

*Ergo-One*®  
**Plus Power**  
**Tug**

by



**Model EPT**  
**Owners/Operator's**  
**Manual**

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### ***Ergo-One*<sup>®</sup> Plus Power Tug *PRODUCT SERVICE INFORMATION***

(please fill out and keep this manual on hand for service records)

Company Name		
Address		
City	State	Zip
Representative	Telephone	
Purchase Date	Serial Number	
Purchased From	Telephone	

## ***INTRODUCTION***

Welcome to the ***Ergo-One***<sup>®</sup> **Plus Power Tug**...a member of Alluserv's family of quality material handling products. We know you'll be depending on the TUG, so we have taken great care to make it completely reliable. This Owner's Manual is designed to help you get the most out of your ***Ergo-One***<sup>®</sup> **Plus Power Tug** and includes very important safety and care information. Please read it thoroughly and keep it handy for reference. Thank you for choosing the ***Ergo-One***<sup>®</sup> **Plus Power Tug**.

Information in this manual is based upon specifications in effect at the time of publication. Alluserv reserves the right to make changes at any time without notice. Alluserv products are covered by patents, patents pending, and other rights reserved.

Be sure to complete the Owner's Information box on the front cover. This will be your record of important information which will help you if your ***Ergo-One***<sup>®</sup> **Plus Power Tug** ever requires service. When seeking repair parts while your ***Ergo-One***<sup>®</sup> **Plus Power Tug** is under warranty, a copy of your bill of sale may be requested to verify warranty status.

<b>FAILURE TO READ THIS OWNER'S MANUAL WILL VOID THE WARRANTY.</b>
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**If there is anything in this manual that you do not understand or that you are unsure of, DO NOT OPERATE your *Ergo-One*<sup>®</sup> Plus Power Tug. Call our Customer Service Department at:**

**888-892-2213**

## ***SAFETY FIRST***

To prevent accidents which can cause injury to you, damage the *Ergo-One*<sup>®</sup> Plus Power Tug or damage your cargo, observe the following rules:

1. Read and understand this Owner's/ Operator's Manual before operating the *Ergo-One*<sup>®</sup> Plus Power Tug.
2. Read and understand all safety instructions provided with the cart or piece of equipment which is to be towed by the *Ergo-One*<sup>®</sup> Plus Power Tug.
3. Only trained personnel should be allowed to use the *Ergo-One*<sup>®</sup> Plus Power Tug. All persons using the *Ergo-One*<sup>®</sup> Plus Power Tug must read this owner's/operator's manual.
4. The *Ergo-One*<sup>®</sup> Plus Power Tug has a maximum towing capacity of 1,500 pounds on a **level** surface. Do not exceed the rated 1,500 pound towing capacity.
5. The *Ergo-One*<sup>®</sup> Plus Power Tug has a maximum towing length of 20 feet. Do not exceed the maximum towing length.
6. Do not travel up or down inclines greater than 9°. Towing capacity is reduced on inclines.
7. Do not travel sideways on inclines.
8. Always place the Tug in Turtle Speed Range before traveling down an incline.
9. Do not stop the *Ergo-One*<sup>®</sup> Plus Power Tug on an incline. Always park, load and unload on a flat, level surface.
10. Do not go up or down curbs. Only operate the *Ergo-One*<sup>®</sup> Plus Power Tug on smooth, flat surfaces.
11. Do not carry on or tow passengers with the *Ergo-One*<sup>®</sup> Plus Power Tug.
12. Always turn the key to the OFF position on the *Ergo-One*<sup>®</sup> Plus Power Tug before connecting towed carts or loading or unloading carts.
13. Always load the towed carts evenly, distributing the load to prevent tipping.
14. Always take corners slowly and with caution to prevent the load from shifting.
15. Do not use the *Ergo-One*<sup>®</sup> Plus Power Tug to push or pull stationary objects.
16. Always unplug the batteries before making any adjustments or repairs to the *Ergo-One*<sup>®</sup> Plus Power Tug.
17. Sound Horn when approaching or operating in areas with limited visibility.
18. Do not expose the *Ergo-One*<sup>®</sup> Plus Power Tug to high temperatures. The *Ergo-One*<sup>®</sup> Plus Power Tug is battery operated. Batteries may explode if exposed to high temperatures.
19. Do not operate the *Ergo-One*<sup>®</sup> Plus Power Tug with a flat tire, broken wheel or broken or bent cart frame.
20. Use extreme caution when operating the *Ergo-One*<sup>®</sup> Plus Power Tug near doorways, in hallways and near stair wells. Reduce speeds in these areas.
21. Do not manually release the electro-mechanical brake on or near an incline. If you must release this brake, release the brake only when on a level surface and with the TUG detached from the towed carts.
20. Always make sure the tow pin is fully inserted into the tug's receiver cup prior to moving the cart. Failure to do so may result in an unsafe condition where the towed cart would release from the tug causing harm or damage to surrounding people or objects.

## ***OPERATING THE Ergo-One® Plus Power Tug***

We would like you to be satisfied using your ***Ergo-One® Plus Power Tug***. When you use the ***Ergo-One® Plus Power Tug*** for the first time, you must know how to properly operate and care for it to avoid unsafe situations. Please read this manual thoroughly and become familiar with all of the safety information provided.

Be aware of your surroundings, drive slowly and cautiously. Avoid collisions and/or changing directions quickly which could cause damage to the ***Ergo-One® Plus Power Tug***, or shift the load, damaging the goods or injuring you or any surrounding people.

Anticipate and avoid unsafe situations. Be courteous of others and let your presence be known.

Perform first time operation in an open area on a flat surface - free of obstacles. Have someone familiar with the operation of the ***Ergo-One® Plus Power Tug*** available to assist you.

### ***CONTROLS***

Read and understand all instructions and control functions before attempting to operate the ***Ergo-One® Plus Power Tug***.

#### **On-Off Key Switch:**

The on-off key switch is located on the underside of the ***Ergo-One® Plus Power Tug***'s control handle.

#### **Drive Position:**

To turn the power on, fully insert the key into the key switch, and then turn the key clockwise. When the power is on, the TruCharge indicator, located on the shroud under the handle, will illuminate.

#### **Speed Range Switch:**

The Speed Range Switch is located on the top, left side of the handle control. Depressing the turtle side of the switch will reduce the maximum speed of the ***Ergo-One® Plus Power Tug***.

**Always reduce speeds during training, in close quarters or in circumstances in which you risk damage or injury if the maximum speed is not limited.**

#### **Direction of Motion:**

Direction of motion is controlled by the finger control lever located to the right and left sides of the center section of the hand control unit. Rotating the top of the lever away from you accelerates the cart **away** from you. Rotating the bottom of the lever accelerates the cart **towards** you. To **STOP**, **release** the control lever. Let the cart come to a complete stop before changing directions.

#### **Receiver Control Switch:**

The receiver control switch is located on the right side top of the control handle. Pushing on the switch arrow pointing at you extends the actuator, rotating the receiver away from you, allowing some of the towed carts weight to be transferred to the tug's drive system. Pushing on the switch arrow pointing away from you will retract the actuator, lowering the towed cart to a release position.

#### **Braking Systems:**

The ***Ergo-One® Plus Power Tug*** has two types of braking systems. It has dynamic regenerative braking while moving and electromechanical braking for parking.

#### ***Dynamic Regenerative Braking***

Dynamic regenerative braking automatically brings the ***Ergo-One® Plus Power Tug*** to a smooth stop when you release the control lever. However, it does not lock the wheels in place.

#### ***Electromechanical Braking***

After the dynamic braking has brought the ***Ergo-One® Plus Power Tug*** to a stop, or near stop, the electro-mechanical brake will lock the wheels in place. The drive wheels, must be contacting the floor surface for the brake to hold.

#### **Emergency Reversing Pad (*Belly Button*):**

The Emergency Reversing Pad is located on the back side of the hand control unit and is designed to rapidly accelerate the TUG away from you immediately upon being depressed providing that the key switch is in the on position and the cart is moving towards you. The cart will continue to move as long as the pad is pushed upon.

## Horn

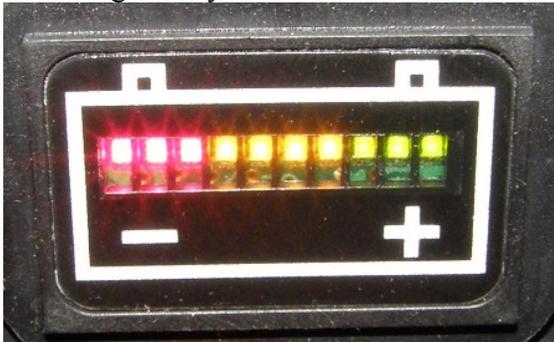
The horn switch is located on the top side of the **Ergo-One® Plus Power Tug**'s control handle and is marked with a horn symbol. Push on the button to sound the horn.

The horn will also sound automatically when the tug is in a fault mode. See the Trouble Shooting section for fault codes.

The Horn is located under the shroud and above the actuator push tube. The horn has a volume control baffle on the front. Rotate the baffle to the desired loudness.

## TruCharge Indicator Description:

The TruCharge Indicator has four ranges of indicating battery condition:



1. Green bars 1-3 indicate the batteries are fully (or nearly fully) charged.
2. Middle yellow bars 4-7 indicate the batteries are being drawn down. Fully charge the batteries at the earliest convenience.
3. Red bars 8-10, on left side, indicate the batteries need charging. Fully charge as soon as possible.
4. Flashing Red bars 9 & 10- **Charge The Batteries at Once!** Drive the **Ergo-One® Plus Power Tug** to the closest 115 Volt 60 Hz AC outlet to charge.

The lights may fluctuate between the different ranges depending on the driving conditions at the time. Quick acceleration or moving between floor surfaces - concrete to carpeting - may cause the charge level to drop momentarily to the next level.

## DRIVING THE CART

The **Ergo-One® Plus Power Tug** is equipped with electronically proportional speed control. Driving speed is proportional to the force of the push or pull of your fingers on the control lever. The harder you push or pull, the faster it will go.

### To Drive the **Ergo-One® Plus Power Tug**:

1. Turn the key switch clockwise to the Drive Position.
2. Select the speed range by depressing either the rabbit or turtle side of the speed range switch.
3. For the cart to travel away from you, gently rotate the top of the control lever away from you. The cart will start to move and accelerate away from you to the desired speed proportional to the pressure on the control lever.
4. To stop, release the control lever. The cart will gently slow down with the aid of dynamic regenerative braking. Stopping distance increases as the load increases. Allow for extra stopping distance when towing heavy loads or multiple carts.
5. To go in opposite direction, toward you, gently rotate the bottom of the control lever away from you. The cart will accelerate toward you to the desired speed proportional to your finger pressure on the control lever.
6. To stop, release the control lever. The cart will gently slow down with the aid of dynamic regenerative braking. Stopping distance increases as the load increases. Allow for extra stopping distance when towing heavy loads or multiple carts.

## CHARGING

The **Ergo-One® Plus Power Tug** is equipped with two absorbed glass mat or gel-cell batteries which require charging on a regular basis. An on board charging system is integrated into the electronics of the **Ergo-One® Plus Power Tug** to make charging easy. When the cart is plugged in, the **Ergo-One® Plus Power Tug** is charging.

### **To Charge the *Ergo-One*<sup>®</sup> Plus Power Tug:**

1. Position the cart close to a 115 Volt 60 Hz AC power outlet.
2. Turn the unit off and remove the key.
3. The cart's main charging cord is wrapped on the cord holder below the hand controls.
4. Plug the cord end into the outlet. If needed, connect only an industrial grade grounded extension cord to the charging cord and then to the 115 Volt AC power supply outlet. Make sure the plug is fully engaged into the supply outlet.
5. Allow the unit to charge four to eight hours, for a full charge if the unit was completely discharged.
6. Unplug the cord (and extension cord from the unit) from the power supply outlet before attempting to turn the unit on. The unit will not operate while in the charging mode.

### **OPTIONAL Exchangeable Battery Package:**

The *Ergo-One*<sup>®</sup> Plus Power Tug was designed to exchange batteries as an optional way to charge the batteries. This kit contains two batteries with quick disconnect style wiring and a 24 volt charger.

#### **To exchange the batteries:**

1. Drive the tug to the desired exchange location.
2. Turn the unit off and remove the key.
3. Unwrap the charging cord from the cord holder below the hand controls.
4. Locate and remove the four finger turn screws that secure the plastic shroud to the frame.
5. Gently lift the shroud up and forward, carefully feeding the charging cord through the shroud. The shroud is still attached to the wiring harness.

6. Locate the TruCharge Battery Indicator wiring harness located below the TruCharge Indicator on the shroud.
7. Disconnect the wiring harness at its connector.
8. Place the shroud off to the side.
9. Locate the large red and black connectors on the wiring harnesses attached to each battery.
10. Disconnect the connectors by grasping the red and black connectors and pulling straight apart.
11. Unscrew the battery hold down and remove the hold down strap.
12. Carefully remove the battery from the cart.
13. Place the exchange batteries in place on the cart and reverse instructions to reassemble the tug.
14. Connect the spent batteries to the charger that came in the kit by attaching like color connectors.
15. Plug the charger cord end into a 115 Volt 60 Hz AC power outlet. If needed, connect only an industrial grade grounded extension cord to the charging cord and then to the 115 Volt AC power supply outlet. Make sure the plug is fully engaged into the supply outlet.

NOTE: Both of the batteries must be charged at the same time in order for the charger to work.

## Towing with the *Ergo-One*<sup>®</sup> Plus Power Tug:

The *Ergo-One*<sup>®</sup> Plus Power Tug was designed to tow wheeled carts fitted with an Alluserv Docking Assembly.

### To Tow with the *Ergo-One*<sup>®</sup> Plus Power Tug:

1. Drive the Tug up to the desired cart to be towed and align the lip of the Tug's receiver with the cart's tow pin.
2. Slowly drive the Tug forward to bump the lip of the Tug's receiver with the cart's tow pin.
3. Gently pull back on the Tug's handle to engage the pin into the receiver. The receiver angle may need to be adjusted slightly to engage the pin fully. Push on the receiver control switch arrows to change the angle of the receiver. Make sure the pin is fully engaged before proceeding.
4. With the cart's pin fully engaged in the receiver cup, push the receiver control switch's arrow pointing at you to extend the actuator.

**Stop when the receiver is firmly on the pin so the tug can not disengage when the handle is pushed forward.** The more weight transferred on to the tug, the harder it is to steer.

Note: The Tug's tiller will slowly come towards the operator as the receiver grips the pin

### **STOP pushing on the Up Arrow when the cart's wheels lift slightly off the ground or when the actuator stalls.**

5. With the cart attached to the Tug, careful driving operation can resume. Remember that stopping distance increases as the load increases. Allow for extra stopping distance when towing heavy loads or multiple carts.
6. Detach the Tug from the towed cart by first bringing the Tug to a complete stop on a level surface. Then push the down arrow side of the Receiver Control Switch on the hand control unit until the cart's wheels are back on the ground and tension is relived from the tow pin in the receiver cup.
7. Gently push the handle of the Tug towards the towed cart to disengage the tow pin from the receiver cup.

## **BATTERIES**

**FOR BEST RESULTS: USE ABSORBED GLASS MAT OR GEL-CELL BATTERIES WITH YOUR *Ergo-One*<sup>®</sup> Plus Power Tug.**

1. The batteries supplied with the *Ergo-One*<sup>®</sup> Plus Power Tug are maintenance free, sealed, absorbed glass mat or gel-cell batteries. DO NOT remove the battery caps.

DO NOT attempt to add water. This will ruin your batteries and void your warranty. Liquid-electrolyte batteries are not recommended for use with your *Ergo-One*<sup>®</sup> Plus Power Tug.

2. If a crusty or powdery white substance appears on or around the battery terminals, clean them: use a solution of baking soda and water with a toothbrush. DO NOT allow this solution to enter the battery vents.

If you do not clean the batteries when this substance appears, or if it is left for prolonged periods, it will reduce the quality of battery connection and affect performance.

3. When replacing the batteries, clean the terminals and battery posts using a wire brush.

When re-attaching the terminals, be sure all connections are tight. Failure to connect with proper polarity will damage the control module.

### **BATTERY LIFE**

Battery life depends upon use and proper care. If you use the *Ergo-One*<sup>®</sup> Plus Power Tug a lot, your batteries will need replacement sooner than if you only use your *Ergo-One*<sup>®</sup> Plus Power Tug a little.

If the distance you travel on a charge becomes noticeably shorter, and ramps once easily climbed become difficult to go up, you may need to replace the batteries. Heating or swelling of the batteries (sometimes accompanied by an acrid odor) is another sign that the batteries may require replacement.

Other factors which can reduce battery life are: irregular or inefficient charging, leaving the batteries in a discharged state for a prolonged period of time, extreme temperatures and cargo weight.

If you notice any of these conditions, have your batteries load tested.

### **BATTERY LOAD TESTING:**

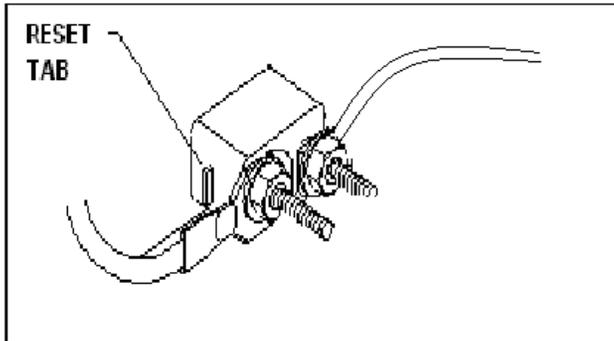
A "load test" is a sure test of battery condition, and can be performed by your local Authorized Service Center.

Load testing measures battery voltage under a heavy load. Before the load test, your batteries should be fully charged. The service center will measure the open circuit voltage, or voltage across the batteries, prior to a load test. This open circuit voltage must measure at least 12.6 volts on each battery in order to receive an accurate assessment during a load test. The service center will set the load tester to 100 amperes and hold the setting for 10 seconds.

At the end of 10 seconds, the service center will read the results while the batteries are still under load. If the load test voltage is below 10.0 volts each, the batteries should be replaced.

## **CIRCUIT BREAKER**

A manually reset circuit breaker is located between the positive wire from the main controller and one battery wire attached to the positive (+) terminal of one of the batteries. The circuit breaker protects the controller wiring and batteries against damage in the event of a short circuit.



If a breaker opens, try to determine the cause or reason why it opened. Reset the breaker by pushing in on the tab. If it opens again in a short time - there is a short circuit which must be found and corrected. **DO NOT TAPE THE TAB DOWN!**

**DO NOT DEFEAT THE BREAKER! DO NOT REMOVE OR BYPASS THE CIRCUIT BREAKER!** If any additional wiring is added to the *Ergo-One® Plus Power Tug*, it must not bypass the breaker.

## **FUSE**

An automotive style fuse is installed in the wiring harness of the *Ergo-One® Plus Power Tug*. This fuse protects the actuator circuit. It is attached to the circuit breaker via a black rubber housed harness. The fuse is under the rubber cap. If the actuator is not moving, check this fuse.

Replace fuse with a 10 amp fuse only.

## **MAINTENANCE**

### **MAINTENANCE SCHEDULE**

Your *Ergo-One® Plus Power Tug* will give you years of safe and dependable service in return for regular maintenance and early attention to any developing problems. We recommend the following maintenance program.

If you use your *Ergo-One® Plus Power Tug* often, you will find it to your advantage to perform this maintenance more frequently.

**CAUTION: Turn the cart off before performing any maintenance.**

### **Every Day or As Needed:**

1. Maintain the batteries' charge.
2. Clean debris from the wheels and drive unit assembly.
3. Inspect tow hitch assemblies installed on towed carts.

### **Once Each Month:**

1. Check for loose connectors and any signs of unusual wear.

### **Once Every Three Months:**

1. Check the exposed wires for wear, fraying or cracking.
2. Check the connectors for wear or cracking.
3. Examine the tires or wheel assemblies for wear or damage.

### **Once Each Year:**

1. Check the motor brushes for wear.

**NOTE: This maintenance is best performed by your local Authorized Service Center.**

### **MAINTENANCE PROCEDURES**

#### **Cleaning Your *Ergo-One® Plus Power Tug*:**

Turn the power OFF before cleaning your cart. **DO NOT** hose off your *Ergo-One® Plus Power Tug*. Excessive water may damage electronic components. Wipe the hand controls with a damp cloth and dry immediately.

Do not use harsh or abrasive cleansers on the *Ergo-One® Plus Power Tug* or its tires. These types of cleansers will damage the finish of your *Ergo-One® Plus Power Tug*, and may cause premature tire wear. Clean your tires with a rag or a soft bristle brush dipped in warm water.

## TROUBLE SHOOTING CHECKLIST

Your *Ergo-One*<sup>®</sup> Plus Power Tug's drive system has been designed and built to be dependable and trouble free, but we know that there can be unexpected problems with any technical product. The following checklist will give you a "First Aid" approach to dealing with most problems.

SYMPTOM	POSSIBLE CAUSE	SOLUTION
<b>Unit Dead, TruCharge Indicator Not illuminated</b>	Key switch turned to off (left) position.	Turn key switch to Drive (right) position.
	Circuit breaker opened or fuse blown.	Check fuse and re-set the circuit breaker.
	Batteries dead.	Charge batteries. Load test batteries.
	Power connection interrupted.	Check power cable going to battery. Check other connections.
<b>Unit Dead, TruCharge Indicator Illuminated</b>	Brake Switched to Off Position. Horn Sounding	Check Brake Lever - Place in Down (on) Position
	Speed selector set too low for conditions.	Switch to higher speed setting.
	Obstruction in pathway of wheels.	Check for obstruction.
	Unit in "Sleep" mode.	Turn unit off for 3 seconds to reset mode.
	Unit in Charge Mode.	Unplug unit.
	Throttle engaged during start up.	Release throttle and wait 3 seconds or turn unit off and then back on.
<b>Unit Runs Slow</b>	Speed selector set too low for conditions.	Switch to higher speed setting.
	Towing a heavy load.	Normal condition. Reduce load to increase speed.
	Surface uneven or changed (concrete or tile to carpet)	Normal condition.
	Weak or low batteries. Horn sounding.	Fully charge batteries.
	Worn batteries.	Fully charge batteries. Load test batteries.
	Motor worn out.	Contact Authorized Service Center.
<b>Unit Runs but Actuator Won't Move</b>	Blown Fuse.	Check and replace fuse.
	Bent Actuator	Check Actuator. Replace Actuator.
<b>Battery Weak or Won't Take a Charge</b>	Battery charge low. Horn sounds when key is in on position.	Fully charge and load test batteries. Replace if bad.
	Charger power interrupted. Look at charger indicator lights for indication that power is going to the charger.	Check wall outlet for continuous power. Make sure light switch is not turning off charger. Make sure power cord is inserted into charger.
	Charger burned out.	Replace charger.
<b>Intermittent Running</b>	Loose connection in wiring.	Check all exposed wire connections.
	Worn motor brushes.	Have Authorized Service Center check brushes. Replace if worn.
<b>Hard to Turn</b>	Load unbalanced or offset	Redistribute load evenly on towed cart.
	Too much weight on receiver cup.	Push the Down Arrow to adjust receiver.
	Tug and towed cart interfering.	Check for interference.

### PUSHING MANUALLY:

The Tug's drive system can be disabled to allow you to push the cart manually. To disable the drive system:

1. On a level surface only, lift up on the brake handle to disable the Electro-Mechanical Parking Brake. Horn will sound if key is on.
2. Turn the Key Switch to the OFF position to disable the Dynamic Braking.
3. Push cart at walking speed only (3 mph max). DO NOT TOW CART!

**WARNING: DO NOT RELEASE THE BRAKE ON OR NEAR A RAMPED SURFACE. THE UNIT WILL NOT STOP ON ITS OWN WHEN THE BRAKING SYSTEM IS DISABLED. SEVERE INJURY OR DEATH MAY RESULT IF THE CART IS LEFT TO ROLL UNATTENDED.**

# TruCharge Diagnostic Codes:

Below is a list of self-help actions. Try to use the following table before you contact your service agent. Go to the number in the list that matches the number of flashing bars and follow the instructions.

## 1 Bar



The battery needs charging or there is a bad connection to the battery. Check the connections to the battery. If the connections are good, try charging the battery.

## 2 Bar



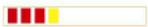
There is a bad connection to the motor. Check all connections between the motor and the controller.

## 3 Bar



The motor has a short circuit to a battery connection. Contact your service agent.

## 4 Bar



Not used.

## 5 Bar



Not used.

## 6 Bar



The controller is being inhibited from driving.

## 7 Bar



A throttle fault is indicated. Make sure that the throttle is in the rest position before switching on the machine.

## 8 Bar



A controller fault is indicated. Make sure that all connections are secure.

## 9 Bar



The parking brakes have a bad connection. Check the parking brake and motor connections. Make sure the controller connections are secure.

## 10 Bar



An excessive voltage has been applied to the controller. This is usually caused by a poor battery connection. Check the battery connections.

## TruCharge Indicator Blinks On Every 3½ Seconds

The unit has entered the “sleep” mode. Turn the key to “off” and then to “on”.

## TruCharge Indicator Flashing 1 Bar Slowly And Continuously

The unit is working properly but the batteries need to be charged. Charge batteries now.

## TruCharge Indicator Flashing Rapidly

A circuit trip has occurred. Check connections and turn unit off and then on. Check flash codes.

**TruCharge Indicator Flashes Slowly, Pauses, Then Flashes Slowly Again (even with throttle released)**

See Above Diagnostic Codes.



## **WARRANTY**

### ***Ergo-One*<sup>®</sup> Plus Power Motorized Material Handling Carts**

This warranty is effective for *Ergo-One*<sup>®</sup> Plus Power products manufactured on or after July 1, 2007.

The Manufacturer warrants that all Alluserv *Ergo-One*<sup>®</sup> Plus Power Products shall be free from defects in material and workmanship and conform to specifications and that such Products are suitable for their intended use and purpose to the extent such uses and purposes are known or reasonably should be known by the Manufacturer. All *Ergo-One*<sup>®</sup> Plus Power Products are so warranted for a period of twelve (12) months following the date of end user inspection. Inspection, test, acceptance or use of the *Ergo-One*<sup>®</sup> Plus Power Products shall not affect the Supplier's obligation under this warranty and such warranty shall survive inspection, test, acceptance and use.

#### **Exclusions or Exceptions:**

- Batteries carry a one-hundred twenty (120) day warranty following the date of end-user inspection.
- Labor is warranted for twelve (12) months following the date of end-user inspection and is limited to the repair or replacement of components covered under the parts warranty.
- Failure of any part or system caused by abuse or vandalism voids this entire Warranty.
- Service calls, trip charges, transportation to or from the service center or distributor, or other charges imposed by the distributor or service center to make the repairs on the product.
- Defects, product, or part failure caused by unauthorized work performed on the product. Unauthorized modification of this product voids the entire Warranty.
- Part failure resulting from failure to maintain or use the product as specified in the owner's manual.
- Any part, accessory, or modification – authorized or unauthorized – placed on the product, which is not manufactured, supplied, or installed by the Manufacturer.
- Shipping damage is not covered by this warranty. Please refer to the shipping damage claim information or call the freight carrier for claim information.
- Any warranty or claim made by an independent sales agent contrary to, or in addition to, this Warranty.

A dated sales receipt is required for warranty parts. A trip charge may apply for in-facility service. This warranty is limited to, for and with the original purchaser only and is non-transferable.

## TUG HITCH OPTIONS:

### Modifying Your Existing Carts to use the Alluserv Ergo-One Tug

This document was prepared to help you modify your rolling carts to work with the Ergo-One removable Male Hitch End Model MH5 or MH6. Your cart must have fixed casters at one end of the cart and swivel casters at the other end. The weight of the cart and load must not exceed the rated 1,500 pound capacity of the Lakeside Ergo-One Plus Power TUG.

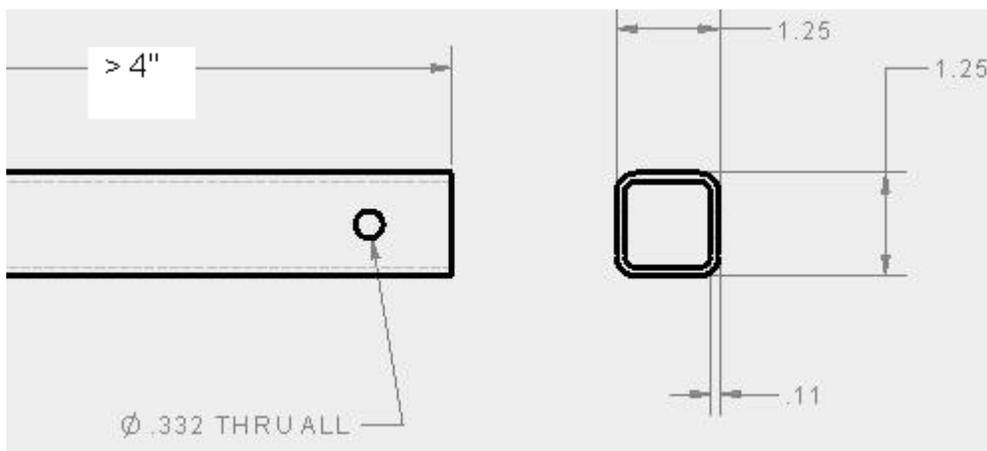
A 1 ¼" square 12 gage tube is required to accept the male hitch end. This tube can be any length over 4". This tube must be affixed to the cart's bottom frame in a manner that insures the integrity of the cart when pressure from the tug and hitch is applied to the receiver tube. The tube may need to run the entire length of the cart.

The tube must be located centered between the front swivel casters of the cart with the bottom of the tube located at a height of 5" to 5.25" off the floor for the MH5 or 6.25" to 6.5" for the MH6. The front of the tube should extend to or just past the forward most structure of the bottom of the cart – the cart's edge or cart's bumper.

The tube must have a .332" hole centered through the sides of the tube located 1" back from the front of the tube end. This hole will be used to pin the male hitch end in to the receiver tube.

You may add an additional tube at the back side of the cart to use the Ergo-One removable Female Hitch End Model FH. The same requirements listed above apply with the exception of the height off the floor. The height here can range between 3" and 8".

The Female Hitch End Model FH allows an additional cart to be towed behind the tugged cart providing that the total weight of both carts and contents does not exceed the rated 1,500 pound capacity of the Alluserv Ergo-One Plus Power TUG.





## **Hitch Receiver Tube Installation Instruction Sheet**

**NOTE:** All Alluserv Hitch assemblies are designed for use on rolling carts with at least one set of fixed casters. Use on carts without one set of fixed casters is unsafe and could cause personal injury or damage to property. Model number RTB utilizes a high bonding acrylic foam tape to install the hitch tube to the cart. Model number RTB is designed for use on light weight carts with continuous flat bottoms only. These are cut to length with ears welded to accommodate the cart bottom. Works with male and female hitch ends below.

### **Model Number RTB PermAdhere Receiver Cut to Size**

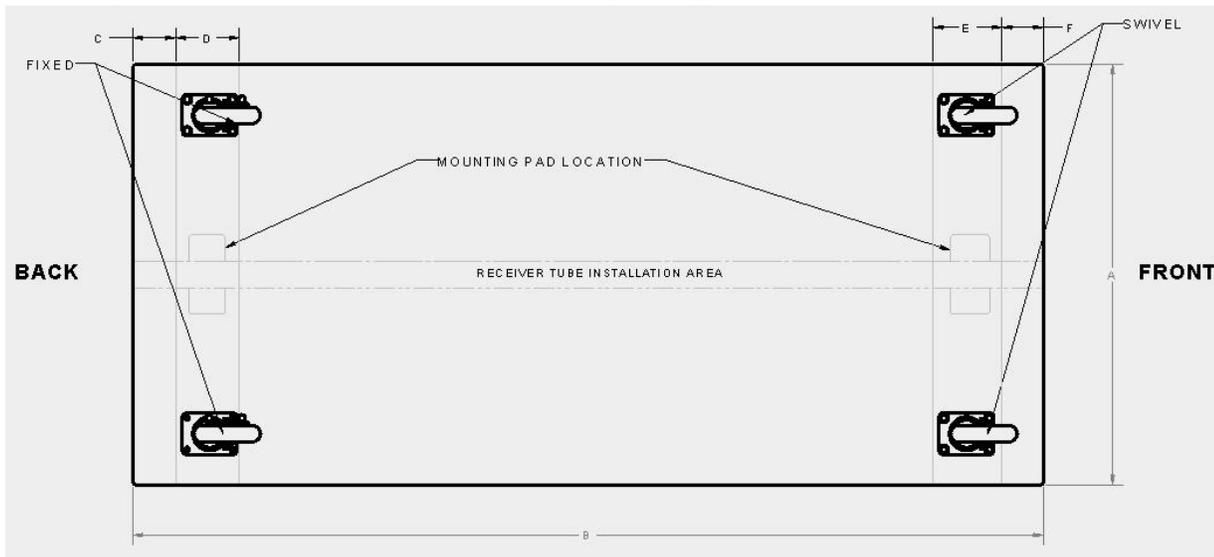
1. Measure the width of the cart at the cart's lower edge and place a piece of tape on the cart to identify the center of the cart on both sides.
2. Place the Hitch Receiver Tube assembly under the cart and align with the taped marks.
3. Fit the tube on to the cart to make sure that there are no obstructions under the cart that would interfere with the tube when installed. If there are no problems, proceed.
4. Drop the tube down and clean the surface areas on the cart with alcohol where the grip adhesive will contact.
5. Remove the adhesive protection tape from both of the tube grips.
6. Center the tube's grip ends to both sides of the cart and then press the tube grip up against the cart's bottom and hold firmly in place for 60 seconds. You will want the help of a second person to do this step if you do not have a small jack available.
7. Allow the adhesive to set for 8 hours before use to insure proper curing.
8. Insert the Female Hitch End into the Receiver Tube on the side of the cart containing the fixed casters and pin in place with hitch pin.
9. Insert the Male Hitch End into the Receiver Tube on the opposite end and pin in place with a hitch pin.
10. The cart is ready for tugging or towing.
11. Inspect the hitch before each use for loose, worn, or missing parts. Do not tow or tug the cart if the hitch tube is loose.



# Hitch Receiver Tube Measuring Guide Instruction Sheet

**NOTE:** All Alluserv Hitch assemblies are designed for use on rolling carts with at least one set of fixed casters. Use on carts without one set of fixed casters is unsafe and could cause personal injury or damage to property. Model number RTB utilizes a high bonding acrylic foam tape to install the hitch tube to the cart. Model number RTB is designed for use on light weight carts with continuous flat bottoms only. These are cut to length with ears welded to accommodate the cart bottom. The PermAdhere Receiver Tube is a custom designed hitch tube based upon information provided by you. The goal of this guide is to provide Alluserv needed information to build a custom welded receiver tube with mounting pads located in a position to adhere to the bottom of your cart.

## Model Number RTB PermAdhere Receiver Cut to Size



- A) Measure the WIDTH of the cart base from side to side. WIDTH=\_\_\_\_\_
- Using masking tape and a pen, mark the center of each of the sides of the cart to aid in future hitch installation.
- B) Measure the LENGTH of the cart base from front to back. LENGTH=\_\_\_\_\_
- Look under the cart to identify the lowest points on the cart. Mark the location on the supplied drawing along with the ground clearance of those points. If the bottom of the cart is flat and there is a clear path along the bottom of the cart for the hitch tube to run, note that on the drawing and submit this sheet along with your order to Lakeside.
- If the cart contains cross members, note whether the cross member is the lowest point of the cart and if the cross member is mounted with a flat surface area facing down to adhere the hitch too.
- C) Measure from the back of the cart to the fixed wheel caster mounting cross member.  
RCM=\_\_\_\_\_
- D) Measure the width of the fixed wheel caster mounting cross member.  
FCMCW=\_\_\_\_\_
- E) Measure the width of the swivel wheel caster mounting cross member.  
SCMCW=\_\_\_\_\_
- F) Measure from the front of the cart to the swivel wheel caster mounting cross member.  
FCM=\_\_\_\_\_

Mark on the drawing of the cart where the mounting pads should be placed for maximum adhesion. The mounting pads are approximately four inches by six inches.

THIS SHEET IS FOR THE \_\_\_\_\_ CART IN \_\_\_\_\_ DEPARTMENT.



## Hitch Receiver Tube Installation Instruction Sheet

**NOTE:** All Alluserv Hitch assemblies are designed for use on rolling carts with at least one set of fixed casters. Use on carts without one set of fixed casters is unsafe and could cause personal injury or damage to property.

### Model Numbers RT26, RT40, RT56 Adjustable Clamp-On Style Receivers

1. Measure the width of the cart at the cart's lower edge and place a piece of tape on the cart to identify the center of the cart on both sides.
2. Measure the length of the cart from outer lower edge to outer lower edge.
3. Adjust the length of the Hitch Receiver Tube so that the distance measured between the tube's grip plates is just longer than the measurement in number 2 by:
  - a. Backing out the clamping bolts until the tips of the bolts are flush with the nuts.
  - b. Adjustment is made by pulling out the adjusting pin and telescoping the tube in or out.
4. Place the Hitch Receiver Tube assembly under the cart and align with the taped marks.
5. Fit the tube on to the cart to make sure that there are no obstructions under the cart that would interfere with the tube when installed. If there are no problems, proceed.
6. Drop the tube down and clean the surface areas on the cart with alcohol where the grip adhesive will contact.
7. Remove the adhesive protection tape from both of the tube grips.
8. Center the tube's grip ends on both sides of the cart and then press the tube grip up against the cart's bottom and edge and hold firmly in place for 30 seconds. You will want the help of a second person to do this step if you do not have a small jack available.
9. Reach under the cart and tighten the clamping bolts until the hitch is firmly in place.
10. Insert the Female Hitch End into the Receiver Tube on the side of the cart containing the fixed casters and pin in place with hitch pin.
11. Insert the Male Hitch End into the Receiver Tube on the opposite end and pin in place with a hitch pin.
12. The cart is ready for tugging or towing.
13. Inspect the hitch before each use for loose, worn, or missing parts. Do not tow or tug the cart if the hitch tube is loose.

