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# Installation Instructions

## Electric Dump Truck Tarp System

### Aluminum or Steel

### 4-Spring or 5-Spring

Congratulations on your new tarp system! This is the installation manual for our best-selling Aluminum Electric 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).

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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.

## SYSTEM CONTENTS:

| Qty     | <i>Long Box</i>                | Qty | <i>*Hardware Bag</i>              |
|---------|--------------------------------|-----|-----------------------------------|
| 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   | 5/8" x 1-1/2" Bolt, Washer, & Nut |
|         | <i>Small Box</i>               | 4   | 1/2" x 1" Bolt & Nut              |
| 2       | Pivot Pins                     | 8   | 1/2" x 1/2" Socket Set Screw      |
| 8 or 10 | Spiral Torsion Springs         | 7   | 5/16" x 3/4" Bolt                 |
| 2       | Tarp Axle Mounting Brackets    | 4   | 5/16" x 1-3/4" Bolt               |
| 2       | Plastic Tarp Centering Flanges | 2   | 5/16" x 2-1/4"                    |
| 1       | Tarp Motor                     | 17  | 5/16" Washers                     |
| 1       | Roll of Dual Connector Wire    | 8   | 5/16 Nylock nuts                  |
| 1       | Rotary Switch Kit              |     |                                   |
| 2       | 90° Corners                    |     | <b>OPTIONAL ACCESSORIES</b>       |
| 1       | <i>Hardware Bag*</i>           | 2   | 30° or 45° Elbows                 |
|         |                                | 1   | Wind Deflector                    |
|         |                                | 1   | Tarp Housing                      |
|         |                                | 1   | Solenoid Switch Kit               |

## TOOLS REQUIRED

- Ratchet and pliers
- Two Tape Measures
- 3/8", 1/2", 9/16", and 3/4" Sockets and Wrenches
- Screwdriver
- Drill
- 3/8", 1/2", 5/8" Drill bits
- Allen wrench set
- Level
- Wire cutters
- Utility knife or wire strippers
- Crimping pliers or vice grip (for crimping terminals to battery cable)
- (Optional) Welder - Steel and Aluminum
- (Optional) 1-1/2" Hole Saw (for mounting axle directly to cab protector)
- (Optional) Zip ties or cable clips

## 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 or at your local hardware store. Make sure to use the same gauge wire across the whole system.

### 2. Determine cable route.

The tricky parts of running cable from the motor to the switch and to the battery are 1) How to go around the lift hinge without the wire getting pinched or pulled, and 2) How to get into the cab. Before beginning, lift the dump bed and examine the cab, hinge, and frame for the most logical route.

Some cabs have an established entry point for all wires that need to go in and out of the cab. This is often found under the steering wheel, under the center console, or under the passenger glovebox. Open the hood of the truck and try to find a location where a cluster of wires is entering through the firewall and see if the hole is large enough to allow for more cables to pass through.

You may have to drill a hole in a discreet location in the floor or under the dashboard, but be cautious of sharp edges or unintended exposure to moisture, heat, or toxic gases from underneath the vehicle. Consult a mechanic, the vehicle owner's manual, or general information about the vehicle model in order to determine the safest method for creating an entry point into the cab.

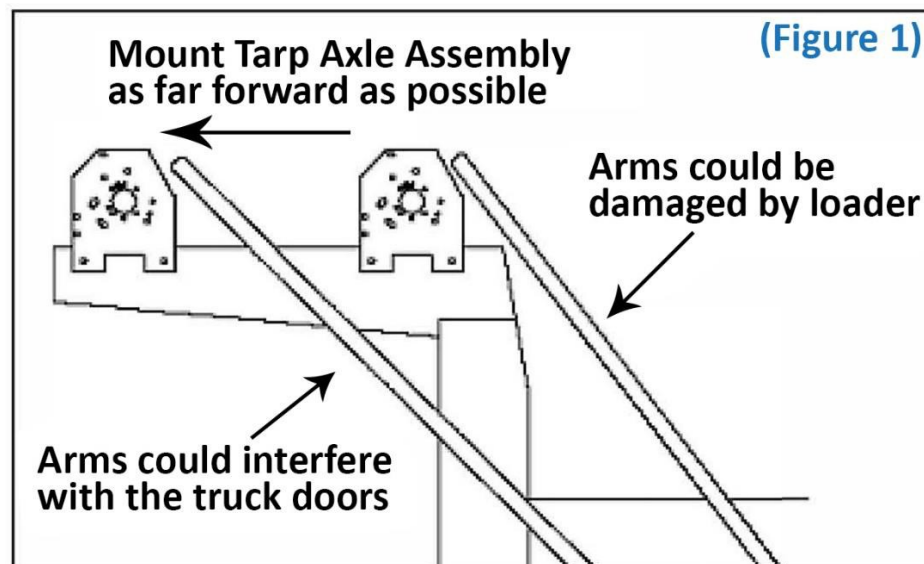
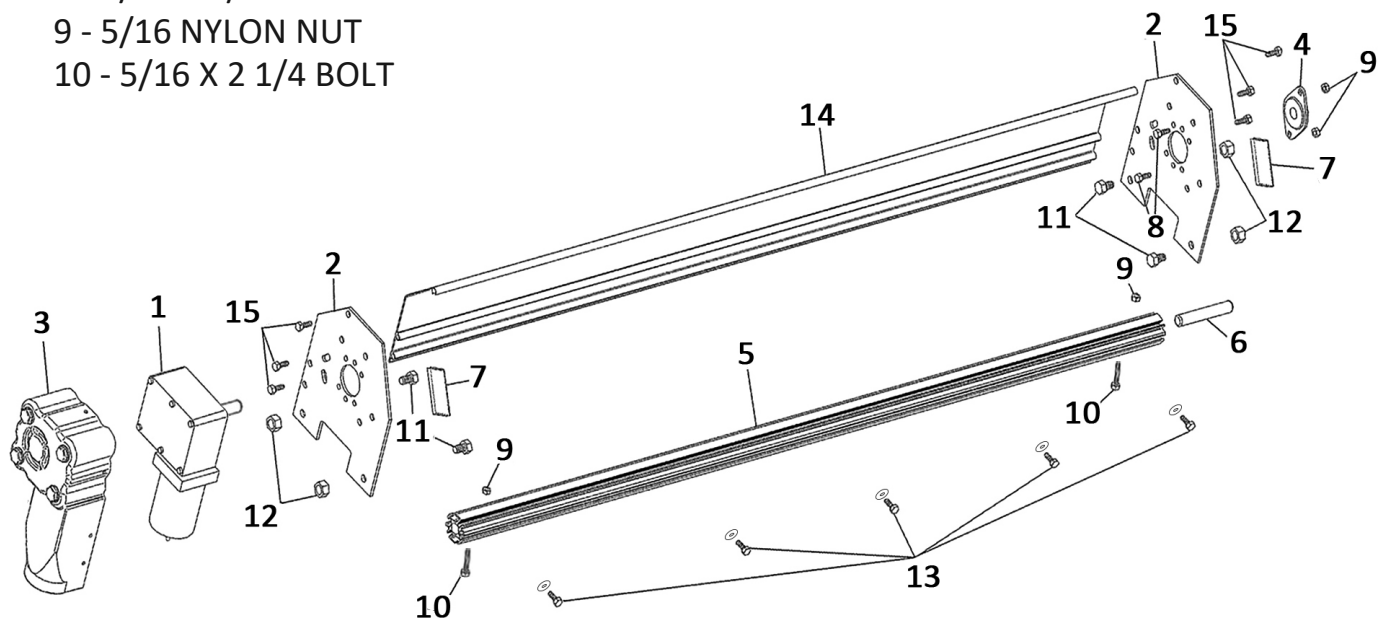
### 3. Are you installing the tarp system on a trailer?

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 AXLE

- |                                 |   |
|---------------------------------|---|
| 1 - TARP MOTOR                  | 11 - 1/2 X 1 BOLT                       |
| 2 - TARP AXLE MOUNTING BRACKETS | 12 - 1/2 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 - 3/8 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 1/4 BOLT          |   |



## INSTALLING THE TARP AXLE (CONTINUED)

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

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

**Note:** *If there is no room to mount the Tarp Axle Assembly due to exhaust stacks or vehicle design, the axle and motor will need to be mounted on the top of the side board pockets or at the front of the dump bed.*

### STEP 2: INSTALLING THE MOUNTING BRACKETS

Once you have determined your mounting location, you can install the included Tarp Spool Mounting Brackets (2) or just use the brackets as a template to drill directly into the frame of the truck. **Note:** *Make sure to factor in the space needed between the tarp axle and the roof of the cab guard to allow the entire tarp to roll up effectively.*

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

Measure from the inside of one mounting bracket to the inside of the other and cut the Tarp Axle 1" shorter than that length. The axle is predrilled with holes 3/4" from the ends. After cutting, drill a new 3/8" hole through the axle on the side that you cut, 3/4" from the end (drill in one of the round-bottomed slots, not in one of the threaded slots). Slide the motor shaft through the center hole of the bracket and into the axle and secure with a 5/16" bolt (10), washer, and nut (9). Attach the Axle Bearing (4,8,9) to the mounting bracket opposite the motor. 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" bolt (10), washer, and nut (9) and tighten the axle bearing set screws to secure the stud shaft's position inside the axle bearing.

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

Measure the distance between your mounting brackets, and cut the Aluminum Wind Deflector (1) to the proper length and attach it to the Tarp Spool Mounting Brackets using the included six self-threading bolts (17)



# WIRING THE TARP MOTOR

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" conduit to conceal the wire going down from the motor for better safety and looks!

1. Mount the switch bracket in a safe, convenient location, clear of anything that might bump the switch into the "On" position.

2. Unroll the dual connector wire. Strip the ends of the wires and crimp (or solder) the ring terminals onto the exposed copper. Make sure the ring terminals are tightly secured to the wires. It is recommended to cover any exposed copper with heat shrink tubing. Attach the colored wire to the positive post (marked red) on the motor and connect the black wire to the unmarked post.

3. Run the cable from the motor to the bottom of the dump box and towards the hinge at the back. Use cable clips or zip ties to secure the cable to the underside of the box. Take special care to route the cable around the hinge so that it does not get pinched or pulled during operation of the lift. Run the cable back to the front of the box along the frame of the truck and into the cab.

4. Route the cable into the cab and to the mounting location of the switch. Cut off any extra wire and set it aside. Leave enough slack to easily configure the wiring of the switch. A small piece (about 4") of positive (colored) wire will be required to connect the switch to the manual circuit breaker.

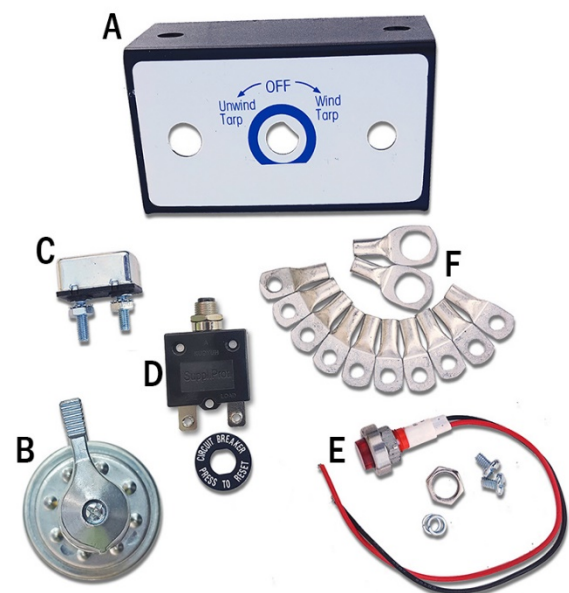
Figure 2

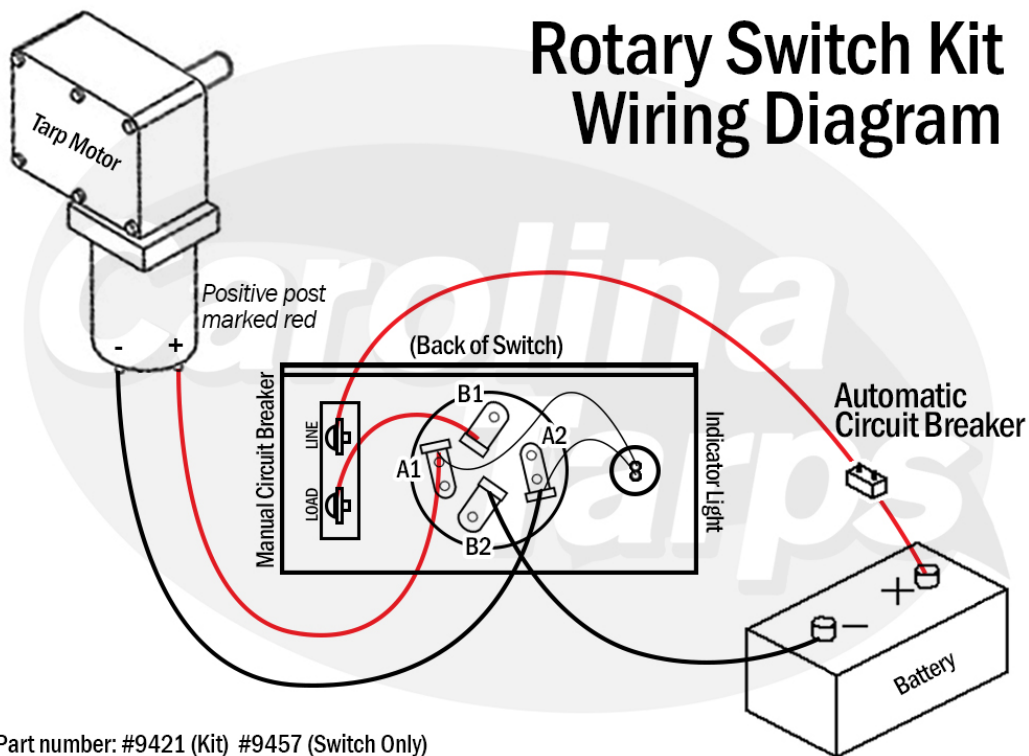
## 5. Wire the Switch

*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





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.***

**6.** 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.

*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.

**7.** 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 when the switch is turned to "Wind". If the axle spins clockwise, 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 it and can cause damage.

## 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.

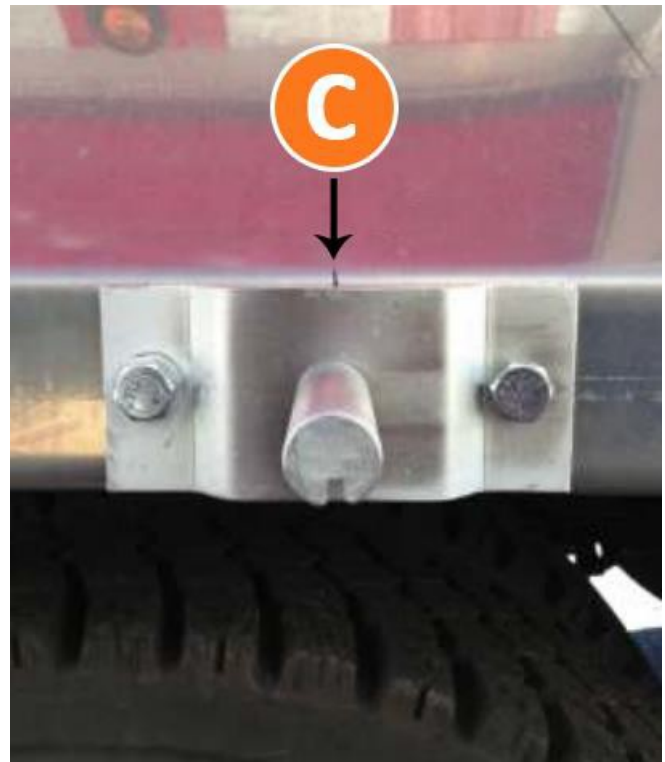
**1.3** Measure from **Point A** to **Point C** and then measure from **Point B** to **Point C**. These measurements should be equal. Adjust the **Point C** mark left or right until the distance between **C** and **A** is equal to the distance between **C** and **B**.

**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.
4. Bolt the pivot pins to the rail using the included 5/8" x 1 1/2" bolts, 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.

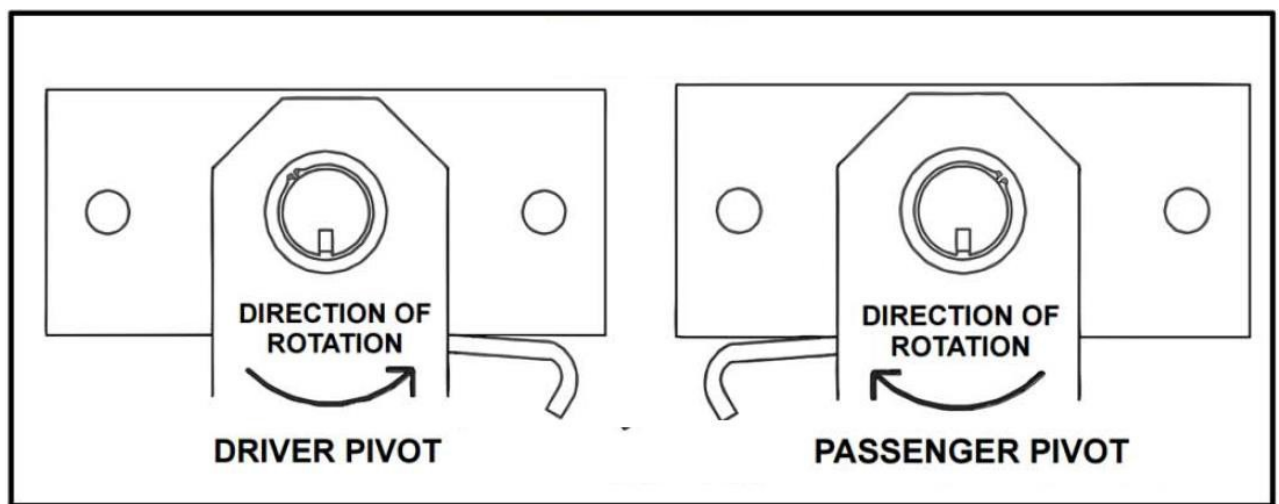


## INSTALLING THE TARP ARM SET

**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.

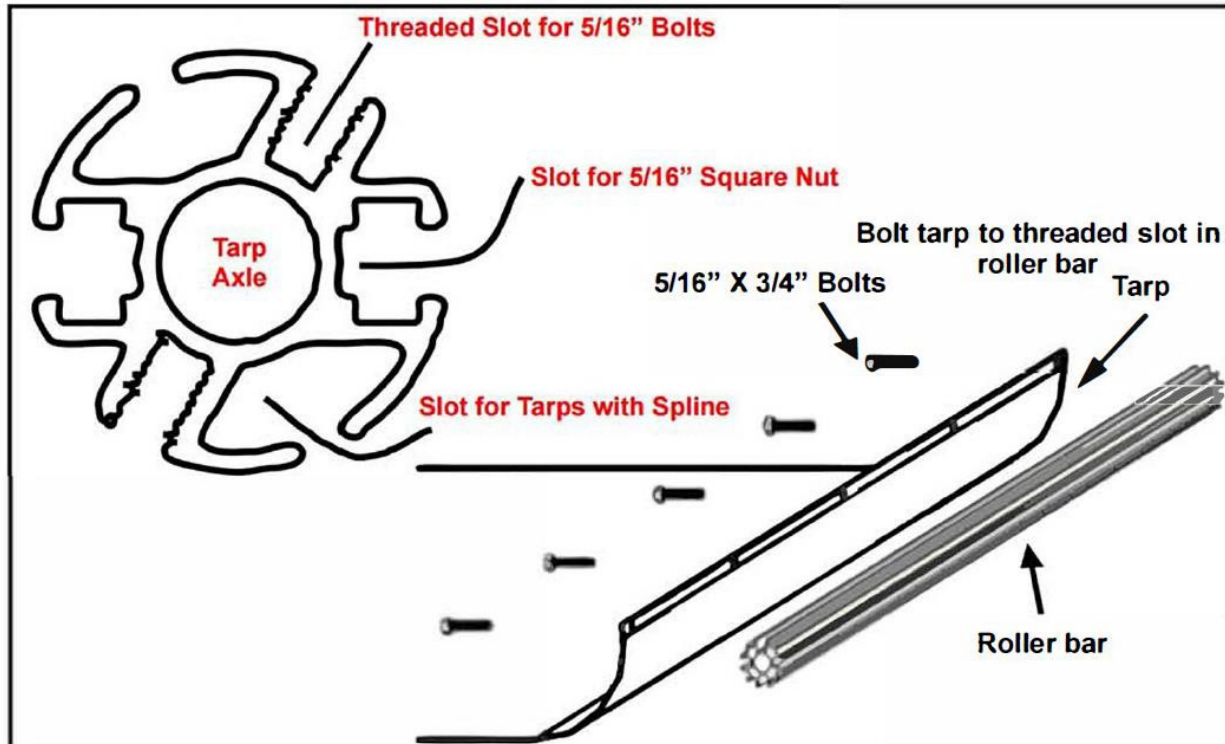
5. After completing both arm assemblies, hold the cross tube (6) up so that you can slide the upper arm corners into each end. Attach the cross tube to the corners with the included hardware (15, 16) but do not fully tighten yet.
6. Rotate the assembled tarp arm set forward. Make sure the arms and cross 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.



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 them in place.
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.



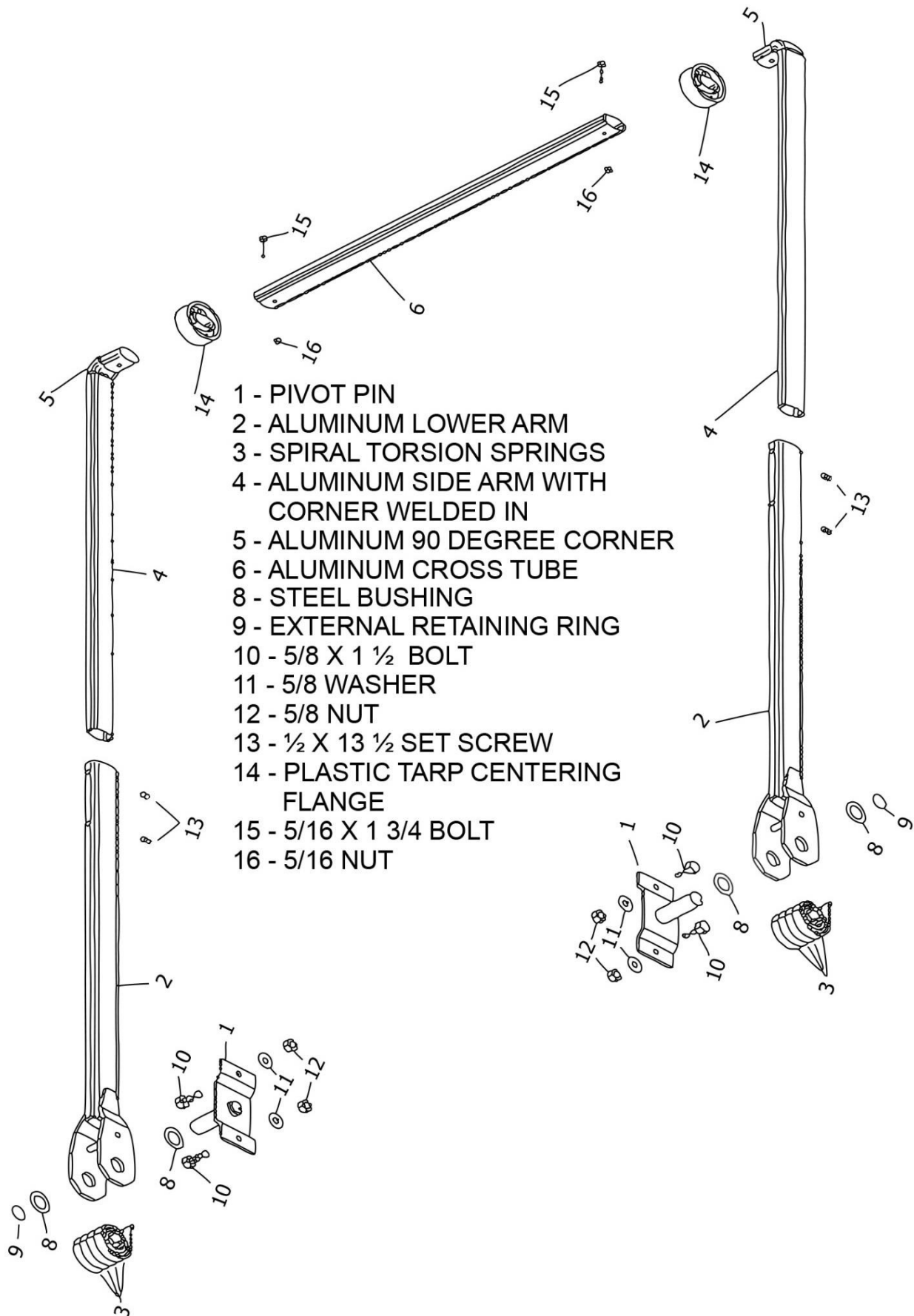
1. Line the front tarp grommets up with one of the threaded slots in the axle.
2. Attach the tarp to the front axle with 5/16" x 3/4" bolts and washers.
3. Slide the cross tube (6) through the pocket in the back of the tarp.
4. Slide the plastic tarp centering flanges (14) over each end of the cross 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.

## **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.

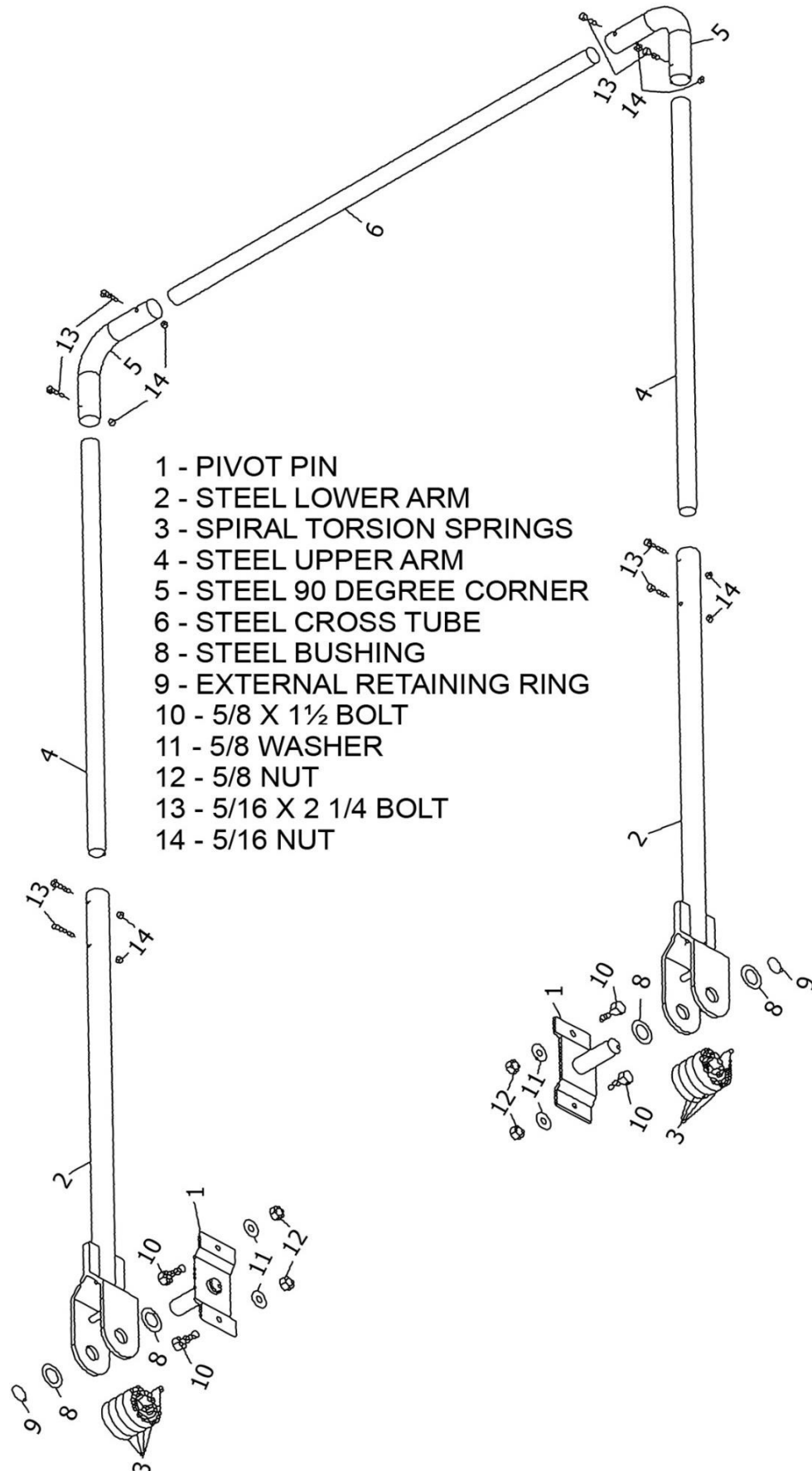
We appreciate your business and look forward to helping you again in the future! If you have any questions, issues, or need to order parts, visit our website at [www.carolinarp.com](http://www.carolinarp.com) or call us at 864-283-0056.

# TARP ARM SET DIAGRAM (ALUMINUM)





# TARP ARM SET DIAGRAM (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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