

EZFLOW^{XR}

Hydraulic Trap



INSTALLATION MANUAL



Cornhusker Hopper Trailers with Roller Bearing Doors
24" & 30" Wide Trap Doors Only

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This kit converts Cornhusker Trailers from existing manual crank hopper doors to EZ Flow^{XR} hydraulic doors.

Must have roller bearing sliding doors!

It is recommended to use an all season soy based hydraulic fluid rated to be fluid down to -65°F. (2 gallons included): Easy Flow Hydraulic Oil – P/N 577-55236 – Approximately 1-1/2 gallons required.

Tools Needed

- | | | |
|------------------------------|-----------------------|------------------------|
| • Standard Wrench Set | • Standard Socket Set | • Deep Well Socket Set |
| • Hole Saw Set Up To 2 ½" | • Vice Grips | • Pliers |
| • C-Clamps | • Screw Driver Set | • Socket Extension |
| • Drill Bits -9/32" – 13/32" | • Hammer | • Penetrating Oil |
| • Cordless Drill | • T-10 Torx Driver | • 1" End Wrench |
| • Heat Gun | • Hex Key Set | • Wire Crimpers |

INSTALLATION INSTRUCTIONS

1. REMOVE EXISTING MANUAL DOOR OPENERS

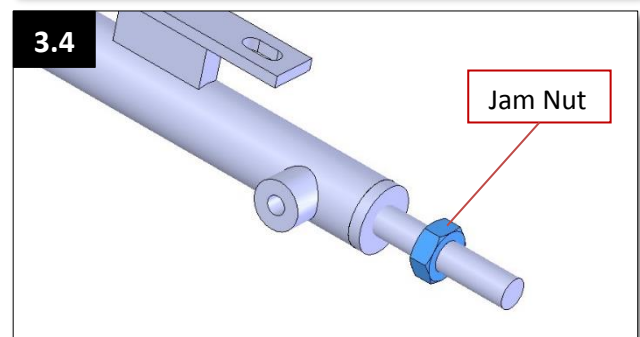
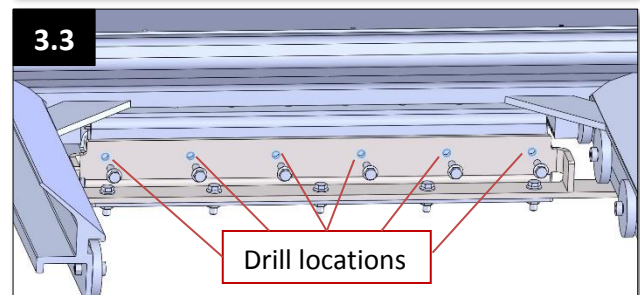
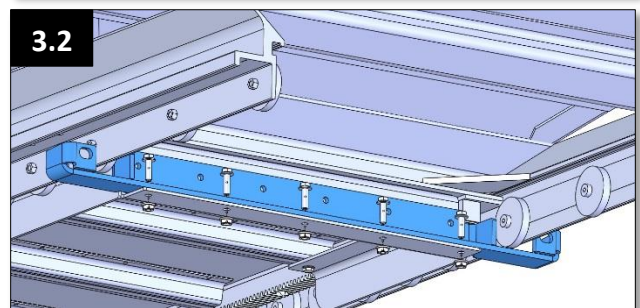
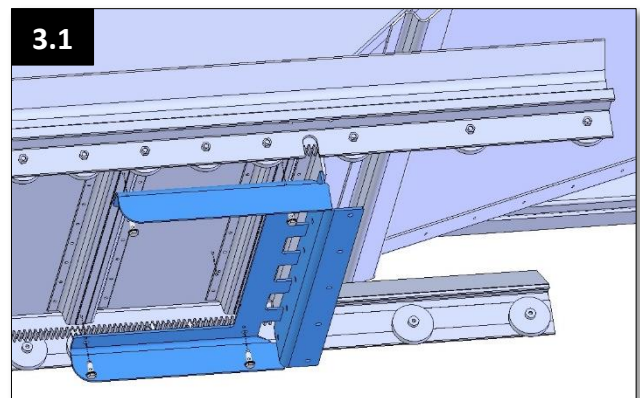
- a. Remove and discard the existing brackets, gearboxes, U-joints and cross shaft.
- b. Repeat for both hopper doors.

2. VERIFY THAT THE DOORS ROLL SMOOTHLY

- a. Pull the doors open and closed a few times and determine if they are operating smoothly.
- b. If there is binding on the doors, determine why they are not operating smoothly and rebuild the doors if necessary. See the trailer manual for instructions on how to adjust the trap doors.

3. INSTALL DOOR BRACKETS

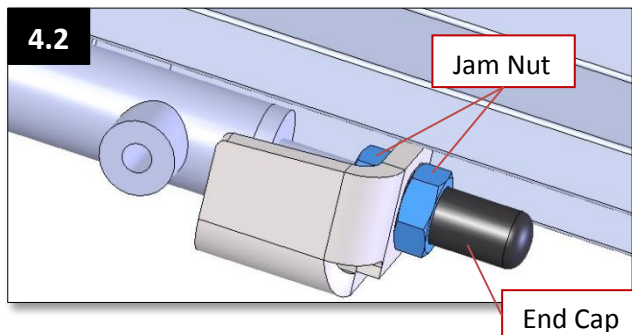
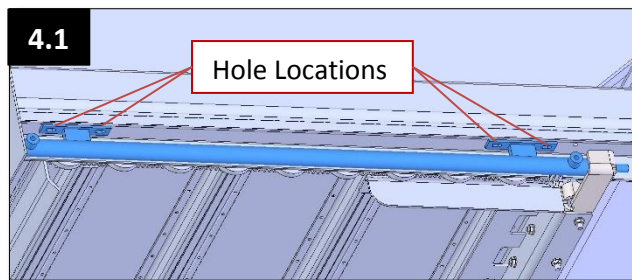
- a. With the trap door in the closed position, install the door bracket reinforcement (101779 for 30" or 101863 for 24") to the underside of the trap door using (4) 3/8-16 X 1" self-tapping screws. Make sure front angle of reinforcement bracket is flush with the trap door lip and the screw holes are centered with the existing trap door reinforcement channels. **See Fig 3.1**
- b. Position and fasten the new door bracket (101758 for 30" or 101612 for 24") onto the reinforcement bracket with the supplied (5) 3/8-16 X 1 1/4" bolts and (5) 3/8-16 flanged locking nuts. **See Fig 3.2**
- c. Drill six 25/64" holes through the fastener holes into the existing trap door lip. Install the remaining (6) 3/8-16 X 1 1/4" bolts and (6) 3/8-16 flanged locking nuts into the door bracket assembly. **See Fig 3.3**
- d. Repeat the above steps for the rear hopper door.



4. INSTALL HYDRAULIC CYLINDERS

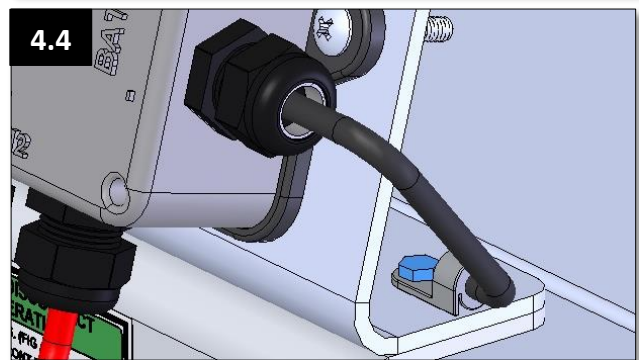
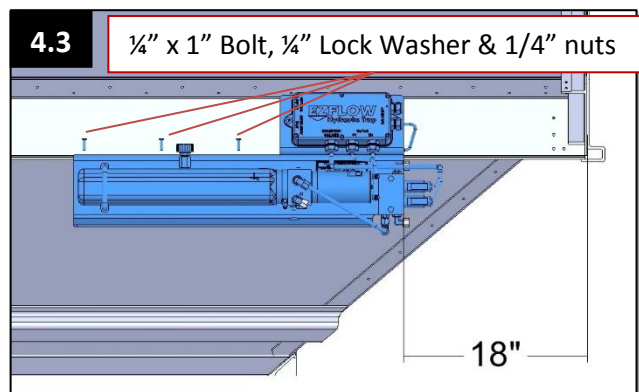
- a. Screw one 5/8"-11 Jam nut onto each cylinder rod as far as possible. **See Fig 3.4**
- b. Make sure the trap doors are in the fully closed position for the following steps.
- c. Hydraulic cylinders must be installed with the rod ends toward the center of the trailer, the hydraulic fittings pointing outward and the mounting feet facing up.

- d. Place proper cylinder up against trap frame with the rod end through the door bracket flush against the jam nut. Mark the feet hole locations on the trap frame for drilling. **See Fig 4.1**
- e. Drill the cylinder feet holes using a 25/64" drill bit.
- f. Install the hydraulic cylinders using the 3/8-16 X 1-1/4" long serrated flange bolts, along with the 3/8-16 flanged locking nuts.
- g. Install the remaining 5/8"-11 Jam nut onto the rod ends securing the new door brackets to the cylinders. **See Fig 4.2**
- h. Repeat for each side of front and rear hopper doors.
- i. Install rubber end caps to keep threads free from corrosion and contaminants.



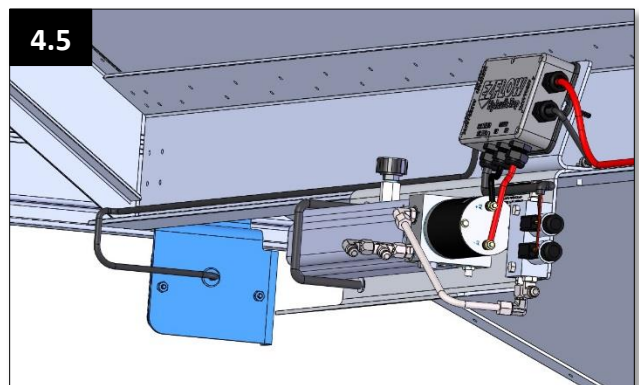
5. INSTALL THE PUMP, CONTROL BOX AND DOUBLE BLOCKING VALVE ASSEMBLY

- a. Fill pump reservoir with the supplied oil to the full line before mounting.
- b. Clamp the pump mount bracket to the cross c-channel in the apex of the trailer between the hoppers. Position it at the start of the radius of the bend and the edge 18" from the curb side rail. **See Fig 4.3**
- c. Drill (5) 9/32" holes in the cross c-channel through the existing mount bracket holes.
- d. Install the bracket with the supplied 1/4" X 1" bolts, 1/4" nuts and 1/4" lock washers. Install black ground wire to the farthest right fastener. **See Fig 4.4**

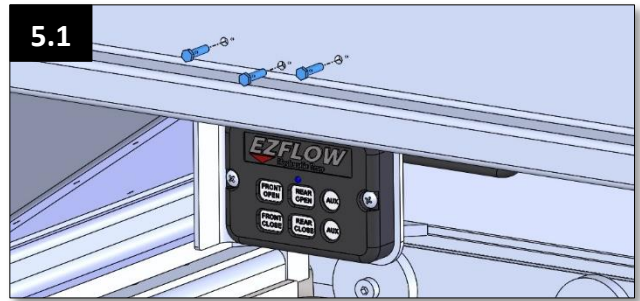


6. INSTALL KEYPAD CONTROLLER

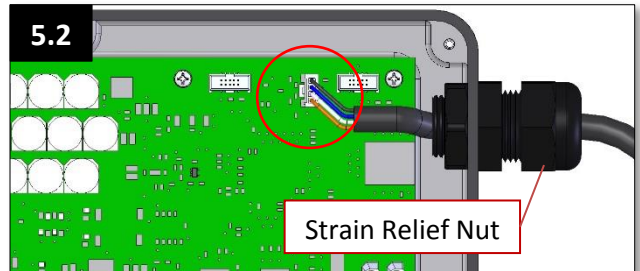
- a. Mount Keypad w/ bracket.
 - i. Place leading edge of the bracket to frame rail in line with the pump mount bracket as shown. **See Fig 4.5**



- ii. Drill mounting holes through the roadside lower rail and use (3) ¼" x 1" stainless steel bolts and ¼" stainless steel nylock nuts to secure bracket to the lower frame rail. **See Fig 5.1**
- iii. Secure communications cable with zip ties along the top of the c-channel.



- b. Insert comm cable into the control box mounted on the pump assembly and plug the connector into the control board as shown. **See Fig 5.2**
- c. Install and tighten the strain relief fitting with a 1" end wrench to secure the cable and to keep out moisture and contaminants.
Failure to do this will result in damage to the internal electronics.



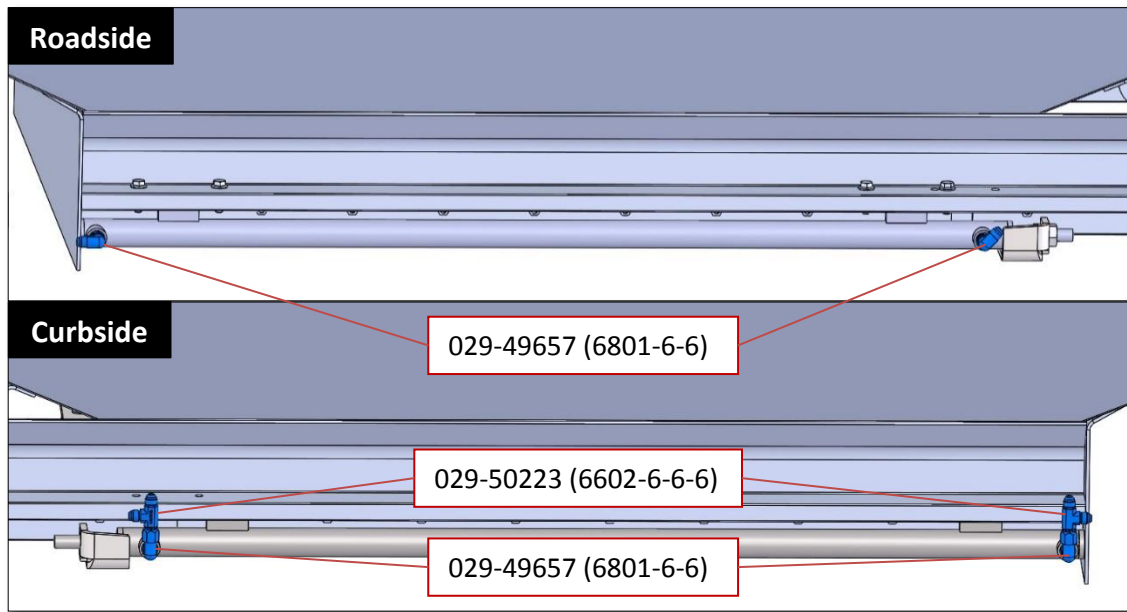
7. INSTALL HYDRAULIC FITTINGS TO CYLINDERS

- a. When installing hydraulic fittings, hand tighten all fittings until all fittings and hoses are installed. When all connections are made, go back and tighten all fittings.
- b. Proper way to install hydraulic fittings and hoses.
 - i. 37 Degree JIC Fitting Assembly Instructions.
 1. Lubricate threads and the entire surface of the cone with hydraulic/system fluid.
 2. Align matting components for hand connection and turn flare nut until sealing surface makes full contact.
 3. Torque flare nut to the 18-20 foot/lbs. for -6 fittings. All torques are wet torques. Do not tighten dry.
 4. Alternative to torque method in Step 3 is to tighten nut until firm resistance is felt. Turn Flare nut clockwise additional no less than 30 degrees and no more than 90 degrees. Again lubrication of fitting is required before tightening.
 - ii. SAE O-Ring Adapter Assembly Instructions
 1. Lubricate O-ring and treads of fitting with hydraulic/system fluid.
 2. Looking at fitting from end with nut/washer/O-ring assembly, back off lock nut far as possible by turning nut clockwise as far as possible on fitting.
 3. Turn fitting into port until the washer touches the highest spot on the fitting and to sudden resistance is felt.
 4. Back off fitting counterclockwise for proper alignment but do not exceed one revolution.
 5. Tighten lock nut to 8-10 ft. /lbs. for (-4) and 12-16 ft. /lbs. for (-6) All torques are wet torques. Do not tighten dry.


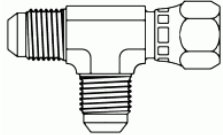
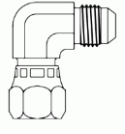
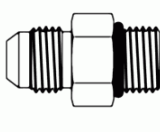
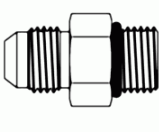
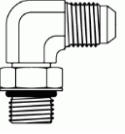
Alternative to torque method in Step 5 is to tighten nut until firm sudden resistance is felt while holding fitting in place. Turn lock nut clockwise an additional 1 to 1-1/4 flat revolution. Again lubrication of fitting is required before tightening.

- c. Hydraulic cylinder fittings.
 - i. Install part number 029-49657 - adapter 6801-6-6, 90 degree JIC to O-RING into each of the eight cylinder ports.
 - ii. On the curb side of the trailer, install part number 029-50223 – adapter 6602-6-6-6, Tee, JIC to female swivel JIC to JIC onto each of the 90 degree adapters.

(DO NOT REMOVE PLUGS UNTIL READY TO INSTALL FITTINGS OR HOSES)



HYDRAULIC FITTING CHART

			
029-49657 <u>FITTING #6801-6-6</u>	029-50223 <u>FITTING #6602-6-6</u>		
			
029-50435 <u>FITTING #6500-6-6</u> PREINSTALLED ON MOTOR BRACKET ASSEMBLY	029-49468 <u>FITTING #6400-6-4</u> PREINSTALLED ON MOTOR BRACKET ASSEMBLY	029-50225 <u>FITTING #6400-6-6</u> PREINSTALLED ON MOTOR BRACKET ASSEMBLY	029-51138 <u>FITTING #6801-6-4</u> PREINSTALLED ON MOTOR BRACKET ASSEMBLY

8. INSTALL HYDRAULIC HOSES TO TRAP FRAME

a. For 24" wide trap door.

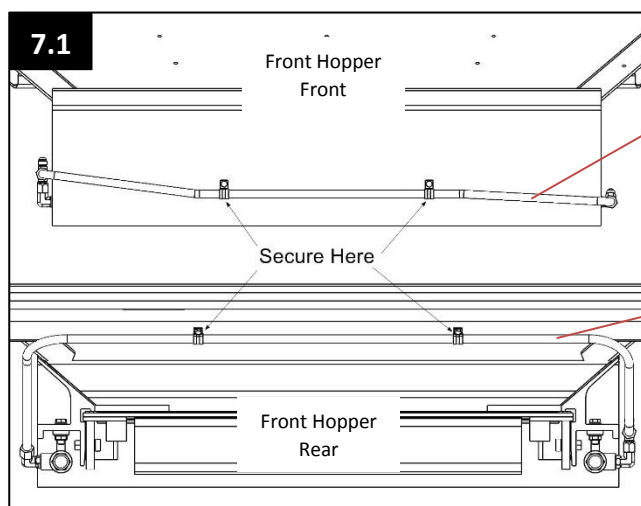
- i. 029-53992 – 52-1/2" hydraulic hose. Cross rear of hopper – cylinder tube end.
 1. One hose for each hopper. Two total hoses.
 2. Attach hose to hopper as shown. **See Fig 7.1**
 - a. 1/4" bolts, nylock nuts, and 5/8" Jiffy clips.
- ii. 029-53989 – 46-1/2" hydraulic hose. Cross front of hopper – cylinder rod end.
 1. One hose for each hopper. Two total hoses.
 2. Attach hose to hopper as shown. **See Fig 7.1**
 - a. 1/4" bolts, nylock nuts, and 5/8" Jiffy clips.

b. For 30" wide trap door.

- i. 029-53991 – 56-1/2" hydraulic hose. Cross rear of hopper – cylinder tube end.
 1. One hose for each hopper. Two total hoses.
 2. Attach hose to hopper as shown. **See Fig 7.1**
 - a. 1/4" bolts, nylock nuts, and 5/8" Jiffy clips.
- ii. 029-53989 – 46-1/2" hydraulic hose. Cross front of hopper – cylinder rod end.
 1. One hose for each hopper. Two total hoses.
 2. Attach hose to hopper as shown. **See Fig 7.1**
 - a. 1/4" bolts, nylock nuts, and 5/8" Jiffy clips.

c. Repeat all steps for both hopper doors.

If the hoses going across the rear of the trap frame seem too long, rotate the 90° fitting on the roadside of the tub forward to use up the slack.

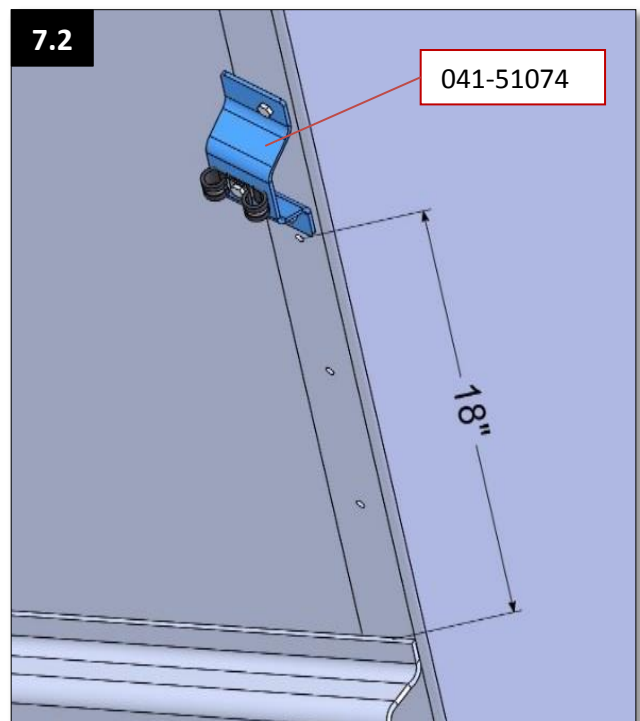


Use 029-53989 – 46-1/2" hydraulic hose. Attach with 5/8" Jiffy clips, 1/4" bolts, nylock nuts.

Use 029-53991 – 56-1/2" hose for 30" door. Use 029-53992 – 52-1/2" hose for 24" door. Attach with 5/8" Jiffy clips, 1/4" bolts, nylock nuts.

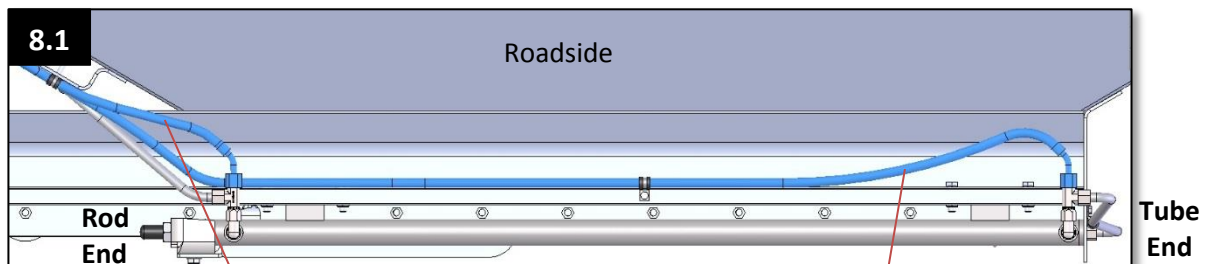
9. INSTALL HOSE BRACKETS

- a. All hose brackets are to be installed on the curb (passenger) side of the trailer.
- b. Brackets are to be installed with the included 1/4" x 1-1/2" bolts and 1/4" nylock nuts. If installer has access to Huck guns and bolts, optional use of 032-02087 – HUCKBOLT 1/4" #10 UNCAPPED and 032-02000 – COLLAR HYUCK 1/4" STD FLANGE is approved.
- c. Place bracket into position and drill holes through tub panel. Lower edge of brackets is located 18" up from the edge of the channel cross member. **See Fig 7.2**
- d. Both brackets, 041-51075, install on the front & rear tub.



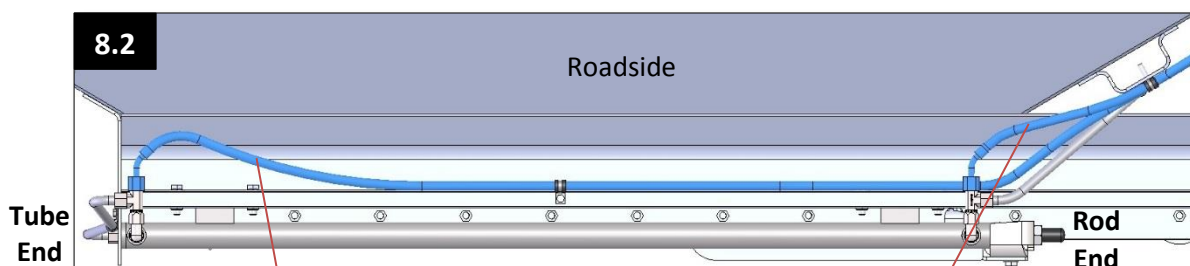
10. INSTALL HYDRAULIC HOSES TO CYLINDERS

- a. Due to multiple Cornhusker kits for different Apex dimensions, longer hose part #'s are not called out but sorted by 1st 2nd 3rd & 4th longest hydraulic hoses in each EZ Flow^{XR} kit.
- b. Attach hydraulic hoses to the cylinders as shown below.
 - i. 1st Longest hydraulic hose. **Rear** hopper – cylinder **tube** end.
 1. Attach hose as shown. **See Fig 8.2**
 - a. ¼" bolts, nylock nuts, and 5/8" Jiffy clips.
 - ii. 2nd Longest hydraulic hose. **Front** hopper – cylinder **tube** end.
 1. Attach hose to brackets as shown. **See Fig 8.1**
 - a. ¼" bolts, nylock nuts, and 5/8" Jiffy clips.
 - iii. 3rd Longest hydraulic hose. **Rear** hopper – cylinder **rod** end.
 1. Attach hose to brackets as shown. **See Fig 8.2**
 - a. ¼" bolts, nylock nuts, and 5/8" Jiffy clips.
 - iv. 4th Longest hydraulic hose. **Front** hopper – cylinder **rod** end.
 1. Attach hose to brackets as shown. **See Fig 8.1**
 - a. ¼" bolts, nylock nuts, and 5/8" Jiffy clips.



Front hopper
4th longest hydraulic hose. End with 45 degree fitting attaches to cylinder rod end.

Front hopper
2nd longest hydraulic hose. End with 45 degree fitting attaches to cylinder tube end.



Rear hopper
1st longest hydraulic hose. End with 90 degree fitting attaches to cylinder rod end.

Rear hopper
3rd longest hydraulic hose. End with 45 degree fitting attaches to cylinder tube end.

c. Attach hoses to hydraulic pump and blocking valve. See Fig 9.1

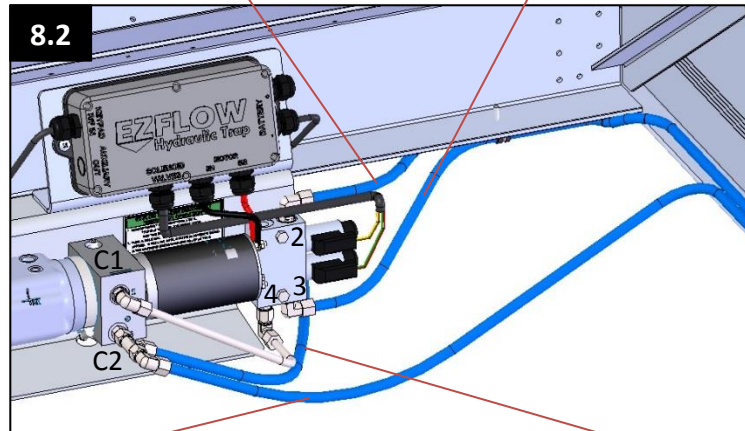
- i. Attach 1st longest hose to pump port "C2".
- ii. Attach 2nd longest hose to pump port "C1".
- iii. Attach 3rd longest hose to blocking valve port "3".
- iv. Attach 4th longest hose to blocking valve port "2".

Front Hopper

4th longest hydraulic hose. Attaches to blocking valve port "2". From cylinder rod end.

Rear Hopper

3rd longest hydraulic hose. Attaches to blocking valve port "3". From cylinder rod end.



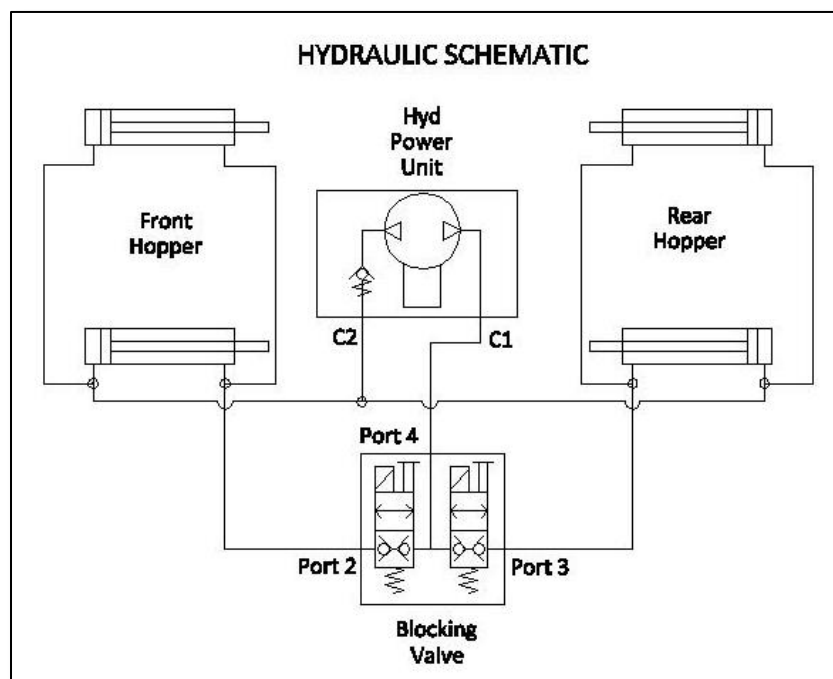
Rear Hopper

1st longest hydraulic hose. Attaches to C2 port on pump. From cylinder tube end.

Front Hopper

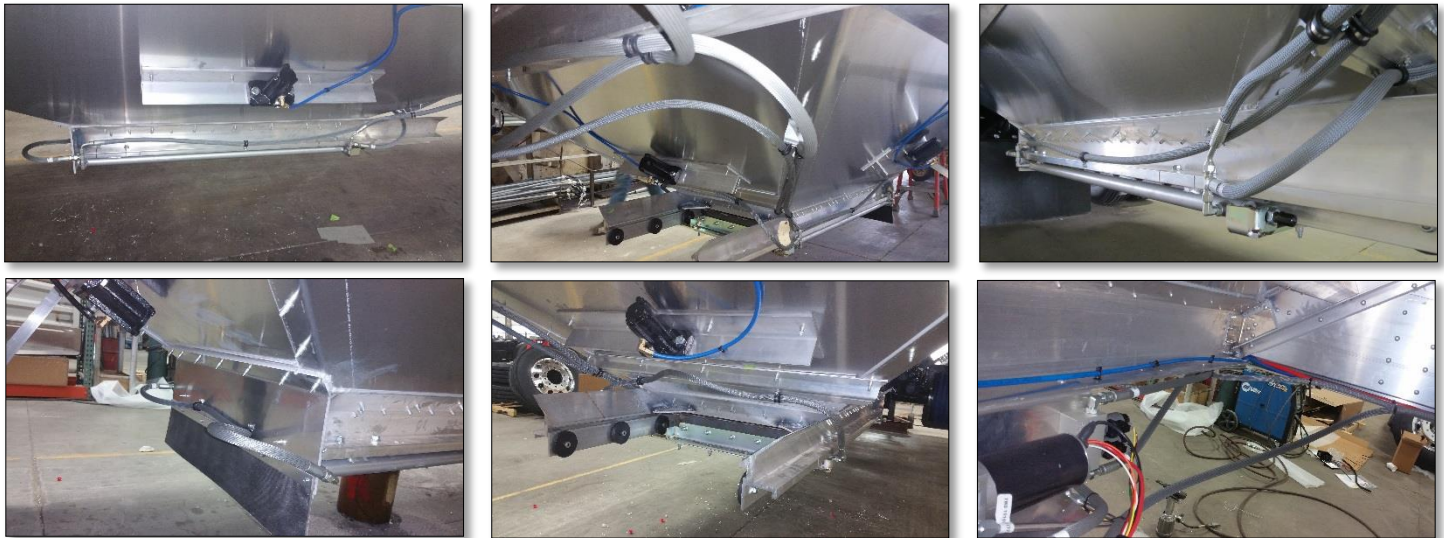
2nd longest hydraulic hose. Attaches to C1 port on pump. From cylinder tube end.

d. Verify all hose hydraulic hose connections with the following schematic.



e. Mount all hoses as shown in the pictures below using the following hardware.

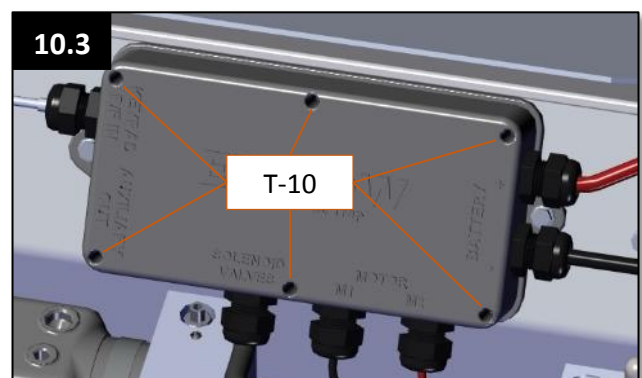
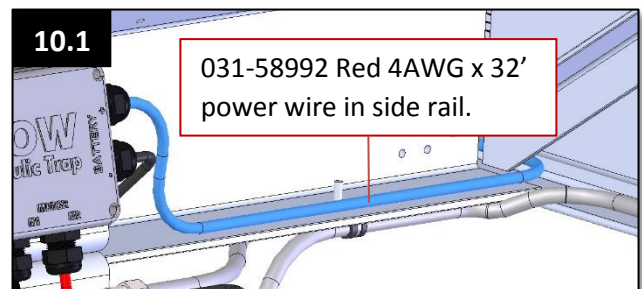
- i. 032-01284 – 1/4" x 1-1/2" stainless steel bolt.
- ii. 032-44653 – 1/4" stainless steel nylock nut.
- iii. 031-51080 – 5/8" Jiffy clip.
- iv. 021-00843 – zip tie 7-1/2" long.



f. After all hoses are mounted and secured, tighten all fittings.

11. INSTALL POWER WIRE INTO EZ FLOW CONTROL BOX.

- a. Using a fish tape to pull the 031-58992 – Red 4AWG x 32' feet long power wire through curbside lower rail from the nose of the trailer.
- b. Pull enough wire (approximately 22") over so that it reaches the EZ Flow control box in the apex. **See Fig 10.1**
- c. Separate the control box lid from the base.
- d. Pull the 4AWG red wire through the strain relief as shown. Strip back insulation 1/4" if not already done. **See Fig 10.2**
- e. Insert the 4AWG red wire into the Bat + set screw terminal and tighten with a hex key wrench. Make sure no wire strands are touching any electrical components on circuit board.
 - i. Tighten the strain relief nut with a 1" end wrench.
- f. Install control box to lid base with provided (6) six T-10 Torx screws. Make sure rubber gasket is in place. **See Fig 10.3**



Failure to install gasket correctly will result in damage to the internal electronics

12. INSTALL 2-POLE PLUG RECEPTACLE IN NOSE OF TRAILER.

(If not already present for electric tarp option)(Sold separately)

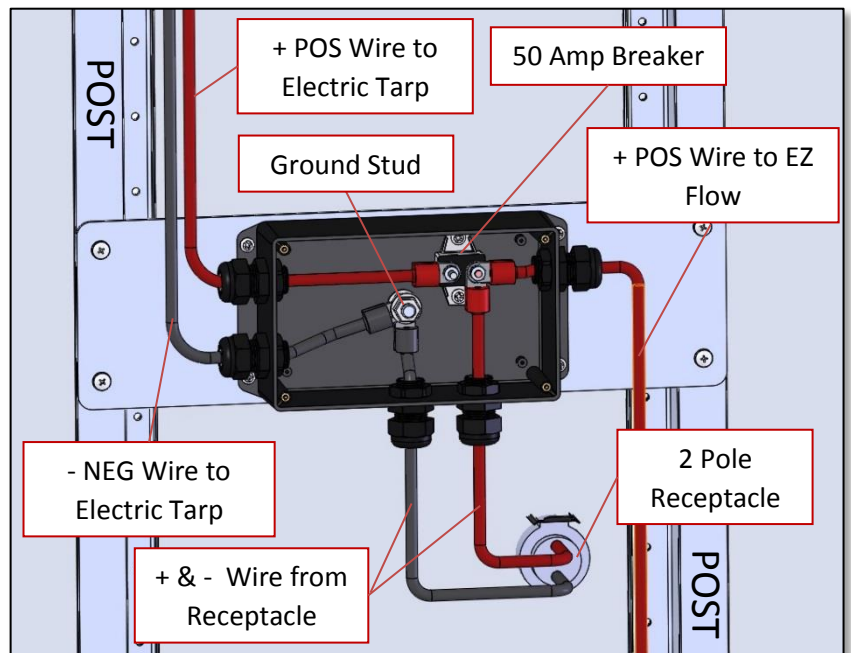
- Determine best location for plug receptacle in relation to the other attachments that are on the nose plate.
- Drill a 2-1/4" hole in the nose plate where there is access to it. Exact location to be determined as "best fit".
- Insert receptacle into hole and drill bolt mounting holes.
- Attach receptacle to trailer with:
 - 032-43152 – 1/4" stainless steel screws.
 - 032-44653 – 1/4" stainless steel nylock nuts.



13. JUNCTION BOX INSTALLATION

(If equipped with electric tarp option)

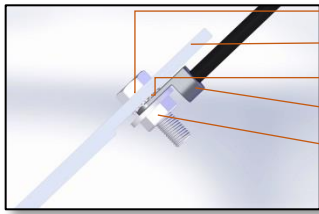
- Choose a mounting location close to the power receptacle.
- Clean Z-posts with a wire brush where mounting plate will be installed. (Surface must be clean to make good contact for the ground.)
- Use the four #4-24 X 3/4" screws to attach the mounting plate to the Z-posts.
- If tarp system present or being installed, insert +POS and – NEG power wires through the strain reliefs on left side of junction box as shown.



- Install and crimp supplied 3/8 lug eyelets onto tarp system power wires. Use 1" of 1/2" heat shrink over base of connectors to protect from accidental contact and shorting.
- Connect + POS wire from tarp system to the left side of the 50 amp breaker and the - NEG wire to the ground stud.
- Insert the 4AWG power wire from the EZ Flow system through the bottom strain relief into the junction box.
- Install and crimp supplied 1/4" lug eyelet to the 4AWG power wire. Use 1" of 1/2" heat shrink over base of connector to protect from accidental contact and shorting.
- Connect the 4AWG power wire to the right side of the 50 amp breaker.
- Double check all connections to make sure everything is tight. Tighten strain relief nuts with 1" end wrench. This prevents water intrusion from around the wires.
- Close the junction box with the supplied screws.

l. If not using separate junction box for tarp option.

- i. Drill a 7/16" hole in the mounting post approximately 8" above the receptacle hole as shown.
- ii. Mount ground stud and wire to mounting post in following order.



1. 032-44809 – 3/8" stainless steel bolt.
2. Post.
3. 032-58829 – 3/8" washer external tooth star washer.
4. 031-51269 – Black 6 gage x 18" long ground wire.
5. 032-03471 – 3/8" serrated flange nut.
6. 035-52548 – Corrosion Protection Grease.
7. 031-51477 – Black battery boot installed on wire.

m. Wire 2- pole receptacle with power wire and ground wire. (Junction box not used)

- i. Push both + POS & - NEG wires thru 034-51020 – 2 pole receptacle rubber boot.
- ii. Place dielectric grease onto exposed wire ends of the + POS & - NEG.
- iii. Insert + POS end into top terminal and tighten set-screw.
- iv. Insert – NEG end into bottom terminal and tighten set-screw.
- v. Slide protective rubber boot onto the 2-pole receptacle as shown below.



14. FINISH INSTALL

- a. Apply power to the unit by plugging into a 12 volt power supply from the tractor.
Tractor wiring kit sold separately. See tractor wiring installation instructions.
- b. See included Operation Instruction Manual for operation and remote programming of the EZ Flow^{XR} System.
- c. Bleed all hydraulic lines.
 - i. Slightly loosen hydraulic fittings at the cylinders one at a time.
 - ii. Run pump until oil is seen at the fittings.
 - iii. Re-tighten the fitting.
 - iv. Repeat for all fittings at the cylinders.
- d. Run doors open and closed a few times to make sure all air is out of lines.
- e. Refill the hydraulic reservoir to the full line.