

**BLOCK  
AND  
ROLL<sup>®</sup>**  
TENT BALLAST SOLUTIONS<sup>®</sup>

# **E-MOVER 2.0**

**70225-33**

OWNER'S MANUAL



**GRANITE  
INDUSTRIES**

**GRANITE INDUSTRIES**  
GRANITEIND.COM  
877-447-2648

97018



## CONTENTS

Cart Features .....	3
Charging Information.....	4
Frequently Asked Questions .....	5
Operating Instructions.....	6-7
Troubleshooting .....	8
Battery Information.....	9
Battery Replacement .....	10-12
Parts Diagram .....	13-14
Wiring Diagram .....	15
Replacement Parts .....	16



Dear Block And Roll Customer,

We would like to take the opportunity to say thank you for your recent purchase. We encourage you to read through this manual to learn all you can about your new cart. If you have questions or any problems at all, please give us a call, toll free, at 877-447-2648. We're here to help!

Sincerely,

All of us at Granite Industries

## WARRANTY

### 1 Year

- **Chassis:** Includes frame and powder coating
- **Electronics:** Includes controller, s-drive, and wiring
- **Powertrain:** Includes transaxle containing the motor and differential
- **Batteries & Charger**

### 90 Days

- **Wheels, Casters & Tires**

## TERMS

Warranty starts from the delivery date of the cart.

We will repair, without charge, any defect due to faulty material or workmanship. These warranties do not cover failures due to abuse, misuse, improper installation, accidental damage or when repairs or modifications have been made or attempted to be made by anyone other than Granite Industries. Any defective products that meet warranty specifications and Granite Industries approval, may be returned to the factory to be repaired or replaced free of charge. (Granite Industries will pay to ship replacement item(s) to the customer; however the customer is responsible for shipment of products to the factory.)

This remedy is the sole remedy in contract, tort or otherwise, and Granite Industries is not liable for incidental, consequential or special damages.

These warranties give you specific legal rights, and you may have other rights which vary from state to state.

Should you have any questions, contact Granite Industries at 877-447-2648. (Proof of purchase may be required).

Block and Roll E-Movers are covered by patent number 9,868,455.

Block & Roll E-Movers are manufactured by Granite Industries in Archbold, Ohio under license from B&R Innovations, LLC.



## CART FEATURES

### Built with you in mind.

#### Our carts come fully assembled

All carts come fully assembled, charged and ready to use. All you have to do is power the cart on and drive away. (We do recommend charging overnight after receiving.)

#### We designed our carts to be simple to operate:

- To turn on, pull the red On/Off switch out towards you.
- Toggle the black switch for forward and reverse.
- Grasp and twist the throttle.
- To turn the cart off, simply push the red button in.

#### Safety Features

- **Emergency Stop** – The red E-Stop button allows the user to immediately stop the progress of the cart.
- **AutoLock** – Automatically locks the wheels when the throttle is not being applied. This feature prevents the cart from rolling away from the user and also provides easy loading and unloading on inclines.
- **HillSense** – Allows the cart to be used safely on inclines and declines. The cart will travel at the speed set by the user, not by the incline or decline.
- **SmoothStart** – On acceleration, power is applied to the drive tires in a controlled manner ensuring a smooth start each time.
- **Four Wheel Design** – All carts have at least four wheels to provide maximum stability.

#### They've been tested (again and again)

The standard 21 amp-hr rechargeable battery packs have been extensively tested. We are confident to rate the batteries with a 6-8 hour real world capacity. The cart was tested with three different weights (0 lbs, 300 lbs, 600 lbs) and driven on both grass and pavement.

## Satisfaction Guaranteed

Granite Industries is committed to making sure each cart meets your expectations. To ensure customer satisfaction, we offer a 15 day money back guarantee. Use the cart and see how much easier the cart makes your projects. If you're not satisfied, simply contact Granite Industries at 877-447-2648 for a return authorization and details.

Orders and quote requests can be emailed to [support@graniteind.com](mailto:support@graniteind.com) or faxed to 419-445-3304



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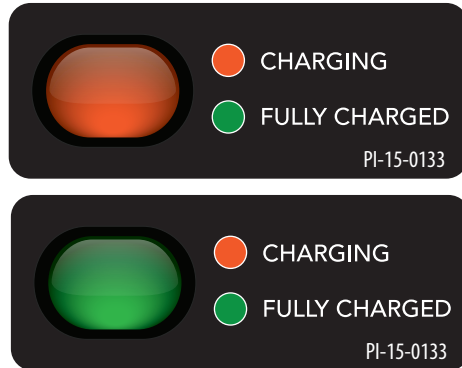


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# CHARGING INFORMATION

## CHARGE YOUR CART

When your cart arrives, please plug it in and make sure the battery is fully charged. When charging, the indicator light will be orange. Once it reaches a full charge, the light will turn green, and your cart is ready to use.



The charger can be left connected to the batteries after a full charge (green light) without harming the batteries. It uses a four stage charging system to optimize battery longevity. The charger uses minimum power in standby mode and maintains the batteries at full charge.

For the best battery life, charge the cart after each use or at the end of the work day. It's preferable to let the batteries charge overnight by plugging the cart into a 110V outlet.

**Note:** If the charger indicator light goes directly to green, your batteries or charger may have gone bad, or you may have a loose connection.

## CAUTIONS AND WARNINGS

1. Before using the battery charger, read all instructions and cautionary markings on the battery charger, batteries and the product using the batteries.
2. To reduce risk of injury, charge only lead-acid type of rechargeable batteries. Other types of batteries may burst, causing personal injury or damage.
3. Do not expose charger to rain or snow.
4. To prevent the risk of fire, use the charger only in dry and ventilated rooms without flammable fluids and explosive gases.
5. Do not cover the charger with clothing, fabric or similar items during the charging process. Ventilation is important to prevent overheating.
6. To reduce the risk of damage to the electric plugs and cords, pull by the plug rather than the cord when disconnecting the charger.
7. Make sure extension cord is not used unless absolutely necessary. Use of improper extension cord could result in risk of fire and electric shock. If extension cord must be used, make sure:
  - The pins on the plug of the extension cord are the same number, size and shape as those on the charger. (3 prong with ground)
  - The extension cord is properly wired and in good electrical condition. A 16 ga cord or heavier duty extension cord is recommended.
8. Make sure charging cord is located so that it will not be stepped on, tripped over or otherwise subject to damage or stress.
9. Do not operate charger with damaged cord or plug - replace immediately if there are signs of damage!
10. Do not operate charger if it has received a sharp blow, has been dropped or otherwise damaged in any way.
11. Do not disassemble the charger.
12. Never charge a battery in an airtight enclosure.

## FREQUENTLY ASKED QUESTIONS

### How long do the batteries last on a single charge?

It is completely dependent upon how much weight is being carried, the type of terrain, and the softness or hardness of the surface. We estimate a range of 4-6 hours of "real world" use. PLEASE NOTE: Most use is not as intense as our "real world" estimates, so actual use time is typically much longer.

### When and how long should I charge my cart?

Charge your cart immediately after using. If, during operation, the battery indicator light goes to red, it is time to recharge. It is recommended to leave the cart on the charger overnight to extend the life of the batteries.

### How long will the batteries last before needing to be replaced?

The batteries are designed to last for 300-500 charge/discharge cycles, which translate into approximately 1-2 years. The batteries are common, and can be purchased from Granite, your local battery supplier, or on Amazon.

### Will tipping the unit hurt the batteries, electronics, or drive system?

No. Batteries, electronics, and drives can operate in any orientation.

### What is the maximum speed?

All E-Movers operate from 0 to 3 miles per hour in both forward and reverse.

### While pushing my cart in manual/freewheel mode, it suddenly decelerates aggressively. What causes this?

There is a safety feature on your cart that is designed to prevent the cart from running away when the brake is manually disengaged.

### How much weight can my cart handle?

750 lbs is the maximum load for level ground. On a 1:3 slope (18 degrees), the maximum load is 500 lbs.

### Why does my cart lose traction when one wheel is off the ground?

The drive system is an open differential that allows the machine to efficiently make turns without skidding the tires. The drawback is that if one of the drive tires leaves the ground, it will simply spin until all tires are back on the ground.

### Is a balanced load important to the performance?

Yes. Balancing the load so that it is not top-heavy or side-loaded, will allow much safer operation. Furthermore, most of the load should be located over top of the drive wheels for better traction.

### How do I clean my cart?

Simply remove all debris, hose it down with soapy water, and towel dry. We do not recommend using a pressure washer.

### Can I use my cart in cold temperatures?

You certainly can, but we recommend that you charge and store the batteries at room temperature.

### What maintenance is required?

Not much, really! Simply remember to always recharge when not in use - it's okay to leave the cart on the charger. The drive system is sealed for life, thus no lubrication is required. Also, keep the unit dry to enhance its life and appearance.

### How should I store my cart?

We recommend keeping your cart indoors, out of the rain and other elements. For long-term, or "off season" storage, give the battery an overnight charge, then disconnect the battery pack from the cart and store it indoors at room temperature. Every 3-4 months, fully charge the battery even though it's not in use. This helps to prolong the life of the batteries.

### Where is the serial number?

Every cart comes with its own serial number. This is located on the front side of the upper control box. You will need this number when you fill out your warranty card.



# OPERATING INSTRUCTIONS

## SAFETY INFORMATION

- Check tire pressure and wheel condition before operating.
- Only use chargers and batteries issued by Granite Industries. Use of third party batteries or chargers may cause harm to the user and the cart.
- Always make sure the hopper is latched securely before operating the cart.
- Always make sure the load is distributed evenly in the hopper and the cart is stable before operating.
- Push in the red E-Stop whenever the cart is sitting still or whenever the batteries are charging.
- Do not exceed the rated capacity of 750 pounds for the cart. Keep in mind the 500 pound capacity for inclines. Exercise caution when operating on inclines or declines.
- Do not drive the cart over sudden drops such as curbs, steps, or ledges. We recommend using ramps to navigate uneven surfaces.
- The metal battery pack can be opened to reveal the batteries; however, the physical batteries should never be opened. They are sealed lead acid batteries and cannot be resealed. Do not attempt to add more battery acid or water. If the batteries need replaced, please purchase new batteries.

## BEST PRACTICES

- Hand wash your cart with soapy water. Never use a pressure washer.
- Do not drive your cart through deep puddles of water and do not submerge the drive system or battery box.
- The drive system is lubricated for life, so no maintenance is required.
- Check tire pressure on pneumatic tires: 31 psi for ag tires.
- When the battery indicator light goes to red, it is time to recharge.
- Recharge cart immediately after using.

## POWER YOUR CART ON

To power your cart on, pull the red E-stop button out. You will notice the battery indicator lights light up, and your cart is ready for operation.

If the cart sits inactive for 20 minutes while on, it will go to sleep in order to conserve power. To wake the cart up, push the E-Stop button in, and pull it back out to power your cart on again.



FORWARD/REVERSE  
BUTTON

E-STOP BUTTON



BATTERY INDICATOR  
LIGHTS

THROTTLE



# OPERATING INSTRUCTIONS

## DRIVING YOUR CART

Once your cart is on, make sure your forward/reverse button is toggled upwards for forward. Twist the throttle towards you and the cart will begin moving forward. While driving your cart forward, stay directly behind the cart with both hands on the handles. When operating the cart in reverse, do NOT stand in the path of the cart and walk backwards. Instead, turn around and stand beside the unit to prevent accidental injury.

## SLOPES AND INCLINES

The E-Mover 2.0 can carry up to 500 lbs on an incline with a 1:3 slope ratio (18 degrees).

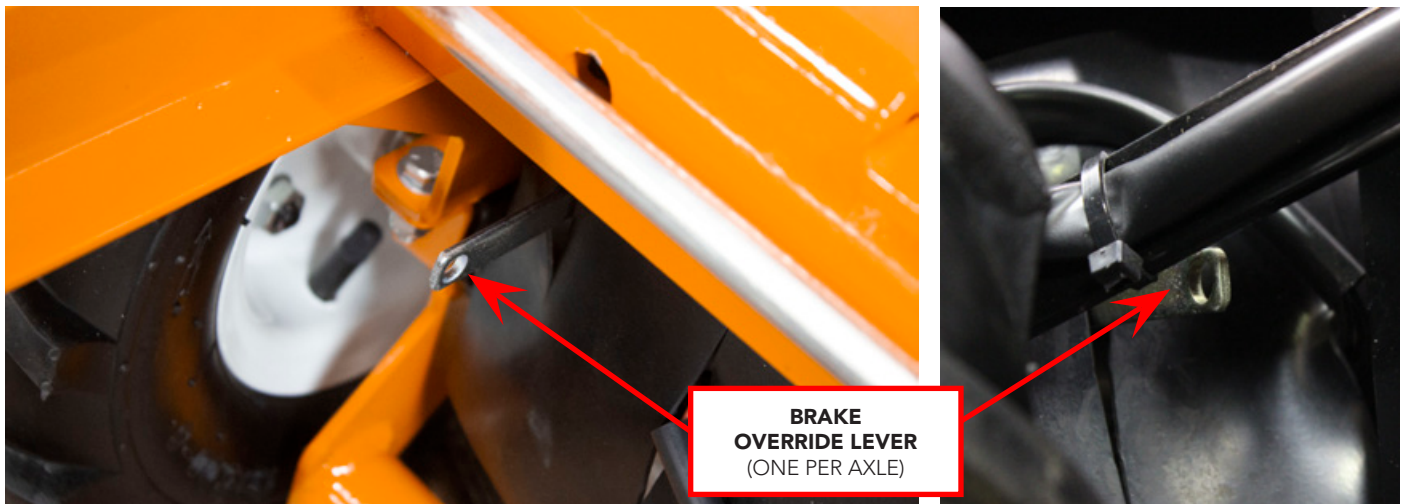
When going downhill, operate your cart in reverse, leading the cart downhill with the handles first. This will prevent your cart from tipping over, especially if it is carrying a full load.

Do not drive your cart across an incline, this may cause the cart to roll over on it's side. Always travel parallel with the slope or incline.

## FREE WHEEL MODE

The drive system is equipped with a lever that overrides the electromechanical brake for manually operating your cart. The brake lever allows you to override the electric brake when you need to push the cart manually, when loss of power had occurred. With the brake in the disengaged position, the E-Stop button must be pushed in, and the power turned off, or the drive system will not move freely. The controller will NOT operate the motor when the brake is disengaged.

When lever is in the up position the brake is engaged, and when down it is disengaged. When you reset the brake system the unit will not operate until you toggle the power button off and back on, this process will need to be repeated every time the brake is manually disengaged.

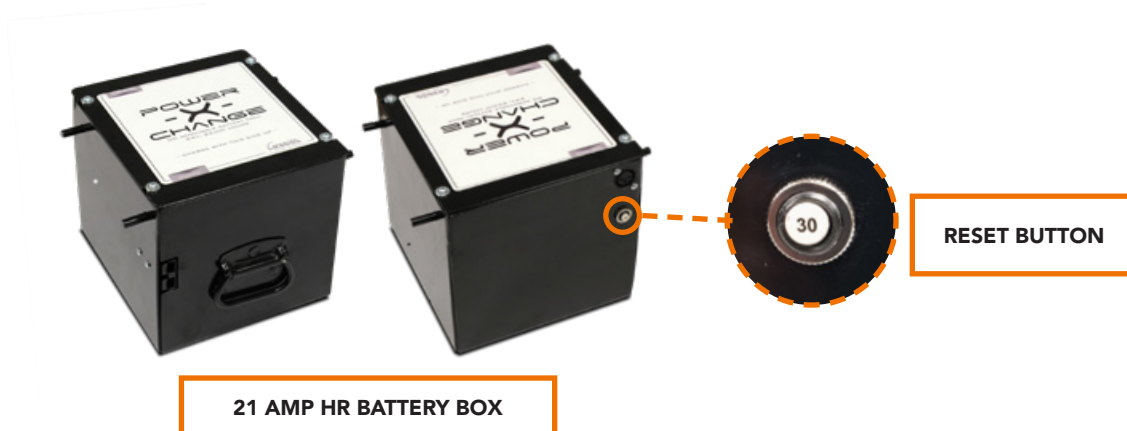


The brake lever allows you to override the electric brake if you need to push the cart manually. The lever moves approximately 15 degrees down from horizontal, when the lever is in the up position the brake is engaged, and when pointing down it is disengaged. When you reset the brake system the unit will not operate until you toggle the power button off and back on, this process will need to be repeated every time the brake is manually disengaged.

While pushing my cart, it suddenly decelerates aggressively. What causes this? There is a safety feature on your cart called "Push Too Fast." It is designed to prevent the cart from running away when the brake is manually disengaged. While we do not recommend overriding this safety feature, it can be done by disconnecting the plastic clip on the wiring harness that leads to the battery pack. The cart is then able to freewheel without decelerating.

## TROUBLESHOOTING

Issue	Possible Problem	Solution
Cart will not run	Batteries are dead	Charge the cart
	E-Stop is in the OFF position	Pull e-stop out, to the ON position
	Unit is in sleep mode	Cycle the unit OFF for a couple seconds, then back ON
	Cart is in freewheel mode (brake is disengaged)	Re-engage motor brake (see free wheel mode section)
	Electrical malfunction	Disconnect and connect all electrical connections, and make sure they are all secure
	Moisture issue	Let dry, avoid getting the s-drive and battery box wet
Cart shuts off during use	Circuit breaker has tripped	Push the reset button on the battery pack (see diagram below).
	Thermal overload (weight, climb angle, or terrain may have exceeded transaxle capacity)	Release throttle, allow transaxle to cool down at least 30 seconds. Unload some weight, cycle power switch and operate machine again. Reset button will likely need to be pushed.
Cart suddenly stops	Broken or loose motor wire or connector	Check motor wires and brake wires to make sure none are broken, and also check connector to make sure wires are secure
Cart abruptly slows down while in freewheel mode	Safety feature has triggered preventing the cart from rolling away	Push the cart slower while in freewheel mode
Batteries are not lasting as long as desired	Cold batteries	Keep batteries warm
	Batteries not fully charged	Make sure your cart is fully charged before using
	Batteries are damaged or too old	Replace your batteries
	Loose wire connections	Check all connections to make sure everything is secure
Charger light goes directly to green when charging, but battery is not charged	The battery and/or charger may have gone bad	Test the charger on another battery if possible. Replace battery and/or charger
	The connections may have come loose, or disconnected	Check charger and battery connections





# BATTERY INFORMATION

## IMPORTANT RECOMMENDATIONS

- It is recommended to wear insulated gloves when handling batteries.
- If equipment is to be stored for a long period of time, the batteries should be disconnected to avoid undue drain
- When replacing your batteries, fasten them tightly, but do not apply undue force to the terminals, or bend them.
- Do not place batteries in close proximity to objects which can produce sparks or flames.
- Avoid exposing batteries to heat. Service life is shortened considerably at ambient temperatures above 86° F (30°C)
- Do not mix batteries with different capacities, different ages or different makes.
- For best results and generally acceptable performance and longevity, keep operating temperature range between -40° F (-40° C) and 140° F (60° C)
- It is good practice to ensure that the connections are re-torqued and the batteries are cleaned periodically.
- Do not attempt to disassemble batteries. Contact with sulfuric acid may cause harm. If it should occur, wash skin and clothing with liberal amounts of water
- Batteries should not be stored in a discharged state or at elevated temperatures.
- Please recycle old batteries. Do not throw them away, or attempt to burn them. Attempting to burn batteries (new or old) may rupture or explode.

## BATTERY FEATURES

- Absorbent Glass Mat (AGM) technology for superior performance.
  - AGM design ensures the acid inside the battery is spill-proof
  - Vibration resistant
  - Better performance in cold temperatures
  - Faster charging
  - Longer expected life
- Valve regulated, spill proof construction allows safe operation in any position. However upside down is not recommended.
- Maintenance free design. There is no need to add electrolyte, as gases generated during the charge phase are recombined in a unique oxygen cycle.
- Power/volume ratio yielding unrivaled energy density.
- Special separators, advanced plate composition and a carefully balanced electrolyte system ensure the battery has the ability to recover from an excessively deep discharge.
- All batteries feature a series of low pressure, one-way relief valves. These valves safety release any excessive accumulation of gas inside the battery and then reseal themselves.
- Batteries may be discharged over a temperature range of -40° F (-40° C) and 140° F (60° C), and charged at temperatures ranging from -4° F (-20° C) and 122° F (50° C). For best results we recommend charging the batteries at room temperature.
- The high impact resistant battery case and cover (UL94-HB) is made of non-conductive ABS plastic. The case materials impart great resistance to shock, vibration, chemicals and heat.
- Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified.
- U.L. recognized under file number MH 20845.

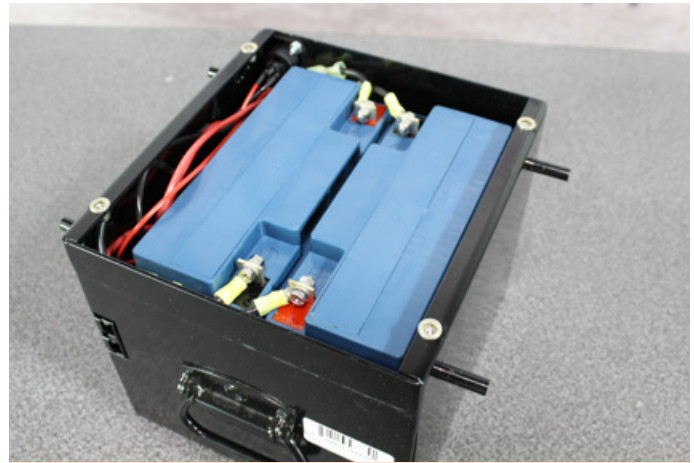
## BATTERY REPLACEMENT (24v, 21 amp)

### TOOLS

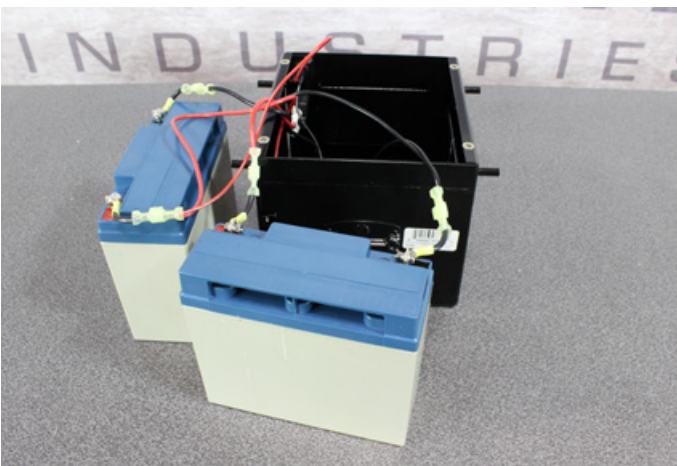
Needle nose pliers
10 mm wrench
#2 or #3 Phillips screwdriver



**1** Disconnect the wires going to the battery box. Remove the battery from the cart by taking out the hair pin and removing the rod. Slide the battery box out from its housing.



**2** Remove the four (4) #10 screws holding the lid in place. Remove the lid and set aside.

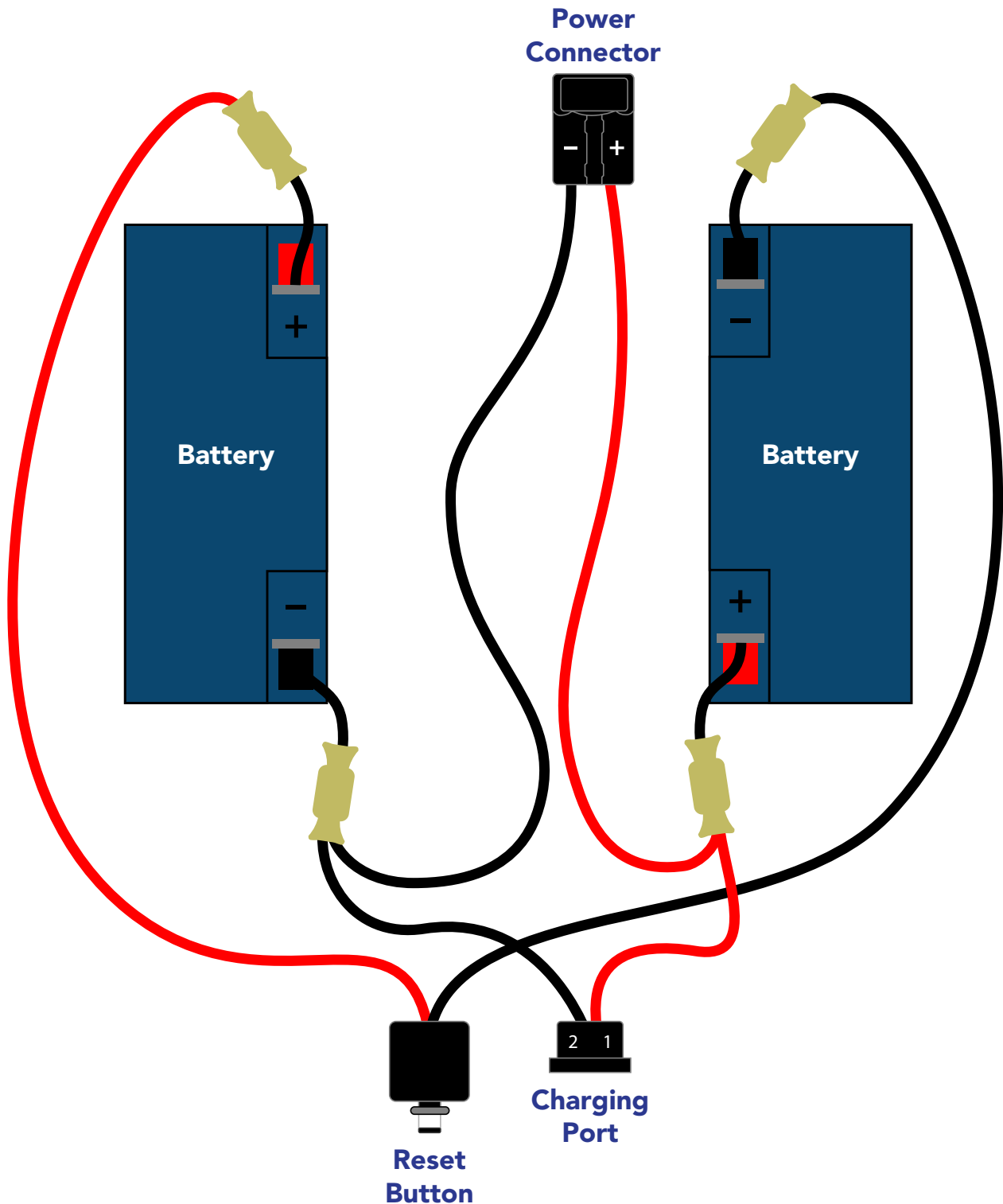


**3** Carefully remove the batteries, and disconnect the nut & bolt connectors. PLEASE RECYCLE YOUR OLD BATTERIES

## BATTERY REPLACEMENT (24v, 21 amp)

4

Reconnect the batteries to the power connector, circuit breaker and charging port as shown below. Do not actually remove the power connector, charging port and breaker from the battery box. They are shown this way below for a better visual.

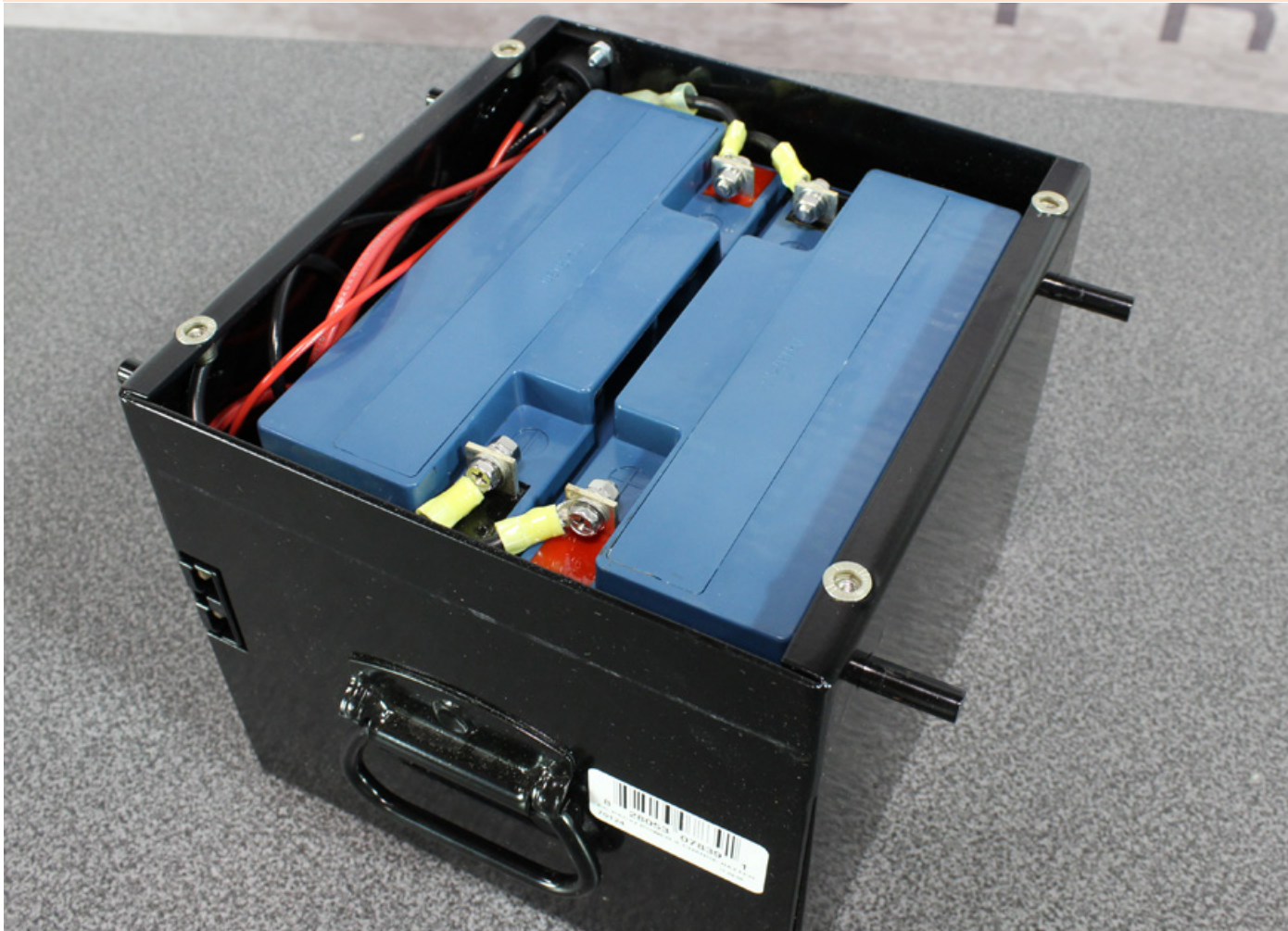




## BATTERY REPLACEMENT (24v, 21 amp)

5

Place the batteries back into the box one at a time. Make sure the **terminals are opposite** each other. Tuck the wires into the box and out of the way.



6

Replace the box lid and secure with four (4) #10 screws.

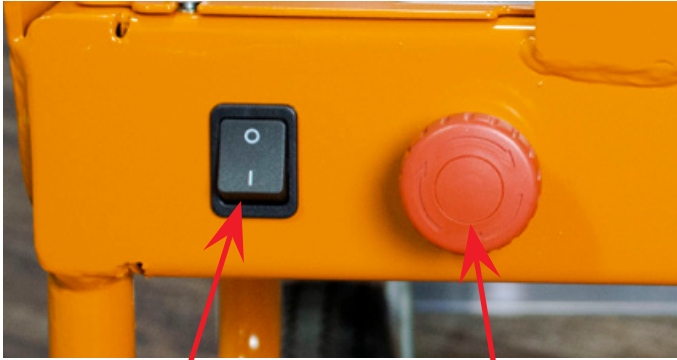


7

Place the battery box back onto the cart, insert the rod and secure with the hair pin. Reconnect the wires to the power terminal. Charge overnight before use.



## CHASSIS PARTS DIAGRAM

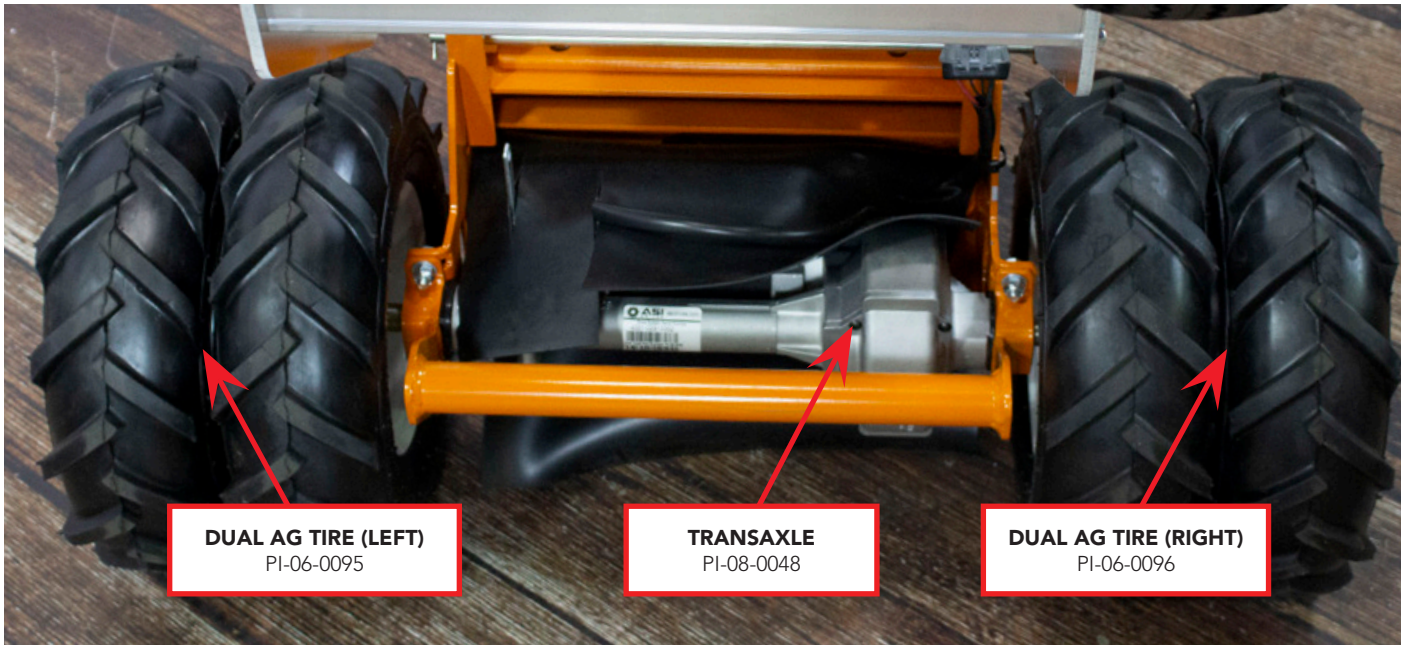


**FORWARD/REVERSE**  
PI-08-0061

**E-STOP BUTTON**  
PI-08-0075



**THROTTLE KIT**  
PI-08-0053



**DUAL AG TIRE (LEFT)**  
PI-06-0095

**TRANSAXLE**  
PI-08-0048

**DUAL AG TIRE (RIGHT)**  
PI-06-0096



**REAR CASTER WITH 10"  
FLAT FREE TIRE**  
PI-06-0055



## CHASSIS PARTS DIAGRAM



HANDLE  
CONTROL BOX  
EXTERIOR



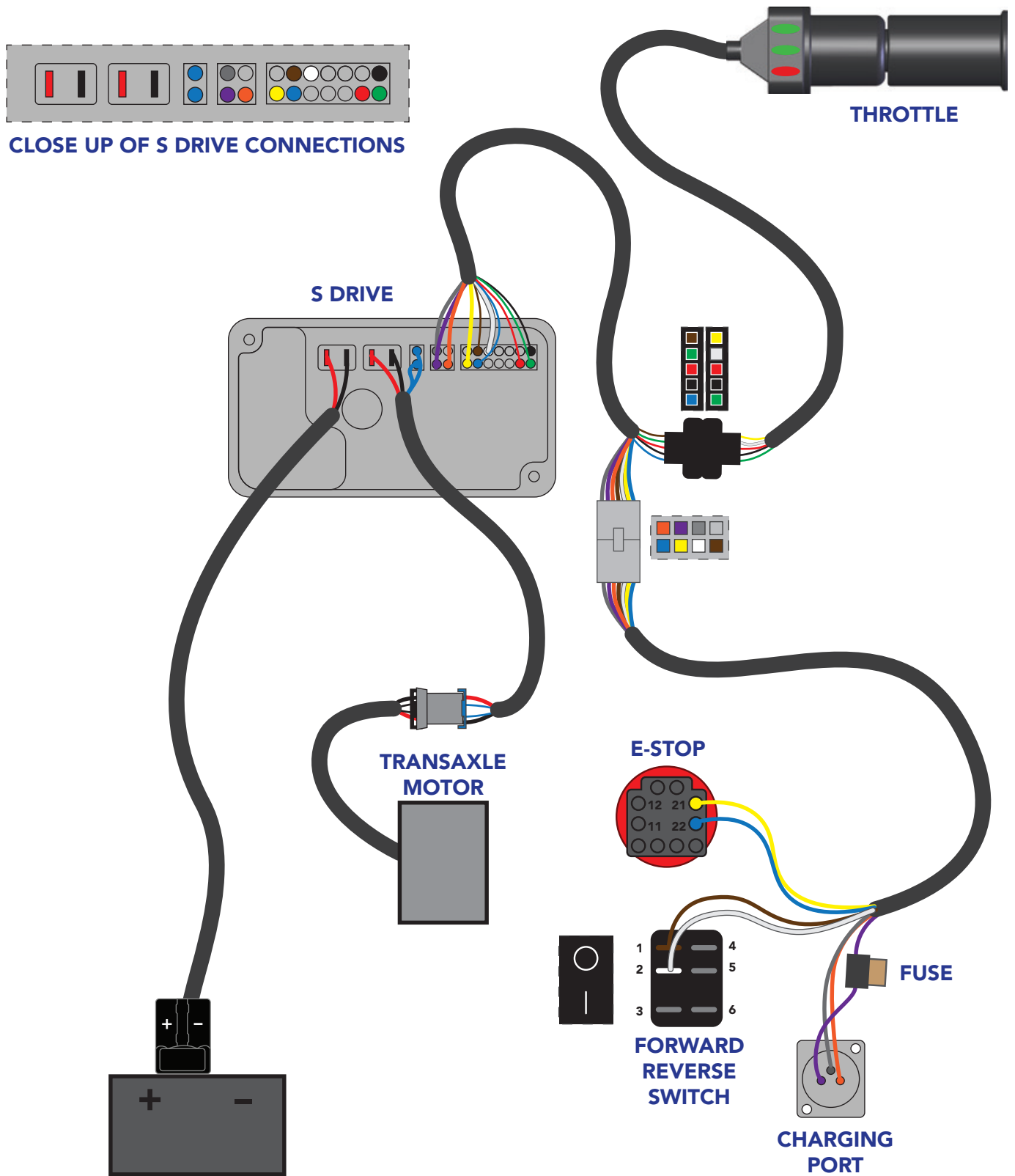
HANDLE  
CONTROL BOX  
INTERIOR WIRING



S-DRIVE BOX  
INTERIOR WIRING



# WIRING DIAGRAM



## REPLACEMENT PARTS LIST



Rear Caster with  
10" Flat Free Tire  
PI-06-0055



Dual Ag  
PI-06-0095 (Left)  
PI-06-0096 (Right)



Power-X-Change 21A  
70124



Charger for 70124  
PI-11-0191



Transaxle  
PI-08-0048



S Drive  
PI-11-0149 (70)



Throttle Kit  
PI-08-0053



Fwd / Rev Switch  
PI-08-0061



E-Stop Switch  
PI-08-0075



Circuit Breaker  
PI-08-0045 (30 Amp)



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