



# INSTALLATION AND OPERATION MANUAL



<u>43' – 50' 2002 and Newer Timpte STD/Split Tub Style Hopper Trailers</u> KIT #101587 – 43 & Larger 96w - KIT #101588 – 43 & Larger 102w Non Full Open Door Using 54" single doors

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> > August 26, 2016

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## Tools Needed

- Standard Wrench Set
- Standard Socket Set
- Deep Well Socket Set
- Hole Saw Set up to 2 ½"
- Vice Grip
- Pliars
- C-Clamps

- Screw Driver Set
- Socket Extension
- Drill Bits 9/32" 13/32
- Hammer
- Penetrating oil
- Cordless Drill

Recommended hydraulic oil (2 gallons included): Easy Flow Hydraulic Fluid – P/N 577-55236 – Approximately 1-1/2 gallons required

# This kit converts a 2002 or newer Timpte trailer using a single 54" door from an existing manual crank hopper doors to Easy Flow hydraulic doors.

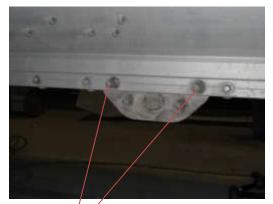
# **INSTALLATION INSTRUCTIONS**

## 1) REMOVE EXISTING MANUAL DOOR OPENERS.

- a. Remove the three bolts that hold the manual crank shaft.
- b. Remove the cross shaft by removing the two side brackets from door rails. There are two bolts per side of door. Repeat for both doors. Save the fasteners for use on the manual over ride system.



Three bolts per door opener to be removed.



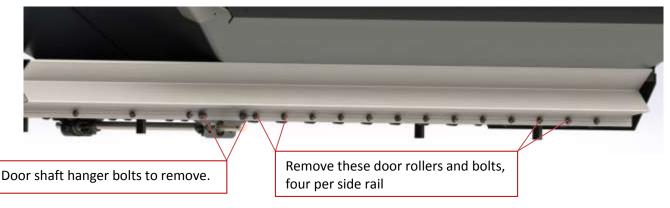
Four bolts per door opener shaft (two per side) to be removed.

## 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.

## 3) REMOVE THE DOOR ROLLERS.

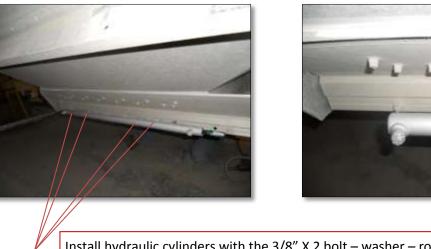
- a. Remove four rollers per door rail. Save the roller and all hardware except the bolt for reinstalling with the hydraulic cylinders.
- b. Start from the manual door opener cross shaft, remove the next two rollers and the skip eight then remove the next two. Rollers and bolts can be seen in the following figure.



#### 4) INSTALL HYDRAULIC CYLINDERS.

a. Install the hydraulic cylinders using the 3/8-16 X 2" long stainless steel bolts and the rollers and hardware saved from the previous step.

b. Hydraulic cylinder rods need to point toward the center of the trailer. Do not completely tighten the bolts until the door brackets are installed.

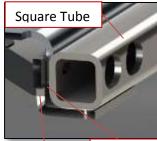


Install hydraulic cylinders with the 3/8" X 2 bolt – washer – roller – washer – washer – trap frame – cylinder foot – washer – nut. (40'/42' shown)

## 5) INSTALL DOOR BRACKETS.

- a. Open the doors at least 6" 8" to make it easier to install the door bracket assembly.
- b. Screw one 5/8"-11 Jam nut onto each of the cylinder rods as far as possible.
- c. Slide the door bracket assembly onto the front lip of the door. Make sure the lip of the door is between the square tube and the back lip of the bracket.
- d. While holding the door bracket assembly in place close the door until the cylinder rods are protruding through the outer holes in the bracket.
- e. When the door is completely closed, hold the door brackets onto the hydraulic cylinders with the remaining 5/8"-11 Jam nuts. Snug down the nuts to hold the bracket in place.
- f. Drill 13/32" holes in the door lip thru the center of all the slots in the door bracket assembly.
- g. Insert a 3/8" x 2" bolt through the 13/32" hole in the back of each of the reinforcing brackets.
- h. Install the reinforcing bracket by sliding the bolt through the inner hole of the door bracket, the lip of the door, and the reinforcing tube and use a 3/8" flange nut to secure.
- i. Install the 3/8" x 1 1/4" bolts and 3/8" flange nuts through the remaining holes in the door brackets, the lip of the door and the reinforcing tube.
- j. Remove the outer jam nuts from the cylinder rods, they will be installed later.
- k. Slide the door open so there is access to the top of the door.
- I. From the bottom side of the door drill four 1/4" holes through the door using the holes in the reinforcing brackets as a guide.
- m. From the top side of the door countersink the four holes so that the M6 x 35 socket flat head screw will fit flush against the top of the door.
- n. Install the four M6-1.0 x 35mm flat head socket cap screw and M6 nuts through the door and the reinforcing bracket.
- o. Tighten the 3/8" flanged locking nuts to hold the bracket and the reinforcing tube in place.
  - i. If Huck bolts are available, they can be used instead of the standard bolts. Huck bolts are not included in this kit. Use Timpte part numbers 032-01512 Huckbolt 3/8 uncapped #8, and 032-37347 Collar Huck 3/8".
- p. After the brackets are attached to the doors tighten the bolts attaching the cylinders to the door frame.





Slide the door bracket onto the lip of the door. Make sure the door lip is between the square tube and the back lip of the bracket.

Back Lip of Bracket

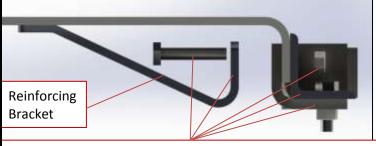
Door Lip

Capture the door bracket with two 5/8" jam nuts.

Cvlinder Rod

Door Bracket

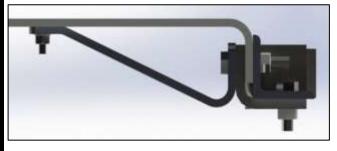
Jam Nut.



Attach reinforcing bracket, and the door bracket to rear lip of the door and the reinforcing angle to the front lip of the door with  $3/8'' \times 2$  bolts and nuts on both sides. Finish attaching the door brackets using  $3/8'' \times 1 \frac{1}{4}''$  bolts and nuts.

Drill 1/4" holes from the underside of the door using the reinforcing bracket as a guide. Counter-sink the topside of the door to make the M6x35 screw flush.

Install the M6-1.0 x 35 screws and nuts.



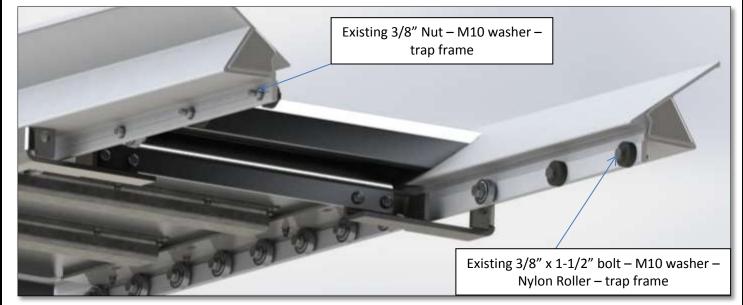
Finished Door Bracket Installation



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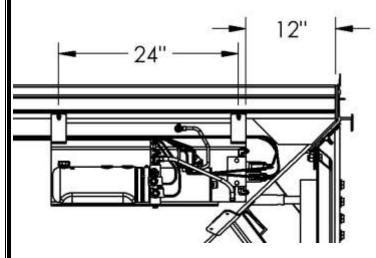
#### 6) REPLACE THE STEEL ROLLER BEARINGS WITH NYLON ROLLER BEARINGS. (IF NEEDED)

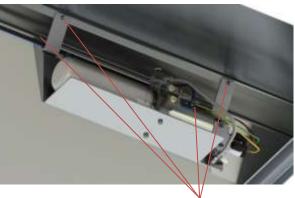
- a. Remove the steel roller bearings.
  - i. Remove four of the roller bearings on the open side of the trap frame two from each side.
  - ii. Keep the bolts and nuts to be reused with the nylon bearings.
- b. Install the new nylon roller bearings.
  - i. Install the new bearings using the existing bolt M10 washer nylon roller trap frame M10 washer nut.
  - ii. Tighten the nut until it is tight. The nylon roller does not turn the trap door slides across it.



#### 7) INSTALL THE PUMP AND THE DOUBLE BLOCKING VALVE.

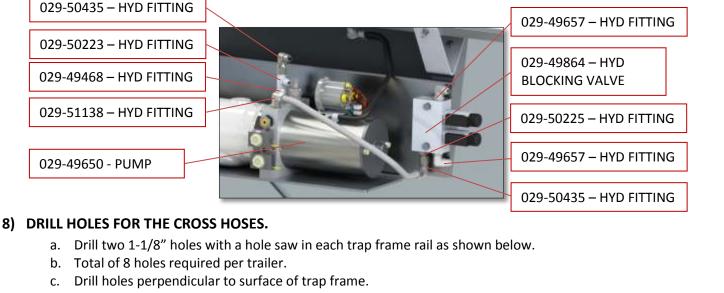
- a. Clamp the pump mount bracket to the cross c-channel closest to the ground. Position it at the start of the radius of the bend and the edge 18" from the curb side rail.
- b. Drill five 9/32" holes in the cross c-channel. Install the bracket with ¼" X 1-1/2" bolts, ¼" nuts and ¼" lock washers.



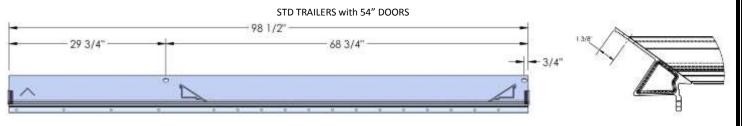


¼" x 1-1/2" Bolt, ¼" Lock Washer & 1/4" nuts

# MOTOR BRACKET ASSEMBLY SHOWN FOR REFERENCE ONLY



- d. Be careful not to hit the tub when drilling holes.
- e. Insert 034-40444 ¾" RUBBER GROMMET into holes.



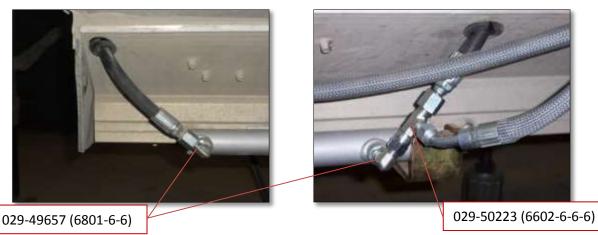
#### 9) INSTALL HYDRAULIC FITTINGS.

- 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 exceeding 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.
    - (6) 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. HYDRAULIC FITTING CHART TIMPTE - 029-49657 TIMPTE - 029-50223 FITTING #6801-6-6 FITTING #6602-6-6 TIMPTE - 029-50435 TIMPTE - 029-49468 TIMPTE - 029-50225 TIMPTE - 029-51138 FITTING #6500-6-6 FITTING #6801-6-4 FITTING #6400-6-4 FITTING #6400-6-6 PREINSTALLED ON MOTOR PREINSTALLED ON MOTOR PREINSTALLED ON MOTOR PREINSTALLED ON MOTOR **BRACKET ASSEMBLY BRACKET ASSEMBLY** BRACKET ASSEMBLY BRACKET ASSEMBLY

- 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) ROADSIDE CURBSIDE

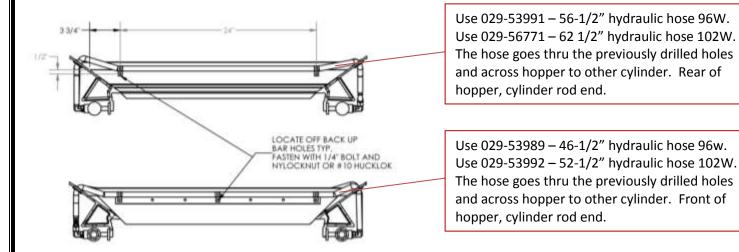


## 9) INSTALL HYDRAULIC HOSES STD TUB WITH 54" DOOR.

- a. 96" wide trailer
  - 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.
      - (a) ¼" 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.
      - a. ¼" bolts, nylock nuts, and 5/8" Jiffy clips.

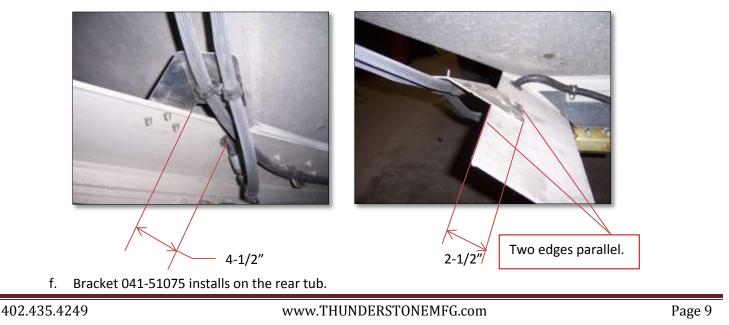
- b. 102" wide trailer
  - i) 029-56771 62-1/2" hydraulic hose. Cross rear of hopper cylinder tube end.
    - (1) One hose for each hopper. Two total hoses.
    - (2) Attach hose to hopper as shown.
    - (a) ¼" bolts, nylock nuts, and 5/8" Jiffy clips.
  - ii) 029-53992 52-1/2" hydraulic hose. Cross front of hopper cylinder rod end.
    - (1) One hose for each hopper. Two total hoses.
    - (2) Attach hose to hopper as shown.
      - (a) ¼" bolts, nylock nuts, and 5/8" Jiffy clips

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.

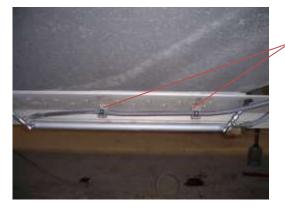


#### **10) INSTALL HOSE BRACKETS.**

- a. All hose brackets are to be installed on the curb side of the trailer.
- b. Brackets are to be installed with the included  $\frac{1}{2}$ " x 1-1/2" bolts and  $\frac{1}{2}$ " nylock nuts.
  - i. If installer has access to Huck guns and bolts, optional use of 032-02087 HUCKBOLT ¼ #10 UNCAPPED and 032-02000 – COLLAR HYUCK ¼" STD FLANGE is approved.
- c. Clamp bracket into position and transfer drill holes.
- d. Lower edge of brackets is located 2-1/2" down from the edge of the tube rail, and 4-1/2" from the large hole for the cross hose.
- e. Bracket 041-51075 installs on the front tub.



- g. On the side of the tub rail, install two 041-51077 brackets.
- h. Total of 4 brackets to be installed.
- i. Remove old Huckbolt and install bracket with new hardware.



029-51077 – hydraulic hose bracket, 2 per trap frame rail on curb side only.



Short leg of bracket against tub rail

Long leg of bracket to clamp hose to

- j. Install bracket with shorter leg against the trap frame rail.
- k. Install brackets 041-51263 and 041-51074 to the tub corner of the front tub.
- I. Install brackets 041-51264 and 041-51074 to the tub corner of the rear tub.
- m. Install the brackets so that the lower edge of the bracket is 16" from the tub rail.



#### 11) INSTALL HYDRAULIC HOSES STD TUB WITH 54" DOOR.

- a. Attach hydraulic hoses to the cylinders as shown below.
  - i) 029-51086 80" hydraulic hose. Front hopper cylinder rod end.
  - ii) 029-51241 152" hydraulic hose. Front hopper cylinder tube end.

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- (1) Attach hose to brackets as shown.
  - (a) <sup>1</sup>/<sub>4</sub>" bolts, nylock nuts, and 5/8" Jiffy clips.
- iii) 029-51241 152" hydraulic hose. Rear hopper cylinder tube end.
  - (1) Attach hose to brackets as shown.
    - (a) ¼" bolts, nylock nuts, and 5/8" Jiffy clips.



#### Front hopper

029-51086 – 80" hydraulic hose STD trailer. End with 45 degree fitting attaches to cylinder rod end.

**Front hopper** 029-51241 – 152" hydraulic hose STD trailer. End with 90 degree fitting attaches to cylinder tube end.



**Rear hopper** 029-51241 – 152" hydraulic hose STD trailer. End with 90 degree fitting attaches to cylinder rod end. **Rear hopper** 029-51086 – 80" hydraulic hose STD trailer. End with 45 degree fitting attaches to cylinder tube end.

iv) 029-51086 – 80" hydraulic hose. Rear hopper – cylinder rod end.

- b. Attach hoses to hydraulic pump and blocking valve.
  - i. 43' + trailers Attach hose 029-51241 152" hose to pump port "C2.
  - ii. 43' + trailers Attach hose 029-51241 152" hose to pump port "C2".
  - iii. 43' + trailers Attach hose 029-51086 80" hose to blocking valve port "3".
  - iv. 43' + trailers Attach hose 029-51086 80" hose to blocking valve port "2".

Front hopper 029-51241 - 152'' hydraulic hose Opposite end with 90 degree fitting attaches to cylinder tube end. Rear hopper 029-51086 – 80" hydraulic hose Opposite end with 45 degree fitting attaches to cylinder rod end.



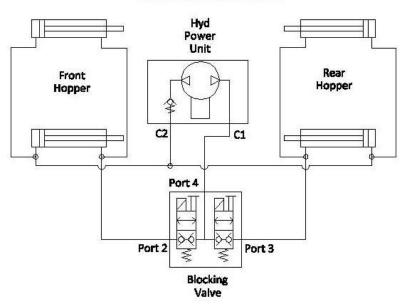
Rear hopper 029-51241 – 152" hydraulic hose Opposite end with 90 degree fitting attaches to cylinder tube end. Front hopper. 029-51086 – 80" hydraulic hose Opposite end with 45 degree fitting attaches to cylinder rod end.

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



#### HYDRAULIC SCHEMATIC

- d. Mount all hoses as shown in pictures below using the following hardware.
  - a) 032-01284 1/4" x 1-1/2" stainless steel bolt.
  - b) 032-44653 ¼" stainless steel nylock nut.
  - c) 031-51080 5/8" Jiffy clip.
  - d) 021-00843 zip tie 7-1/2" long.



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

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#### 12) INSTALL CONTROL BOX AND WIRING.

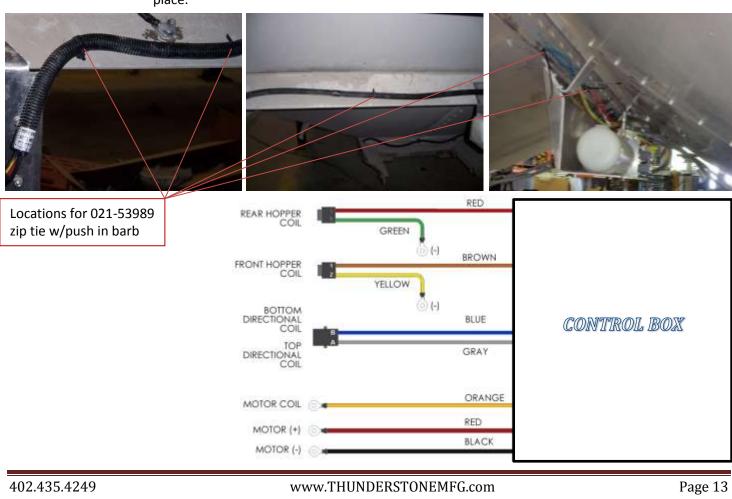
- a. Mount control box bracket part number 035-58975.
  - i) 032-01284 1/4" x 1-1/2" stainless steel bolt.
  - ii) 032-xxxxx ¼" lock washer
  - iii) 032-44653 ¼" stainless steel nylock nut.
- b. Mount the back edge of the bracket in line with the pump mount bracket as shown.





Line up back edge of bracket with the hydraulic pump mount bracket.

- c. Attach control wiring harness to trailer.
  - i. Attach wiring harness with 021-35989 zip tie w/push in barb.
  - ii. Drill ¼" hole for each zip tie location. Space evenly so that the wiring harness is held securely in place.



- d. Install power wire and wires from the control box to motor.
  - i. Use a fish tape pull 031-50504 Red 4 gage x 28 feet long power wire thru the side rail and out of the hole in the tub rail that is closest to the motor assembly.
    - ii. Pull enough wire thru the hole so that it reaches the motor assembly.
    - iii. Install 031-19057  $\frac{1}{2}$ " Black convoluted wire loom on the wire so that the loom goes thru the hole in the tub rail to protect the wire.
    - iv. Attach the wire end to the "+" terminal on the motor coil.
    - v. Apply 035-52548 Corrosion protection grease to the all connections.
    - vi. Attach the red power wire from the control box to the "+" terminal on the motor coil.
    - vii. Attach the black ground wire from the control box to the motor ground.
    - viii. Attach the orange wire to the top terminal of the motor coil.
    - ix. Plug the rear hopper control wire (red and green) to the top of the blocking valve.
    - $x. \ \ \, \mbox{Run the green wire with the ring terminal to the ground on the motor.}$
    - xi. Plug the front hopper control wire (brown and yellow) to the bottom of the blocking valve.
    - xii. Run the yellow wire with the ring terminal to the ground on the motor.
    - kiii. Plug the blue and gray wire to the two yellow directional coil wires.





031-50504 – red 4 gage x 28 foot power wire with  $\frac{1}{2}$ " wire loom installed on it, pulled thru the side rail and attached to the "+" terminal on the motor assembly.

- e. Install plug receptacle in nose of trailer.
  - i. Determine best location for plug receptacle in relation to the other attachments that are on the nose plate. (See page 21 for actual size hole pattern)
    - a) Drill a 2-1/4" hole in the nose plate where there is access to it. Exact location to be determined as "best fit".
    - b) Insert receptacle into hole and drill bolt holes.
    - c) Attach receptacle to trailer with:
      - 1. 032-43152 ¼" stainless steel screws.
      - 2. 032-44653 ¼" stainless steel nylock nuts.



031-50504 – red 4gauge x 28 foot power wire in side rail.



031-50504 – red 4-gauge x 28 foot power wire in nose of trailer under plastic wire raceway.



031-51223 – 2 pole vertical receptacle placement

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- f. Install ground wire and wire receptacle.
  - i. Drill a 7/16" hole in the z-post as shown approximately 8" above the receptacle hole.
  - ii. Mount ground stud and wire to z-post.
    - a) 032-44809 3/8" stainless steel bolt.
    - b) Z-post.
    - c) 032-58829 3/8" washer external tooth star washer
    - d) 031-51477 Black battery boot installed on wire.
    - e) 031-51269 Black 6 gage x 18" long ground wire.
    - f) 032-03471 3/8" serrated flange nut.
    - g) 035-52548 Corrosion Protection Grease.
  - iii. Wire receptacle with power wire and ground wire.
    - h) Push both wires thru 034-51020 2 pole receptacle boot.
    - i) Install power wire on the receptacle.
    - j) Install ground wire on the receptacle.
    - k) Push boot over the plug.

031-51223 – power receptacle and 034-51020 – receptacle boot

031-50504 – Power wire leading to control box.

Install ground stud as described above.

031-51269 – Black 6 gage x 18" long ground wire

#### 13) FINISH INSTALL

- a. Apply power to the unit by plugging into a 12 volt power supply.
- b. Program the remote to the control box per included instructions.
- 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 all the cylinders.
  - v. Run doors open and closed a few times to make sure all air is out of lines.
  - vi. Refill the hydraulic reservoir to the full line.

## 14) INSTALL THE MANUAL OVER RIDE

- a. Remove the existing  $1 \frac{1}{2}$  nuts from the end of the cross shafts so you can remove the side brackets.
- b. Remove the two side brackets from both of the cross shafts. There are two bolts holding the brackets to each of the bearings supporting the cross shafts. Do not use the existing brackets because they will interfere with the closing of the door when the cylinder mount brackets are installed.
- c. Attach the new side brackets to the bearing supports using the bolts and nuts from the old brackets. Snug the nuts but do not fully tighten.
- d. Hold the cross shaft assembly under the trap door using the bolt holes where it was originally mounted.
- e. Put the new 1 1/2" nuts onto the end of the cross shafts making sure it doesn't hit the cylinder. The hole in the nut is close to the trap frame. Mark where the hole will be drilled.
- f. Remove the cross shaft assembly and Drill a .375" (3/8" drill bit) hole through the cross shaft where it is marked.
- g. Drive the  $3/8'' \times 11/2''$  groove pin through the nut and the cross shaft.
- h. Attach the cross shaft loosely to the trap frame using the saved fasteners from the old installation.

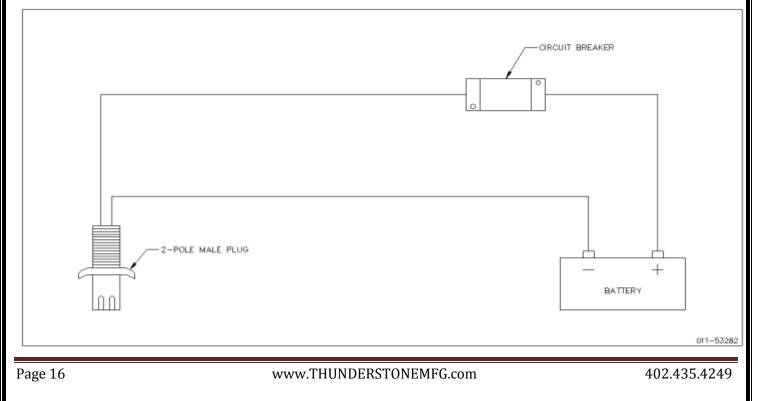
- i. Hang the shaft assembly between the trap frame rails using the fasteners shown in the figure at the bottom. Do not tighten the fasteners yet. The view is from beneath on the road side of the trailer.
- j. Ensure that the teeth on each spur gear engage the same tooth location on the formed gear rack. In other words, if one gear tooth engages the third formed gear rack tooth from the end, the other gear must also engage the third formed gear rack tooth. Move the shaft assy. and door as needed to obtain correct alignment.
- k. When the teeth are aligned properly, tighten the fasteners that attach the shaft assembly bracket to the trap frame. Move the door back and forth to ensure the door moves smoothly.



#### **15) WIRING THE TRACTOR**

- a. Verify that the positive wire is on the top of the plug when connected.
- b. Connect the 4" jumper wire to the BAT terminal on the circuit breaker.
- c. Connect the positive (red) wire coming from the two pole plug to the AUX terminal on the circuit breaker.
- d. Connect the ground (black) wire to the main ground post on the tractor.
- e. Connect the 4" jumper wire to a positive terminal on a battery.

See diagram below for more information.



# **OPERATION INSTRUCTIONS**

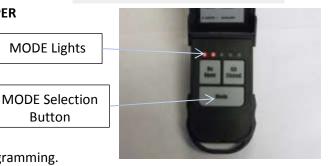
#### 16) PROGRAMMING REMOTE TO EASY FLOW BOX

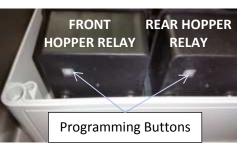
- a. Open the control box by unscrewing the four screws in the front of the control box. Do not remove the screws from the cover.
- b. Pull the lid away from the control box. Do not disconnect the wires connecting the lid to the control box.
- c. Plug the power cord into the nose of the trailer to power up the control box.
- d. Open the remote cover and observe the flashing light.
- e. Press the **MODE** button once to select the **FRONT HOPPER** mode (first two lights flashing).
- f. Push and hold the programming button on the bottom of the FRONT HOPPER RELAY inside the control box until you hear a beep (about 5 sec).
- g. Press the **ON/OPEN** button on the remote 4 times. A double beep will be heard to confirm programming. See table below for multiple remote programming.
- h. Press the MODE button on the remote to select the REAR HOPPER mode (three lights flashing).
- Push and hold the programming button on the bottom of the REAR i. HOPPER RELAY inside the control box until you hear a beep (about 5 sec).
- Press the **ON/OPEN** button on the remote 4 times. A double beep j. will be heard to confirm programming. See table below for multiple remote programming.
- k. Confirm remote programming by running the front and rear hopper doors open & closed with the remote.
- Close the lid of the control box by holding it up to the body of the box and screwing the four lid screws back into Ι. the box. Make sure that any wires are not being pinched before tightening the screws. Be careful not to strip the screws when tightening as they are plastic.

Button

Table for programming multiple remotes to each relay	1st Remote	2nd Remote	Remote	e
1 Remote	4	2n(		4th Remote
2 Remotes	1	3	3rd	ו Re
3 Remotes	1	1	2	4th
4 Remotes	1	1	1	1
Number of remotes to program	Number of <b>ON/OPEN</b> presses			







#### 17) MANUAL OPERATION

- a. Turn on Master Disconnect
  Switch in the tractor. (when applicable)
- b. To power up Control Box, the Hopper Select Switch needs to be switched to the hopper that will be operating.
- c. Use the directional switch for the hopper that is selected to move the door in the direction needed.
- d. To power off the Control Box when finished, switch

 Image: Note: Select Switch

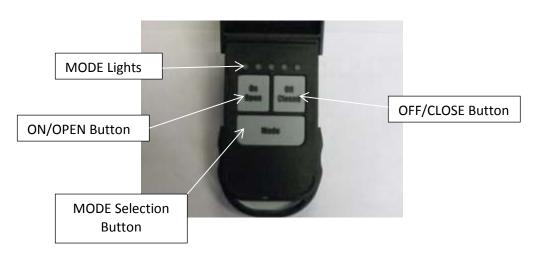
 Image: Select Select Switch

 Image: Select S

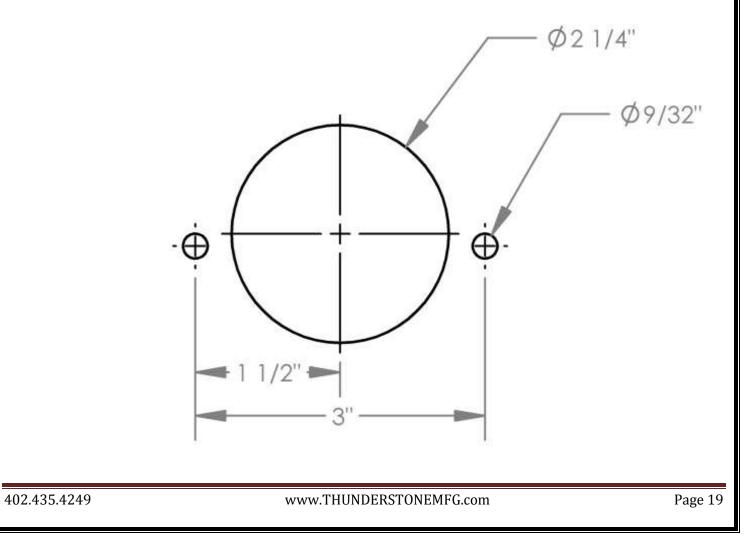
the hopper select switch to the center off position.

#### **18) WIRELESS OPERATION**

- a. Turn on Master Disconnect Switch in the tractor. (when applicable)
- b. Open transmitter and Push "MODE" button to select the "Front Hopper" Mode (First two lights flashing).
- c. Select button to perform the required operations for the front hopper.
- d. To use the rear hopper, push "MODE" button to select Rear Hopper (First three lights flashing).
- e. Select button to perform the required operations for the rear hopper.



# Hole pattern for 031-51223 – 2 pole, vertical, receptacle placement. Actual Size



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