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CleenSweep® Hydraulic - CSH24

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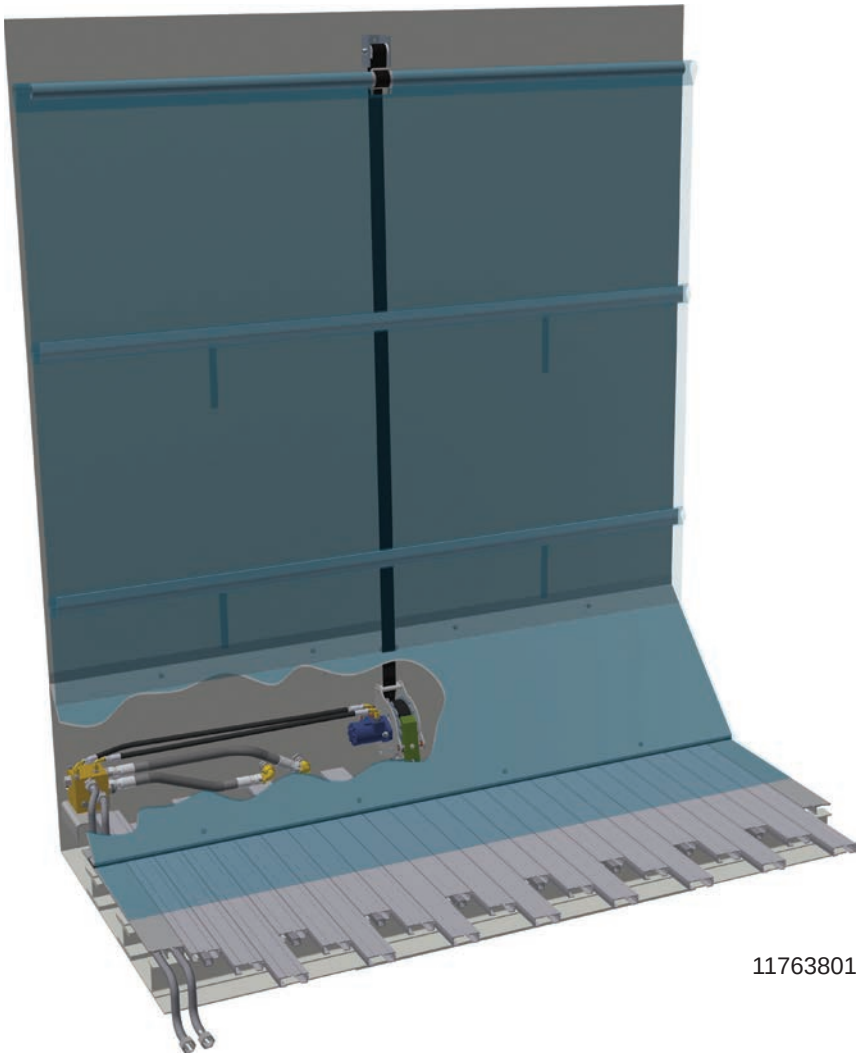
KEITH® CLEENSWEEP® TARP SYSTEM



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INSTALLATION / OWNER'S MANUAL & PARTS CATALOG

Original Instructions

Released: 2024-12-10 DOC07155 Rev. B

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Operating Instructions

Introduction

This manual explains procedures for installing and operating the KEITH® Hydraulic CleenSweep® Tarp System. Many variables affect the installation, but the general process remains constant. Details of the installation vary, according to trailer features and installer preferences.

An efficient installation requires appropriate tools and accessible materials that are not supplied with this kit. (This kit does not include any hoses.) A list of needed tools and required materials is supplied.

It is strongly recommended that the installers and operators read this entire manual before beginning the installation or operating of the system.

Please direct any questions to KEITH Manufacturing Co., one of our international offices listed in the contact information section of this manual, or on our website.

⚠ **WARNING: Always disconnect hydraulic and electric power to the trailer and follow lock out/tag out safety procedures before entering the trailer or working on the CleenSweep® Tarp System components. Failure to do so may result in serious injury or death due to the large forces involved with the CleenSweep® Tarp System.**

IMPORTANT: Installing the CleenSweep® Tarp System requires some alterations to your trailer. Changes made without the approval of the trailer manufacturer may void the trailer's warranty.

CleenSweep® Tarp System Limited Warranty

This CleenSweep® Tarp System is warranted to the original purchaser to be free from defects in material and workmanship under normal use for a period of **one year** from the date of purchase. During the warranty period, and upon proof of purchase, the CleenSweep® Tarp System will be repaired or replaced with the same or similar model.

IT IS EXPRESSLY AGREED THAT THIS SHALL BE THE SOLE AND EXCLUSIVE REMEDY OF THE BUYER. UNDER NO CIRCUMSTANCES SHALL KEITH MANUFACTURING CO. BE LIABLE FOR ANY COSTS, LOSS, EXPENSE, DAMAGE, SPECIAL DAMAGES, INCIDENTAL DAMAGES, OR CONSEQUENTIAL DAMAGES ARISING DIRECTLY OR INDIRECTLY FROM THE USE OF THE CLEENSWEEP TARP SYSTEM. WHETHER BASED UPON WARRANTY, CONTRACT NEGLIGENCE OR STRICT LIABILITY.

THE WARRANTY AND LIMITS OF LIABILITY CONTAINED HEREIN ARE IN PLACE OF ALL OTHER WARRANTIES AND LIABILITIES, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY KEITH MANUFACTURING CO. AND EXCLUDED FROM THIS WARRANTY. FURTHER, KEITH MANUFACTURING CO. DOES NOT WARRANT THAT THE CLEENSWEEP TARP SYSTEM COMPLIES WITH LOCAL, MUNICIPAL, STATE OR FEDERAL CODES, IF ANY AND THE BUYER ALONE IS RESPONSIBLE FOR ANY KNOWLEDGE OF ANY COMPLIANCE WITH ANY SUCH CODES.

This warranty shall not apply to any parts that; (a) have been repaired or altered outside of the CleenSweep® Tarp System; (b) have been subjected to misuse, negligence or accident; or (c) have been used or installed in a manner contrary to CleenSweep® Tarp System instructions.

In certain circumstances some states do not allow the exclusion or limitation of incidental damages, some or all of the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may have other rights that vary from state to state.

If this warranty violates law: To the extent any provision of this warranty contravenes the law of any jurisdiction, that provision shall be inapplicable in such jurisdiction and the remainder of the warranty shall not be affected thereby.

Notice: To validate all warranties, a warranty registration card must be completed and returned to KEITH Manufacturing Co. within ten days of purchase. If you did not receive a warranty registration card, contact your dealer immediately.

Warranty Registration Card

Note: To validate the warranty, the registration information must be filled out completely and returned to KEITH within ten (10) days of purchase and/or installation.

Please fill out the Warranty Registration form on our website at www.KeithWalkingFloor.com or fill out the Warranty Registration Card below and mail or email it to:

KEITH Manufacturing Co.
401 NW Adler St.
Madras, OR 97741

TechDept@KeithWalkingFloor.com

This warranty registration card must be completed and on file at KEITH in order for the warranty period to begin on the purchase date. If no purchase date is registered, the beginning of the warranty will automatically revert to the manufacture date.

Name / Company Name: _____

Address: _____

City, State / Prov.: _____ Postal Code: _____

Country:_____

Phone: _____

E-Mail: _____

SYSTEM DATA:

Date of Purchase: _____

Model / Serial Number: _____

Purchased From: _____

Type of Material Loaded/Unloaded: _____

I have fully read the KEITH Manufacturing Co. warranty information and fully understand and agree to the terms of the warranty.

Name: _____ Date: _____ Signature: _____

1.0 Safety

1.1 General Safety

1.1.1 Intended Function and Expected Use:

1.1.1.1. The KEITH® CleenSweep® system is a winch system primarily intended to restage clean out systems used in live floor trailers. The system is supplied as a kit primarily intended for installation into mobile trailers or truck bodies. It is powered by either a hydraulic motor or an electric motor. The basic system is controlled by a mechanically-actuated pull valve or an electric push button. The system is compatible with options and accessories to improve performance. For example, it can be electrically controlled by hardwired or wireless remote.

1.1.2 Improper Use

1.1.2.1. This equipment has been manufactured utilizing state-of-the-art technology in accordance with acknowledged safety regulations. Nevertheless, dangerous situations could arise from improper use, which could endanger life and limbs of personnel and cause damage to the equipment and other assets. This equipment may only be used for its intended purpose. It may only be operated in impeccable technical condition and in accordance with the proper use and this user manual. Problems, which could affect safety, must be resolved immediately. The manufacturer is not liable for any damage caused by improper use or arbitrary modifications. The installation, commissioning, operation, and maintenance instructions must be followed as outlined in this manual.

1.1.2.2. Personnel must not enter the danger zone(s) when the system is enabled. Specifically, nobody should be inside, under, or behind the trailer in the unloading zone during operation. Additionally, no one should be in a full or filling trailer. Lock-out and tag-out procedures must be followed before accessing the drive area.

1.1.2.3. The hydraulic power source must not exceed the pressure and flow ratings. A relief valve is installed for the CleenSweep® system, but a relief valve should be installed for the overall system to ensure the maximum pressure is not exceeded.

1.1.2.4. Control circuitry must not be altered or bypassed.

1.1.2.5. Safeguards must not be altered or bypassed.

1.1.2.6. The user and system designer must understand the characteristics and safe handling requirements of the material that is being conveyed.

1.1.2.7. Bulk materials are by nature unstable and flowable. Avoid burial by avoiding contact with the material.

1.1.3 Training

1.1.3.1. Operators must read and understand this manual before operating or maintaining the machine. Only qualified, trained personnel may execute commissioning, operation, and maintenance of the system.

1.1.4 Personal Protective Equipment

1.1.4.1. Always wear protective equipment appropriate for risks associated with each phase of the system's life, including transportation, installation, assembly, operation, inspection, maintenance, and dismantling, disabling, and scrapping. As a minimum, this includes the following personal protective equipment:

- Safety Glasses
- Gloves
- Helmets
- Hearing Protection
- Protective/Traction Shoes
- Welding/Grinding Protection
- Thermal Protection (i.e. Coats)

1.1.5 Hydraulic Oil Safety

1.1.5.1. See the Material Safety Data Sheet (MSDS) for the oil used in your system for further information about hydraulic oil safety.

1.1.5.2. In an accident involving high pressure equipment, hydraulic oil may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, due to the system's driving force, material injected into a fi ngertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

1.1.5.3. Do not use high pressure systems in the vicinity of flames, sparks, and hot surfaces. Use only in well ventilated areas.

1.1.5.4. Use only designated appropriate fill and drain ports for the oil.

1.2 Design / Installation Safety

1.2.1 Electric Components and Installation

1.2.1.1. KEITH recommends connecting to earth ground (whenever possible).

1.2.1.2. Wiring must be connected consistent with local codes and regulations, including electromagnetic interference regulations.

1.2.1.3. Adequate electric overcurrent protection must be provided.

1.2.2 Hydraulics

1.2.2.1. Hydraulic piping and components must be constructed of materials that are rated for system pressures, and must be installed with best industry practices. Follow all pipe, tubing, fitting, and hose manufacturer installation and routing guidelines.

1.2.2.2. Hydraulic piping should be supported and isolated from vibration. Contact KEITH for recommendations on installation.

1.2.2.3. Place protective shrouds around the hydraulic tubing in any areas that may have operators or people frequently nearby.

1.2.3 Controls

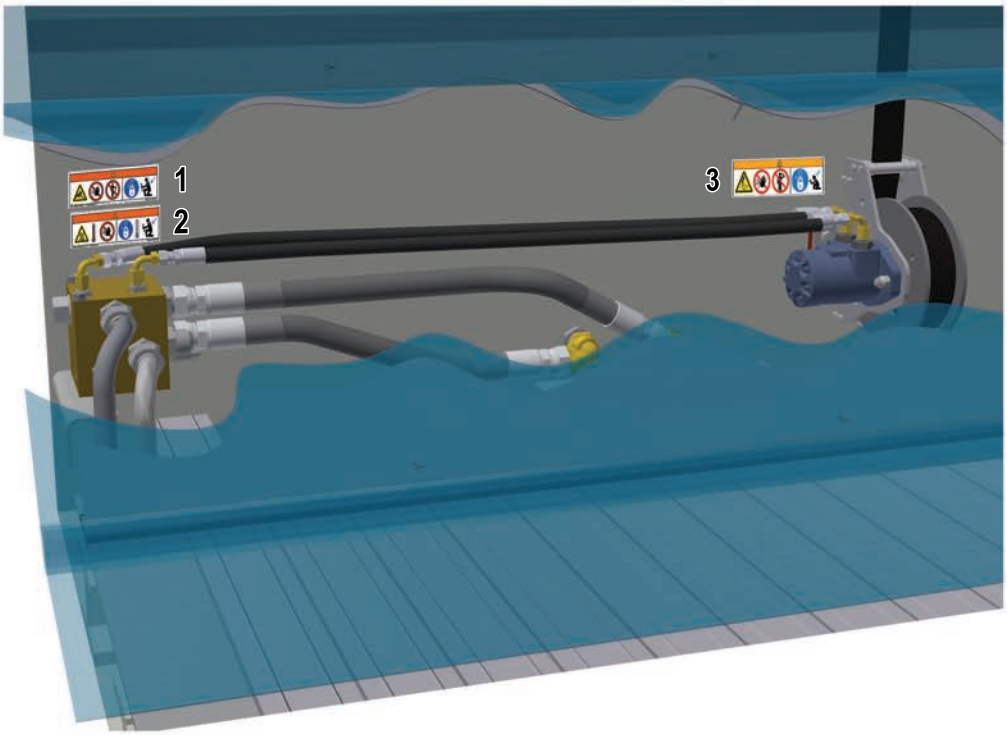
1.2.3.1. The control panel must be located such that it is easily accessible for all sizes and capacities of people, and allows the operator to move freely (whenever applicable).

1.2.3.2. Control devices must be located outside of danger zones, such that any exposed persons in danger zones are visible from the control station.

1.2.3.3. An acceptable means must be provided to monitor the status and movement of the load.

1.3 Marking of Machinery

1.3.1 Safety Decals



Decal Kit # 84804378

KEITH Manufacturing Co. www.KeithWalkingFloor.com 84804377 Rev B

Worded Old - 2019	Wordless 2020 - Future	Description
		Hydraulic pressure can cause serious injury. Stay clear during operation. Lockout/tagout before servicing.
		Hot surface can cause severe burns. Do not touch. Turn off and lock out main power disconnect and allow to cool before servicing.
		Rotating parts and shaft can cut or entangle causing serious injury. Stay clear when in operation. Lockout/tagout before servicing.

* Some or all of these safety decals may apply and be adhered to this system.

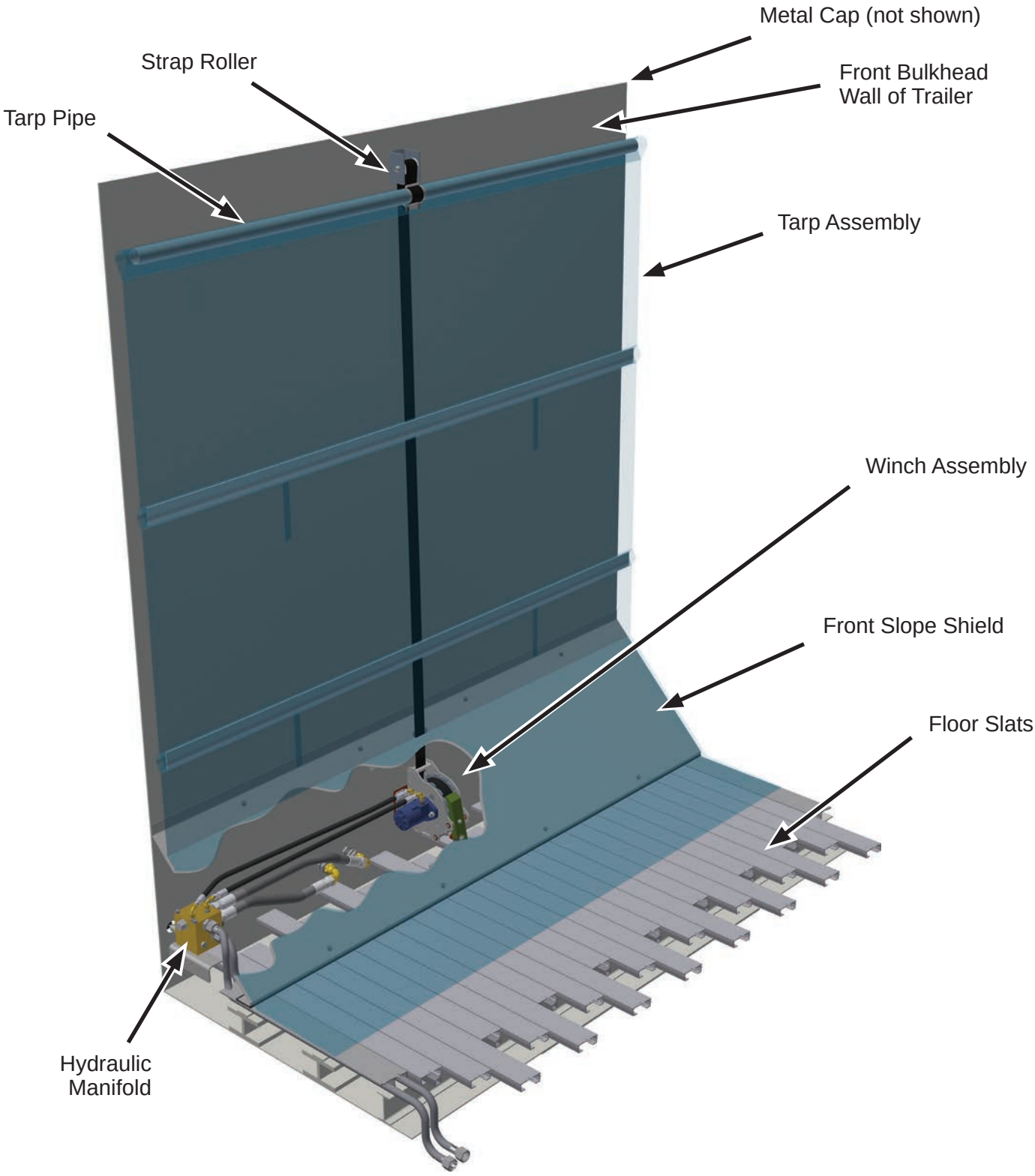
2.0 Specifications

2.1 System

CleenSweep® Hydraulic 24	
Dimensions	10.9”W x 10.5”H x 11”D [277 mm x 267 mm x 290 mm]
Weight	30 lbs [13.6 kg]
Operating Temperature	-10-…120 F [-23…50 C]
Hydraulic Pressure into Manifold	3000 psi [207 bar] Max
Flow Rate into the Manifold	15 gpm [57 lpm] Max
Recommended Hydraulic Pressure into Winch	1800 psi [124 bar]
Recommended Flow Rate into Winch	2.5 gpm [9.5 lpm] or 5.0 gpm [19 lpm]

* Operating pressure and flow rate are determined by the specifications for the manifold valving.

2.2 Component Identification



3.0 Installation

3.1 Tools

Tools Needed	Where Used
End wrenches: Metric	Various locations
Ratcheting driver: Metric	Various locations
Hex (Allen) wrenches	Various locations
Power Drill & Drills:	
3/8” [9.5 mm]	Tarp top pipe for U-bolt attachment
7/16” [11 mm]	Mounting winch, strap roller, manifold bracket (opt. – may be welded on)
1-1/4” [32 mm] hole saw (optional)	Manual valve clearance hole through trailer wall (if manifold is mounted below front shield)
Welding equipment (optional)	Mounting manifold bracket, winch mounting plate, strap roller bracket (may be bolted on)
Cutting tools (optional)	Cutting access panels in trailer wall or front shield (if necessary)

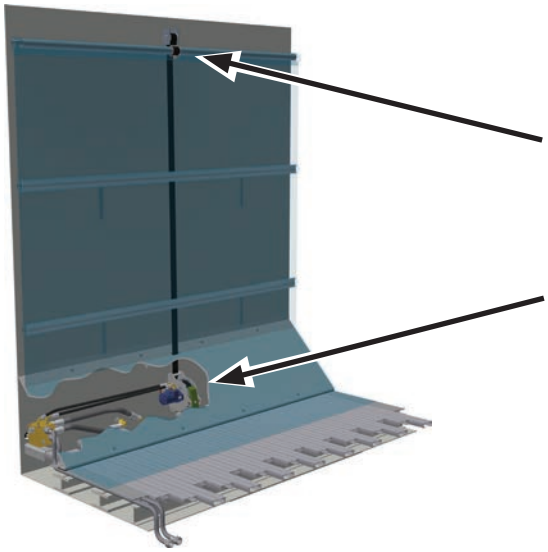
3.2 Materials Needed

Materials - Not Supplied by Keith	
MATERIAL	**WHERE USED**
Hoses/tubing:*	*Hose/tube lengths will vary depending on installation
-6 (3/8”) [10 mm] hose/tube with Female -6 (3/8”) 37º JIC (ISO 8434-2) each end	MANIFOLD – TO – WINCH MOTOR: PRESSURE WINCH MOTOR – TO – MANIFOLD: RETURN
-16 (1”) [25 mm] hose/tube with female -16 (1”) 37º JIC (ISO 8434-2) fitting on manifold end	PUMP – TO – MANIFOLD MANIFOLD – TO – DRIVE: PRESSURE DRIVE – TO – MANIFOLD: RETURN MANIFOLD – TO – TANK
Fittings:*	*Required fittings will vary depending on installation
Hose/tube clamps:*	*Required clamps will vary depending on installation
Fasteners:*	*Fastener lengths and required quantities will vary depending on installation
3/8” [M10] bolts, nuts, washers, locking nuts (or plain nuts w/locking washers)	Mounting strap roller (3 each) and manifold bracket (2 each); use grade 5 (class 8.8) or stronger fasteners.
1/2” [M12] bolts, nuts, washers, locking nuts (or plain nuts w/locking washers)	Mounting winch (2 each); use grade 8 (class 10.9) or stronger fasteners.
Rivets	Securing tarp to pipe/UHMW strips
Flanged button head or dome head bolts, flat washers and nylock nuts	Securing tarp to UHMW strips
Recommended Tarp Stiffeners:	
2” [50 mm] diameter lightweight metal conduit pipe	Top pipe (1); Length: 2” [50 mm] shorter than trailer interior width
1-1/2” [40 mm] diameter lightweight metal conduit pipes -or- 1/4” x 3” [6 mm x 76 mm] UHMW plastic strips	Middle pipes or strips (2); Length: 2” [50 mm] shorter than trailer interior width
Wiring:*	Wiring length will vary depending on installation
14 AWG 2-conductor	Electric-controlled systems

* Hose lengths and tubing bends and lengths will vary depending on the manifold and winch mounting locations and therefore should not be fabricated until the winch and manifold are mounted and measurements can be taken. Additional fittings (elbows, reducers, adapters, etc…) may be required depending on the particular installation.

3.3 Winch & Strap Roller Mounting Position Options

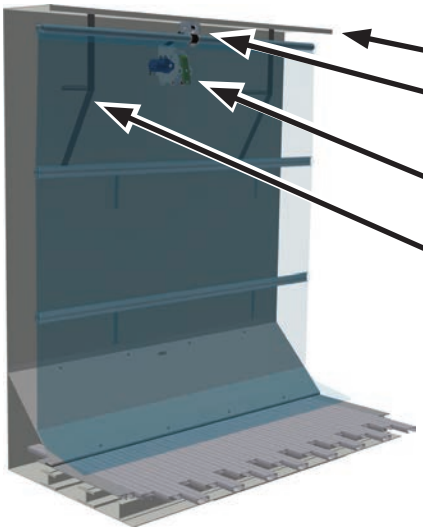
Low Mount



Strap Roller - attached to top of front wall or on metal cap

Winch - under slope shield

High Mount



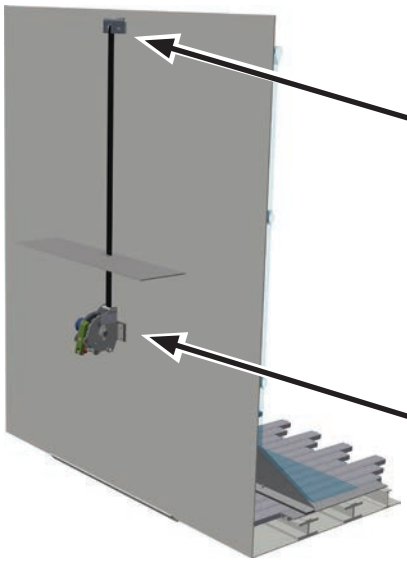
Metal Cap

Strap Roller - attached to metal cap

Winch

Guide Rails - short

Outside Mount



Strap Roller - through top of front wall

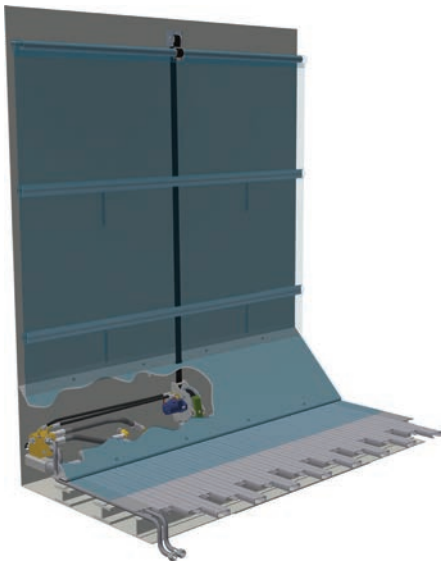
Winch

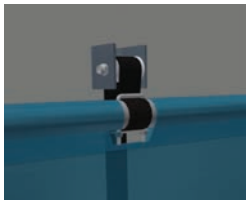
WARNING: Always disconnect hydraulic and electric power to the trailer and follow lock out/tag out safety procedures before entering the trailer or working on the CleenSweep® Tarp System components. Failure to do so may result in serious injury or death due to the large forces involved with the CleenSweep® Tarp System.

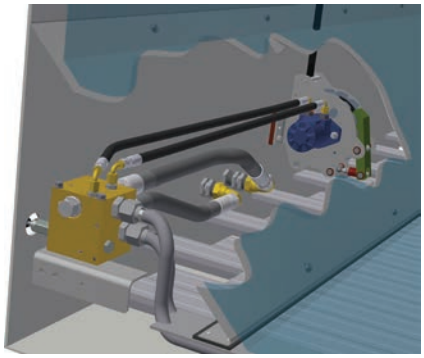
3.4 Hydraulic Winch & Strap Roller Installation

3.4.1 Option 1: Low Mount - Winch below front slope shield, strap roller near top of wall

Low Mount - (Winch and manifold mounted below the front shield) Requires the use of the strap roller assembly mounted near the top center of the front wall.



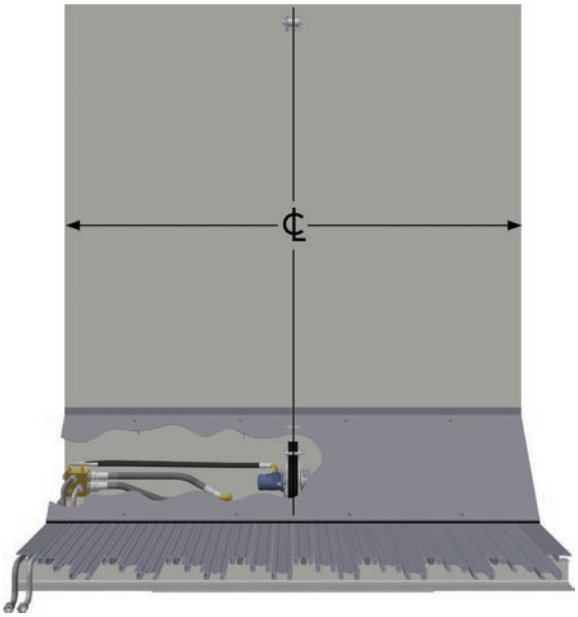


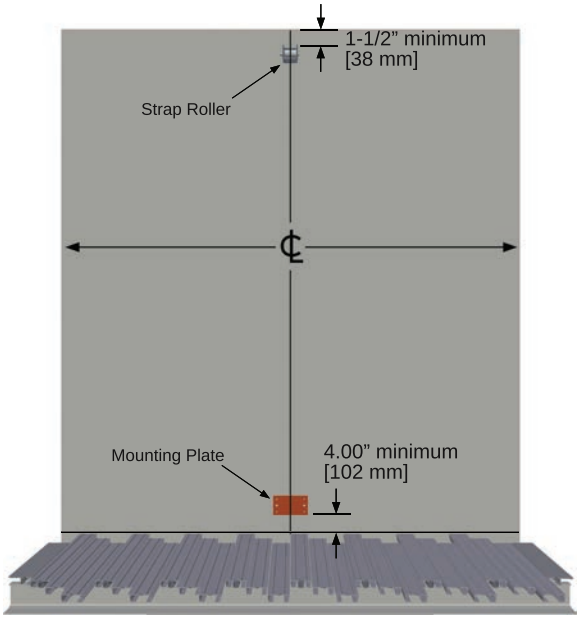


3.4.1.1. Winch Installation Below Slope Shield

NOTE: Front wall of trailer may need to be reinforced to withstand the forces created by the winch.

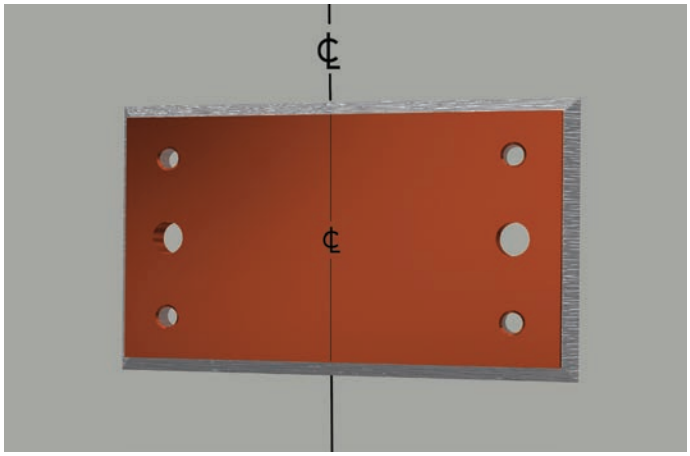
1. Locate and mark a centerline up the front wall of the trailer. **NOTE:** It is crucial that strap roller and the roll of strap on the winch is mounted in the absolute center of the trailer. If the winch is not mounted square, it will put uneven pressure on the tarp strap and the system will not function properly.



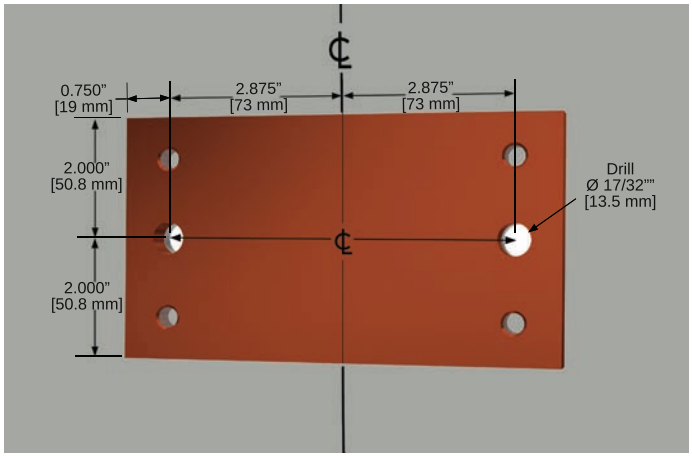


2. The winch must not interfere with the operation of the floor slats, and there should be a 1” [25mm] minimum clearance between the winch and slats. Ensure all moving parts of the winch and floor have adequate clearance. Measure 4” [102 mm] up from the top of the floor slats to locate the bottom of the mounting plate.

   A. WELD ATTACHMENT: Remove the winch mounting plate from the winch assembly, center on the front wall and weld. Then re-attach winch assembly to mounting plate using the (4) M10 bolts.

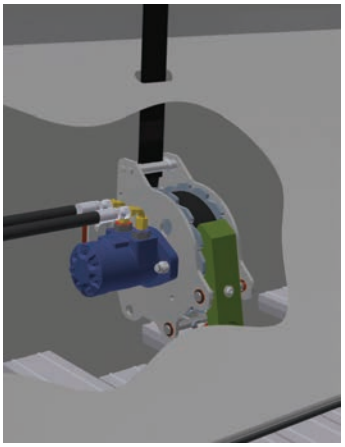


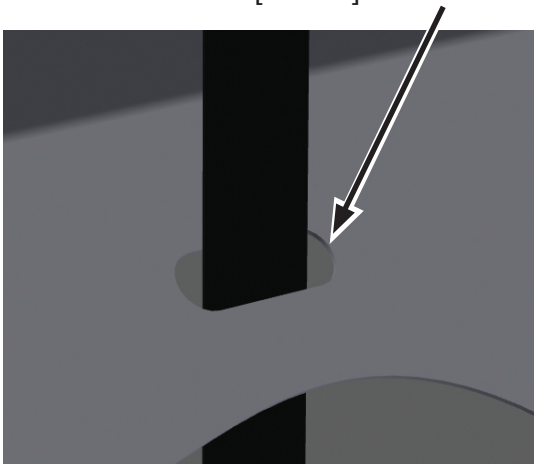
   B. BOLT ATTACHMENT: Transfer the winch mounting plate mounting bolt hole pattern to the wall and drill (2) 17/32” [13 mm] bolt clearance holes. Then attach the entire winch assembly to the trailer wall using (2) 1/2” grade 8+ [M12 class 10.9+] locking fasteners (not included).



3. Front shield modification: It is recommended that the front shield be hinged or fitted with a door/panel to gain access to the winch after it is installed to facilitate adjustment, inspection and maintenance.

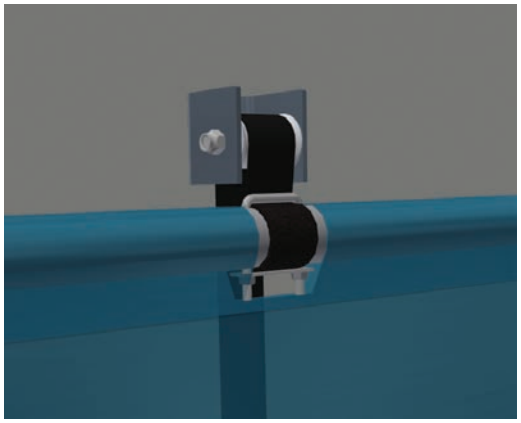
4. A slot must be cut through the front shield for the strap to pass through. The slot must be centered along the path of the strap from the winch to the strap roller assembly and **all sharp edges removed or covered to prevent damage to the strap**. Maintain at least 1/2” [13 mm] clearance all around the strap.



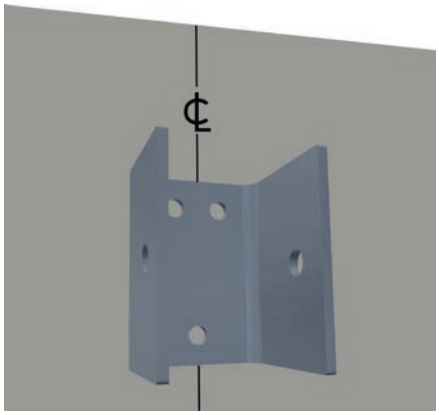


3.4.1.2. Strap Roller Assembly Installation Inside Trailer Near Top of Front Wall

NOTE: Front wall of the trailer may need to be reinforced to withstand the forces created by the winch.



1. Locate the centerline at the top of the front wall of the trailer.



2. Measure down a minimum of 1-1/2” [38 mm] from the top to locate the strap roller mounting bracket.
3. Center the strap roller bracket with the two mounting holes toward the top of the wall and weld in place or transfer the strap roller bracket bolt pattern to the wall and drill (3) 7/16” [11 mm] bolt clearance holes.
4. Attach the strap roller to the front wall using (3) 3/8” grade 5+ [M10 class 8.8+] locking fasteners.

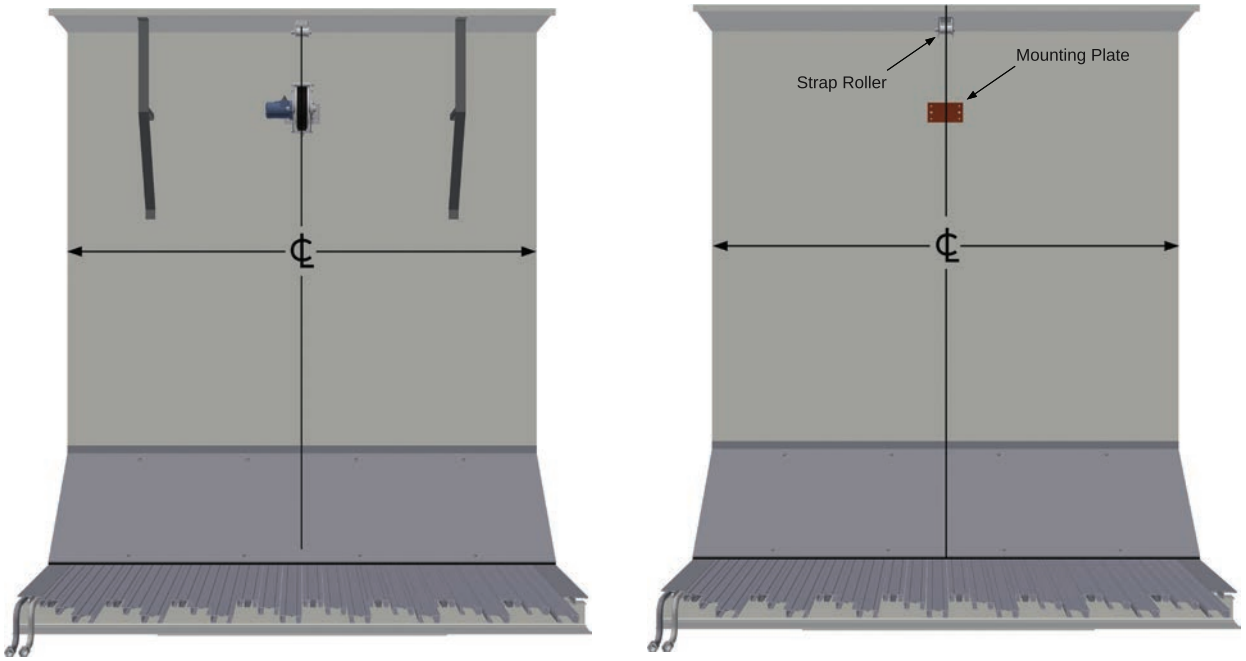
3.4.2 Option 2: High Mount - Winch near top inside of trailer, strap roller on cap plate

High Mount - Guide rails and a metal cap plate (not supplied by KEITH Manufacturing Co.) can be installed to allow the tarp to be pulled up higher in the front of the trailer. Doing so will reduce the possibility of material getting behind the tarp. A strap roller assembly is required, because the angle of the strap needs to change direction from vertical to horizontal when the tarp is fully extended. Mount the winch near the top center of the front wall of the trailer. The winch should be mounted with the strap up. Ensure all moving parts of the winch have adequate clearance.

3.4.2.1. Winch Installation Inside Trailer Near Top of Front Wall

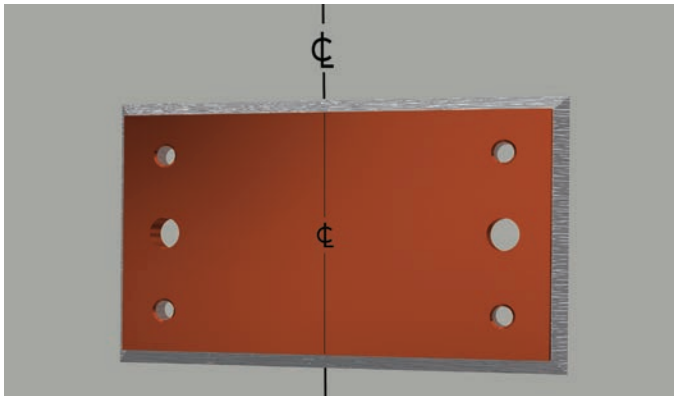
NOTE: Front wall of trailer may need to be reinforced to withstand the forces created by the winch.

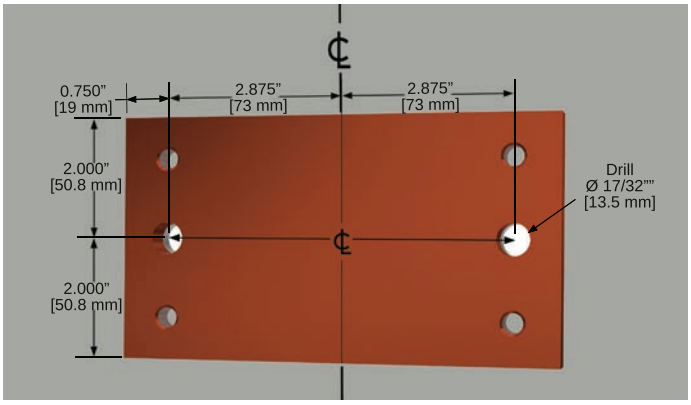
1. Locate and mark a centerline up the front wall of the trailer. NOTE: It is crucial that strap roller and the roll of strap on the winch is mounted in the absolute center of the trailer. If the winch is not mounted square, it will put uneven pressure on the tarp strap and the system will not function properly.



A. WELD ATTACHMENT: Remove the winch mounting plate from the winch assembly, center on the front wall and weld. Then re-attach winch assembly to mounting plate using the (4) M10 bolts.

B. BOLT ATTACHMENT: Transfer the winch mounting plate mounting bolt hole pattern to the wall and drill (2) 17/32" [13 mm] bolt clearance holes. Then attach the entire winch assembly to the trailer wall using (2) 1/2" grade 8+ [M12 class 10.9+] locking fasteners (not included).

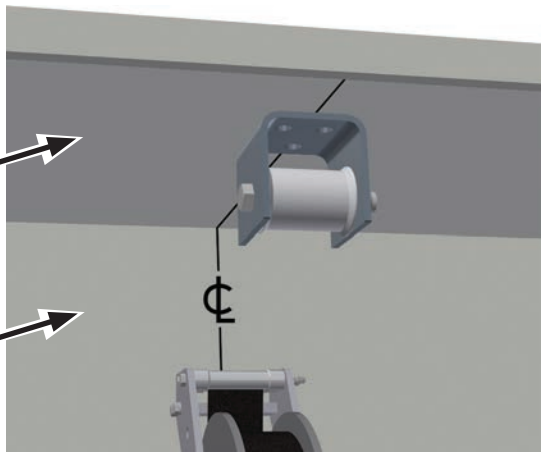


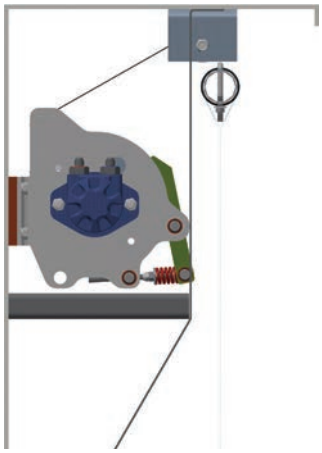


3.4.2.2. Strap Roller Assembly Installation on Metal Cap Plate

NOTE: Front wall of the trailer and cap plate may need to be reinforced to withstand the forces created by the winch.

1. Locate and mark the centerline of the cap plate.





2. Locate the strap roller bracket far enough out from the front wall so that the tarp will hang straight down along the outside of the tarp guide rails when it is fully retracted. (See image)
3. Center the strap roller bracket with the two mounting holes toward the rear of the trailer and weld in place or transfer the strap roller bracket bolt pattern to the wall and drill (3) 7/16" [11 mm] bolt clearance holes.
4. Attach the strap roller to the cap plate using (3) 3/8" grade 5+ [M10 class 8.8+] locking fasteners.

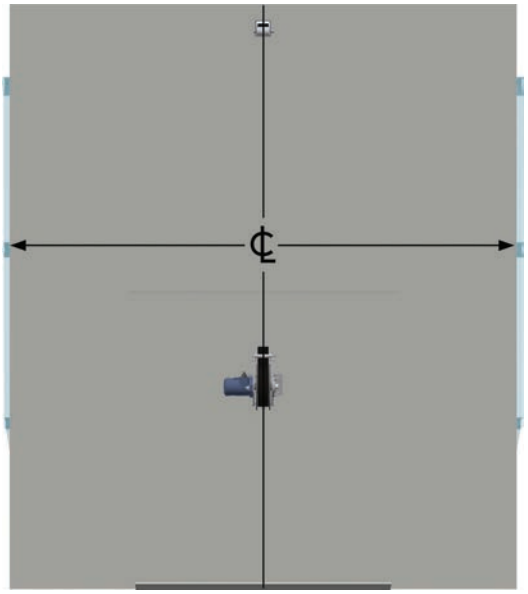
3.4.3 Option 3: Outside Mount - Winch on outside of trailer, strap roller through front wall

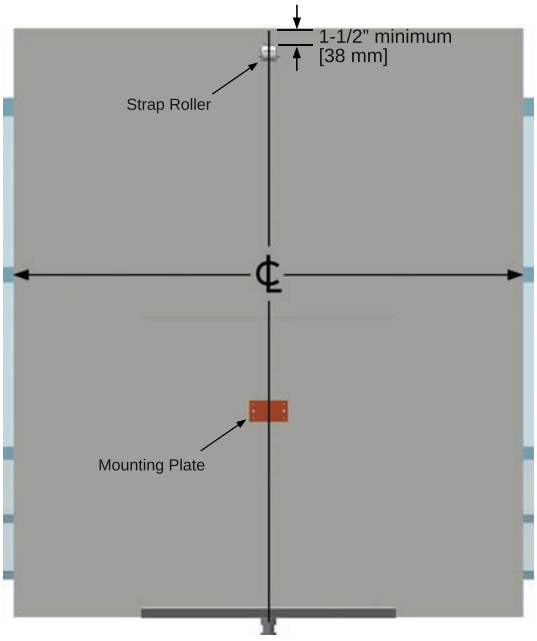
Outside Mount - (Winch mounted on the outside of the front trailer wall) Requires the use of the strap roller assembly mounted in a hole cut through the front wall near the top center.

3.4.3.1. Winch Installation Outside of Front Trailer Wall

NOTE: Front wall of trailer may need to be reinforced to withstand the forces created by the winch.

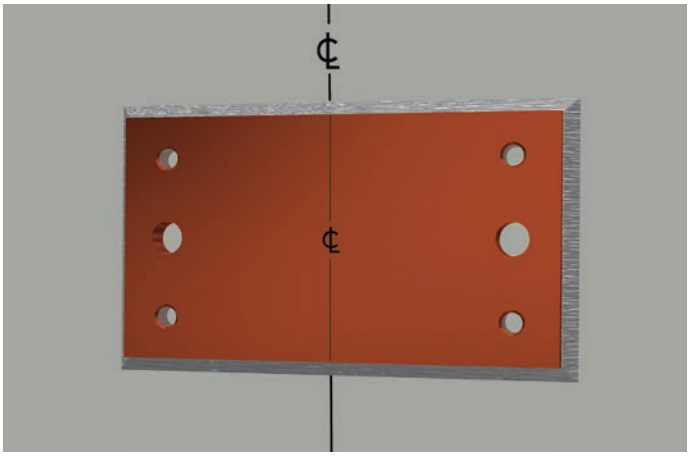
1. Locate and mark a centerline up the front wall of the trailer. NOTE: It is crucial that strap roller and the roll of strap on the winch is mounted in the absolute center of the trailer. If the winch is not mounted square, it will put uneven pressure on the tarp strap and the system will not function properly.



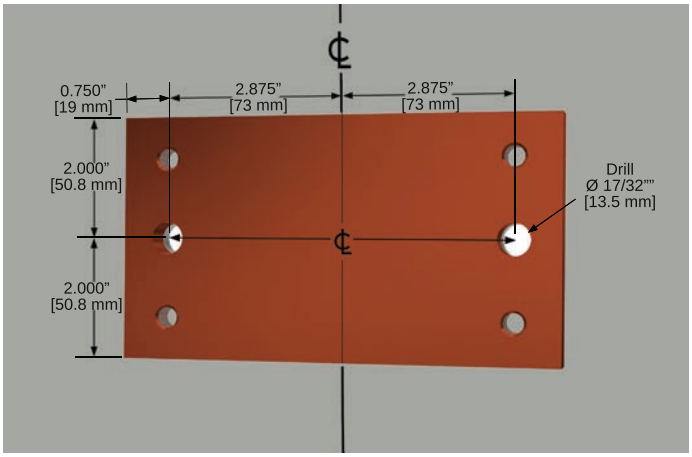


2. Ensure all moving parts of the winch and floor have adequate clearance.

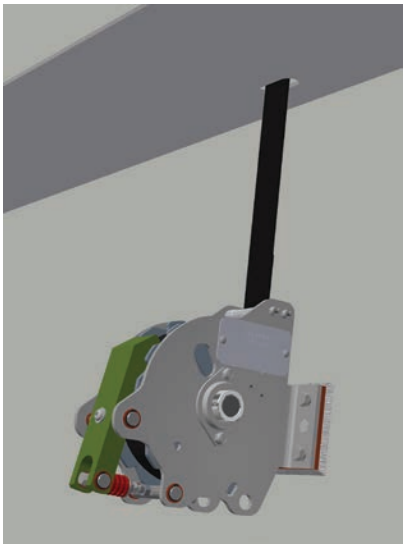
   A. WELD ATTACHMENT: Remove the winch mounting plate from the winch assembly, center on the front wall and weld. Then re-attach winch assembly to mounting plate using the (4) M10 bolts.

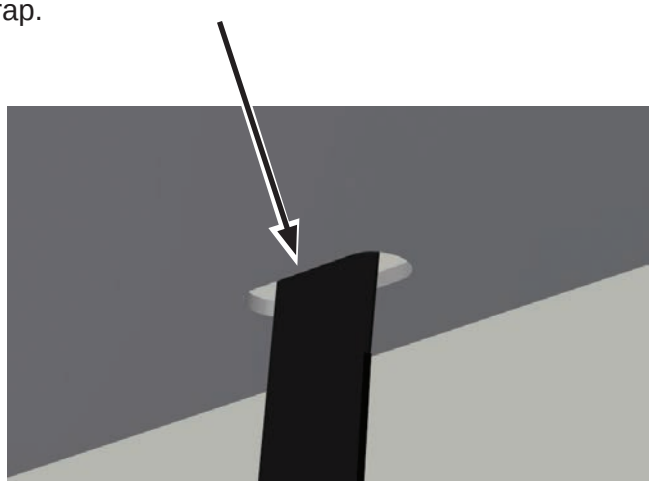


   B. BOLT ATTACHMENT: Transfer the winch mounting plate mounting bolt hole pattern to the wall and drill (2) 17/32” [13 mm] bolt clearance holes. Then attach the entire winch assembly to the trailer wall using (2) 1/2” grade 8+ [M12 class 10.9+] locking fasteners (not included).



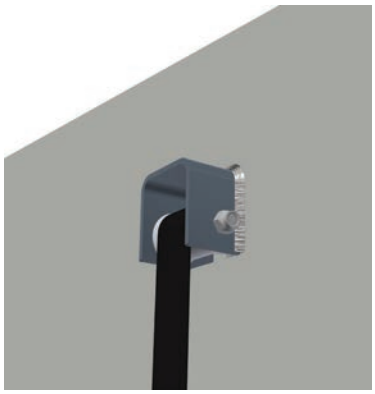
3. If the winch is mounted below the front wall platform, an opening must be made for the strap to pass through. The slot must be centered along the path of the strap from the winch to the strap roller assembly and **all sharp edges removed or covered to prevent damage to the strap.** Maintain at least 1/2” [13 mm] clearance all around the strap.

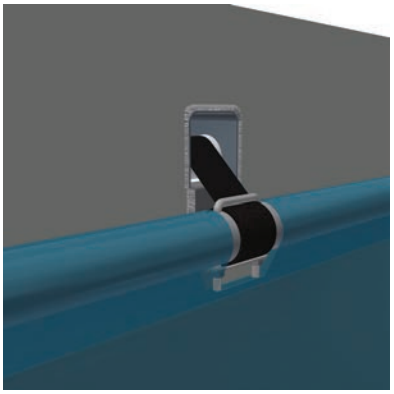




3.4.3.2. Strap Roller Assembly Installation Through Top of Front Wall

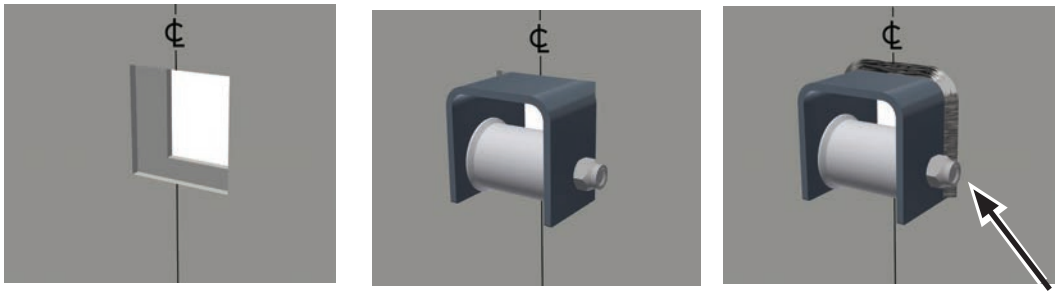
NOTE: Be sure to order appropriate bracket (aluminum, stainless steel) for welding.





NOTE: Front wall and/or cap plate of the trailer may need to be reinforced to withstand the forces created by the winch.

1. Locate the center at the top of the front wall of the trailer.
2. Measure down a minimum of 1-1/2" [38 mm] from the top and cut a clearance hole completely through the front wall for the 3 in x 3 in [80 mm x 80 mm] strap roller mounting bracket.
3. Center the strap roller bracket in the cut out hole and weld in place.

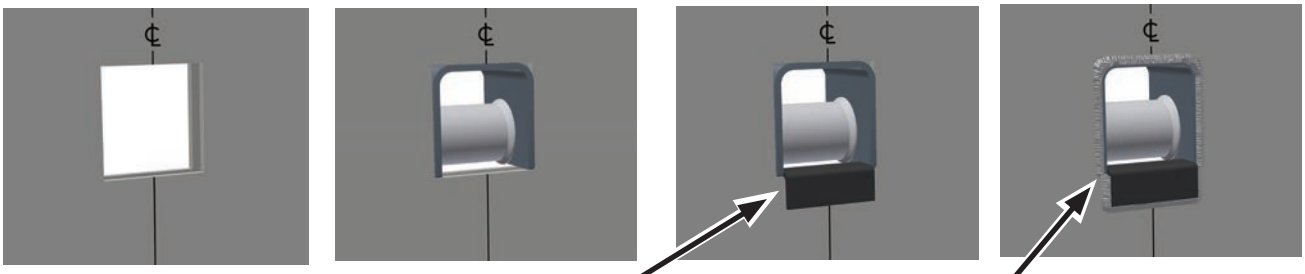


View from Outside Trailer Wall

Leave clearance gap around head of nut & bolt for tool access

4. Install angle on lower inside edge of cut hole. Round and smooth all edges and welds to ensure that the strap is not damaged by burrs or sharp corners.

View from Inside Trailer



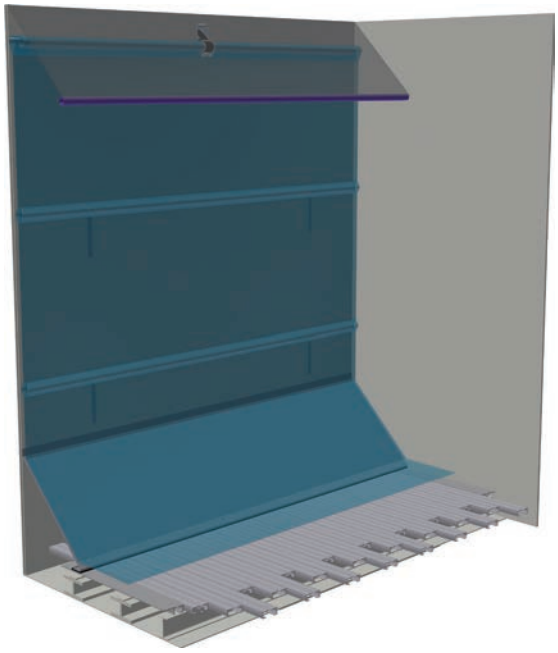
Smoothed angle

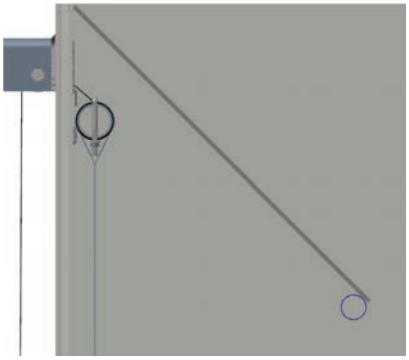
Remove all sharp edges from welds and around strap opening

3.4.4 Option for High Density or High Flow Materials

A. High Sided Trailer with Sloped Cap Plate:

- Prevents material from getting behind the tarp while loading and from getting stuck on top of cap plate.

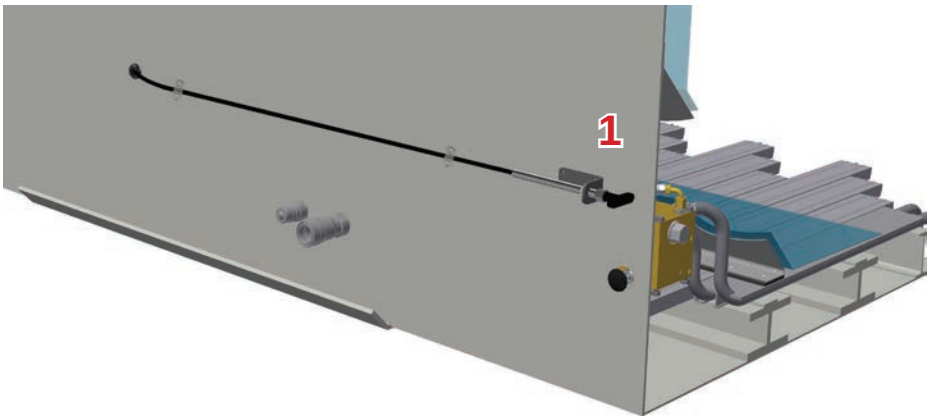


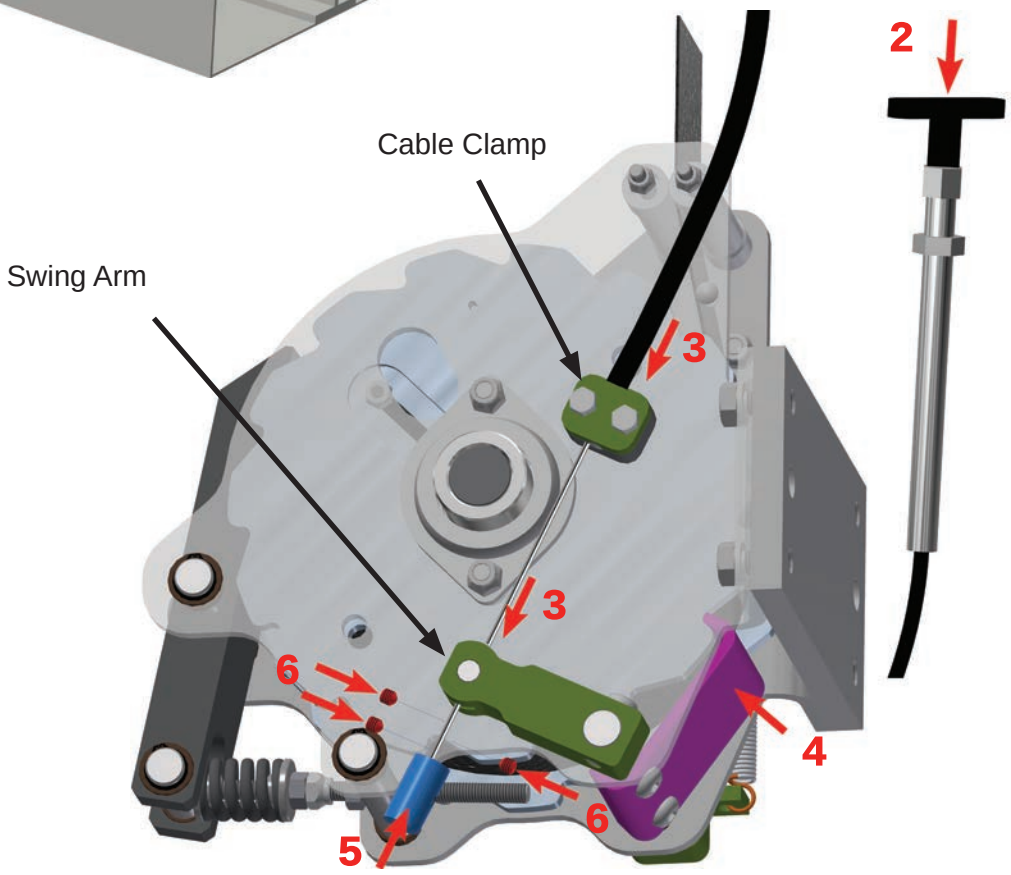


3.5 Winch Cable Lock Installation (Optional)

The cable lock retains the tarp in the current position while engaged and prevents it from extending.

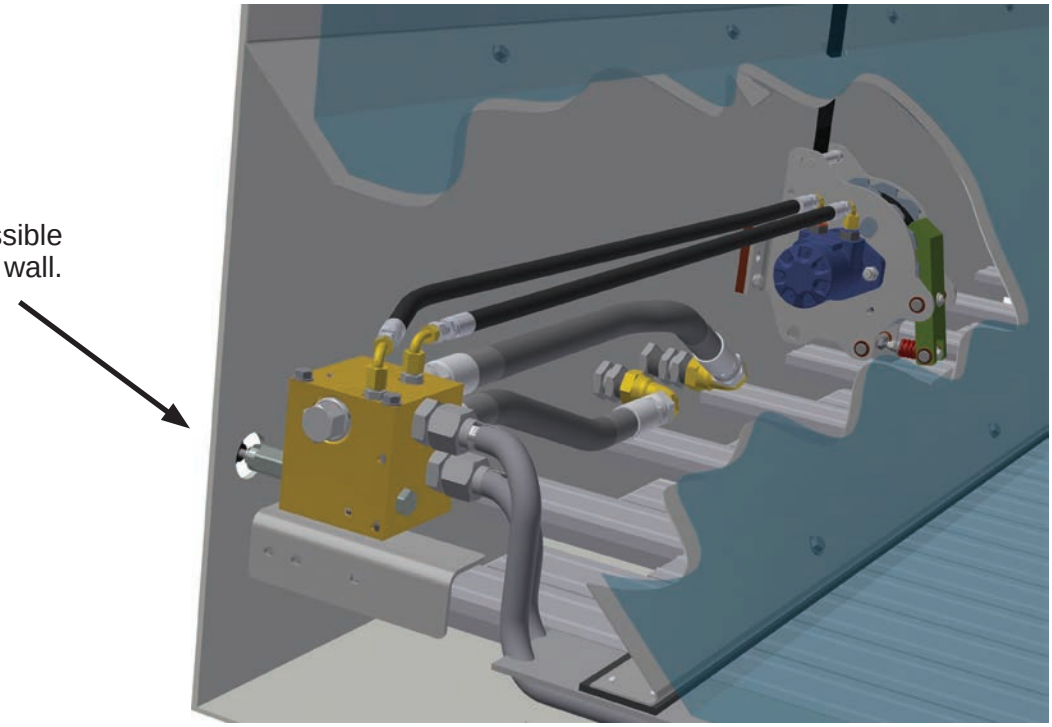
1. Install cable through trailer wall for easy access to the knob on the outside of the trailer. Make sure nothing impinges the cable. (minimum bend radius 6”)
2. Push the cable knob all the way in and twist to lock in place.
3. Feed the cable through the hole in the cable clamp and the hole in the swing arm. Push the cable through until the cable shroud is flush with the bottom edge of the cable clamp and tighten the clamp bolts (10mm wrench).
4. Rotate the lock lever until it fully seats in a spool notch.
5. Slide the cable stop over the exposed cable end and push it on until it is up against the swing arm, but ensure that the lock lever is still fully engaged in a spool notch.
6. Tighten the (3) set screws (use Loctite 243) (3mm hex key) to hold the cable stop securely in place.



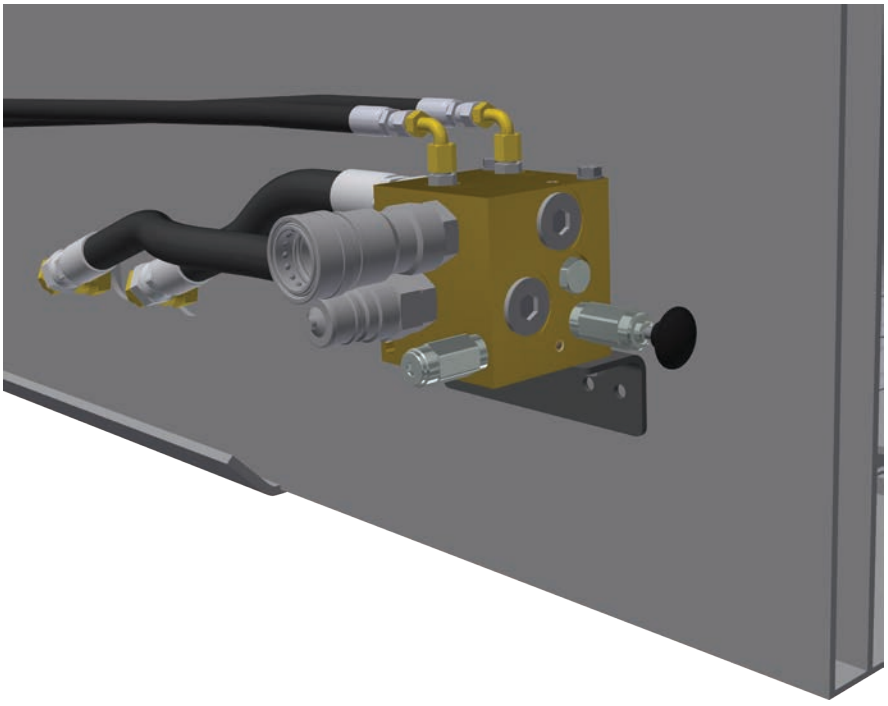


3.6 Manifold Installation

Knob needs to be accessible through hole in trailer wall.



Manifold mounted below front shield.



Manifold mounted on exterior of front wall on driver's side.

The manifold can be mounted in several locations based on installer preference, trailer construction and other installed equipment. The most common mounting locations are under the front shield, on the driver's side of the exterior front wall or on the driver's side landing gear.

See Section 3.6 for hydraulic plumbing installation considerations before choosing a location and installing the manifold.

7. If the manifold is mounted below the front shield it is recommended that the front shield or trailer wall be hinged or fitted with a door/panel to gain access to the manifold after it is installed to facilitate adjustment, inspection and maintenance.
8. Determine the orientation and location of the manifold and manifold fittings based on hose/tube routing requirements, clearance requirements and valve access.
   - When mounting the manifold under the front shield position, the manifold and manifold mounting bracket must be installed so that hydraulic hoses will not interfere with the operation of the floor slats. A clearance distance of 2-1/2" to 3" [64 mm to 76 mm] above the top of the slats works well.
   - Maintain at least 1" [25 mm] clearance between any part of the CleenSweep® system assembly and the floor slats.
9. Attach the manifold mounting bracket to the trailer by welding or using 3/8" [10 mm] nuts, washers, locking washers and bolts of appropriate length (not supplied).
10. The manual override knob on electric systems and the manual valve knob on manual systems must be accessible from the outside of the trailer. This will require a hole through the wall of the trailer or an appropriate access panel in the wall of the trailer if the manifold is mounted below the front shield.
    - For manual systems the knob may be removed temporarily and reattached on the opposite side of the wall after mounting the manifold with the valve body inserted through a 1-1/4" [32 mm] hole in the trailer wall.
    - An extension (not supplied) may be fitted to the manual valve stem if necessary. The valve stem knob may be removed and the valve stem is threaded 1/4"-20 UNC.
11. Attach the manifold to the manifold mounting bracket using the supplied 3/8"-16 X 5 3/4" bolts [M10 x 1.5 x 150 mm bolts] locking nuts, and washers.

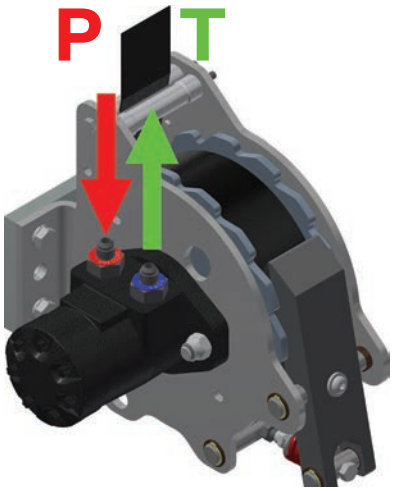
3.7 Hydraulic Plumbing Installation

The manifold is plumbed into the hydraulic system between the pump and the *WALKING FLOOR*® drive. All fluid traveling to and from the drive goes through the CleenSweep® system manifold first -this requires rerouting some of the existing trailer hydraulic plumbing. Careful planning is necessary before making any modifications to the existing trailer plumbing. Due to the wide variety of existing plumbing configurations and possible CleenSweep® system manifold installation options specific plumbing details including hose/tube lengths, etc are not provided.

All ports on the manifold are labeled. There are two ports each for the winch pressure, winch return, pressure out to floor, return from floor, and return to tank to allow several mounting/plumbing options. The manifold is shipped with one of the paired ports plugged but it may be necessary to swap plugs/fittings for certain installations.

- All components, lines and fittings must be kept absolutely clean to prevent contamination of the hydraulic system.
- Keith recommends installing a High-Pressure filter before the manifold.
- Ensure all hoses and tubes are adequately protected from moving parts and possible damage from material loading by providing at least 1" [25 mm] clearance from moving parts, firmly clamping hoses and tubing in place and using shields or guards where applicable. Use rubber grommets or equivalent protection when routing through cross-members, walls or other structures.
- Keep bends and fittings to a minimum.
- All hoses, tubes and fittings must be suitable for a working pressure of at least 3000 PSI [207 bar].

- The fittings supplied on the winch motor and manifold for the winch pressure and return lines are male -6 (3/8”) 37º JIC (ISO 8434-2).
- The fittings supplied on the manifold for the Pump-Pressure-In, Pressure-Out-To-Drive, Tank-Return-From-Drive and Return-To-Tank are male -16 (1”) 37º JIC (ISO 8434-2).
- Manifold ports are SAE O-ring ports of the same size as the hose/tube fitting.
- The Manifold is connected to the winch and the trailer hydraulic system according to the table below.



Manifold Plumbing	
MANIFOLD FITTING:	**CONNECTS TO:**
WINCH PRESSURE Male -6 (3/8”) 37º JIC (ISO 8434-2)	Winch motor pressure port (pressure port is the one that will cause counter-clockwise spool rotation when viewing winch from motor side) Male -6 (3/8”) 37º JIC (ISO 8434-2)
WINCH RETURN Male -6 (3/8”) 37º JIC (ISO 8434-2)	Winch Return Port Male -6 (3/8”) 37º JIC (ISO 8434-2)
PRESSURE IN Male -16 (1”) 37º JIC (ISO 8434-2)	Pressure line in from pump
PRESSURE OUT Male -16 (1”) 37º JIC (ISO 8434-2)	Pressure line out to floor drive
TANK Male -16 (1”) 37º JIC (ISO 8434-2)	Tank return line from floor drive
TANK Male -16 (1”) 37º JIC (ISO 8434-2)	Return line to tank

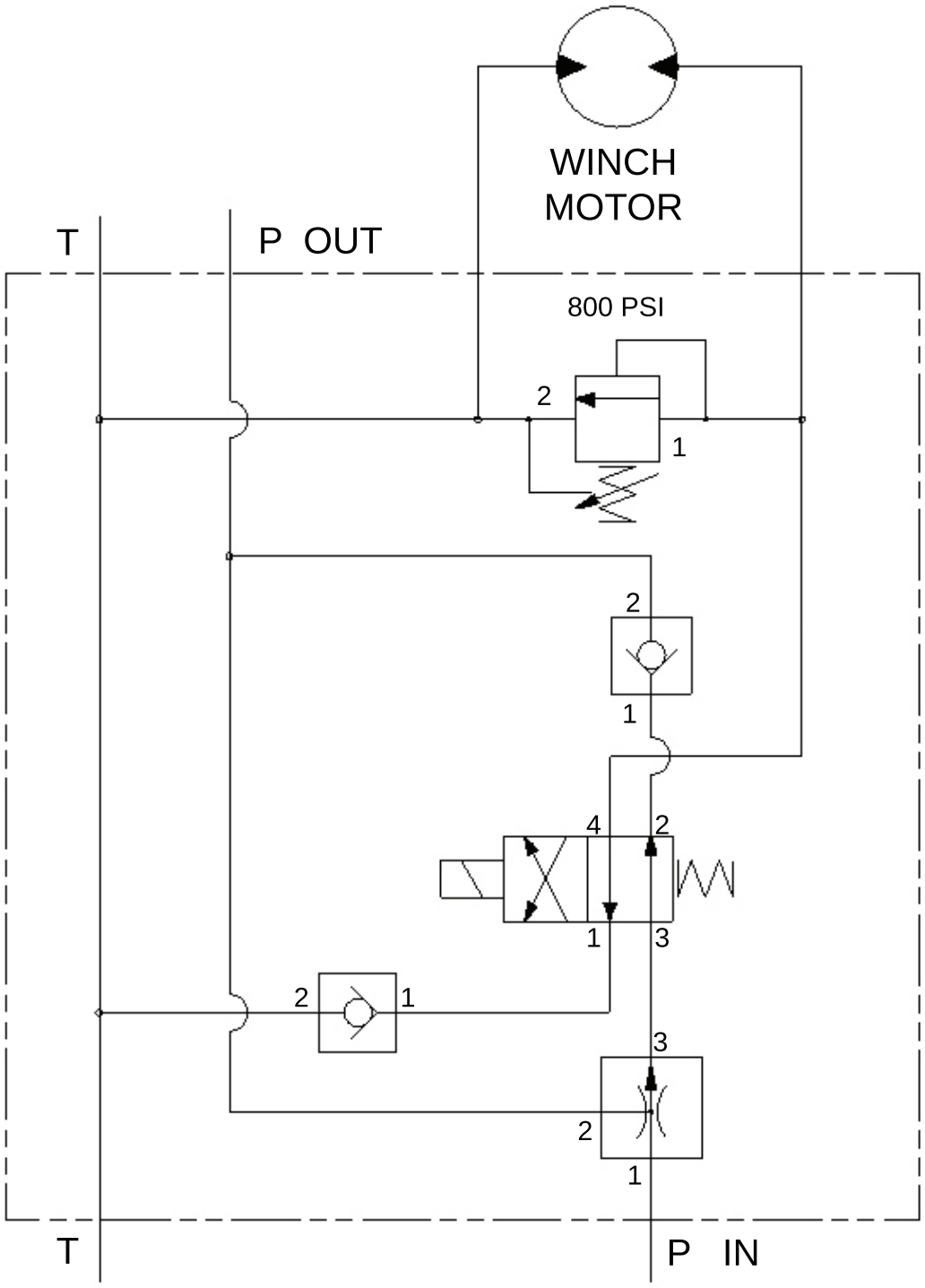
WARNING: Overtightening the -6 pressure and -6 return fittings that go into the motor can create cracks in the motor that will destroy the motor.

3.8 Hydraulic Fitting Torque Chart

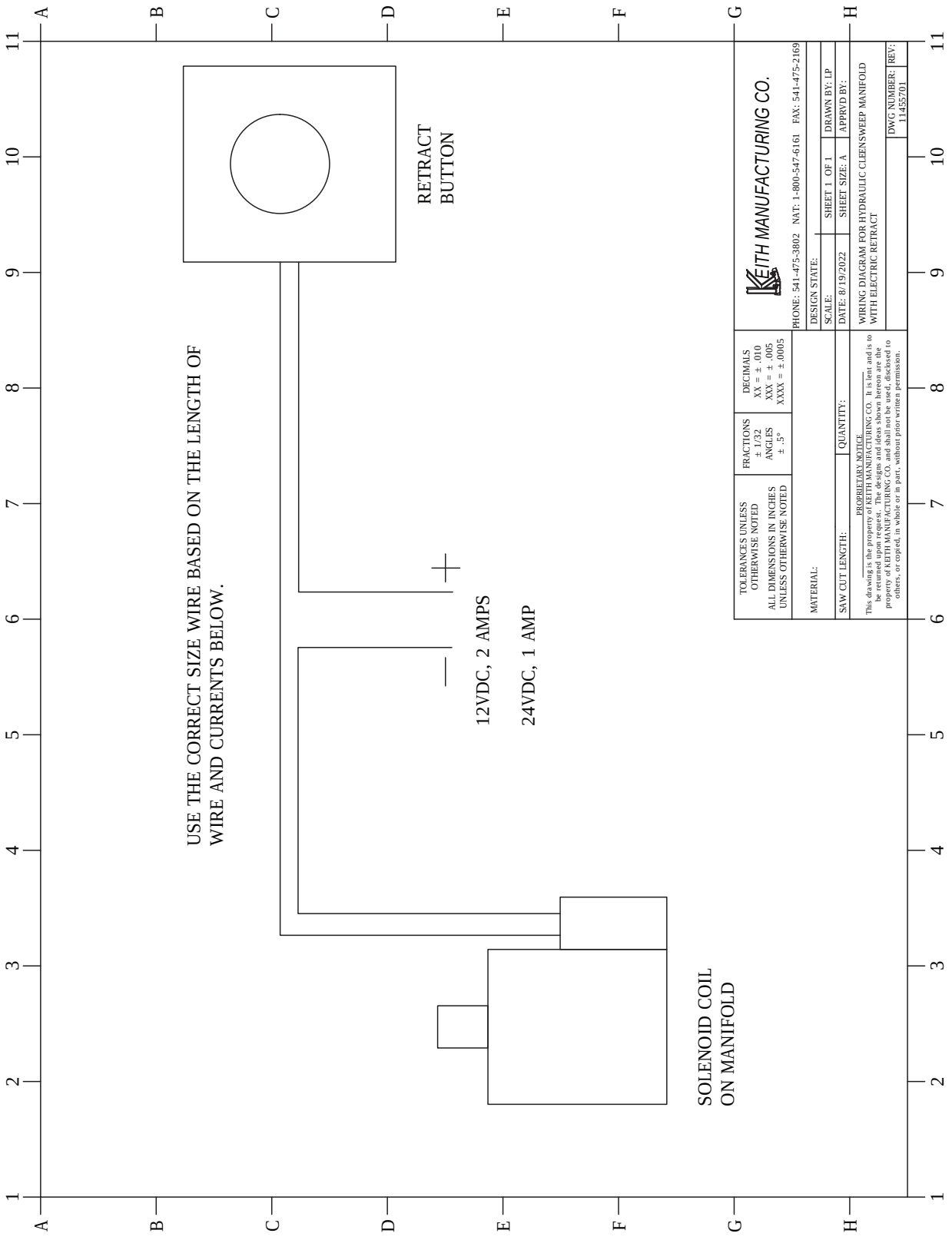
Hydraulic Fitting Torque Chart		
Sizes	**Tube Nuts**	**Swivel Nuts or Hose Ends**
-6 JIC	2-1/2 FFWR	2 FFWR
-8 JIC	2-1/2 FFWR	2 FFWR
-12 JIC	1-1/2 FFWR	1-1/2 FFWR
-16 JIC	1 FFWR	1-1/2 FFWR

- FFWR (Flats From Wrench Resistance)
- JIC (Joint Industry Council, 37º flare seating surface)

3.9 Control Manifold Hydraulic Schematic



3.10 Wiring of Electrical Controls (Electric Controls Option)



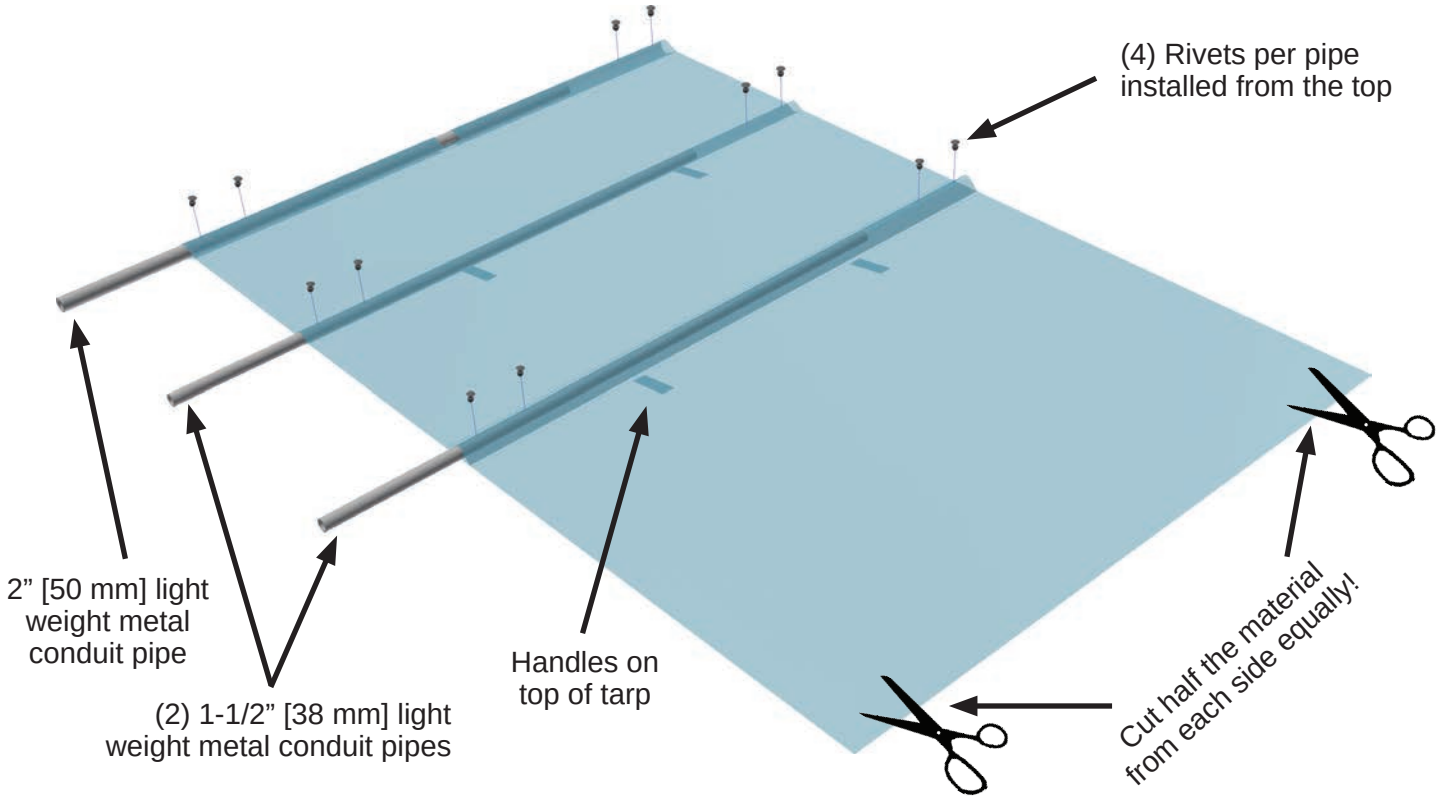
3.11 Tarp Assembly, Installation & Adjustment

Please note that pipes, strips and fasteners are not supplied by KEITH Manufacturing Co. For the top pocket, located at the top of the tarp when fully retracted and hanging, (1) 2" [50 mm] diameter lightweight metal conduit pipe is recommended. For all other pockets, use 1-1/2" [40 mm] diameter lightweight metal conduit pipes or 1/4" x 3" [6 mm x 76 mm] UHMW plastic strips.

1. Cut the pipes/strips approximately 2" [50 mm] shorter than the inside width of the trailer. Take this measurement just above the trailer floor, at the trailer's narrowest point.
2. If the tarp is wider than the width of the trailer, cut the tarp to the same width as the inside of the trailer. Remove half of the material from each side of the tarp.

Note: If you are installing the tarp into a trailer with a V-Floor® system or into a bullnose trailer, the tarp will need to be wider than the inside of the trailer because the tarp will conform to the ridges on the floor or the nose of the trailer. See Tarp Modifications for V-Floor Trailers for additional instructions.

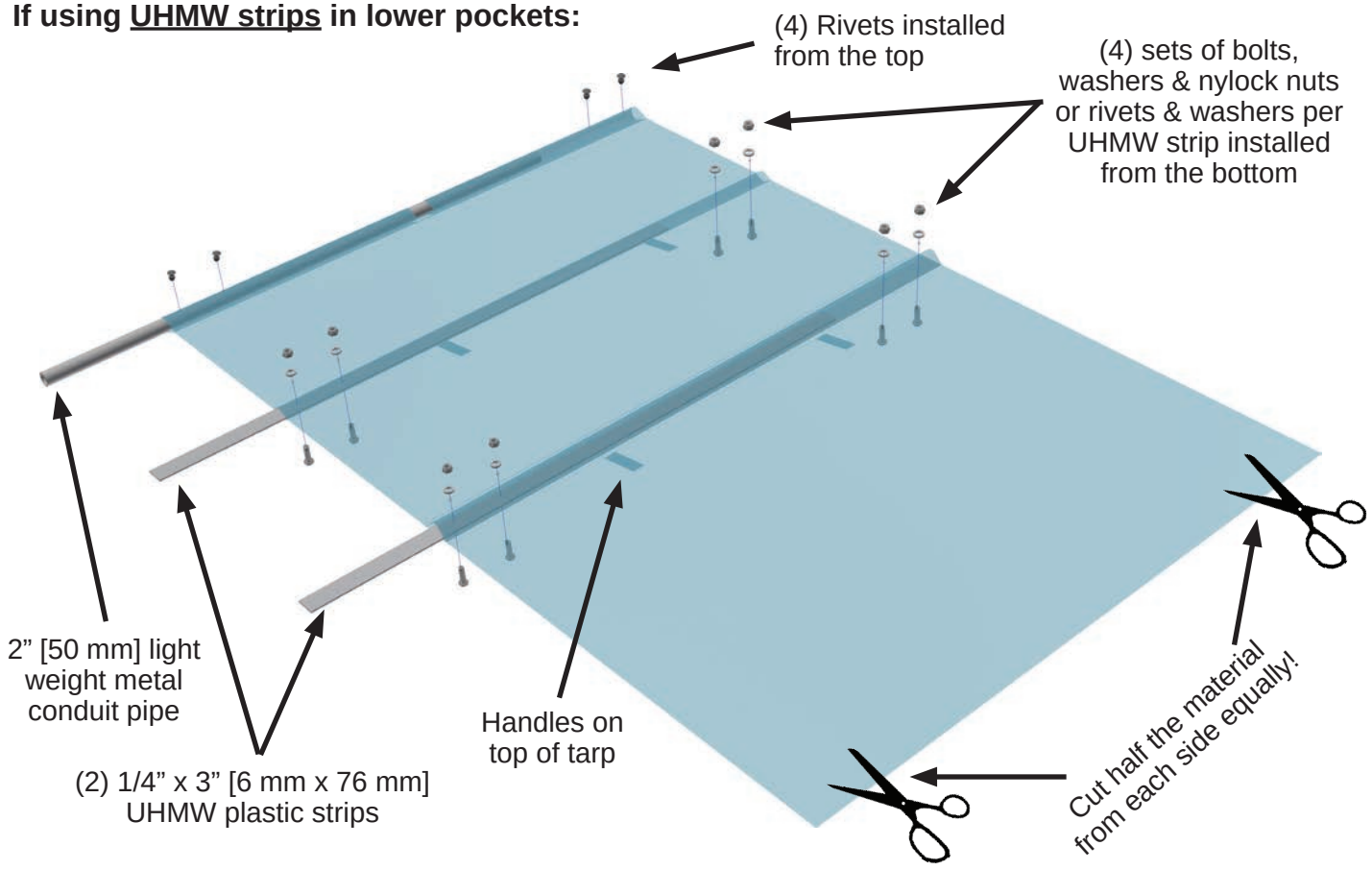
If using <u>Pipe</u> in lower pockets:

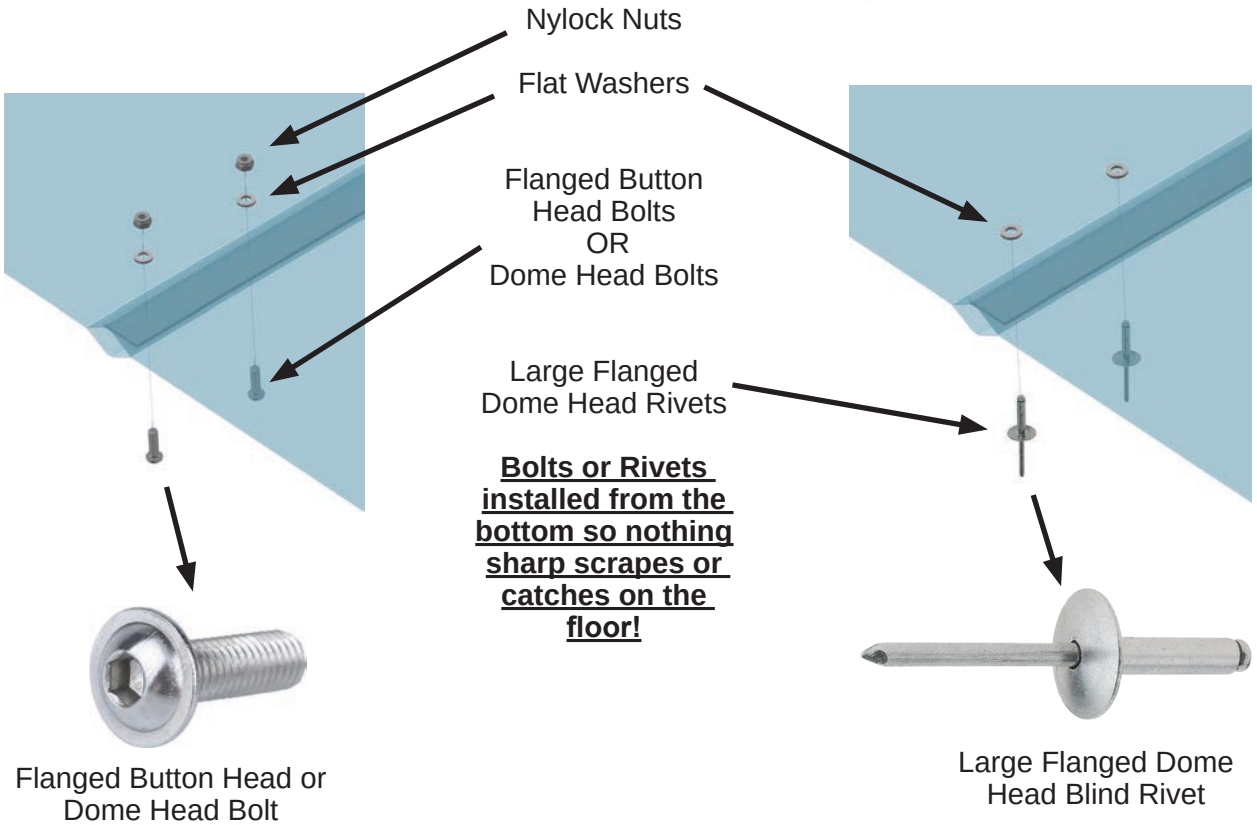


B. With the tarp laying down on the floor of the trailer, center the 2" [50 mm] pipe in the top pocket of the tarp which has the notch cut out in the center. On the top side of the pipe drill (4) holes through the tarp and pipe and install rivets (not supplied) to hold the pipe in place.

C. Center the smaller diameter pipes in the lower pockets of the tarp. On the top side of the pipes drill (4) holes through the tarp and pipes and install rivets (not included) to hold the pipes in place.

If using <u>UHMW strips</u> in lower pockets:





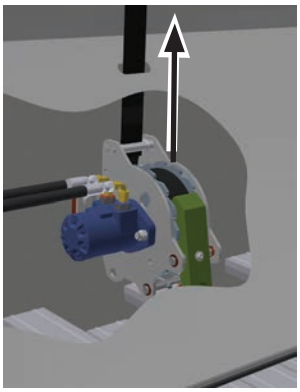
A. With the tarp laying down on the floor of the trailer, center the 2” [50 mm] pipe in the top pocket of the tarp which has the notch cut out in the center. On the top side of the pipe drill (4) holes through the tarp and pipe and install rivets (not supplied) to hold the pipe in place.

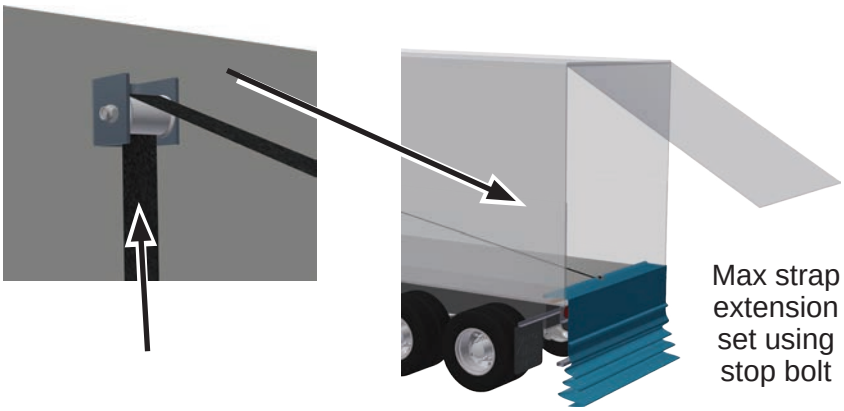
B. Center the UHMW strips in the lower pockets of the tarp. Drill (4) holes completely through the tarp and UHMW strips. Use bolts with washers and nylock nuts (not supplied) or use rivets with washers (not supplied) to keep the UHMW strips in place. Bolts or Rivets should be installed from the bottom so nothing sharp scrapes or catches on the floor.

3. Find the center of the top pipe when the tarp is in the hanging position. Drill (2) 3/8” [9.5 mm] holes, evenly spaced, through the top pipe to attach the U-bolt. It must be centered and installed so that when the tarp is hanging from the winch, the threads of the U-bolt are facing downward. If necessary, you can make the notch in the tarp wider in the middle to accommodate the U-bolt.

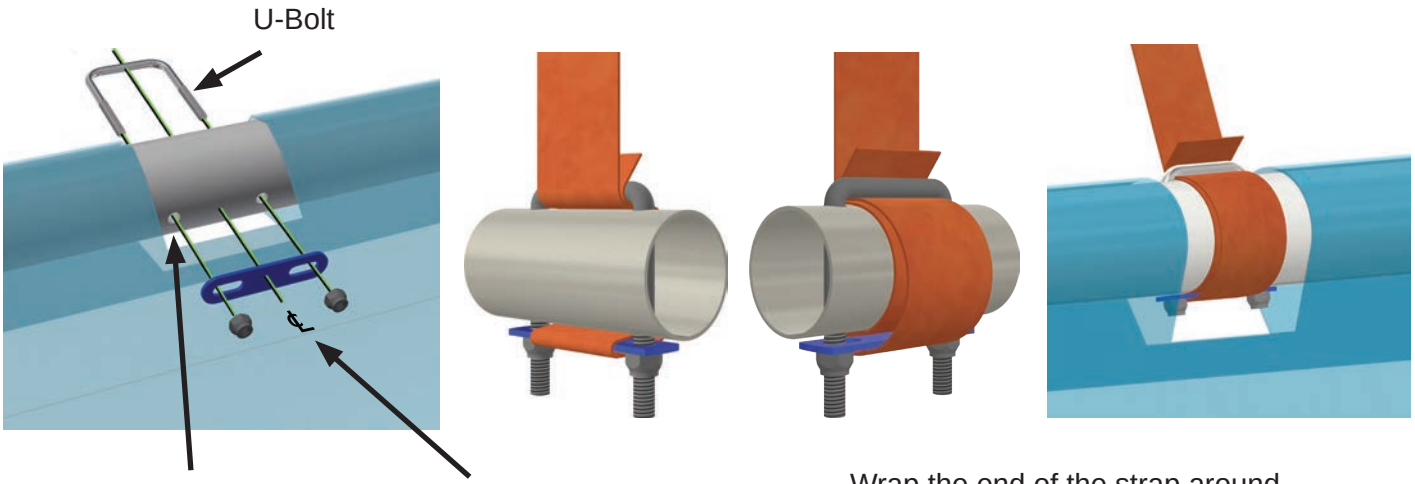
4. Retract all slats to the front of the trailer. Lay the tarp in the rear of the trailer, with the handles on top of the tarp and the 2” [50 mm] top pipe resting inside of the trailer just before the end of the slats. This will be where the tarp stops during unloading with the rest of the tarp hanging off the back of the trailer.

5. Release the winch strap brake and thread the strap through the strap guide on the winch, through the slot in the front shield (if winch is low-mounted) and through the strap roller. Pull the strap to the end of the trailer, making sure that the strap is not twisted.



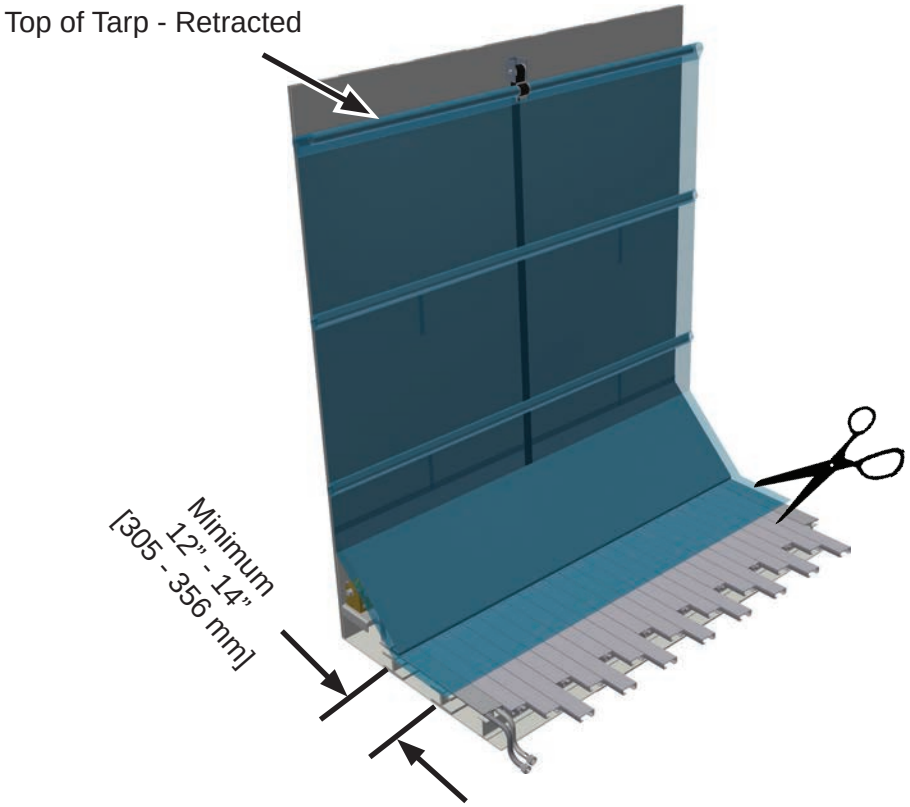


6. Wrap the strap loosely under the u-bolt, around the top pipe, around the u-bolt plate and back up under the u-bolt. Pull tight and tighten the U-bolt to hold the strap securely in place. This will keep the top pipe of the tarp from falling out of the trailer when the strap is fully extended.

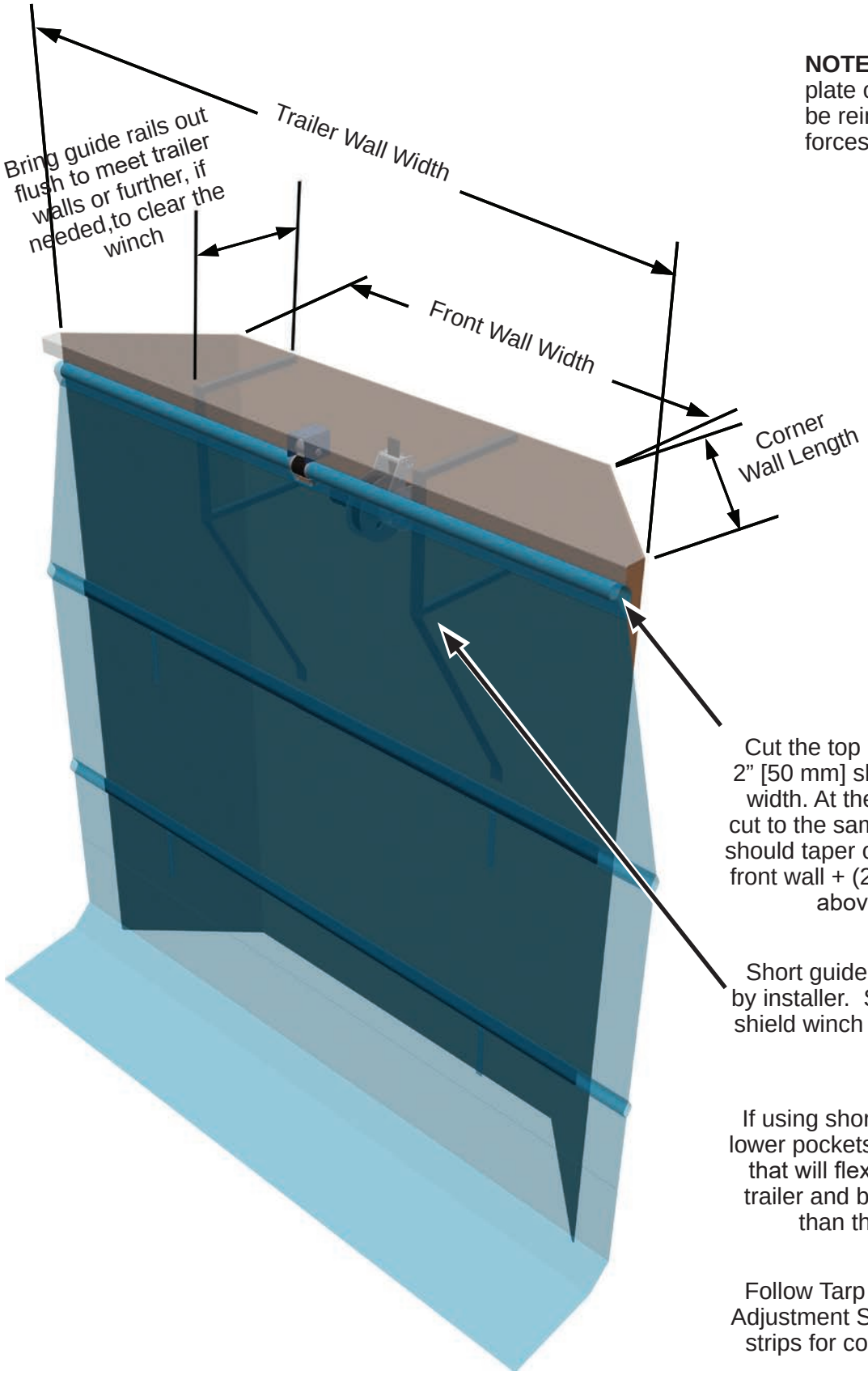


7. Use the winch to pull the slack out of the strap, then install the strap anchor bolt tightly up against the wound strap. This will keep the top pipe of the tarp from falling out of the trailer when the strap is fully extended. Use a hammer to indent the bolt into the wound strap. It's important that the bolt not leave a bulge in the strap which could affect the operation of the brake.

8. See Winch Spring Brake Adjustment section to properly set brake tension.
9. Retract the tarp assembly completely so that the U-bolt is back to the strap roller. Cut the tarp to length leaving a minimum of 12"-14" [305-356 mm] of tarp on the floor covering the slats. Too much tarp on the floor and the tarp will get caught in the unloaded material and be difficult to remove. Too little tarp on the floor and it won't move along with the load and sweep cleanly. Additional tarp on the floor (36"-48" [914-1219 mm]) may be needed if the material being unloaded is very light weight (low density).



3.12 Tarp Modifications for Bullnose Trailer



NOTE: Front wall and cap plate of the trailer may need to be reinforced to withstand the forces created by the winch.

Cut the top light weight conduit pipe 2” [50 mm] shorter than the trailer wall width. At the top, the tarp should be cut to the same width as the trailer and should taper out to the total width of the front wall + (2x) corner wall length, just above the first pocket.

Short guide rails (shown) fabricated by installer. Should be long enough to shield winch or other objects attached to front wall.

If using short guide rails (shown) the lower pockets must have UHMW strips that will flex into the bullnose of the trailer and be cut 2” [50 mm] shorter than the trailer wall width.

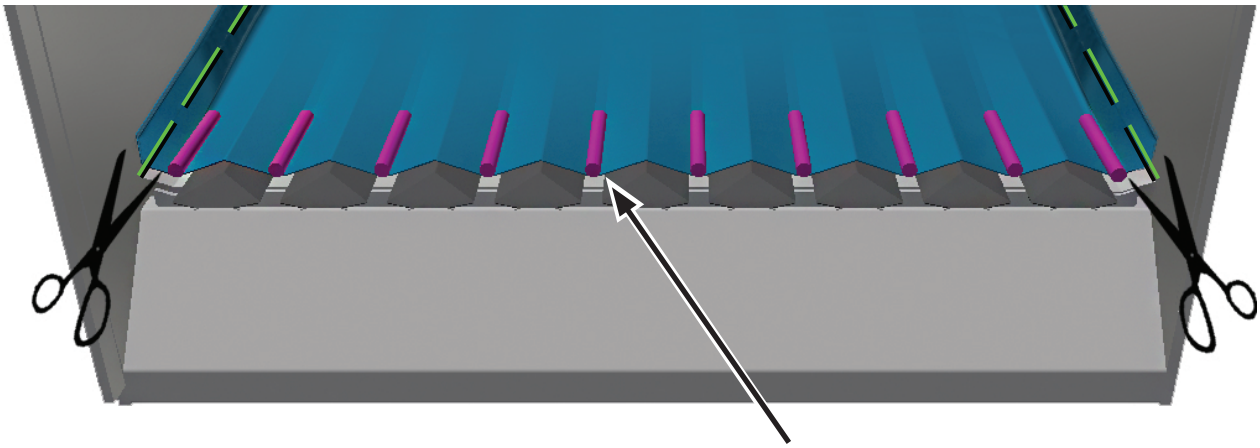
Follow Tarp Assembly, Installation & Adjustment Section 3.10 using UHMW strips for complete tarp instructions.

3.13 Tarp Modifications for V-Floor Trailers

Note: If you are installing the tarp into a trailer with a V-Floor® system or into a bullnose trailer, the tarp will need to be wider than the inside of the trailer because the tarp will conform to the ridges on the floor or the nose of the trailer. For a V-9 system, the tarp should be approximately 6" [152 mm] wider than the inside of the trailer. For a V-18 system, the tarp should be approximately 7" [178 mm] wider.

A. Start in the middle of floor and place weights or (gravel, dirt, etc) on the tarp between all the slats to hold the tarp down so it conforms to all of the slats.

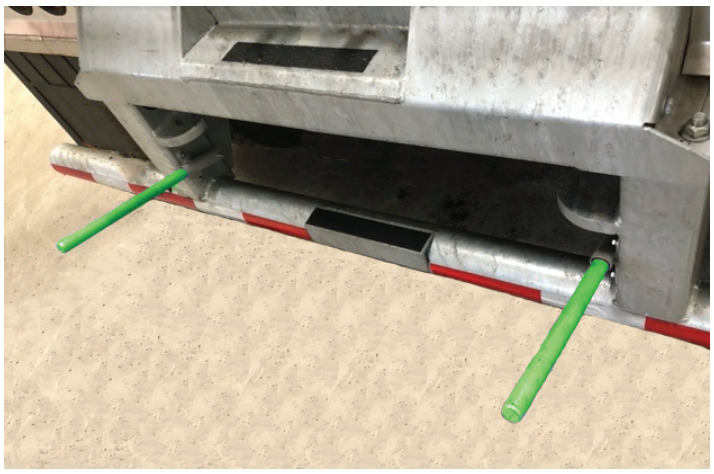
B. Cut both sides of the tarp **equally** along the trailer wall so that the tarp is now the same width as the trailer.



Example of weights

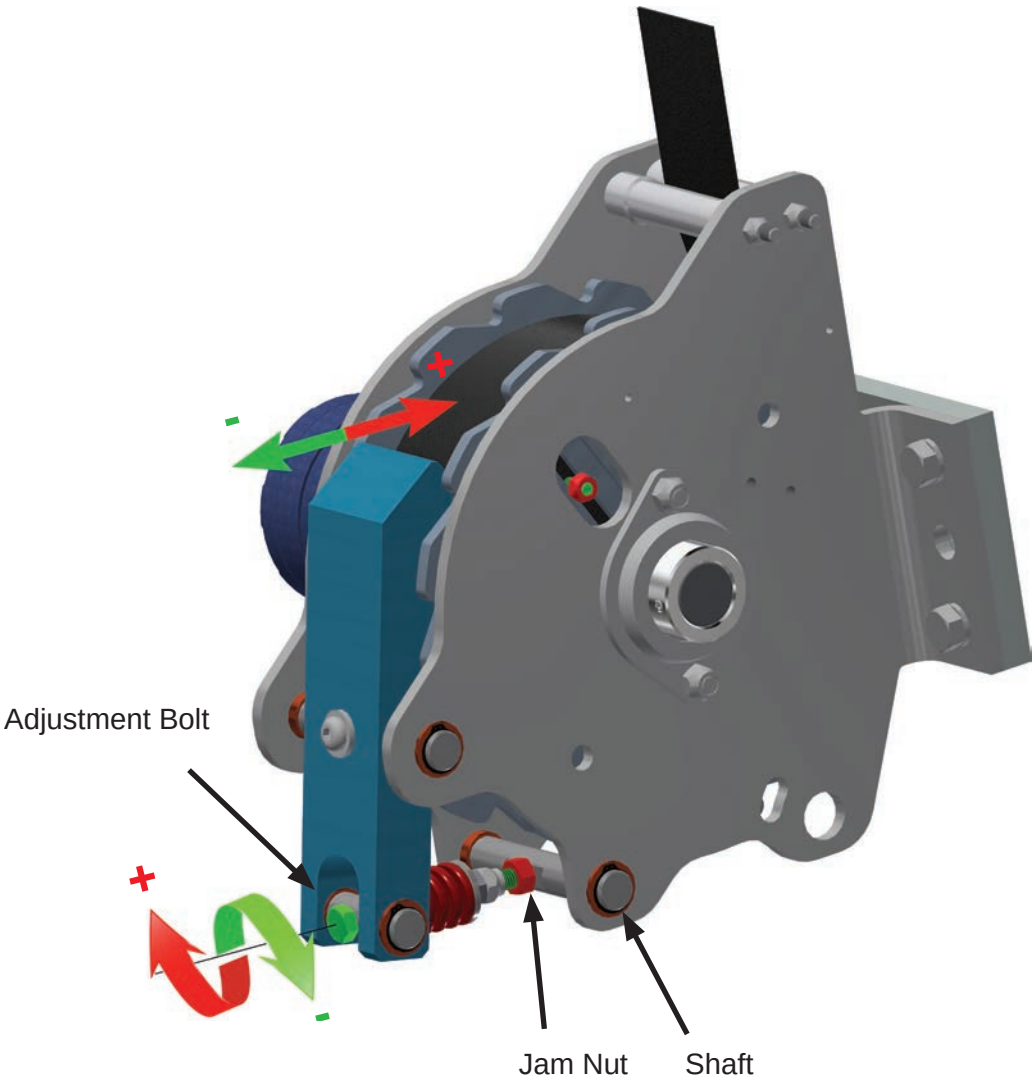
3.14 Optional - Tarp Catch Hooks

Installing catch hooks on the end of the trailer will catch and hold the tarp and make sure that it doesn't get buried in the load.



3.15 Winch Spring Brake Adjustment

The winch brake uses tension & friction to retain the tarp in the retracted position at the top of the front wall during loading, transport, and the beginning of the unloading cycle.



1. Retract the tarp completely to the top of the front wall.
2. Loosen the single jam nut using a 13 mm wrench.
3. Turn the bolt using a 13 mm wrench to loosen or tighten the brake against the strap until it takes approximately 10 lbs [5 kg] of force to move the tarp (it should be possible, but take some effort to pull the tarp down by hand). The amount of brake force will vary depending on application.
4. Re-tighten the single jam nut against the shaft. **NOTE: Do NOT adjust the position of the other 2 nuts on the adjustment bolt.**

4.0 Operation

4.1 System Check - Initial Start-Up

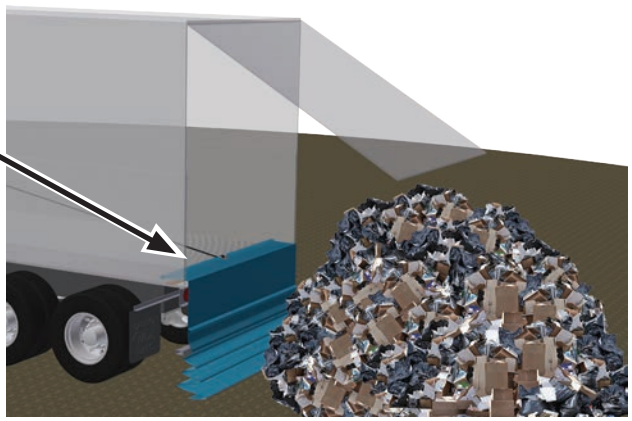
- ✓ Read through this manual. If there is any confusion, contact a KEITH representative and resolve any concerns before operation of this system
- ✓ Inspect all fasteners and fittings for proper torque.
- ✓ Ensure there are no leaks and that all lines are secure before putting the trailer in service.

4.2 Loading Operation

Verify that the tarp is fully retracted and that there is a minimum of 12”-14” [305-356 mm] of tarp covering the floor slats prior to loading the trailer. It is recommended that a viewing window/port be installed in the top of the front trailer wall so the operator can verify that the tarp is fully retracted from the winch operating position prior to loading.

4.3 Unloading Operation

1. **DO NOT let material build up on tarp.** It is recommended that the trailer be moved forward periodically during unloading and especially near the end of the unloading cycle, move it 6’-10’ [1830-3050 mm] to prevent material from being unloaded on top of the tarp.



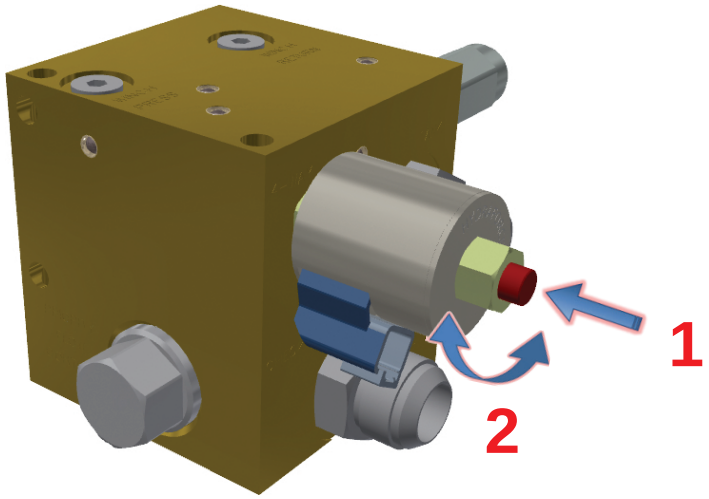
2. After unloading the trailer make sure to stop the floor with all of the slats to the front of the trailer. Dislodge the tarp by hand from underneath any material that may have been unloaded on top of the tarp. **DO NOT attempt to pull the tarp from under a load by using the winch or moving the trailer** – this may damage the winch, tarp, strap or trailer. Installing catch hooks (optional) on the end of the trailer will catch and hold the tarp and make sure that it doesn’t get buried in the load.
3. Ensure hydraulic power is supplied to the trailer and engage the winch by activating the power switch (electric systems) or pulling out the manual valve knob (manual systems).
4. The tarp takes 10-20 seconds to retract and when fully retracted hydraulic fluid delivered to the winch is redirected through the relief valve in the manifold. Full retraction can be verified through the viewing window/port (if installed), otherwise it is signified by an audible bang as the tarp top pipe impacts the strap roller, as well as an audible change in the hydraulic system sound as the fluid is directed through the relief valve. At this point disengage the winch and verify that the tarp is fully retracted.

4.4 Optional Cable Latch Lock (If equipped for Tipper Trailers):

This lock is ONLY intended for use when the trailer will be tipped for unloading instead of using the walking floor. The lock should remain unlocked (knob pulled out and twisted to keep in position) until preparing to tip the trailer. When preparing to tip the trailer, release the knob and push in to engage the locking mechanism into the spool teeth until unloading is compete, then return knob to the pulled out position and twist to keep knob in position.

4.5 Electric System Manual Override

The electrically-activated valve supplied with electric systems includes a manual override knob that allows the operator to activate the winch without electric power. The manual override is intended for emergency use, not for continuous duty operation.



Manual override knob on electrically-activated valve.

(1) Push the red button in and (2) turn it half a turn. (3) Release the red button.

NOTE: After the tarp is retracted, return the red solenoid button to the default position.

5.0 Troubleshooting

5.1 Check List

Before contacting KEITH for technical assistance, please verify the following:

- ✓ Is your system installed as described in the installation instructions? (If electric switch) Is everything wired per the wiring diagram?
- ✓ Are there any obstacles that might prevent retraction?
- ✓ Is the brake not adjusted properly and prematurely stopping the tarp?
- ✓ (If electric switch) Is there sufficient voltage? Measuring between the 12 VDC and ground wire should show 13 V while the tractor is running.
- ✓ (If electric switch) Are all connectors mated correctly?
- ✓ (If electric switch) Is there any visible damage to the winch, control box, or cables?
- ✓ (If optional cable lock installed) Is the cable lock functioning and is the knob in the correct position?

5.2 Problem / Solution - Troubleshooting

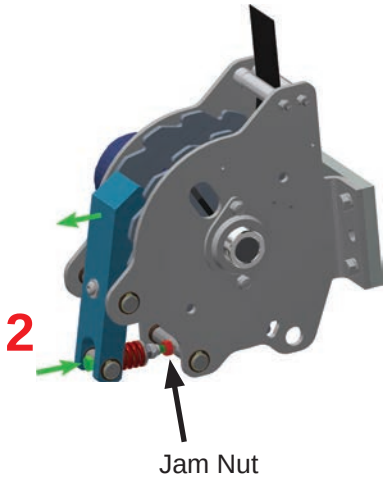
Problem:	**Tarp will not stay at the top of the trailer after retracting.**
Possible Cause:	Brake is not properly adjusted.
Solution:	See brake adjustment sections for instructions on how to properly adjust the brake.
Problem:	**Tarp stops before fully retracting.**
Possible Cause #1:	Tarp is getting caught.
Solution:	Remove any obstacles for the tarp.
Possible Cause #2:	Brake is engaging too soon due to improper adjustment or thickening/swelling of strap material due to debris, deterioration/fraying of material or ice build up.
Solution:	Clean or replace the strap and/or brake pad or adjust the brake tension.
Problem:	**Winch system is non-operational.**
Possible Cause #1:	Insufficient hydraulic pressure.
Solution:	Ensure PTO is running.
Possible Cause #2:	(If Optional Cable Lock Installed) Cable lock not releasing lever.
Solution:	Pull cable lock knob to release lock or reconnect cable to lock mechanism.
Possible Cause #3:	(If electric switch) Connectors are not fully engaged.
Solution:	Check all connectors and make sure that they all have a solid connection.
Possible Cause #4:	(If electric switch) Insufficient power.
Solution:	Confirm that the voltage between the +12 VDC and GND wires is +13 VDC.

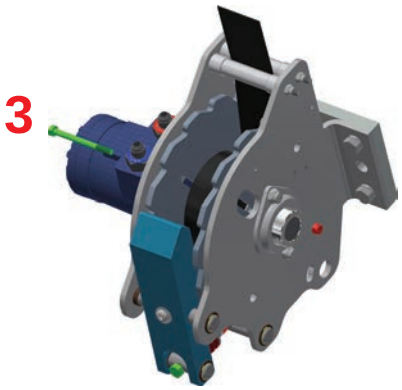
5.3 Adjustments & Replacements

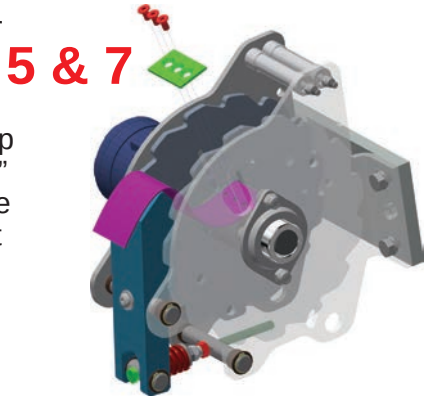
5.3.1 Strap Replacement

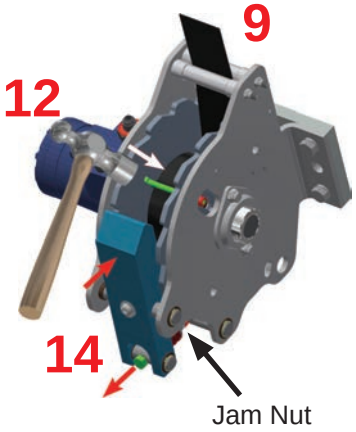
The strap replacement process is similar for all versions of CleenSweep®. (CleenSweep® with spring roller brake shown.) See Tarp Assembly, Installation & Adjustment section for additional images.

1. Remove strap from top pipe on tarp.
2. Loosen the jam nut and spring brake adjustment bolt so the strap can be pulled freely from the spool.
3. As you pull off the strap, remove the strap stop bolt & nut and set aside.
4. Pull all of the strap off of the spool.
5. Remove the (3) screws and strap plate holding the strap to the spool and remove the old strap. If your winch has (3) button head screws and no strap plate, you should consider changing out the (3) screws for flat head countersunk screws and adding the strap plate (See parts catalog section).
6. Replace brake pad and screws with new parts if worn.
7. Place the end of the new strap, that has three holes in it, on the spool in the same direction that it will wind in and secure with three countersunk screws and clamp plate. Use medium strength thread locker (blue Loctite 243) and torque to 7 ft-lbs [9.5 Nm].
8. Wind the strap onto the spool.
9. Thread the end of the strap up through the strap guide on the winch, through the slot in the front shield (if winch is low-mounted) and over the strap roller. Pull the strap and stretch it out to the end of the trailer, making sure that the strap is not twisted.
10. Make sure all slats are retracted to the front of the trailer. Lay the tarp in the rear of the trailer, with the handles on top of the tarp and the 2" [50 mm] top pipe resting inside of the trailer just before the end of the slats. This will be where the tarp stops during unloading with the rest of the tarp hanging off the back of the trailer.
11. Wrap the strap loosely around the top pipe 3 times, pull tight and tighten the U-bolt to hold the strap securely in place.
12. Use the winch to pull the slack out of the strap, then install the strap stop bolt & nut tightly up against the wound strap. (This will keep the top pipe of the tarp from falling out of the trailer when the strap is fully extended.) Use a hammer to indent the bolt into the wound strap. It's important that the bolt not leave a bulge in the strap.
13. Retract the winch fully so the top tarp pole at the top of the trailer.
14. Tighten the brake adjustment bolt until there is enough tension to hold the tarp in place while driving down the road 10 lbs [5 kg], then re-tighten the jam nut against the shaft.



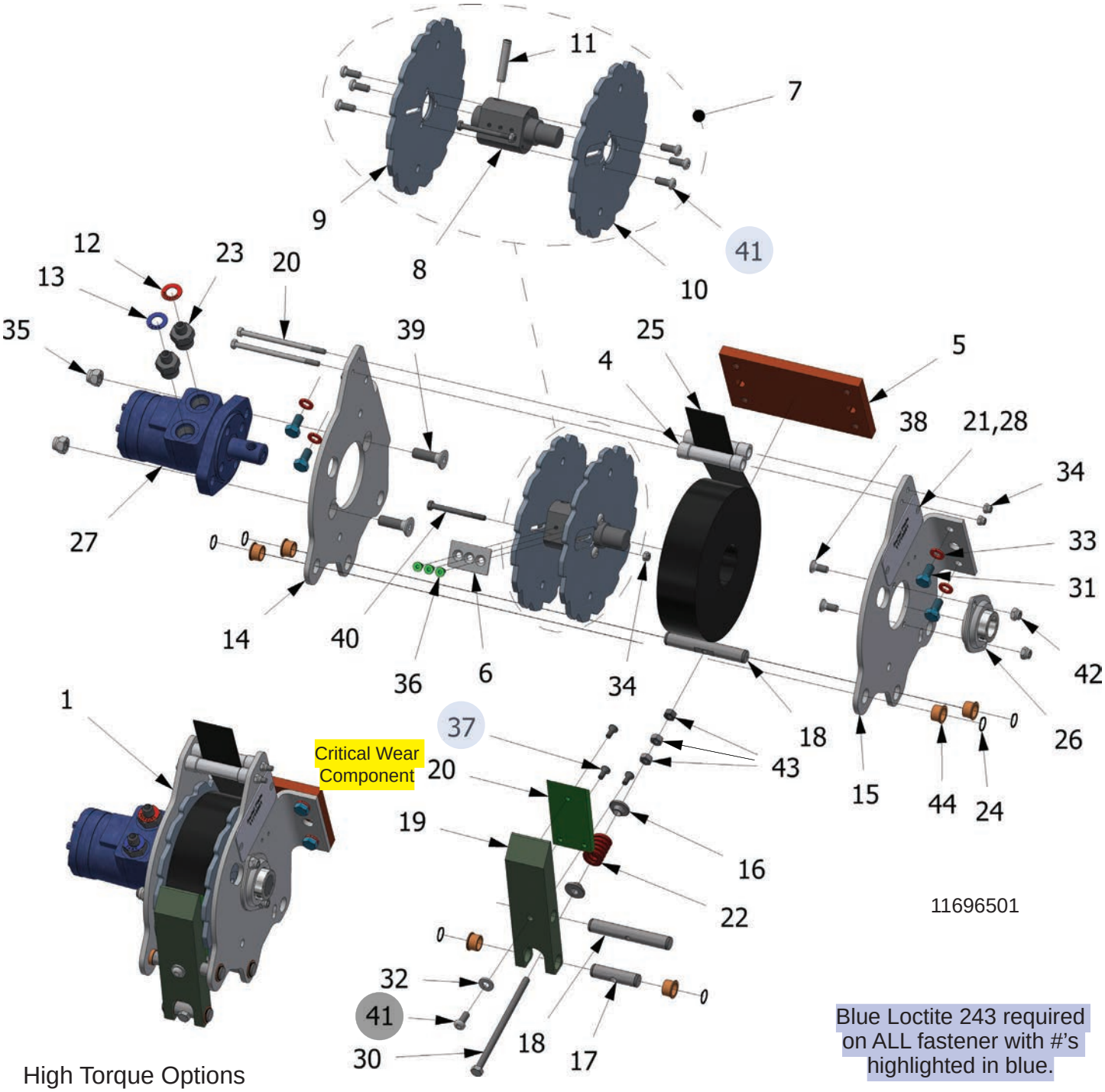






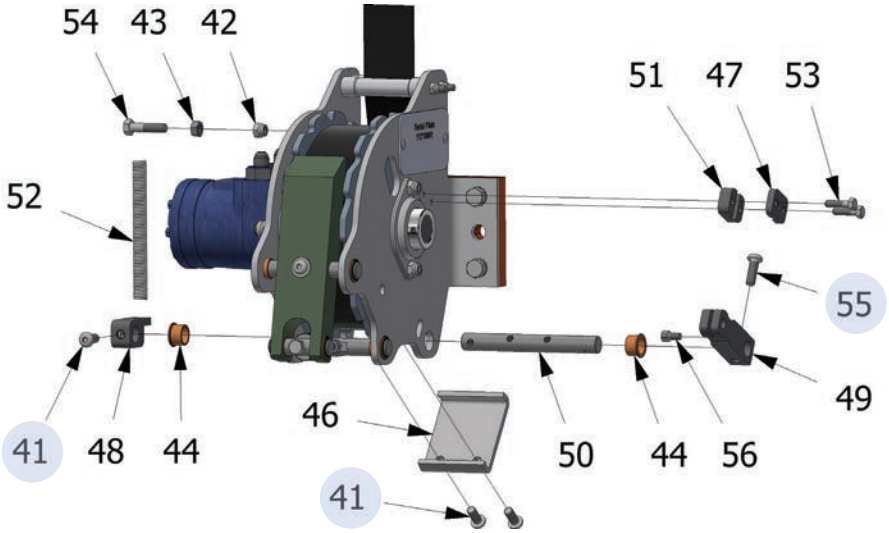
6.0 Parts Catalog

Winch Assembly

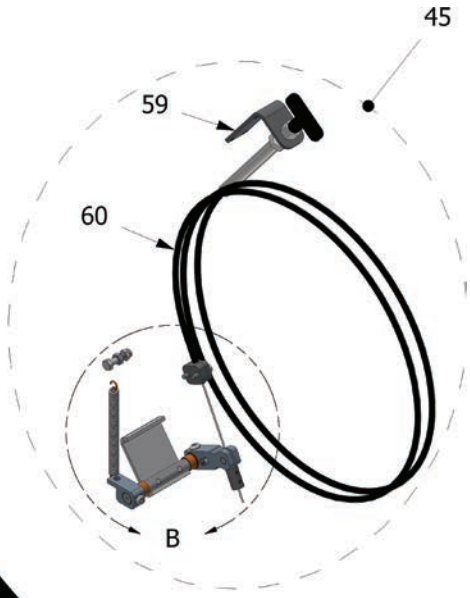


*Serial number must be provided to determine actual part numbers.

11718501

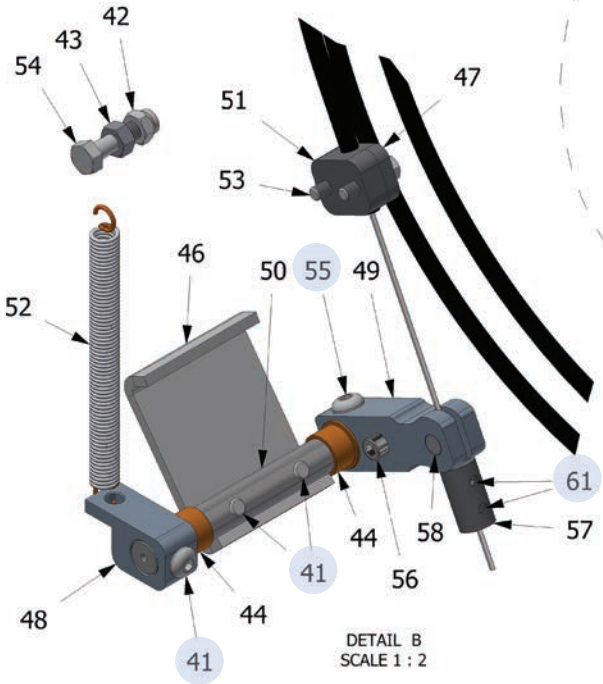


Latch Lock Kit



11718601

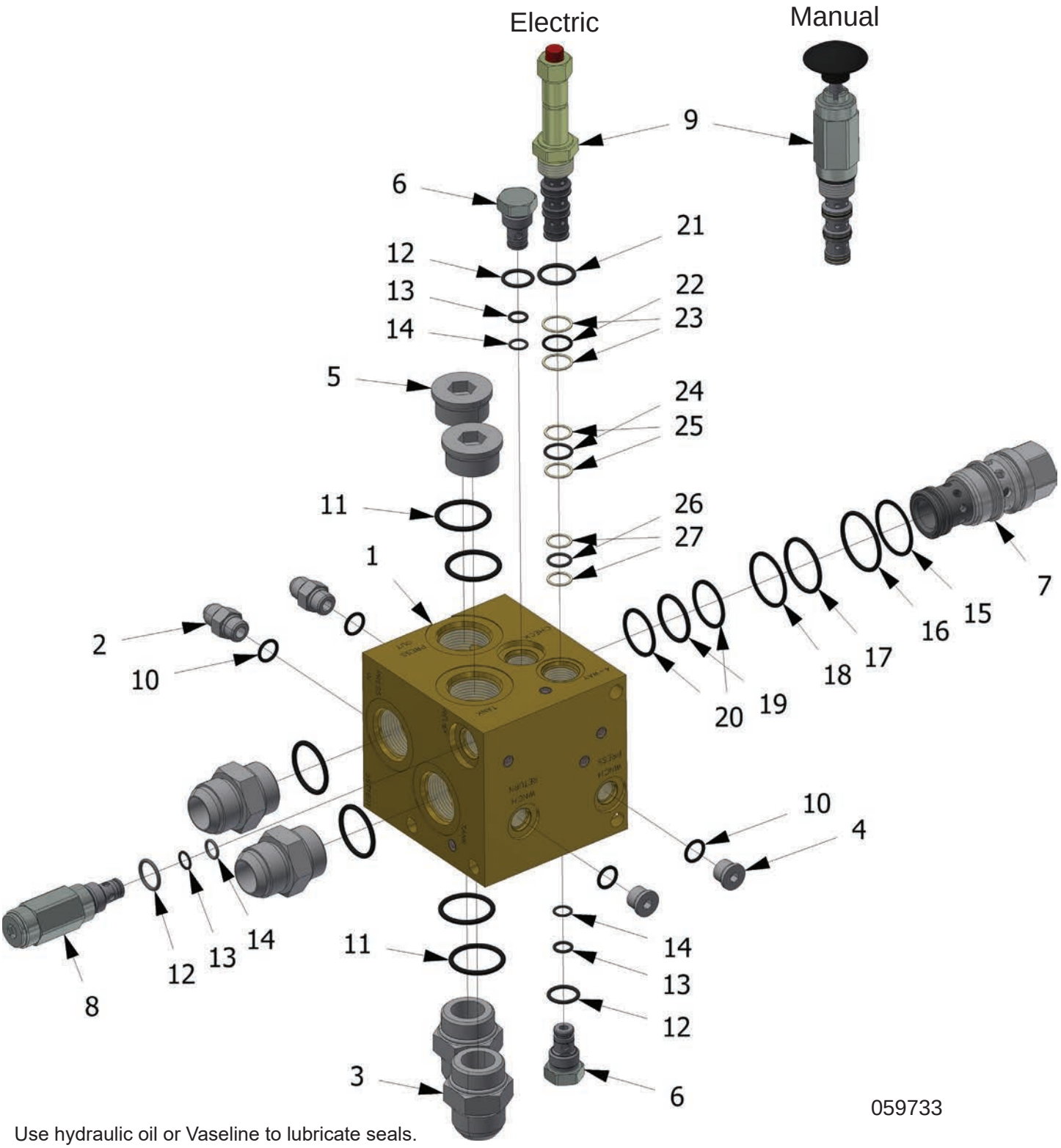
Blue Loctite 243 required on ALL fastener with #'s highlighted in blue.



ID #	Qty	Part #	Description
1	**-**	**11696501**	**Winch Assembly CSH24 (Includes Items 4-44)**
2	**-**	**11718501-PD**	**Winch Assembly w/Lock Assembly CSH24L (Includes Items 1 & 45)**
4	2	08419101	STRAP GUIDE FOR WINCH
5	1	08551301	WINCH BASE PLATE, UNIVERSAL MOUNT
6	1	10114801	STRAP CLAMP, CSE
7	**-**	**10781801**	**SPOOL HUB BOLT TOGETHER CSH (Includes items 8-11 & 41)**
8	1	10781601	SPINDLE HUB, BOLTED SPOOL, CSH
9	1	10781701	SPOOL WALL, TOOTHED EDGE, BOLTED SPOOL, CSH
10	1	10781702	SPOOL WALL, TOOTHED EDGE, BOLTED SPOOL, CSH
11	1	86671150	SPRING PIN COILED STEEL 1050-1095 - 3/8" X 2" (91598A572)
12	1	11435609	ID LABEL PRESSURE RED HYD MOTOR
13	1	11435610	ID LABEL TANK BLUE HYD MOTOR
14	1	11696601	SIDE PLATE, MOTOR MOUNT
15	1	11696701	SIDE PLATE, BEARING MOUNT
16	2	11697001	WINCH SPRING GUIDE, for 8MM BOLT and 1" OD X .5" ID SPRING CSH24
17	1	11697101	WINCH SHAFT, SPRING STOP, CSH24/CSE24
18	2	11697201	SHAFT, SPRING MOUNT/BRAKE ARM,
19	1	11697301	WINCH BRAKE ARM, SPRING BRAKE CSH24/CSE24
20	1	11697401	WINCH BRAKE PAD, UHMW, SPRING BRAKE (Critical Wear Component)
21	1	11718801	SERIAL PLATE, 4-1/4" X 2-1/4", WINCH CSH24
22	1	84452610	SPRING 105-505 MSC#07662695
23	2	84684100	06-10 F5OX-S STRAIGHT THREAD CONNECTOR MJIC X M O-RING
24	6	84800438	RETAINING RING 5/8" OD (MCMASTER PN 98410A126)
25	1	85811075	STRAP POLYESTER 2” X 75’ (+/-10”) (May also need to replace brake pad)
26	1	85818617	BEARING FLANGE ABEC-1 2-BOLT
27	1	85819490	MOTOR HYD CSH
28	2	86528000	POP RIVET - 0.1875 x 0.251 (0.251 - .375) Steel, Mild
29	2	87005101	BOLT HEX GR8.8 6MMX110MM
30	1	87007560	BOLT HEX GR10.9 8MMX150MM ZINC FULL THREAD
31	4	87008470	Hex Bolt - M10 x 1.5 x 20
32	1	87075700	Metric Plain Washers
33	4	87076500	Lock Washer - M10
34	3	87100500	NUT HEX NYLOCK 6mm
35	2	87102500	NUT HEX NYLOCK 12mm
36	3	87701500	BOLT FLOOR 6MMX12MM
37	3	87701580	BOLT FLOOR 6MMX16MM
38	2	87701599	BOLT FLOOR 8MMX20MM ZINC
39	2	87703060	BOLT FLOOR 12MMX40MM
40	1	87004570	BOLT HEX GR8.8 6MMX70MM

ID #	Qty	Part #	Description
41	7	87009007	BOLT BUTTON HEAD ZINC M8 x 1.25 x 20
42	3	87101000	NUT HEX NYLOCK 8mm
43	4	87101010	NUT HEX 8MM
44	6	83866010	FLANGED SLEEVE BEARING OIL-EMBEDDED 5/8"DIA X 3/4"ID X 1/2"L
45	-	**11718601-PD**	**WINCH LATCH LOCK KIT CSH24L (Includes items 41-61)**
46	1	11712210	WINCH LATCH LOCK BRAKE FOR CSE24/CSE24L
47	1	11712215	WINCH TOP PLATE CABLE CLAMP CSE24L & CSH24L
48	1	11712219	WINCH SWING ARM SPRING CSE24L & CSH24L
49	1	11718301	SWING ARM CABLE LATCH LOCK BRAKE FOR CSH24 AND CSE24
50	1	11718401	SHAFT, LATCH MOUNT, CSH24L
51	1	11724201	WINCH MOUNT CABLE FOR CSH24L
52	1	84458541	Spring Extension 5085 Century .5 x 5.75
53	2	87004000	BOLT HEX GR8.8 6MMX25MM ZINC
54	1	87005950	BOLT HEX GR8.8 8MMX35MM ZINC
55	1	87009006	BOLT BUTTON HEAD ZINC M8 x 1.25 x 25
56	1	87009098	BOLT SOCKET HEAD 6MMX12MM
57	1	02105002	STOP ADJ MET PULL CKV CD CSH24L
58	1	11712213	WINCH CABLE STOP GUIDE CSE24L LATCH LOCK BRAKE
59	1	11712218	HANDLE CABLE MOUNT LATCH LOCK BRAKE
60	1	85791260	KNOB-OPERATED PUSH/PULL CONTROL CABLE, TURN TO LOCK
61	3	86404208	SCREW SET 6MMX6MM CUP POINT

Hydraulic Manifold Assembly



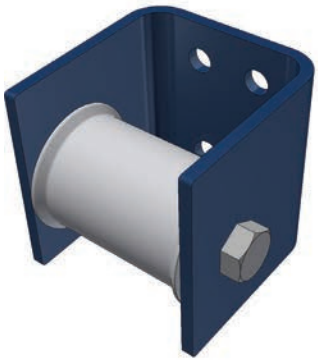
Use hydraulic oil or Vaseline to lubricate seals.
Do Not use grease!
Do Not use Teflon tape!

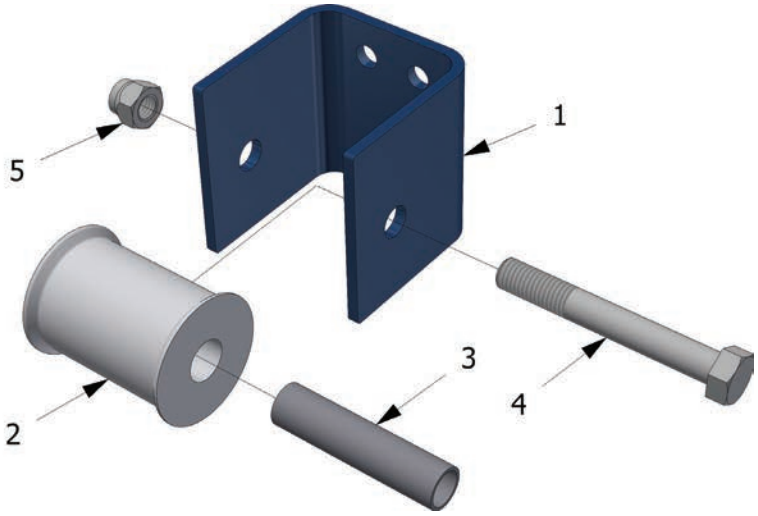
ID #	Qty	Qty	Part #	Description
-	-		**05973302**	**Manifold Assembly Electric 2.5 GPM 1800 PSI Relief (Includes items 1-27)**
-		-	**05973305**	**Manifold Assembly Manual 2.5 GPM 1800 PSI Relief (Includes items 1-27)**
1	1	1	05971601	Manifold Body CSH
2	2	2	84684000	06 F5OX-S Straight Thread Connector MJIC X M O-Ring (6400-06-06)
3	4	4	84685400	16 F5OX-S Straight Thread Connector MJIC X M O-Ring (6400-16-16)
4	2	2	84687400	06 HP5ON-S Hollow Hex Plug M O-Ring Hex Socket (6408-H06-O)
5	2	2	84687900	16 HP5ON-S Hollow Hex Plug M O-Ring Hex Socket (6408-H16-O)
6	2	2	85103601	CHECK VALVE HF CV08-20-0-N-25
7	1	1	85101042	FLOW CONTROL FREA-XAN 2.5 GPM
			85101045	FLOW CONTROL SUN FREA-XAN-5.0 GPM (OPTIONAL)
8	1	1	85107556	RELIEF VALVE - HF RV08-20H-0-N-18/18.0 1800PSI KSH
9	1	-	85108800	VALVE CARTRIDGE SV10-40M-0-N-00 HF ELEC
	-	1	85104949	VALVE CARTRIDGE MP10-40K-0-N 4WAY 2POS MANUAL
-	-	-	**09983501**	**SEAL KIT for MANIFOLD ASSY 059733 (Includes items 10-27)**
10	4	4	84386800	906 O-RING BUNA 90
11	6	6	84387800	916 O-RING BUNA 90 N1490-90
12	3	3	84387000	908 O-RING BUNA 90
13	3	3	84375210	2-012 O-RING #6 FACE SEAL NITRILE
14	3	3	84388512	012 O-RING BACKUP BUNA 90
-	-	-	**84308028**	**Seal Kit T-17A Cavity Buna-N for FREA-XAN SUN #990017007 (Includes items 15-20)**
15	1	1	515-002-126	Back-up A
16	1	1	500-001-126	O-Ring A
17	1	1	500-002-124	O-Ring B
18	1	1	515-002-123	Back-up B
19	1	1	500-001-120	O-Ring C
20	2	2	515-002-121	Back-up C
-	-	-	**85108798**	**SEAL KIT - HF SK10-4N-MMM (Includes items #21-27)**
21	1	1	84387200	910 O-Ring Buna 90
22	1	1	84375300	016 O-Ring Buna 90
23	2	2	84388516	O-Ring Backup 8-016 TS .030 Teflon
24	1	1	84375290	015 O-Ring Buna 90
25	2	2	84388515	O-Ring Backup 8-015 TS .030 Teflon
26	1	1	84375260	014 O-Ring Buna 90
27	2	2	84388514	O-Ring Backup 8-014 TS .030 Teflon

Available in Kit Only

Available in Kit Only

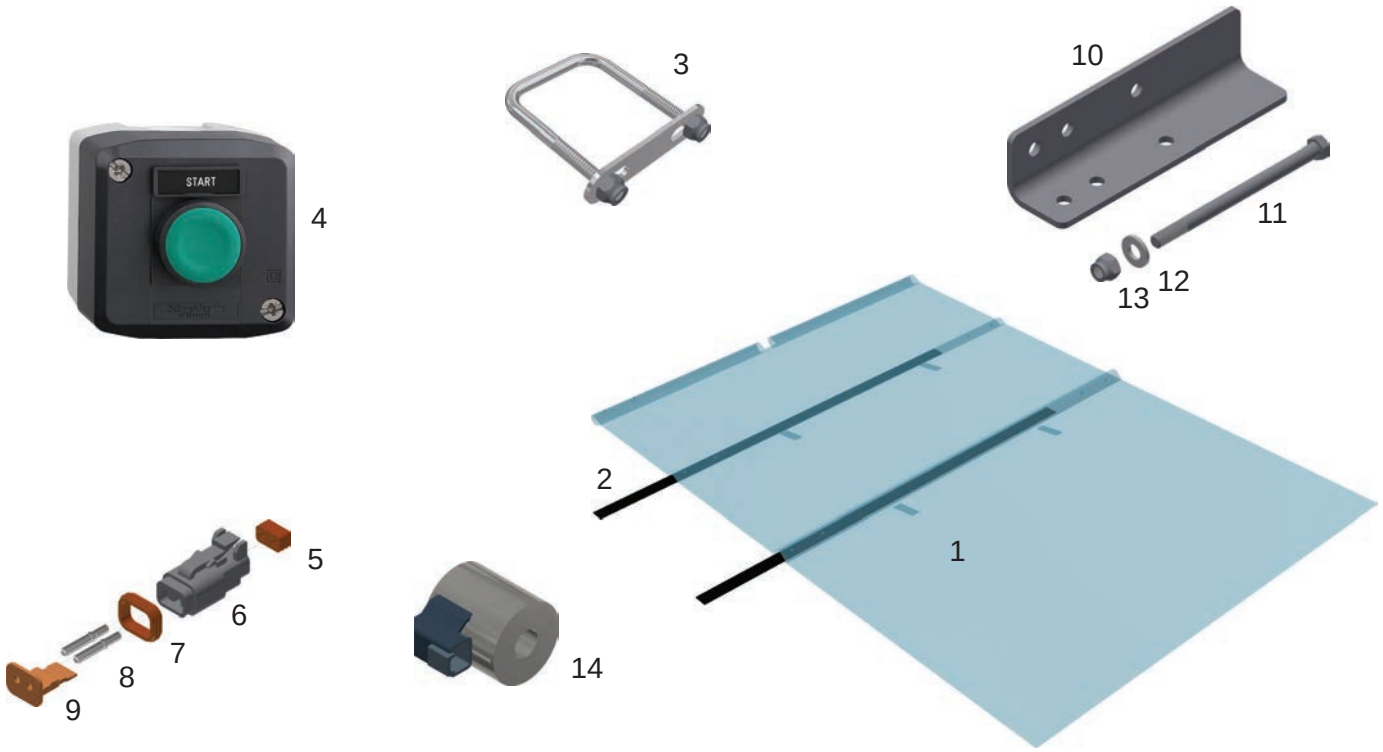
Strap Roller Assembly





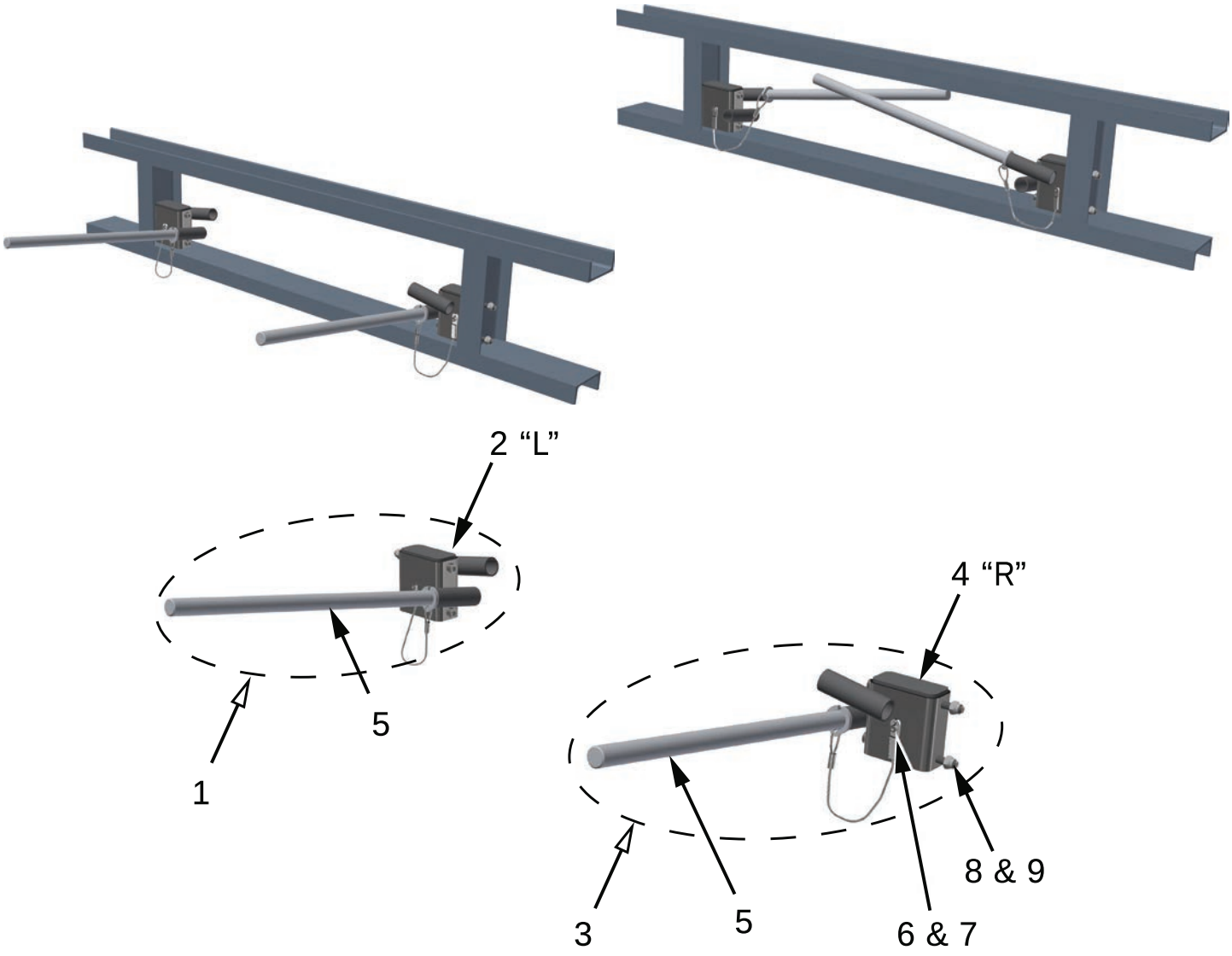
ID #	Qty	Qty	Part #	Description
-	-		06250301	STRAP ROLLER ASSEMBLY, AL - METRIC (Includes items 1-5)
-		-	06250302	STRAP ROLLER ASSEMBLY, SS - METRIC (Includes items 1-5)
1	1	-	06250401	STRAP ROLLER BRACKET UNVL CSH KSH AL
	-	1	06250402	STRAP ROLLER BRACKET UNVL SS -CSH UNIVERSAL MOUNT
2	1	1	05795501	STRAP ROLLER CSH
3	1	1	05813401	STRAP ROLLER BUSHING CSH
4	1	1	87013400	BOLT HEX 10.9 12MMX90MM
5	1	1	87102500	NUT HEX NYLOCK 12MM-1.75 ZINC

Tarp & Misc Components



ID #	Qty	Part #	Description
1	1	85811120	TARP 18OZ VINYL 100” X 126” D-52376C STANDARD CSP CSH
2	2	03540110	UHMW STRIP BLACK 1/4” X 2-7/8” X 102”, NO HOLES
3	1	86671112	BOLT U SQ ASSY M8X2”IWX3”ILX1-1/2 THREAD
4	1	85791635	BUTTON START W/BOX XALD101
-	**-**	**06714701**	**CONNECTOR KIT DEUTSCH DT06-2S (Includes items 5-9)**
5	1	w/Socket	DT06 GROMMET
6	1	85600120	SOCKET 0462-209-16141
7	1	w/Socket	DT06 SEAL
8	2	85600100	2 PIN PLUG DT06-2S
9	1	85100110	W2S WEDGELOCK
10	1	06033101	MANIFOLD MOUNTING BRACKET, STEEL
10	1	06033102	MANIFOLD MOUNTING BRACKET, ALUMINUM
11	2	87011602	BOLT HEX 10.9 10MMX150MM HCSZ
12	2	87076000	WASHER FLAT 10MM
13	2	87102000	NUT HEX NYLOCK 10MM
14	1	-	COIL for ELECTRICAL CONTROLS - (Contact Keith Sales for Information)

Tarp Catcher



ID #	Qty	Part #	Description
-	**-**	**11520714**	**TARP CATCHER ASSY (Includes assemblies 1-9)**
1	**-**	**11520701**	**LEFT TARP CATCHER ASSY (Includes items 2, 5-7)**
2	1	11520703	LEFT TARP CATCHER WELD ASSY
3	**-**	**11520702**	**RIGHT TARP CATCHER ASSY (Includes items 4-7)**
4	1	11520704	RIGHT TARP CATCHER WELD ASSY
5	1	11520709	BAR TARP CATCHER ASSY w/GALVANIZED LANYARD ASSY
6	1	87075501	WASHER LOCK M6 EXTERNAL TOOTH
7	1	87009098	BOLT SOCKET HEAD 6MMX12MM ZN
8	2	87008580	BOLT SOCKET HEAD 10MM-1.5 X 130MM 12.9 ECOGUARD
9	2	87102000	NUT HEX NYLOCK 10MM

7.0 Technical Support

Please have the following information readily available before contacting KEITH Manufacturing Co. for support:

- Model Number (Located on the Serial Plate of the unit or engraved)
- Serial Number (Located on the Serial Plate on the unit or engraved)
- Vehicle make and unit installer

KEITH Technical Support Contact Information:

Website: www.KeithWalkingFloor.com

Email: TechDept@KeithWalkingFloor.com

Toll-Free: 800-547-6161

Phone: +1-541-475-3802

8.0 Contact Information - KEITH Manufacturing Co.

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