CRAMARO®

TARPAULIN SYSTEMS

MENTOR®

INSTALLATION, MAINTENANCE, & SAFETY INSTRUCTIONS

(800) 272-6276

001-321-757-7611

TARP WORKS™

www.cramarotarps.com

Plants In: Delaware, Florida, Massachusetts, Nevada, Ohio, and Canada

Important: Read before you start

1. The DOT regulated maximum width of a vehicle with a tarp system is 108". That is 102" for the body plus 3" per side. The 3" per side is the maximum and both sides are to be equal.
2. Height limits are set by individual states and can vary from 13'6" to 14'. It is important to make sure you will be in compliance with your state & Federal rules before making any modifications to your vehicle.
3. Read through these instructions and familiarize yourself with the various parts of the system.
4. Never operate the tarp system when the vehicle is moving!

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PRODUCT WARRANTY

GENERAL INFORMATION

Prior to returning any part for warranty, customers should contact Cramaro Sales at 800-272-6276 to explain the issue and obtain a Return Goods Authorization (RGA) number. Parts are returned at the customer's expense. After a part has been determined to be covered by warranty, Cramaro will ship the repaired or replaced part to the customer prepaid. Any expedited shipping or special handling is solely the customer's responsibility.

Cramaro products are warranted against defects in quality and workmanship only. They are not warranted for application suitability or any specific application other than what they were designed for. This warranty does not cover any non-Cramaro labor to remove or replace any part found to be defective.

It is also understood that under the terms of sale that Cramaro does not assume responsibility for and is not liable for any consequential losses or damages to equipment or materials; or expenses incurred due to delays, loss of production, vehicle down time, loss of revenue, or costs resulting from a product failure within the limits of this warranty.

For more information contact Cramaro Sales at 800-272-6276. Please have order information and details of the claim available.

TARP SYSTEMS AND RELATED PARTS

Cramaro warrants its tarp systems and parts (excluding tarps and electrical components) to be free of defects for a period of 1 year from the date of shipment. Cramaro's liability is limited to repair or replacement of covered items. See above for exclusions and exceptions. Improper installation will burn out electrical components and may damage the motor. These products should be installed by trained technicians only.

TARPS

Tarp seals and/or stitching that is found to be defective will be repaired by Cramaro. Tarps must be returned to Cramaro for repairs. Tarp fabric is not warranted as it is subject to wind damage if not used properly. Warranty coverage is for 1 year from date of shipment.

ELECTRICAL COMPONENTS

Electrical components (such as wire, breakers, switches, solenoids, relays, etc.) are not returnable nor are they covered under warranty.

ELECTRIC MOTORS

All motor assemblies - warranted for a period of 1 year from date of shipment. Motor assemblies must be returned intact. Any attempt to disassemble will void all warranties. Cramaro will repair or replace defective motors upon inspection at our discretion. Cramaro does not warranty motors installed on non-Cramaro systems.

PLASTIC LINERS

Liners are not warranted against wear and tear. We recommend that the "Plastic Bed Liner Usage Chart" be viewed to select the best liner material being transported.

FOR MORE INFORMATION CONTACT CRAMARO AT (800) 272-6276

Before You Start

Before you start…What is the condition of the side rails? They must be smooth to provide an even surface for the bows to slide on. If they cannot be smoothed then plastic runner can be used to provide a smooth surface. Keep in mind the use of plastic runner will affect the positioned height of the front shaft. See Step 1. Wood sideboards may need to be replaced prior to beginning installation. Also damaged/bent boards or board holders will need to be repaired or replaced.

The type of bulkhead your bed has will dictate how you install the front drive.

You will have to determine the centerline of the body so that cables and drive pulleys are centered to function equally. The centerline in the rear must be the same as in the front. This may require shims or fabrication when mounting the rear pulleys. See the following drawings on how to determine your centerline. Proper alignment of the bows, pulleys and cables are crucial to obtain trouble-free operation.

Important: The proper alignment of the shaft, the bows and the rear brackets are critical to obtaining a smoothly operated system. Misalignment can cause the system to bind and decrease the life of the product.

Warning: Tarp must be fully closed when body is in motion. Tarp must be open when dumping and loading to prevent damage to the system.

Recommended Bolt Torque in Ft-lbs.		
Size	Grade 5	Grade 8
1/4"	6.3	
5/16"	13	
3/8"	23	26
7/16"	37	
1/2"	57	64

Step 1: Side Rails and Plastic Runner Install

The runner's thickness will affect the mounting height of the shaft.

1. Starting at the rear, center and attach the plastic runner to the top of the METAL side rails. Using a 7/32" drill bit, drill through the partially countersunk end of the runner and the top of the rail as far back as the rail will allow.

2. Using a T30 torx bit, sink the provided 1/4" flathead self tapping screw until it is flush or just slightly below. If left above, it will restrict the bow's movement. So, make sure they are flush or below. If you have WOOD side-boards, lag screws will be provided.

3. To minimize any waves in the runner, repeat the process while pulling the plastic runner tight in front of the previous screw.

4. Let the excess runner hang off the front of the truck until you have determined where the front bow will stop when fully opened. Once determined, cut off any excess in front of that, and if necessary, drill another 7/32" hole. Sink 2 self tappers about 1" apart in the end of the runner. COUNTERSINKING IS NOT NEEDED AS THE SCREW WILL PULL DOWN FLUSH.

Step 2: Front Shaft Assembly

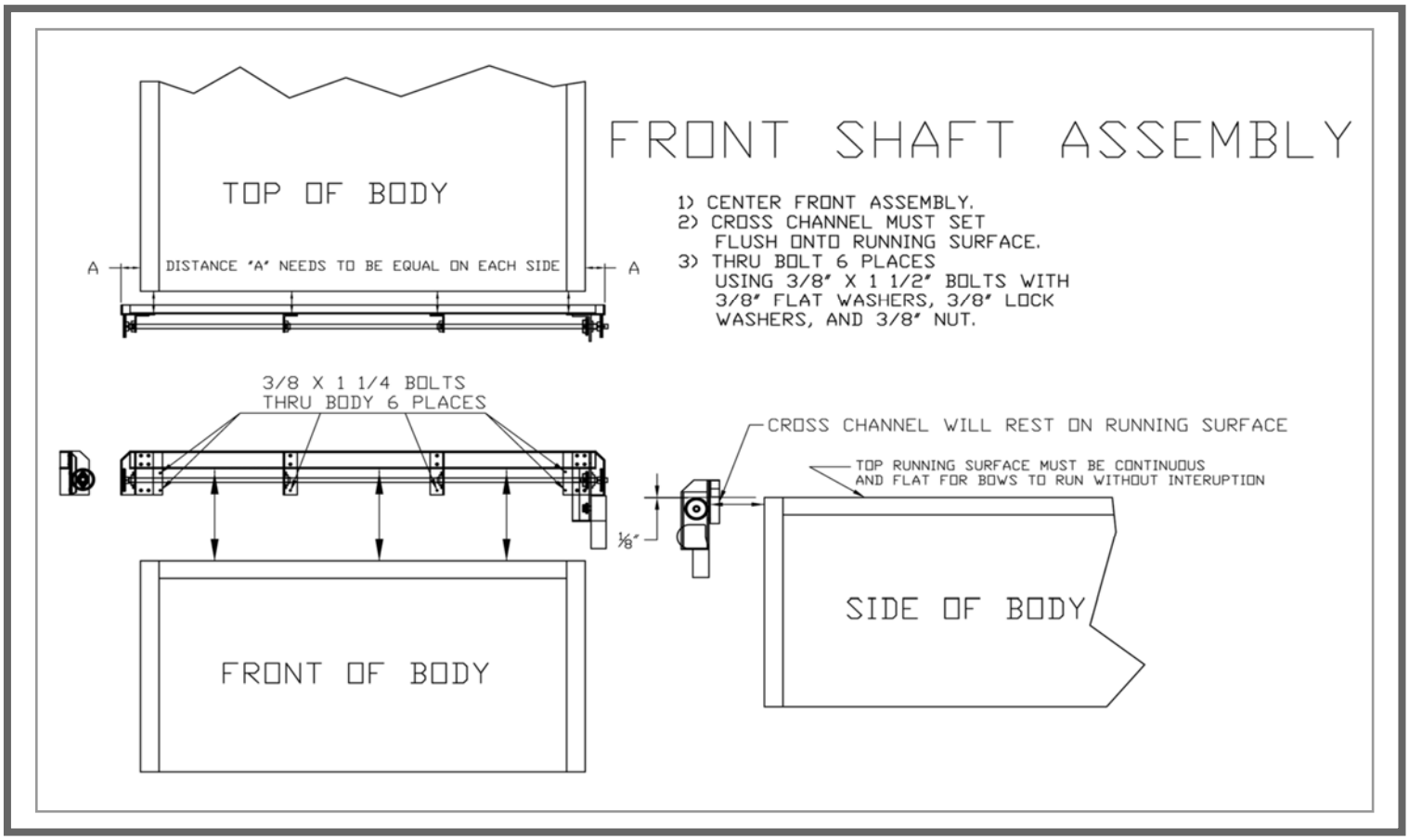
LEVEL SURFACE SQUARE FRONT TRAILERS

1. Mount the front shaft to the front of the trailer or the cab shield by resting the bottom of the c-channel on top of the running surface.

2. Center the assembly to the unit. When using plastic runner on a square front trailer, a 1/4” Shim should be used under the cross channel (provided).

3. Drill and bolt into place using the provided holes or in a similar position. Sometimes the holes do not match and a hole position adjustment is required. See diagram.

The top of the cable pulleys should be 1/8” below the running surface and the pulleys should be equal distance from both sides.

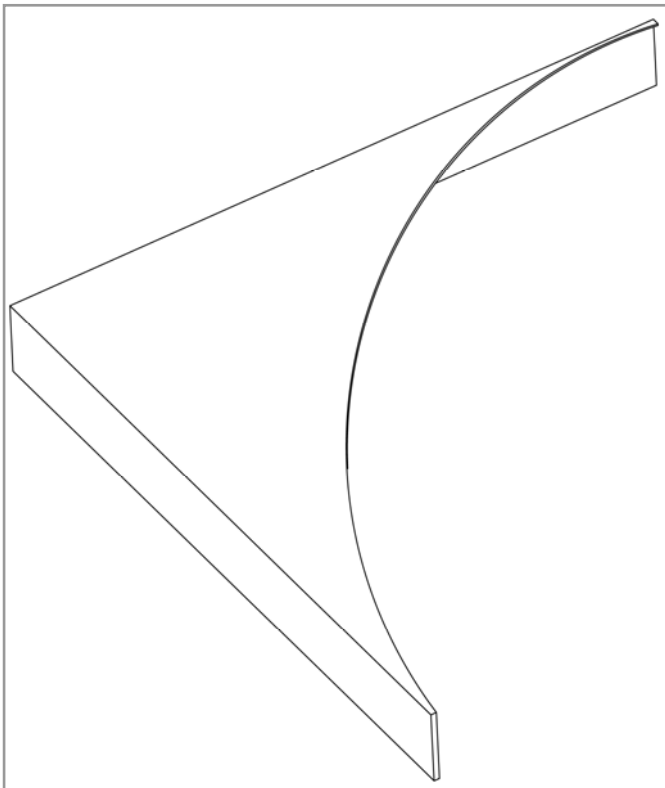


FOR HIGH RISE FRONT RADIUS CORNER TRAILERS (maximum dog house height above running surface not to exceed 6")

Before you install the front assembly, locate and mount the plastic spacer blocks.

1. Locate the vertical side of the flat surface of the bulkhead and position spacers 1" in toward the center on both sides of the shaft assembly. Most trailers have 89" width of flat surface before the radius starts. (Use 2 of the metal style flat head screws from the plastic runner to mount the plastic spacers to the backside of the 2"x4" at the correct spacing according to the width of the flat surface of the bulkhead.)
2. Pre-drill your mounting holes in the 2"x 4" assembly. Pay close attention to the position of the holes in relation to the front shaft to ensure the drill can be inserted from outside to inside.
3. You will also need to install the gap seal provided in the kit along the horizontal length between the plastic mount blocks. The seal should be mounted before the assembly is bolted to the unit. This will prevent air from getting behind the front assembly.
4. Mount the front shaft assembly directly to the front bulkhead at the correct pulley height while centered. Drill through the shaft assembly above and below the shaft Use 3/8" grade 5 bolts that are long enough to allow flat washers on both sides and use nyloc nuts or equivalent. (longer bolts may be required due to trailer variations)

You will need to close the open radius corner on both sides using an appropriate flat plate 1/8" thick. (Part supplied when ordering system) this is to keep air from getting under the tarp and to provide a continuation of the running surface. Pay close attention to the transition from the running surface to the plate to ensure the bow

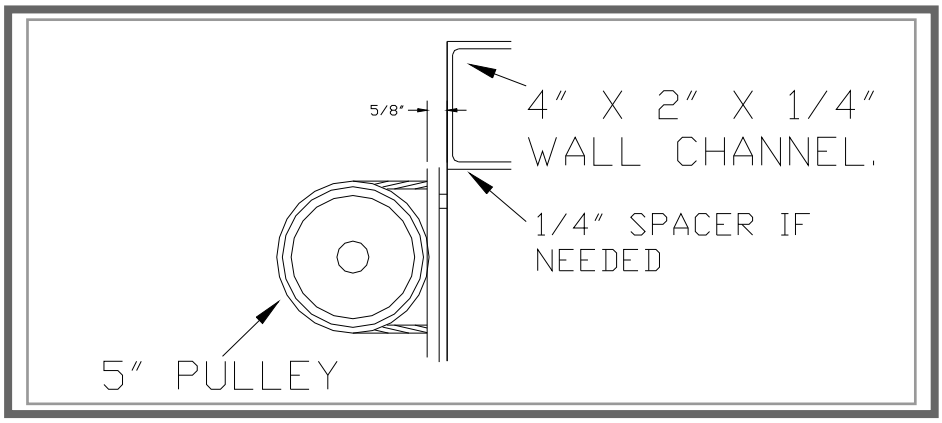


1. Make a template out of cardboard by tracing the radius of your trailer.
2. Use the template to trace the radius onto the aluminum fill in.
3. With a jig saw, cut the radius.
4. Weld or bolt the aluminum fill in to the front assembly 2X4 and your trailer. (It may be necessary to leave extra material past the radius to serve as a fastening surface)
5. Silicone any gaps.

Dump Truck

You must have a minimum of 4 ½" depth in the cab shield from the running surface to the bottom floor of the cab shield in order to place motor inboard on the shaft.

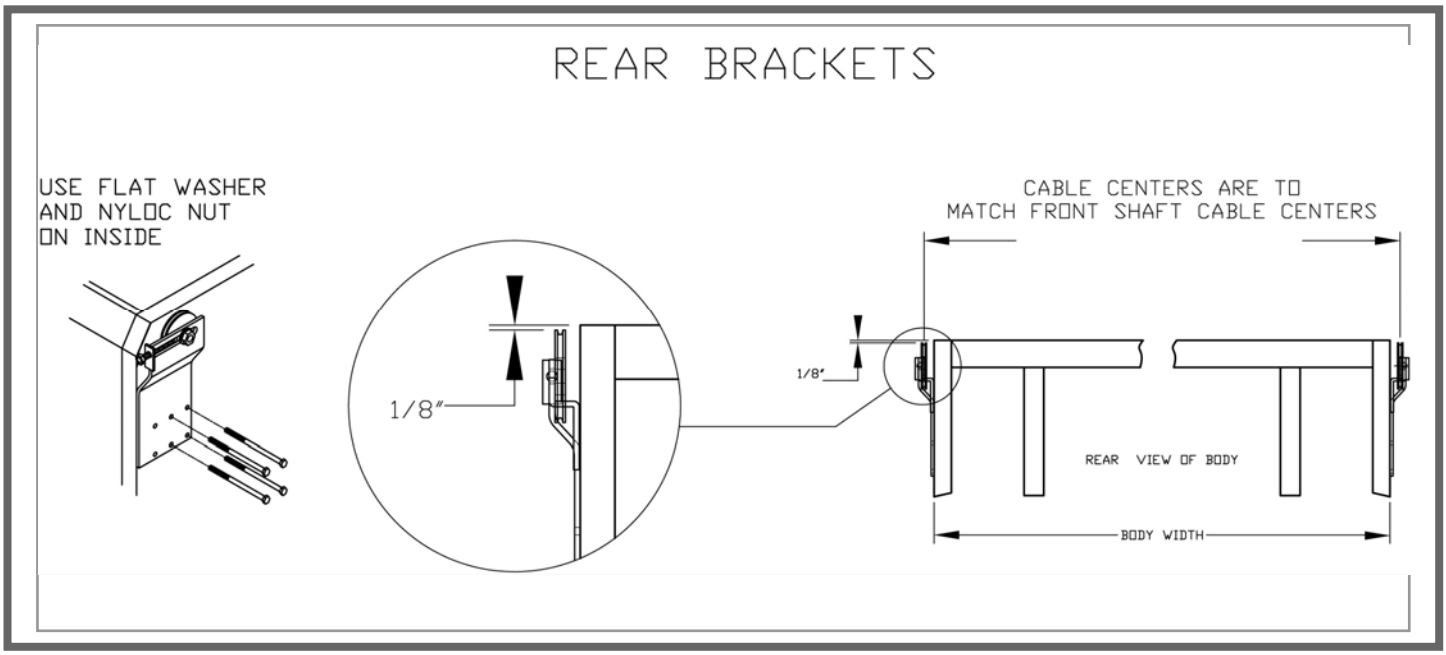
1. Drill a 2" hole 2 ½" down from the running surface through the cab shield or gussets, to slide the shaft through. Install bearings and plates.
2. Shim as needed to make the shaft straight and level.
3. Mount the shaft as far forward as possible while considering the position of the motor if the system is electric.
4. Bolt C-channel to cable guide plates.
5. Center the assembly on top of the running surface approximately 5/8" from the rear of the front pulley.

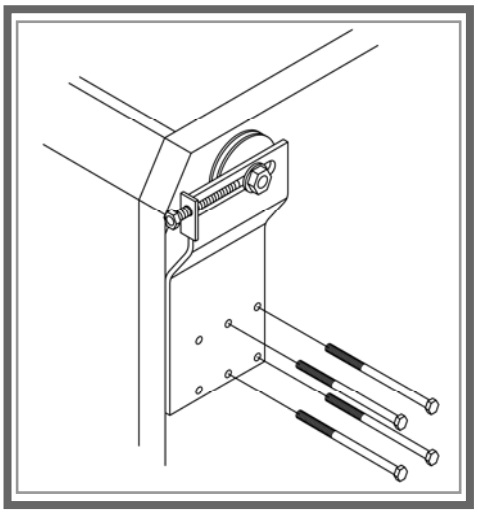


Mark the cable guides to be cut out with enough clearance to allow the C-channel to rest on the running surface. Weld or bolt the c-channel to the truck. You must make a filler panel to cover any voids for water penetration

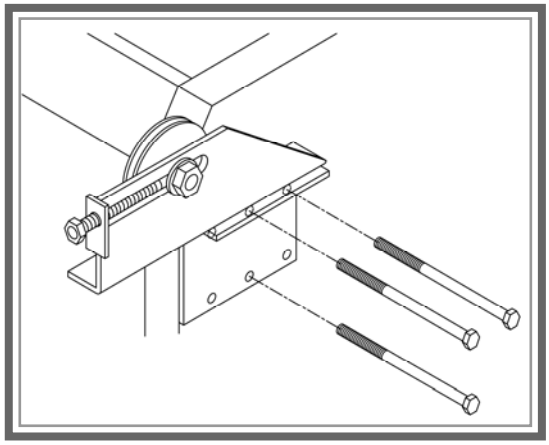
Step 3: Rear Brackets

1. Position brackets as far to the rear as possible, allowing maximum coverage of the load. Make sure both the left and right brackets are the same distance from the front assembly. If your application has a rear barn door, you will be limited as to how far back to mount the brackets. More than likely the rear brackets will prevent the door from opening all the way against the side of the trailer. While holding the bracket in place test open the door to determine the desired mounting position of the brackets.
2. The width of the rear brackets must have the same cable centers as the front shaft for the tarp system to operate smoothly. Use of shims (not supplied) may be necessary. If you have the optional adjustable/extended rear bracket, simply loosen the bolts and adjust the width of the pulleys. These brackets may also require shims to maintain correct pulley width. Retest the door
3. The top of the cable pulley should be 1/8" below the running surface. Be sure to rotate the brackets toward the rear of the truck by 1/4" and clamp into position. Note: After cables are tightened, the brackets will adjust to a more level configuration. Using a 3/8" drill bit, drill through the unit and mount using the provided 3/8" x 5 1/2" bolts with flat washers and *Nylock* nuts on the inside. On Aluminum trailers quite often a stiffening plate is used on the inside to prevent the bolts from drawing in too much. The brackets can also be welded if the unit is manufactured of *Hardox* type steel. When welding, rotation of the brackets will not be required. See diagrams.





Drill 3/8” holes through the dump body. Bolt the rear bracket assemblies by using the 3/8” x 5 1/2” Grade 5 bolts, flat washers, lock washers and nuts provided. Three bolts per side are required as a minimum.



Using the adjustment nut on the back of the rear bracket, position the pulleys as far forward on the rear bracket as possible. This will facilitate tightening the cables later in the installation process to give yourself maximum adjustment over the life of the system.

Step 4: Bow Installation

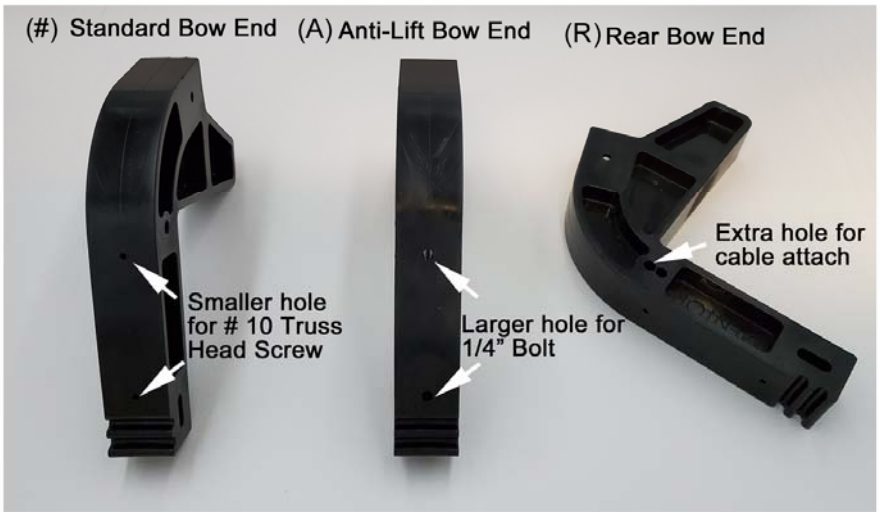
1. First, orient the bow bundle so that the rear bow (the one with two cable holes in the upper portion of the bow end) is facing the rear of the unit.
2. Lift the bundle with a fork lift in the center of the bows and place on the top of the side rails just behind the shaft assembly. Be careful not to damage the shaft assembly with the forks. Alternatively, you can place a ladder on each side of the unit, just under the shaft assembly, and two people can carefully walk them up and over the shaft assembly and onto the side rails. This can also be done in reverse starting at the rear and moving forward.
3. Remove the 1/4” rod holding the bows together on one side only, Proceed to Step 5 before removing the rod on the other side. Removing both rods before installing the cable will cause the bows to come apart, making installation extremely difficult.

Assemble The Bows

Placement for the Anti-lift bow is crucial. Follow the chart below to be sure Anti-lift bows end up in the strongest location for your trailer length. Assemble bows with 1/4" fasteners and arrange in order shown in the chart below. Insert provided 1/4" steel rod into the cable holes on each side and bend ends to keep the bows together

Mentor Bow Spacing Chart

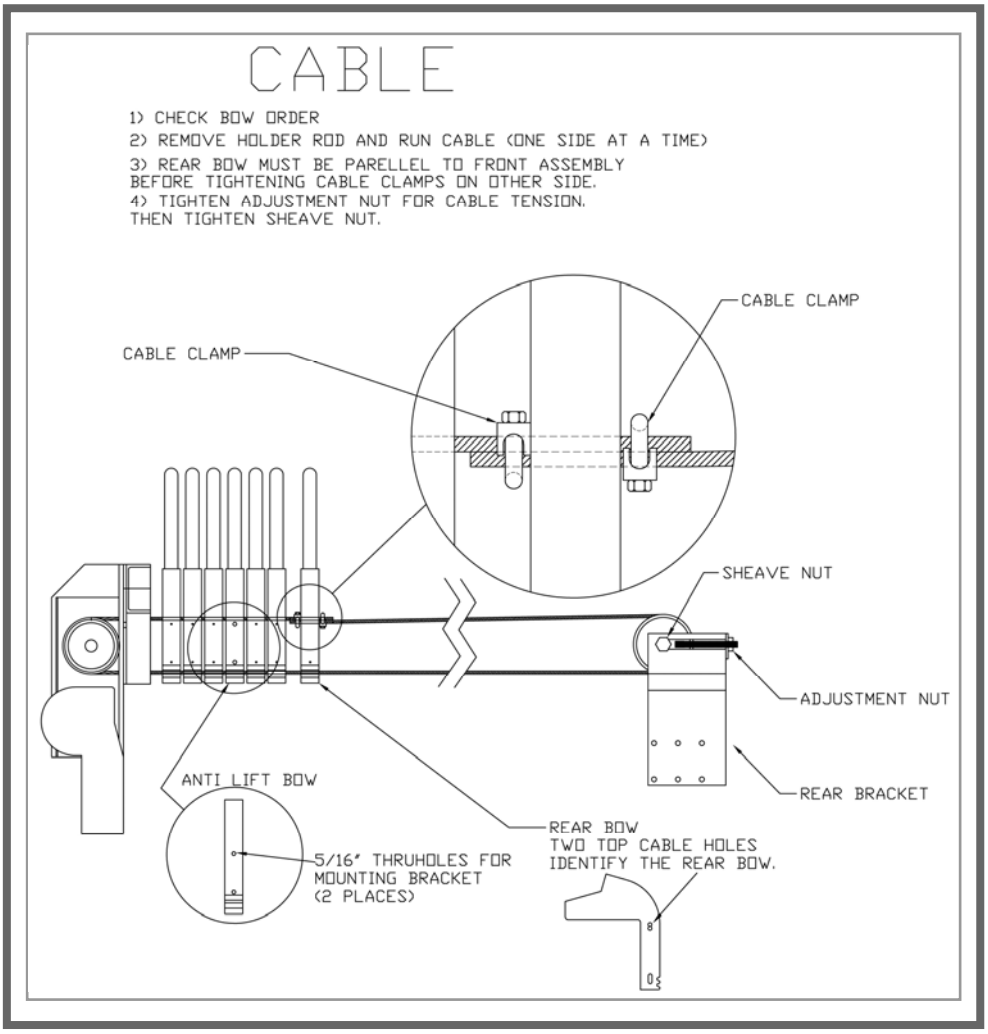
Number of Bows	Sets of Anti-Lifts	Order of bows (Number = qty.of std. A= Anti-lift bow. R = Rear bow.)
4	1	1-A-1-R
5	1	2-A-1-R
6	1	2-A-2-R
7	1	3-A-2-R
8	1	3-A-3-R
9	2	2-A-2-A-2-R
10	2	2-A-3-A-2-R
11	2	2-A-3-A-3-R
12	2	3-A-3-A-3-R
13	3	2-A-2-A-3-A-2-R
14	3	2-A-3-A-3-A-2-R
15	3	3-A-3-A-3-A-2-R
16	3	3-A-3-A-3-A-3-R
17	3	3-A-3-A-4-A-3-R
18	3	3-A-4-A-4-A-3-R
19	3	4-A-4-A-4-A-3-R
20	3	4-A-4-A-4-A-4-R



Step 5: Cables

1. Before you run cables through bow ends make sure the rear pulleys are close to the front of the adjustment slot but not touching the cable lock.
2. Starting at the rear bottom slotted hole, thread the cable through the bow ends toward front and around the pulley. Then thread the cable through the front bow end top hole to the rear bow.
3. Thread the other end of the cable around the bottom of the rear pulley and over the top. Then thread through the second hole directly under the top hole with the cable. (SEE DRAWING)
4. Place a vise grip on both ends of the cables to hold while you place cable clamps on each side of the rear bow end as shown.
5. Pull cable tight and hold while you tighten the cable clamps. To properly tighten the clamps you must alternate from one nut to the other nut back and forth until they tighten no more. This seats the saddle of the clamp against the U-bolt. You should see the cable become pinched by the U-bolt.
6. Now is a good time to insert the special stainless steel bolts into the anti-lift bow block ends (SEE DRAWING) and spin the nut on finger tight to prevent them from falling out. You may need to lift the bow up to facilitate the insertion of the bolt from the backside of the block. The block has 2 holes that are countersunk on the inside so the bolt does not protrude when fastened.

Note: *There can be as many as 3 blocks per side depending on the system length.*

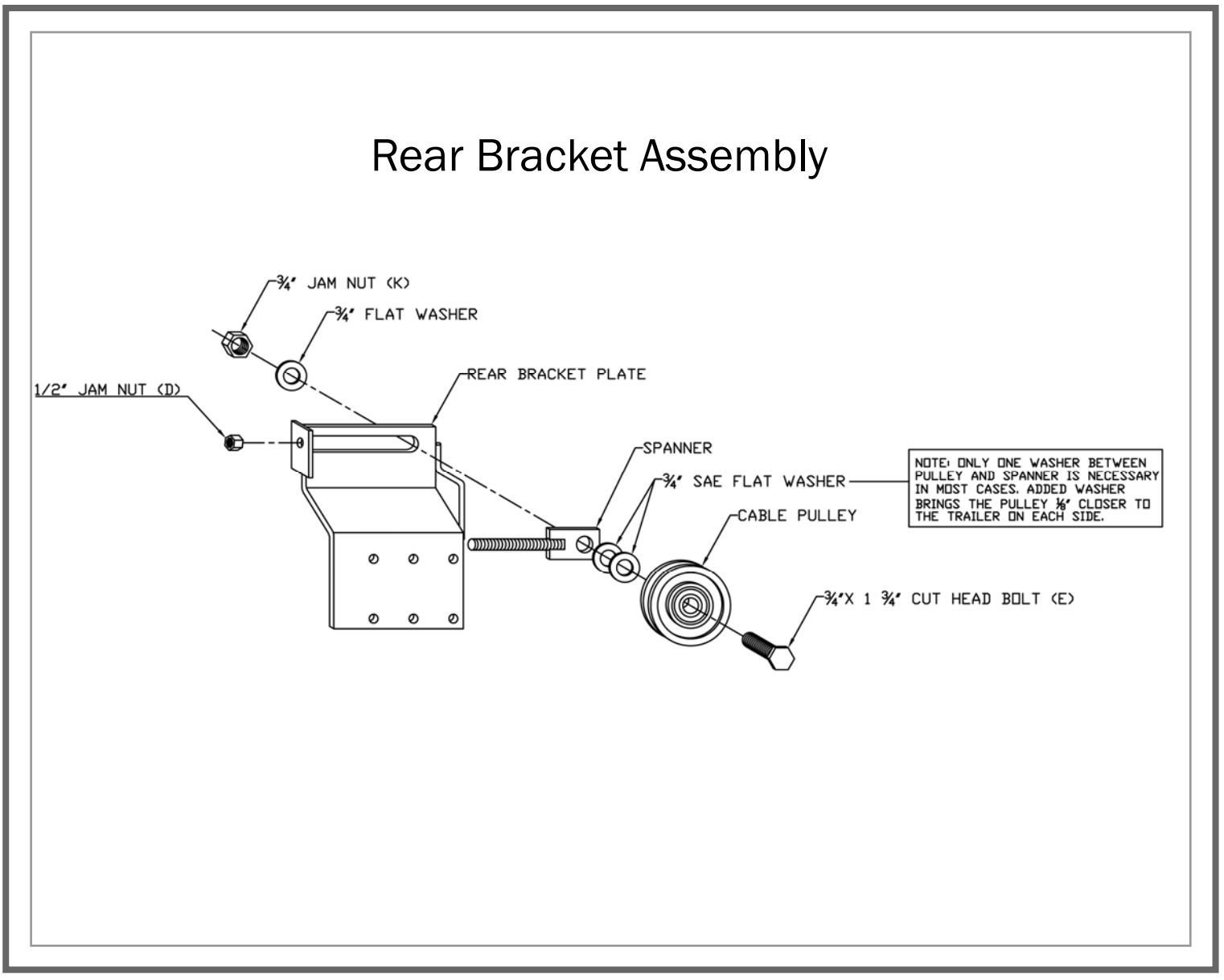


THE FOLLOWING CABLE ADJUSTMENT IS BEST DONE AFTER THE TARP IS COMPLETELY INSTALLED

1. Be sure the sheave (pulley) nut (K) is loose enough to slide in the rear bracket groove.
2. Tighten adjustment nut on rear brackets (D) to tension cables on one side until proper tension is achieved .

   (Proper tension is measured by squeezing the cables together 18" from the rear bracket. With force, the cables should be about 2" from contacting one another. This must be done while the bows are at the front of the system)

2. Tighten the sheave (pulley) nut (K) .
3. On the other side position the rear bow so it will align parallel to the shaft. Repeat the tightening process. The rear bow should stop the same distance away from the rear



Step 6: Belt or Chain Drive Installation

See separate instructions for installing the electric option.

1. Slide provided drive sprocket or pulley (with the hub facing in) onto the drive side of the shaft on the outside of the cable pulley. Tighten the longer setscrew through the pulley and into the pre-countersunk hole on the shaft. Then tighten the short setscrew to the shaft.
2. If you are installing an idler kit, mount idler pulleys or sprockets near body front but make sure the chain or v-belt will not obstruct the cab door from opening.

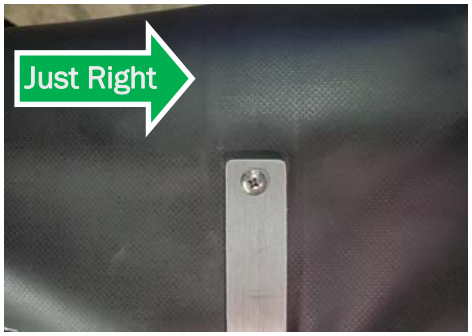
3. Temporarily tighten the handle bracket to the mounting plate, making certain the bolts are in the lower end of the adjustment slots, giving you full range of tension adjustment after mounting. Position on the body in your desired mounting location in line with the upper drive sprocket or pulley.
4. Hang the chain from the upper sprocket on the shaft and attach to the handle sprocket. Adjust on the dump box where the handle assembly is to be mounted, making certain the chain is straight and will not bind when cranking. Cut off any excess chain and connect the ends using the provided master link.
5. Weld or bolt the mounting plate or bracket to the body; additional fabrication may be needed.
6. Apply downward force on the crank assembly to desired tension and tighten the (3) nuts that attach the crank assembly to the mounting bracket.

Step 7: Tarp Installation

1. Unpack and roll the tarp out in a clean area with the top side up.
2. Reroll the tarp starting at the rear pocket and rolling in a circle to the front. Set the tarp on top in front of the bow pack.
3. Make sure you have about 18 inches of wiggle room in the length so as to be able to move the bows toward the front of the trailer.
4. Pull out the first bow mount position tabs and using the plastic ties attach the tarp tabs to the first front bow.
5. Move that bow forward and unroll to the second tab position, repeat this process until all the bows except the rear bow are attached to the tabs.
6. Remove the 1/4" bolt off both sides of the rear bow and slide the rear bow through the rear bow pocket of the tarp. Reinstall the bow and fasten.
7. Run tarp to rear of truck stopping 2" in front of rear brackets. Some assistance to move the bows may be required as they tend to tilt while being moved.
8. Mark tarp at front of c-channel. Mark a center line on the c-channel and the tarp. Align the center marks.
9. Start in the center and work towards the edges.
10. Pull excess tarp material tightly over front c-channel. Lay nylon cable down and fold tarp over. Then lay the aluminum flat bar over the cable toward the rear.
11. Drill through and fasten with self tapping screws so nylon cable is locked in front of flat bar.
12. At this time, attach side plates to the rear bow only. Be sure to trap the nylon cable that is sewn into the bottom edge of the tarp into the grooves in the bow end. Start on the bottom groove. The other side may have to go in the top groove, as tarp widths may vary. When fitting tarp into groove on bow end, do not over tension tarp; this may cause premature wear. (See Section A and B)
13. Now stretch out the tarp by closing until the pulley stops. Tarp should stop about 1/2" from rear bracket when tight.
14. Next go back to the cable section and complete the tension setting as per instruction.

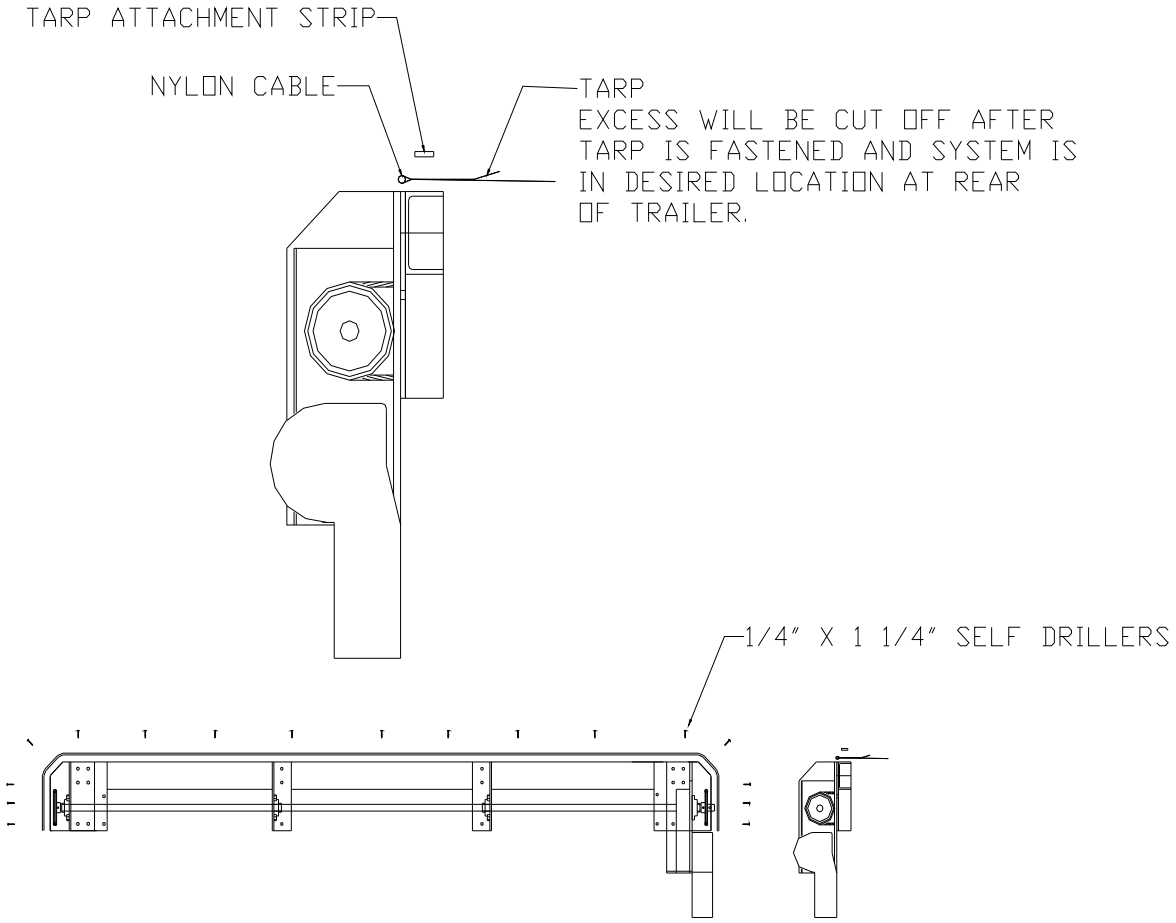
Section A

Section B



FRONT TARP ATTACHMENT

1) RUN SYSTEM TO REAR TO DETERMINE TARP LENGTH .
TARP WILL STOP 2"- 4" IN FRONT OF REAR BRACKETS.
2) FOLD MATERIAL AT FRONT OVER NYLON CABLE
AND FASTEN THRU PREDRILLED HOLES WITH 1/4 X 1 1/4 SELF DRILLERS.



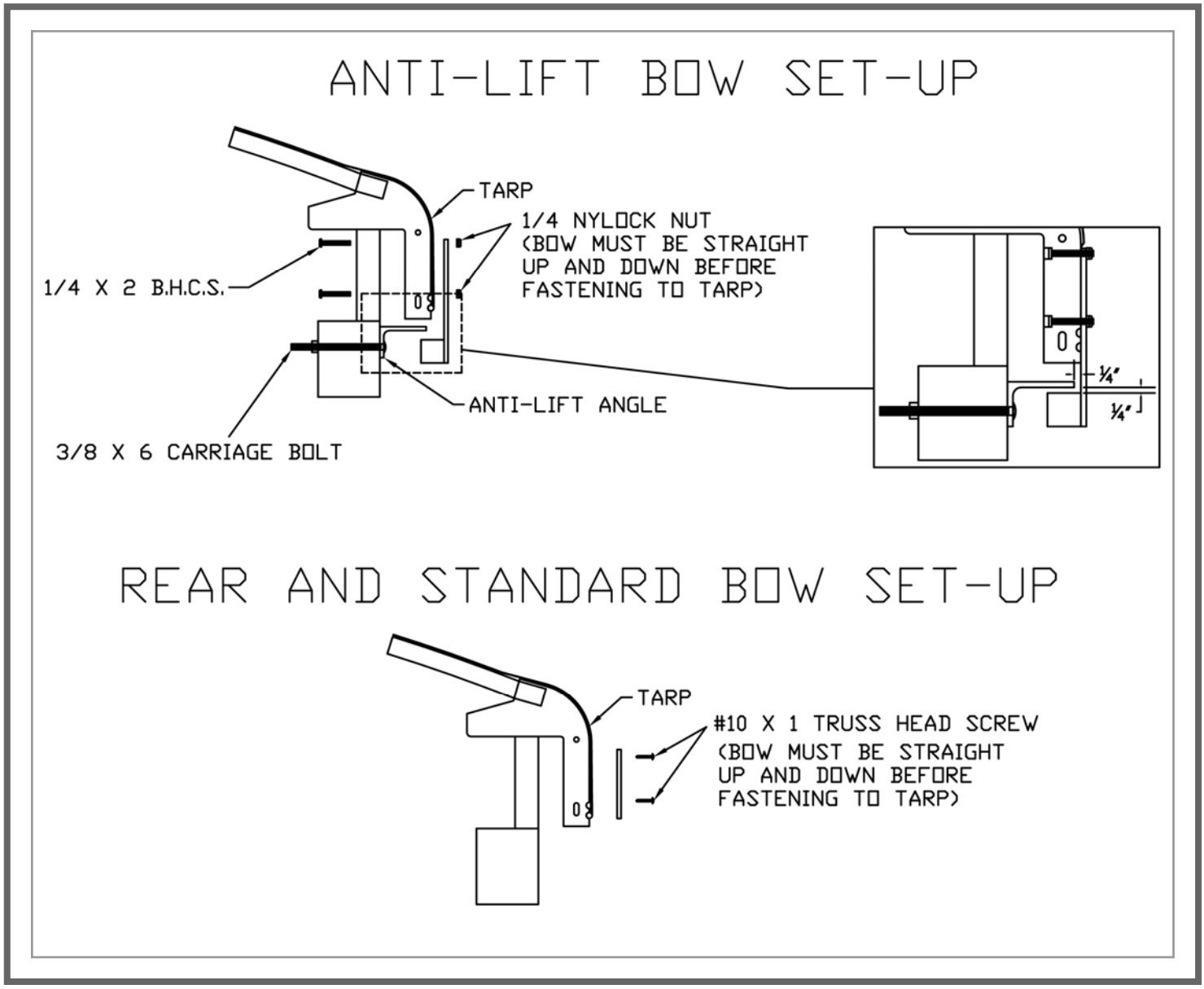
Step 8: Tarp Attach Plates

1. Set all bows up straight and level centered to the pocket.

2. Install side plates through tarp and into bow ends using #10 truss head screw. For the first side, be sure to trap the nylon cable that is sewn into the bottom of the tarp into the bottom groove in the bow end. Attach one side completely before moving to the other side of the system.

3. Install Side plates on other side using the top or bottom groove. This side may have to go on top as tarp width may vary. When fitting tarp into groove on bow end, do not over tension tarp; this may cause premature wear. (See Section B on page 13)

4. Attach anti-lift clips and guide plates. Leave about 1/4" space in between clips and guides.



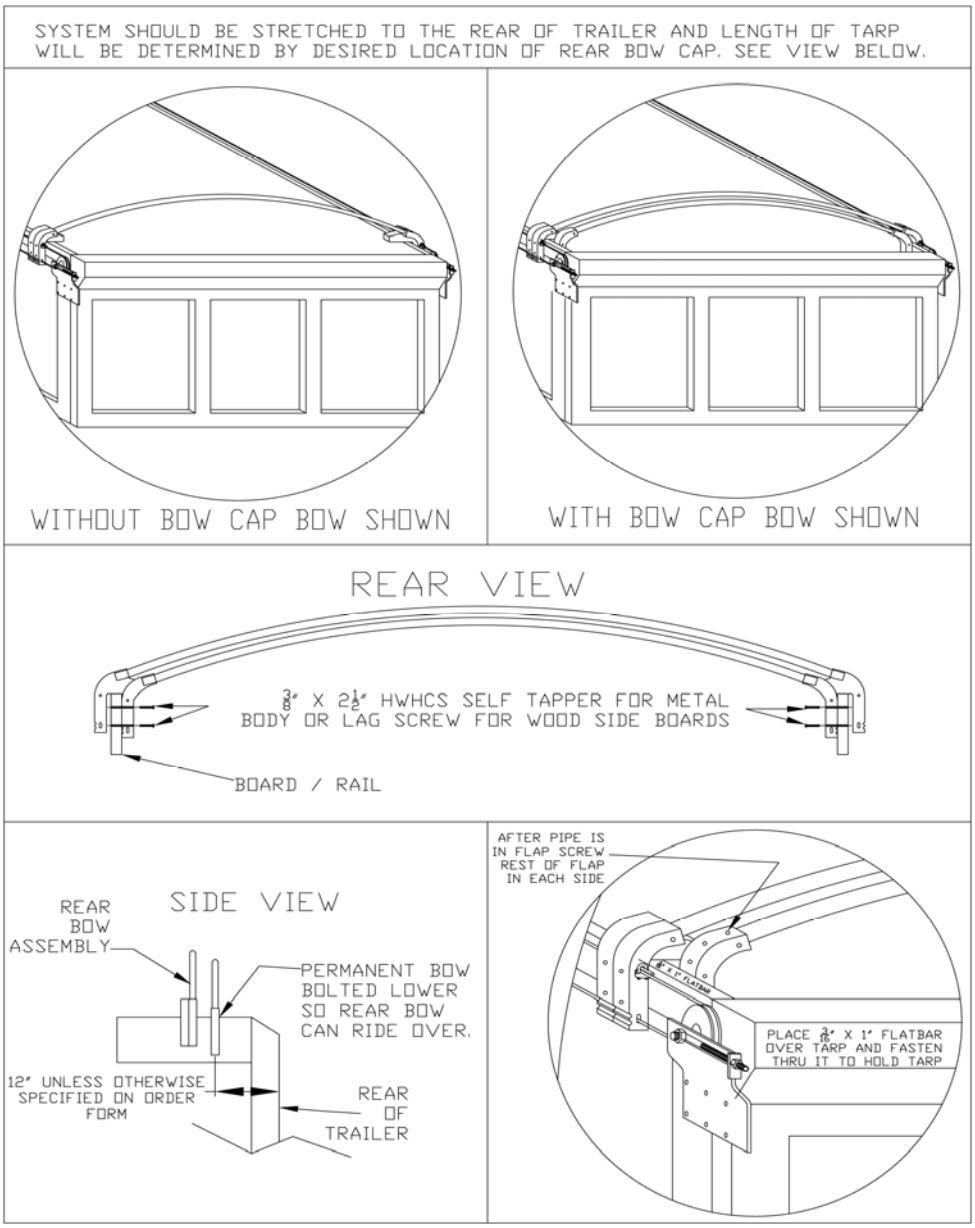
Step 9: Pleat The Tarp

After installation is complete, it is important to train the tarp to pleat in the outward direction when the system is opened.

1. Fold the tarp at each bow end to train the cable (sewn in the tarp) to push the tarp in an outward direction.
2. Fold at the cable between the bow end.
3. Continue the process until all tarp folds are trained.

Step 10: Rear Bow Cap (OPTION)

1. Measure the inside width of the top rails at the rear of the trailer where the plastic runners end.
2. Fasten the bow cap ends to the single bow using the provided 1/4" x 1 3/4" bolts and nyloc nuts.
3. Lay the bow flat on the ground. Measure the outside width of the bow ends.
4. This measurement should be equal to 1/16" wider than the inside width of the top rails.
5. Remove one bow end from the single bow. Cut off the difference it measures to one side of the bow.
6. Reattach the bow end.
7. Lay the bow flat on the ground and adjust to achieve the desired width.
8. Drill through the bow on the side that was shortened in the same hole position on the bow end as the other side.
9. Remove one bow end and slide the bow through the rear bonnet and refasten it into the bow end.
10. Close the system until the tarp is fully stretched.
11. Clamp the bow behind the rear main bow. Leave a 3/4" gap between the bow cap bow end and the main rear bow end at the top and bottom .
12. Drill through the bow end and into the trailer using an 11/32" drill bit in two places on each side.
13. Using the provided 3/8" x 2 1/2" self tappers and lock washers. Do not over tighten as you will strip the threads. Measure the distance either on top of or on the rear of the tailgate where you would prefer to attach the rear flap.
14. Cut the provided 1/8" x 1" Aluminum flat bar to match.
15. Starting from the middle, pull the tarp tightly over the tailgate and place the 1/8" x 1" aluminum strip over the tarp and sink one of the provided 1/4" x 1 1/4" self drillers with lock washer and flat washers.
16. If need be, a starter hole can be utilized by using a 7/32" drill bit and then sinking the 1/4" x 1 1/4" screw.
17. Repeat the process while working your way to the outside, while pulling the tarp tightly each time. Wrap the side flap around the permanent placed rear bow and attach to the rear bow end using a 1/4" x 1 1/4" screw, lock washer, and flat washer.
18. If you are satisfied with the seal, go ahead and cut off the excess.


SYSTEM SHOULD BE STRETCHED TO THE REAR OF TRAILER AND LENGTH OF TARP WILL BE DETERMINED BY DESIRED LOCATION OF REAR BOW CAP. SEE VIEW BELOW.
WITHOUT BOW CAP BOW SHOWN
WITH BOW CAP BOW SHOWN
REAR VIEW
3/8" X 2 1/2" HWHCS SELF TAPPER FOR METAL BODY OR LAG SCREW FOR WOOD SIDE BOARDS
BOARD / RAIL
SIDE VIEW
REAR BOW ASSEMBLY
PERMANENT BOW BOLTED LOWER SO REAR BOW CAN RIDE OVER.
12" UNLESS OTHERWISE SPECIFIED ON ORDER FORM
REAR OF TRAILER
AFTER PIPE IS IN FLAP SCREW REST OF FLAP IN EACH SIDE
PLACE 3/8" X 1" FLATBAR OVER TARP AND FASTEN THRU IT TO HOLD TARP

Installation Checklist

Important!

After the system installation is complete, be sure to check your work. Use this checklist as a guide to help you catch an oversight to ensure proper system operation.

Electric Motor (Option)

- ☐ At least 11 Volts at the motor. Test with power source/tractor that will be used regularly.
- ☐ All batteries at power source/tractor have proper voltage
- ☐ Has proper connection at contact plates (Option)
- ☐ 4GA wire used on the system as well as at the power source/Tractor
- ☐ Cramaro electric kit used
- ☐ Correct breaker used

Tarp

- ☐ Has been pleated at bow end and at center
- ☐ Reinforcements have been lubricated (add WD40 to cables for weather below 40 degrees)
- ☐ Is tight when in the covered position
- ☐ Clears obstacles and sharp objects
- ☐ Does compress to the front of the system fully

Cable

- ☐ Tension is correct
- ☐ Clamps are positioned properly

Front Assembly

- ☐ Is mounted at the correct height and is centered
- ☐ Radius fill in ramps are used *(For radius front trailers)*
- ☐ Is level with the trailer

Anti-Lift Assemblies

- ☐ Mounted on correct bows
- ☐ Mounted straight
- ☐ Proper clearance between guide and clip
- ☐ Runs smoothly and does not bind

Installation Checklist

Rear Brackets

- ☐ Proper height
- ☐ Proper width (Cable center matches front assembly)
- ☐ Pulley Bolts are tight
- ☐ Pulley has plenty of adjustment left

Handle Assembly (Option)

- ☐ Is fastened to a secure mounting location
- ☐ Sprocket lines up with shaft sprocket
- ☐ Chain has proper tension
- ☐ Chain does not interfere with drivers door

Rear Bow Cap (Option)

- ☐ Is secure and vinyl is tight
- ☐ Rear bow covers rear bow cap to create a seal

System checked by: _____

Date: _____

For installation issues or questions, please contact us (800) 272-6276. We are here to help!

Maintenance Schedule & Adjustments

Every 2 months

- Check tension of cables.
- Clean and lubricate cables
- Inspect the tarp for any tears, cuts, or worn areas
- Check condition of cables (check for frayed wire, cuts, rust)
- Inspect hardware to be sure fasteners haven't become loose
- Check length of tarp
- Check security of cable clamps
- Check alignment of rear bow
- Check tension of V belt or chain
- Make certain anti-lift clips are installed on all vinyl systems

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Every 6 months

Remove the cable clamps and inspect that area of the cable for corrosion or broken wires. If necessary, replace the cable.

Cable Tension

The cable tension is correct when you cannot easily touch the cable together when squeezing with one hand 18" from the rear pulley. It is recommended to check tension after 2 weeks of the initial install.

The cable is adjusted by first loosening the main nut on the rear pulley using a 1 1/8" wrench and then tightening the cable by using a 3/4" wrench on the rear spanner nut. Be sure to retighten the pulley nut.

Do not over tighten the cable as this will cause the front shaft to bend or break which can cause the cable to derail.

To clean and lubricate the cable, run a clean rag covered with light oil or WD 40 over the entire cable on both sides of the system. In addition, spray WD 40 or a similar product into the slots on the bow ends. Do not use any heavy oil products as this will cause the dirt to stick to the cables and pulleys.

Adjustment of the V-Belt or Chain

If the rubber belt slips or if the chain loosens while operating the system, an adjustment will be necessary. Simply loosen the three bolts on the handle bracket and slide the handle downward until desired tension is achieved. Retighten the bolts.

Bow Alignment

To check for proper bow alignment, crank the system all the way to the front of the vehicle. The ends of all the bows should be touching each other and should be tight against the front assembly. If one side is not tight to the front then loosen the cable on the opposite side ,with the bow(s) that are closer to the front assembly, and use the handle or switch to open the system. This side that is loose will slip and the bows will begin to align themselves. When every bow is aligned and tight to the front, then retighten the cable.

Trouble Shooting

If the system will not move when cranked:

1. The v-belt or chain is too loose.
2. The cables are too loose.
3. The (chain sprocket or v belt pulley) set screw on the shaft is loose.
4. Check side boards to see if obstructed.

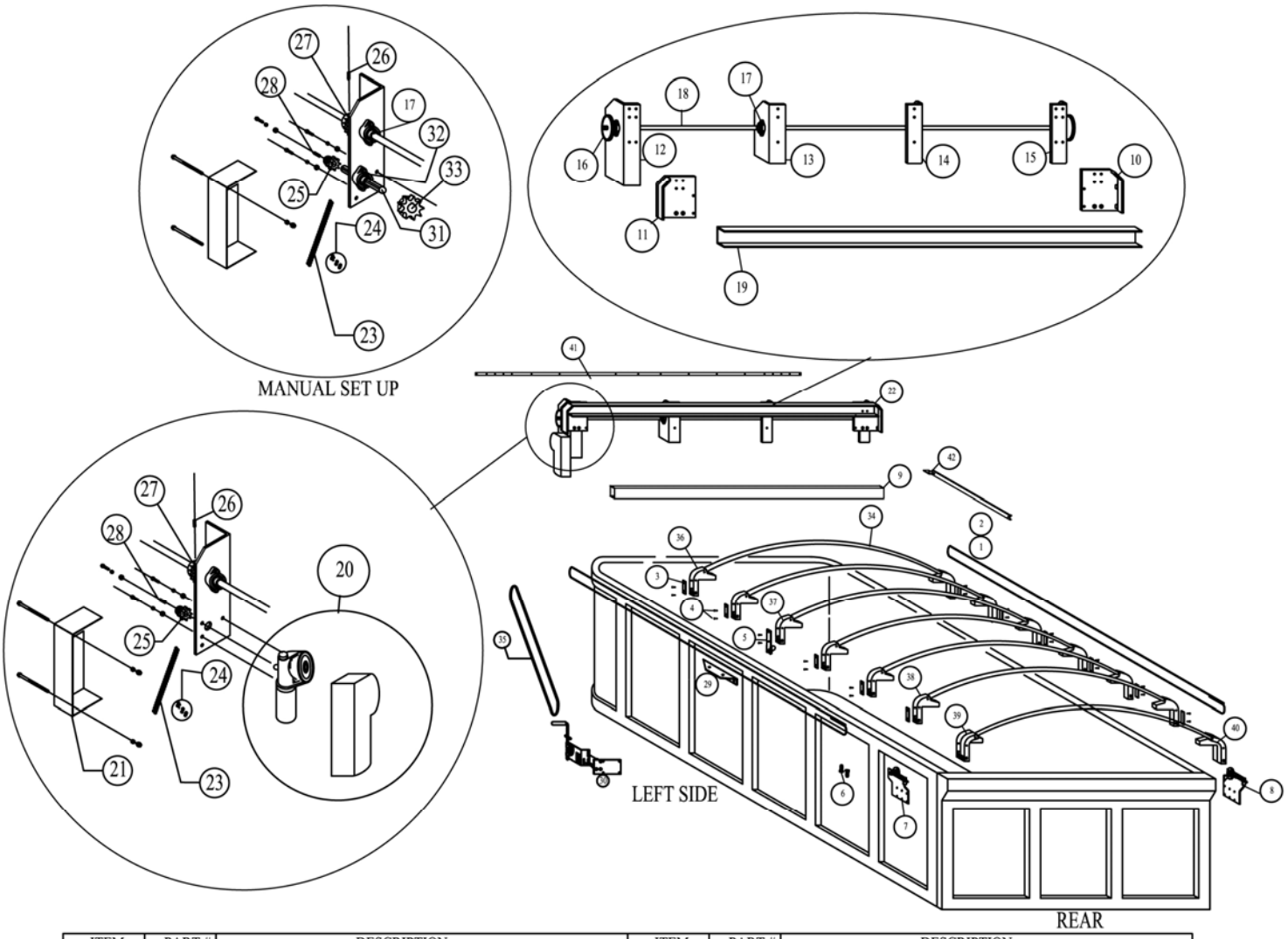
If cables are breaking:

1. Check the height of your drive cables. The bottom of the cables should be approximately 3/4" above the running surface of the body. Heights greater than 1" can cause the cable to wear prematurely or even snap.
2. Make sure the cables are not loose.
3. Tarp is to long, creating a lot of wind whipping which can break cables and cause premature wear on system.
4. Make sure anti-lift clips and slip clips are used properly.
5. Tarp needs to be stretched tight when traveling or bows may "rock back and forth".

If the system is hard to crank:

1. The cables are too tight.
2. The cables are dirty or not lubricated, use WD-40 to clean and lubricate the cables.
3. The rear bow is not in alignment.
4. The bows are not at the same cable centers. (You can reshape the bows by pushing upwards or downwards to bend them back into shape. The distance between the ends of each bow must be the same as the center distance of the cable pulleys).
5. For systems with nylon cables, the nylon cables may be too loose.
6. The sideboards are damaged.

MENTOR ®



ITEM	PART #	DESCRIPTION	ITEM	PART #	DESCRIPTION
1	106200	1/4" GALVANIZED STEEL CABLE	22	******	SEE PART LIST #601500 - 601510 FOR FRONT ASSEMBLIES
2	106201	1/4" STAINLESS STEEL CABLE	23	601400	NICKEL PLATED #50 22" CHAIN WITH MASTER LINK
3	604100	TARP HOLD DOWN PLATE	24	601405	#50 MASTER LINK
4	411110	#10 X 1" TRUSS HEAD SCREWS	25	601410	SPROCKET #50BS9-3/4" BORE
5	604010	ANTI LIFT CLIPS	26	413435	5/16" X 2 1/2" ROLL PIN ZINC PLATED
6	106206	1/4" CABLE CLAMPS	27	601415	SPROCKET #50B18-1" BORE
7	107772	REAR BRACKET ASSEMBLY WITH 5" PULLEY LEFT	28	160000	KEYSTOCK 3/16"
8	107773	REAR BRACKET ASSEMBLY WITH 5" PULLEY RIGHT	29	109028	ANTI-LIFT ALUMINUM GUIDE
9	******	SEE PART LIST #600005-600008 FOR 2 X 4 BEAM	30	******	SEE PAGE 13 FOR CHAIN HANDLE ASSEMBLY
10	601066	FRONT ASSEMBLY END BRACKET RIGHT	31	601409	3/4" X 5" SHAFT WITH 1/4" KEYWAY
11	601065	FRONT ASSEMBLY END BRACKET LEFT	32	116355	BEARING 3/4" SIDE MOUNT
12	601004	DRIVE ANGLE LEFT	33	600000	ADJ UPPER SPROCKET 40B38-3/4B
13	601033	SHAFT ALUM INNER SUPPORT ANGLE LEFT	34	******	SEE PART LIST #602010 - 602017 FOR BOWS
14	601032	SHAFT ALUM INNER SUPPORT ANGLE RIGHT	35	105075	CHAIN #40 NICKEL PLATED
15	601031	SHAFT ALUMINUM SUPPORT ANGLE LEFT	36	602001	BOW END STANDARD
16	105004	CABLE PULLEY 5"	37	602002	BOW END ANTI LIFT
17	116050	BEARING 1" SIDE MOUNT	38	602003	BOW END REAR
18	******	SEE PART LIST #103015 - 103030 FOR SHAFT MATERIAL	39	602004	BOW END REAR CAP ASSEMBLY LEFT
19	******	SEE PART LIST #601045 - 601060 FOR CROSS CHANNEL	40	602005	BOW END REAR CAP ASSEMBLY RIGHT
20	164903	2.1 HP MOTOR ASSEMBLY	41	******	SEE PARTS LIST #604200-604204 FOR TARP ATTACH STRIP
21	600001	CHAIN COVER	42	109300	RAMP