

ERGO-EXPRESS®

E-Series Motorized Cart

User Manual: Operation and Service



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Liability Statement

This product, the Ergo-Express® Motorized Cart, has been built to the highest standards of PHS West. Please do not attempt to operate or repair this equipment without adequate training. Any use, operation, or repair in contravention of this document is at your own risk. By acceptance of this system, you hereby assume all liability consequent to your use or misuse of this equipment. PHS West assumes no liability for incidental, special, or consequential damage of any kind. PHS West reserves the right to make equipment or product specification changes at any time. This manual, and all information contained within it, are subject to revision at a future date.

End of Life Statement

Your PHS West Motorized Cart has been designed to provide years of reliable and trouble free service, but at some point in time, it may be necessary to retire the system from service. To protect the environment, the following requirements should be considered and followed:

- This PHS West Motorized Cart is primarily constructed from steel and contains no hazardous materials (with the exception of the batteries). This equipment has an electrical control panel that must be removed from the system and disposed of according to country, regional and local requirements.
- The PHS West Motorized Cart is considered mobile industrial equipment as stated in Category 6 in Annex 1A of the European Waste of Electrical and Electronic Equipment (EU WEEE) Directive 2012/19/EU. As of 2014, this directive could change in the future and the directive should be reviewed for any future changes.
- Included in the PHS West Motorized Cart are components manufactured by others. Their retirement and disposal are covered in the individual equipment technical manuals listed in the PHS West manual if applicable.

Proprietary Notice

All drawings and information herein are the property of PHS West. All unauthorized use and reproduction is prohibited.

Trademark Acknowledgments

All product names and trademarks are the property of their respective owners.

Revision Log

Revision Level	Date	Affected Pages	Description of Change
I	1/2/2026	All	Branding, Updates to Training Information



Introduction

For an understanding of efficient and safe operation of your Ergo-Express® Motorized Cart, it is important to read this manual.

The Ergo-Express® Motorized Cart uses a microprocessor-based controller to operate all functions including: drive speed, drive direction, a motor speed governor, a battery charge meter and an automatic brake. Additionally, the microprocessor controls many functions not readily apparent to the user such as load compensation, acceleration control, emergency stop behavior, and motor current limiting.

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Safety

Document Symbol Conventions

It is important that you read and understand this manual. The information contained within relates to protecting your safety and preventing problems. The symbols below are used to help you recognize this information.

Symbol	Description
	DANGER! Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury
	WARNING! Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
	CAUTION! Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury
	NOTICE: Indicates a potential situation which, if not avoided, can result in property damage or damage to the equipment
	Note: Indicates information, notes, or tips for improving your success using the equipment

CAUTION!

The following instructions are vital to preventing hazardous situations that could result in an injury.

- Before servicing, disconnect the power at the batteries and unplug the chargers.
- All batteries are sealed and maintenance free.
- Never operate the motorized cart if your visibility is obstructed.
- Always use safety straps while towing other equipment.
- Use caution when operating the tug on steep inclines.
- Never carry riders on the cart.
- Never leave the tug unattended while the parking brake is disengaged.
- Turn the power off when leaving the tug unattended.

Built-In Features

The User Interface is equipped with several internal features to enhance the operation of the system.

- **Throttle Engaged During Power Up:** To prevent abrupt startups, the equipment will not operate if the throttle is engaged while the power switch is turned on. The throttle must be in the neutral position when the power switch is turned on.
- **Sleep Mode:** The equipment utilizes a power saving mode designed to conserve battery life. If the system does not detect user input for several minutes, the equipment will power itself off. To exit sleep mode, turn the power switch to the off position, and then back to the on position.
- **Electromechanical Brake:** the cart automatically engages a motor brake when the drive wheels are not being powered, even while the system is off. See **Manually Moving** for instructions on disengaging the brake.
- **Throttle Lock-Out During Charging (Interlock):** If the system is charging, the throttle levers will be disabled. If the throttles are engaged while charging, the cart will not operate and a fault code will be displayed on the user interface.

- **Anti-Runaway:** If, for any reason, the brake lever is released and the cart rolls away, the controller will automatically limit the speed of the cart. This function operates even if the cart is powered "off."
- **Start Compensation:** The controller will sense when the cart is stopped on an inclined surface and will provide additional power when started to prevent roll back.
- **Daily Inspection:** Always inspect your cart before using it. If any of the components are found to be damaged, nonfunctional, or missing, remove the cart from service and replace immediately. Refer to the **Maintenance** section.



Figure 1: User Interface

User Interface

The user interface (**UI**) is the control system for the cart's power drive and safety features. It is located at the front of the cart at the top of the steering column.

1 On/Off Key Switch

The key switch is located on the side of the user interface. To power the cart on, insert the key at a horizontal orientation and rotate it counterclockwise. With the key at a vertical orientation, the cart will perform a boot up cycle lasting approximately 10-20 seconds before the cart is ready to operate. To turn the cart off, rotate the key clockwise to its original position.

2 Throttle

It is critical to understand all of the user interface functions prior to engaging the throttle.

The two throttle levers on the user interface are used to control the speed of the drive motor. When either throttle is engaged the cart will move in the direction indicated by the directional control switch (see Directional Control Switch). Releasing the throttle will disengage the power drive and bring the cart to a stop. The speed of the cart is proportionate to amount the throttle is engaged. For example, engaging the throttle halfway will activate the power drive at half of the maximum speed. Engaging the throttle fully will activate the power drive at the maximum speed. Both levers perform the same function.

3 Stop Switch

The stop switch is used to bring the cart to an immediate stop when needed and should not be used for routine stops. To engage the stop switch, press the large blue button. The cart will come to an immediate stop and the throttle will not function while the stop switch is depressed. Upon releasing the stop switch, the cart's throttle will function normally.



Directional Control Switch

The directional control switch acts as a directional toggle. If the reverse light is illuminated, the cart will travel in the reverse direction.



Speed Control Knob

The speed control knob determines the maximum speed of the cart when the throttle is fully engaged. Turn the knob to increase or decrease the maximum speed.



Battery Charge Indicator

The battery charge indicator will remain illuminated during normal operation. A flashing battery charge indicator indicates low battery, and the cart should be charged immediately. See **Battery Charging**

Operation

⚠ CAUTION!

- Turn the power off when leaving the cart unattended.
- **Power on the cart:** Turn the on/off key switch counter-clockwise to the 'On' position.
- **Engage throttle:** Slowly engage either throttle lever until the cart begins to move. Both levers perform the same, functioning as a proportional speed control.
- **Coming to a stop:** Releasing the throttle disengages the power drive and brings the cart to a stop. In cases where an immediate stop is necessary, engage the stop switch.
- **Positioning:** When traveling in **forward**, position yourself directly in front of the user interface with both hands on the handlebars. When traveling **reverse**, keep to the side of the cart and slightly ahead of the user interface. Use the hand closest to the truck to operate the throttle and steer. Make sure to stay out of the path of the cart.
- **Maintain spatial awareness:** Anytime the equipment is in motion, the operator should be facing the direction of travel, announcing their presence, and managing their speed at a level appropriate for the environment.

Battery Charging

⚠ CAUTION! Please read instructions completely before charging.

- Charge batteries fully in a dry, well ventilated, fire retardant location.
- Inspect batteries for bulging, swelling, and cracking before charging.
- Ensure that the batteries are replaced every 12 months.
- Never change a frozen battery.
- If you suspect a problem with the your cart batteries, contact the PHS West technical support team.

Proper charging practices will ensure the cart operates at peak performance. It is recommended to charge the cart at the end of each shift and between workloads when possible. This will prevent unforeseen downtimes and maximize the cycle life of the batteries.

Charging the Batteries

1. Position the cart near a standard 110-Volt outlet and turn the power off.
2. Find the charging cord beneath the UI and plug into the outlet.
3. The battery charge indicator will flash for approximately 30 seconds indicating the start of the charging cycle.
4. The battery charge indicator will remain lit continuously until fully charged.
5. Once the cart is fully charged, the battery charge indicator will flash.

Charging Guidelines:

- Allow batteries to charge fully.
 - Initial charge is nine hours.
 - Standard charge time after initial is five to eight hours.
- The batteries should be charged whenever the cart is parked and not in use. The system has a smart charger so the batteries will not overcharge.
 - There is no need to cycle the batteries. There is no risk of the batteries developing a memory if charged too frequently. They should be charged at any time, regardless of discharge level.
- In the event the batteries do become fully discharged, a full charge will take approximately three to eight hours, depending on the battery equipment options.
- Battery life will, in part, depend on proper charging practices.
 - Avoid operating the cart when the battery charge indicator is low.
 - As batteries wear out, their ability to hold a charge decreases. If the batteries are losing a charge more quickly than in the past, replace them.
 - If stored for an extended period of time, leave the charger plugged in to an outlet or disconnect the batteries.

Manually Moving

If the cart must be moved manually, the motor brake must be physically disengaged. Reference the figure below for the override lever location. While the brake is physically disengaged, the cart will not operate and a 1-2 fault code will flash on the user interface.

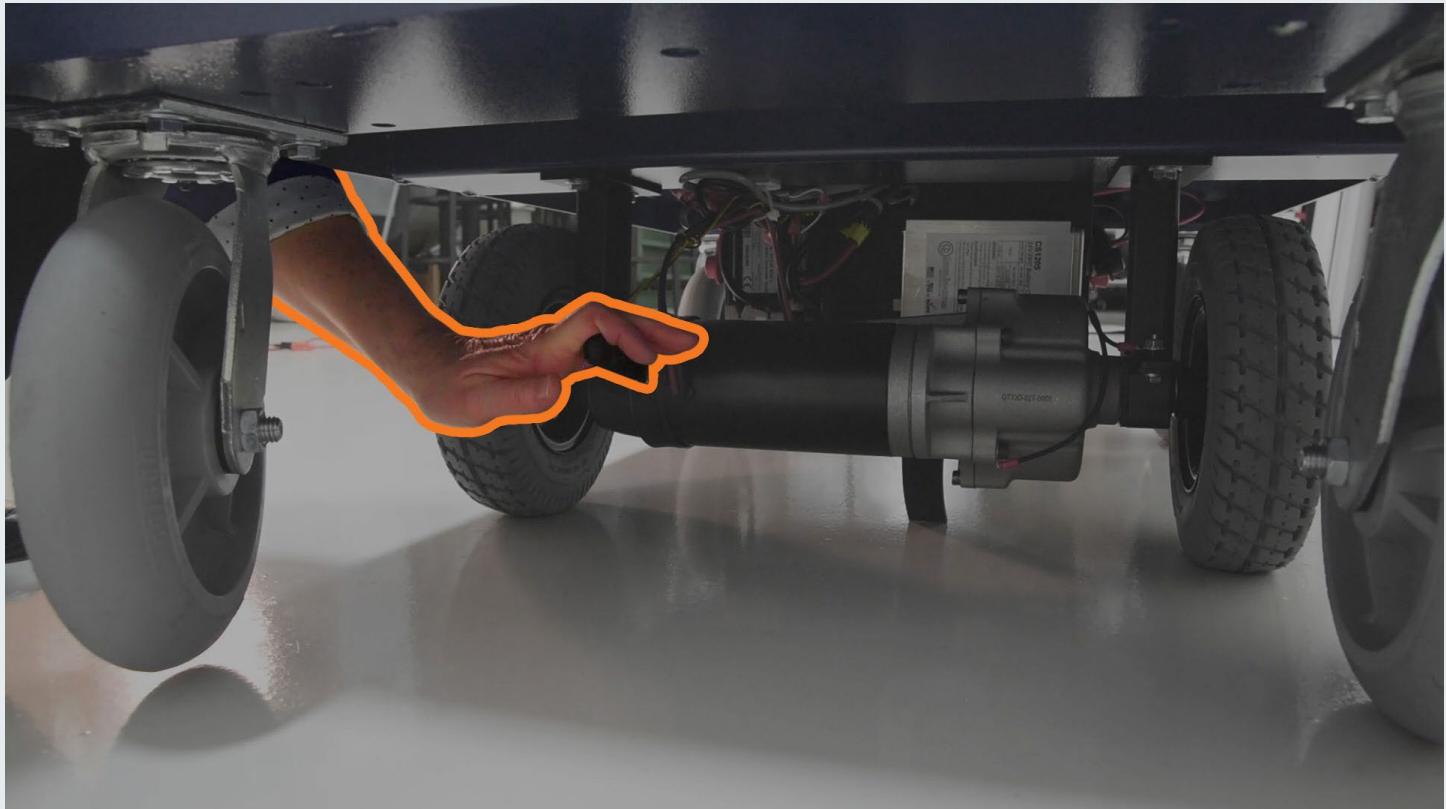


Figure 2: Brake Lever

Maintenance

⚠ CAUTION!

Only minimum maintenance is required to maintain the service and dependability of the cart. Failure to follow these instructions may result in personal injury or property damage.

Daily

- Always inspect your cart before using it. If any of the following are found to be damaged, nonfunctional, or missing, remove the cart from service and replace immediately.
- Maintain battery charge. Operating the equipment with a low charge can damage the battery.
- Keep the charger plugged in when not in use.
- Visually check the load wheels and drive wheel for damage.
- Ensure that the power cord is in good condition and secured.
- Check that the stop switch is operating properly.
- Visually check the cart for any other external damage.

Monthly

- Check and tighten any exposed fasteners.
- Inspect load wheels for roughness during rotation. Replace if necessary.
- Inspect the charge cord and AC charging receptacle.

Three Months

- Check all bolts and connections for tightness and wear.

Six Months

- Check all electrical connections for clean contact.
- Check all tires for wear and replace if necessary.

Yearly

- Replace the batteries.

General Cleaning

These manufacturer recommended practices for cleaning products are not intended to disinfect product. Periodic cleaning to remove the buildup of dirt and residue is highly recommended to extend the life of your powder coating finish.

Use a mild detergent with warm water on a soft cloth. Use of a CaviWipe™ type of cleaner is also acceptable. Do not use wire brushes, abrasives, or similar cleaning tools that will abrade the powder coated surface. Always test the solution in an inconspicuous area before using on a large scale.

⚠ WARNING!

Do not expose the cart to spray-on cleaning solutions or excessive moisture.

Troubleshooting

The power on sequence may take up to 30 seconds as the controller performs diagnostic tests and ensures the cart is ready for use. The battery charge indicator displays three states:

- **Steady On** indicating normal operational status
- **Steady Off** indicating the power is off
- **Flashing** indicates an error code
 - The UI display will display a constant flash to indicate low battery. This does not indicate a fault.
 - The UI display will flash when charging to indicate a full charge. This does not indicate a fault.

If there is a fault detected, use *Table 1* to interpret. Count the flashes to determine the fault code. The display will flash the first number of the code, pause for approximately one second, then flash the second number of the code.

Code	Problem	Possible Causes
1-1	Brake Short	<ul style="list-style-type: none"> ▪ Shorted brake ▪ Loose/broken connection to brake ▪ Faulty UI module
1-2	Brake Open	<ul style="list-style-type: none"> ▪ Brake manually released ▪ Brake shorted to case ▪ Missing/open brake ▪ Loose/broken connection to brake ▪ Faulty UI module
2-1	Motor Short	<ul style="list-style-type: none"> ▪ Defective motor ▪ Loose/broken connection to motor ▪ Faulty UI module
2-2	Motor Open	<ul style="list-style-type: none"> ▪ Defective motor ▪ Loose/broken connection to motor ▪ Brake manually released ▪ Faulty UI module
2-3	Power Relay Short	<ul style="list-style-type: none"> ▪ Defective batteries ▪ Faulty UI module
3-1	Over Temperature Condition	<ul style="list-style-type: none"> ▪ Allow the cart to sit idle for 15 minutes ▪ EM brake or motor causing excessive amperage draw ▪ Faulty controller
4-1	Over Voltage Condition	<ul style="list-style-type: none"> ▪ Replace the battery charger
4-2	Charge Mode Time Out	<ul style="list-style-type: none"> ▪ Bad charger cable ▪ Bad batteries ▪ Bad charger
5-1, 5-2	Controller Short	<ul style="list-style-type: none"> ▪ Faulty controller
5-3	Throttle Fail Band	<ul style="list-style-type: none"> ▪ Throttle control pot is off center/open ▪ Loose/broken connection cable ▪ Faulty UI module.
6-1	Bad Software Revision	<ul style="list-style-type: none"> ▪ Replace the controller.

Service

Prior to servicing your equipment, please call our 24/7 technical and operational support hot-line at 1-888-639-5438.

Transaxle Assembly

Sealed for life. Do not open or service. These actions will void warranty.

Micro-Processing Controller (MPC)

Do not attempt to service the MPC or any related electronic components as this will void warranty.

Circuit Breaker Replacement

An automatic resetting circuit breaker protects the wiring and batteries in the event of a short circuit. If the your cart stops working, check for overloads or short circuits before continuing to operate.

The circuit breaker is located under the cart and attached to the positive terminal on batteries. If you suspect the circuit breaker is defective, call for technical support.

WARNING!

Do not operate the cart until the circuit breaker is repaired.

Notes