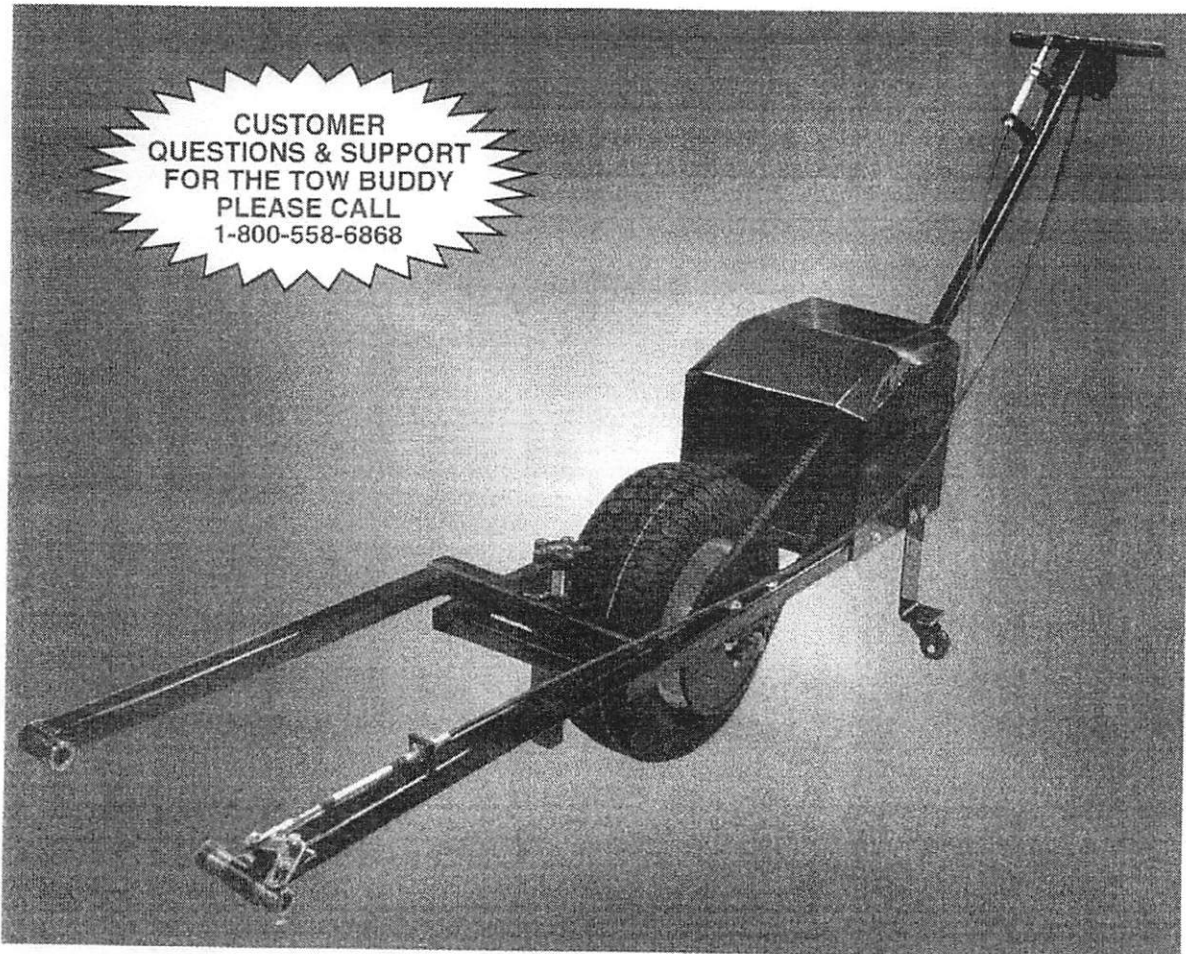


GROUND SUPPORT MANUFACTURING

Tow Buddy Assembly and Operating Instructions



Ground Support Manufacturing
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Tow Buddy Installation Instructions

Thank you for buying your tow bar from Ground Support manufacturing. Used properly, this unit will give you years of reliable service. It is powered by a high torque, 12 Volt gear motor using reversing speed controller. The motor direction and speed is controlled by the speed controller, which in turn is controlled by the operator using the two push buttons and rheostat located on the handle. A 12 volt garden tractor style battery supplies power (not supplied). The battery is maintained by a trickle charger (supplied) which is plugged in the charging plug.

Assembly Instructions:

This unit is shipped without a battery. The battery required can be acquired at any battery supply or hardware store. The battery size 7-3/4" wide x 5-1/4" deep and 8-3/4" high and is rated at 12 volt. It should have a flat top to accommodate the battery hold down clamp. A sealed gel cell or lead acid battery is highly recommended to prevent corrosion of components under the hood. Begin by finding the 6" high L-shaped block provided in the shipping materials. Place the block under the frame so that the frame is level with the ground. This will make the first few steps much easier.



Figure 1

1. Remove the hood by removing the four 1/4" bolts (two bolts on each side) that hold the rear support legs (See Figure 1).
- The TEC screws at the front of the hood (one each side) do not have to be removed, only loosened.
2. Lift the hood straight up and remove it. (See Figure 2).

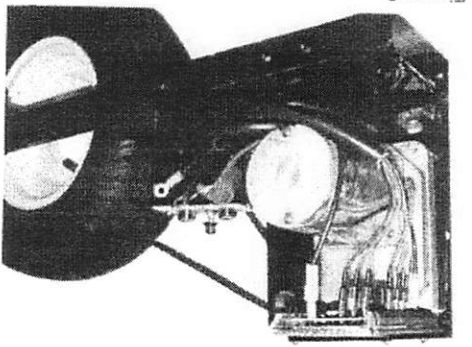


Figure 2

3. With hood removed, remove the control box and cable from the battery area (See Figure 2). Take care not to disconnect any wires.
4. Place the battery into position on the frame between the two bolt holes and place the battery hold down clamp on top of the battery (See Figure 3).

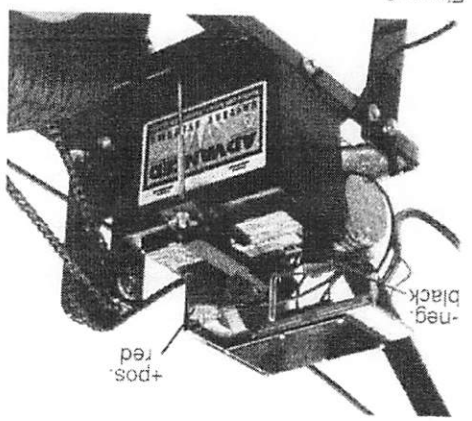


Figure 3

5. Slip the battery protective covers over the battery cables. Position the battery bolt facing forward on the positive post, to keep it from coming into contact with the motor bracket (See Figure 3).
6. Connect the battery cables to the battery with the red cable to the positive and the black cable to the negative (See Figure 3).

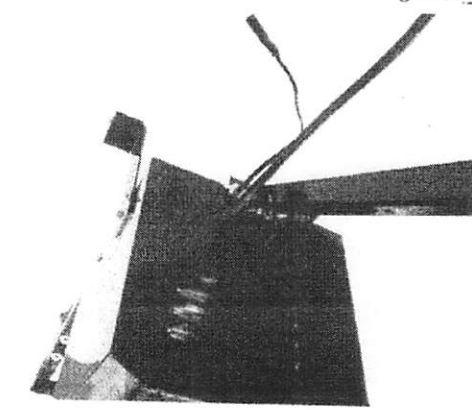


Figure 4

7. With hood removed, remove the control box and cable from the battery area (See Figure 2). Take care not to disconnect any wires.
8. Once the battery has been installed, the handle needs to be bolted into place. Use the two 3/8" x 2" bolts in the horizontal holes and the one 3/8" x 1" bolt for the single vertical hole (See Figure 4).

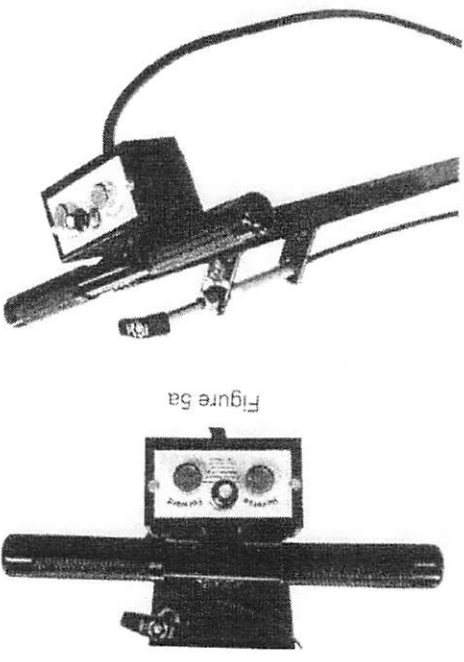


Figure 5a

9. Unroll the control box cable. The battery charger and control cable should exit through the opening by the handle connection point.
10. Install the control box to the flat panel, located right under the handle near the handle grips. Install using two 1/4"-20 bolts (See Figure 5a and 5b).

11. Reinstall the cover. Pay particular attention to the wires, preventing the wires from getting pinched.
12. Install the two support legs using any two predrilled holes in the legs. Attach each leg to the outside of the Tow Buddy frame. Tighten the 1/4" bolts modestly as you will be adjusting the height of the leg in a later step. The caster configuration works best with the casters facing outwards (See Figure 6).

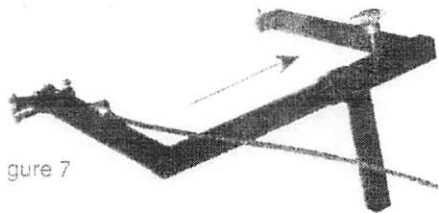


Figure 7

3. Assemble the nose gear attach fork by sliding the left side into the support arm (See Figure 7).

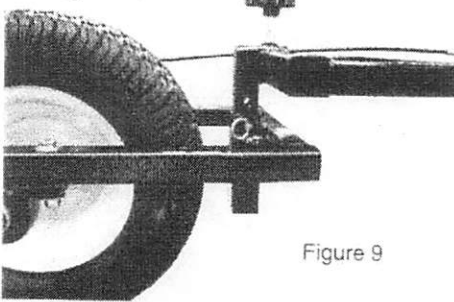


Figure 9

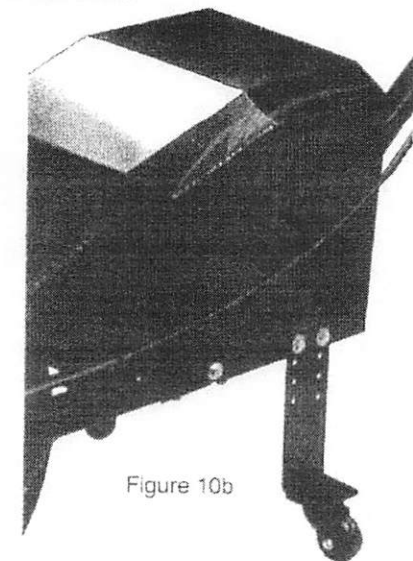


Figure 10b

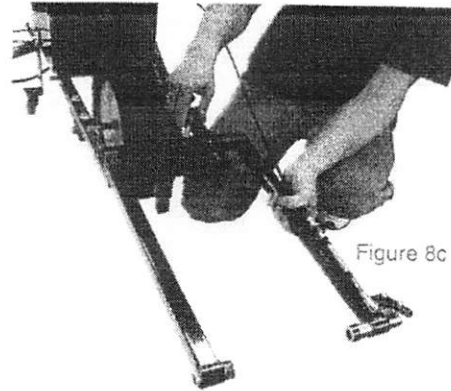


Figure 8c

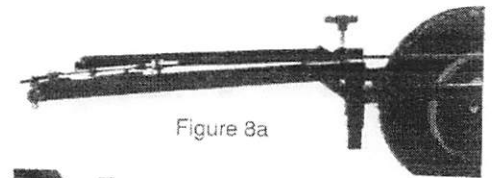


Figure 8a

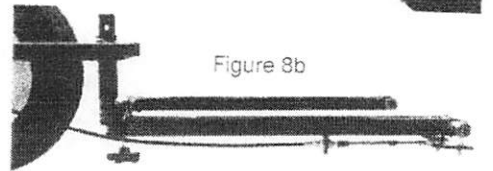


Figure 8b

14. The attached fork may be put onto the frame either from the top, for attachment to the upper lugs on a variety of nose gear configurations (i.e. Cessnas or Bonanzas), or inverted for use on the lower attach points such as axles, (i.e. many Pipers with axle attachments), (See Figures 8a, 8b, and 8c).

15. Height Adjustments:

a. The unit is easiest to operate when the fork of the Tow Buddy is at a height approximately 1" above the attaching points (i.e. axle or nose gear lugs) when the Tow Buddy is sitting on its legs. To accomplish this there are two adjustments that can be made. First is the height of the fork itself. Remember that the fork can either be positioned on top of the frame or inverted to come into the frame from the bottom (See Figures 8a and 8b). Adjust the fork height to get the Tow Buddy attach points near your aircraft attach points (See Figure 9).

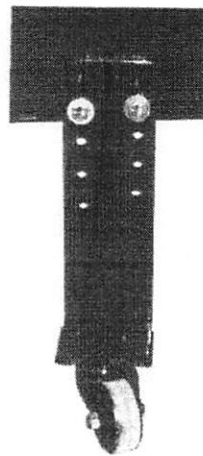


Figure 10a

b. The second adjustment is accomplished by adjusting the height of the Tow Buddy legs. There are predrilled holes in the legs that allow you to raise or lower the height of the frame from above the legs. By adjusting the leg height you can raise or lower the height of the fork. In this adjustment, raising the height of the legs lowers the height of the fork, while lowering the height of the legs raises the fork (See Figures 10a and 10b). Adjust the legs to get the fork to the desired height and tighten bolts securely. Using these two adjustments you should be able to get the fork height to the recommended 1" height above the attaching point on your aircraft. When making adjustments try to keep the Tow Buddy frame level to the ground. When done properly, the legs of the Tow Buddy will not be touching the ground when the unit is attached to the aircraft (by approximately the same 1"). This height allows for ease of connecting to the aircraft while allowing for downward pressure on the handle to increase the traction of the tire, when necessary.

16. Install the aircraft tow pins by inserting the pin into the fork end. Use the thumb screw in the fork end to tighten the pin in place.

Operating Instructions

Now that your power tow bar is fully assembled, it's time to put it to work. First of all, it's a good idea to get used to its operation and speed control. As the control box shows, one button moves the unit forward and one button moves the unit back. The center knob adjusts the speed. By turning the speed control clockwise, the travel speed increases in either direction in respect to the button pushed. Remember, this unit looks small, but it produces a substantial amount of torque. As long as the button is pushed, it will continue to try to move whatever is in its way. As the load increases, the controller senses the increase and automatically increases power supply to the motor, compounding the force. It is always best to start the unit with the speed setting at its lowest setting (dial set at full counter-clockwise rotation of speed knob). Then press the direction knob. Once the unit begins to move, increase the speed by turning the speed control clockwise until desired speed is reached.

After you get comfortable with the operational characteristics of the unit, it's time to attach it to the aircraft.

Warning: Do not tow aircraft on an incline without additional personnel covering the brakes. This unit does not have braking ability.

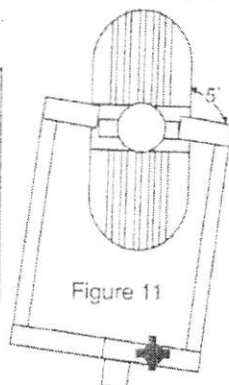


Figure 11

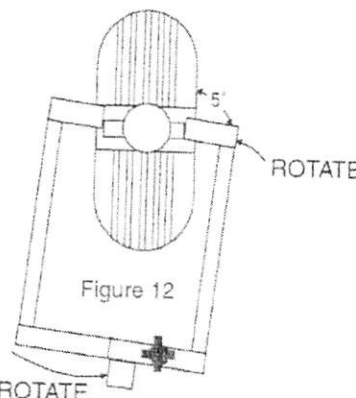


Figure 12

The process is relatively simple and gets easier with practice. The easiest way to do this is to approach the aircraft nose gear at a five degree angle (See Figure 11). When the right hand attach fork is lined up with the corresponding nose gear lug and at a distance of about 1/2" away. Rotate the power tow bar handle to the right, moving the attach fork to the left over the lug while pulling on the fork onto the aircraft attach points (See Figure 12). When the fork is closed onto both attach points, secure the knob with the locking mechanism so the fork does not slip.

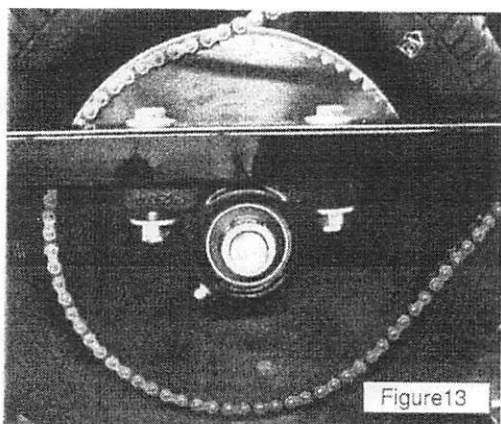


Figure 13

Maintenance:

The maintenance on your power tow bar is truly minimal. Chain maintenance is crucial to proper operation. The chain tension should be monitored after every use. The heavier the aircraft and the more usage, the more often the chain will have to be adjusted. The adjustment procedure for this is very simple. The two pillow lock bearings, which support the wheel axle on either side of the wheel, are slotted and provide movement for chain adjustment. Loosen the four bolts that secure these bearings and slide the axle forward and tighten the chain (See Figure 13).

The chain should be tightened until there isn't any slack and with maximum of a 1/4" deflection, with slight finger pressure. Do not over tighten as this will reduce bearing life (See Figure 14).

While adjusting the chain, check the sprocket for being parallel with the chassis tube. This must remain parallel for proper chain tracking. This adjustment will have to be done relatively soon after the first few uses. The chain will slacken during its initial break in (See Figure 15).

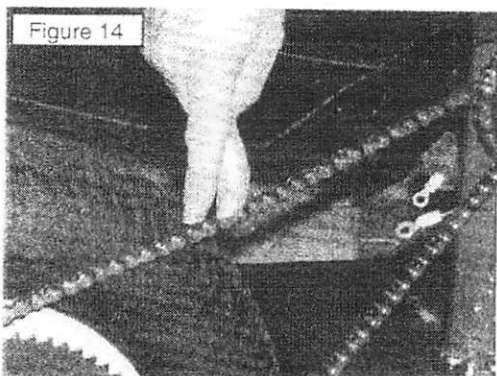


Figure 14

It is highly recommended that the unit stays indoors.

Trouble Shooting:

Q. Unit does not seem to have enough power to move my aircraft.

A. When this situation occurs the problem is usually that the speed control dial is set too high. The unit is designed to start up at a slow setting and then speed up as necessary. If the unit is set at too high of a speed setting at the start, the power surge within the controller exceeds a predetermined safety limit and power to the unit is automatically reduced. When this occurs, reset the speed dial to minimum speed (counterclockwise) and press the forward or reverse button again. Increase the speed slowly by turning the speed dial clockwise until desired speed is reached.

Q. Unit is difficult to attach airplane.

A. The height adjustments are critical to the ease of connecting the unit to the aircraft. Please review assembly instructions #16 to be sure proper adjustments have been made. Also unit becomes easier to attach with practice.

Turn clockwise to increase current
limit fold back set point

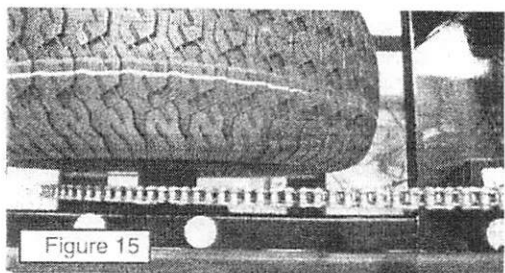


Figure 15

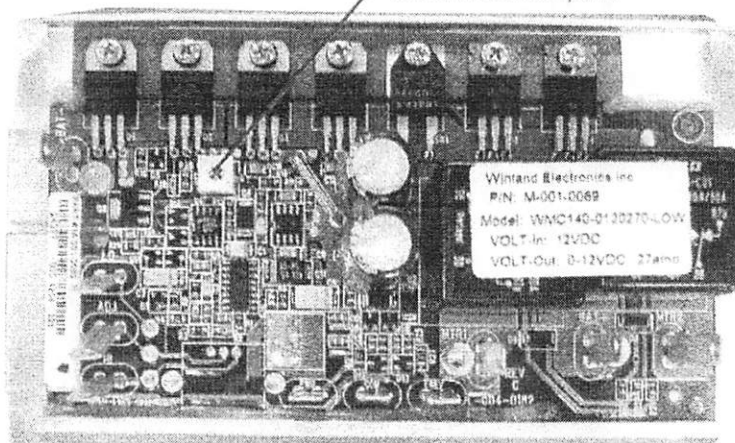


Figure 16

Q. Tow Buddy does not move when forward or reverse buttons are pushed, or will only move very slowly even when speed dial is increased to maximum.

A. Unit should always start at minimum speed and then increase speed dial in a clockwise manner. In rare instances the units controller may be inadvertently turned down to a low setting causing insufficient power to be sent to the motor. The controller (See Figure 16) is located under the hood just behind the battery and is bolted to the underside of a flat bracket using four screws. Unscrew the screws attaching the controller to the frame and view the controller as in figure 17. The set screw identified in the picture should be turned very gently using a phillips screwdriver, in a clockwise direction until it stops. This is its maximum and proper setting for this use. Replace controller, insuring wiring is intact, to bracket using screws and replace hood. Try Tow Buddy again, being sure to start with the speed dial set to the lowest setting. Once it starts to move, then increase the speed dial to the desired speed.

Once again thank you for buying your power tow bar from Ground Support Manufacturing. If we can help in any way, please feel free to call us at 1-800-558-6868.

***NOTE* IF YOU ARE HAVING TROUBLE WITH YOUR TOW BUDDY PLEASE CALL OUR GROUND SUPPORT SPECIALIST AT 1-800-558-6868 BEFORE RETURNING YOUR TOW BUDDY.**

TB-3000 Tow Buddy Packing List

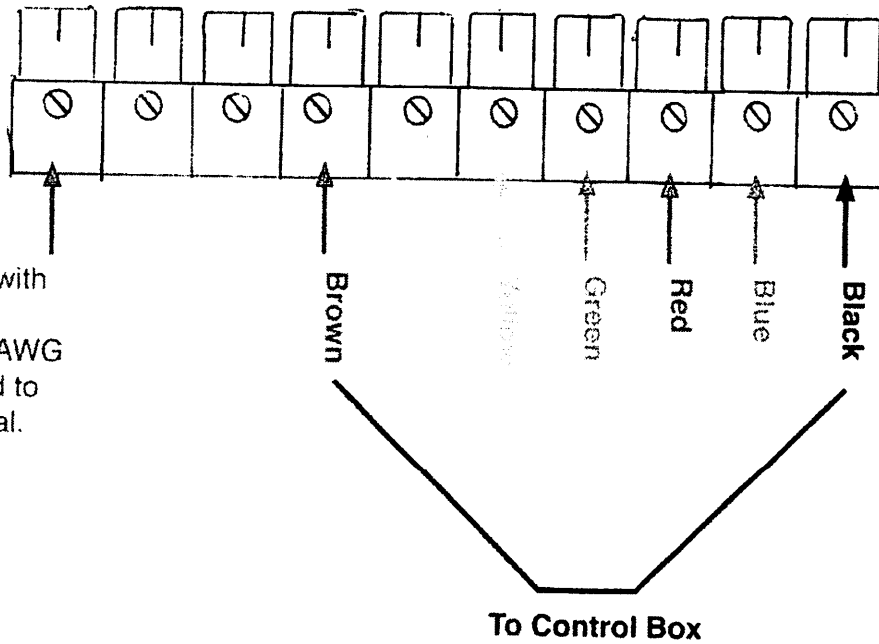
Serial Number:

QTY	Description
<input type="checkbox"/>	1 Base Unit
<input type="checkbox"/>	1 Handle with Left Fork
<input type="checkbox"/>	1 Right Fork
<input type="checkbox"/>	1 Fork Knob
<input type="checkbox"/>	1 Set Caster Legs
<input type="checkbox"/>	1 Battery Charger and Extra Alligator Clamps
<input type="checkbox"/>	1 Battery Hold Down Clamp
<input type="checkbox"/>	1 Hold Down Kit consisting of: <ul style="list-style-type: none"><input type="checkbox"/> 2-L Bolts<input type="checkbox"/> 2-Fender Washers<input type="checkbox"/> 2-Wing Nuts
<input type="checkbox"/>	2 Cable Clamps
<input type="checkbox"/>	2 Tek Screws
<input type="checkbox"/>	1 Detent Pin
<input type="checkbox"/>	2 1/4"- 20 x 3/4" Hex Head Cap Screws
<input type="checkbox"/>	2 3/8" x 2-1/4" Hex Head Bolts
<input type="checkbox"/>	1 3/8" x 1" Hex Head Bolt
<input type="checkbox"/>	3 3/8" Nuts
<input type="checkbox"/>	3 3/8" Washers
<input type="checkbox"/>	3 3/8" Lock Washers
<input type="checkbox"/>	2 Thumb Screws
<input type="checkbox"/>	1 Instructional Manual

Packed By:

Tow Buddy Wiring for Heavy Duty Circuit Board

***To Bypass Rheostat, Connect Red and Blue Wires (for troubleshooting)**



Red wire 9" long with ring terminal P/N GS00088 (16-14 AWG Blue) on end. Red to battery (+) terminal.

Back of Rheostat

