



Owner Manual

Vehicle Registration

Register your e-ride vehicle on-line at www.e-ride.com. Click on warranty vehicle registration, fill out the form and click on the submit button. If you have no access to the internet please contact the e-ride Industries Customer Assistance Center at 800-950-4351 to register.

By filling out this form, you are giving us information so we can contact you for any further vehicle or service information that may become available.



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Section 1: Introduction

1.1 A Note to the Customer

Thank you for purchasing your zero emission, battery powered Neighborhood Electric Vehicle (NEV) from *e-ride Industries*. Customer satisfaction and safety are the primary concerns of *e-ride Industries*. For this reason, it is recommended that you take the time to read through this entire manual for important information about the safe use and maintenance of your electric vehicle.



1.2 About the Manual

This owner manual is designed to familiarize you with the safe and proper use of your new *e-ride* vehicle. It will help you learn about the features, controls, and operation of your new electric vehicle. I will also give you important information about maintenance and the associated safety information. **This manual is applicable to the two e-ride Industries models: the two passenger exv2 and the four passenger exv4.**



1.3 Vehicle Identification

For both two and four passenger models, the vehicle identification number (VIN) is found on the VIN/Certification Label. This label is located on the base of the driver's seat facing the door. The VIN contains information such as the model year, type, GVWR, tire pressure, and other useful information. Please record the 17 character vehicle identification number in the space below:

Vehicle Identification Number (VIN):

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Date Purchased: ____/____/____



Section 2: General Specifications

Specifications for:

2.1 e-ride Industries Flatbed Utility Vehicle (EXV2)

Curb weight	1,750 pounds
GVWR	3,000 pounds
Length	168 inches
Width	60 inches
Height	70 inches
Flatbed bed size	72 inches x 58 inches
Drive system voltage	72 volt
Batteries	8 volt lead acid – quantity 9





Drive Axle
Motor

Top Speed
Tires
Brakes
Steering
Chassis
Bumpers
Suspension

Gear reduced direct drive
72 volt DC
separately excited
(optional 72 volt AC)

25 miles per hour
14" street rated

Hydraulic front disc and rear drum
Rack & pinion
Riveted aluminum
Steel front and rear
Independent front suspension,
leaf spring solid axle in rear





Speed Controller

72 volt with regenerative braking
(optional 72 volt AC)

Charger

72 volt Lester DC charger

Charge time

8-12 hours depending on discharge

Charging energy requirements

220 volt AC for best charge and
110 volt AC for emergency use only

Lights

Headlights w/bright, taillights, turn signals,
hazard lights and brake lights

2.2 e-ride Industries Coach Transportation Vehicle (EXV4)



Curb weight	1,860 pounds
GVWR	3,000 pounds
Length	160 inches
Width	60 inches
Height	70 inches
Flatbed bed size	28 inches x 55 inches
Drive system voltage	72 volt
Batteries	8 volt lead acid - quantity 9
Drive Axle	Gear reduced direct drive
Motor	72 volt DC separately excited





Top Speed	(optional 72 volt AC) 25 miles per hour
Tires	14" street rated
Brakes	Hydraulic front disc and rear drum
Steering	Rack & pinion
Chassis	Riveted aluminum
Bumpers	Steel front and rear
Suspension	Independent front suspension, leaf spring solid axle in rear
Speed Controller	72 volt with regenerative braking (optional 72 volt AC)
Charger	72 volt Lester DC charger
Charge time	8-12 hours depending on discharge



Charging energy requirements

220 volt AC for best charge and
110 volt AC for emergency use only

Lights

Headlights w/bright, taillights, turn signals,
hazard lights and brake lights





Section 3: Lighting

3.1 Locations

3.1.1 *Headlights*

The headlights are found in the front of the vehicle mounted into the front of the hood. There are four total headlights that utilize a clear lens. The dim setting lights are the center two and the outer two lights are the bright setting lights. The dim setting operates with just the center two lights and all four lights are illuminated on the bright setting. Headlights should be kept clean and in good operation at all times as not to impair night visibility.



3.1.2 Front Parking Lights/ Turn Signals

These lights operate as both the front turn signals and the parking lights. They are located in the front of the vehicle mounted into the front of the hood. They are the rectangular amber colored lights located just below the headlights on either side of the vehicle. They operate with the head lights turned on as well as flashing for the corresponding turn signal.

3.1.3 Taillights/ Brake Lights/ Rear Turn Signals

These lights have three functions and are the red rectangular lights at the rear of the vehicle mounted into the tail panel. These operate on their dim setting as the taillights with the light (headlight) switch turned on. They also flash with the corresponding turn signal and illuminate when the brake pedal is pushed on their bright setting.



3.2 Headlight Bulb Replacement

1. Make sure the lights switch and key switch have been turned off.
2. Remove cover from the light by taking off the four nuts.
3. Remove the wire connector from the headlight.
4. Turn the bulb counter-clockwise and pull it straight out to remove it from the housing.
5. To put back together, go through steps 2 – 4 in reverse order.





3.3 Taillight Bulb Replacement

1. Make sure the lights switch and key switch have been turned off.
2. Turn the socket counter-clockwise to release it from the housing.
3. Pull the bulb straight out to remove it from the socket.
4. To put back together, go through steps 2 and 3 in reverse order.





3.4 Flasher Replacement

1. Make sure the lights switch and key switch have been turned off.
2. Remove the console and dash assemblies. The flasher is located on the firewall to the left of the wiper motor.
3. Pull the flasher straight out to remove its plug housing and replace.
4. To put back together, go through steps 2 and 3 in reverse order.

Note: The turn signals and hazards use the same flasher.



Section 4: Driver Controls

4.1 Instrumentation

4.1.1 Speedometer

This speedometer shows miles per hour around the outer edge of the gauge and kilometers per hour around the center. There is also a digital display screen at the bottom which shows the total miles on the vehicle. An internal light illuminates when headlights are tuned on.



4.1.2 Dash Display

The vehicle is equipped with a SEVCON speed controller that utilizes a digital display which is mounted near the center of the dash. The display screen has three display areas.

- a. The top left display (under the battery picture) is the battery life gauge. There are a total of ten charge bars. The bars begin solid when the vehicle is fully charged and turn into outlines of the bars with the decrease of the battery pack charge. Each bar represents 10% of the battery pack's capacity.
- b. The bottom left area of the Sevcon display shows the hours on the speed controller with a flashing hour glass to the right of the hour number. When you turn on the vehicle it cycles through three modes; T=time vehicle has been driven, P=Unused, K=time vehicle ignition has been turned on.



- c. The far right area of the display is the section that shows certain system faults and errors. When there is a problem or a procedure is performed out of sequence, the display will give you a message explaining what is wrong. If you have any questions about a fault display, call *e-ride Industries* Customer Assistance Center at 1-800-950-4351. A list of the fault codes and the corresponding issue is given on the next page.



Faults shown on the display are as follows:

Fault code	Issue	Action to Take
BDI Cutout	Batteries are below 20% state of charge, vehicle will drive at half speed	Recharge vehicle
Over Temp	Speed controller is above normal operating temperature	Stop vehicle and allow speed controller to cool
Accel Fault	Accelerator pedal pressed during power up	Make sure accelerator pedal is not pressed, then cycle key switch
Seq Fault	Direction selector switch was in “forward” or “reverse” and park brake was released when key was turned on.	Set park brake, then cycle key switch
Coil S/C	Main contactor issue	Cycle key switch, if fault still persist contact e-ride industries
Fail	There is an internal issue with the speed controller	Contact e-ride industries



4.1.3 AC Dash Display (Utilized by Optional AC Drive System Only)

The optional AC drive system uses a Curtis speed controller that utilizes a digital display which is mounted near the center of the dash. This display replaces the one for the DC drive system. The display screen has three display areas and one menu button.

- a. The bottom of the display has five LED lights that display the batteries state of charge. There are three green, one yellow and one red, the light that is lit corresponds to the battery pack state of charge. When the lit light is the one to the right the pack is fully charged, it will move to the left and change color with the battery pack discharge.
- b. There is a menu button located to the right of the steering column just below the dash that cycle through the menu of the display. Each time you press this button, it will display in series; TOC=number of times vehicle has been charged, Volt=battery pack voltage, RPM=motor revolutions per minute, Temp=motor temperature, and Cntrl=controller temperature.



- c. The center of the display is a digital display that can show a number of different operations such as:

Action performed	Item shown on display
Ignition key is first turned on	Total miles on speed controller
Park brake on or direction selector in neutral	“Park”
Park brake released and direction selector in reverse	“Reverse”
Park brake released and direction selector in forward	State of charge in percentage by 1%

- d. The top of the display is a wrench with a red LED light that lights up when there is an issue with the drive system. An error code will also show up on the center digital display when this light illuminates. Contact e-ride Industries with this code.



4.1.4 Battery Water Level Indicator

The round pale green light located on the dash to the right of the steering wheel is the battery water level indicator. Its purpose is to remind you to refill the batteries with water when it is needed. When the light is green, battery water level is correct. When the indicator flashes red, make sure to replenish the batteries.

4.1.5 Turn Signal and Hazard Light Indicators

The two round green LED lights that are mounted in the dash on either side of the steering wheel are the lights indicating that the turning signals are in operation. They flash when signal is on. Each will flash when the corresponding signal is turned on, both will flash when the hazard lights are turned on.



4.1.6 Drive Ready Light

The red LED light mounted in the dash to the left of the steering wheel is the drive ready light. This light indicates when the vehicle is powered up and the park brake is released and is therefore ready to drive. Just choose a direction and depress the accelerator to drive the vehicle.



4.2 Dash Controls

4.2.1 Ignition Key Switch

The ignition switch is the silver colored cylinder located on the dash to the left of the steering wheel. Insert the ignition key and turn clockwise to power up the vehicle.

4.2.2 Direction Selector Switch

This switch is the red rocker switch located on the dash to the left of the steering wheel. Press the top of the switch to move vehicle forward. Press the bottom of the switch to move vehicle in reverse. The center position of this switch is neutral. The parking brake must be released and accelerator depressed in order to move vehicle.



4.2.3 *Horn*

This switch is the round black button located to the left of the steering wheel. Push the button in to sound the horn. The horn will sound as long as the button is held and stop when the button is released.

4.2.4 *Lights Switch*

The lights switch is a black rocker switch located in the three-switch block near the center of the dash. The light switch is the left one in the block. This switch controls the dim headlights as well as the front parking lights and taillights. Turn these lights on by pressing on the top of the switch; turn them off by pressing on the bottom.



Always remember to turn on your headlights at dusk or dawn and during inclement weather. Failure to activate your lights under these conditions could result in a collision.



4.2.5 *Bright Switch*

The bright switch is a black rocker switch located in the three-switch block near the center of the dash. The bright switch is the center one in the block. This switch controls the bright headlights. Turn the bright headlights on by pressing on the top of the switch; turn them off by pressing on the bottom. When the bright head lights are on, the amber light on the switch will also illuminate. This switch only works with the lights switch turned on as well.



When approaching another vehicle or person, be sure to turn off the bright headlights to avoid blinding, which may cause an accident.



4.2.6 *Wiper Switch*

The wiper switch is a black rocker switch located in the three-switch block near the center of the dash. The wiper switch is the right one in the block. This switch controls the front windshield wiper. Turn the wiper on by pressing on the top of the switch; turn it off by pressing on the bottom.



4.2.7 *12 Volt Accessory Power Outlet*

The accessory power outlet is located directly under the lights and windshield wiper control switch block near the center of the dash. The outlet is only operational when the key switch is on. For safety purposes there is a rubber plug attached to the outlet. Keep outlet covered when not in use to prevent anything unintended from entering.

Note: Maximum current usage from the outlet is **15 amps**.



4.4 Steering Column Controls

4.4.1 Turn Signal Lever

The turn signal lever is the longer of the two on the left side of the steering column. Push the lever up to engage the right turn signal and pull it down to engage the left turn signal.



4.4.2 Steering Column Tilt Lever

The steering column tilt lever is the shorter of the two on the left side of the steering column. Pull the lever toward you to release the tilt lock, adjust the column to the desired tilt and release the lever.



Do not attempt to adjust the column tilt while the vehicle is in motion.



4.4.3 Hazard Light Switch

The hazard light switch is the small knob on the right side of the steering column. Push the lever in to turn on the hazard lights; pull it out to shut them off.

4.5 Under-Dash Controls

4.5.1 Accelerator Pedal

The accelerator pedal is the foot pedal on the right. Depress it to accelerate the vehicle; release it to decelerate the vehicle.

4.5.2 Brake Pedal

The brake pedal is the foot pedal on the left. The brake pedal is the wider black painted pedal. Depress the pedal to apply the brakes. The amount of pedal pressure directly correlates to the amount of vehicle braking.



4.5.3 *Parking Brake*

The parking brake is the lever handle located under the dash to the left of the steering column. To engage the parking brake, pull the lever down toward yourself until it locks over-center. To disengage, pull up on the handle and push it forward until it stops. It may be necessary to adjust the parking brake tension as the rear brake pads wear. You can adjust the parking brake tension by turning the top of the handle. Turning the knob clockwise tightens it and counterclockwise loosens.

-Note: The parking brake needs to be released to drive the vehicle. This is done for safety reasons. The drive ready light above the ignition key illuminates when park brake has been released and ignition key is on. This indicates the vehicle is ready to drive.



Be sure to set the parking brake when parking the vehicle to prevent rolling.



4.6 Driver Comfort and Visibility

4.6.1 Side-View Mirrors

There are mirrors positioned on both the right and left side of the vehicle mounted on the door post (or the door if the vehicle is so equipped). The side-view mirrors are adjusted manually. Your view should be adjusted so that the vehicle's rear tires are just visible in the bottom inside corner of the mirror. This will minimize any "blind spots" in your field of view.



Always check to see if it is clear behind you before changing lanes or backing up to avoid any collisions or accidents.



4.6.2 Rearview Mirror

The rearview mirror is mounted to the top center of the windshield. The rearview mirror is adjusted manually. This mirror is intended to give a view out the back of the vehicle to the driver. The mirror operates in the either day or night settings. The tab at the bottom of the mirror switches if between day and night. If the tab is pulled toward you it is in the day mode; if it is pushed toward the windshield it is in night mode.



4.6.3 *Seat Position Lever*

The driver and passenger seats are on tracks that can be adjusted forward and back. The adjustment lever is located at the front, just below each seat. To move the seat, pull the lever to the side and slide the seat to the position you desire. Releasing the lever will lock the seat in place.

-Note: Rear seats (if equipped) are not adjustable.



Do not attempt to adjust the driver seat while the vehicle is in motion. Always make sure that the seats are locked in place before operating the vehicle.





4.7 Operator/ Passenger Restraint System

4.7.1 Restraint Operation

Research has proven that seat belts save lives. Wearing your seat belt properly can reduce the seriousness of injuries in a vehicle accident. Some of the most serious injuries happen when people are thrown from the vehicle. Seat belts help provide protection from that. Abide by the following rules when using your safety restraints to obtain their full benefit:

- a. All occupants of the vehicle, including the driver, should always properly wear their safety belts.
- b. Lap belts should fit snugly and as low as possible around the hips, not across the waist.



- c. To reduce the risk of injury, make sure children sit where they can be properly restrained.
- d. Two people should never be belted into a single seat belt. People belted together can crush one another in an accident, causing injury. Never use a lap belt for more than one person.



It is extremely dangerous to ride in a cargo area of the vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and seat belts.



4.7.2 *Restraint Maintenance*

Periodically check all your belts, buckles, latch plates, retractors and anchorages to ensure they are working properly. Look for any other loose or damaged safety belt system parts. If you see anything that might keep a safety belt system from working properly, have it repaired.

All safety belt assemblies used in vehicles involved in a collision should be replaced. However, if the incident was minor and a qualified service technician finds that the belts do not show damage and continue to operate properly, they do not need to be replaced. Safety belt assemblies not used during a collision should also be inspected and replaced if damaged or improper operation is found.



Failure to inspect and if necessary replace the safety belt assembly following a collision could result in severe personal injuries in the event of another collision.



4.7.3 *Child Restraints*

You are required by law to use safety restraints for children in the United States. If small children ride in your vehicle (generally children who are four years old or younger and weigh 40 lbs (18 kg) or less), you must put them in safety seats made especially for children. Check your local state laws for specific requirements regarding the safe transportation of children in your vehicle. Always follow the instructions and warnings that come with any infant or child restraint you might use.



Never let a passenger hold a child on his or her lap while the vehicle is in motion. The passenger cannot protect the child from injury in a collision.



Section 5: Vehicle Operation



This vehicle contains a high voltage electrical system. If this vehicle is not used properly or serviced as stated in this manual, serious injury or death may result. Read this manual prior to charging or servicing this vehicle.



5.1 Main Disconnect Switch

The vehicle is equipped with a master disconnect switch that detaches the battery pack power from the rest of the vehicle systems. This switch is located at the front of the vehicle inside the front right wheel well. The switch is equipped with a key on a chain. To power the vehicle insert the key into the socket and turn clockwise until it locks in. To relieve power from the vehicle turn the key counterclockwise and remove.

This switch should be disengaged before any maintenance is performed on the vehicle. This switch should also be turned off during charging to prevent any possible damage to the vehicle electrical system.





5.2 Vehicle Drive Sequence

The driving inputs should be done in the following sequence to engage the drive system properly:

1. Turn the key switch on. (make sure the main disconnect switch is on as well)
2. Release the parking brake.
3. Push the directional switch to either forward or reverse.
4. Lightly depress the accelerator pedal.

The vehicle's controller works based on a sequence of inputs in the proper order to function correctly. The direction selector switch must not be in forward or reverse when the controller is powered up (master disconnect on and key switch on). If this occurs the vehicle will not drive and the dash display will read an error. To correct this, simply put



the direction selector switch back into the neutral position and then re-engage it in forward or reverse.



When driving the vehicle, be careful not to take corners too fast because the vehicle may flip.



5.3 Charging

5.3.1 Operating Procedure

The battery charger is a self-regulating charger with a minimum of moving parts, designed for long, trouble free service. The charger utilizes convection cooling which maximizes the reliability and minimizes any maintenance costs. Charge only flooded, liquid electrolyte (wet) lead acid batteries with this charger.

Normal charging at the finish charge rate for the last three to five (3-5) hours is important to achieve equalization of all battery cells every time the batteries are charged. New batteries or batteries charged in cold temperatures (below 50 degrees F) will require more time to achieve full charge.

The charger turns off automatically when battery pack is fully charged. Charge time will vary depending on the depth of discharge. Allow 8 hours for normal charging. Severely discharged batteries may require up to 12 hours to be properly charged and





equalized. After the charger has turned off, disconnect the AC supply cord from the outlet, then disconnect the DC output plug from the battery on portable chargers only.

This manual contains important safety and operating instructions for your battery charger. Before using a battery charger, read all of the instructions and cautionary markings on battery charger, battery, and the vehicle itself.



CAUTION: Do not leave charger connected while unattended for more than two consecutive days. Severe overcharging and possible damage to batteries will result if charger should fail to turn off.



WARNING: Lead acid batteries generate gases which can be explosive. Charge only in well ventilated areas. Do not disconnect charger DC output terminals from battery when charger is on. The resulting arcing and burning will damage the connectors and could cause the battery to explode. Keep sparks, flame, and smoking materials away from battery.



DANGER: To reduce the risk of fire, do not use the charger near flammable materials or vapors.

Note - For Optional AC Drive Systems Only:

If your vehicle is equipped with an optional AC drive system do not charge the vehicle unless the battery percentage is below 80%. If charging is done when battery percentage is above 80% the display will not reset and the wrong battery percentage will be displayed.



Operating instructions for off-board charger:

1. Locate charger in an area that is dry and well vented and away from any flammable fluids or objects that cannot be exposed to heat.
2. Connect the DC output plug by grasping the charger plug body and pushing it straight into the vehicle receptacle until it is fully engaged.
3. Connect an AC supply cord to a properly grounded single phase outlet of the charger with one of the proper voltages and frequencies as follows:
 - 115 volts 16 amp 60 hertz
 - 230 volt 13 amp 60 hertz
4. The charger will start after a short delay as indicated by the transformer hum and the ammeter movement.
5. Once the charge has completed, pull on the plug body from the receptacle rather than the cord when disconnecting the cords from the charger.



Operating instructions for on-board charger:

1. Connect the AC supply cord to the correct single phase outlet, located in the front bumper of the vehicle, with one of the proper voltages and frequencies as follows:
 - 115 volts 16 amp 60 hertz
 - 230 volt 13 amp 60 hertz
2. The charger will start after a short delay as indicated by the transformer hum and the ammeter movement.
3. Once the charge has completed, pull on the plug body from the receptacle rather than the cord when disconnecting the cord from the vehicle.



Never plug in both 120 volt and 220 volt cords at the same time. When one cord is plugged into one receptacle the other receptacle has live power also.



If the charger must be stopped, always disconnect the input supply cord from its outlet to terminate the charge.

5.3.2 Receiving and Installing the Charger

When the charger is received, portable chargers should be checked for possible in-transit damage. If any damage is found, it should be reported to the dealer/manufacturer.



Do not expose the charger to rain or snow.



5.3.3 AC Input and Grounding

This battery charger must be grounded to reduce the risk of electric shock. This charger is equipped with an electric cord having an equipment-grounding conductor with insulation as an outer surface that is green, with or without yellow stripe(s). If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding connector to a live terminal.



WARNING: Improper connection of the equipment-grounding conductor can result in a risk of electric shock.



5.3.4 Extension Cord Requirements

Only use an extension cord if it is absolutely necessary. Always use a three-conductor, No. 12 AWG heavy duty cord with ground that is properly wired. The extension cord should be in good electrical condition, and kept as short as possible. Make sure the pins on the plug of the extension cord are the same number, size, and shape as the AC plug of the battery charger. The use of an improper extension cord could result in a risk of fire or electrical shock. Locate all cords so they will not be stepped on, tripped over or otherwise subjected to damage or stress.



5.3.5 Charger Safety Information

This manual contains important safety and operating information for your charger. Please read all of the safety information before using the charger. Some important safety information and warnings are given below:

- a. To reduce the risk of injury, charge only liquid electrolyte (wet) lead acid rechargeable batteries. Other types of batteries may burst causing personal injury and damage.
- b. If either end of your charger plug becomes damaged in any way make sure to replace it IMMEDIATELY. There is 72 volts running to the end of the plug and if the plug is cracked, broken, or damaged in any way, there is potential of injury or death. Do not attempt to use until you have the damaged plug replaced.



- c. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electrical shock, or injury to persons.
- d. Do not operate the charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified service center.
- e. To reduce the risk of electrical shock, unplug the charger from a live outlet or disconnect AC power to the outlet before attempting any maintenance or cleaning. Turning off controls will not reduce the risk of electric shock.
- f. DO NOT use jumper cables to the batteries on this vehicle.
- g. Only charge this vehicle with the appropriate battery charger that is supplied with the vehicle.



5.4 Optimizing Battery Performance

The vehicle is equipped with nine 8 volt batteries. They are located down the center of the vehicle under the battery cover. There are several simple steps that can be taken to achieve maximum battery life and performance.

5.4.1 Battery Break-In

When the batteries are new, make sure to charge the battery pack before its first use. This is because it is difficult to know how long they have been stored. Start early in cycling the batteries. Limit the use of new batteries for first five cycles. New batteries are not capable of their rated output until they have been discharged a number of times. It takes 90-120 cycles to fully maximize range.



5.4.2 Battery Watering

Make sure to fill battery water promptly when there is an indicated need. The batteries must be refilled with distilled or de-mineralized water to avoid internal damage. Electrolyte levels lower during discharge and rise during charge. **Therefore, it is mandatory that water be added to cells ONLY when they are fully charged.** Older batteries may require more frequent additions of water than new batteries.

5.4.3 Charge Cycling

For normal overnight charging use only 230 volt AC input. Limit the use of the 115 volt AC input to emergency situations and occasional charging when vehicle is not in use and/ or 230 volt input is not available. **Continual use of the 115 volt input will lead to undercharging of the batteries, reducing performance and battery life.**



Do not excessively discharge batteries. Excessive discharge can cause polarity reversal of individual cells resulting in complete failure shortly thereafter. **The batteries state of charge should not drop below 50% for maximum battery life.** Limited use of new batteries will also minimize the chance of cell reversal. Charge the batteries to their full state every two months whether you have used them or not to ensure they will not fully discharge.



Do not leave the charger connected while unattended for more than two consecutive days. Severe overcharging and possible damage to the batteries will result if the charger should fail to turn off.



5.4.4 Storage

Do not park the vehicle and leave it for any length of time with discharged batteries. The batteries could discharge to the point where damage could occur and the battery charger will not charge.

If you allow the vehicle to sit in conditions of -6 degrees C (20 degrees F) or less with a state of charge of 20% or less, **the battery could freeze.** If the batteries happen to freeze, it may cause damage to the batteries and permanently reduce their capacity. If in cold conditions, place the vehicle in an area greater than 0 degrees C and allow it to warm up before charging. **Never charge the vehicle if the batteries may be frozen.**



5.4.5 Cleaning and Maintenance

Keep the top of the batteries clean and dry to insure longer lasting, trouble-free operations. Also, make certain the battery cables are always tightly fastened to the battery terminals. Make sure the cables are tight to the terminals but be careful not to over tighten. Any corrosion present on the batteries or terminals, should be cleaned promptly by brushing them off with a wire brush. The acid can be neutralized with a solution of baking soda and water.



Section 6: Maintenance



This vehicle contains a high voltage electrical system. If this vehicle is not used properly or serviced as stated in this manual, serious injury or death may result. Read this manual prior to charging or servicing this vehicle.



6.1 Battery Maintenance

Batteries normally produce explosive gases which can cause personal injury. Therefore, do not allow flames, sparks or lighted substances to come near the battery. When working near the battery, always shield your face and protect your eyes. Always provide ventilation.



Whenever cleaning or servicing the batteries, be sure to unplug the main disconnect.





Battery Safety Precautions: Always observe the following personal safety precautions when working with lead acid batteries:

- a. Someone should be within range of your voice or close enough to come to your aid when you work near a battery.
- b. Keep batteries out of reach of children. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. Shield your eyes when working near the battery to protect against possible splashing of acid solution. If acid comes in contact with eyes or skin, flush immediately with water for a minimum of 15 minutes. If acid is swallowed, call a physician immediately.
- c. To avoid sparks when removing a battery, turn off all lights and accessories.
- d. Connect positive (+) cable to positive terminal, connect negative (-) cable to negative terminal. Reversing polarity can be very dangerous.



- e. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention.
- f. Never smoke or allow a spark or flame in the vicinity of batteries.
- g. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.
- h. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead acid battery. A lead acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- i. Never charge a frozen battery.
- j. Do not lift a battery by the terminal posts, or internal damage may result.



6.1.1 Battery Water Filling

Your vehicle is equipped with flooded batteries. The battery cells need to be checked and filled as needed. The battery water level indicator on the dash will indicate when the batteries need to be replenished with water. When the indicator flashes red, make sure to replenish the batteries. Perform this in a well-ventilated area that is dry and well lit.

To fill the batteries:

1. Fill the provided tank with distilled or de-mineralized water.
2. Place the tank in the roof of the vehicle with the tank fill hose hanging over the front of the windshield.
3. Open the hood and take the cap off the battery pack side of the fill hose.
4. Connect the tank fill tube with the battery pack fill tube.



5. Keep filling the water bottle as necessary to continue filling the batteries (it fills the best with a full tank). The wheel in the tank fill hose will continue to spin as long as water is going into the batteries. Once the wheel has stopped, the batteries are full of water. Disconnect the water bottle hose and re-attach the battery pack fill hose to the vehicle with the cap in place.

To manually check the water level of a single cell or battery:

1. Remove the battery cover in the center of the vehicle.
2. Inspect the fluid level in each cell by looking to see how high the white float is sitting in each cell cap.
3. Replace the cover before operating the vehicle.

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6.1.2 Battery Terminals

The batteries operate the best when they have clean, tight connections to their terminals. The batteries should be visually inspected monthly to ensure that the connections are free of corrosion. If corrosion occurs, remove the corrosion from the terminal and then scrub the terminal with a mixture of baking soda and water to prevent corrosion from returning.

6.1.3 Battery Disposal

Always dispose of batteries in a responsible manner. Follow your local authorized standards for disposal. Call your local authorized recycling center to find out more about recycling batteries. You may also call your local Interstate Battery Dealer to pick up used or dead batteries.





6.2 Charger Maintenance

The battery charger requires minimal maintenance. It should be kept clean and all connections are to be tightly secured. In the event of intermittent operation, examine and tighten, if necessary, all connections. If any problems cannot be resolved, consult a qualified service center. Do not disassemble the charger; take it to a qualified service center when service or repair is required. Incorrect reassembly may result in a risk of electrical shock or fire.



DANGER: To reduce risk of electric shock, always disconnect the AC supply cord from its outlet and the DC output cord from the battery before attempting any maintenance or cleaning of the battery charger.



6.3 Brakes

The fluid level on your brake system is a crucial safety component. You should check it periodically on the side of the reservoir. The brake level should be within the range that is given on the reservoir, if it isn't, fluid should be added. After filling, reinstall the cap and wipe off any excess brake fluid.

When you are adding brake fluid to the reservoir, be careful not to spill any fluid onto the vehicle. If this happens make sure to wash it off immediately with soap and water to avoid cracking, discoloration, or any other damage to the paint or any other part of the vehicle.

-Note: The vehicle is equipped with a four-wheel hydraulic braking system, only use standard **Dot 3** brake fluid from an unopened container.



6.4 Windshield Wipers

If the wiper operation results in streaky or obstructed vision, clean the blade with mild soap and water to remove any foreign material, grease or dirt. If the wiper operation still results in poor visibility, inspect the blade, the insert, and the arm using the following guidelines:

- a. Make sure that the blade and arm are not bent or dented.
- b. Make sure that the blade is still pliable and not stiff or cracked.
- c. If there are any defects, be sure to replace the blades to ensure safety.



6.5 Tires

6.5.1 Tire Rotation

Because your vehicle's tires perform different jobs, they often times wear differently. To make sure the tires wear evenly and last longer, rotate them on a regular basis. If you notice that the tires are still wearing unevenly, have them checked.

6.5.2 Tire Alignment

At least twice a year, check your tire alignment. If your alignment is not correct, this could cause steering resistance and rolling resistance which would cause a decrease in the range and overall performance of the vehicle. Mis-aligned tires will also cause uneven tire wear which could be a safety hazard.



6.5.3 Tire Pressure

Under-inflation increases tire flexing and can result in tire failure. Over-inflation causes a tire to be too stiff. Objects on the ground could puncture the tire more easily and tire failure could occur. Unequal tire pressure can cause steering problems and could also cause you to lose control of the vehicle. Take these steps to ensure correct tire pressures:

- a. Use an accurate tire pressure gauge.
- b. Check the tire pressure when tires are cold, after the vehicle has been parked for over an hour or has been driven more than 3 miles.
- c. Adjust the tire pressure according to the recommended specifications listed on the sidewall of the tires and on the VIN label on the driver's seat base.

6.5.4 Tire Replacement

Replace the tire when the wear band is visible through the tire treads. Tires smaller or larger than the original size may affect the accuracy of the speedometer.



6.6 Fuses

6.6.1 72 Volt Fuses

All 72 volt rated fuses are located in the rear motor compartment of the vehicle. In most cases, if these fuses fail there is another issue with your vehicle. Problems that cause fuse failure should be diagnosed by a trained professional.



Front Controls Fuse - This fuse is for the front controls of the vehicle (key switch, converter, heater, etc). It is a 30 amp fuse (NON-30).

Main Drive System Fuse - The main fuse for the 72 volt D.C. drive system which is rated for 325 amps (ANN-325).



Main drive System Fuse (Optional AC drive) - The main fuse for the 72 volt A.C. drives system which is rated for 425 amps (ANN-400) is mounted onto the A.C. drive controller.

6.6.2 12 Volt Fuses

The 12 volt fuses are located at the front of the vehicle beneath the hood. Unlatch and open the hood, remove the aluminum tunnel cover. The fuse panel is a small black box in the center. Remove the weather cover by pressing both tabs on the side tabs and lifting upward. The fuse circuit, size and panel locations are given in the following table:



Fuse Table

Fuse Location	Circuits Protected	Fuse
F1	Ignition	3 Amp
F2	Hazard & Turn Lights	10 Amp
F3	Radio	10 Amp
F4	Interior Doom Light	5 Amp
F5	12 Volt Battery (A.C. Drive only)	25 Amp
F11	Headlights	20 Amp
F12	Horn, D.C. Controller Fan, Back-up Alarm	15 Amp
F13	Brake Lights, Speedometer, Wiper Motor, 12 Volt Accessory Outlet	15 Amp
F14	Heater Coil, Heater Fan, Radio Ignition	10 Amp
F15	2-Speed Fan, Beacon Light	10 Amp



6.7 Key Replacement

To obtain an extra or replacement key for your vehicle please call the *e-ride Industries* Customer Assistance Center at 1-800-950-4351.

6.8 Care and Cleaning

To clean the vehicle, you can use any mild cleaning soap or cleaner and soft towel for the entire vehicle (seats, glass, dash, etc.). Also, make sure to use a soft, clean towel to avoid surface scratches and water spotting.



Caution: Do not rinse the interior of your vehicle. Direct water on the charger plug, windshield, dash panel or instrument panel could damage the electrical system.



6.9 Maintenance Schedule

Vehicle Maintenance Table

TASK	MONTHLY
1. Check all nine batteries for proper water level	X
2. Check tires for correct pressure and wear	X
3. Check for correct operation of parking brake	X
4. Check brake fluid for proper level	X
5. Check brake lines for leaks	X
6. Check headlights, blinkers, brake lights, wipers	X
7. Check seat belts for proper operation	X
8. Check battery terminals for tight connections	X



Section 7: Transporting the Vehicle

The vehicle should be transported on a trailer only. Do not tow the vehicle with the drive wheels in contact with the road. The best way to transport your vehicle is in an enclosed trailer. If you have to use an open trailer, be sure to do the following:

1. Only load the vehicle facing forward.
2. Tie down the vehicle using an X pattern.
3. Be sure to tie down any loose objects.
4. On EXV4 models only, a strap must be used over the plastic roof panel to hold it in place.



Towing the vehicle at speeds in excess of 25 miles per hour with any of the wheels in contact with the ground is not recommended. e-ride Industries will void all warranties if vehicle is towed in this manor.



Section 8: Customer Assistance Information

Customer satisfaction is a primary goal of *e-ride Industries*. If you have any questions or concerns with your *e-ride* vehicle, please contact the e-ride Industries Customer Assistance Center.

By Mail: e-ride Industries
Customer Assistance Center
3171 92nd Avenue
Princeton, MN 55371

By Phone: 1-800-950-4351

Customer Assistance

Center hours: Monday through Friday CST, 8am to 5pm

By e-mail customer.assistance@e-ride.com



When contacting the Customer Assistance Center, please have the following information available:

- ✓ The vehicle identification number (VIN)
- ✓ The year and model of your vehicle
- ✓ The date you purchased the vehicle
- ✓ The current odometer reading
- ✓ The name of the dealer the vehicle was purchased from



Section 9: Warranty Information

12 Month Limited Warranty

e-ride Industries warrants to the original retail purchaser of record that the *e-ride* vehicle purchased from the manufacturer, distributor or authorized dealer, is free from defects in materials and workmanship subject to the terms and provisions contained herein. This warranty gives you specific legal rights. You may have other rights that vary state to state.

e-ride Industries and your distributor/dealer are not responsible for any time that you lose, for any inconvenience you might be caused, for the loss of transportation, or for any other incidental or consequential damages you may have. Any implied warranty of merchantability (that the vehicle is reasonably fit for the general purpose for which it was sold) or fitness for a particular purpose (that the vehicle is



suitable for your special purposes) shall be void and excluded subsequent to one (1) year from the date you take delivery of your new *e-ride* vehicle or the day it is first put into service (example: dealer demonstrator), whichever occurs first. The repair or replacement of the *e-ride* vehicle or defective component thereof is the exclusive remedy under this written warranty or any implied warranty. *e-ride Industries* makes no other representation or warranty of any kind, and no representative, employee, distributor, or authorized dealer has the ability to make or imply and representation, promise, or agreement which in any way varies the terms of this limited warranty.

9.1 What is Covered

Bumper-to-bumper coverage: The 12 Month Limited Warranty begins the date you take delivery or the day the vehicle was first put into service and lasts for a period of 12 months, regardless of miles driven. During this coverage period, authorized e-ride



dealers or repair centers will repair, replace, or adjust all parts of your vehicle that are defective in factory-supplied materials or workmanship.

Authorized service centers will only use *e-ride* parts or other parts that are authorized by the company.

9.2 Battery Coverage

Batteries are warranted through their respective manufacturers.

9.3 Safety Restraint Coverage

Under your limited warranty, Safety Restraint Coverage begins at the warranty start date and lasts for five years regardless of miles driven. During this period, *e-ride* warrants your vehicle's safety belts against defects in factory-supplied materials or workmanship.



9.4 What is NOT Covered

This warranty shall not apply to damage or repair costs caused by, but not limited to:

1. Accidents, collision, or objects striking the vehicle
2. Damage cause by failure to operate, maintain or improperly maintain, and service the vehicle as specified in the applicable sections of the owners manual
3. Theft, vandalism, riot, or terrorist acts
4. Abuse and misuse of the vehicle, such as overloading, racing, or driving off road
5. Modifying or altering any component of the vehicle
6. Tampering with the vehicle
7. Using improper or contaminated fluids
8. Driving though water deep enough to cause damage to the electrical system
9. Damage caused by use and/or the environment, such as: fading, deterioration or weathering of seats, floor mats, composite parts or paint caused by ordinary wear and tear from exposure



9.5 Maintenance and Normal Wear

The 12 month limited warranty does not cover parts and labor to maintain your *e-ride* vehicle or the replacement of parts due to normal wear and tear. Normal tire wear is not covered by this limited warranty. Damage to tires caused by road hazards are not covered by this limited warranty. Any damage caused by a puncture is not covered under this limited warranty.

Note: This warranty is void on vehicles currently or previously titled as salvaged, scrapped, junked, or totaled.



9.6 Questions

For warranty questions, please contact our Customer Assistance Center (see contact information on page 75). Please have the following information available:

- ✓ The vehicle identification number (VIN)
- ✓ The year and model of your vehicle
- ✓ The date you purchased the vehicle
- ✓ The current odometer reading
- ✓ The name of the dealer the vehicle was purchased from

-Warranty may vary depending on application (example, rental companies)