IF IT ROLLS...
WE CAN MOVE IT!

AIRTUG® Trailer Tugs
Assembly & Operations Instructions
MODELS: TT-HD-EM-15 and TT-HD-EA-15

Airtug, Inc. is not responsible for damage sustained when proper clearance is not maintained by the operator between the tug and its surroundings.

Caution: Braking too abruptly or moving too fast can seriously damage the differential ring gear. This is considered abuse and is not covered by the transaxle warranty.

Note: All reference to "right" and "left" orientation is made while standing behind the tug, looking forward from the operating position.

Tug Operation: Turn the motor on with the switch on the top of the handle. The twist grip handle operates the hydrostatic transaxle. Rotating the twist grips forward or aft moves the tug accordingly. Rotating the grip slightly in either direction will move the tug very slowly. As you increase the rotation of the handle grips, the tug speed increases. Maximum torque is applied at very slow speeds ensuring excellent maneuverability while rotating the hand grips fully results in maximum speed. The hydrostatic transaxle provides smooth variable speed control throughout the entire range of grip motion. The twist grip is spring loaded to "return -to-brake position." Nevertheless, it is not recommended to walk away from the tug while the motor is running. While moving the trailer, braking is effected by gradually returning the grip to the neutral or brake position. Even while moving the trailer on a downgrade, the tug will only go as fast as you have the twist grip turned. When moving over the door weather edge or door rail, it's recommended to have a little momentum. Ramps or steps can be purchased from Airtug, if necessary, to overcome high door sills or rough pavement. Ensure you turn the motor off after each use and plug in the battery charger.

Depending on how the trailer is set up, raising or lowering the ball may help shift more weight onto the tug drive wheels for improved traction. Please note that if the weight on the tongue of the trailer is not set up properly that additional weight may be needed on the drive wheels of the tug. Also, lowering the tire pressure on the tug may improve traction. There is also a sticker on the handle for other recommendations to improve traction. Airtug® sells additional weight packs if you are having problems with traction and have tried all the recommendations on the handle. For best practice, safety, and for the best traction, begin movement as slowly as possible to put the trailer in motion.

SAVE THIS DOCUMENT AND ENSURE ALL OPERATORS READ IT PRIOR TO MOVING ANY TRAILERS

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Loading: Position the ball of tug under the receiver of the trailer and stop. Then either crank the trailer down onto the tug (Manual) or push the button to raise the ball up into the ball receiver and lift the tongue of the trailer up into the air (Automatic). Do not hold the button when the cylinder is maxed out on stroke. This can cause damage to the cylinder motor and electronic circuits.

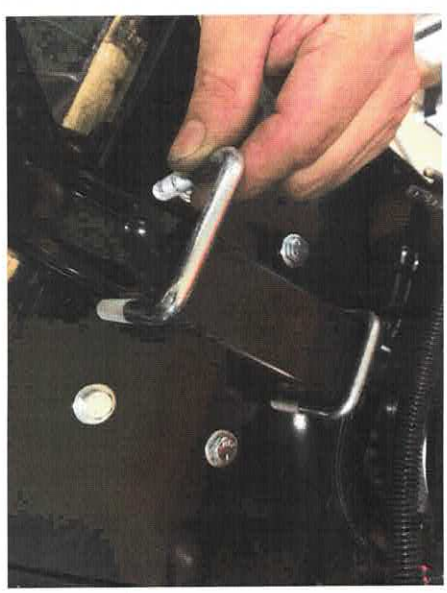
Plug in the trailer electric to the plug on the tug labeled "Surge Brake By-Pass" near the ball and this will not allow the surge brake to lock up when pushing the trailer in reverse.

Battery Charging: Prior to the first use, plug the charger cable into a 110V outlet or extension cord and charge the batteries fully as indicated by the green light at the top of the charger. The orange light indicates batteries are charging. Keep the battery charger plugged in between use. See the battery charger manual for more information.

Handle Assembly

Slide the handle under the u-bolts that are on the frame.

Tighten the washers/nuts from underneath.



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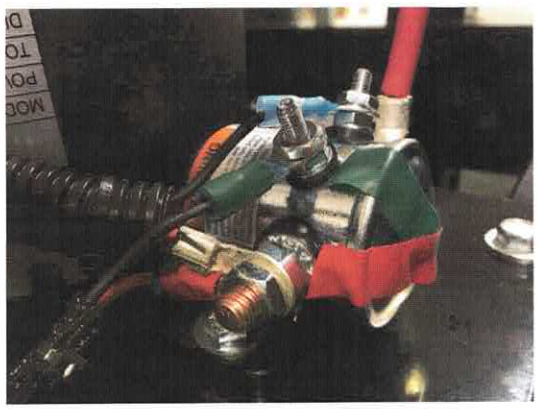
Then attach the wires from the handle to the solenoid on the side of the motor, matching the colors.



Attach the transmission cable to the handle as shown. Tighten the mounting nuts with an 11/16" wrench. Attach the socket at the end of the cable to the ball on the twist grip.

Connect power for automatic ball cylinder (on EA models) by connecting In line fuse from handle to battery on right, and single black wire with female spade terminal. Put 1/2" Loom over wires

Connect red & black wires in protective loom to the wires from cylinder (located under battery on right)

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General Maintenance

Tire Pressure: The tire pressure can range from 30 psi for lighter trailers to the maximum tire pressure of 70 psi for heavier trailers. It should be reduced for added traction for lighter trailers. Lower pressures improve traction.

Batteries: Keep the batteries fully charged. The battery performance will diminish measurably as the ambient air temperature drops.

Hydrostatic Transaxle: This should be checked for oil level. Add 20W-50 oil if level is low.

Drive Wheel Bearings: Permanently lubricated.

Caster Zerk Fittings: Needs to be lubed periodically to ensure ease of caster wheel steering.

Drive Chains: Apply chain lube periodically depending on use and environment.

Tractive Ability: If the tug seems to be losing tractive ability, it's an indication of a loose drive belt. The engine plate is mounted on slotted holes and can be moved rearward to tighten the drive belt if necessary. Simply loosen the nuts, push the engine plate towards the rear of the tug and tighten the nuts firmly.

Wet Battery Maintenance: (If you purchased gel cell batteries, there is no battery maintenance required.)

1. New batteries require a full charge before use and need to be cycled several times before reaching full capacity.
2. Battery connections should be kept tight at all times. Periodic inspection is recommended.
3. Vent caps should remain in place and tight at all times during operation and charging.
4. Keep batteries clean from all dirt and corrosion.
5. A maintenance routine should be set up to check the battery fluid level every two (2) weeks initially until an adequate routine is established for the particular operating environment. The acid level should be 1/4" above the battery cell plates. The acid level should never touch the fill well. Distilled or treated water should be used to replenish the batteries. Care should be taken to avoid metallic contamination (iron).
6. Batteries should not be discharged to the point of no longer being able to power the tug. Keeping the batteries fully charged will greatly reduce the risk of a dead battery when you need it most.
7. Batteries should be brought up to a full charge at the earliest opportunity using the built in 24V battery charger with reverse polarity protection and float mode. The battery charger should be left on when the tug is parked to maintain proper charging and maintenance of batteries at all times. Keeping the batteries fully charged will reduce the risk of freezing in cold temperatures.
8. Avoid charging the batteries when the ambient temperature exceeds 120°F.
9. As batteries age, the maintenance requirements increase. Maintain the water level. Older batteries will take longer to fully charge.
10. Periodic battery testing is an important preventative maintenance procedure. Hydrometer readings of each cell while fully charged gives an indication of balance and the true charge level. Imbalance could mean the need for equalizing, and is also a sign of potentially improper charging or a bad cell. Voltage tests (open circuit, charged or discharged) can identify a bad or weak battery. Load testing will identify a bad battery when other methods fail. A weak battery will cause premature failure of a companion battery.
11. Extreme temperatures can substantially affect battery performance and charging. Cold temperatures reduce battery capacity and retard charging. Heat increases water usage resulting in overcharging.

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CAUTION:

* Read, study and understand all warnings and operating instructions prior to use
* When working on the tug:
    * Put the tug up on blocks to get the drive wheels off the ground before beginning any work.
    * Do not allow anyone to stand directly in front of or behind the vehicle during testing.
    * Make sure the Power switch is off.
    * Use well-insulated tools.
* Runaways - Some conditions could cause the tug to run out of control. Disconnect the motor, or jack up the tug, and get the drive wheels off the ground before attempting any work on the motor control circuitry.
* High Current Arcs - Electric vehicle batteries can supply very high power, and arcs can occur if they are short circuit. Always turn off the battery circuit before working on the motor control circuit. Wear safety glasses, and use properly insulated tools to prevent short circuit.
* Do not overload this tug beyond the rated capacity.
* This tug is designed for use only on hard level surfaces capable of sustaining the load.
* No alterations to the tug shall be made.
* Electronic components may be damaged if exposed to water! This is not covered under warranty.
* Failure to heed these warnings may result in personal injury and/or property damage.

Battery Maintenance

Flooded batteries, also known as wet cell, are a popular choice due to their widespread use in a variety of applications. Many of the flooded batteries in use are Maintenance Free batteries. However, there are also applications where the flooded batteries require regular maintenance. The process can be easy if you follow these steps.

Note: Extreme care must be always taken when handling a flooded battery. Please wear the correct PPE including gloves and protective glasses.

1. Inspect the battery

- Examine the outside of the battery. The top of the battery and terminals should be clean, dry and free of any corrosion.
- If there is fluid on top of a deep cycle flooded battery, it may mean the battery is being over charged or over watered; refer below for cleaning.
- Check terminal connections, ensuring they are tight. Replace any damaged terminals or connectors.
- Check that all cell caps are secured properly on the battery.

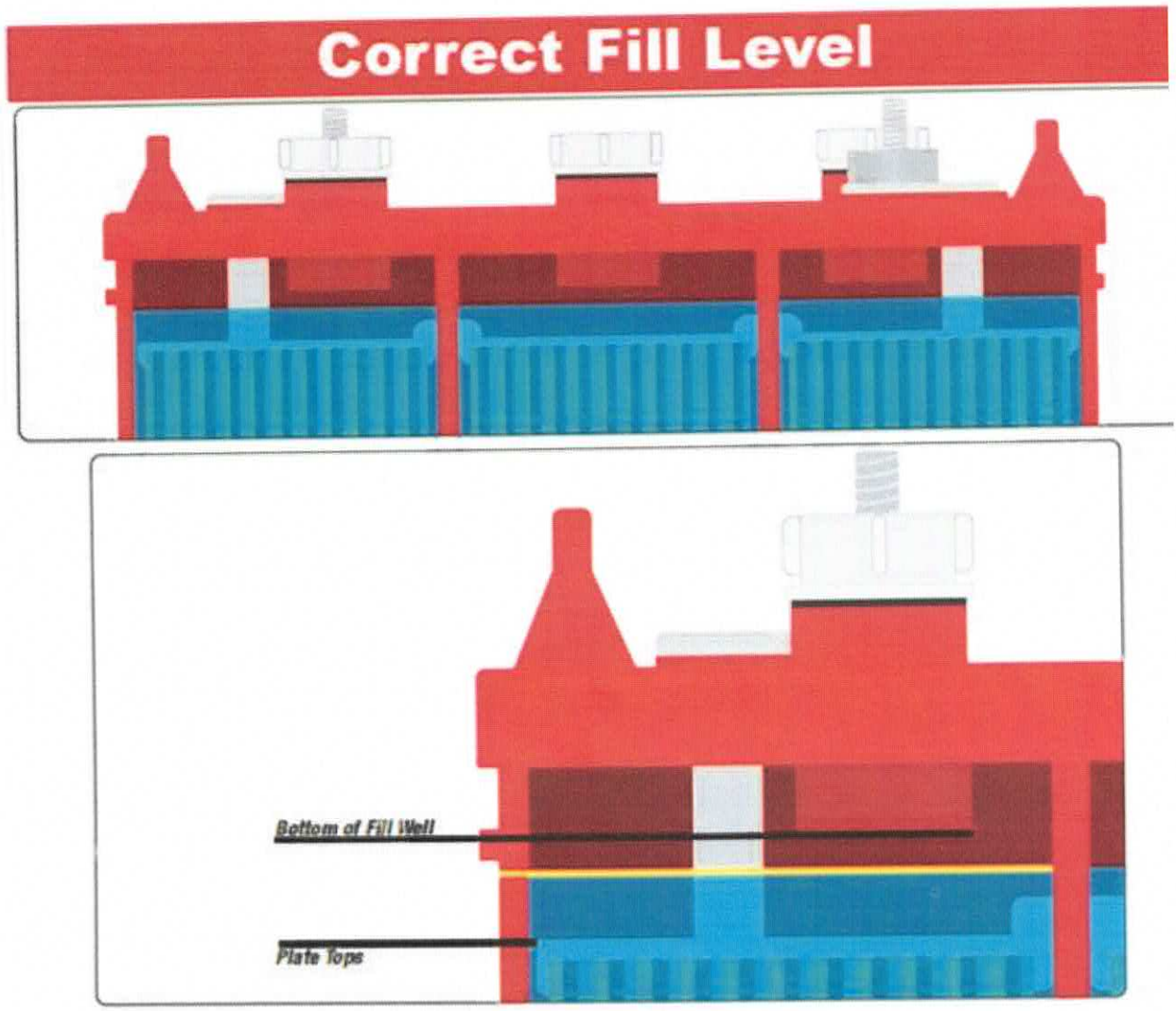
2. Clean the battery

- If required, clean the top of the battery, terminals and connections with a cotton cloth or non-metal brush.
- Make up a solution of approx. 60g soda ash to 1 liter of water. Repeat clean with a cloth or brush, ensuring no solution enters the battery.
- Rinse and dry with a clean cloth.

3. Top-up the battery with water

Deep cycle flooded batteries need watering periodically. The frequency depends on a few factors - usage, charging, operating temperature and age. Check new batteries every few weeks to determine the watering frequency. It is normal for batteries to use more water as they age.

- Deionized or distilled water is recommended. Tap water contains impurities that will damage the battery.
- Fully charge batteries prior to adding water. Only add water to discharged or partially charged batteries if the plates are exposed. When this happens, only add enough water to cover the plates and then charge the batteries.
- Check the Electrolyte level by first removing the caps and placing them upside down to ensure the underside of the cap is not contaminated (see Figure 1 for correct levels).
- After adding water, reinstall the caps onto the battery.



Caring for a flooded battery is as simple as topping up with water regularly to replenish the water which has evaporated. If this preventative maintenance is not conducted, the battery will deteriorate which can result in premature battery failure, or potentially an explosion.