# PULLTARPS®

1404 N. Marshall Ave. El Cajon CA. 92020

**Dual Stage Tower
Installation Instructions**
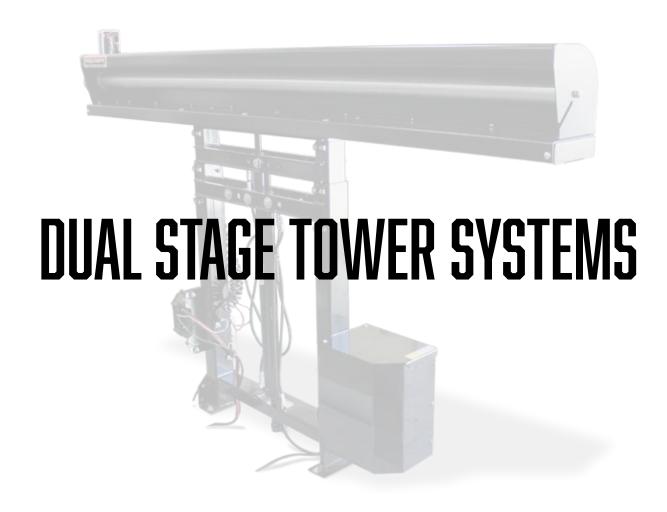
513-0014: Dual Stage Electric Tower
513-0020: Dual Stage EDU Tower

607-0116

WLH 09/17/18
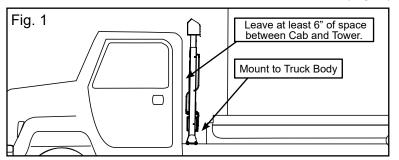
## TABLE OF CONTENTS

***Assembly***

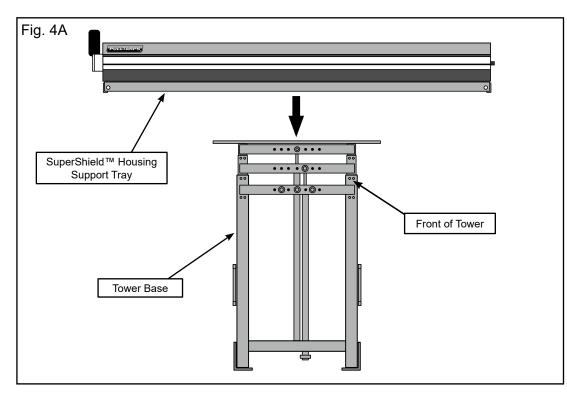***Components***

# DUAL STAGE TOWER SYSTEMS

## Mounting the Tower System

**Step 1:** Mount the Tower Base onto the Frame Rails and leave at least 6" of space between Cab and Tower (Fig. 1). Verify there is enough space between Cab and Tower. Mount with Weld Brackets (Fig. 2) or U-Bolt Brackets (Fig. 3).

Fig. 1

Leave at least 6" of space between Cab and Tower.

Mount to Truck Body

Fig. 2

Fig. 3

Fig. 4A

SuperShield™ Housing Support Tray

Front of Tower

Tower Base

**Step 2:** With a team member, lift the assembled Housing & Support Tray then place on top of Tower Base. Secure with the supplied hardware (Fig. 4A, B & C).

**Note: Make sure the Tower Base is level and secured before mounting.**

Fig. 4B

Fig. 4C
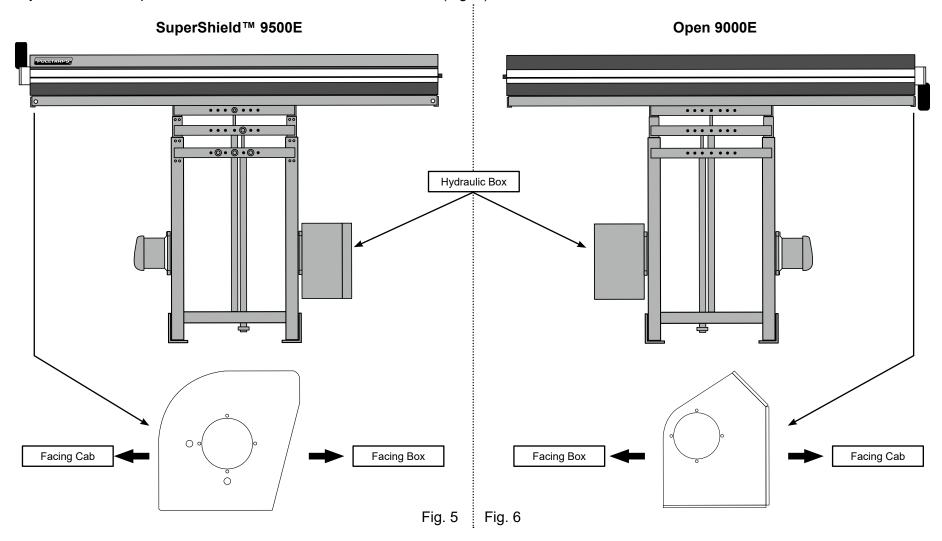
## Determine Location of Hydraulic Pump Based on Housing Type
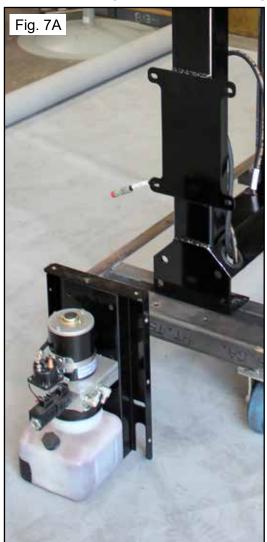
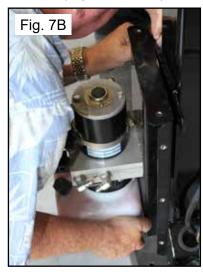**Step 3:** Determine the proper position of the Hydraulic Pump on the Tower.
* **SuperShield™ 9500E:** Pump is mounted on the right or passenger side of the tower (Fig. 5).
* **Open 9000E:** Pump is mounted on the left or driver side of tower (Fig. 6).

**SuperShield™ 9500E**　　　　　　　　**Open 9000E**

Hydraulic Box

Facing Cab　Facing Box　　Facing Box　Facing Cab

Fig. 5　Fig. 6

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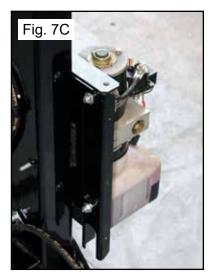
## Installing the Hydraulic Pump

**Step 4:** Secure the Hydraulic Pump to the corresponding side of the Tower Base using the supplied mounting hardware (Fig. 7A, B & C).



Fig. 7A



Fig. 7B



Fig. 7C

**Step 5:** Rotate the Hydraulic Connectors to face the tower (Fig. 8).

**Note: Hydraulic fluid may leak when removing the caps at the end of each hose.**



Fig. 8

**Step 6:** Attach the first Hydraulic line, marked green and yellow, to the first connector (Fig. 9).

**Note: Use a backup wrench when attaching Hydraulic line.**



Fig. 9

## Installing the Hydraulic Pump


Fig. 10

**Step 7:** Attached the second Hydraulic line (Marked Red) to the second (outer) Hydraulic connector (Fig. 10).

**Note: Use a backup wrench when attaching Hydraulic line.**

**Step 8:** Check the lines to make sure there aren't any leaks from the Hydraulic lines (Fig. 11).


Fig. 11

## Attaching the Control Box

**Step 9:** Attach the Mounting Plate to the Tower Base on the left side facing the front of the tower (Fig. 12).
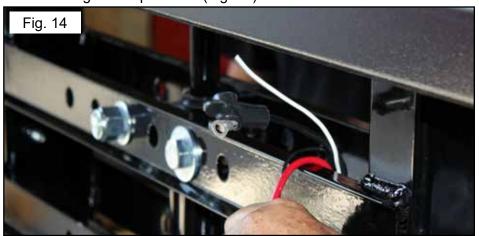
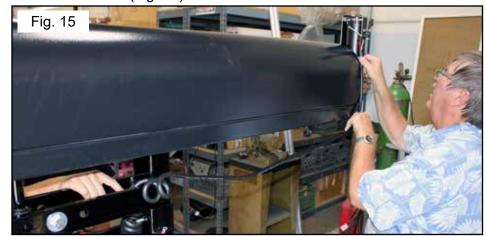**Step 10:** Once the base is secure, attach the Control Box to the mounting plate (Fig. 13A & B).

Fig. 12

Mounting Plate

Fig. 13A

Fig. 13B

## Electric Power for Housing Motor

**Step 11:** Place the Electric Motor wires inside of the Tower Base and thread through the top section (Fig. 14).

Fig. 14

**Step 12:** Take the wires on the non-coiled end and extend to the Electric Motor connectors (Fig. 15).

Fig. 15
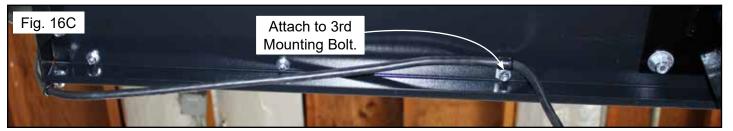
**Step 13:** Once you've extended the wire to the motor and estimated the correct length, attach the wire to the Housing Base using a wire mount (Fig. 16A). Use the existing bolt to secure to the housing base (Fig. 16B). Now secure the wire underneath and on the back side to the Support Tray. Use the third mounting bolt position (Fig. 16C).

**Note: For the outside mount, reverse the bolt position, so the cable can be attached to the outside of housing base.**

Fig. 16A

Fig. 16B

Fig. 16C

Attach to 3rd Mounting Bolt.
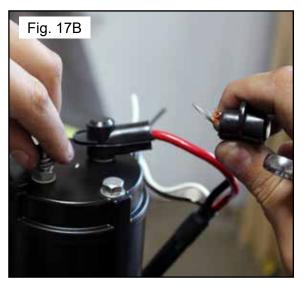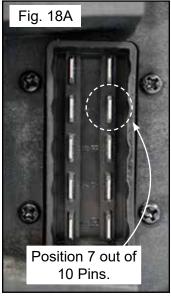
## Electric Power for Housing Motor

**Step 14:** Attach the wires to the motor connectors. The Red wire (Fig. 17A) attaches to one connector and the Black wire (Fig. 17B) attaches to the other connector. Secure in place (Fig. 17C).

Fig. 17A

Fig. 17B

Fig. 17C

Fig. 18A

Fig. 18B

Position 7 out of 10 Pins.

Fig. 19
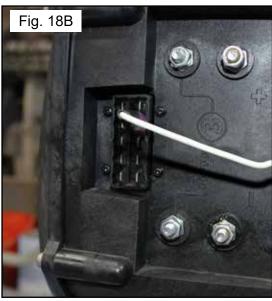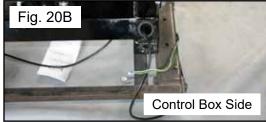
**Step 15:** Take the wires from the coiled side of the Electric Motor wiring and attached the White Wire to the pin connector #7, on the right side facing front of tower, of the Control box (Fig. 18A & B).

**Step 16:** Next, take the Red (+) and Black (-) wires from the Coiled side of the Electric Motor wiring and attach to the corresponding positive (+) and negative (-) connectors on the other side of the control box. Use the top two connection points (Fig. 19).

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**Dual Stage Tower
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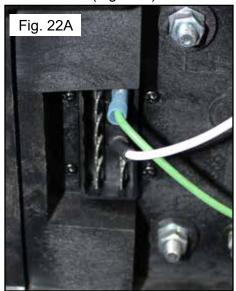
## Connecting Hydraulic System to Control Box
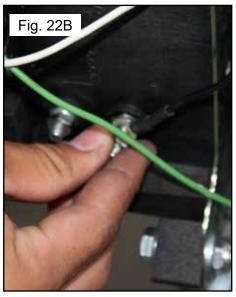
**Step 17:** Take the provided Hydraulic Power wires (Three Connectors) and snake the wired through the wire base, so the wires come out of the wiring holes. The wired ends shold be extended out of the holes on both sides of the tower (Fig 20A & B).

Fig. 20A

Hydraulic Side

Fig. 20B

Control Box Side
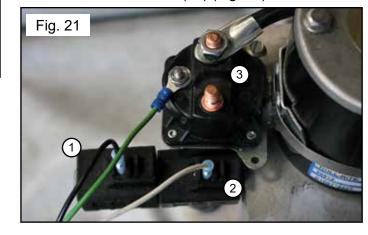
**Step 19:** On the Control Box side, take the White Wire and attached to the connector closest to the control interface (Fig. 22A). Then take the Black Wire and attach to the connectior that is at the bottom and hearest the tower (Fig. 22B).

Fig. 22A

Fig. 22B
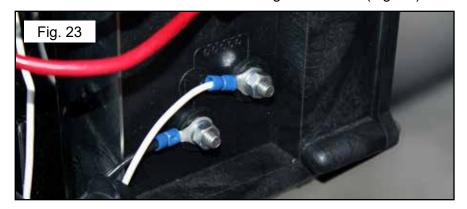
**Step 18:** On the Hydraulic Side, place the two flat pin connectors into the connectors on the pump. The Black wire fits into the box on the outside (#1) and the White wire fits into the box on the inside (#2). Now connect the Green wire to the outside position on the Distribution Node (#3) (Fig. 21).

Fig. 21
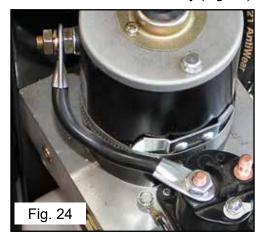
**Step 20:** Take the Black Wire and wrap around the inside of the tower base and connect to the bottom right connector (Fig. 23).

Fig. 23
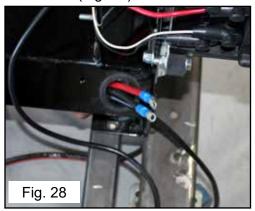
## Connecting Hydraulic System to Control Box

**Step 21:** Unit comes prewired. Verify connection but do not remove wire, which would void the warrenty (Fig. 24).

Fig. 25

**Step 22:** Take the Black and Red power wire from the wiring harness and wrap around tower base to connect to the Hydraulic motor (Fig. 25).

**Step 23:** Take the connector for the Red Wire and connect to the distribution node (Copper connector - Fig. 26).

Fig. 27

Fig. 24

Fig. 26
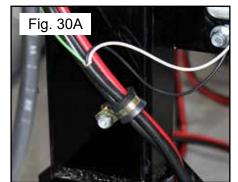
**Step 24:** Now take the Black wire (ground) and connector to bolt below the distribution node (Fig. 27).

**Step 25:** Take the other end of the Red and Black power cable and snake it through the wiring harness and pull through hole on the Control Panel side (Fig. 28).

Fig. 29
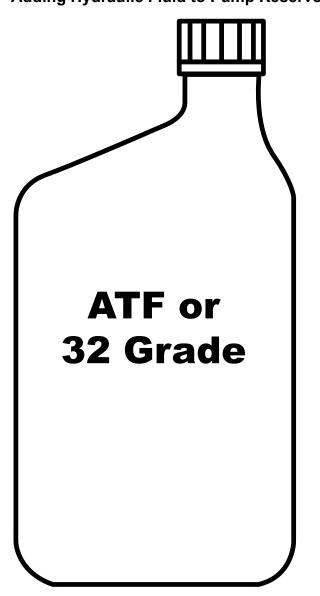
**Step 26:** Connect the Black ground wire and connect to the ground wire on the Control Box on the front side of tower. Next, connect the Red wire to the top power connector (Fig. 29).
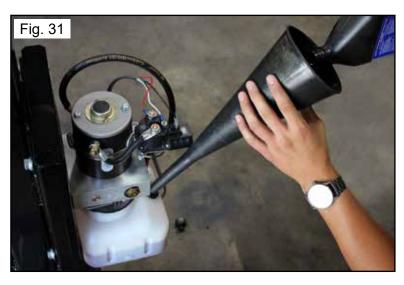
**Step 27:** Secure the wires on both sides of Tower Base with wire harness and attach to existing tower bolts (Fig. 30A & B).

Fig. 30A

Fig. 30B

Fig. 28

**Adding Hydraulic Fluid to Pump Reservoir**

ATF or
32 Grade

Fig. 31
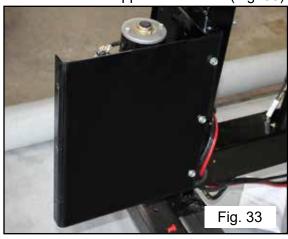
**Step 28:** Fill pump reservoir with two (2) quarts of Automatic Transmission Fluid or 32 Grade Hydraulic oil (not supplied) (Fig. 31).

Fig. 32
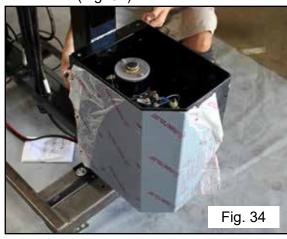
**Step 29:** After filling, reinsert filler cap and secure. Check system for leaks. (Fig. 32).
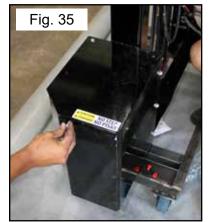
## Installing Hydraulic Protective Cover & Testing Tower

**Step 30:** Facing the back of the Tower System, take the Hydraulic Case back panel and attach with supplied hardware (Fig. 33).
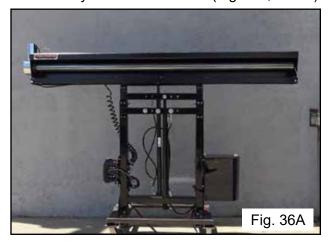
**Step 31:** Take the second panel that is bent at two points and attach to the back plate and tower (Fig. 34).
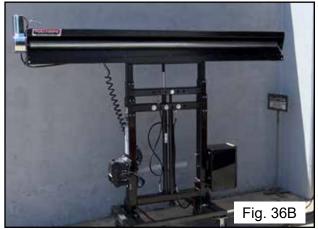
**Step 32:** Secure the Hydraulic Cover lid and remove any remaining tape (Fig. 35).

Fig. 33

Fig. 34

Fig. 35

**Step 33:** With power source connected, slowly rais and lower the tower. Check for any wires or lines that may get in the way and secure if needed (See Button Operation Section). Also, test the functionality of the Roller Tube (Fig 36A, B & C).

Fig. 36A

Fig. 36B

Fig. 36C

# DC SERIES CONTROL BOX

## DC Series Operation Instructions / Arm Systems

**Step 1 - To Cover Container:** To activate (power up or down) the control box you must press and hold buttons one (Ch. 1) and two (Ch. 2) on the control box or the key fob (I, II) for three (3) seconds (Fig. 37).

**Step 2:** Deploy 2-3 feet of tarp before moving the tower. To deploy tarp, press and hold button one (Ch. 1) on the control box or the key fob (I) (Fig. 38), or on non-remote systems, there will be a switch to wind and unwind your tarp.

**On/Off** Hold both Buttons

**On/Off** Hold both Buttons

Open  Raise  Forward

CH 2  CH 4  CH 6

CH 1  CH 3  CH 5

Close  Lower  Reverse  Work Light

Fig. 37

**Press & Hold**

Open  Raise  Forward

CH 2  CH 4  CH 6

CH 1  CH 3  CH 5

Close  Lower  Reverse  Work Light

Fig. 38

**Step 3:** Raise the tower as high as possible to keep tarp from dragging on the load in the container.

To raise the tower, press and hold button four (Ch. 4) on the control box or the key fob (IV) (Fig. 39).

**Note:** It's best to not pull the container all the way forward, until after raising the tower and deploying at least three feet (3') of tarp (See Step 2).

**Step 4:** Lower the tower so that the tarp wraps neatly around the front of the container. To lower the tower, press and hold button three (Ch. 3) on the control box or key fob (III) (Fig. 40).

On short cans, you may have to pull the tarp down to the top of the container and secure it with a strap.

Open  Raise  Forward

CH 2  CH 4  CH 6

CH 1  CH 3  CH 5

Close  Lower  Reverse  Work Light

**Press & Hold**

Fig. 39

Open  Raise  Forward

CH 2  CH 4  CH 6

CH 1  CH 3  CH 5

Close  Lower  Reverse  Work Light

**Press & Hold**

Fig. 40

**WARNING: Always watch for overhead hazards, tower and arms can potentially come into contact with overhead wires.**

## DC Series Operation Instructions / Arm Systems

**Step 1 - To Uncover Container:** Let some tarp material out to take any tension off the tarp and raise the tower to the maximum height to prevent the tarp from dragging on the load. To raise the tower, press and hold button four (Ch. 4) on your control box or key fob (IV) (Fig. 41).

**Step 2:** Retract the tarp in far enough to clear the container as it is dumped or unloaded. To retract the tarp, press and hold button two (Ch. 2) on the control box or key fob (II) (Fig. 42).

If you are dropping the can and traveling with no can or an empty can, return the tarp system to its home position. A standard home position is with the tower all the way down.

Press & Hold

Open  Raise  Forward

CH 2  CH 4  CH 6

CH 1  CH 3  CH 5

Close  Lower  Reverse  Work Light

I  II
III  IV
V  VI

Fig. 41

Open  Raise  Forward

CH 2  CH 4  CH 6

CH 1  CH 3  CH 5

Close  Lower  Reverse  Work Light

I  II
III  IV
V  VI

Press & Hold

Fig. 42

## DC Series Operation Instructions / Armless Systems

**Step 1 - To Cover Container:** To activate (power up or down) the control box, you must press and hold buttons one and two (Ch. 1 & Ch. 2) on the control box or the key fob (I, II)(Fig. 43).

**Step 2:** Raise the tower as high as possible to keep the tarp from dragging on the load in the container. To raise the tower, press and hold button four (Ch. 4) on the control box or on the key fob (IV) (Fig. 44).

On/Off
**Hold both Buttons**

Open  Raise  Forward

CH 2  CH 4  CH 6

CH 1  CH 3  CH 5

Close  Lower  Reverse  Work Light

I  II
III  IV
V  VI

On/Off
**Hold both Buttons**

Fig. 43

Press & Hold

Open  Raise  Forward

CH 2  CH 4  CH 6

CH 1  CH 3  CH 5

Close  Lower  Reverse  Work Light

I  II
III  IV
V  VI

Fig. 44

## DC Series Operation Instructions / Armless Systems

**Step 3:** Unwind the Pullrope, then press and hold button one (Ch. 1) on the control box or the key fob (I), while walking the tarp to the rear of the container (Fig. 45).

**Press & Hold**

Fig. 45

**Step 4:** Secure the tarp at the rear of the container. Then lower the tower by pressing and holding button three (Ch. 3) on the control box or the key fob (III) (Fig. 46) until tight. This should give you the proper tension on the tarp.

**Press & Hold**

Fig. 46

**Step 5:** Tighten the tarp by pressing and holding button 2 (Ch. 2) on the control box or on the key fob (II) until the tarp is tight (Fig. 47).

**Press & Hold**

Fig. 47

## DC Series Operation Instructions / Armless Systems

**Step 1 - Uncover Container:** Loosen the tarp, uncoil several feet of tarp. To loosen, press and hold button one (Ch. 1) on the control box or the key fob (Fig. 48).

**Step 2:** Raise the tower as high as possible to keep the tarp from dragging on the load in the container. Press and hold button four (Ch. 4) on the control box or key fob (IV) (Fig. 49).

Fig. 48

Fig. 49

**Step 3:** As you walk in the tarp with the Pullrope, press and hold button two (Ch. 2) on the control box or on the key fob (II) (Fig. 50).

**Step 4:** Unload or dump container. If you are traveling with an empty or no container, lower the tower. To lower the tower, press and hold button three (Ch. 3) on the control box or the key fob (III) (Fig. 51).

Fig. 50

Fig. 51
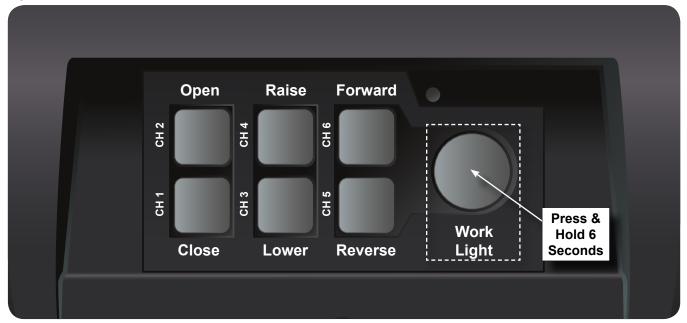
## DC Series Operation Instructions / Armless Systems

**Key Fob Programming: The control box comes preprogrammed to the two (2) supplied remote key fobs. If for any reason you should need to re-program them, or additional key fobs, follow the steps and image below (Fig. 52).**

1. Confirm that the box is turned on (the status LED should be lit green).
2. Press and hold the round work light button for 6 seconds. The LED will flash red three (3) times to indicate program mode.
3. Press and hold button one (I) on the first key fob for two (2) seconds then release. Press button one (I) for two (2) seconds on the second (2nd) key fob. Repeat for each additional key fob that is to be programmed.
4. Let box stand until Status LED returns to green. Programming is complete.

The control box will learn a maximum of four (4) key fobs. All key fobs must be programmed at the same time. Programming an additinal key fob at a later date will erase all previously stored key fobs.

Fig. 52

## Automatic Shut Down Feature

The control box (Fig. 53) incorporates a safety feature to shut off automatically after a period of inactivity*. Press buttons 1 & 2 simultaneously on the box or remote for two seconds (as described above) to power the unit back up.

To shut the box down manually (shut off), press 1 & 2 simultaneously on the box or remote for two seconds as described above. *Boxes produced after 8-10-09 may have programmable time out feature.

*Boxes shipped after 12/14 (SN – 11,505 and up) have extended programmable time out. For earlier boxes call for assistance.

**To adjust the time delay before automatic shut off:**
1. Turn the box on.
2. Press and release the work light button 6 times, wait until the light stops flashing press the Ch. 6 Button, the LED will flash once, press the Ch. 6 Button again, LED will flash once – you are now in the program mode you need to be in to adjust the automatic shut down time and work light on/off conditions.
3. Reference diagram below, # indicated on the button represents minutes until the box automatically shuts down. "∞" means it will not power down automatically.
4. After selecting shut down time wait for the LED to return to green. Programming complete.

REV. 08/10/09

Fig. 53



| Button | On Time before Auto Shutdown |
|---|---|
| 1 | On Indefinitely |
| 2 | 2 minute on time |
| 3 | 4 minute on time |
| 4 | 6 minute on time (default) |
| 5 | 8 minute on time |
| 6 | 10 minute on time |

REV. 31 - 11/12/14 (Serial# 11505 & Up)

| Button | On Time before Auto Shutdown |
|---|---|
| 1 | On Indefinitely |
| 2 | 20 minute on time |
| 3 | 30 minute on time |
| 4 | 40 minute on time |
| 5 | 50 minute on time |
| 6 | Work light on after box auto-shutdown (one blink) |
| | Work light off after box auto-shutdown (default) Two Blink |

## Control Box Troubleshooting

### LED Diagnostics, Unit at Rest (Fig. 54)

| No Light | --- | No Power or box is shut down (see Auto shut Down feature). |
|---|---|---|
| Green | Continuous | Everything is OK. |
| Green | Single Blink | Low Battery Warning. Recharge your Battery soon. |
| Green | Double Blink | Battery is nearly dead and must be recharged before unit will operate. |
| Yellow | Continuous | Fuse 1 (5 Amp, Board Circuit - see Fig.52) is Blown |
| Yellow | Single Blink | Fuse 2 (10 Amp, Onboard Relay - see Fig. 52) is Blown |
| Yellow | Double Blink | Fuse 3 (15 Amp, Pump Signal Wire - see Fig. 52) is Blown |
| Yellow | Triple Blink | Fuse 4 (15 Amp, Work Light Circuit - see Fig. 52) is Blown |
| Red | Continuous | Unit is in Program Mode |

### LED Diagnostics, Unit in Operation (Fig. 54)

| Red | Continuous | Confirms it is in operation |
|---|---|---|
| Green | Single Blink | Low Battery warning. Recharge soon. |
| Green | Double Blink | Battery is nearly dead - unit will not operate until charged. |

**Fig. 54
Button Interface with LED Diagnostic Light**

### Fuse Replacement (Steps)

1) Using the codes above to diagnose which fuse is blown.
2) Remove the 10 bolts that hold the lid in place.
3) Carefully lift lid and unplug switch leads
4) Do not touch circuit board any more than necessary.
5) Carefully locate (Fig. 55) & remove the blown fuse & replace it with a fuse that is the same size.
6) Replace the lid.
   a. Plug switch leads in.
   b. Arrange so that they will not be pinched as lid is replaced.
   c. Insure that gasket is in place in groove in lid.
   d. Press lid back into place and replace 10 lid bolts.
   e. Tighten lid bolts in a star pattern to insure lid tightens evenly.
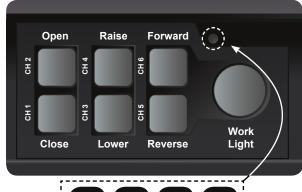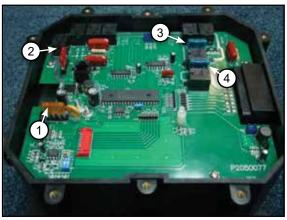
**Fig. 55 - Fuse Replacement (1-4)**

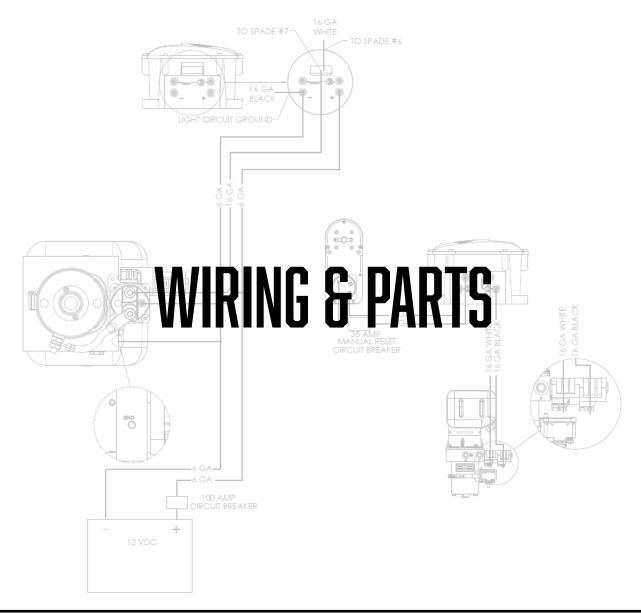## Quick Reference Guide - Detach and put in truck

### Black Box Operation

- **ON/OFF** – To turn the control box on or off, press CH1 and CH2 simultaneously for 2 seconds. This can be done from the box itself (see figure 6) or from the key fob (see figure 7) by pressing buttons I & II simultaneously.

- **Work Light** – If your system is equipped with work lights, turn the control box on and then press the Work Light button to turn them on or off. THIS IS NOT THE ON/OFF BUTTON FOR THE CONTROL BOX!

- **CH1 and CH2** – control buttons for output #1 on the control box (typically connected to the tarp motor). These two buttons correspond to buttons I and II respectively on the remote key fob. Pressing these two buttons at the same time and holding for 2 seconds will turn the control box on and off.

- **CH3 and CH4** – control buttons for output #2 on the control box (typically controls the tower raising and lowering). These two buttons correspond to buttons III and IV respectively on the remote key fob. Press and release these two buttons at the same time on the key fob to operate the work light from the remote.

- **CH5 and CH6** – control buttons for output #3 on the control box (additional equipment). These two buttons correspond to buttons V and VI respectively on the remote key fob.

### Shut Down Feature
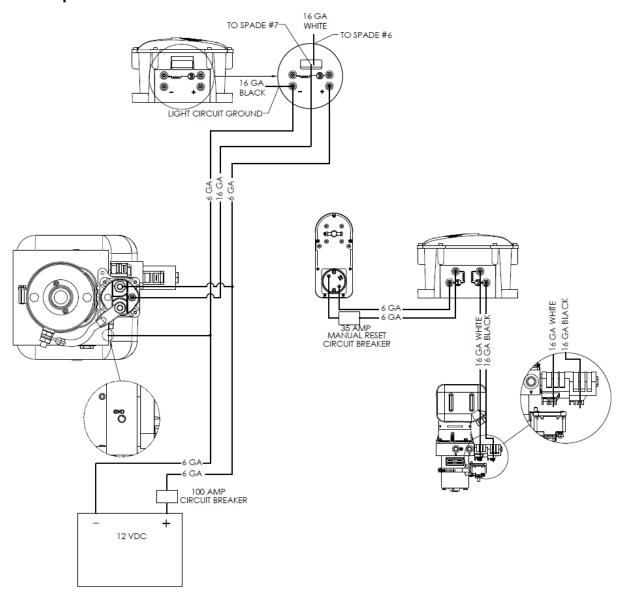
The control box incorporates a programmable safety feature which shuts it off automatically after a given period of inactivity. This feature is programmable, see "Automatic Shut Down Feature" section in your operating instructions.
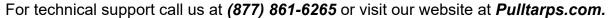
Press buttons 1 & 2 simultaneously on the box or remote for two seconds (as described above) to power the unit back up.
To shut the box down manually (shut off), press 1 & 2 simultaneously on the box or remote for two seconds as described above.

TO SPADE #7

16 GA
WHITE

TO SPADE #6

16 GA
BLACK

LIGHT CIRCUIT GROUND

6 GA

16 GA

6 GA

16 GA WHITE

16 GA BLACK

16 GA WHITE

16 GA BLACK

35 AMP
MANUAL RESET
CIRCUIT BREAKER

# WIRING & PARTS

GND

6 GA

6 GA

100 AMP
CIRCUIT BREAKER

12 VDC
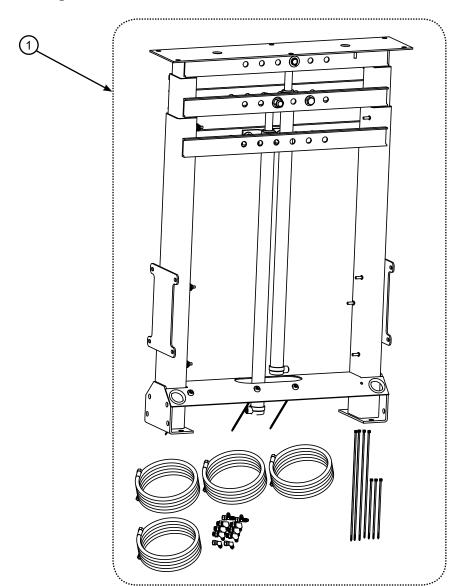
## System with Single Valve Pump

TO SPADE #7

16 GA
WHITE

TO SPADE #6

16 GA
BLACK

LIGHT CIRCUIT GROUND

6 GA
16 GA
6 GA

6 GA
6 GA

35 AMP
MANUAL RESET
CIRCUIT BREAKER

16 GA WHITE
16 GA BLACK

16 GA WHITE
16 GA BLACK

GND

6 GA
6 GA

100 AMP
CIRCUIT BREAKER

12 VDC
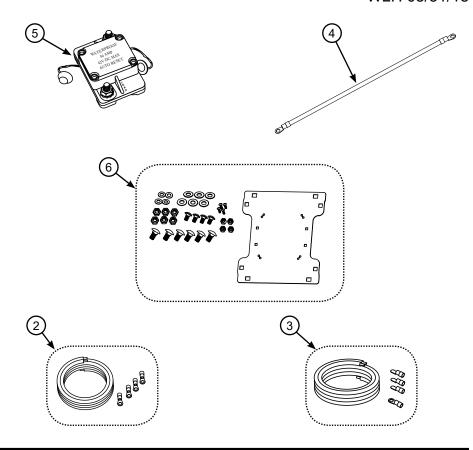
## Dual Stage Electric Tower - #513-0014
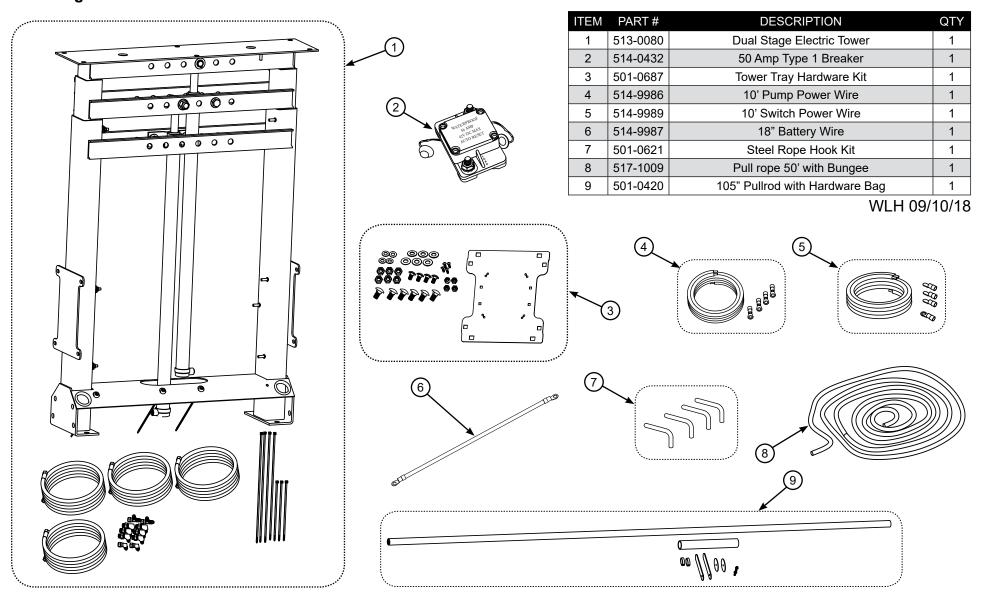
| ITEM | PART # | DESCRIPTION | QTY |
|------|--------|-------------|-----|
| 1 | 513-0080 | Dual Stage Electric Tower | 1 |
| 2 | 514-9986 | 10' Pump Power Wire | 1 |
| 3 | 514-9989 | 10' Switch Power Wire | 1 |
| 4 | 514-9987 | 18" Battery Wire | 1 |
| 5 | 514-0432 | 50 Amp Type 1 Breaker | 1 |
| 6 | 501-0687 | Tower Tray Hardware Kit | 1 |

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WATERPROOF
50 AMP
42V DC MAX
AUTO RESET

## Dual Stage EDU Tower - #513-0020



| ITEM | PART # | DESCRIPTION | QTY |
|------|--------|-------------|-----|
| 1 | 513-0080 | Dual Stage Electric Tower | 1 |
| 2 | 514-0432 | 50 Amp Type 1 Breaker | 1 |
| 3 | 501-0687 | Tower Tray Hardware Kit | 1 |
| 4 | 514-9986 | 10' Pump Power Wire | 1 |
| 5 | 514-9989 | 10' Switch Power Wire | 1 |
| 6 | 514-9987 | 18" Battery Wire | 1 |
| 7 | 501-0621 | Steel Rope Hook Kit | 1 |
| 8 | 517-1009 | Pull rope 50' with Bungee | 1 |
| 9 | 501-0420 | 105" Pullrod with Hardware Bag | 1 |

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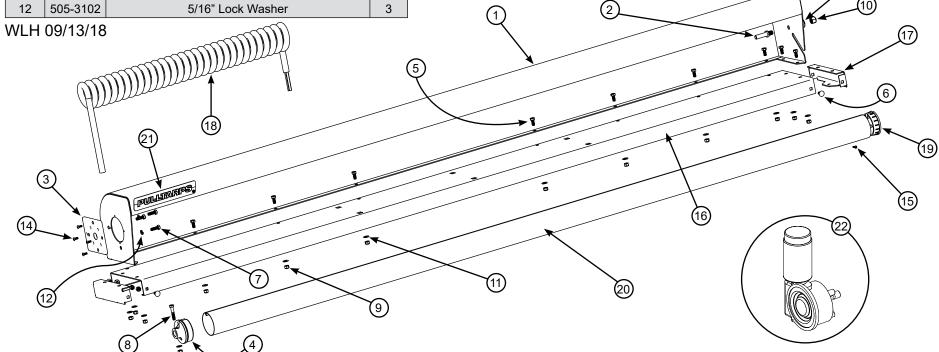
## SuperShield™ 9500E 100" Tower Assembly with Tray - #513-0081

| ITEM | PART # | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 501-0121 | 9.5" x 100" SuperShield™ Housing | 1 |
| 2 | 501-0801 | System End Plate Stud | 1 |
| 3 | 501-1235 | Aluminum Adapter Plate | 1 |
| 4 | 501-9915 | Roller Drive Aluminum End Cap 3" | 1 |
| 5 | 503-3103 | 5/16" - 18 x 3/4" Hex Bolt | 12 |
| 6 | 503-3104 | 5/16" - 18 x 3/4" Carriage Bolt | 4 |
| 7 | 503-3105 | 5/16" - 18 x 1" HHCS Bolt G2 | 3 |
| 8 | 503-3108 | 5/16" - 18 1-3/4" HHCS Hex Bolt G2 | 1 |
| 9 | 504-3103 | 5/16" - 18 Nylock Nut Steel | 17 |
| 10 | 504-5001 | 1/2" Crimp Nut | 1 |
| 11 | 505-2502 | 1/4" USS Washer 5/16" | 17 |
| 12 | 505-3102 | 5/16" Lock Washer | 3 |

| ITEM | PART # | DESCRIPTION (Continued) | QTY |
|---|---|---|---|
| 13 | 505-5001 | 1/2" AN Washer 1/16" thick | 1 |
| 14 | 506-9905 | 10 - 32 x 1/2" Philips Pan Head Screw | 4 |
| 15 | 506-9916 | Screw, #8 - 18 x 3/4" Self Drilling | 1 |
| 16 | 513-0079 | 100" R/R Tower Tray | 1 |
| 17 | 513-0090 | Tower End Support Insert | 2 |
| 18 | 514-0216 | 110" 2 Stage Tower Coil Wire | 1 |
| 19 | 517-0102 | Flanged End Cap | 1 |
| 20 | 517-0511 | SuperShield 9500 100" Electric Galv. Roller Tube | 1 |
| 21 | 607-0061 | Pulltarps Decal for System | 1 |
| 22 | 517-0909 | 1.3HP 12V Motor & Gearbox (Optional) | 1 |

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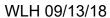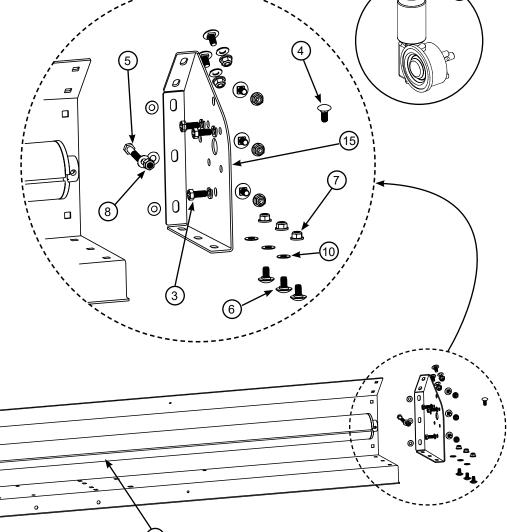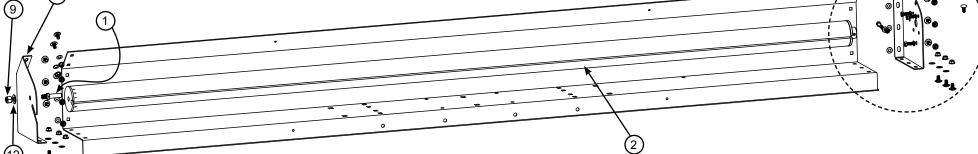
## Open 9000E 102" Tower Assembly with Tray - #513-0017

| ITEM | PART # | DESCRIPTION | QTY |
|------|--------|-------------|-----|
| 1 | 501-0801 | System End Plate Stud | 1 |
| 2 | 501-1368 | 102" Roller Assembly | 1 |
| 3 | 503-3103 | 5/16" - 18 x 3/4" HHCS Bolt | 3 |
| 4 | 503-3104 | 5/16" - 18 x 3/4" Carriage | 1 |
| 5 | 503-3108 | 5/16" - 18 1-3/4" HHCS Hex | 1 |
| 6 | 503-3118 | 5/16" - 18 x 5/8" Carriage | 15 |
| 7 | 504-3102 | 5/16" - 18 Thin Nylock Nut | 16 |
| 8 | 504-3103 | 5/16" - 18 Nylock Nut Steel | 1 |
| 9 | 504-5001 | 1/2" Crimp Nut | 1 |
| 10 | 505-2502 | 1/4" USS Washer 5/16" | 17 |
| 11 | 505-3102 | 5/16" Lock Washer | 3 |
| 12 | 505-5001 | 1/2" AN Washer 1/16" | 1 |
| 13 | 513-0061 | Tower Housing 102" | 1 |
| 14 | 513-0062 | Tower Housing End Plate | 1 |
| 15 | 513-0063 | Tower Electric End Plate | 1 |
| 16 | 607-0061 | Pulltarps Decal (Not Shown) | 1 |
| 17 | 517-0909 | 1.3HP 12V Motor & Gearbox (Optional) | 1 |

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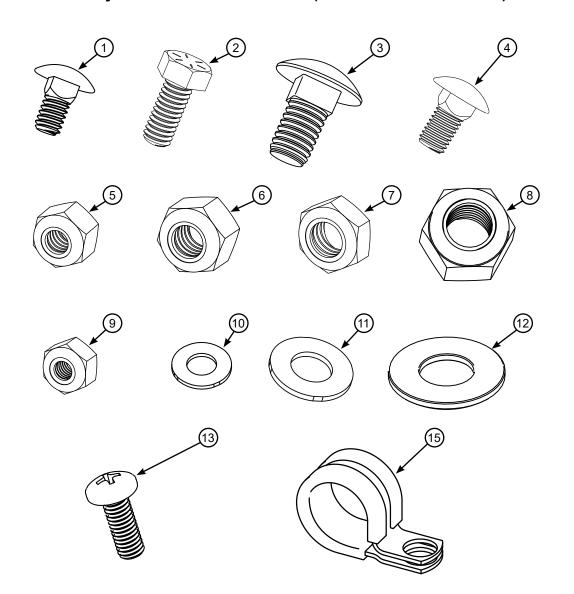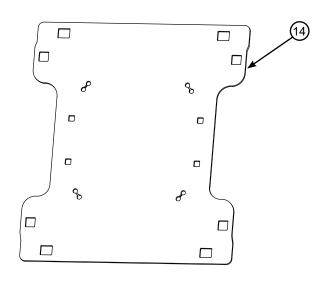
## Tower Tray Hardware Kit - #501-0687 (Illustrations not to scale)

| ITEM | PART # | DESCRIPTION | QTY |
|------|--------|-------------|-----|
| 1 | 503-2501 | 1/4" - 20 x 1/2" USS Carriage Bolt | 2 |
| 2 | 503-3103 | 5/16" - 18 x 3/4" HHCS Bolt | 2 |
| 3 | 503-3717 | 3/8" - 16 x 3/4" Carriage Bolt | 8 |
| 4 | 503-5020 | 1/2" - 13 x 1" Carriage Bolt | 6 |
| 5 | 504-2503 | 1/4" - 20 USS Nylock Nut | 2 |
| 6 | 504-3103 | 5/16" - 18 Nylock Nut Steel Zinc | 2 |
| 7 | 504-3705 | 3/8" - 16 Nylock Nut "Thin" | 8 |
| 8 | 504-5004 | 1/2" - 13 Nylock Nut | 6 |
| 9 | 504-9903 | 10 - 32 Nylock Nut | 4 |
| 10 | 505-2502 | 1/4" USS Washer 5/16" Hole | 4 |
| 11 | 505-3702 | Washer 3/8" SAE Flat Zinc | 8 |
| 12 | 505-5004 | 1/2" USS Flat Washer | 6 |
| 13 | 506-9905 | 10 - 32 x 1/2" Philips Pan Head Screw | 4 |
| 14 | 513-0093 | Universal Tower Switch Plate | 1 |
| 15 | 514-9977 | Wire Clamps 3/4" ID | 2 |

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