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TABLE OF CONTENTS

***Parts & Tools***

Wiring, Parts & Tools
Smart Switch Basic Kit - Wiring Diagram #514-0114 .................. 2
Smart Switch Basic Kit #514-0114 ............................................. 3
Core System Electric ............................................................... 4
EZ-Mount 4 Spring Arm System #501-1769 (No Wire) & 501-1768 (With Wire) ............................................................. 5
4 Spring Enclosed Housing Assembly Right #501-2204 & Left #501-2203 ................................................................. 6
Required Tools ........................................................................ 7

***Assembly***

Roller Tube Assembly
Roller Tube Assembly ............................................................. 9
Roller Drive End Cap Assembly ................................................ 10

Electric Arms & Pivot Assembly
Pivot Points and Mounting Locations (Low Mount) ............... 12
Pivot Points and Mounting Locations (High Mount) ............... 13
Arm Alignment, Tarp and Pullbar Installation .......................... 14

Standard Application
Attaching Tarp to Roller Tube ................................................ 16
Installing Roller Tube & Electric Motor ................................. 17-19

Over The Top Application
Attaching Tarp to Roller Tube Assembly ............................. 21
Installing Roller Tube & Electric Motor ............................... 22-24

Flap Tarp, Rope & Hook Installation
Optional Flap Tarp, Rope and Hook Installation ................... 26
Bungee Cord Installation......................................................... 27
WIRING, PARTS & TOOLS
Electric Core Systems
Installation Instructions

Smart Switch Basic Kit - Wiring Diagram #514-0114

BOOT COLORS

<table>
<thead>
<tr>
<th>With Boot</th>
<th>Red</th>
<th>Black</th>
<th>Yellow</th>
<th>Blue</th>
<th>Green</th>
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WIRING INSTRUCTIONS
See document 607-0089/Basic Smart Switch–12 Volt in Technical Documents at Pulltarps.com

Note: 12” Max distance between Battery and Breaker.
Smart Switch Basic Kit #514-0114

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
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<td>514-9978</td>
<td>50 Amp Reversing Contactor</td>
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<td>514-0433</td>
<td>35 Amp Breaker</td>
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<td>3</td>
<td>514-9954</td>
<td>Rocker Switch Bracket</td>
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<td>4</td>
<td>514-0117</td>
<td>Rocker Switch 3 Position Momentary</td>
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<td>5</td>
<td>514-0317</td>
<td>Black Terminal Boot</td>
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<td>6</td>
<td>514-0319</td>
<td>Red Terminal Boot</td>
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<td>7</td>
<td>514-0342</td>
<td>Blue Terminal Boot</td>
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<td>Yellow Terminal Boot</td>
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<td>Connector 14 Ga. Lug with 1/4” Eyelet</td>
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<td>10</td>
<td>514-0321</td>
<td>Push On Female Terminal 16 Ga.</td>
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<td>11</td>
<td>506-9904</td>
<td>#10 x 3/4” Self Drilling Screw</td>
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<td>12</td>
<td>514-0303</td>
<td>Connector 14 Ga. #10 Stud Eyelet</td>
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<td>13</td>
<td>514-0307</td>
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<td>15</td>
<td>514-0309</td>
<td>Connector 6 Ga. Lug with 3/8” Eyelet</td>
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<td>16</td>
<td>514-0211</td>
<td>#16 - 3 Wire PVC 27# Copper</td>
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Core System Electric #285-3017 & 531-2850 (EZ-Fit)

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<tr>
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<tr>
<td>1</td>
<td>501-0293</td>
<td>Core End Plate</td>
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<td>501-0294</td>
<td>Core Diamond End Plate</td>
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<td>3</td>
<td>501-0805</td>
<td>Universal Bolt in Stud</td>
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<td>4</td>
<td>501-1315</td>
<td>96” Electric Roller Tube</td>
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<td>5</td>
<td>503-2521</td>
<td>1/4” - 20 x 1/2” FH Socket</td>
<td>3</td>
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<td>6</td>
<td>503-3103</td>
<td>5/16” - 18 x 3/4” HHCS Bolt</td>
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<td>7</td>
<td>503-3720</td>
<td>3/8” - 16 x 1” CGE Bolt</td>
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<td>8</td>
<td>504-3702</td>
<td>3/8” - 16 Hex Nut</td>
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<td>9</td>
<td>505-3102</td>
<td>5/16” Lock Washer</td>
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<td>10</td>
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<td>3/8” SAE Flat Zinc Washer</td>
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<td>6GA. Wire 70' Long</td>
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<td>12</td>
<td>517-0909</td>
<td>1.3HP 12V Motor &amp; Gearbox</td>
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<td></td>
<td>514-0114</td>
<td>12V Smart Switch Basic (Not Shown)</td>
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Illustration view shown looking from passenger side to rear of vehicle.

<table>
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<th>ITEM</th>
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<tr>
<td>1</td>
<td>501-0430</td>
<td>103&quot; Teardrop Pull Bar</td>
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<td>2</td>
<td>501-1205</td>
<td>103&quot; Steel Upper Arm Bent</td>
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<td>3</td>
<td>501-1229</td>
<td>Lower Connection Arm Tube</td>
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<td>4</td>
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<td>Steel/Aluminum Elbow &amp; Upper Connection</td>
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<td>501-1293</td>
<td>Teardrop Bumper Kit</td>
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<td>501-2203</td>
<td>4 Spring Enclosed Housing Assembly (Right)</td>
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<td>7</td>
<td>501-2204</td>
<td>4 Spring Enclosed Housing Assembly (Left)</td>
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<td>8</td>
<td>501-2235</td>
<td>EZ-Mount Assembly</td>
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<td>514-0121</td>
<td>6GA. Wire 70' Long (For 501-1768)</td>
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Electric Core Systems
Installation Instructions

4 Spring Enclosed Housing Assembly Right #501-2204 & Left #501-2203

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<td>2</td>
<td>501-2122</td>
<td>UHMW Enclosed Spring End Cap</td>
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<td>3</td>
<td>501-2210</td>
<td>Enclosed 4 Spring Housing</td>
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<td>4</td>
<td>501-2242</td>
<td>Steel Adjustable Enclosed 4 Spring Pivot Only</td>
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<td>3/8&quot; - 16 x 3&quot; Hex Head Bolt</td>
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<td>3/8&quot; - 16 Nyloc Hex Nut Zinc Plt</td>
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<td>7</td>
<td>506-0101</td>
<td>1-1/4&quot; Snap Ring</td>
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<td>8</td>
<td>517-9966</td>
<td>Spring, Underbody Arm System</td>
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4 Spring Enclosed Housing Assembly Right #501-2204 & Left #501-2203

REV. 12/21/17 WLH

Assembled Profile View
Electric Core Systems
Installation Instructions

Required Tools

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<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
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<tr>
<td>1</td>
<td>Power Drill</td>
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<tr>
<td>2</td>
<td>Adjustable Wrench</td>
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</tr>
<tr>
<td>3</td>
<td>5/16&quot; Wrench</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Hack Saw or Circular Saw</td>
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</tr>
<tr>
<td>5</td>
<td>Duct or Masking Tape</td>
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<tr>
<td>6</td>
<td>Rubber Malet</td>
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</tr>
<tr>
<td>7</td>
<td>Metal File</td>
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</tbody>
</table>

WLH 03/19/18

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ROLLER TUBE ASSEMBLY
Roller Tube Assembly

**Step 1:** Measure the inside of your cab shield frame to get the width. This will give you the correct length to cut the roller tube (Fig. 1).

**Step 2:** Locate the cab shield measurement tape on the Roller Tube (Fig. 2) and cut to the desired length (Fig. 3). **NOTE:** Please cut the end as straight as possible.

**Step 3:** After you’ve cut the Roller Tube, use a metal file to remove metal fragments (Fig. 4).

**Step 4:** Insert the end cap into the Roller Tube. Use a rubber mallet to tap the edges of the end cap lightly to ensure that it has been seated properly (Fig 5A & B).

**Step 5:** Use a 3/4” Self-Drilling Screw and secure the Flanged End Cap in the Roller Tube (Fig. 6A). Insert the screw approximately 1/2” from the end of the End Cap and approximately 1” up from the Hemtube Groove on the Roller Tube (Fig. 6B).
Electric Core Systems - Roller Tube
Installation Instructions

**Roller Drive End Cap Assembly**

**Step 6:** Before installing the Roller Drive End Cap, file the edges to smooth out the end of tube to provide a better fit for the End Cap (Fig. 7).

**Step 7:** Insert the Roller Drive End Cap into Roller Tube. Use a rubber mallet to tap the edges of the End Cap lightly to ensure that it has been seated properly (Fig. 8A & 8B).

**Step 8:** To secure the Roller Drive End Cap in the Roller Tube, make four (4) indentations or dimples to hold the End Cap in place. Use a mallet and flathead screwdriver to make the dimples (Fig. 9A, B, C & D).

**WARNING:** Do not make indentation on welded seam.

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ELECTRIC ARMS & PIVOT ASSEMBLY
Pivot Points and Mounting Locations (Low Mount)

**Step 1:** Determining the Pivot Points and Mounting Locations on each side, careful measurement must be taken to insure that the arm and pivot assemblies are mounted square and parallel to the truck or trailer body. Locate the proper mounting positions by determining Point “A” and Point “B” and insuring measurement “D” and “E” are equal (Fig. 11). Point “C” must be located as low as possible and be the same on both sides.

**Step 2 - Arm Preload:** Install Arm and Pivot assemblies with Arm indexed (Fig. 12). Arms must be indexed with no spring load on pivots. Index Arm at 180 degrees of travel from the Roller Mechanism for proper preload of the spring. The dotted lines represent proper 180 degree preload position for applications with Bent Arms. Mark pivot pin location on box.

**Step 3 - Mounting the Pivot Mount:**
Locate the 4 Spring Housing with marks made in Step 2. Weld the Spring Mounting in place and then bolt on the Spring Housing 180° from Housing Location (Fig. 13).

**Note:** Applies to Lower Mounting.
Pivot Points and Mounting Locations (High Mount)

**Step 4:** Careful measurements must be taken to insure that the arm and pivot assemblies are mounted square and parallel to the truck or trailer body. Locate the proper mounting positions by determining Point “A” and Point “B” and insuring measurement “D” and “E” are equal (Fig. 14). The pivot “C” should be 1/2 way between Point “A” and Point “B” and 7” below the top rail on both sides (Fig. 15).

**Step 5 - Arm Preload**
Arm must be indexed with no load at 24 degrees to top rail for proper preload of springs (Fig. 16).

**Step 6 - Setting the Index for EZ-Mount System (High Mount Only)**
Indexing illustrations are for driver side index (Fig 17A - C).
Arm Alignment, Tarp and Pullbar Installation

Step 7 - Correct Alignment of arm to truck:
Arms and pivots must be square and parallel to truck (Fig. 18).
(Dimension “A” must equal “B” - Dimension “C” must equal “D” - Dimension “E” must equal “F”)

Step 8: Adjust the Arms on both sides to be the same length (Fig. 19).

Step 9 - Installing The Pullbar:
Cut the pullbar to length making sure the arms remain parallel and square to the body.
Slide the tarp into groove in the pullbar and center the tarp.
Roll the tarp up on the pullbar two revolutions (Fig. 20).

Note: Tarp must be retracted when dumping.

Step 11: Fasten the tarp in place by sliding the two urethane bumpers on to the pullbar far enough to touch the edges of the tarp. Lock in place by installing a 1-1/2” long (506-9933) self drilling screw through the bumper and into the hem tube groove of the pullbar (Fig. 21).

For elbows, use the long bolts provided in the kit, when deployed to catch the rope on flap tarps.
STANDARD APPLICATION
Attaching Tarp to Roller Tube

**Step 1:** Place the tarp on the ground or large table and unroll flat. The front of the tarp should be facing up, showing the wearpatch logo (Fig. 23A - C). At the opposite end of the wearpatch, place the Roller Tube on the ground with the Roller Drive End Cap on the right side, facing the end with the wear patch. **NOTE:** Do not attach the Pullbar at this time.

**Step 2:** Grab either end of the tarp and slide Hemtube into the Roller Groove, until centered (Fig. 24).

**Step 3:** Roll the tarp on Roller Tube, keeping tarp centered (Fig. 25).

**Step 4:** Once the tarp is rolled up, use duct tape to hold tarp in place (Fig. 26).
Installing Roller Tube & Electric Motor

**Step 5:** To get the proper mounting position to drill the necessary holes for the Electric Motor, take the Core Diamond End Plate and place against the Driver Side of the Cab Shield, over the existing mounting holes (Fig. 27A). Once the Core Diamond Plate is in position, mark hole positions on the Cab Shield for drilling (Fig. 27B).

**Step 6:** With the holes drilled, secure the Diamond End Plate on the inside portion of the Driver Side Cab Shield using carriage bolts and fasten with washers and nylock nuts (Fig. 29).

**Step 7:** Next, insert the Universal Bolt Stud on the Flanged End Cap of the Roller Tube (Fig. 30).

**Step 8:** With a team member, lift the Roller Tube up and prepare to install in housing brackets (Fig. 31).

**NOTE:** Utilize two (2) people for ease of installation.
Installing Roller Tube & Electric Motor

**Step 9:** With both team members holding the roller tube, slide the Roller Tube with Core End Plate into the Cab Shield (Fig. 32).

**Step 10:** Place the Core End Plate on the Passenger Side of the Cab Shield, then insert carriage bolt and fasten with washer and nylock nut (Fig. 33).

**Step 11:** On the Driver Side, insert three (3) HHCS Bolts to allow for the Electric Motor to be mounted in the Cab Shield (Fig. 34).

**Step 12:** With the HHCS Bolts in place, attach the Electric Motor (Fig. 35) to the Cab Shield and Core Diamond End Plate (inside Cab Shield).

**Step 13:** With the Electric Motor in place, secure with three (3) HHCS Bolts using a 5/16" wrench (Fig. 36A & B).
**Electric Core Systems - Standard Installation Instructions**

**Installing Roller Tube & Electric Motor**

**Step 14:** Place Electric Motor Cover on the mounted motor (Fig. 37A) and then secure with two (2) mounting screws (Fig. 37B).

**Step 15:** With the Electric Motor drive shaft inserted into the Roller Drive End Cap, install the HHCS bolt, flat washers and nyloc nut (Fig. 38A & 38B) and tighten.

**Note:** Make sure the Roller Tube is firmly secured to the Electric Motor shaft.

(For Arm installation, see instructions on pages 12-14)
OVER THE TOP APPLICATION
Attaching Tarp to Roller Tube Assembly

**Core System & Roller Tube Assembly (Fig. 39)**

**Step 1:** Place tarp on the ground or large table and unroll flat. The back of the tarp should be facing up, showing only the Wear Patch stitching (Fig. 40A - C). At the opposite end of the Wear Patch, place the roller tube on the ground with the Roller Drive End Cap on right side, facing the end with the wear patch.

NOTE: Do not attach the Pullbar at this time.

**Step 2:** Grab either end of the tarp and slide hemtube into the roller groove, until centered (Fig. 41).

**Step 3:** Roll tarp on Roller Tube, keeping tarp centered (Fig. 42).

**Step 4:** Once tarp is rolled up, use duct tape to hold tarp in place (Fig. 43).

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Installing Roller Tube & Electric Motor

**Step 5:** Once the tarp is securely taped, lift and rotate the Roller Tube 180°, facing the system housing (Fig. 44) and set aside.

**Step 6:** To get the proper mounting position, you must drill the necessary holes for the Electric Motor. Take the Core Diamond End Plate and place against the Passenger Side Housing Side Plate, over the existing mounting holes (Fig. 45A). Once the Core Diamond Plate is in position, mark hole positions on the Cab Shield for drilling (Fig. 45B).

**Step 7:** With the holes drilled, secure the Diamond End Plate on the inside portion of the Passenger Side End Plate using carriage bolts and fasten with washers and nylock nuts (Fig. 46).

**NOTE:** The Core Diamond End Plate comes with multiple hole positions for different Cab Shield Layouts & Motors (Fig. 47).

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Installing Roller Tube & Electric Motor

**Step 7:** With a team member, lift the roller tube up and prepare to install in housing brackets (Fig. 49).

**Step 8:** Next, insert the Universal Bolt Stud on the female side of the Roller Tube (Fig. 48).

**NOTE:** Utilize two (2) people for ease of installation.

**Step 9:** With both team members holding the roller tube, position in front of housing (Fig. 50).

**Step 10:** Place the Core End Plate on the Passenger Side of the Cab Shield, then insert carriage bolt and fasten with washer and nylock nut (Fig. 51).

**Step 11:** Insert three (3) HHCS Bolts to allow for the Electric Motor to be mounted on the Drivers Side of the Cab Shield (Fig. 52).
Installing Roller Tube & Electric Motor

Step 12: With the HHCS bolts in place, attach and secure the Electric Motor (Fig. 53) to the Passenger side End Plate and Core Diamond End Plate (inside Cab Shield) using a 5/16" wrench.

Step 13: With the Electric Motor in place, secure with three (3) HHCS Bolts (Fig. 54A & B).

Step 14: Place Electric Motor Cover on the mounted motor and then secure with two (2) mounting screws (Fig. 55).

Step 15: With the Electric Motor drive shaft inserted into the roller tube end cap, install the HHCS bolt, flat washers and nyloc nut (Fig. 56A & 56B) and tighten.

Note: Make sure the roller tube is firmly secured to the Electric Motor shaft.

(For Arm installation, see instructions on page 5-7)
FLAP TARP, ROPE & HOOK INSTALLATION
Optional Flap Tarp, Rope and Hook Installation

**Parts:**
- Tie Down Hooks (Steel or Alum.)
- Pull Down Hook

**Note: The Location Of The Tie Down Hooks Is Critical!**

**Step 1:** Flip the braided rope over the corner so that the flaps and tie down ropes hang over each side of the box. The number of tie down hooks vary depending on the length of your tarp. One pull down hook is included with your Pulltarp system. If needed, use the hook to pull the braided rope and flaps over the side of the box.

The tie down hooks must be positioned so that:

1. The tie down rope can be reached from the ground.
2. The bungee cord has to be stretched to reach the last hook (see **Step 2**).
3. The rope has no slack.
4. The tie down hooks are level with one another.

To ensure proper hook placement, first duct tape the rope to the box in place of the tie down hooks. Start with hook closest to the cab.

1. Position the first hook 6” (15.24cm) down and 12” (30.48cm) forward (toward the cab) from the first grommet (Fig. 57).
2. Position 2nd hook straight down from 1st grommet. This hook should be reached from ground (Fig. 58).
3. Place middle hooks equal distances from grommet (Fig. 59). These hooks should be placed at the same height as the second hook.
4. Position last hook (closest to the tailgate) below the last grommet at the same height as the others (Fig. 60).
5. Weld hooks in place.
Bungee Cord Installation

Parts:
- 2 Bungee Cords
- 2 Oval Compression Sleeves
- 1 Snap Clip

**Step 2:** After side hooks are installed, the tie down rope must be installed and cut to proper length. It is important to get all of the slack out of the rope to prevent blowing and rubbing of flaps in windy conditions.

Tarps with Side Flaps

To tighten, pull loose end of rope through the Oval Compression Sleeve (Fig. 61). Stretch the bungee cord making sure all slack is taken out of the rope, crimp compression sleeve (Fig. 62). Be sure to keep flaps even on sides so Tie Down Ropes remain equal in length.

**Note:** Check for proper placement of rope through the last two hooks.

Snap Clip Installation

Flip the rope back on top of the tarp, making sure to hold the bungee at all times. The first snap clip is factory installed 5’-6” from the pullrod. Open the clip and enclose the rope. Weave the second clip through the main pullrope where the ends of the bungee cords meet the main pullrope. Make sure the rope is taught when clipped (Fig. 63).

**Note:** First snap clip should not be used on long wheel base belly dumps.

Connect Bungee Cord to Rope

1. Thread braided rope through Oval Compression Sleeve.
2. Feed rope through the eye of the bungee cord.
3. Thread the rope back through the oval compression sleeve. Adjust for proper length. Crimp compression sleeve.

Excess Rope

You may need extra rope to keep the side flap system ground operated. If your application requires extra rope, the slack needs to be taken up by a taching the end of the bungee cord to an alternate hook (Fig. 64).