

Michel's Camera Arm



Tools required to install The Camera Arm;

- 9/16" Wrench
- 9/16" Socket and Ratchet
- 7/16" Wrench or Socket
- Impact Driver
- #3 Robinson Impact Driver Bit
- Drill and Drill Bits
- Wire Stripper
- Side Cutter
- Heat Gun
- Solder & Soldering Iron
- #1 Phillips Screw Driver
- Electrical Tape

Please read entire Instructions before beginning!

Pictures are for reference only and may not be accurate of actual parts supplied!

Step 1

Most of The Camera Arm comes pre-assembled from the factory, except for mounting of the camera. The camera isn't mounted on the arm, since the orientation of the camera needs to be determined by the end user. Figure 1. Shows the two different orientations of the camera assembled onto the Camera Adjusting Bracket. One is assembled to be mounted at the front of the trailer and the other is assembled to be mounted at the rear of the trailer. It is suggested that on trailers 32ft and under, that 1 camera arm be mounted at the front of the trailer. Suber-B trailers would receive a pair of camera arms, with one arm at the front of each trailer. On trailers longer than 32ft, it is suggested to mount one Camera Arm on the front and one Camera Arm on the Rear as shown in Figure 2. As an Optional mounting location, the rear arm can be mounted in the middle of the trailer facing backwards. (Note: This may be necessary on longer trailers in order to acquire enough power to operate the camera.) See wiring for more details.

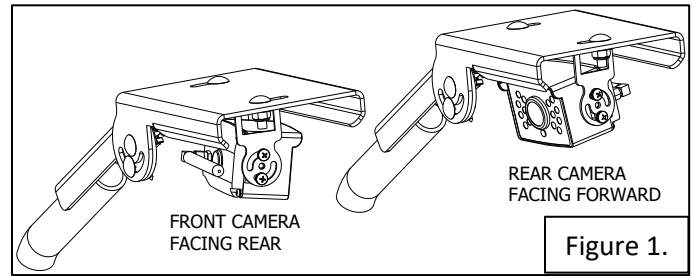


Figure 1.

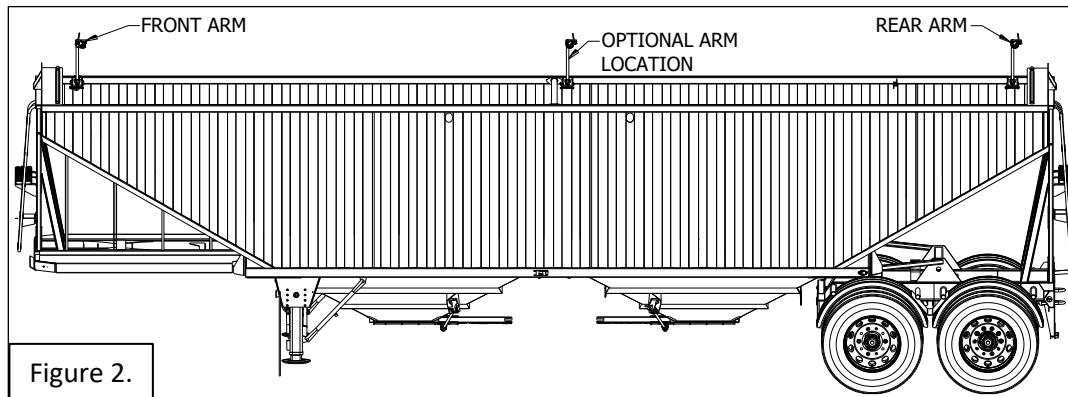


Figure 2.

Step 2

The picture in Figure 3 is showing the procedure for assembling the Camera onto the Camera Adjusting Bracket and Camera Adjusting Bracket onto the Arm Assembly. The orientation that is shown is considered to be a front mount rear facing camera when the tarp opens to the passenger side of the trailer. To build a rear mount front facing assembly, turn the camera 180°. Refer to Figure 1. Use ¼" Carriage bolts, washers, and Nylock Nuts to secure the brackets into place. Leave the carriage bolts loose until after the camera adjustment is completed in Step 7.

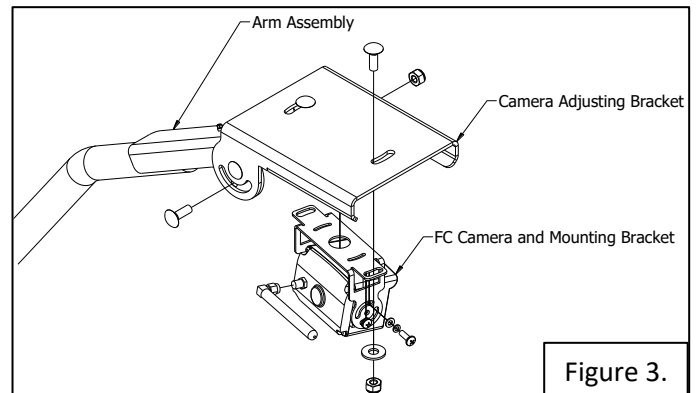


Figure 3.

Step 3

Mount the camera arm on the side of the trailer that the tarp rolls open too. Shown in Figure 4 is considered a Standard Roll Tarp orientation and the Camera Arm would therefore be mounted on the passenger side of the trailer. Install the Mounting Base Plate 4" to 6" from the hood. Refer to Figure 4. Using a #3 Robinson and an Impact Driver, install the ¼"-14 x 1-1/2" Pan Head Self Drilling Screws to secure the bracket. Install the top three screws first and then pull down on the arm. This will leave enough room to be able to install the top two side mounting screws.

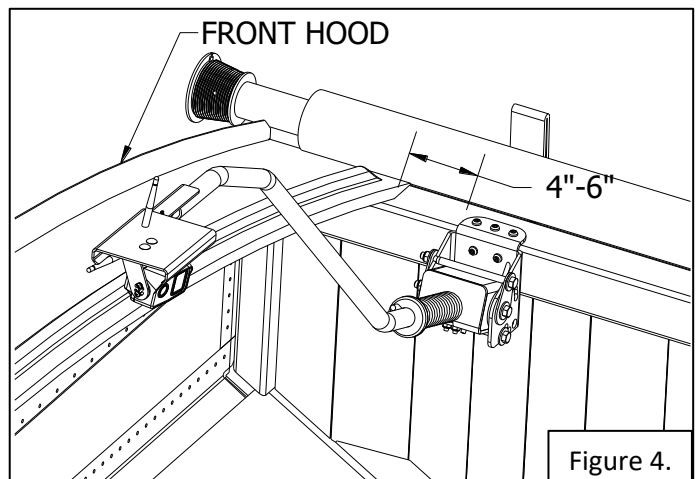


Figure 4.

Slopped Mounting Bracket (Optional)

If the trailer has slopped top rails, an optional Slopped Mounting Bracket is available that squares the side of the trailer. This allows the camera arm to be mounted and operate properly. See Figure 5. This bracket will be secured to the trailer using $\frac{1}{4}$ "-14 x 1-1/2" Pan Head Sq Drive Self Drilling Screws. The Mounting Base Plate will then be secured to this bracket instead of the side of the trailer.

Modification Instructions for Titan Thin Wall Trailers.

If you are installing on a Titan trailer, follow these instructions, otherwise proceed to Step 4. There is an aluminum gusset plate that is attached to the hood and onto the sides of the trailer. Refer to Figure 6 & 7. Because of this gusset plate, the mounting bracket for the camera arm needs to be modified.

Use a cutting wheel or saw to remove the top flange of the Mounting Base Plate. See Figure 6. Once removed, the base plate can be installed onto the wall underneath the aluminum gusset plate. See Figure 7. Since the trailer has a double wall, it is acceptable to secure the bracket through the inside wall of the trailer wall without affecting the outside wall.

Note: On a Titan trailer there is a center brace that is bolted between the hood and the first hoop. There is a brace on both the front and rear of the trailer. These braces need to be removed for proper operation of the Camera Arm.

Step 4A.

The wiring runs through the center of the camera arm, through the spring and through the spring mount pipe, it should be routed over top of the torsion spring tubing and in front of the height control bolt. See Figure 9. On the side that is closest to the hood, feed the wire through the bottom back hole. See Figures 8 & 10. Pull the wire loom through the hole and leave it stick out approximately 1". There should be a drip loop left in the wire loom and the rest of the loom should be fed through the spring mount pipe and into the arm. The wire loom will help protect the wiring as the arm is operated up and down.

Run the wire under the rolled up tarp, at the outside edge of the hood. Leaving another drip loop near the mounting bracket. See Figure 10. Run the wire to the front of the tarp and out the front of the trailer. The tarp may have to be lifted up for the wire to be located properly underneath the tarp. In order to lift the tarp, it may have to be closed (loosened) to remove some tension. Included are $\frac{1}{4}$ " wire clips and lags screws to secure the wire to the inside of the trailer. As an alternative option, two grommets are included for mounting through the wall of the trailer.

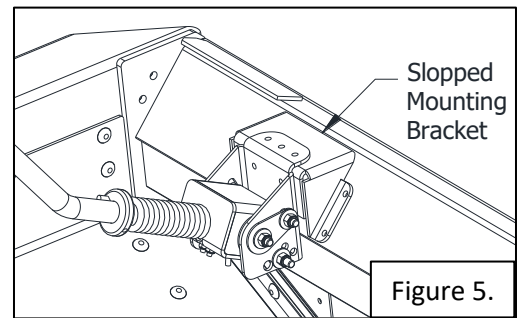


Figure 5.

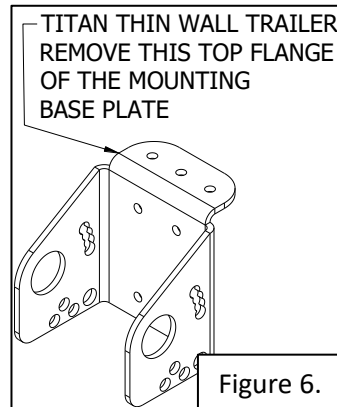


Figure 6.

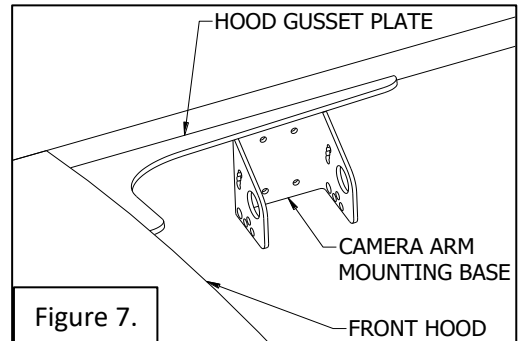


Figure 7.

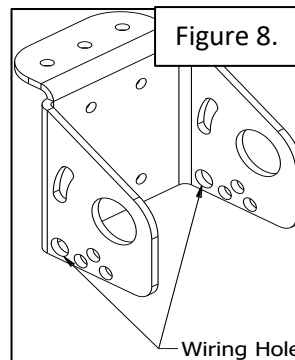


Figure 8.

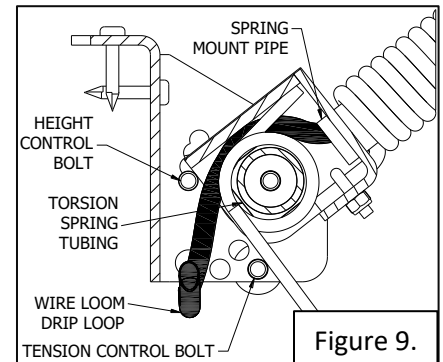


Figure 9.

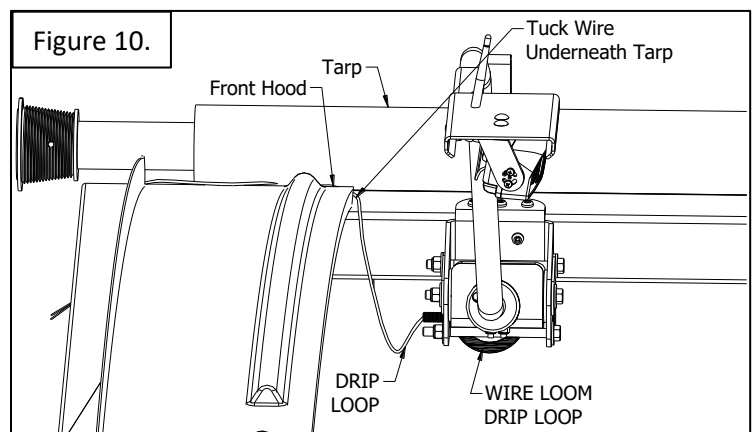


Figure 10.

Remove one of the clearance lights at the top of the trailer and splice the camera wiring into the wiring of the light. **Note: The White wire is the ground or – (Negative 12vdc) and the Black wire is + (Positive 12vdc).** Most trailers made in North America are wired with the black wire + positive and white wire ground - negative. **Warning:** Double check the wiring of the trailer with a volt meter to verify which wire is + positive and which wire is – negative. **DO NOT USE A TEST LIGHT FOR THIS TEST. A TEST LIGHT WILL NOT VERIFY WHICH WIRE IS POSITIVE AND WHICH WIRE IS NEGATIVE.**

Note: Two 18-14 AWG Gel Filled Wire Pico Tap connectors are included for splicing into existing wires. See Figure 12.

Figure 12.

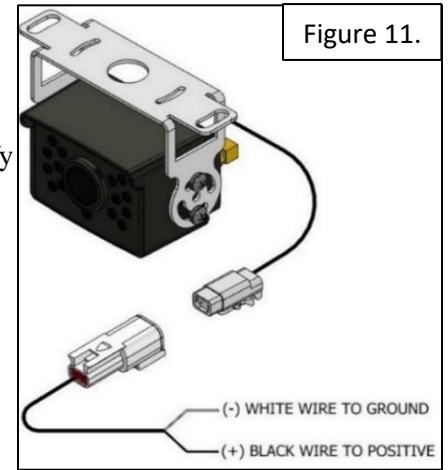


Figure 11.

Step 4B. (On trailers 40' and longer)

On trailers that are 40' and longer, there may not be enough voltage to operate the camera at the rear of the trailer. It is suggested that **before installing the rear camera** on the back of the trailer, temporarily hook the camera wiring up to a clearance light and verify that the camera is working on the monitor. The monitor should be in the cab of the truck when verifying operation. The voltage should not be below 10.50 volts. This can be checked by using a multi meter. If the camera does not communicate with the monitor, and/or the voltage is below 10.50 volts, then there are a few different options.

1. Michel's offers a DC to DC Converter that will solve the lack of available power problem. When connected to a power source between 8-36vdc, the converter will output a constant 12vdc up to 3A. By connecting the converter in-line with the camera, it allows the camera to be work properly when voltage at the rear of the trailer drops below the normal operating voltage range. To use this converter, simply cut the positive and negative wires going to the camera and splice the converter in. The part number and description for this is: 0015-000150 - DC-DC Converter 8-40vdc input -12vdc output - 3A
2. Run a new power wire to a better power source to operate the camera. If the trailer is equipped with chute openers, a good power source is at the power junction box for the chute openers. Another option is to run a wire directly to the front of the trailer and splice into the wiring at the back of the trailer plug, it is recommended to use a 14-2 SJOOW or heavy wire if running all the way to the front of the trailer. **Note:** This wiring is not supplied with the camera arm kit.
3. Move the rear camera to the optional arm location near a center partition in the trailer. See Figure 2. Connect the wiring to a side marker light through the side wall of the trailer. It is recommended to temporarily connect the wiring to ensure that this is an adequate power source before fully installing the camera. **Caution** must be taken when drilling through the top header of the trailer as there are wires inside the wall and/or top rail tubing.

Step 5

The operating instructions for the monitor and camera are separate instructions from these installation instructions. They should be included with the FC Monitor and Camera Instruction Manual. If you have purchased other cameras and monitor, then refer to that manufacturer's instruction for proper operating instructions.

Step 6

With a person inside the cab of the truck, have them communicate which direction to adjust the Camera Arm. The height adjustment up and down is controlled by changing the position of the height control bolt. There are 4 positions to choose from for the height position. Position 1 is the lowest camera height and Position 4 is the highest camera height. See Figures 13 & 14. Insert a 3/8" x 5-1/2" bolt through a 3/8" washer and the Pivot Cover. Choose the desired height position hole and insert the bolt. Pushing down on the arm will allow the bolt to be inserted without interfering with the arm assembly. Slide the bolt through the Pivot Washer on the other side and install a washer and the lock nut. Do not over tighten this bolt as it can pinch the Camera arm and hinder the up and down operation.

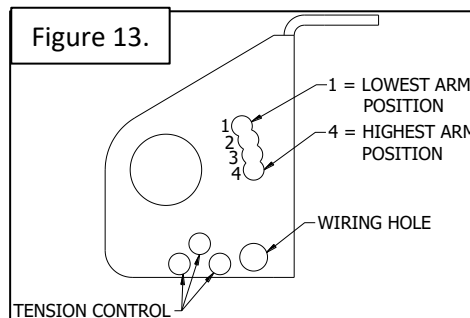


Figure 13.

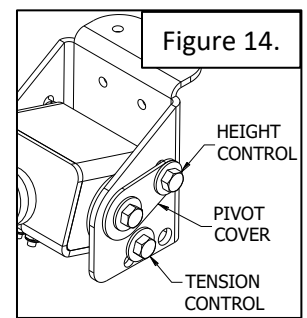


Figure 14.

Step 7

Once the desired height of the camera is set, the camera can be rotated in 3 different directions. See Figure 15.

Direction 1. Loosen the two ¼” carriage bolts that mount the Camera Adjusting Bracket to the arm. It can now be rotated up and down until the camera is level with the trailer.

Direction 2. Loosen the two ¼” carriage bolts that mount the Camera Mounting Bracket to the Camera Adjusting Bracket. This will allow the camera to rotate Left and Right.

Direction 3. Loosen the screws that mount the Camera to the Camera Mounting Bracket. This will allow the camera to be adjusted Up and Down.

Once the Camera is located in the correct position, tighten all of the mounting hardware. Note: Over tightening the cross bolts will result in the arm being difficult to raise and lower.

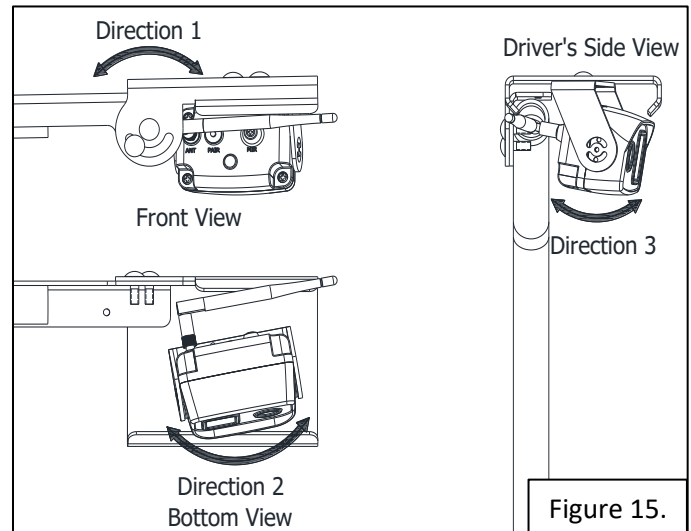


Figure 15.

Step 8

After the Camera arm is installed and adjusted in the correct position. Close and open the tarp a few times to verify everything is working and adjusted properly. If the camera arm does not raise up all of the way to the Height Control Bolt, the Tension Control Bolt can be moved to add more tension to the torsional spring and the arm. See Figure 17.

Assembling Instructions

The following are instructions on how to assemble the camera arm. Note: The Camera Arm comes assembled from the factory, but in some cases must be partially unassembled to be installed correctly. For example: On a Titan trailer the Mounting Base Plate needs to be removed, modified, and installed on the trailer. Then The Camera Arm needs to be reassembled on the trailer.

To assemble the Arm into the Mounting Base Plate, the Mounting Base Plate can be installed onto the trailer or held in a bench vise by the top tab.

1. Insert the black plastic Pivot Bushings into the Arm Assembly.
2. Slide the Arm Assembly into the Mounting Base Plate and slowly insert the Torsion Spring Tubing through the side of the Mounting Base Plate and the black plastic Pivot Bushing approximately 1/3 of the way.
3. Place the Torsion Spring in the Arm and continue sliding the tubing through.

Important: The short side of the Torsion Spring will be on the inside top of the Arm Assembly. See Figure 17.

4. Slide a 3/8” washer and the Pivot Cover onto one of the 3/8” x 5-1/2” bolts and install it through the Torsion Spring Tubing. Install the other Pivot Cover, 3/8” washer, and 3/8” Nylock Nut. Leave this bolt loose enough so the Pivot Covers can still rotate.

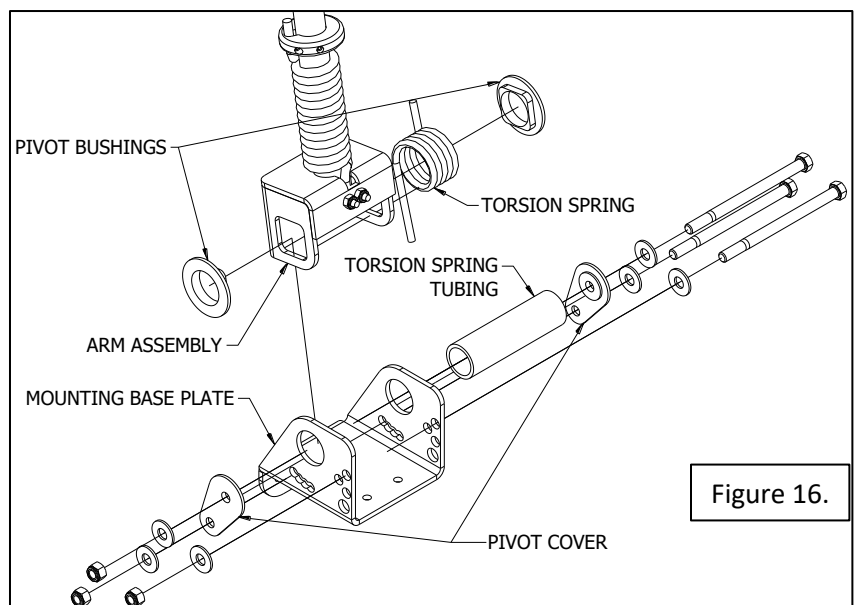


Figure 16.

5. Install a 3/8" bolt in the Middle Tension hole. See Figure 16 & 17. This bolt adds tension to the Torsion Spring and from this location it can be set one hole looser and one hole tighter. **Important: The long end of the Torsion Spring arm needs to be on the front side of the bolt in order to add tension to the arm.** This bolt can be left loose. See Step 6 for instructions for installing the height control bolt.

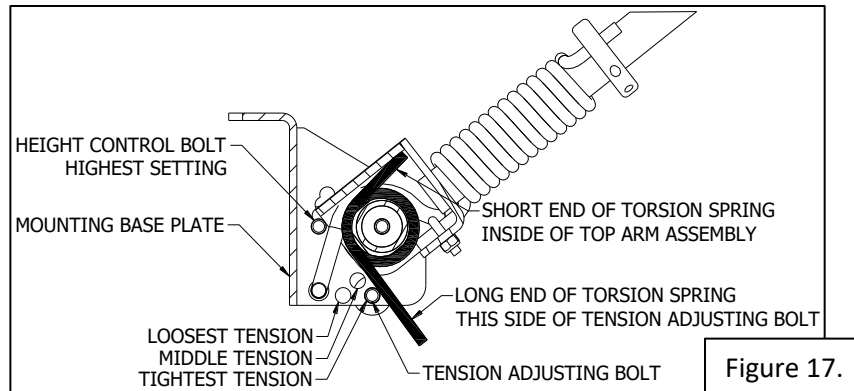


Figure 17.

The Camera Arm Parts and Accessories

0015-000130 - Fixed Channel (FC) Monitor

Includes:

1. Fixed Channel Monitor
2. Sunshade
3. Butterfly Monitor Mounting Base – Comes with Monitor
4. Wireless Antenna – Comes with Camera & Monitor
5. U-Shape Monitor Mounting Base – Comes with Monitor

Note: This kit also includes mounting hardware and wiring not shown in picture.

0015-000107 - 1 FC Camera & 5ft wire lead (No Arm) DASH CAMS, A,B,C,D (Includes #8c)

0015-000108 - 1 FC Camera & 18ft wire lead (No Arm) CAMERA ARM, AIR GAUGE, A,B,C,D (Includes #8b)

0015-000109 - 1 FC Camera & 50ft wire lead (No Arm) AUGER KITS, A,B,C,D (Includes #8a)

6. FC Camera C/W Mount Bracket and Hardware must choose proper Camera Channel
 - a. 0015-000131 - Camera A Only w/connector (For FC Monitor)
 - b. 0015-000132 - Camera B Only w/connector (For FC Monitor)
 - c. 0015-000133 - Camera C Only w/connector (For FC Monitor)
 - d. 0015-000134 - Camera D Only w/connector (For FC Monitor)
7. Wireless Antenna – Comes with Camera
8. Wiring with Receptical
 - a. 0015-000040 - 18' of wire
 - b. 0015-000041 - 50' of wire
 - c. 0015-000042 - 5' of wire

Note: This kit also includes mounting hardware not shown.

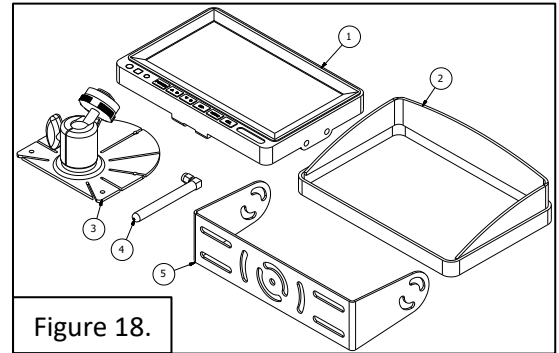


Figure 18.

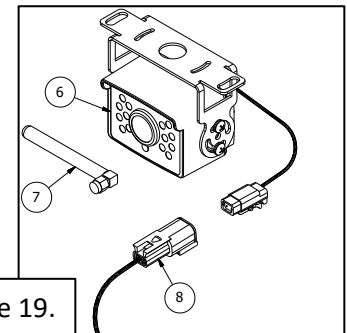


Figure 19.

0015-000112 – FC Series Camera Arm Assembly (Arm ONLY, No Camera)

1. 0100-001102 - 3/8" Nylock Hex Nut
2. 0101-001002 - 3/8" Flat Washer
3. 0015-000057 - Pivot Cover
4. 0015-000055 - Mounting Base Plate
5. 0106-000008 - 1/4"-14 x 1-1/2" Pan Head Sq Drive Self Drilling Screw
6. 0015-000056 - Torsion Spring Tubing
7. 0105-000220 - 3/8"-13 x 5-1/2" Bolt
8. 0015-000065 - UMHW Pivot Bushing
9. 0117-002021 - Torsion Spring
10. 0015-000051 - Arm Assembly
11. 0105-009002 - 1/4" x 3/4" Carriage Head Bolt
12. 0015-000060 - Camera Adjusting Bracket
13. 0101-001000 - 1/4" Flat Washer
14. 0100-001100 - 1/4" Nylock Nut

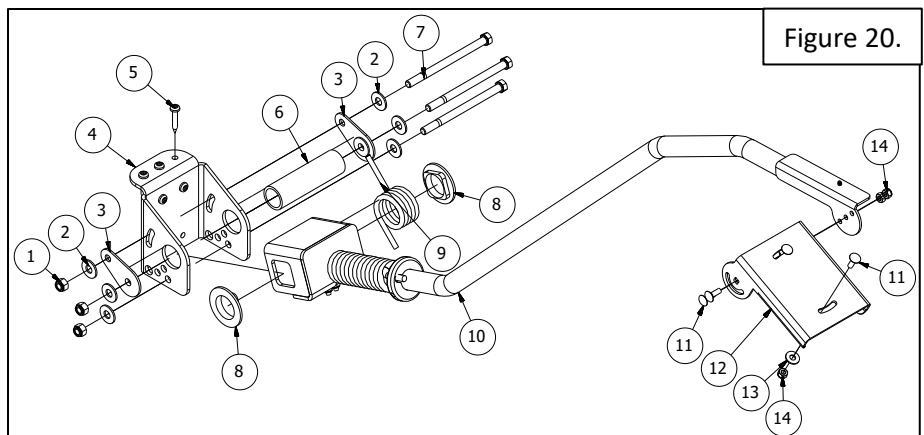


Figure 20.

0015-000051 – Arm Assembly

1. 0015-000061 – Spring Mount Weldment
2. 0117-002022 – Camera Arm Antenna Spring
3. 0015-000065 – Arm Locating Washer
- 3A. 0104-000103 – Hexagon Socket Set Screw
4. 0015-000052 – Arm Weldment
5. 0116-003102 – 3/16" Cable Clamp U-Bolt
6. 0100-001100 – 1/4" Nylock Nut
7. 0145-910583 – Mounting Clip
8. 0145-910607 – Receptacle, 2 Pin, ATM Series
9. 0103-000007 – 3/16" x 5/16" Rivet

Note: The Arm Assembly will have the wiring pre-assembled at the factory.

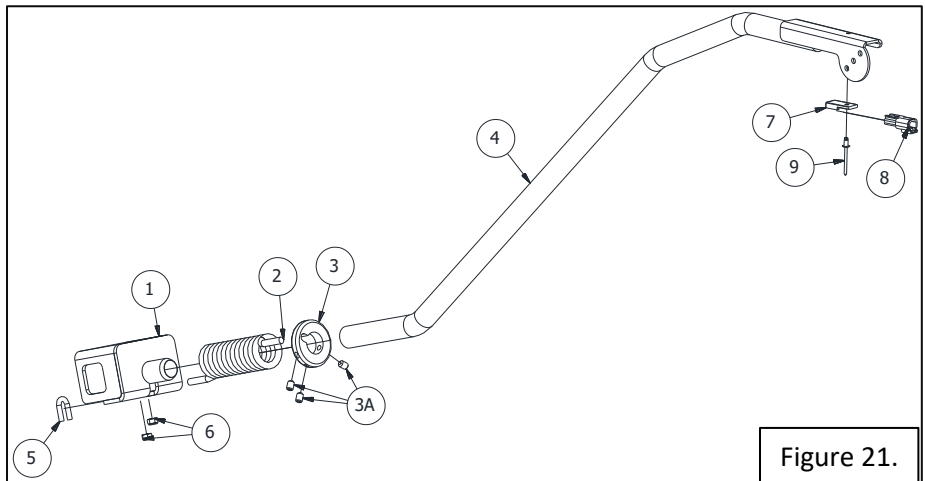


Figure 21.

Optional Mounting Equipment

0015-000075 – Slopped Mounting Bracket.

This bracket is used on any trailer that has slopped top side rails on the trailer. This bracket will help square the Mounting Base Plate to the trailer.

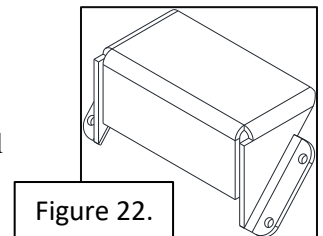


Figure 22.

Other Camera Mounting Kit Options

0015-000110 - 8"-16" Grain Auger Kit C/W - 1 FC Monitor and 1 Camera (Complete Kit #)

Note: Camera and mounting bracket not shown, but is included in this kit.

1. 0015-000084 – Auger Mounting Plate
2. 0015-000083 – 8" to 16" Auger Bottom Strap
3. 0015-000082 – Top Cross Strap
4. 0105-009002 – 1/4" x 3/4" Carriage Head Bolt
5. 0100-001100 – 1/4" Nylock Hex Nut
6. 0101-001000 – 1/4" Flat Washer
7. 0101-001002 – 3/8" USS Flat Washer
8. 0100-001102 – 3/8" Nylock Hex Nut
9. 0105-009210 – 3/8" x 3" Carriage Head Bolt
10. 0105-009215 – 3/8" x 1" Carriage Head Bolt

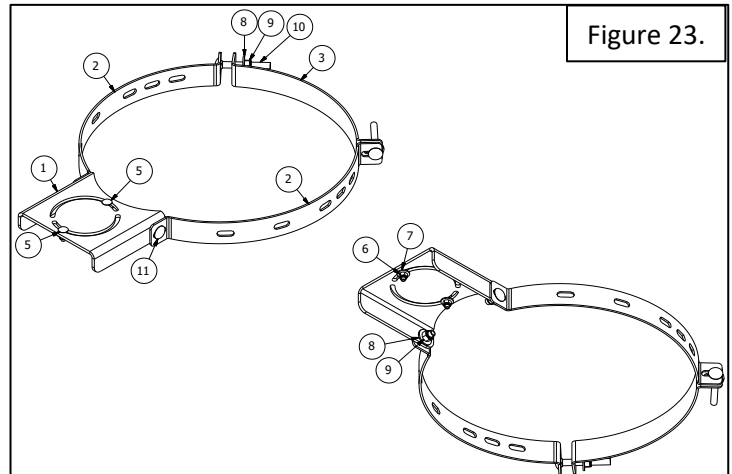


Figure 23.



Figure 24.



Figure 25.

0015-000111 - Std Conveyor Kit C/W - 1 FC Monitor and 1 Camera

1. 0015-000131 to 0015-000134 – Wireless Camera
2. 0015-000076 – Universal Conveyor Mounting Bracket
3. 0015-000077 – Support Strap
4. 0100-001100 – ¼" Nylock Hex Nut
5. 0101-001000 – ¼" Flat Washer
6. 0105-009003 – ¼" x 1" Carriage Head Bolt

Note: This kit comes with 0015-00041 – 50' of wire.

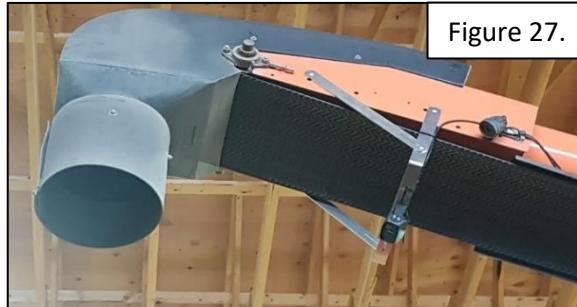


Figure 27.

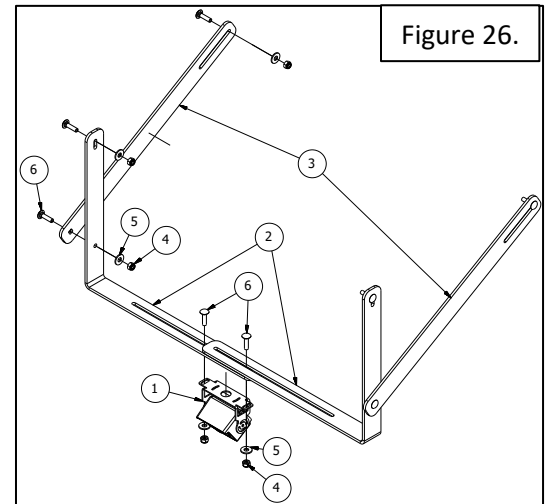


Figure 26.

Coming Soon**Air Gauge Kit**

Air Gauge kits will be available soon. The camera will be mounted inside of the Air Gauge Box by installing a new lid/cover onto the existing Air Control Box. The camera will be positioned out of the way as much as possible to allow the gauge to be still be seen when the cover is closed.



Figure 28.

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