2. Store the battery in a cool, dry location, protected from the elements.
3. During storage, monitor the specific gravity (flooded) or voltage. Batteries in storage should be given a boost charge when they show a 70% charge or less. See Table 1 in the Testing Section.
4. Completely charge the battery before re-activating.
5. For optimum performance, equalize the batteries (flooded) before putting them back into service. Refer to the Equalizing section for this procedure.

Table2 Electrolyte Freezing Point @ Various States of Charge

Specific gravity (g/cm ³)	State of charge(%)	Freezing temperature(°C)
1.280	100%	-68.9
1.265	92%	-57.4
1.250	85%	-52.2
1.200	62%	-26.7
1.150	40%	-15
1.100	20%	-7.2

Battery Terms Explained

1. **Active Material**—In the positive plates, the active material is lead dioxide. In the negative, it's metallic sponge lead. When a circuit is created, these materials react with sulfuric acid during charging and discharging.
2. **Ampere (Amp)**—A unit of measurement for the electron flow or current through a circuit.
3. **Ampere-Hour (Amp. Hr., AH)**—A unit of measure for a battery's electrical storage capacity, calculated by multiplying the current in amperes by the time in hours. (Example: A battery which delivers 5 amps for 20 hours provides 5 amps ×20 hours = 100 AH of capacity.)
4. **Capacity Rating**—The time in minutes that a new, fully-charged battery will deliver 25 amperes or 75 amperes at 80°F and maintain a terminal voltage equal to or greater than 1.75 volts per cell.
5. **Cell**—The basic current-producing unit in a battery. It consists of a set of positive plates, negative plates, electrolyte, separators and casing, A cell's nominal voltage is 2 volts.(Example: A 12-volt battery has 6 cells.)
6. **Circuit**—The path followed by a flow of electrons. A closed, or short, circuit is a complete path. An open circuit has a broken path.
7. **Cycle**—One discharge of a battery plus one recharge.
8. **Depth of Discharge (DOD)**—The percentage of capacity actually removed from a battery compared to the

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total rated capacity.

- 9. Electrolyte**—In a deep cycle battery, it is a dilute solution of sulfuric acid and water.
- 10. Hydrometer**—A tool used to measure the specific gravity of the electrolyte solution.
- 11. Equalization**—An overcharge performed on flooded lead-acid batteries after they have been fully charged. This maintenance step helps eliminate stratification and sulfation.
- 12. Ohm**—A unit of measurement for electrical resistance within a circuit.
- 13. Open Circuit Voltage**—The voltage of a battery when there is no load attached(not receiving or delivering energy).This measurement is best taken when the battery has been at rest for at least 6 hours.
- 14. Power Inverter**—An electronic device that converts direct current (DC) power from a battery into standard alternating current(AC)house power.
- 15. Primary Battery**—An energy storage device that can deliver energy but cannot be recharged (i.e., disposable flashlight battery)
- 16. Secondary Battery**—An energy storage device than can deliver energy and can be recharged.(i.e., automotive or deep cycle battery)
- 17. Separator**—A divider made of porous material that is placed between the positive and negative plates in a battery cell and allows current to flow through it, while preventing direct contact between the plates which would cause a short circuit.
- 18. Specific Gravity(S.G.)**—A measurement of the strength of battery electrolyte by comparing its density to that of pure water.
- 19. Stratification**—A condition where the concentration of acid is greater at the bottom of the battery than at the top.
- 20. Sulfation** —The formation of lead sulfate on the positive and negative electrodes.
- 21. Volt (V)**—A unit of measurement for electrical potential within a circuit.
- 22. Watt (W)**—A unit of measurement for electrical power.
- 23. Watt Hour (Wh)**—A unit of measurement for electrical power for a certain period of time.

▲ General maintenance items

★Advanced maintenance items

User regular maintenance details					
Maintenance items	Weekly (or 20H)	Monthly (or 80H)	Quarterly or 250H)	Half a year (or 500H)	Annually (or 1000H)
Check tire pressure	▲				
Check whether the tires are abnormally worn	▲				
Check the tightening of the axle bolts and wheel nuts	▲				
Tire rotation			▲		

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Check the service brake and parking brake efficiency		▲			
Check the wear of the brake shoes			▲		
Check the free travel and work of the steering wheel			▲		
Check the tightness of the ball joints of the steering horizontal and straight rod		▲			
Check the fixing nut of the steering gear spline coupling		▲			
Check the tightness of the steering mechanism and bracket		▲			
Check and adjust the front wheel toe			▲		
Check the connection and tightening of the steering components			▲		
Check the tightness of the leaf spring U-bolt			▲		
Check the tightness of the front shock absorber			▲		
Check whether the battery pole is loose		▲			
Clean the battery pole with water		▲			
Check the working conditions of the controller and accelerator		▲			
Clean and fix the line connector		▲			
Check the wear of the brake friction lining			▲		
Check and adjust the front wheel bearing		▲			
Check the work of the rear axle main reducer and bearings					★

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Check and replace transmission gear oil					★
Check and replace the rear axle gear oil		▲ (after the first month or after the running-in period)			★
Check the work of the rear axle final drive and bearing		▲ (after the first month or after the running-in period)			★
Check the bolts and nuts of the motor			▲		
Clean and lubricate the front wheel bearings (with gear lubricant)					★
Check the electromagnetic brake			▲		
Lubricate other parts (use general oil)				★	

※Motors Maintenance

This electric vehicle uses an AC traction motor as the driving force, and the motor working conditions are logically controlled by a precision electronic controller, so that the motor has superior traction characteristics. As a power output device for electric vehicles, the drive motor's performance directly affects the use of the whole vehicle. The drive motor should be maintained on time, and the motor surface should be kept clean to ensure heat dissipation when it is working.

Regular maintenance and maintenance can be carried out through the following items and the "Regular Inspection and Maintenance List"

- Check whether the motor terminals are fixed and secure;
- Check whether the motor connection line is deformed and discolored;
- Check whether the motor coding line and electromagnetic brake lead wire are intact and firmly fixed;
- Check whether the electromagnetic brake and dust jacket are intact, whether the electromagnetic brake can park normally, and whether the dust cover completely seals the gap of the electromagnetic brake;
- Every 500 kilometers, open the dust cover of the electromagnetic brake, clean the dust accumulation of the brake pad wear, prevent the electromagnetic brake from stuck or fail, and after cleaning, the dust cover should be covered.
- Check the braking clearance of the electromagnetic brake (check with the plug gauge), when the clearance is greater than or equal to 0.7mm, the brake pad should be replaced in time.

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✘ Common Troubleshooting

Failure phenomenon	Probable Cause	Solution
The vehicle cannot run	Wrong Operation	Before turning on the key switch, place the forward/backward switch in neutral
	Battery Terminal oxidation (corrosion)	Disconnect the power supply, remove the nut, clean the terminal and install it
	Low battery Capacity	Charge
	Forward & Reverse Button Switch Broken	Replace
	Accelerator Broken	Replace
	Motor Broken	Replace
	Solenoid Broken	Replace
When the vehicle is climbing, it runs slowly until stop	Harness Connector PIN Loose Contact	Repair or replace
	Whether the vehicle is overloaded, causing the controller temperature to be higher than 75°C and shutting down for protection	Reduce the vehicle load and let the controller cool down
Release the accelerator pedal when driving, the vehicle will not slow down	The accelerator pedal spring is broken, causing the pedal do not return	Turn off the electric lock, and then contact the manufacturer
Turn on the ignition key , speedometer do not on and display	Loose connectors of electrical appliances or wiring harnesses	Lock the connector
	Fuse Blown	Troubleshoot short circuit and replace the fuse
Tire deviated from the direction	Tire pressure imbalance	Inflate to balance tire pressure
	Tire not align	Tire alignment Process
Steering difficulty	Insufficient tire pressure	Refuel
	Lack of lubrication on the steering linkage shaft	Add lubricating oil
	The Steering king pin or ball joint broken	Replace
Oversteering	Ball joint broken	Replace
	The steering gear is under-adjusted or worn	Debug or replace
	Steering linkage shaft loose	Fasten
Lack of power and slow	Low battery Capacity	Charge

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response	Damaged transmission gear	Replace
	Drag Brake	Debug the brake system
Rear wheel bearing oil leakage	Damaged wheel bearings or washers	Replace
	Overfilled engine oil	Release the right amount
Abnormal noise	Worn transmission gears or bearings	Replace
	Wear of front axle bearings or rear axle bearings	Adjust or replace
	Damaged motor bearings	Replace
Insufficient braking force	Brake wear	Replace

※ ICON Controller Troubleshooting Chart

CODE	Effect Of Fault	Possible Cause	Set/Clear Conditions
1	HPD/Sequencing Fault	1.KSI,Gears,Pedal,or Brake applied in incorrect sequence. 2.High Pedal applied before KSI	Set:HPD(High Pedal Disable)or sequencing fault caused by incorrect sequence of KSI,Pedal,Gears,or Brake Clear:Peapply inputs in correct sequence.
2	Mosfet break	Power modules broken	Set:Internal controller fault detection.
3	Controller Overtemp	1.Controller is performance-limited at this temperature. 2.Controller is operating in an extrenme environment. 3.Excessive load on vehicle.	Set:Heatsink temperature exceeded 85°C. Clear:Bring heatsink temperature below 85°C.
4	Main Contactor Did Not Close	1.Main contactor did not close. 2.Main contactor tips are oxidized,burned,or not making good contact. 3.External load on capacitor bank(B+connection	Set:With the main contactor commanded closed,the capacitor bank voltage(B+ connection terminal)did not charge to B+

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		terminal)that prevents capacitor bank from charging.4.Blown B+ fuse	
5	Current Sensor Fault	1.Leakage to vehicle frame from phase U,V,orW(short in motor stator). 2.Controller defective.	Set:Controller current sensors have invalid offset reading. Clear:Cycle KSI
6	Stall Detected	1.Stalled motor. 2.Motor encoder failure. 3.Bad crimps or faulty wiring. 4.Problems with power supply for the motor encoder.	Set:No motor encoder movement detected
7	CAN Timeout	1.Time between CAN messages received exceeded the Timeout Period	Set:Time between CAN messages received exceeded the Timeout Period. Clear:Cycle KSI or receive CAN message.
8	B+ Undervoltage	1.incorrect(to low)battery-voltage applied to B+ 2.Battery parameters are misadjusted. 3.Battery resistance too low for given regen current. 4.Battery disconnected while regen braking.	Set:Capacitor bank voltage dropped below the Undevoltage limit with the FET bridge enabled. Clear:Bring capacitor voltage above the Undervoltage limit
9	B+ Overvoltage	1.incorrect(to high)battery-voltage applied to B+ 2.Battery parameters are misadjusted. 3.Battery resistance too high for given regen current disconnected while regen braking.	Set:Capacitor bank voltage exceeded the Overvoltage limit with the FET bridge enabled. Clear:Bring capacitor voltage below the Overvoltage limit
10	Motor Temp Hot	1.Motor temperature is above the programmed	Set:Motor temperature is at or above the Temperature Hot

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		Temperature Hot setting. 2.Motor Temperature parameters are mis-tuned	parameter setting. Clear:Bring the motor temperature within range.
11	EEPROM Failure	1. Failure to write to EEPROM memory	Set:Controller operating system tried to write to EFPRM memory and failed
12	Pedal Fault	1.Dirty connector pins.2.Pedal do not match.3.Pedal broken	Set:Pedal signal input detected but no Pedal switch signal input detected. Clear:Cycle KSI.
13	EMBrake Open/Short	1. Open or short on driver load. 2. Dirty connector pins. 3. Bad crimps or faulty	Set:Electromagnetic brake driver is either open or shorted.This fault can be set only when EM Brake Type > 0. Clear:Correct open or short.and cycle driver.
14	Controller Overcurrent	External short of phase U,V,orW motor connections.	Set:Phase current exceeded the current measurement limit. Clear:Cycle KSI

Your brand is one of your most important assets! Don't let your residents and consumers see one of those run down work carts driving around!

Make it an EPIC experience for the staff and consumers!

Specs

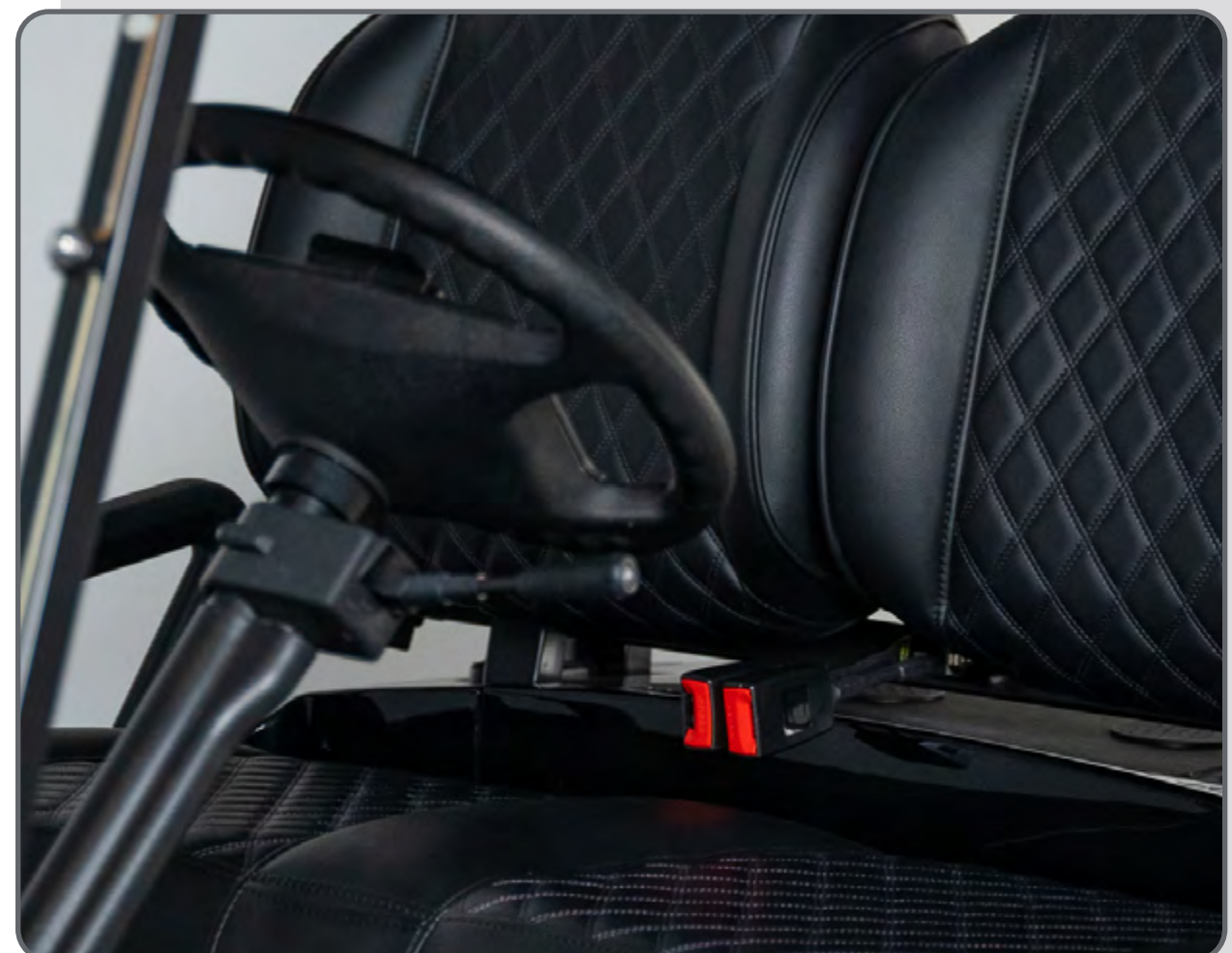
- **Curb Weight:** 1280 lbs
- **Capacity:** 2 People
- **Carry Capacity:** 750 lbs
- **Overall Dimensions LxW:** 99"x47"
- **Metallic Colors:** Black, Charcoal, Red, Pearl White, Royal Blue, Sky Blue, Silver & Matte Black

Body Configuration

- **Frame:** Powder Coated Steel
 - **Body Material:** Injection Molded PP
 - **Wheels:** 14" Aluminum Wheels
 - **Min Ground Clearance:** 6.7"
 - **Min Turning Radius:** 12'
 - **Max Speed:** 19 mph
 - **Max Climbing Capacity:** 20 - 25%
 - **Distance Per Charge:** (@ Speed 20mph) 25 miles
 - **Braking Range:** (@ Speed 20mph) <20ft
 - **Braking System:** Four Wheel Disk Brakes
 - **Lighting and Signals:** LED Lights, Turn Signals
 - **Mirrors:** Lighted Mirrors
 - **Rear:** High-speed Rear Ends
 - **Bumpers:** Durable Front and Rear Bumpers
 - **Roof:** Painted Rooftops
 - **Standard Features:** horns, digital gauges, basket and more.
- Every EPIC is backed by a 2-year limited manufacturer warranty.

Electrical Systems

- **Power:** E
- **Controller:** 450A/500A controllers
- **Motor:** 5kW Motor
- **Batteries:** Maintenance-Free AGM



Your brand is one of your most important assets! Don't let your residents and consumers see one of those run down work carts driving around!

Make it an EPIC experience for the staff and consumers!

Specs

- **Curb Weight:** 1440 lbs
- **Capacity:** 4 People
- **Carry Capacity:** 750 lbs
- **Overall Dimensions LxW:** 123"x47"
- **Metallic Colors:** Black, Charcoal, Red, Pearl White, Royal Blue, Sky Blue, Silver & Matte Black

Body Configuration

- **Frame:** Powder Coated Steel
 - **Body Material:** Injection Molded PP
 - **Wheels:** 14" Aluminum Wheels
 - **Min Ground Clearance:** 6.7"
 - **Min Turning Radius:** 12'
 - **Max Speed:** 19 mph
 - **Max Climbing Capacity:** 20 - 25%
 - **Distance Per Charge:** (@ Speed 20mph) 25 miles
 - **Braking Range:** (@ Speed 20mph) <20ft
 - **Braking System:** Four Wheel Disk Brakes
 - **Lighting and Signals:** LED Lights, Turn Signals
 - **Mirrors:** Lighted Mirrors
 - **Rear:** High-speed Rear Ends
 - **Bumpers:** Durable Front and Rear Bumpers
 - **Roof:** Painted Rooftops
 - **Standard Features:** horns, digital gauges, basket and more.
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Electrical Systems

- **Power:** E
- **Controller:** 450A/500A controllers
- **Motor:** 5kW Motor
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Specs

- **Curb Weight:** 1700 lbs
- **Capacity:** 4 People
- **Carry Capacity:** 750 lbs
- **Overall Dimensions LxW:** 133"x50"
- **Metallic Colors:** Black, Charcoal, Red, Pearl White, Royal Blue, Sky Blue, Silver & Matte Black

Body Configuration

- **Frame:** Powder Coated Steel
 - **Body Material:** Injection Molded PP
 - **Wheels:** 14" Aluminum Wheels
 - **Min Ground Clearance:** 6.7"
 - **Min Turning Radius:** 12'
 - **Max Speed:** 19 mph
 - **Max Climbing Capacity:** 20 - 25%
 - **Distance Per Charge:** (@ Speed 20mph) 25 miles
 - **Braking Range:** (@ Speed 20mph) <20ft
 - **Braking System:** Four Wheel Disk Brakes
 - **Lighting and Signals:** LED Lights, Turn Signals
 - **Mirrors:** Lighted Mirrors
 - **Rear:** High-speed Rear Ends
 - **Bumpers:** Durable Front and Rear Bumpers
 - **Roof:** Painted Rooftops
 - **Standard Features:** horns, digital gauges, basket and more.
- Every EPIC is backed by a 2-year limited manufacturer warranty.

Electrical Systems

- **Power:** E
- **Controller:** 450A/500A controllers
- **Motor:** 5kW Motor
- **Batteries:** Maintenance-Free AGM



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Specs

- **Curb Weight:** 1540 lbs
- **Capacity:** 4 People
- **Carry Capacity:** 750 lbs
- **Overall Dimensions LxW:** 130"x50"
- **Metallic Colors:** Black, Charcoal, Red, Pearl White, Royal Blue, Sky Blue, Silver & Matte Black

Body Configuration

- **Frame:** Powder Coated Steel
 - **Body Material:** Injection Molded PP
 - **Wheels:** 14" Aluminum Wheels
 - **Min Ground Clearance:** 6.7"
 - **Min Turning Radius:** 12'
 - **Max Speed:** 19 mph
 - **Max Climbing Capacity:** 20 - 25%
 - **Distance Per Charge:** (@ Speed 20mph) 25 miles
 - **Braking Range:** (@ Speed 20mph) <20ft
 - **Braking System:** Four Wheel Disk Brakes
 - **Lighting and Signals:** LED Lights, Turn Signals
 - **Mirrors:** Lighted Mirrors
 - **Rear:** High-speed Rear Ends
 - **Bumpers:** Durable Front and Rear Bumpers
 - **Roof:** Painted Rooftops
 - **Standard Features:** horns, digital gauges, basket and more.
- Every EPIC is backed by a 2-year limited manufacturer warranty.

Electrical Systems

- **Power:** E
- **Controller:** 450A/500A controllers
- **Motor:** 5kW Motor
- **Batteries:** Maintenance-Free AGM



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Specs

- **Curb Weight:** 1760 lbs
- **Capacity:** 6 People
- **Carry Capacity:** 1000 lbs
- **Overall Dimensions LxW:** 155"x47"
- **Metallic Colors:** Black, Charcoal, Red, Pearl White, Royal Blue, Sky Blue, Silver & Matte Black

Body Configuration

- **Frame:** Powder Coated Steel
 - **Body Material:** Injection Molded PP
 - **Wheels:** 14" Aluminum Wheels
 - **Min Ground Clearance:** 6.7"
 - **Min Turning Radius:** 12'
 - **Max Speed:** 19 mph
 - **Max Climbing Capacity:** 20 - 25%
 - **Distance Per Charge:** (@ Speed 20mph) 25 miles
 - **Braking Range:** (@ Speed 20mph) <20ft
 - **Braking System:** Four Wheel Disk Brakes
 - **Lighting and Signals:** LED Lights, Turn Signals
 - **Mirrors:** Lighted Mirrors
 - **Rear:** High-speed Rear Ends
 - **Bumpers:** Durable Front and Rear Bumpers
 - **Roof:** Painted Rooftops
 - **Standard Features:** horns, digital gauges, basket and more.
- Every EPIC is backed by a 2-year limited manufacturer warranty.

Electrical Systems

- **Power:** E
- **Controller:** 450A/500A controllers
- **Motor:** 5kW Motor
- **Batteries:** Maintenance-Free AGM



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Specs

- **Curb Weight:** 1880 lbs
- **Capacity:** 6 People
- **Carry Capacity:** 1000 lbs
- **Overall Dimensions LxW:** 157"x50"
- **Metallic Colors:** Black, Charcoal, Red, Pearl White, Royal Blue, Sky Blue, Silver & Matte Black

Body Configuration

- **Frame:** Powder Coated Steel
 - **Body Material:** Injection Molded PP
 - **Wheels:** 14" Aluminum Wheels
 - **Min Ground Clearance:** 6.7"
 - **Min Turning Radius:** 12'
 - **Max Speed:** 19 mph
 - **Max Climbing Capacity:** 20 - 25%
 - **Distance Per Charge:** (@ Speed 20mph) 25 miles
 - **Braking Range:** (@ Speed 20mph) <20ft
 - **Braking System:** Four Wheel Disk Brakes
 - **Lighting and Signals:** LED Lights, Turn Signals
 - **Mirrors:** Lighted Mirrors
 - **Rear:** High-speed Rear Ends
 - **Bumpers:** Durable Front and Rear Bumpers
 - **Roof:** Painted Rooftops
 - **Standard Features:** horns, digital gauges, basket and more.
- Every EPIC is backed by a 2-year limited manufacturer warranty.

Electrical Systems

- **Power:** E
- **Controller:** 450A/500A controllers
- **Motor:** 5kW Motor
- **Batteries:** Maintenance-Free AGM

