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## Dump Truck Tarp System Installation Instructions

### Electric or Manual Aluminum or Steel, 4-Spring or 5-Spring

Congratulations on your new tarp system! This is the installation manual for our best-selling Dump Truck Tarp System. All of our products are designed with your needs in mind and we stand behind the quality and craftsmanship of this system. If you have any questions, comments, or concerns, please feel free to contact us through our website at [www.CarolinaTarps.com](http://www.CarolinaTarps.com) or call us at 864-283-0056.

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#### **WARNING:**

- Never operate tarp system under power lines. This may cause injury due to electrocution.
- Never operate tarp system while moving.

#### **CAUTION:**

- Read through entire instructions and follow directions thoroughly to ensure proper installation and operation of the system.

## ELECTRIC SYSTEM CONTENTS:

*(Refer to the end of this booklet for Manual System Diagram)*

Qty	<b>Long Box</b>	Qty	<b>*Hardware Bag</b>
2	Lower Arms	1	Axle Bearing
2	Upper Arms	1	Stud Shaft
1	Cross Tube	2	External Retaining Ring
1	Aluminum Tarp Axle	4	Stainless Steel Bushings
		4	1/2" x 1-1/2" Bolt, Washer, & Nut
	<b>Small Box</b>	4	3/8" x 1 1/4" Bolt & Nut
2	Pivot Pins	8	1/2" x 1/2" Socket Set Screw
8 or 10	Spiral Torsion Springs	8	5/16" x 3/4" Bolt
2	Tarp Axle Mounting Brackets	4	5/16" x 2-1/2" Bolt
2	Plastic Tarp Centering Flanges	16	3/8" Washers
1	Tarp Motor	8	5/16 Nylock nuts
1	Roll of Dual Connector Wire		
1	Rotary Switch Kit		
2	90° Corners		<b>OPTIONAL ACCESSORIES</b>
1	<b>Hardware Bag*</b>	2	30° or 45° Elbows
		1	Wind Deflector & Hardware Kit
		1	Tarp Housing
		1	Solenoid Switch Kit
		1	Drill Bit Kit (5/16", 3/8", 1/2")

## TOOLS REQUIRED

Estimated Time: 5-10 Hours, depending on experience.

- Two Tape Measures
- 3/8", 1/2" and 9/16" Sockets and Wrenches
- Needle-Nose Pliers
- Phillips Screwdriver
- 5/16", 3/8" and 1/2" Drill bits
- Allen wrench set
- Wire cutters
- Utility knife or wire strippers
- Crimping pliers (for crimping terminals to battery cable)
- (Optional) Welder - Steel and Aluminum
- (Optional) 2" Hole Saw (for mounting axle directly to cab protector)
- (Optional) Long-Length Heavy Duty Zip Ties

## BEFORE YOU BEGIN

### 1. Make sure you have enough cable.

Estimate the total length needed for your install. A quick way to do this is to take the height of the box and add the length of the box twice. Add about 8' for routing into the cab, and another 8' for routing to the battery, and then add 5' just to be safe.

For a 4' high, 14' long bed, you would have:  $4' + 14' + 14' + 8' + 8' + 5'$  for an estimated total length of 53'. We include a 55' roll of 6 gauge wire, which is sufficient for *most* dump bodies. Longer beds will require more wire, which can be found on our website (#9442) or at your local hardware store. Make sure to use the same gauge wire across the whole system.

### 2. Determine cable route.

When running cable from the motor to the switch and to the battery, be sure to consider 1) How to go around the lift hinge without the wire getting pinched or pulled, and 2) How to get into the cab. Before you begin, lift and secure the dump bed and examine the cab, hinge, and frame for the most logical route. Search for an existing wiring entry point, often found under the steering wheel, under the center console, or under the passenger glovebox. Open the hood of the truck and look for a cluster of wires passing through the firewall and see if the hole is large enough to allow for additional wiring. If there is no existing entry portal, then you will have to drill a hole in a safe, discreet location in the floor or under the dashboard. Be cautious of sharp edges or unintended exposure to moisture, heat, or toxic gases from underneath the vehicle. It is recommended to consult a professional before making any permanent modifications to your vehicle.

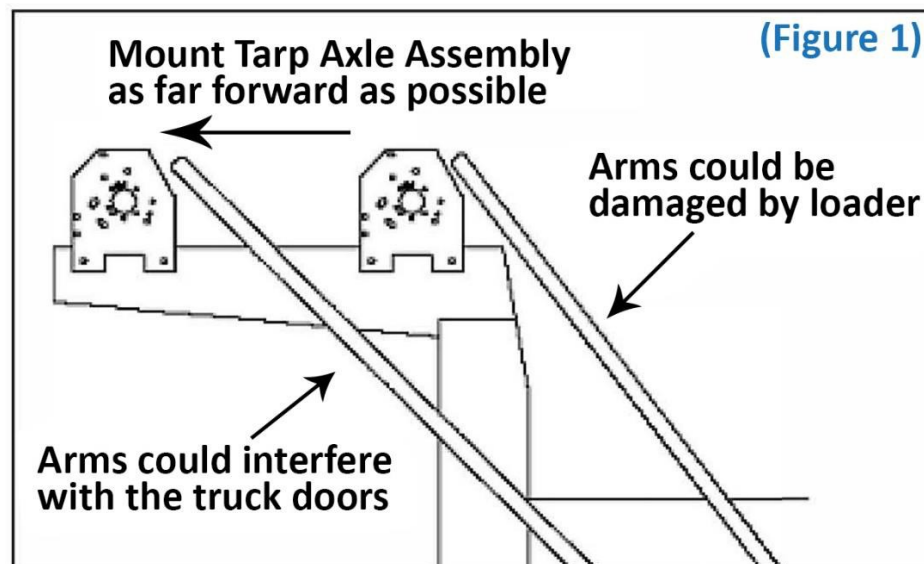
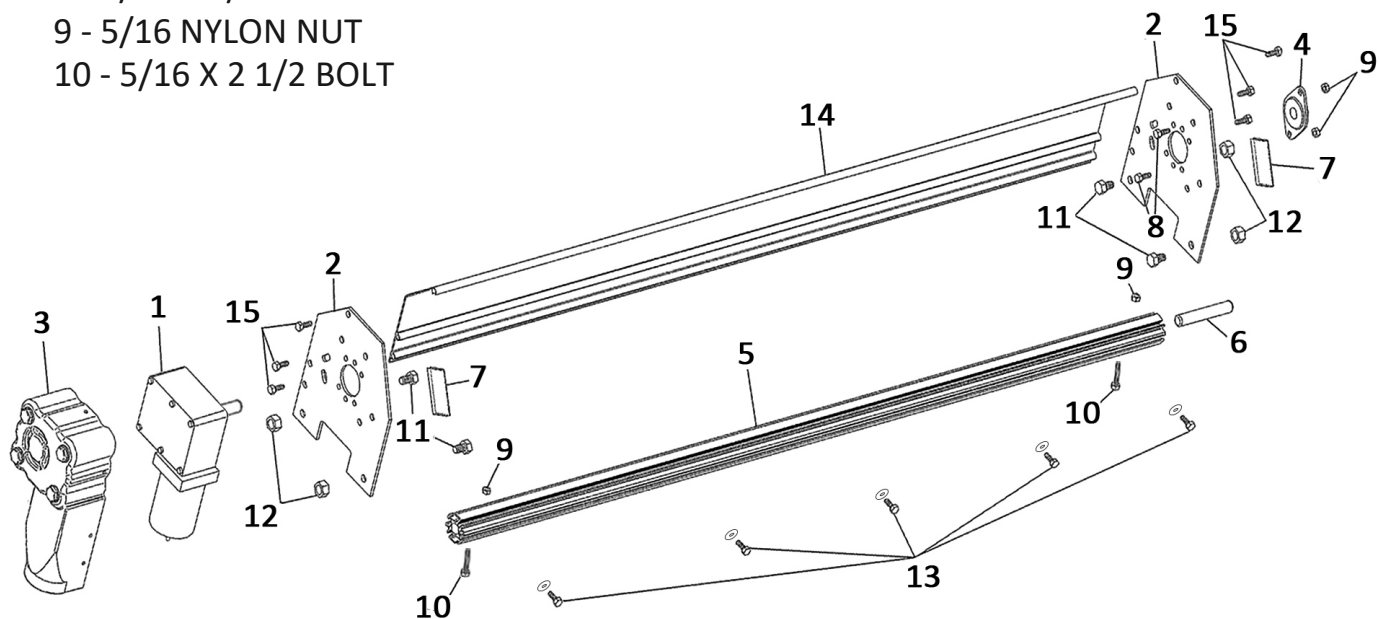
### 3. Are you installing the tarp system on a trailer?

If you are installing the tarp system on a trailer, you will need to install a 50 Amp Connector Plug Set (Part #9319) at the point where the wire goes into the cab to allow for disconnecting the trailer.

Alternatively, you could install a 12V DC chargeable battery onto the trailer, which would allow the trailer to have a fully operational tarp system at all times.

# INSTALLING THE TARP SPOOL KIT

- |                                 |   |
|---------------------------------|---|
| 1 - TARP MOTOR                  | 11 - 3/8" X 1-1/2" BOLT                 |
| 2 - TARP AXLE MOUNTING BRACKETS | 12 - 3/8" NUT                           |
| 3 - CHROME MOTOR COVER          | 13 - 5/16" X 3/4" BOLT & WASHER         |
| 4 - 3/4" BEARING WITH FLANGE    | 14 - ALUMINUM WIND DEFLECTOR (optional) |
| 5 - ALUMINUM TARP AXLE/SPOOL    | 15 - 1/4" X 1-1/2" SELF-TAPPING BOLTS   |
| 6 - 5" X 3/4" STUD SHAFT        | (for use with wind deflector)           |
| 7 - RUBBER BUMPER               |   |
| 8 - 5/16 X 3/4 BOLT             |   |
| 9 - 5/16 NYLON NUT              |   |
| 10 - 5/16 X 2 1/2 BOLT          |   |



### **STEP 1: CHOOSING THE MOUNTING LOCATION OF THE TARP SPOOL KIT**

The Tarp Spool (5) and Tarp Motor (1,3) should be mounted on top of the cab protector, as far forward as possible to avoid damage by loaders, but not so far forward that the upper arms block the vehicle doors (*Figure 1*). Our angled elbows (sold separately) can be added to the arms for more ideal positioning.

### **STEP 2: INSTALLING THE MOUNTING BRACKETS**

Once you have determined your mounting location, install the Tarp Spool Mounting Brackets (2), or use the brackets as a template to drill directly into the cab protector. *Note: Leave enough space between the tarp axle and cab guard to allow the entire tarp to roll up effectively.*

### **(OPTIONAL) STEP 4: INSTALLING THE WIND DEFLECTOR**

If installing a Wind Deflector, measure the outside width of the tarp spool mounting location and cut the wind deflector to that length and pre-attach the mounting brackets to each side with the Wind Deflector Hardware (1/4" x 1-1/2" self-tapping Hex bolts). This way you can set this assembly on top of your bed/cab protector and properly align the front edge of the wind deflector along the edge of your bed/cab protector to seal most of the wind gap in-between the top of your cab and the wind deflector. Hold each bracket in place with a wood clamp and make sure it's level to your liking before you mark and drill the two 3/8" holes for the mounting bracket bolts.

### **STEP 3: MOUNTING THE TARP MOTOR AND TARP SPOOL**

*(For manually operated systems, refer to the diagram at the end of this booklet)*

Measure from the outside of one mounting bracket to the outside of the other and cut the Tarp Axle 2" shorter than that length. After cutting, drill a 5/16" hole through the axle 3/4" from the ends. Attach the Axle Bearing (4,8) to the passenger side mounting bracket. Slide the Stud Shaft (6) through the Axle Bearing into the Tarp Axle. Line up the holes in the Tarp Axle to the hole in the Stud Shaft and secure with 5/16"x 2-1/2" bolt (10) and nut. With the axle secured on one side, slide the motor shaft through the center hole of the drivers side bracket and into the axle and secure with a 5/16" bolt (10), washer, and nut (9). Now you can insert the 5 motor bolts supplied with the motor (be careful not to overtighten). (9) Lastly, use an Allen wrench to tighten the set screws on the axle bearing, securing the stud shaft.

## INSTALLING THE PIVOT PINS

**A:** Resting location of deployed cross tube

**B:** Tarp Axle location

**C:** Pivot point



1. The easiest way to determine the pivot point is to use two tape measures, one in your right hand measuring from **Point A**, and one in your left hand measuring from **Point B**. The intersecting tapes should form an 'X'. Adjust the position of the intersection along the exterior of the box until the two tapes intersect at the same distance from their respective starting points. Mark this point.

### Alternative Method:

**1.1** Mark the halfway point between **Point A** and **Point B**.

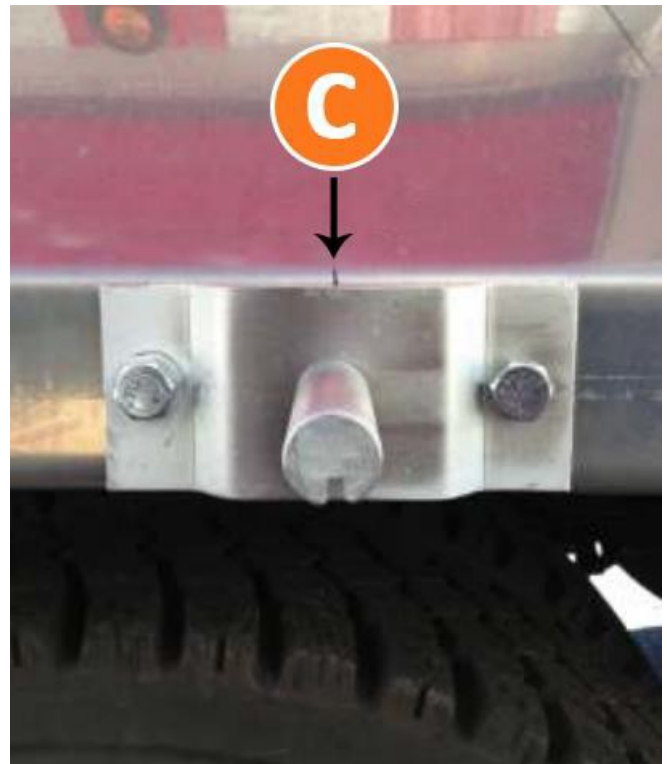
**1.2** Use a level to transfer the halfway mark to the bottom rail.

**1.3** Measure from **Point A** to **Point C** and then measure from **Point B** to **Point C**. These measurements should be equal. Adjust the **Point C** mark left or right until the distance between **C** and **A** is equal to the distance between **C** and **B**.

**1.4** Repeat steps **1.1** - **1.3** on the other side of the dump bed and verify that all measurements match on both sides.

*Make sure the operation of the tail gate will not be inhibited by the position of the cross tube at Point A.*

2. Hold or clamp the pivot pin plate against the rail at **Point C** and align the center of the pin with the mark.
3. Use the pivot pin holes to mark your drilling locations. Start with a smaller drill and work your way up to avoid skidding and fatigue. You can also weld the pivot pin to the box.
  - *The use of a center punch can ensure the bit will not slide away from center.*
  - *The drill bits in our optional drill bit kit are hardened carbide bits that do not require any 'step-up drilling' and cut the drilling time for the install down significantly.*
  - *When drilling a ½" diameter hole, always drill slow and use cutting oil, 3-in-one oil or similar lubricant.*
4. Bolt the pivot pins to the rail using the included 1/2" x 1 ½" bolts, washers and nylock nuts making sure that the slot in the pivot pin is pointed down.
5. Repeat steps 2 - 4 on the other side of the dump bed.

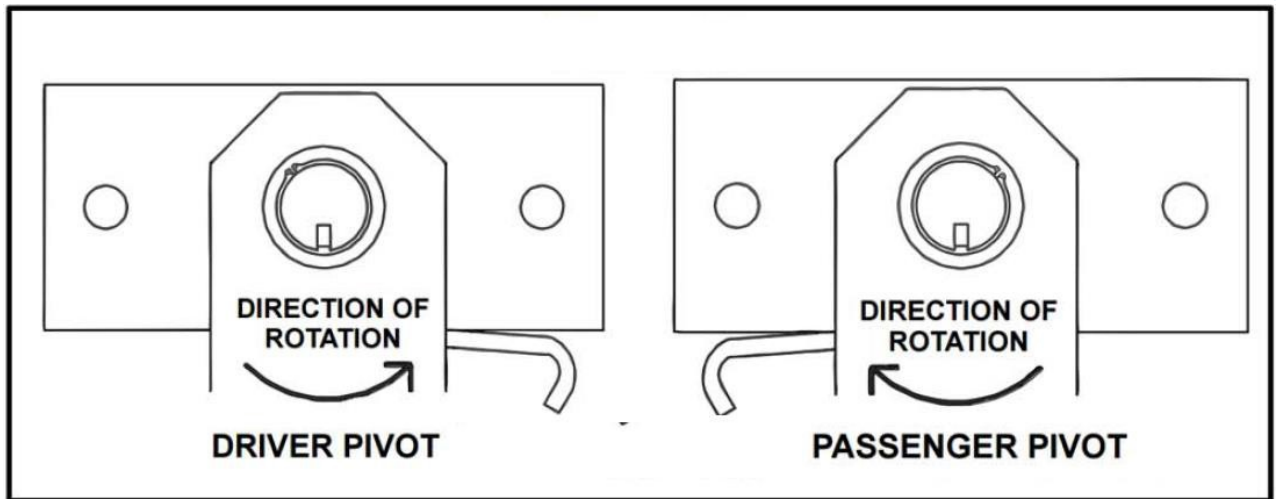


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## INSTALLING THE TARP ARM SET

**Note:** Steps 1-7 are just to find and verify the position and functionality of each piece in the tarp arm set. Final installation will be done later. Refer to the Tarp Arm Set Diagram at the end of this instruction manual for guidance.

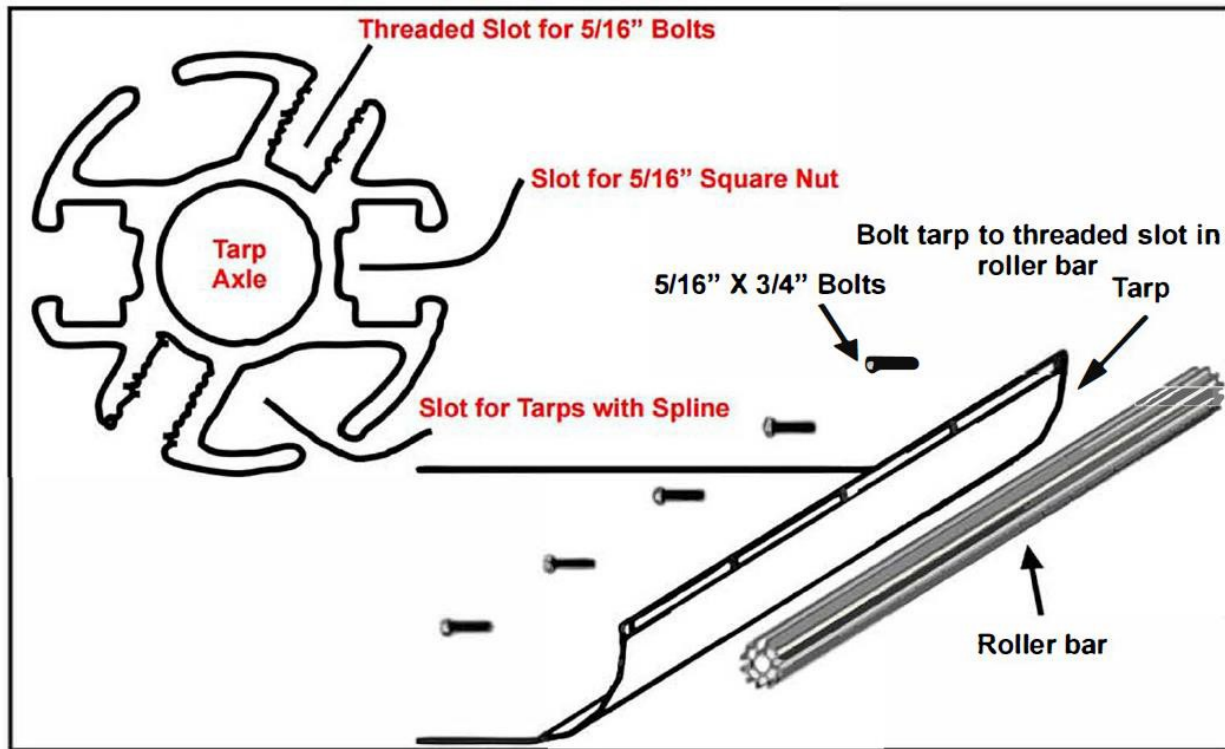
1. Install a corner (5) in each upper arm (4) using the included 5/16" x 1-3/4" bolts (15), 5/16" washers, and 5/16" nylock nuts (16).
2. Check to make sure that the arms will have enough clearance (See pg 5, Fig 1). Hold an upper arm up to the side of the dump box with the corner resting against the axle mounting bracket and with the bottom end aligned with the pivot pin. If the arms will be exposed or in the way, then install two 30° or 45° elbows (Part #9315, #9316) to add a bend in the arms. Steel arms can be bent using proper equipment.
3. Next, determine the overall length of the arm assembly. Without loading the springs (3), fit the bottom end of the lower arm (2) onto the pivot pin (1).
4. Slide an upper arm into the lower arm and position it so that the corner sits on top of the tail gate. If the arm is too long, cut it to a suitable length, leaving at least 2 feet to slide into the lower arm. Use the set screws (13) to lightly tighten the upper arm in place. Swing the arm assembly to the front of the box. If necessary, untighten the set screws and adjust the position of the upper arm so that the corner lands in the correct location at both the front and back of the box. Mark the position on the upper arm.
5. After completing both arm assemblies, hold the cross tube (6) up so that you can slide the upper arm corners into each end. Attach the cross tube to the corners with the included hardware (15, 16) but do not fully tighten yet.
6. Rotate the assembled tarp arm set forward. Make sure the arms and cross tube rest symmetrically against the axle mounting brackets. Adjust as needed.
7. Swing the tarp arm set back to the rear of the dump body and check the landing position. Check for binding or rubbing of the arms against the sides of the dump box and adjust as needed (Bushings or spacers can be used to maintain a certain position of the lower arm spring housing on the pivot pin).
8. Remove the cross tube, upper arms, and lower arms so that you can load the spiral torsion springs (3) into the lower arms and begin final installation.
9. Place a Stainless Steel Bushing (8) onto the pivot pin. Cradle the spiral torsion springs (3) inside the spring housing of the lower arm and maneuver the lower arm back onto the pivot pin, making sure the center tab of each spring sits in the pivot pin slot. Place a second Stainless Steel Bushing (8) on the pivot pin and snap the External Retaining Ring (9) into place, in the notch at the end of the pivot pin.



- a. Depending on the height of the pivot pins from the ground, it is common to need to raise the dump in order to load the springs onto the lower arm. In doing so, understand and use necessary support and safety guidelines to do so safely.
10. With the spiral springs loaded (with no tension on them yet), rotate the lower arm up (counterclockwise on the driver side, clockwise on the passenger side) until you can install the upper arm into the lower arm. **CAUTION: Make sure to maintain a firm grip on the lower arm to prevent the spring-loaded arm from spinning freely and potentially causing damage or injury.** Slide the upper arm into the lower arm to the mark made in Step 4 and tighten the set screws that hold it in place.
  - a. If the dump was lifted during these steps, it can be lowered back down after the upper arms are inserted and resting on the ground near the rear of the dump.
11. Set the rear cross tube across the back of the body, but do not reconnect with the upper arms until you are ready to install your tarp.

# INSTALLING THE TARP

The tarp axle has several ways of attaching a tarp. You can screw bolts through the tarp grommets into the threaded slot of the axle or use the square slot to bolt through the grommets into 5/16" square nuts. There is also a slot to receive a splined tarp. The most common method is to use the threaded slot, which allows you to securely fasten the tarp at the grommet locations. The included hardware assumes this method.



1. Line the front tarp grommets up with one of the threaded slots in the axle.
2. Attach the tarp to the front axle with 5/16" x 3/4" bolts and washers, centered on the axle.
3. Slide the cross tube (6) through the pocket in the back of the tarp.
4. Slide the plastic tarp centering flanges (14) over each end of the cross tube and then bolt the upper arm corners into the cross tube.
5. Position the plastic tarp flanges (14) up against the edges of the tarp so the tarp is centered on the cross tube and tighten the flange set screws securely. These flanges will help the tarp stay centered as well as prevent the tarp from being damaged when being deployed or wound up.

## WIRING

The motor must be wired with 6 or 8 Gauge wire. Smaller wire will result in poor performance and possible overheating. **Tip:** Use 3/4" flex conduit to conceal the wire going down from the motor for better safety and looks!

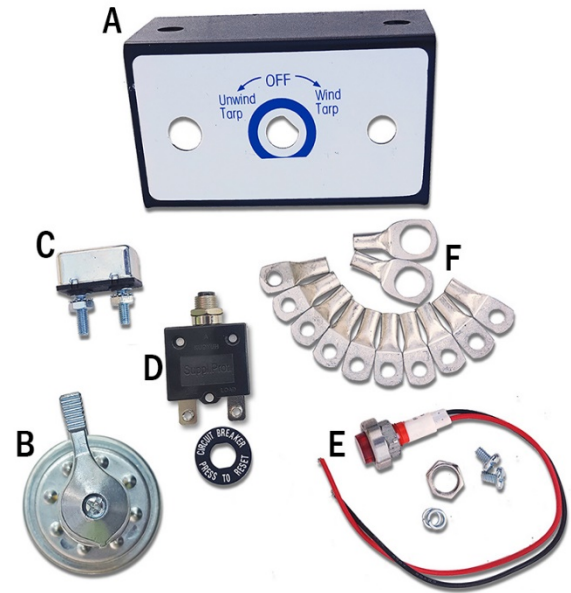
Remember to Disconnect your battery before starting any wiring on your truck!

1. With the arms, axle, tarp and motor all mounted to the top of the truck, raise the bed to begin wiring, ensuring the safe bracing of the bed according to your manufacturer's manual in order to operate safely.
2. Un-roll and straighten the 55ft. roll of 6Ga. wire and find the mid-point and mark it with a sharpie, tape or zip-tie. Drag the wire by the middle behind the truck so the two ends are near the back of the raised bed. This will help when feeding the wire through the frame and up along the bed frame.
3. Run one half of the wire up the length of the bed towards the motor, leaving enough extra to reach the motor once the bed is lowered again. Use any existing wire clamps and/or zip-tie as you go. The bed may have existing frame channels or bracing to secure the wire to. High-Strength Self-drilling screws and wire clamps can be used.
4. The remaining half of the wire can now run along the inside frame of the truck, following other wire or air line hoses. It is advised to refrain from drilling into the main frame channels of the truck and to use existing holes and wire clamps to secure wire to.
  - a. At the pivot point of the dump, a little play in the wire is recommended to allow some flex while the dump is raising and lowering. Cover this section with wire loom for added protection, if desired.
  - b. When running wire through the cab to the mounted switch location, leave enough extra to have room to crimp ring terminals to attach to the switch. Set aside the cut length of extra wire.
5. When done securing the wire under the bed and truck, the bed can be lowered to finish running the wire to the motor and to wire the switch.
6. Wire The Switch.

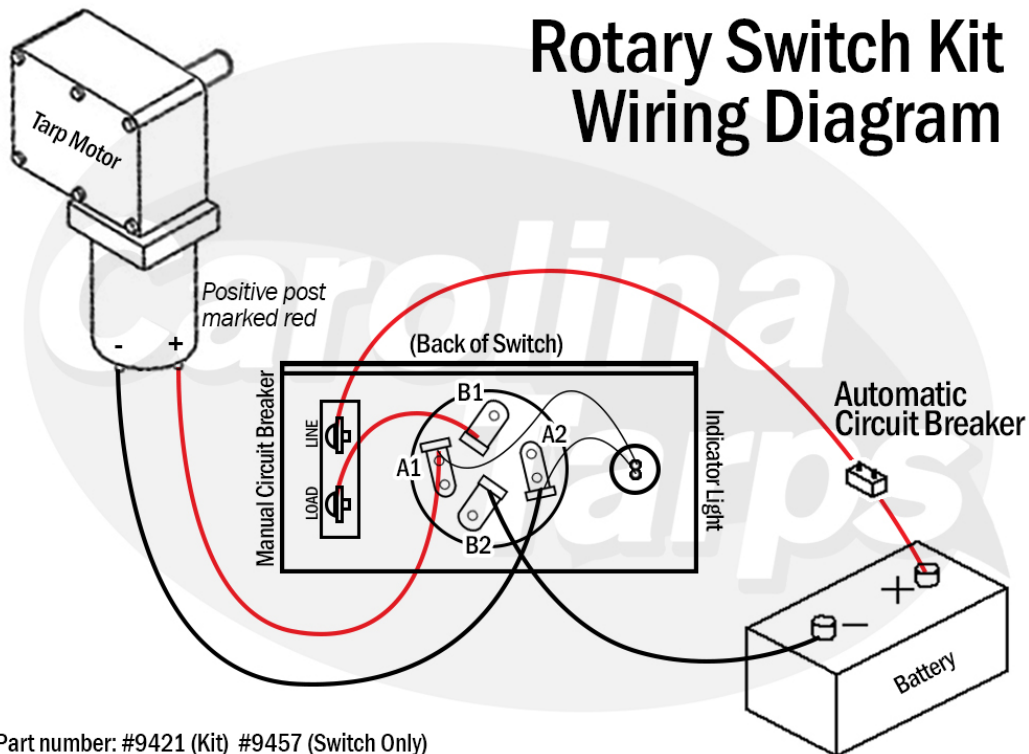
*It is recommended to consult a professional electrician or mechanic when wiring any electronics.*

### Included Rotary Switch Kit Contents:

- A. Switch Mounting Bracket
- B. Rotary Switch
- C. 50 Amp Automatic Circuit Breaker
- D. 40 Amp Manual Circuit Breaker
- E. Indicator Light
- F. Ring Terminals & Hardware



# Rotary Switch Kit Wiring Diagram



Part number: #9421 (Kit) #9457 (Switch Only)

***FOLLOW THE DIAGRAM, BUT DO NOT CONNECT THE BATTERY UNTIL ALL CONNECTIONS AND WIRING ASSEMBLIES ARE SAFELY COMPLETED.***

1. After the switch is wired and mounted, route the cable back out of the cab and towards the battery (Do not connect at this time). Split the dual cable so that you can install the Automatic Circuit Breaker in the positive (+) line. Be sure to wrap the circuit breaker with electrical tape, loom or vinyl material as contacting any metal part of the truck could cause a short.

*Note:* The Automatic Circuit Breaker (C) is marked to indicate which post connects to the battery ("BAT") and which post connects to the switch kit ("AUX"). It is recommended to install the Automatic Circuit Breaker (C) close to the battery, so that potential damage from overload would be limited to the length of wire between the battery and the circuit breaker.

The Manual Circuit Breaker (D) is marked with "Load" and "Line" indicators. The "Load" terminal should be connected to the switch and the "Line" terminal should be connected to the Automatic Circuit Breaker (C) and then to the positive terminal on the battery.

2. Connect the cables to the correct battery terminals. Confirm that the system is operating correctly. If viewed from the driver side, the axle should spin counter-clockwise, or be rolling over the tarp axle, not under. If the axle spins clockwise and winds up under the axle you can swap the two wires connected to the motor. The tarp must spool in the correct direction, otherwise debris will be rolled up in the spooled tarp and can cause damage.

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If purchasing the **OPTIONAL** solenoid switch kit, follow the wiring diagram on the next page.

Install tips:

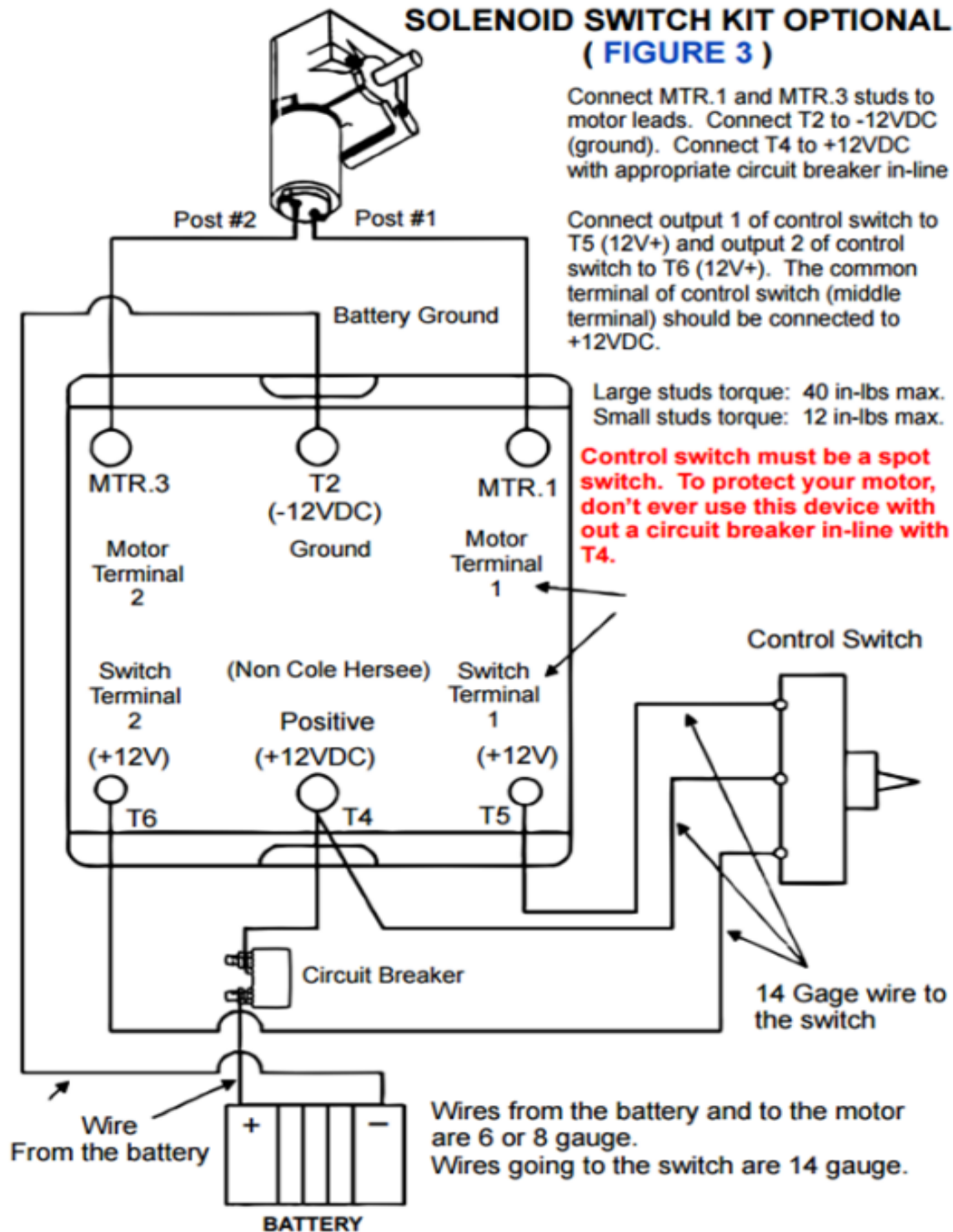
-When installing on a dump-style truck, an optimal location for this is inside the c-channel frame, under the cab. This makes it easy to secure to any nearby frame holes or already ran wires while also shielding from the elements.

-Make sure to wrap the circuit breaker with Electrical tape or vinyl material as to not cause a short once connected to the battery!

*Caution: Although there are drill holes in the solenoid, do NOT drill holes in the truck frame. This can void manufacturers warranties for your vehicle as well as be a potential grounding fault for your system. The included mounting screws are meant for an outside non-frame application such as side rails of a trailer.*

*Heavy Duty zip-ties are plenty to secure this solenoid switch and the wiring to the inside of the frame.*

## SOLENOID SWITCH KIT OPTIONAL ( FIGURE 3 )

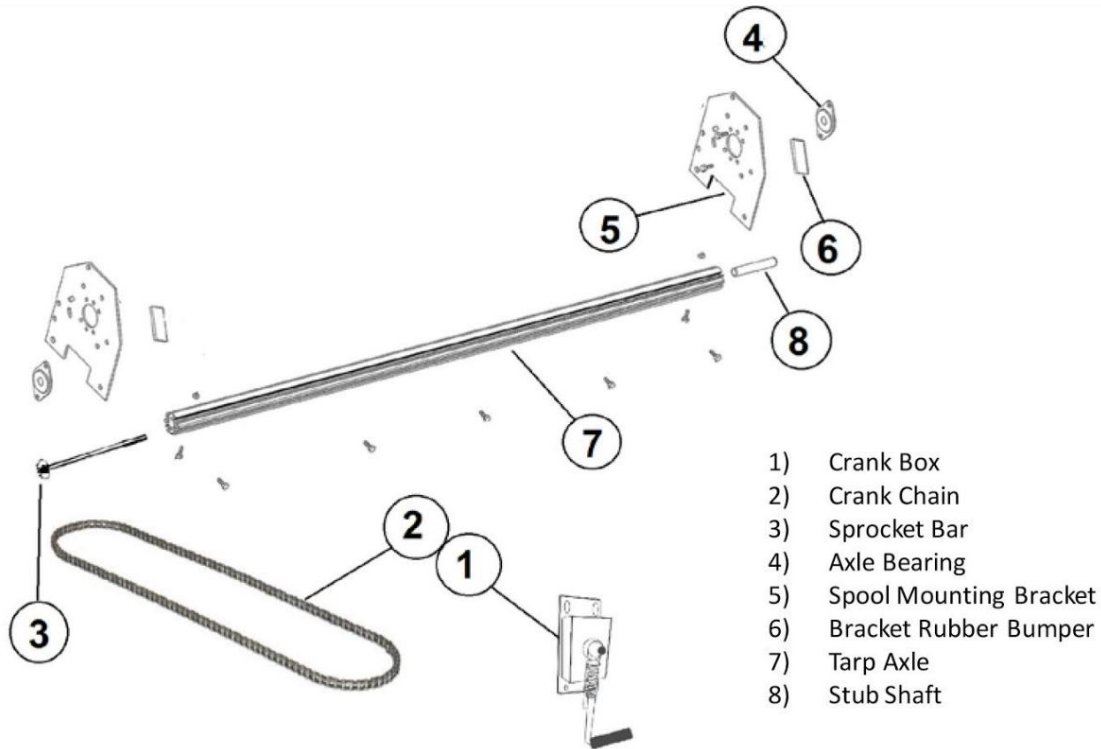


## **CONGRATULATIONS ON INSTALLING YOUR NEW TARP SYSTEM!**

Good job! Installing can be tricky, but the hard work pays off once you are able to enjoy the simplicity and convenience of an automatic tarp system. An important thing to remember, however, is to protect your investment! Be sure to inspect your tarp system regularly, fixing or replacing any necessary parts immediately. Advise drivers, team members, and machine operators to be careful when loading the dump bed, as falling debris or distracted loaders are often the main cause of damage to the tarp system hardware. Do not operate the tarp system while the vehicle is in motion, and do not operate the vehicle unless the tarp system is fully deployed or fully wound up.

We appreciate your business and look forward to helping you again in the future! If you have any questions, issues, or need to order parts, visit our website at [www.carolinatarps.com](http://www.carolinatarps.com) or call us at 864-283-0056.

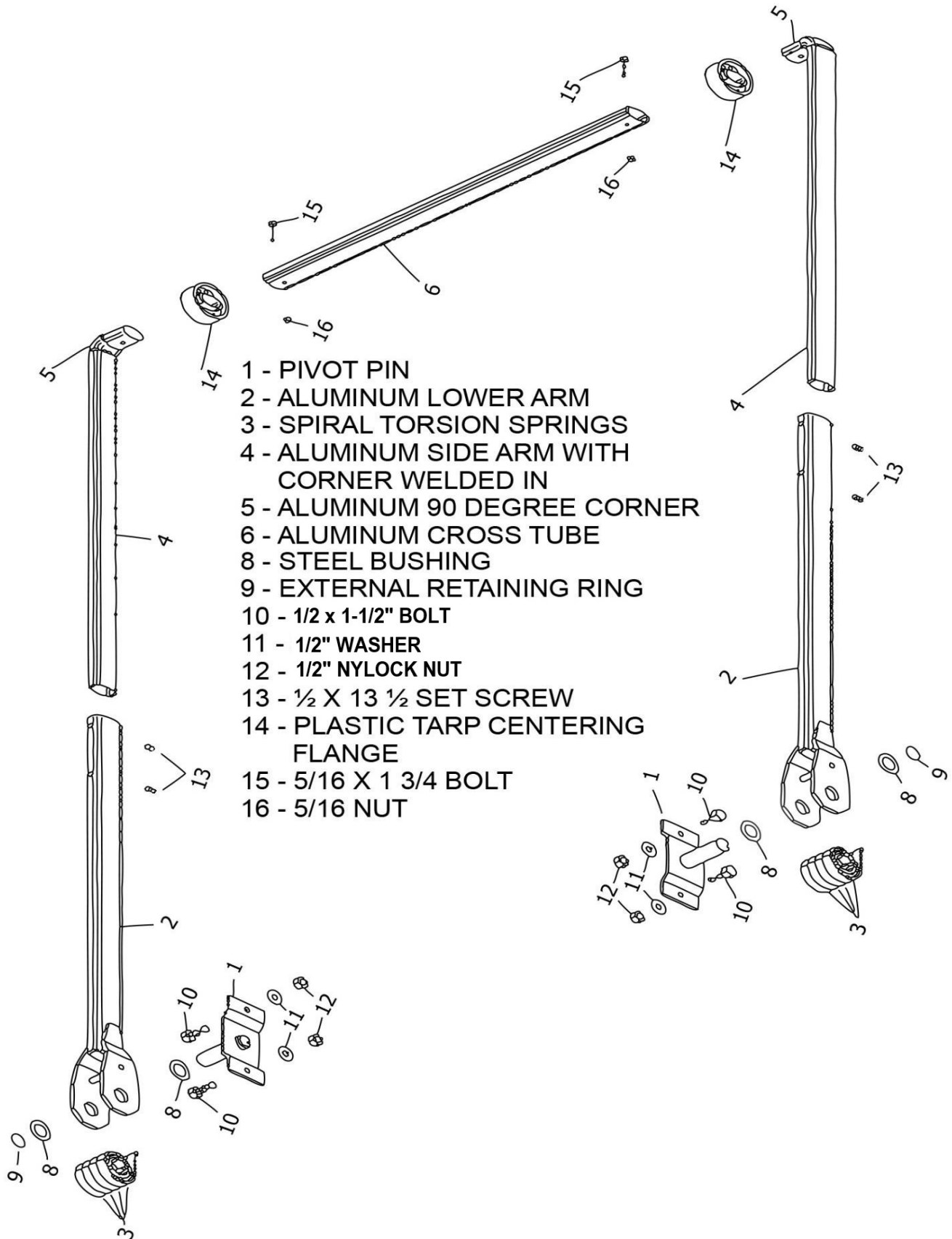
# MANUAL SYSTEM PARTS DIAGRAM



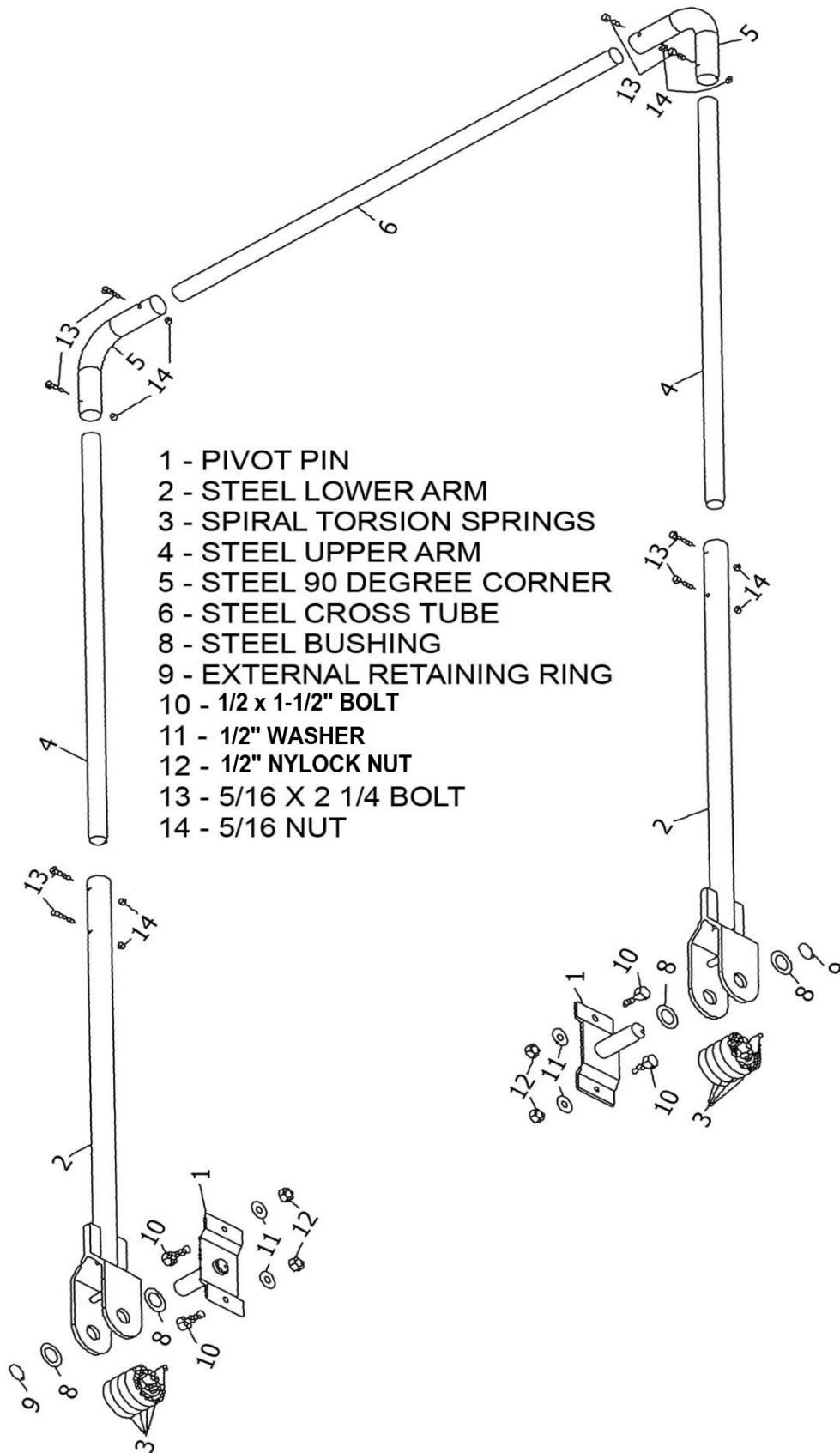
For manual tarp systems, follow the same directions as for an electric system, except for the installation of the motor. Instead, manual systems come with a crank box, a chain, a shafted sprocket, and an additional axle bearing.

1. Mount the crank box (1) as far forward on the external rail as possible. The crank box is designed with slotted bolt holes to allow for the installation and tightening of the crank chain.
2. To find the chain length, slide the gear box up so that the mounting bolts are in the lowest position in the slotted bolt holes. Measure from the bottom of the crank box sprocket to the top of the axle sprocket (3). Multiply by two and subtract 2".
3. Cut the chain at that length and wrap the chain around the crank box sprocket and the axle sprocket and reconnect using the included master link.
4. Push the crank box downward to put tension on the chain and firmly tighten the crank box bolts in order to maintain the chain tension

# SYSTEM DIAGRAM AND LAYOUT (ALUMINUM)



# SYSTEM DIAGRAM AND LAYOUT(STEEL)





**At Carolina Tarps**, we offer quality tarps, tarping systems, and accessories at competitive prices. We pride ourselves on fast delivery and attentive customer service. No matter what you're hauling, we'll help you find the right tarp for the job! Our tarps are designed to stand up to everyday wear and tear and are available in a variety of sizes, styles, colors, and configurations so you can find the exact tarp solution for your needs.

**Among our available tarps are:**

- Agricultural tarps
- Asphalt tarps (RFL)
- Cable tarps
- Canvas tarps
- Coated Nylon Tarps
- Container tarps
- Custom tarps
- Flatbed tarps
- Heavy duty tarps
- Landscaping tarps
- Manual pull tarps
- Mesh tarps
- Roll off tarps
- Trailer tarps
- Vinyl Tarps
- And more!

**We know** how inconvenient and costly it is to have a vehicle out of commission, so our goal is to provide everything you need to cover your load and get back on the road! We sell replacement parts for virtually all tarp system manufacturers, or, if you're ready for an upgrade, we can help you find the perfect system to suit your budget and industry. With our large selection of products, we can provide a solution for just about every commercial trucking need.

Whether you're a first-time buyer or a long-time partner, you can trust us to take care of you and your business. Please let us know about your experience in one (or all!) of these ways:



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