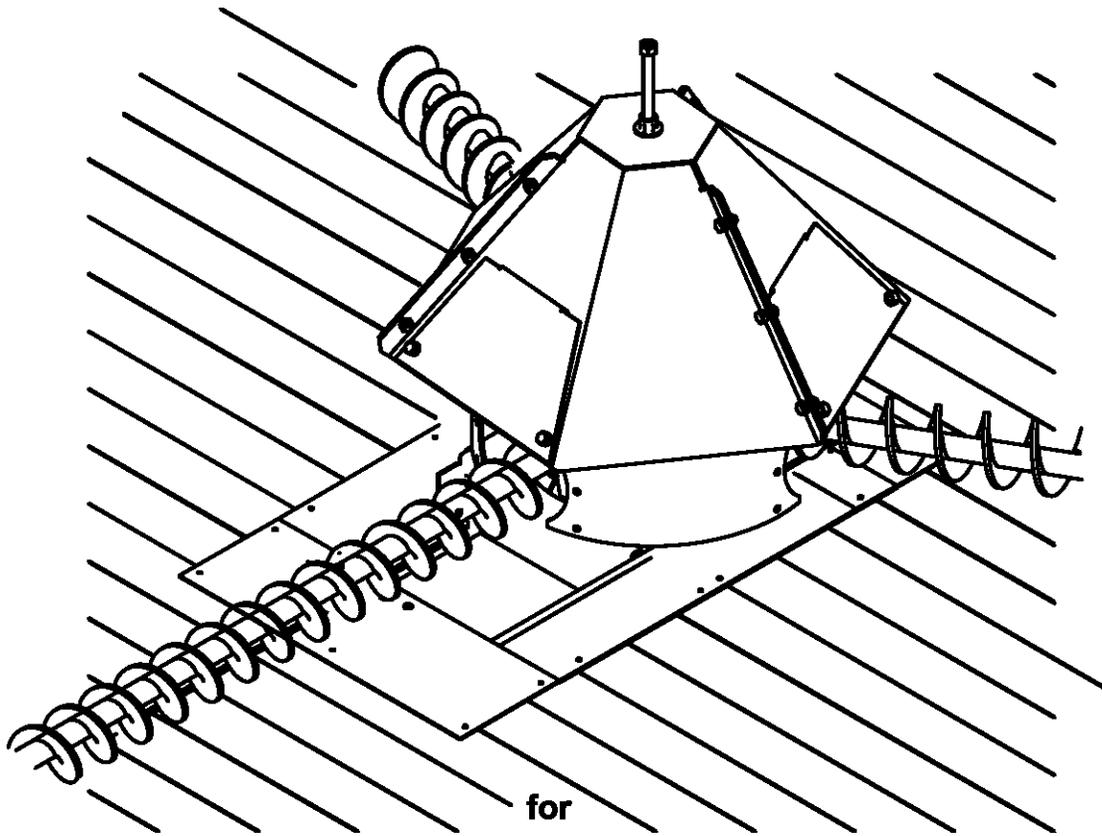




# INSTALLATION INSTRUCTIONS



## **8" DRI-FLO 1500** **3-Sweep High Torque Dri-Flo** **Horizontal Unload**

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P-12896  
9-30-2015



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# **Introduction**

Read this manual carefully. The information contained within this manual will instruct you on how to properly install and operate your equipment. Failure to do so could result in personal injury and/or equipment damage.

The Dri-Flo 1500 is designed to remove dried grain from the bottom of the drying bin and transport it, via the horizontal unloader, to a desired destination. The removal of the grain is precisely metered so as to allow an even layer to be removed, without excessive center coning, which maintains optimum drying conditions. The more consistent the grain level, the more efficient the drying process will be.

Dri-Flo 1500 will normally remove 1500 or more bushels per hour. These values will vary according to the size of the motor pulley, depth of grain, and moisture content of the grain. The amount of grain dried will depend on size of bin, number and size of burner/fans in use, depth of grain, moisture content of the grain, plenum temperature, as well as other factors.

The High Torque Dri-Flo Power Head will allow you to add the Jumpster take away auger with forward or side tilt. (Additional Fittings will be required). This allows for many unloading options.

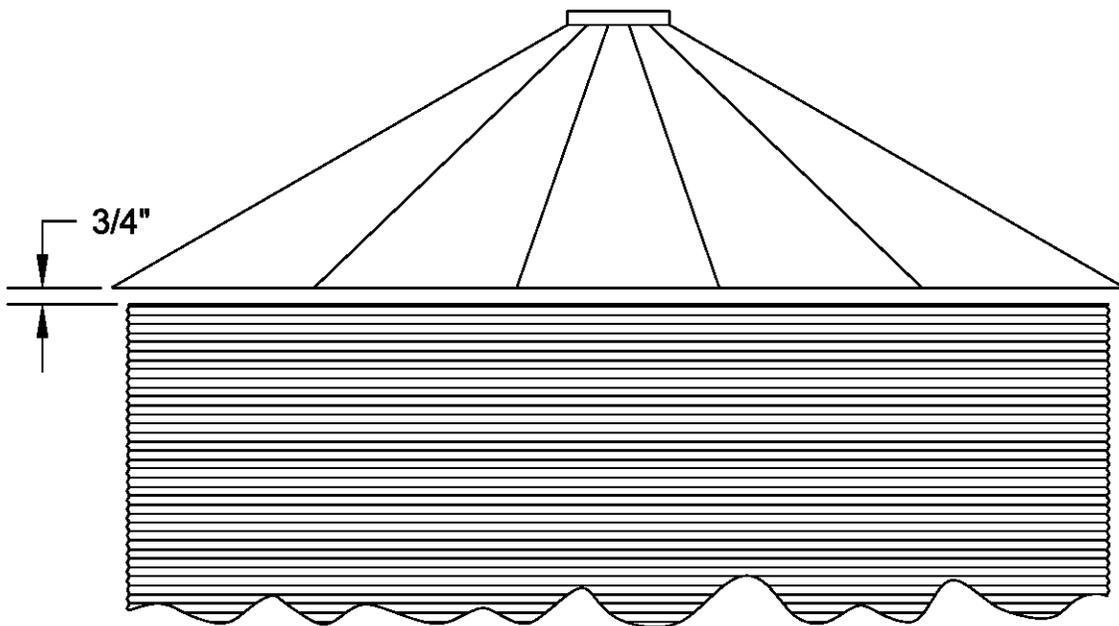
Clamps are used instead of bolts between auger transitions. Many times the unloader can be set up for multiple discharge locations. The unit can be configured to dump into an air system, leg, truck, or bin.

If you are unsure of the correct configuration that would best suit your application, contact your SHIVERS Dealer for more information.

# Attention

The Shivers Dri-Flo will set up patterns of grain flow which puts extra stress on the walls and floor of the drying bin. **Additional floor supports are normally required for the drying floor. Bin sidewall stiffeners are often required.** Consult bin and floor manufacturer for their recommendations before installing and using the Shivers Dri-Flo. Shivers will not be responsible for structural failure of the drying floor or bin, or for any loss, damage, or injury relating to use of the Dri-Flo.

Large amounts of water are removed during the drying process. A way to remove this water from inside the drying bin is required. This is usually accomplished by installing roof vents. **We strongly recommend having the bin roof raised about 3/4" above the bin side wall.** This is especially important while drying when outside temperatures are below freezing. Having the roof raised will keep a lot of the condensation from running down the inside of the bin wall.



# Safety Information

The user of this equipment must assume responsibility for his own safety and for the safety of those working with him.

If any items covered in this manual are not completely understood, or there is a concern with the safety of the product, contact Shivers at the address shown on the front cover.

Read and understand the Operator's Safety Manual (P-10001), and all applicable operator's manuals, before working on Shivers equipment.

Read and understand this manual completely before using this equipment.



**Take note anytime this safety alert symbol appears. Your safety, and that of persons around you, is at stake.**

The safety alert symbol will be accompanied by one of three signal words whose definitions are given as:

**DANGER:** Red and white. Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.

**WARNING:** Orange and black. Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

**CAUTION:** Yellow and black. Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

# **Installation Safety**

Using a tagged padlock, lock off all sources of potential energy before beginning the installation!

All electrical wiring shall be installed in compliance with the latest addition of the ANSI/NFPA Standard 70, National Electrical Code, as a minimum requirement, and in compliance with local wiring codes as applicable.

Wiring must be done by a competent electrician. A licensed electrician is recommended, and must be used when required by local or state statutes.

The installation of this equipment will require special tools such as an oxy-acetylene torch (cutting torch), ladders, safety belts, power tools, and power cords with GFCI (ground fault circuit interrupter). The safe operation, use, and condition, of this equipment is the responsibility of the contractor, or persons involved in their use.

Avoid dusty conditions (especially on existing bins where grain has been stored), to prevent fires or explosions caused by combustion. Wear a dust mask.

## **Safety Decals and Locks**

Field installable safety decals are supplied with this equipment. See section on Installing Safety Decals and Locks in this manual. If more decals are needed, contact the factory for additional ones.

Field installable safety lock kits are supplied with this equipment. See section on Installing Safety Decals and Locks in this manual.

Make sure all decals and the safety lock kits are installed on the system as shown in this manual and the Operators Safety Manual (P-10001) before the equipment is put in use.

# **Bin Layout**

The concrete pad for the drying bin should be as close to flat and level as possible. Make sure it is thick enough and has enough reinforcement so it will not crack and move. Consult the bin manufacturer for more information. A good, solid, flat and level foundation is required for the Dri-Flo to work properly.

See fan and burner installation manuals for instructions on concrete pads for them. See suggested layouts in this manual for orientation of fans, horizontal unloader, and control boxes. The suggested layouts show a Compudry Command Center for the control box. Your installation may have something different, but the orientation should be similar. Try to align the bin sheets so the fan/burner entrance collar(s) do not have to be cut through a seam.

The Horizontal Unloader must come out near the main entrance door of the bin. The control box must be within line of sight of the bin's main entrance door.

There must be a main electrical disconnect switch. This switch must shut off all electrical power to the drying system. It must have the capability of being locked in the OFF position. It must be located near the bin's main entrance and within line of sight of the control box. This disconnect switch is NOT supplied by Shivers, but can be obtained locally.

Lockable disconnect switches for the Machine (Circu-Lator or Dri-Flo) Motors are required near the bin entrance. These disconnect switches are NOT supplied by Shivers, but can be obtained locally.

A switch to control the drying bin spreader is also required, but not supplied by Shivers.

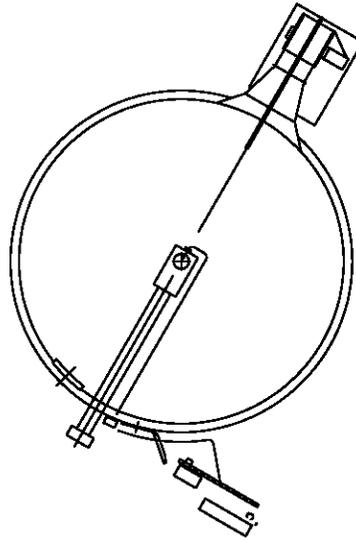
Since the Shivers drying system can operate at temperatures up to 200° F, all sealants in the plenum area must be able to withstand this temperature. Ordinary plastic roofing cement or tar will soften and should not be used. Possible materials to use are:

- (1) Black Jack #1010, Neoprene Flashing Cement, by Gibson-Homans
- (2) Regular 100% Silicone Caulking
- (3) Stretch-a-Seal (™), Bin and Elevator Sealant, by Farm Products Direct  
(Follow manufacturer's instructions) Ph (800)669-9314
- (4) Rubberflex Binseal Ph (800) 817-2986

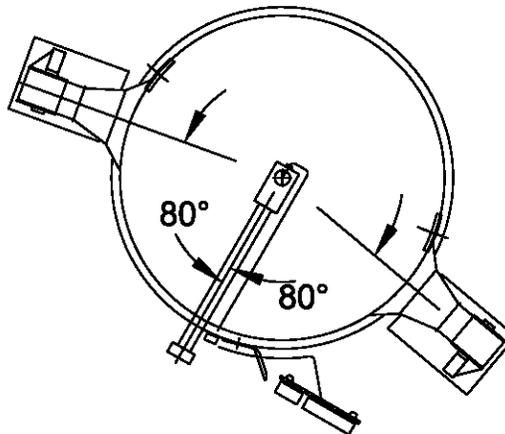
All air leaks in the bin must be sealed off. The sealant should be applied from the inside of the plenum area, if at all possible. If it is applied from the outside, plenum pressure will probably blow it out.

**MECHANICAL INSTALLATION**  
**Recommended Fan Lay-outs for 3-Sweeps Systems**  
**(For New Installations)**

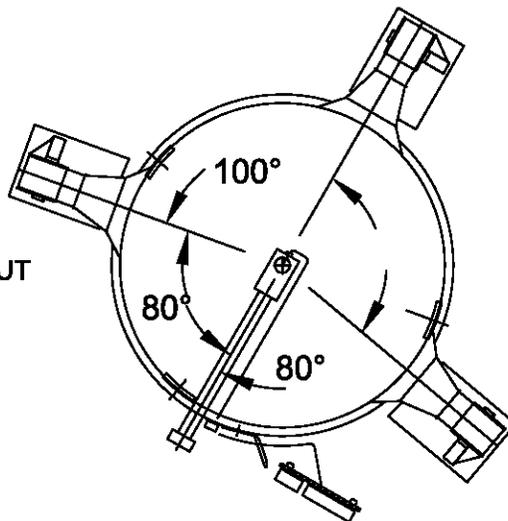
1-FAN LAYOUT



2-FAN LAYOUT



3-FAN LAYOUT



8

# Installing Horizontal Unloader and Gearbox Basket

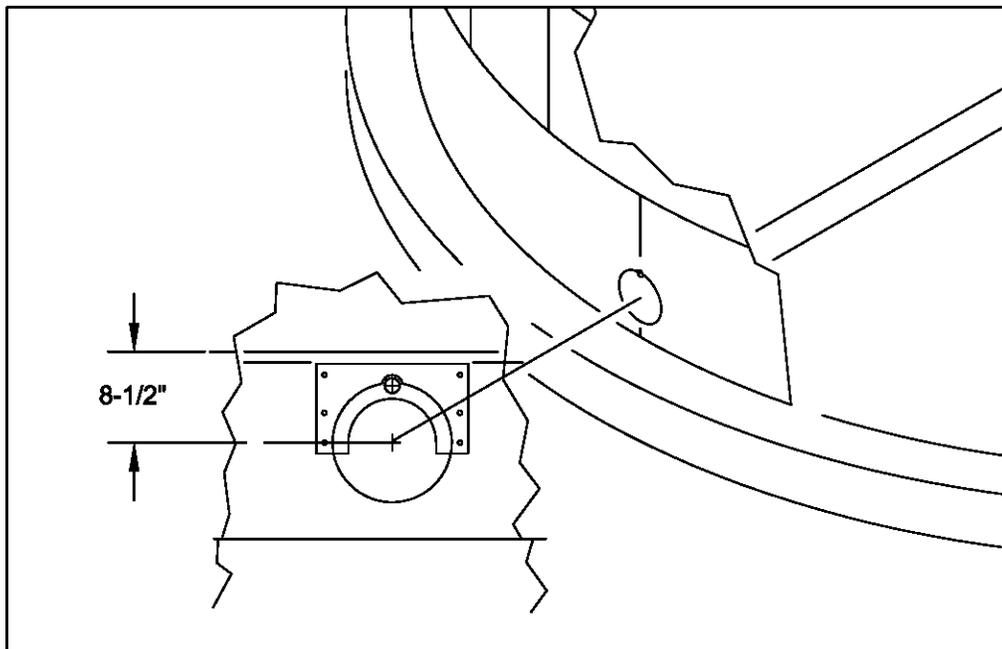
## Step 1:

For installations in existing bins, it is recommended that the floor be removed. If the old floor is going back in, number the individual floor pieces for convenience of reinstallation. The entire concrete bin floor should be cleaned.

## Step 2:

Determine the location where horizontal unload tube will project through the bin sidewall. It should be within sight of the bin entrance and the dryer controller. At this location, measure down 8-1/2" from where the top of the floor will be. This will be the center of the horizontal unload tube.

Hold the faceplate pieces against the bin wall, with the control rod holes on top, and mark all holes on the bin wall. Cut a keyhole shape in the bin wall for the unload tube and control rod. Make sure the hole is large enough to allow the tube with hanger bearings and halfbands to go through. Make sure the faceplate will cover the hole that is cut.

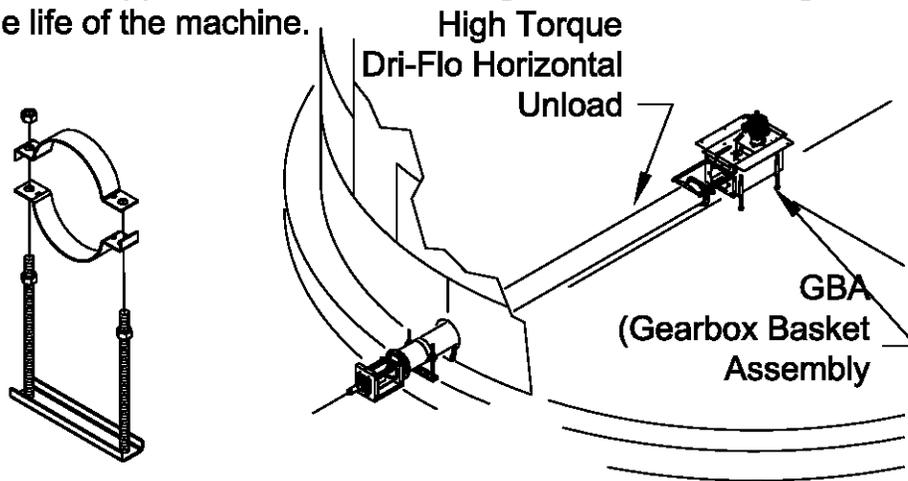


# Installing Horizontal Unloader and Gearbox Basket

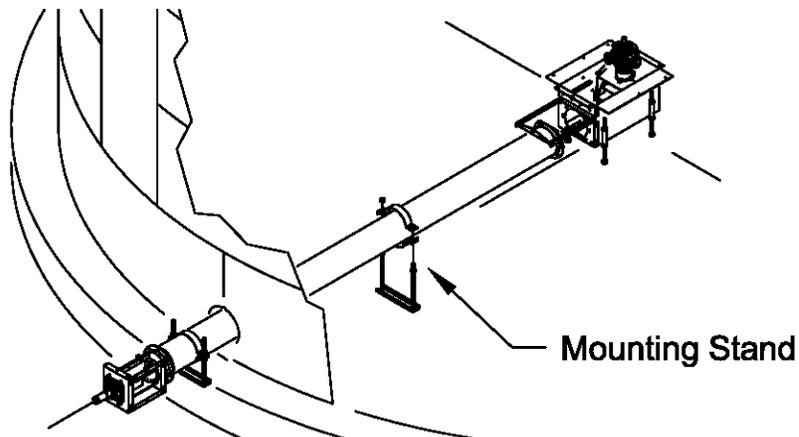
Step 3: Rough Locate HTDF/HU (High Torque Dri-Flo Horizontal Unload).

Place a folded towel across the bottom edge of the opening in the bin wall to protect the HTDF/HU during installation. Be careful not to drop the unit at any time to avoid denting the tube. Put the open end of the HTDF/HU through the bin wall and set it on the floor near the GBA.

Outside the bin, assemble and install the Mounting Stand onto the HTDF/HU. This should be clamped onto the tube 5" away from the bin wall, leaving room for the 2-piece Face Plate to be installed later. This stand is to support the HTDF/HU during installation, leveling, as well as for the life of the machine.

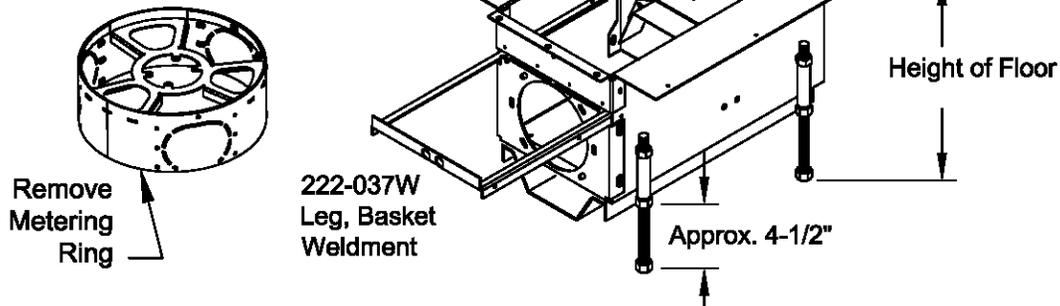


Assemble and Install a second mounting stand onto the HTDF/HU. This should be clamped to the tube at about halfway between the GBA and the bin wall. Make sure the location will not interfere with any intermediate wells. This stand is to support the HTDF/HU during installation, leveling, as well as for the life of the machine.



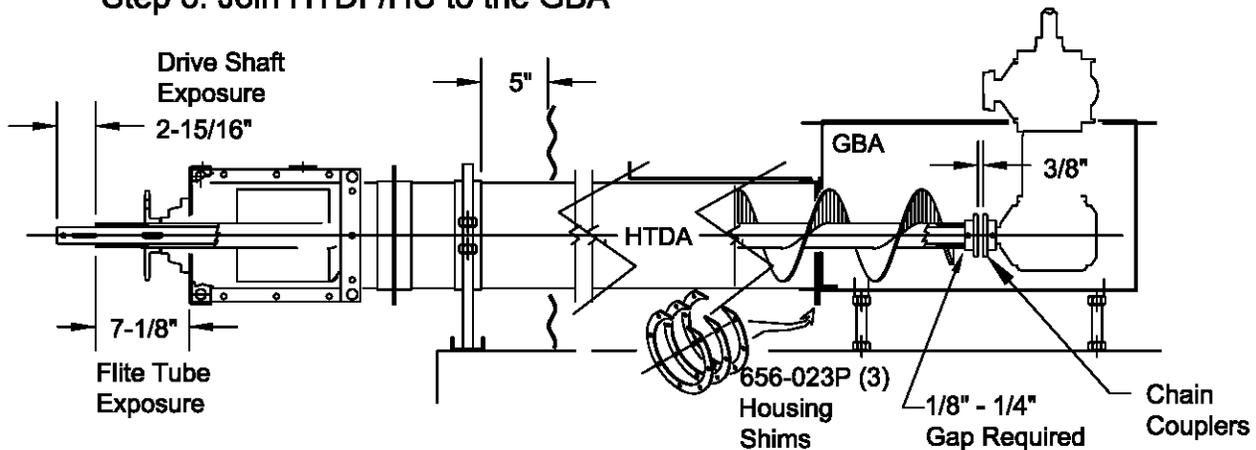
# Installing Horizontal Unloader and Gearbox Basket

Step 5: Prepare gearbox and basket for installation.



Remove Metering ring by loosening bolts from the top of gearbox. Replace lockwashers and bolts back into gearbox. Check the gearbox to insure it is lubricated. Remove the Shipping wire that holds the top gearbox to the bottom gearbox. Screw jam nuts, from 222-085A Basket Hardware Sack, on the 3/4"x 12" support legs at approximately 9". Screw the support legs, with the jam nuts, into the basket until the top of the basket will be about the same height as the drying bin floor.

Step 6: Join HTDF/HU to the GBA



Positioning of the HTDF/HU housing is critical to prevent binding and misalignment. Pre-Assembly is necessary to determine the number of housing shims required.

Fasten the HTDF/HU to the GBA using all the shims and hardware from 656-053A sack and tighten snugly. The HTDF/HU should now be supported by the mounting stand outside the bin and the GBA at the center of the bin.

Outside the bin, measure the flite tube exposed from the front of the HTDF/HU Transition. This should be:  $7\text{-}1/8\text{''} \pm 1/32\text{''}$ . If not, loosen set screws of the bearing, adjust as needed, and retighten set screws. Measure the drive shaft exposed from the flite tube, this should be  $2\text{-}15/16\text{''} \pm 1/32\text{''}$ . If not, pull or push gently to adjust.

## Installing Horizontal Unloader and Gearbox Basket (cont'd)

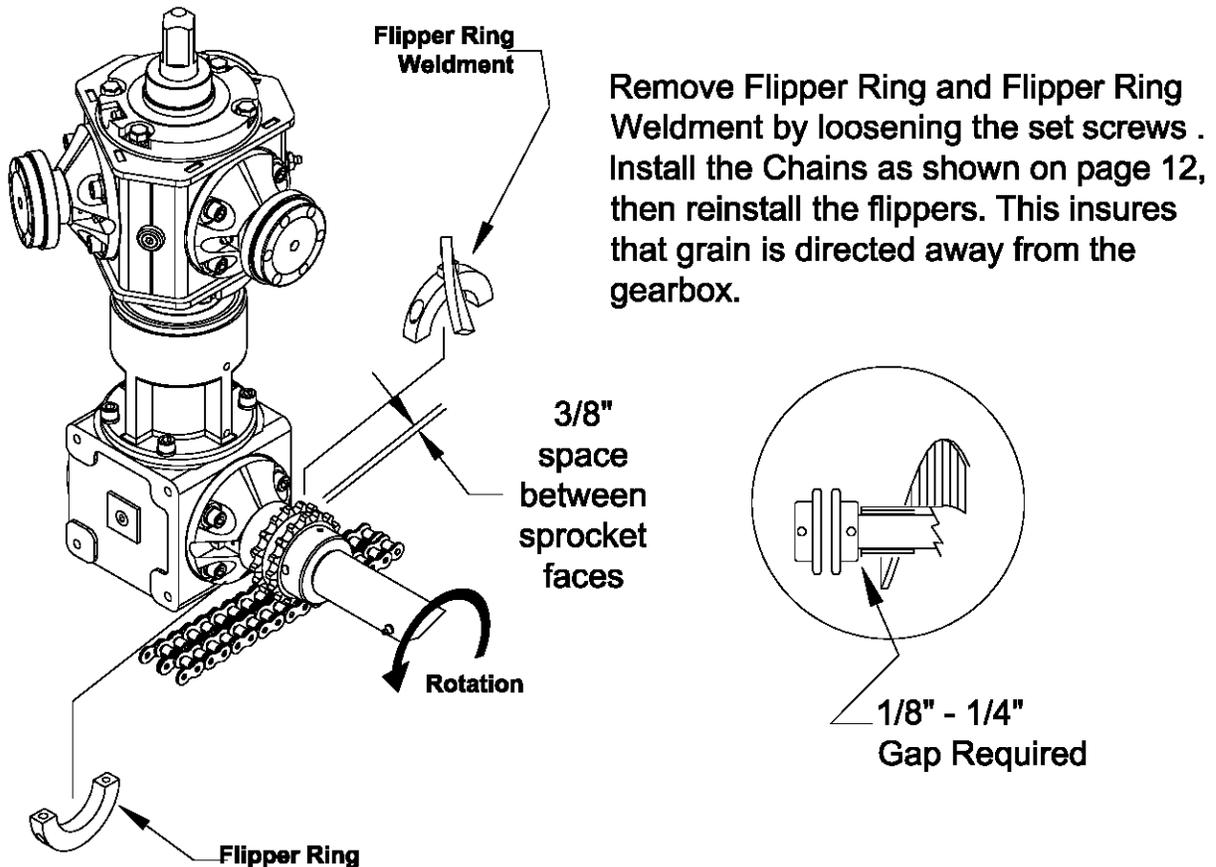
### Step 6: Join HTDF/HU to the GBA (cont'd)

Inside the bin, measure the space between the chain couplers (this should be:  $3/8" \pm 1/32"$ ). If not, determine the number of shims to be removed (approximately 1 shim for each  $1/8"$ ).

Using all six bolts, re-attach the HTDF/HU Housing to the GBA and tighten snugly. Remeasure the exposed drive shaft and chain coupler distance. Adjust until drive shaft is exposed  $2-15/16"$  and chain coupler distance is  $3/8"$ .

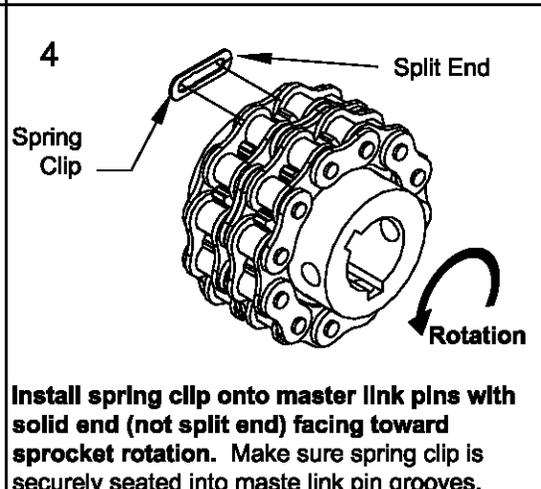
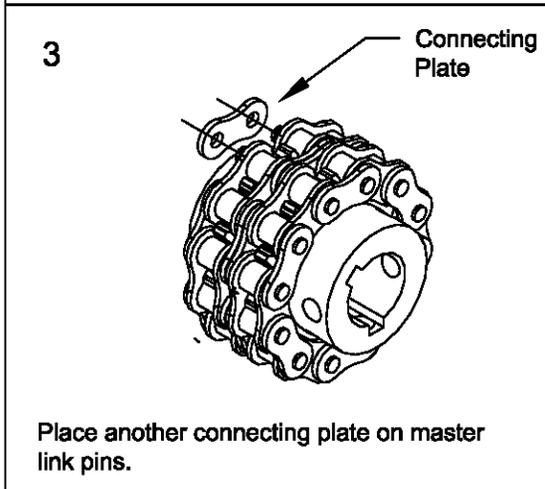
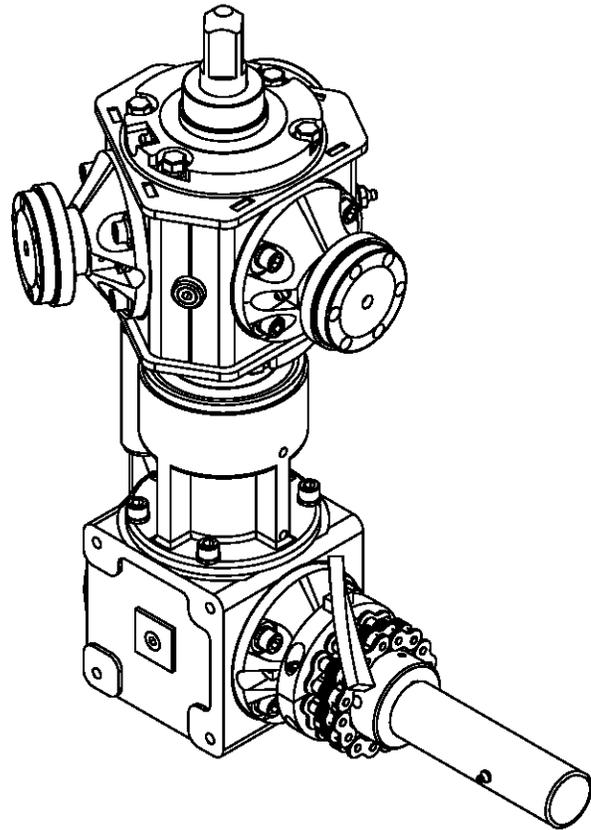
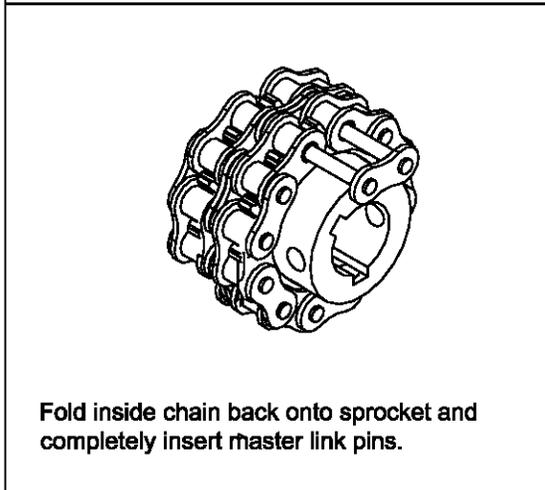
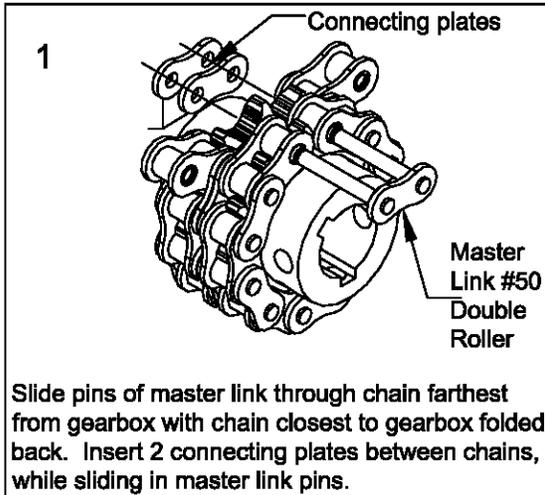
Important: There must also be a  $1/8-1/4"$  gap between the flite tube and the chain coupler sprocket to avoid undue friction during operation, which could start a bin fire.

The units are shipped with an "O" ring to help maintain this spacing during installation. It is not necessary that it remains in place, but it is also OK to leave it there.



# Installing Horizontal Unloader and Gearbox Basket (cont'd)

Using the 656-017A hardware Sack, connect the drive shaft of the horizontal unloader to the gearbox input shaft.



# Installing Horizontal Unloader and Gearbox Basket (cont'd)

## Step 8: Setup of HTDF/HU/GBA Joined Unit

Re-measure to confirm that the square shaft on top of the gearbox is centered in the bin. Adjust as needed. This centering should be checked at least every 90 degrees around the bin.

### Level the Gearbox Basket Assembly (GBA):

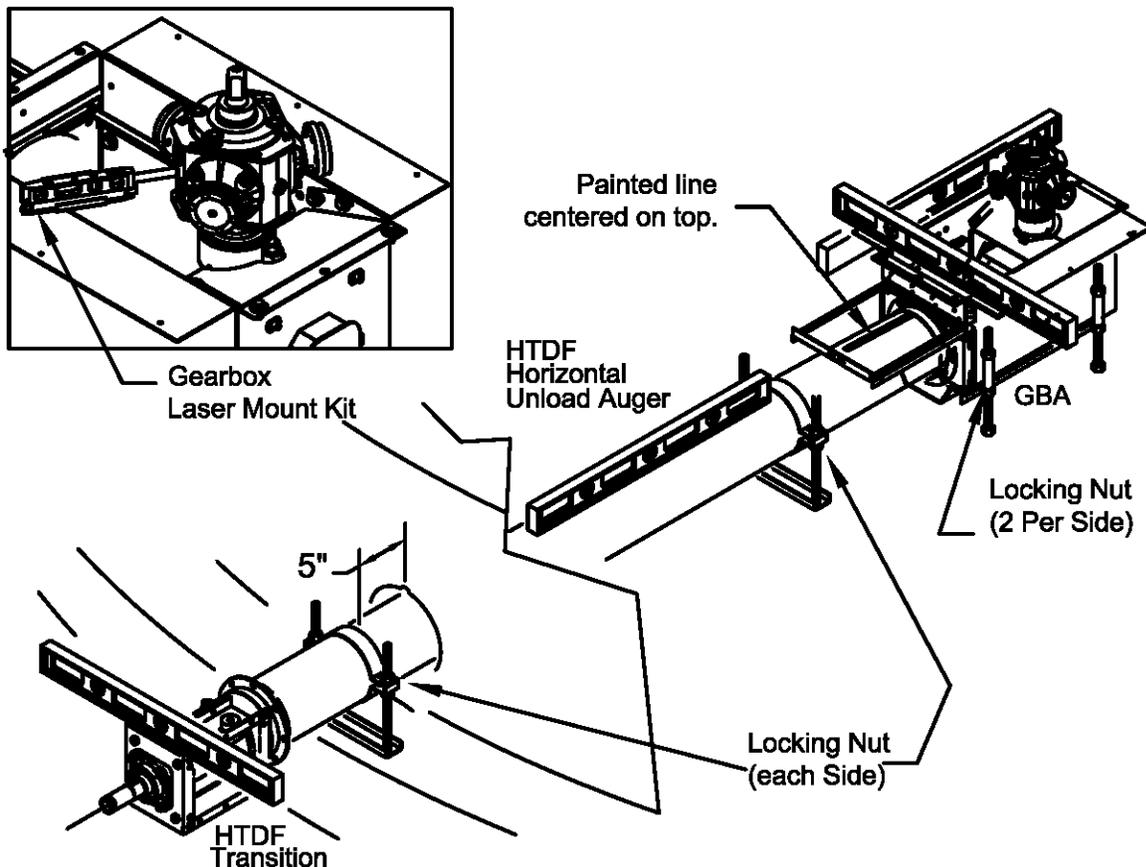
Adjust the support legs of the GBA until the top of it is level and all four support legs are in contact with the slab. Weight must be carried by all four support legs of the GBA. This would be a good time to check that the gearbox is square to the floor using the 423-351-001A Gearbox Laser Mount Kit.

### Level the HTDF/HU Transition:

The top of the HTDF/HU transition should be level. If not, loosen the HTDF/HU housing from the front of the GBA and loosen the top clamp of the mounting stands. Rotate the HTDF/HU until the front of the transition is level. Re-tighten the bolts that fasten the HTDF/HU to the GBA.

### Level the HTDF Horizontal Unload Auger:

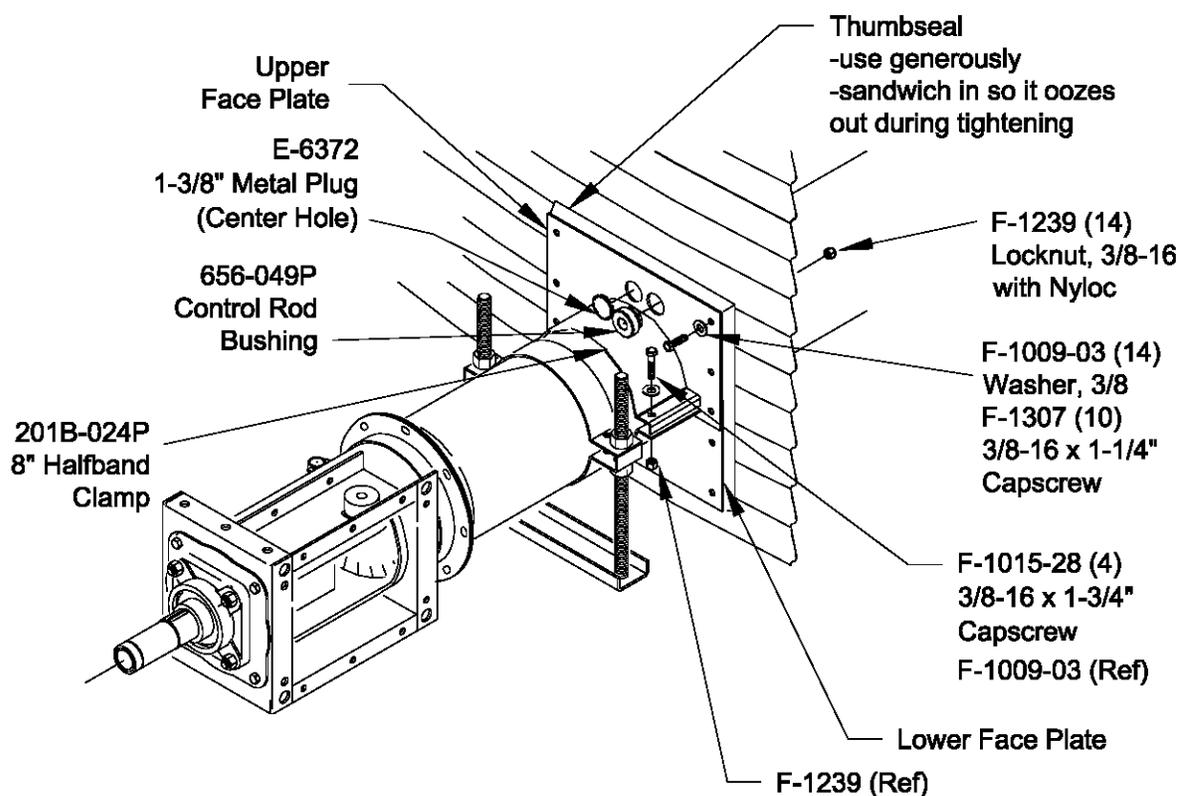
Adjust the outside and inside mounting stand height as needed, then make sure the 5" space has been maintained on the outside stand and tighten both stands securely.



## Installing Horizontal Unloader and Gearbox Basket (cont'd)

### Step 9:

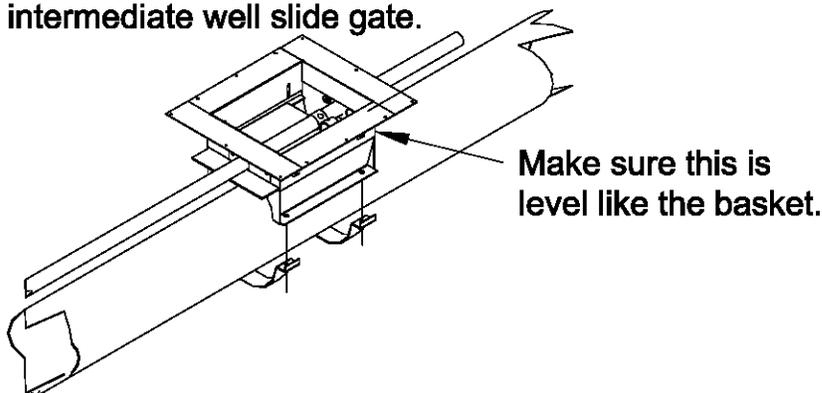
Assemble the lower face plate weldment and half band onto the HTDF/HU between the mounting stand and the bin wall with minimal clamping force. Using two bolts, fasten the upper face plate to the lower face plate weldment and slide it up against the bin wall, leveling as needed. Using the face plate as a template, drill all bolt holes in the bin wall. Using a marker, draw around the faceplate to show where thumb-seal will be needed. Remove the face plate and apply a generous bead of thumb-seal just inside the face plate mark on the bin wall. Re-install the face plate assembly, making sure it is completely sealed against the bin wall. Once GBA, HTDF, and the horizontal transition are level, be sure to tighten the face plate into position.



## Installing Horizontal Unloader and Gearbox Basket (cont'd)

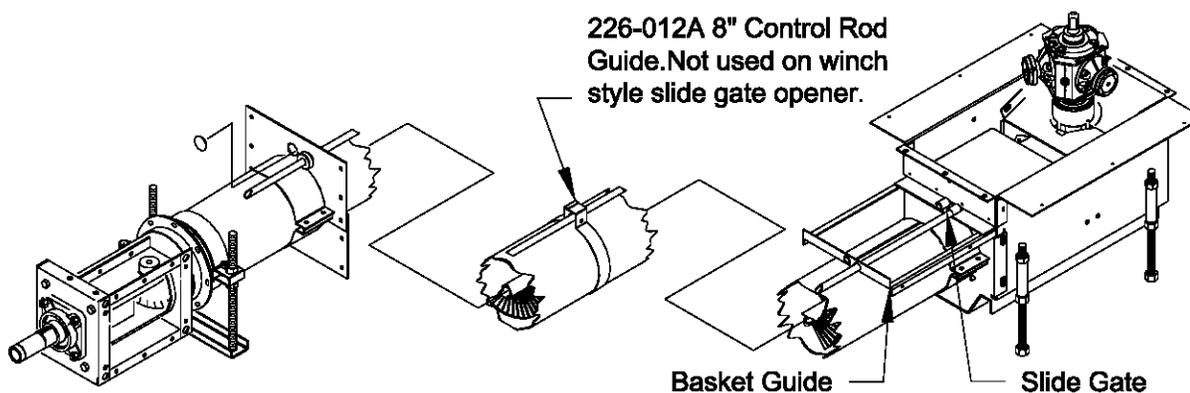
Step 11: Optional Intermediate Well (For more details see Intermediate Well Instructions, P-11584)

If an intermediate well is to be installed, attach it to the horizontal unloader now. Make sure the well is not placed where the tapered sweep auger track will be. Track location will depend on the type of sweep auger. For bins over 33' diameter, the inset wheel track will either be 142" or 145" from the gearbox base. Measure the sweeps to double check the inset wheel location. Once the intermediate well is installed, attach a 1" pipe control rod (not included, supplied by dealer) to allow independent operation of the intermediate well slide gate.



Step 12:

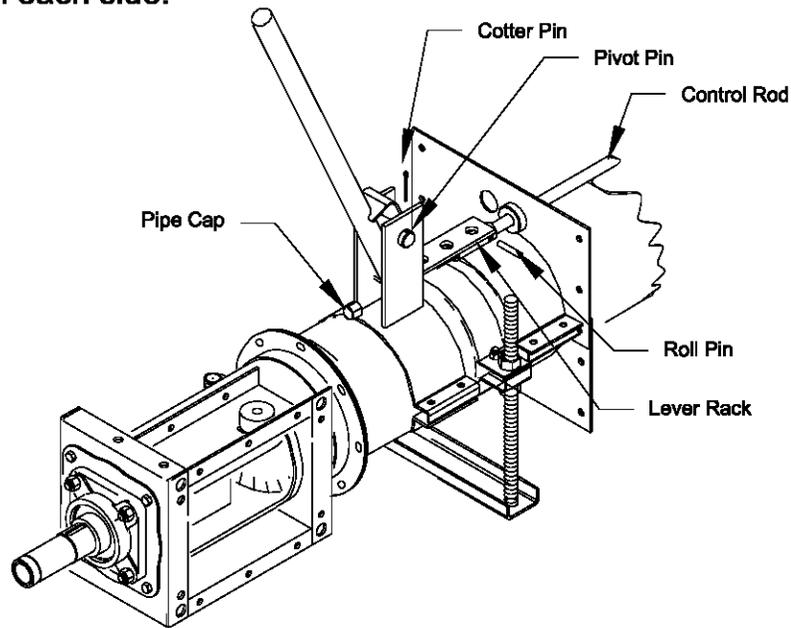
Install the slide gate into the basket as shown. Off center the control rod guide on the unloader tube (guide may not be required if intermediate well is used). Bins over 34' in diameter may require two control rod guides. One is located in the parts box and one is located in the chain and pop rivets parts box. If an intermediate well is not used and a 2-piece face plate is used, install the 656-049P, control rod bushing, into the offset hole in the face plate. Install an E-6372, 1-3/8" metal plug, into the offcentered unused face plate hole. Slide the control rod through the face plate, intermediate well (if used), control rod guide, and basket guide. Screw the control rod into the slide gate and check operation. Attach a slide gate opener (Step 13).



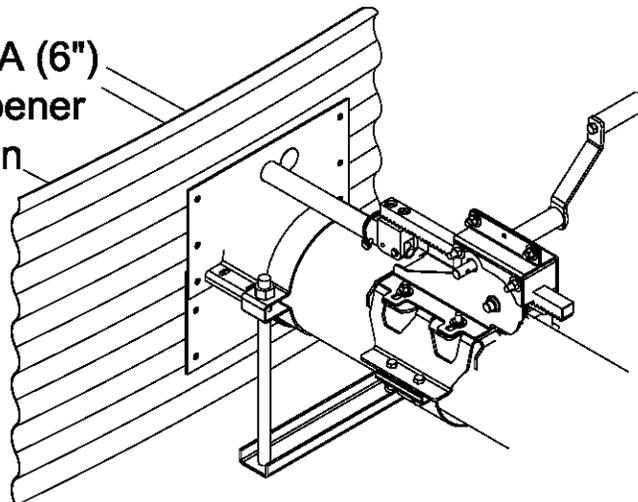
## Installing Horizontal Unloader and Gearbox Basket (cont'd)

Step 13: Optional Slide Gate Opener (91B-001A for 8" - See P-8401 for more details.)

Slide level rack over control rod and screw pipe cap on end of control rod. With the lever rack against the pipe cap, drill a 5/16" diameter hole through the control rod at the hole in the lever rack. Install the roll pin through both parts. With the slide gate closed, center the lever pivot with the center of the first hole in the lever rack and clamp halfbands securely. Slide the pivot pin through the lever pivot and lever and install cotter pins on each side.



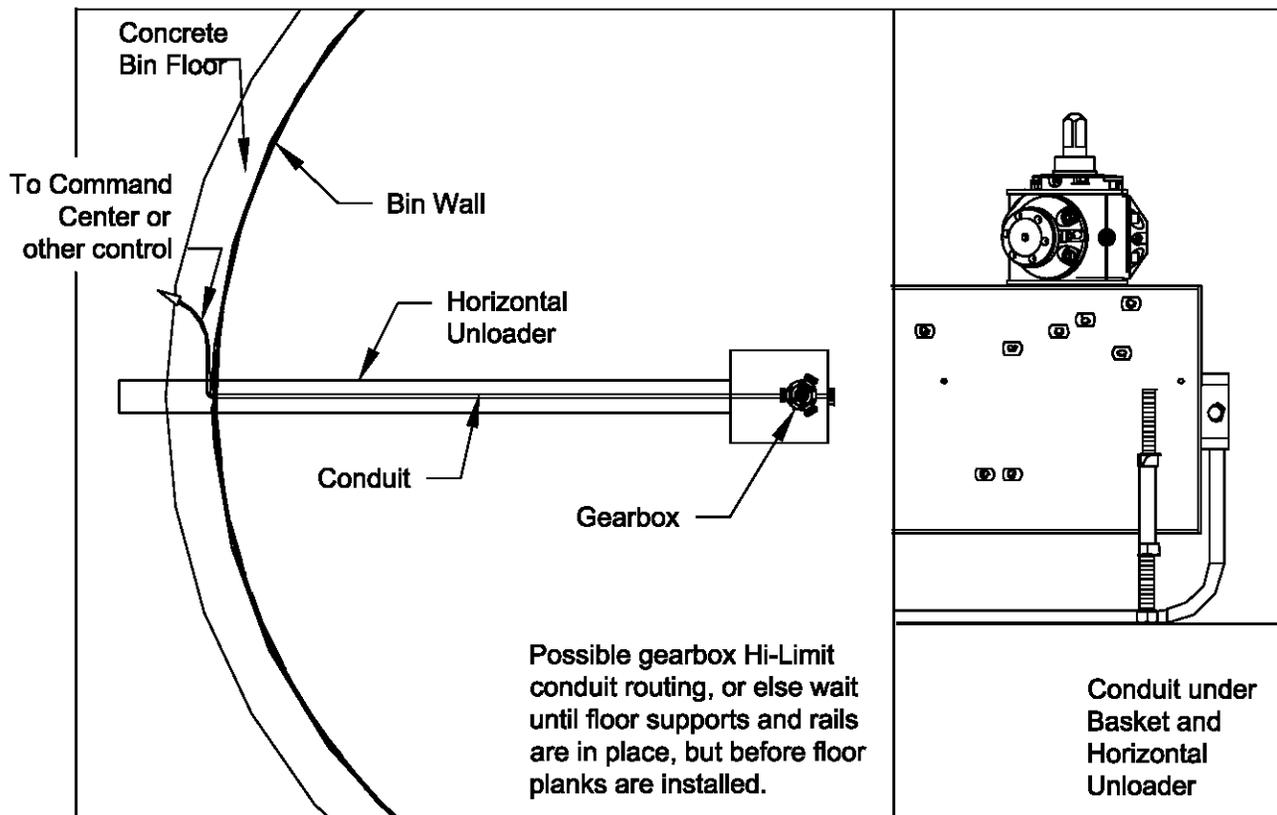
91C-001A (8") & 91D-001A (6")  
Winch Style Slide Gate Opener  
See P-13189 for Installation  
Instructions.



## Installing Horizontal Unloader and Gearbox Basket (cont'd)

Step 14: Install conduit for gearbox Hi-Limit.

The gearbox Hi-limit will shut off the drying fan(s) if it gets above 240° F. What the gearbox Hi-limit will wire to depends on the type of control and how many fans are used in the installation. If a Compudry Command Center is used, the gearbox Hi-Limit will always wire to it. If 2 or more fans are used, the gearbox Hi-limit will wire to either the dryer control box or a Grain Hi-limit Control box. Only if a control other than a Compudry Command Center is used, and there is only one fan on the bin, will the gearbox Hi-limit go directly to the fan. The important thing is to get the conduit installed before the bin floor is in place. The wire can always be routed wherever it needs to go once it is on the outside of the bin. If the conduit is not going to be in-line with the horizontal unloader, it may be better to wait until the floor supports and rails are in place to route the conduit so it doesn't interfere with floor support placement. Use the high temperature wire (641-046A) supplied for under the floor. Once outside the bin, any appropriate electrical control wire can be used. Pull 2 of the high temperature wires through the conduit. Connect each wire to a gearbox Hi-limit wire in the junction box on the back of the basket. Use regular wire nuts to make the connection. Refer to installation manual for dryer control used on where to connect the other end of the gearbox Hi-limit wires.



# Installing Flooring

## Step 1:

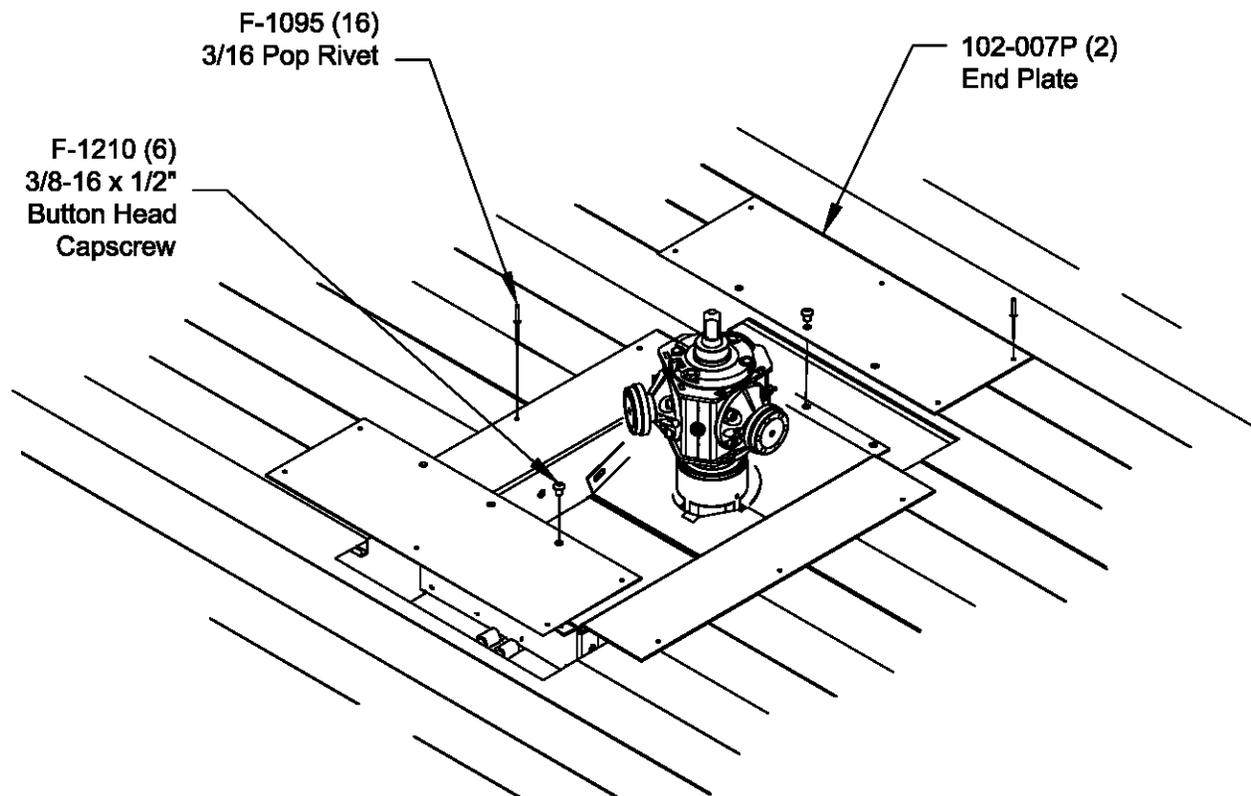
Follow the instructions provided with the floor and supports to install the perforated drying floor.

## Step 2:

Make sure enough of the floor planks are cut out to provide access to the gearbox hi-limit junction box and basket support legs. This would be a good time to check that the gearbox is square to the floor using the gearbox laser mount kit (423-351-001A).

Bolt the two end plates (102-007P) to the basket with 3/8" hex socket button head capscrews (F-1210)\* from the basket sack (222-085A). Drill required holes to pop rivet the end plates (102-007P) and basket sides to the floor planks. Do **NOT** use self-drilling screws.

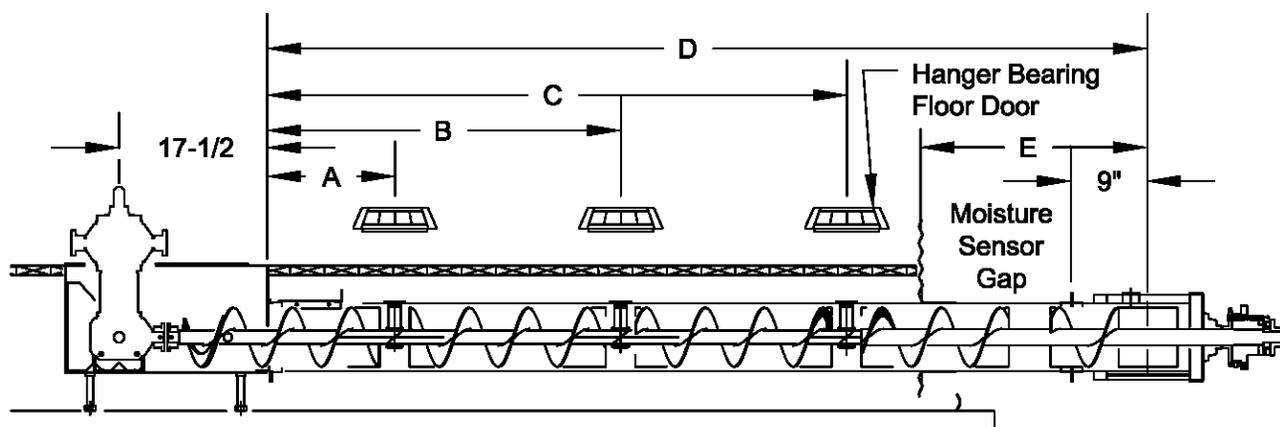
\* NOTE: 3/8" hex socket button head capscrews must be used for sweep auger clearance.



## Installing Floor Doors

**⚠ DANGER** Disconnect and lock-out all power before installing these Floor Doors over Hanger Bearings or servicing below the floor.

Following the directions found in the floor door box, mark out a rectangle 17" long by 15" wide and cut. Lay frame in place and pop rivet. Fasten down Floor Door using screws provided.



**705 Series 8" Hi-Tork Dri-Flo Horz. Unloader w/1-1/4" Drive Shaft,  
Replaceable Hanger Bearings**

HTDF w/Hngr Brgs	Bin Dia.	Hngr Brgs/Floor Door Positions From Inside of GB Basket			Basket to Discharge	Bin Wall to Discharge
		A	B	C		
705I-001A	36FT	68-1/2"	176"	*	256 3/8"	58-3/8"
705J-001A	42FT	103"	211"	*	303-3/8"	69-3/8"
705K-001A	48FT	55"	151"	247"	327-3/8"	57-3/8"

# Tapered Sweep and Wear Track Installation

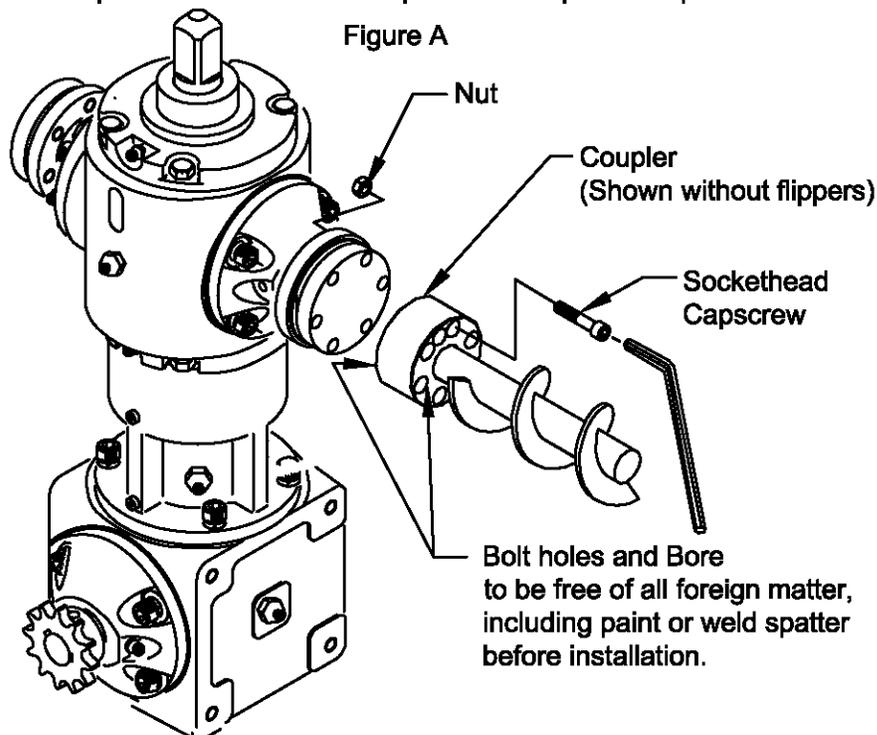
## Step 1:

- a. Remove caplugs from tapered sweep's coupler. Remove all debris from the tapered sweep's coupler and outside surfaces of the gearbox base and flange.
- b. Pack the inside of the tapered sweep's coupler and coat the outside of the gearbox's base and flange with our recommended high temperature-rated grease, Chevron Ulti-Plex Synthetic Grease EP or equivalent. (Shivvers # C-6188 (14oz Tube).  
**CAUTION: USE ONLY THIS GREASE.** Other greases may harden in the coupler, causing sweeps to break.

## Step 2:

Bolt the tapered sweep auger(s) to the gearbox as follows: See Figure A

- a. 3/8-16 sockethead capscrew (F-2158) and locknuts (F-1005-03) or 7/16-20 x 2 (F-2175) and 7/16 jam nut (F-2176) for 712 Series Sweeps, are provided in the decal package. This bolt and nut must be used.
- b. Position the sweep's coupler onto the output shaft.
- c. Insert bolts into sweep's coupler, through the output shaft, and start the threads into the flange, then start a nut onto the end of each bolt.
- d. Tighten the bolts down to about 36-40 ft/lbs.
- e. With a hex wrench on the head of the bolt, tighten the nut, in effect double-nutting it with the flange. The bolt should have threads seen on the outside of the nut. As added protection from loosening, it is recommended that you hit the thread next to the nut with a punch to deform the thread, locking it in place.
- f. Repeat the above process to install all tapered sweeps as required.



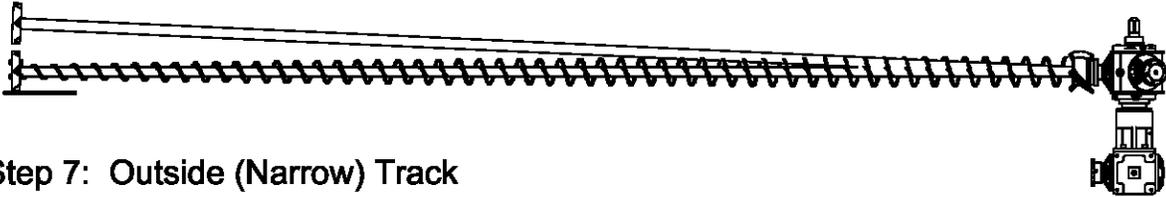
It is recommended that these bolts and nuts not be re-used.

See your dealer or Shivvers for replacement of hardware sack #635-014A for 3/8 hardware or #712-010A for 7/16 hardware.

# Installing Tapered Sweep and Track (cont'd)

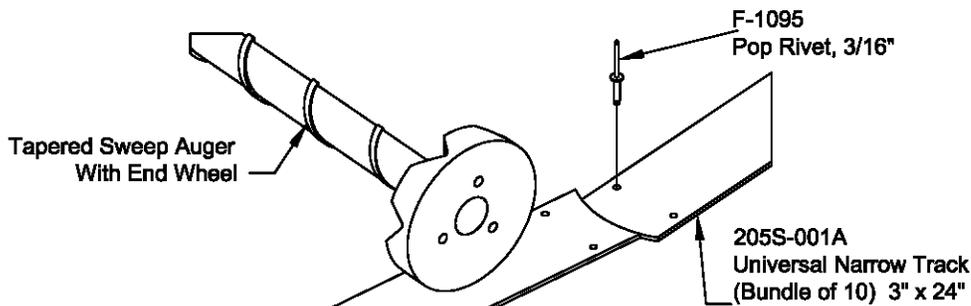
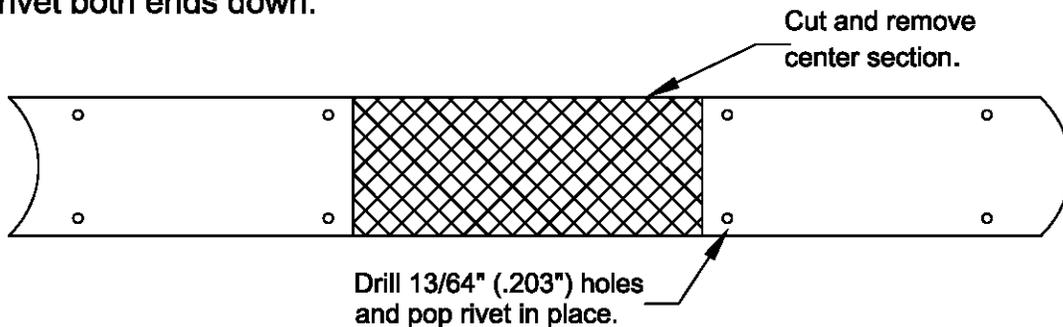
## Step 6:

There should be flex in the coupling after the sweep auger is bolted to the gearbox. Check to make sure the sweep can be lifted a minimum of 6" at the outer end of the bin without bending the sweep auger shaft. Check this in at least 4 places around the bin, especially in-line with and perpendicular to the horizontal unloader. If the amount of flex is not uniform around the bin, the basket legs will have to be adjusted, or gearbox adjusted.



## Step 7: Outside (Narrow) Track

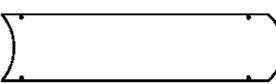
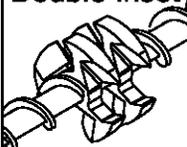
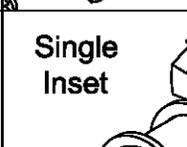
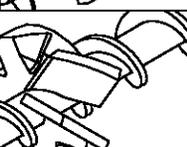
The 3-Sweep Gearbox has been created for larger bins which will have an outside track. **Lay the track sections so that ends butt against each other (no cracks between sections), flush and smooth (one end no higher than another), with sweep auger wheel riding the center of each bend and the center of each end.** As each section is laid in place, move the tapered sweep along the track to insure that curvature and location are correct, then fasten securely with 3/16 pop rivets. Drill additional holes and pop rivet track down, as necessary, to insure a firm, smooth track. Do not use self drilling screws. They will loosen with time. **Do not allow the wheel to run over a pop rivet head.** The last section of track must be trimmed to size. To trim, remove a straight section out of the center of the track, as shown below. Drill 13/64" (.203") holes and pop rivet both ends down.

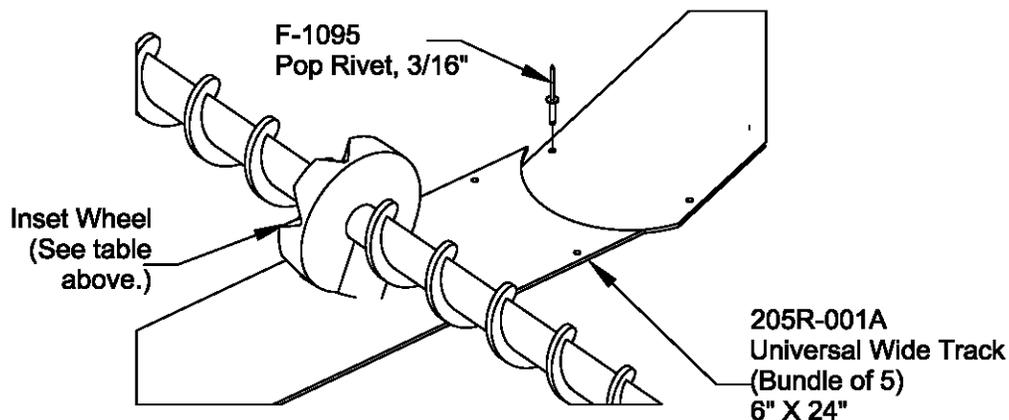


# Installing Tapered Sweep and Track (cont'd)

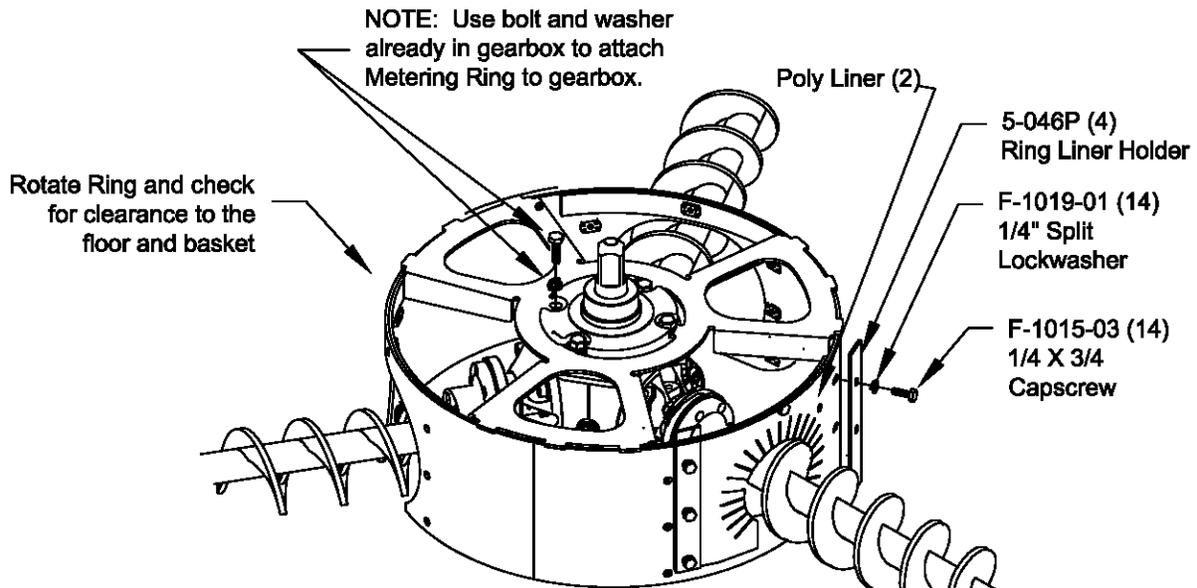
## Step 8: Inset Track

The tapered sweep auger for bins 29' diameter and over have an inset wheel that moves along a wide wear track mounted on the bin floor. These straight track sections must be laid so as to form a smooth, firm path along the bin floor on which the tapered sweep auger can move. **Lay track sections so that ends butt up against each other (no cracks between sections), flush and smooth (one end no higher than another), with inset wheel riding the center of each end.** As each section of track is placed on the floor, move the tapered sweep along the track section to insure that the inset wheel will be centered as it runs along the track. After checking the location, mount the track with 3/16" pop rivets. Drill additional holes and pop rivet track down, as necessary, to insure a firm, smooth track. Do not use self drilling screws. They can loosen with time. **Do not allow the wheel to run over a pop rivet head.** The last section of track must usually be trimmed to size. See Illustration on page 22.

Track Bundle Part #	Track Style & Dimensions	Inset Wheel Location From	Inset Wheel Style	
			Double Inset	Bolt-On Inset
205R -001A 5 Pieces Per Bundle (205-014P) (individual)	 Universal Wide Track 6" x 24"	Gearbox Base  9'-7"		
		11'-10"		
		12'-7/8"		



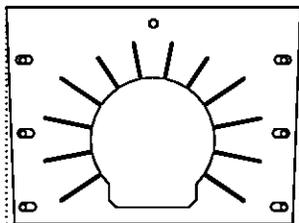
# Installing Metering Ring and Bonnet



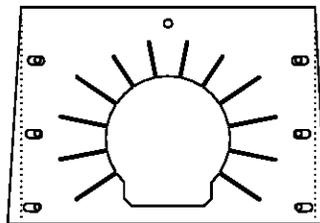
## Step 3B: Install Metering Ring Wear Liners

For ultra hi-capacity sweeps, use 5-057P. Slide the liner down the sweep and over the ring opening. From the hardware sack (5-065A), take one of the 1/4" X 3/4" bolts and 1/4" lockwasher and fasten it in the top center hole of the liner. Locate two (2) of the Liner Holders (5-046P) and place one over the liner on each side of the ring opening. Make sure that the liner holder properly matches the three threaded holes and bolt it in place. Make sure the liner edges are straight, not pushed in or pulled out, before tightening in place. Repeat the procedure for the other sweeps.

### INCORRECT

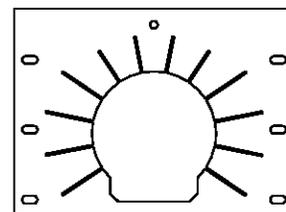


Bottom corners pushed in may cause high center.



Bottom corners pulled out may cause coning.

### CORRECT

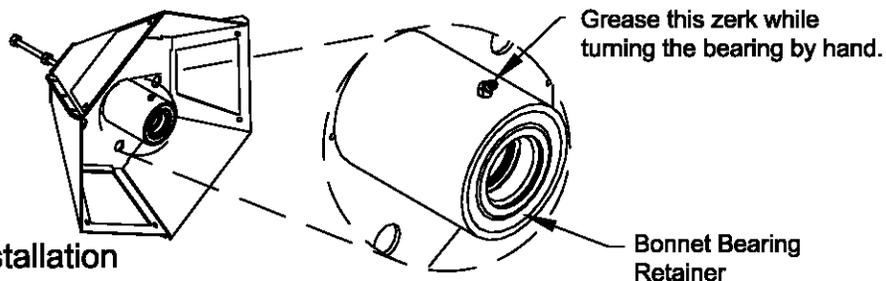


5-057P  
Ultra Hi-Cap  
Poly Liner

# Installing Metering Ring and Bonnet

## Step 4B: Bonnet Lubrication

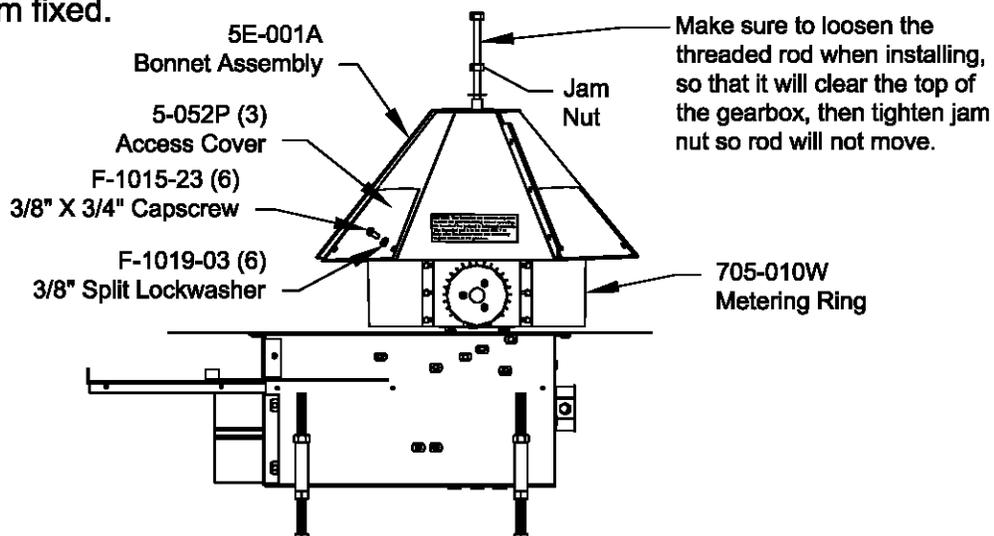
Unscrew the threaded rod from the bonnet so that it will not interfere with the top of the gearbox. The threaded rod is only used to assist in removing the bonnet. The jam nut is used so the threaded rod cannot move. Make sure that the bearing is adequately greased. Using the grease zerk on the side of the bearing retainer, pump grease slowly while turning the bearing, this will ensure the bearings are properly lubricated.



## Step 5B: Bonnet Installation

Make sure that the inner race within the bonnet's bearing retainer is free of obstruction and smooth. Place the bonnet over the gearbox and position it on the gearbox cap. Remove an Access Cover (5-052P) to help view and place the bonnet bearing. Using a mallet or sledge, pound the bonnet down evenly over the gearbox. For best results do not pound on the threaded rod, instead apply force to the top of the hex cap. Place a piece of wood or other similar object on the hex cap of the bonnet to prevent denting or marring.

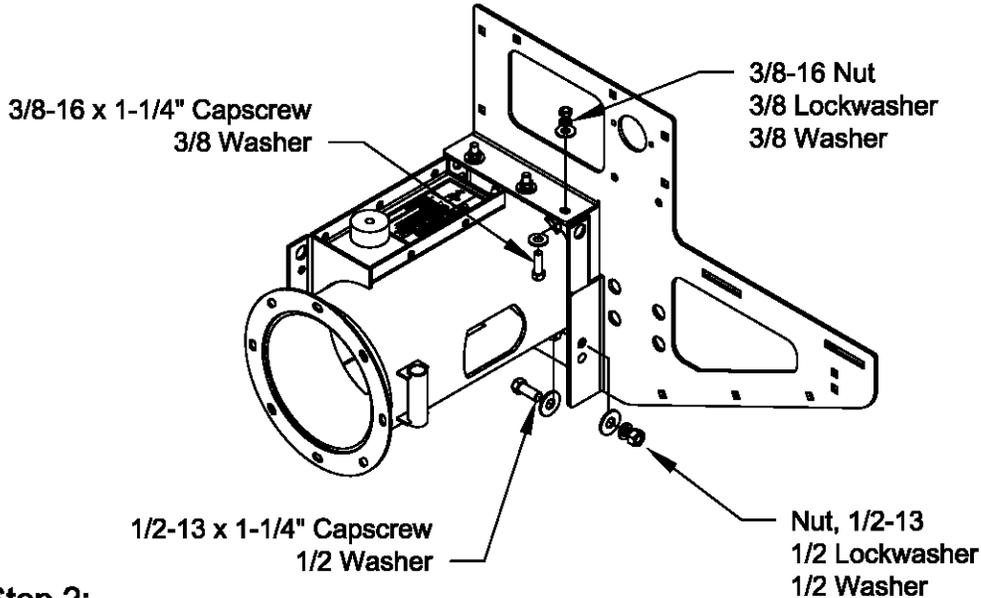
Once the bonnet is forced down, it should spin freely. If any interference is experienced, it is likely that the four bolts on the top of the gearbox are rubbing against the bearing retainer. If this is the case, the bonnet will have to be removed and the problem fixed.



# Installing Dual Motor Drive

## Step 1:

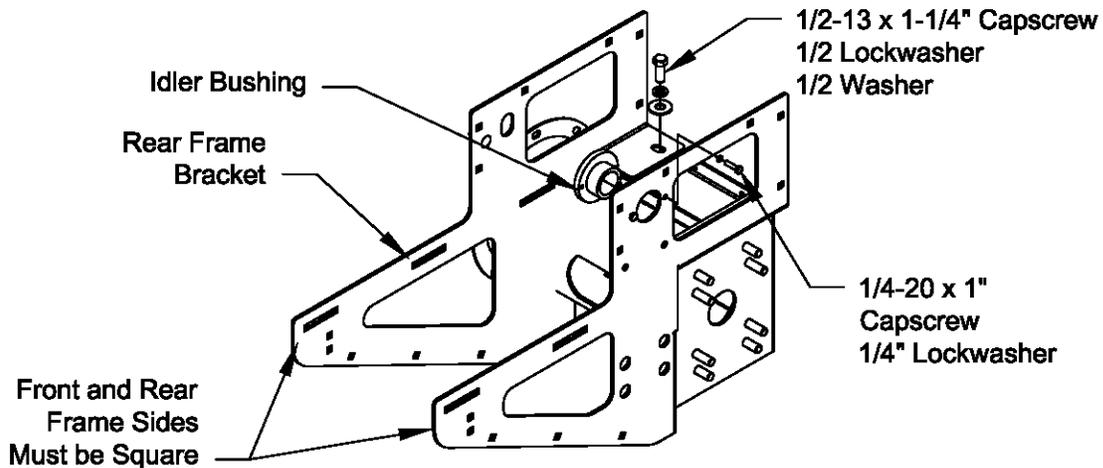
Remove all contents from shipping box. Use hardware, as shown, from sack (654-330A) to secure the Front Frame Bracket (654-325P) to the 8" horizontal unloader transition. DO NOT tighten bolts completely at this time.



## Step 2:

Use hardware, as shown, from sack (654-330A) to position the Rear Frame Bracket (654-324P) to the horizontal unloader transition. Do not tighten 1/2" bolt into transition.

Place the Idler Bushing (654-314P) into hole in the Front Frame Bracket (654-325P). Secure with hardware, as shown, from sack (654-330A).



## Installing Dual Motor Drive (cont'd)

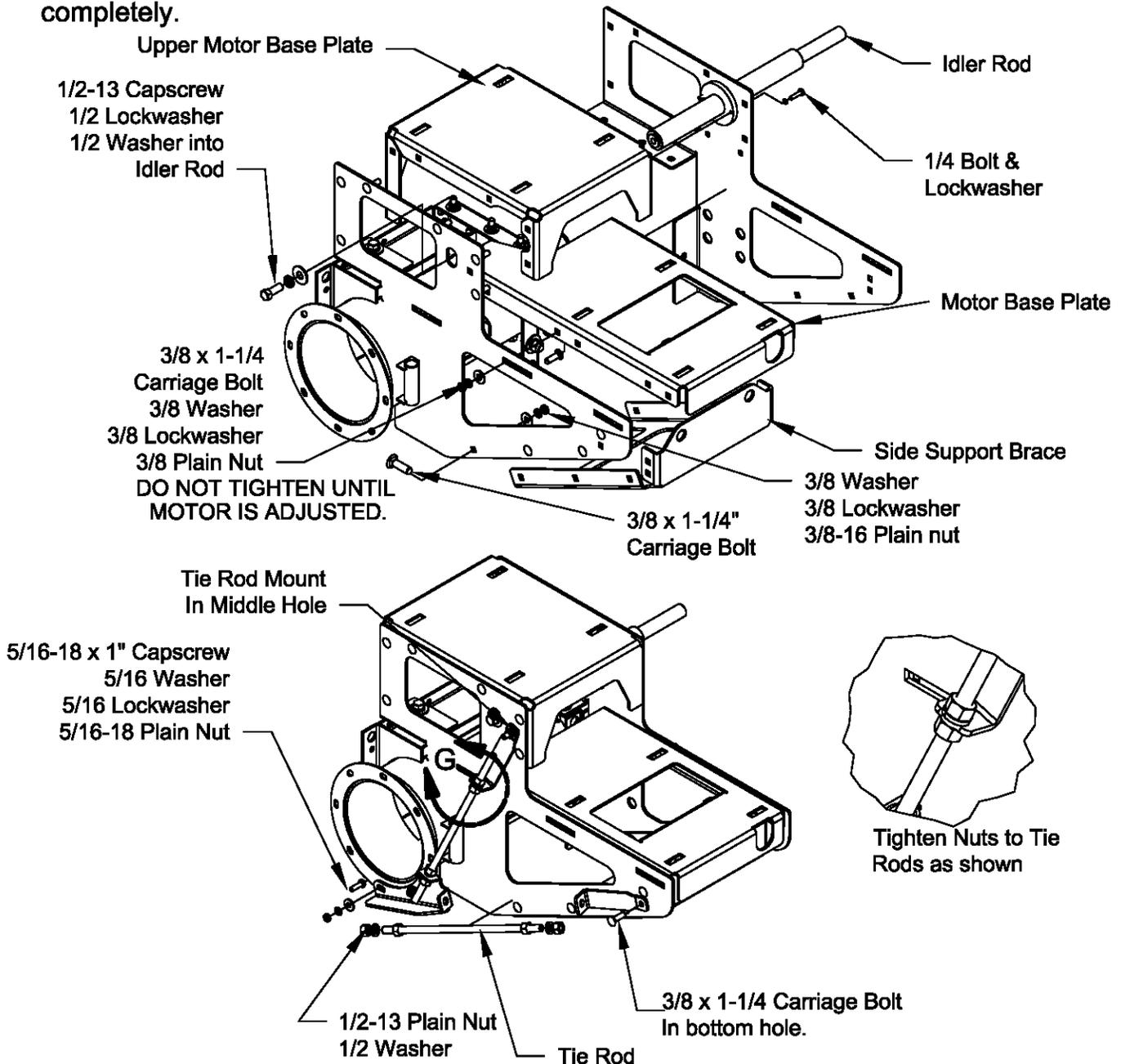
### Step 3:

Use hardware, as shown, from sack (654-330A) to secure the following parts to the front and rear frame brackets: Upper Motor Base Plate (654-335P), Side Support Brace (654-326P) and Motor Base Plate (654-327P). All bolts can be tightened at this time except the (5) bolts that go into the long slots on the frame sides.

Hardware can be placed in the direction that is most convenient for the installer.

Attach Tie Rods Mounts and Tie Rods as shown below

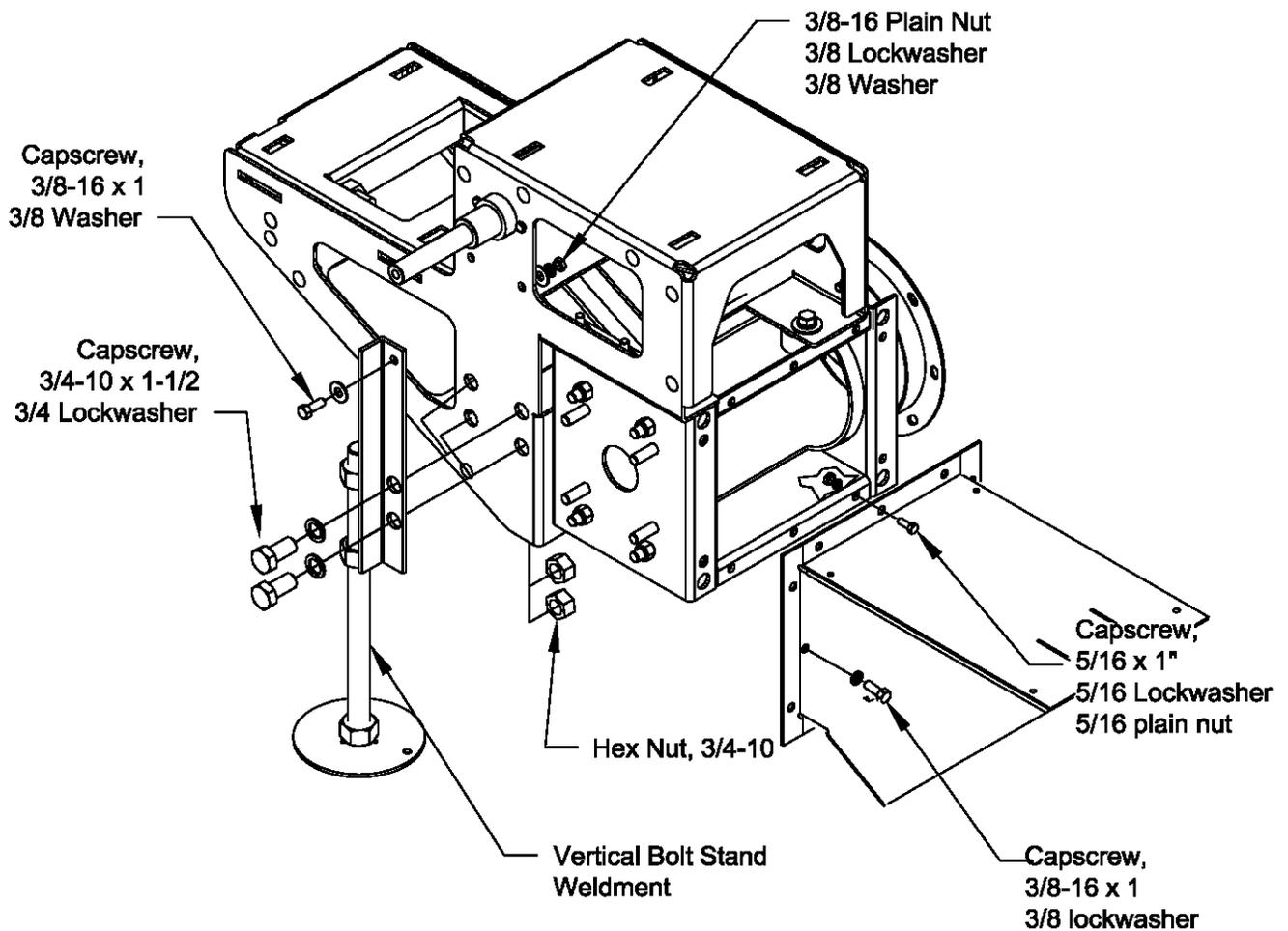
Slide Idler Rod (654-305P) through Idler Bushing. Take care to apply an anti-seizing compound to the rod where it will rest inside of the bushing. Lock in place using hardware, as shown, from sack (654-332A). Tighten these 1/4" bolts completely.



## Installing Dual Motor Drive (cont'd)

### Step 4:

Use hardware, as shown, from sack in 654-332A to secure the Motor Jack Stand (656-047W & 237-009W) to the Frame. Use the Set of holes for the Jack Stand that is best for your application. Tighten bolts completely. Use hardware from sack 656-054A to attach discharge weldment.

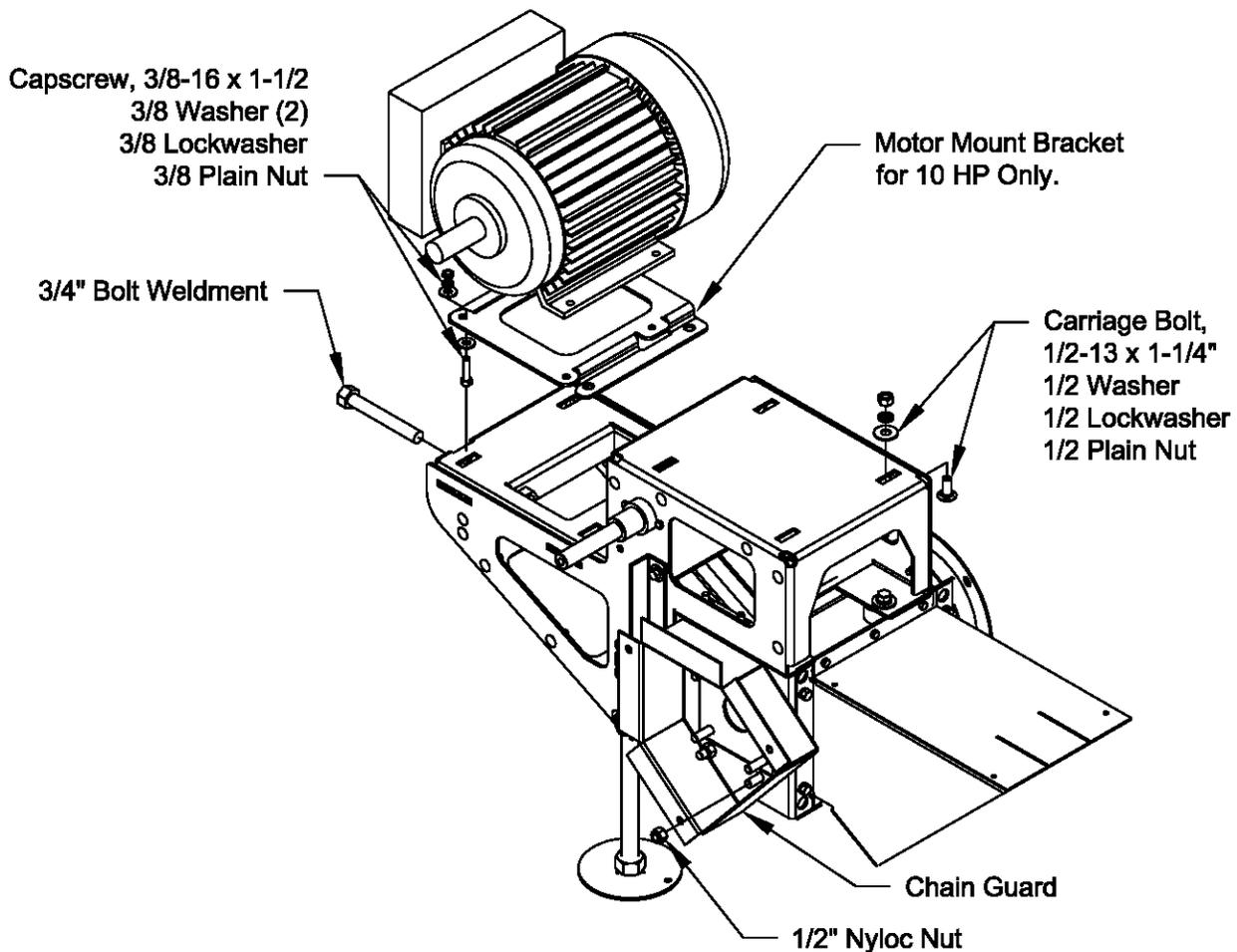


## Installing Dual Motor Drive (cont'd)

### Step 5:

Thread 3/4" Bolt Weldment (654-309W) into the adjustment nut on the Motor Base Plate (654-327P). Secure 10 HP Motors onto the Motor Mount Brackets which will then be fastened to the Motor Base Plates. (If using 15 HP motors, the 10 HP Motor Mount Brackets will not be used.)

Secure the Chain Guard (654-313P) to the horizontal unloader transition using the hardware shown.



### Step 6:

Use hardware, as shown, from sack (654-331A) to secure the Motors to the Motor Base Weldments. The 10HP motor has a separate bracket that bolts on to the Motor Base Weldment as shown. Tighten bolts completely.

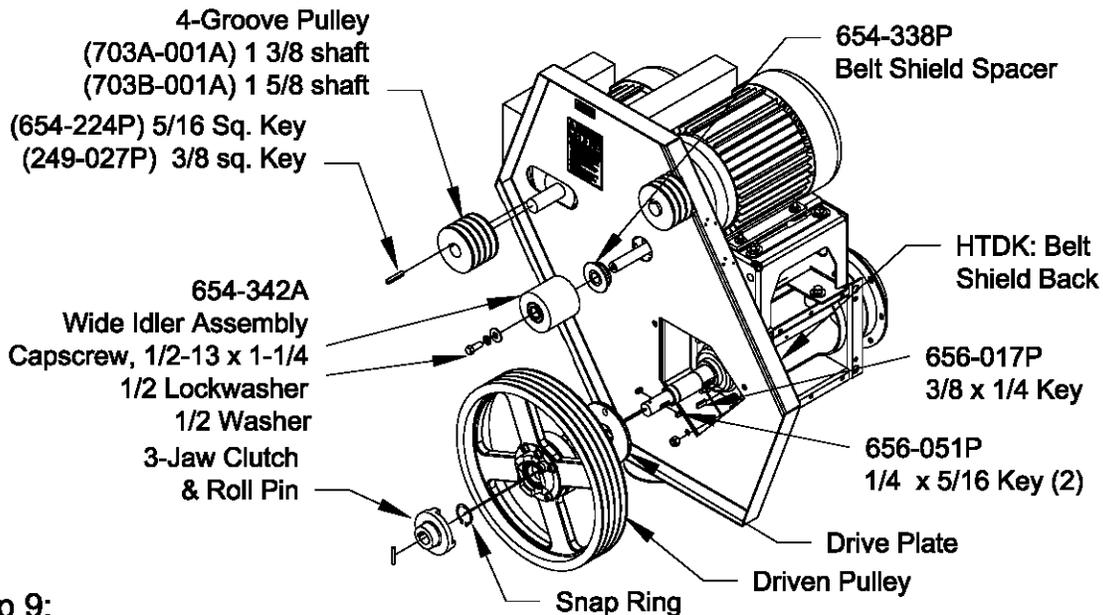
## Installing Dual Motor Drive (cont'd)

### Step 7:

Use hardware, as shown, from sack in 654-332A box to secure the Belt Shield Back (654-311P) to the Chain Guard. The Belt Shield Spacer, 654-338P, should just fit through the hole in the Belt Shield Back with the front step against the belt shield. Place the Wide Idler Assembly over the Idler Rod. Lock into position with hardware, as shown, from the sack in 654-332A. Tighten bolts completely. (Apply anti-seizing compound on the shafts and set screws for ease of disassembly.) Loosen up set screws inside of 4-Groove Motor Pulley. Slide the pulley assembly and key over the Motor shafts. (Apply anti-seize compound.)

### Step 8:

To setup the drive to be engaged all the time, locate the large driven pulley assembly, 654-322A. Follow the instructions in 705-018A hardware sack to switch a bolt and threaded spacer for the clutch pin so the unloader is always engaged. (Before installing large driven pulley assembly, apply anti-seizing compound on shaft for ease of disassembly.) Install snap ring, the 3-Jaw Clutch (656-010P), (2) keys and roll pin. Check the 3-Jaw Clutch for proper engagement and disengagement.



### Step 9:

Before installing belts, wire the motors and check direction to ensure both rotate in the same direction. (Counter-clockwise looking at the pulleys)



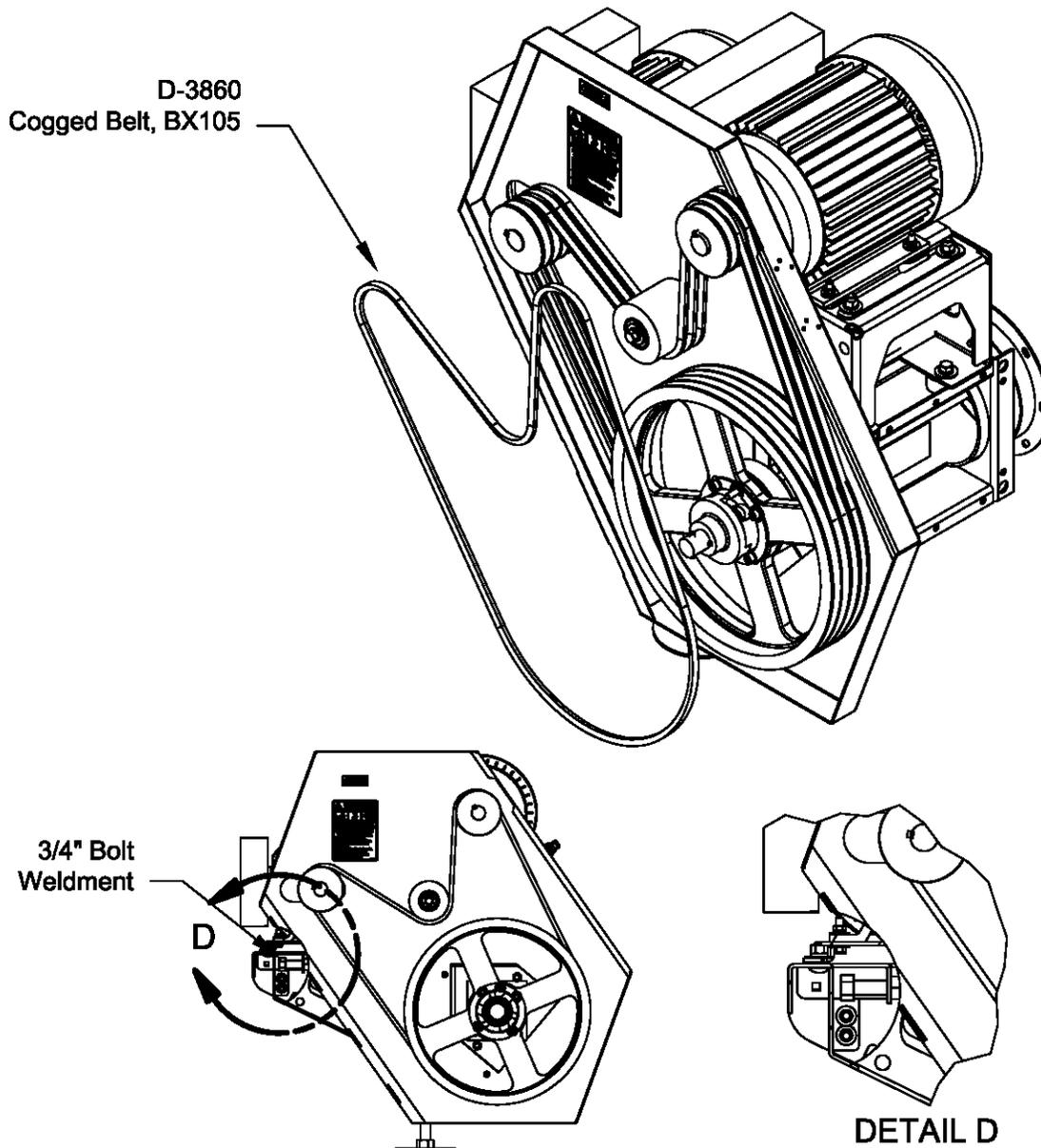
**Shut and lock off power after motors have been wired and checked.**

## Installing Dual Motor Drive (cont'd)

### Step 10:

Using a long straight edge, align the large pulley with the two small pulleys. Install four belts as shown. Tighten the belts by adjusting the bolt weldment (654-309W) underneath the lower motor (Detail D).

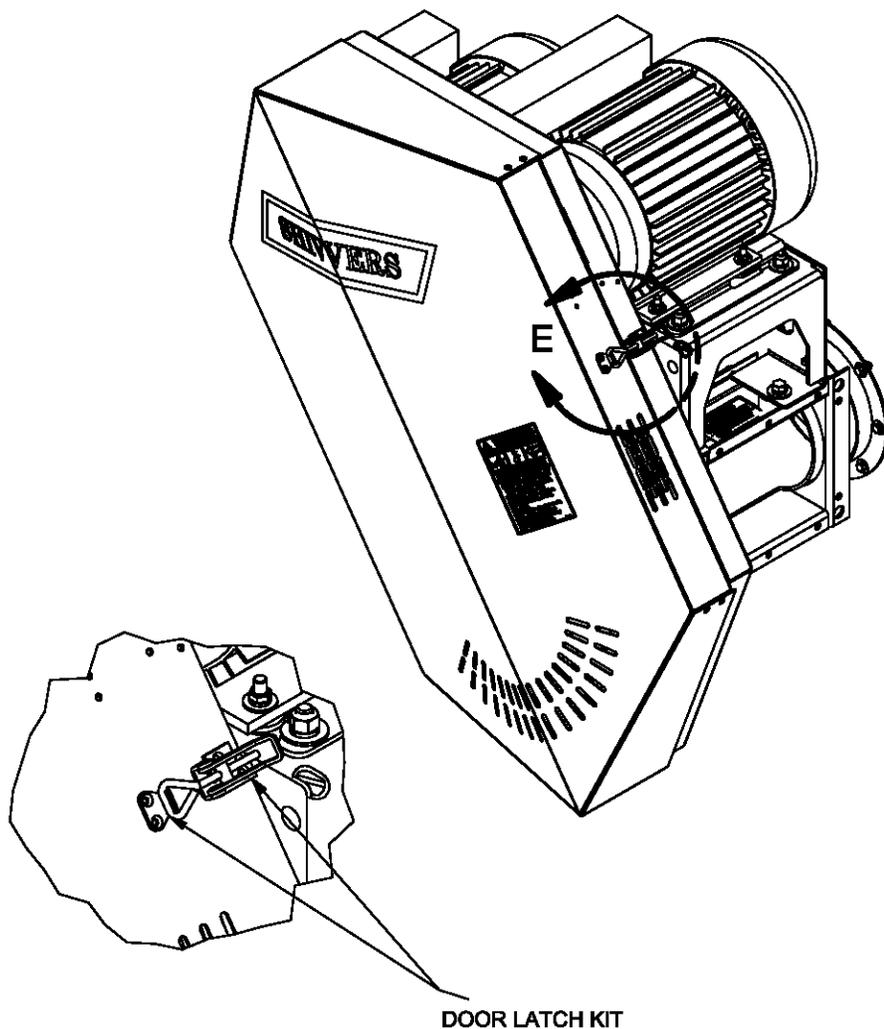
Test belts to make sure they will stay aligned properly. After belts are installed and aligned, tighten all four set screws holding the small pulleys on the motors. Tighten (5) 3/8 Carriage Bolts in slots of lower Motor Base Plate. (See Page 26)



## Installing Dual Motor Drive (cont'd)

Step 11:

Install latch from the door latch kit (H-2412) in lower bolt holes on belt shield back (654-311P) and door striker from the door latch kit (H-2412) onto the belt shield cover (654-310W). Use the hardware provided in the door latch kit (H-2412). Install the belt shield cover (654-310W) onto the belt shield back. Align the tabs on the cover with the slots of the belt shield back. Insert and let the weight of the cover lock hinges in position. Adjust the latch to keep the cover securely in place.



# Installing Safety Decals and Locks

Before applying decals, make sure the mounting surfaces are clean (not oily) and dry.

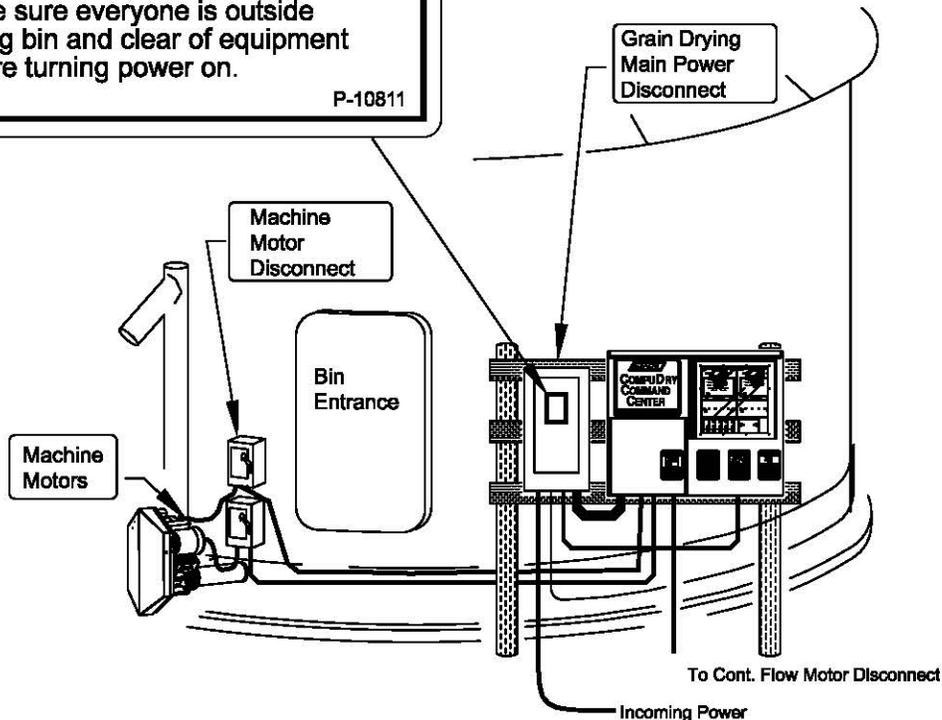
## P-10811 - Field Installed

### 1.) ON MAIN POWER DISCONNECT SWITCH BOX

Put it only on the disconnect that shuts power off to the complete drying system (every motor, fan, and burner). Don't put it on any other disconnect.



"CAUTION" Decal  
Shivvers# P-10811

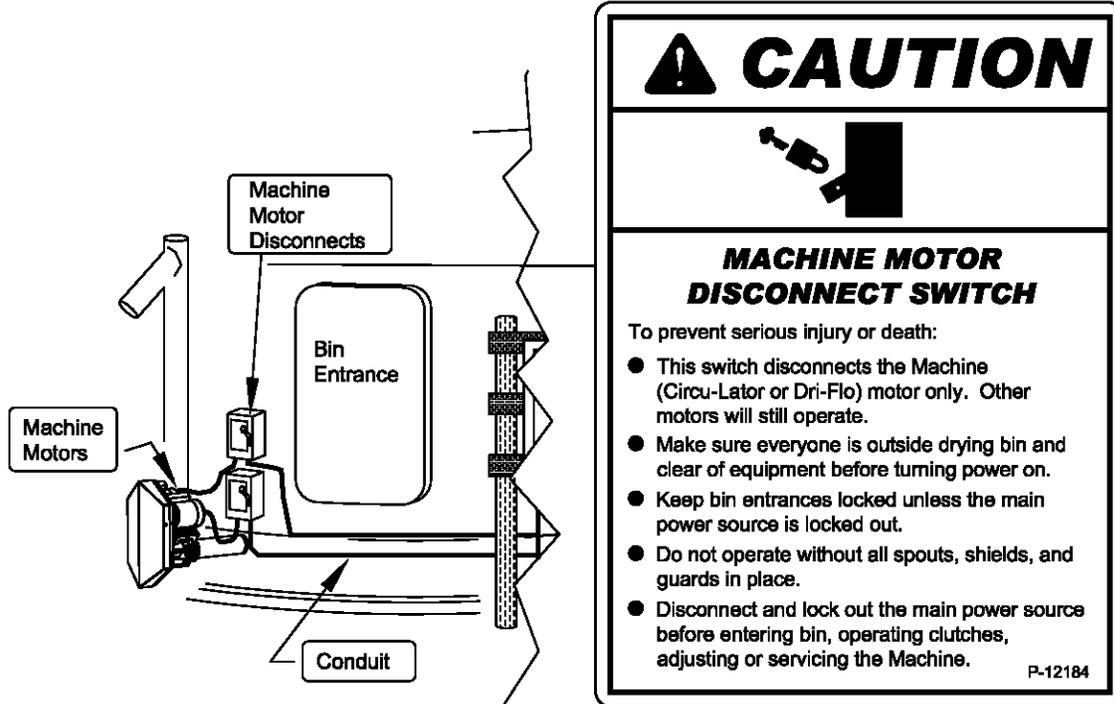


# Installing Safety Decals and Locks

## P-12184 - Field Installed

The Machine (Circu-Lator or Dri-Flo) Motors disconnect switches must be located adjacent to the bin entrance door. They must be of sufficient capacity to safely switch the Machine Motors, usually 10 or 15 Hp. These switches must also have the capability of being locked into the OFF position.

Make sure the safety decals P-12184 are applied on or near the machine motor disconnects.

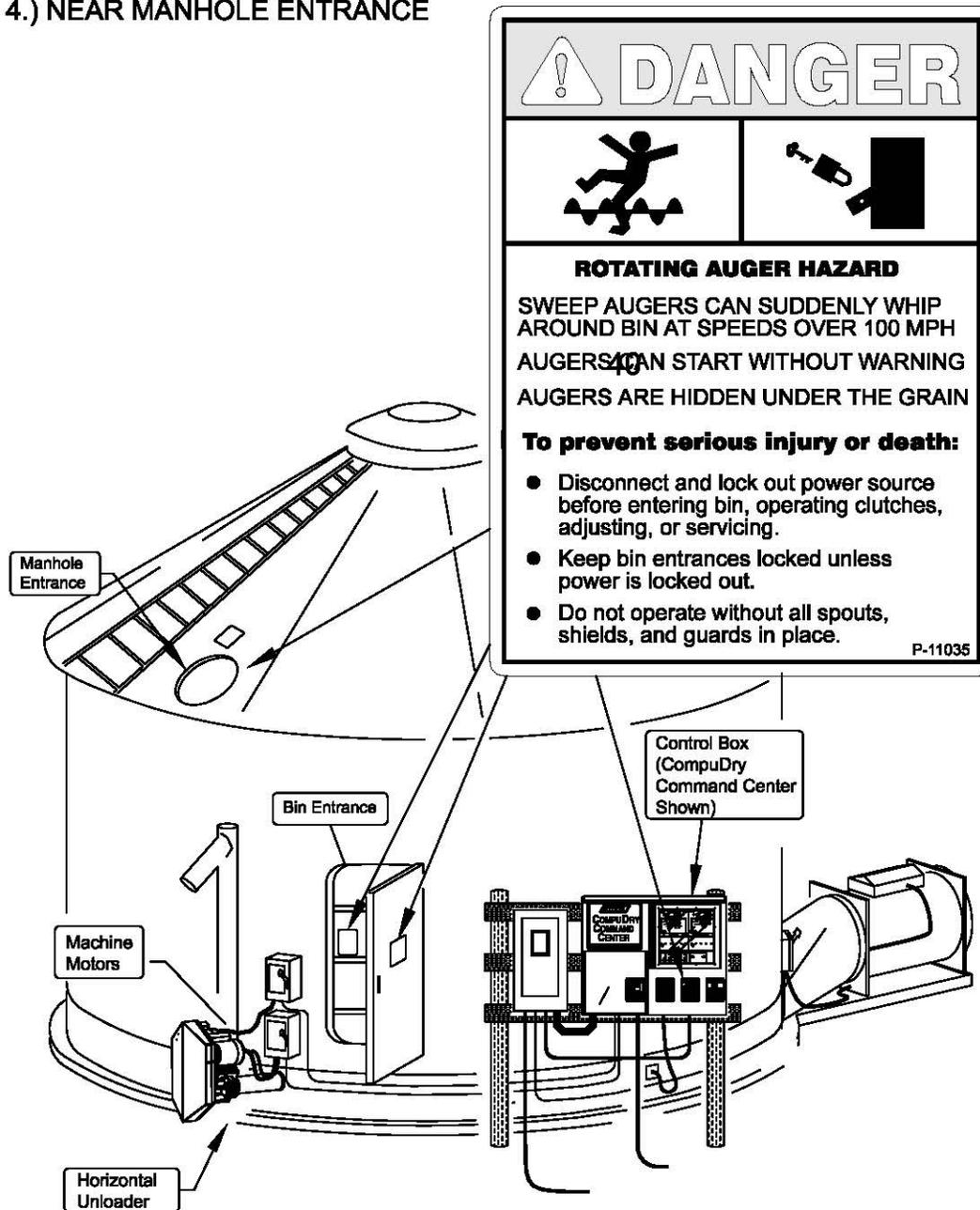


"CAUTION" Decal  
Shivers# P-12184

# Installing Safety Decals and Locks

## P-11035 - Field Installed

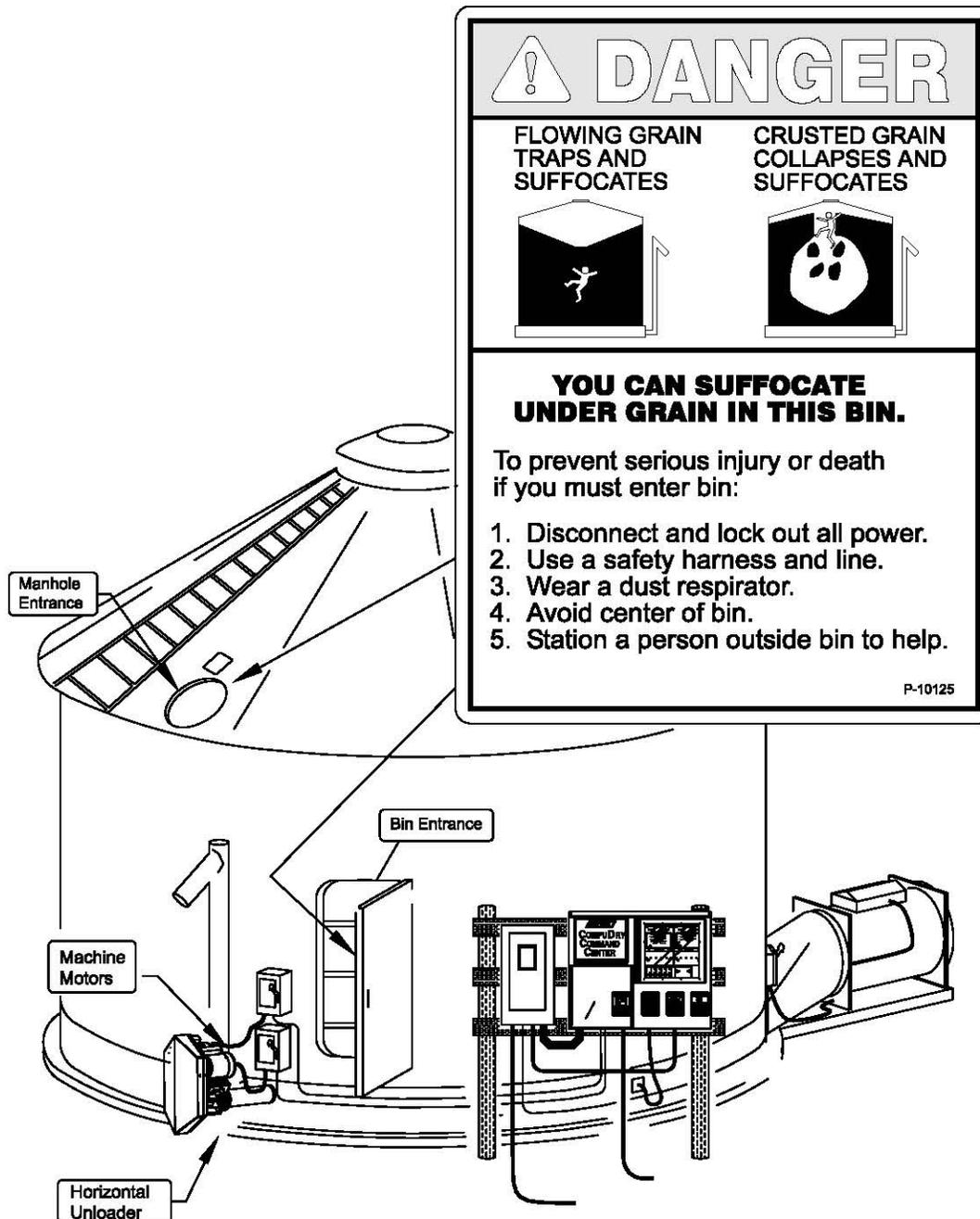
- 1.) ON ALL CONTROL BOXES THAT CONTROL TAPERED SWEEP AUGERS (Circuitrol, Comp-U-Dry, etc.) (Factory Installed).
- 2.) OUTSIDE OF OUTER BIN DOOR ENTRANCE
- 3.) OUTSIDE OF INNER BIN DOOR ENTRANCE
- 4.) NEAR MANHOLE ENTRANCE



# Installing Safety Decals and Locks

## P-10125 - Field Installed

- 1.) INSIDE OF OUTER BIN DOOR ENTRANCE ON ALL BINS
- 2.) NEAR MANHOLE ENTRANCE ON ALL BINS



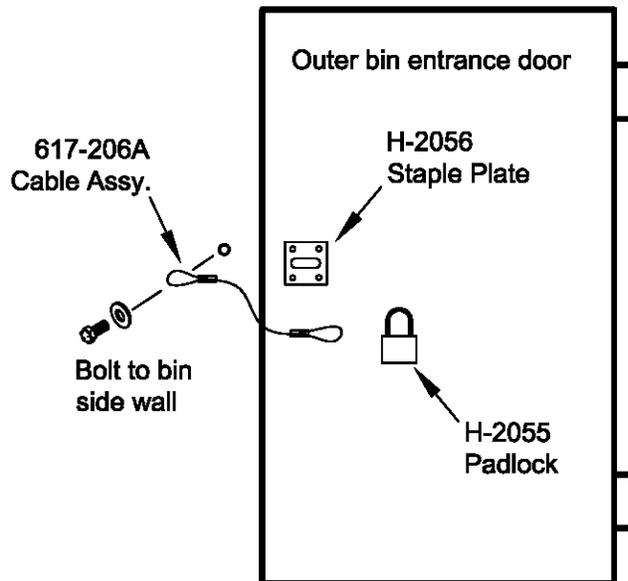
# Installing Safety Decals and Locks

Two 632-191A (Safety Lock Kits) are provided with each Shivers dryer. This kit includes an H-2055 Padlock, P-11158 Self Laminating Lockout Decal, and hardware which will allow locking of any bin entrance point.

Make sure a grain drying main disconnect box is installed and that this padlock works on it. If it doesn't, find one that will or contact Shivers Incorporated for assistance. Leave the power locked off.

If the dryer bin is not equipped with a lockable entry door in good condition, attach one end of the cable assembly to the bin side wall. Use an existing bolt, or use the hardware provided. Attach the staple plate to the bin entrance door within reach of the opposite end of the cable assembly. Use the hardware provided, or weld the staple plate securely to the door.

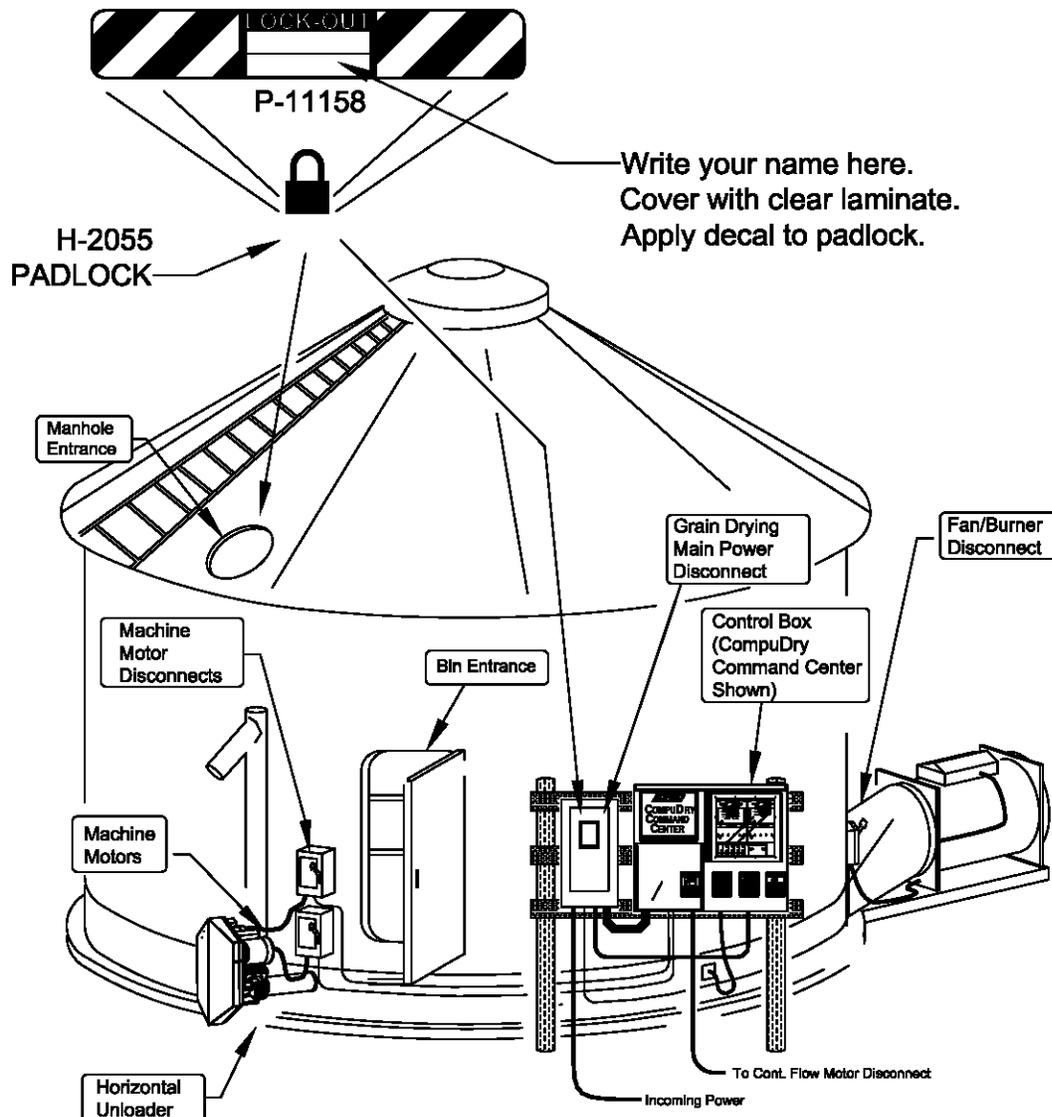
Install a safety lock kit on the manhole cover also. If there are more than two entrances on the bin, order additional Safety Lock Kits. Try the locks and make sure entrance to the bin is denied.



# Installing Safety Decals and Locks

## P-11158 - Field Installed

Write your name on the decal. Cover the printing with the clear laminate, then apply the decal to the padlock. These locks can then be used to lock out power sources when working on the drying equipment. Keep the bin entrances locked when operating the equipment to prevent unauthorized access to potential dangers. The locks will also remind you to disconnect and lock out power sources before entering the bin.



# **DRI-FLO Installation Final Check**

- 1  Check that all joints are level and solid, without cracks, in the tapered sweep wheel track, and that the track is pop riveted, not screwed, down.
- 2  Make certain the tapered sweep wheel(s) do not hit pop rivets in the track.
- 3  Make sure the tapered sweep augers have "flex" in the coupling by lifting the outer end in several locations around the bin.
- 4  Make sure gearbox is square with the floor. Use gearbox laser kit.
- 5  Check that the chain coupler master link is installed correctly.
- 6  Make sure there is 1/8 - 1/4" gap between the horizontal flight weldment tube and the sprocket on 1-1/4" drive shaft where O-ring is located, inside the basket.
- 7  Make sure the Bonnet and Metering Ring are free to rotate without catching.
- 8  Make sure the correct ring liners are installed and are centered on the tapered sweep augers.
- 9  Make sure the tapered sweep couplers are greased with high temperature grease.
- 10  Make sure the unloading pin has been replaced with the shoulder bolt (see P-12900)
- 11  Make sure the 3-jaw clutch will operate correctly.
- 12  Check belt alignment and tension. Make sure belts don't try to roll over.
- 13  Check slide gates for proper operation and leave them in the closed position.
- 14  Make sure all Safety Decals are in place as shown in P-10001 Operator's Safety Manual. Make sure all guards are in place.
- 15  Make sure the Safety Lock Kits (632-101A) are installed as shown in this manual and P-10001 Operator's Safety Manual, and P-11175 Instructions. Either the bin entrances or the power should be locked off.
- 16  Make sure the operator has the Operator's Safety Manual, Operating manuals for each piece of equipment installed, and Safety Lock keys. Make sure they understand how to operate each piece of equipment safely.

