

# 8" Commercial Vertical Drive Unit - Dual Drive, Top and Bottom

Installation Manual

PNEG-1631

Date: 07-30-08

GSI GROUP



PNEG-1631



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## 1. Introduction

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READ THIS MANUAL carefully to learn how to properly use and install equipment. Failure to do so could result in personal injury or equipment damage.

INSPECT the shipment immediately upon arrival. The customer is responsible for ensuring that all quantities are correct. The customer should report and note any damage or shortage on the bill of lading to justify their claim to the transport company.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your equipment and should be easily accessible when needed.

This warranty provides you the assurance that the company will back its products when defects appear within the warranty period. In some circumstances, the company also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the factory specifications, the warranty will become void and field improvements may be denied.

## Safety Guidelines

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting **personal safety** and **preventing equipment problems**. It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below. Please read the manual and pay attention to these sections. Failure to read this manual and its safety instructions is a misuse of the equipment and may lead to serious injury or death.



**This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.**



**DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



**CAUTION** used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.



**NOTE** indicates information about the equipment that you should pay special attention.

### Safety Instructions

Our foremost concern is your safety and the safety of others associated with this equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards and precautions exist, and to inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation where **SERIOUS INJURY** or **DEATH** may occur.

This equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

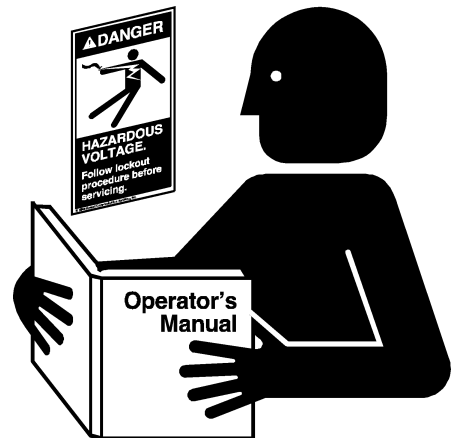
#### Follow Safety Instructions

Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual or need assistance, contact your dealer.



**Read and Understand Manual**

#### Operate Motor Properly

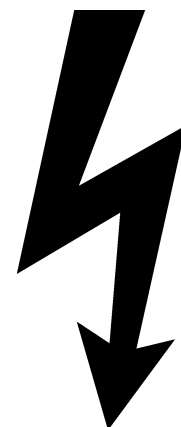
To avoid serious injury or death, stay away from unit and make sure everyone is clear of the equipment before starting or operating the unit.

All electrical connections should be made in accordance with the National Electric Code. Be sure equipment and bins are properly grounded.

Do not operate electric motor equipped units until motors are properly grounded.

Disconnect power on electrical driven units before resetting motor overloads.

Do not repetitively stop and start the drive in order to free a plugged condition. Jogging the drive in this manner can damage the equipment and/or drive components.



**Electric Shock Hazard**

## Operate Unload Equipment Properly

- Untrained operators subject themselves and others to **SERIOUS INJURY** or **DEATH**. **NEVER** allow untrained personnel to operate this equipment.
- **NEVER** work alone.
- Keep children and other unqualified personnel out of the working area at **ALL** times. Refer to the **Start-Up** section of this manual for diagrams of the work area.
- Make sure **ALL** equipment is locked in position before operating.
- **NEVER** start equipment until **ALL** persons are clear of the work area.
- Keep hands and feet away from the auger intake and other moving parts.
- **NEVER** attempt to assist machinery operation or to remove trash from equipment while in operation.
- Be sure all operators are adequately rested and prepared to perform all functions of operating this equipment.
- **NEVER** allow any person intoxicated or under the influence of alcohol or drugs to operate the equipment.
- Make sure someone is nearby who is aware of the proper shut down sequence in the event of an accident or emergency.
- **ALWAYS** think before acting. **NEVER** act impulsively around the equipment.
- **NEVER** allow anyone inside a bin, truck or wagon which is being unloaded by an auger or conveyor. Flowing grain can trap and suffocate in seconds.
- Use ample overhead lighting after sunset to light the work area.
- Keep area around intake free of obstacles such as electrical cords, blocks, etc., that might trip workers.
- **NEVER** drive, stand or walk under the equipment.
- Use caution not to hit the auger when positioning the load.
- **ALWAYS** lock out **ALL** power to the equipment when finished unloading a bin.
- Be aware of pinch points. A pinch point is a narrow area between two surfaces that is likely to trap or catch objects and so is a potential safety hazard.



**Operate Unload  
Equipment Safely**

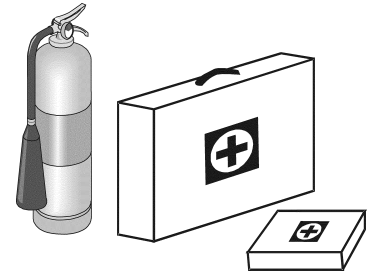
## 2. Safety

### Prepare for Emergencies

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital and fire department near your telephone.



**Keep Emergency Equipment Quickly Accessible**

### Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Remove all jewelry.

Long hair should be tied up and back.

Safety glasses should be worn at all times to protect eyes from debris.

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

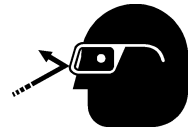
Wear steel toe boots to help protect your feet from falling debris. Tuck in any loose or dangling shoe strings.

A respirator may be needed to prevent breathing potentially toxic fumes and dust.

Wear hard hat to help protect your head.

Wear appropriate fall protection equipment when working at elevations greater than six feet (6').

**Eye Protection**



**Gloves**



**Steel Toe Boots**



**Respirator**



**Hard Hat**



**Fall Protection**





## Operator Qualifications

- A. The User/Operator must be competent and experienced to operate auger equipment. Anyone who works with or around augers must have good common sense in order to be qualified. These persons must also know and meet all other qualifications, such as:
- Any person who has not read and/or does not understand all operation and safety procedures is not qualified to operate any auger systems.
  - Certain regulations apply to personnel operating power machinery. Personnel under the age of 18 years may not operate power machinery, including augers. It is your responsibility, as owner and/or supervisor, to know what these regulations are in your area or situation.
  - Unqualified or incompetent persons are to remain out of the work area.
  - O.S.H.A. (Occupational Safety and Health Administration) regulations state: “At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved”. (Federal Occupational Safety and Health Standards for Agriculture. Subpart D, Section 19287.57 (a) (6)).
- B. As a requirement of O.S.H.A., it is necessary for the employer to train the employee in the safe operating and safety procedures for this auger. The sign-off sheet is provided for your convenience and personal record keeping. All unqualified persons are to stay out of the work area at all times. It is strongly recommended that another qualified person who knows the shut down procedure is in the area in the event of an emergency.

| <i>Date</i> | <i>Employee Name</i> | <i>Supervisor Name</i> |
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### 3. Decals

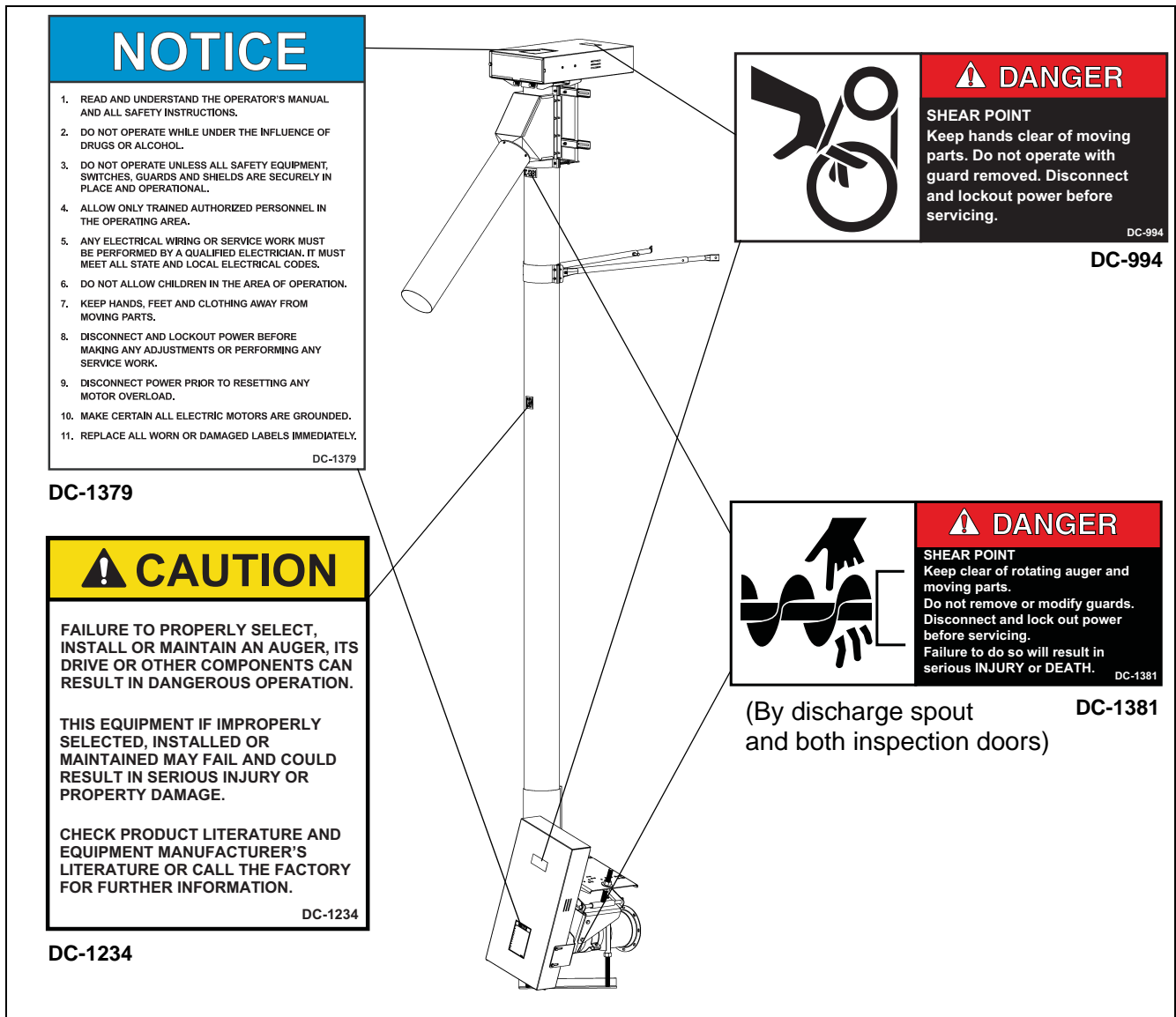
Check the components shown below to ensure that the safety decals are in place and in good condition. If a decal cannot be easily read for any reason or has been painted over, replace it immediately. Contact your dealer or the manufacturer to order a replacement decal free of charge.

**Contact:**

GSI Group  
 1004 E. Illinois St.  
 Assumption, IL. 62510  
 Phone: 217-226-4421  
 Fax: 217-226-4420

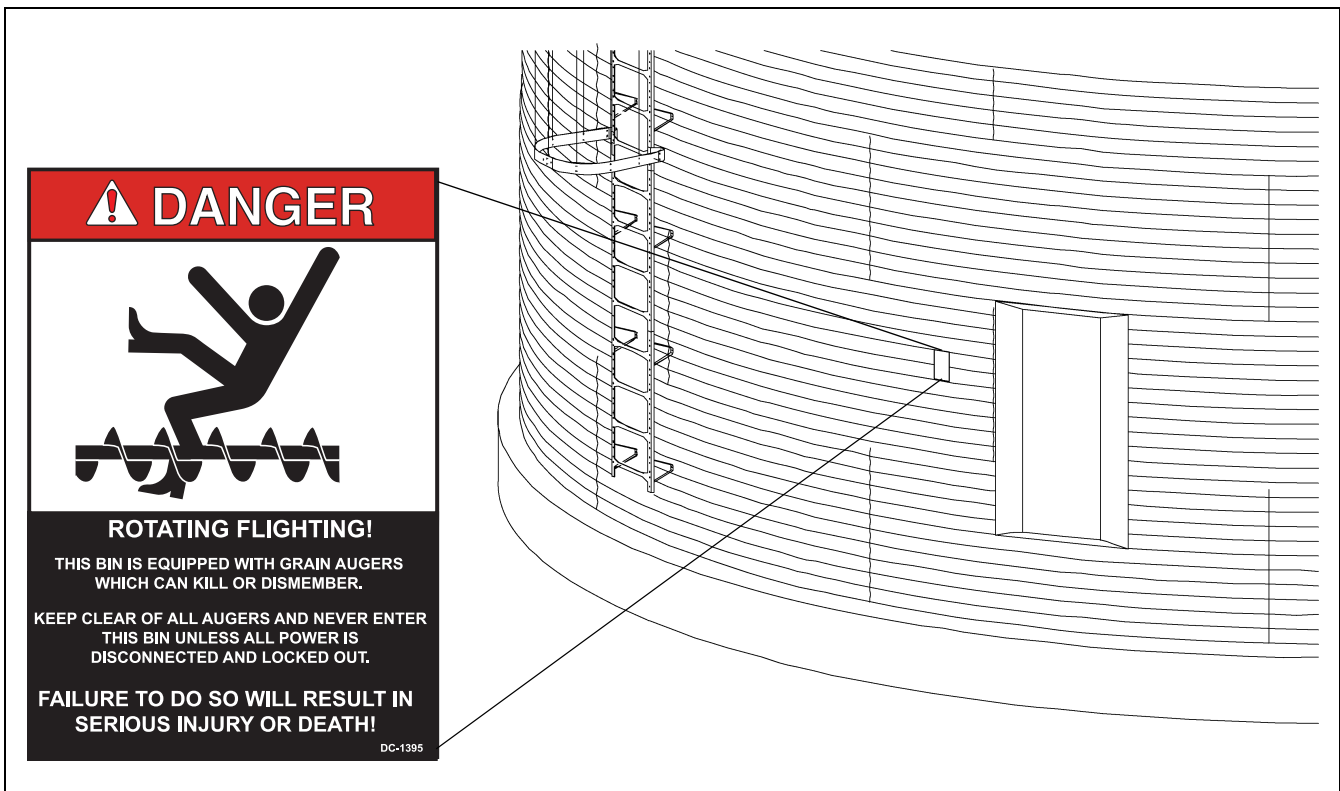
**Decal List**

| Part #  | Description             | Size            |
|---------|-------------------------|-----------------|
| DC-1234 | Caution                 | 2-1/4" x 2-3/4" |
| DC-1379 | Danger - Notice         | 5-1/8" x 7-3/8" |
| DC-1381 | Danger - Rotating Auger | 2" x 4-1/2"     |
| DC-994  | Danger - Shear Point    | 4-1/2" x 2"     |



- A. DANGER Sign No. DC-1395 was supplied with your bin unloading equipment. This safety sign should be applied to the side of the bin near the bin opening, so it will be viewed by people entering into the bin storage building. Do not cover any safety signs or any other signs that are already there.
- B. If the safety sign location suggested is not in full view because of equipment modifications, other equipment in the area or any reason, then locate the safety sign in a more suitable location.
- C. Be certain the surface is clean, dry and free of dirt and oil. Peel paper backing from decals and stick into place. The adhesive backing will bond on contact.

**NOTE:** Please remember, safety signs provide important safety information for people working near bin unloading equipment that is in operation.

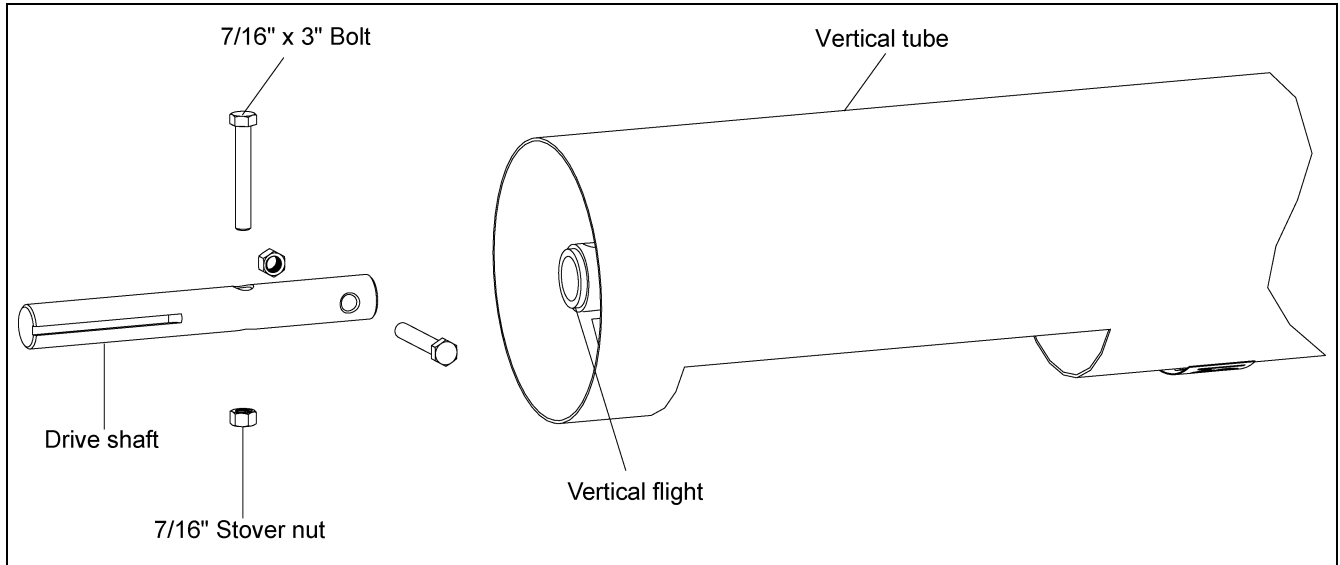


**NOTE:** If the Safety Sign cannot be easily read for any reason or has been painted over, replace it immediately. Additional Safety Signs may be obtained free of charge from your dealer, distributor or ordered from the factory.

Order SAFETY SIGN NO. DC-1395

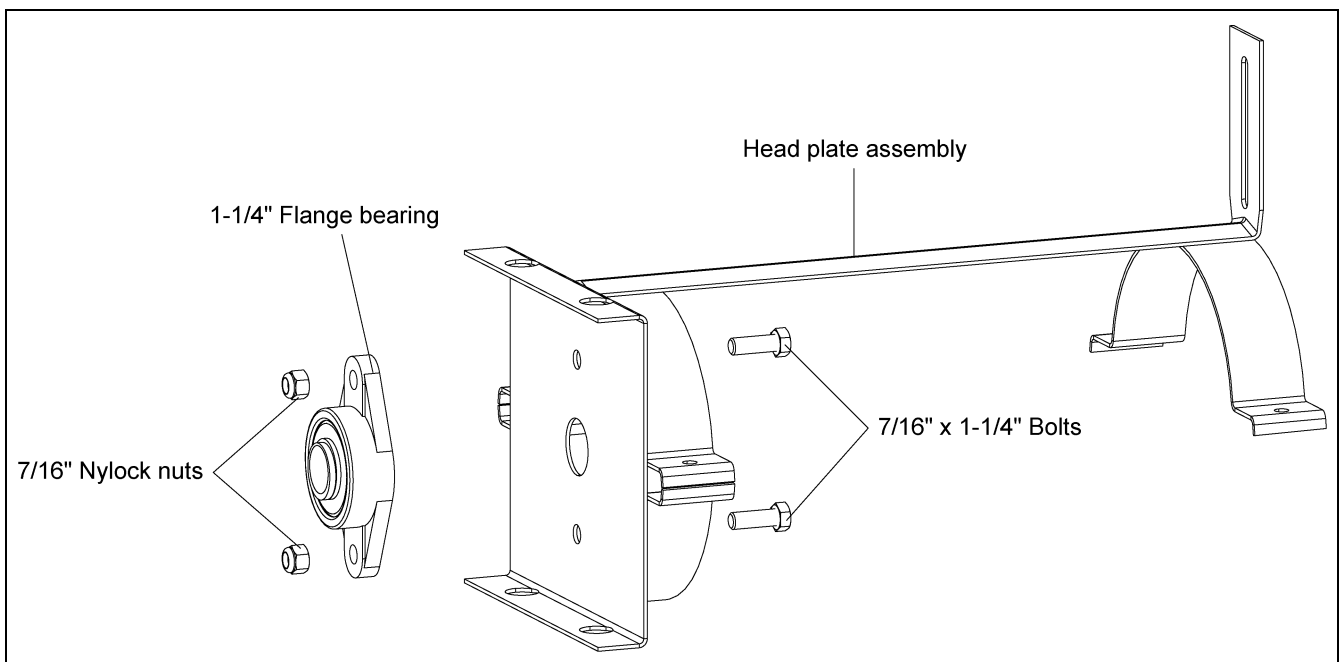
## 4. Installation

1. Bolt the 1-1/4" drive shaft to the vertical flight using two (2) 7/16" x 3" grade 8 bolts and stover nuts.



**Figure 4A**

2. Find the head plate assembly. Attach the 1-1/4" flange bearing to the head plate using two (2) 7/16" x 1-1/4" bolts and nylock nuts.



**Figure 4B**

- Place the head plate assembly over the end of the vertical tube, with the spout back band in between the head plate assembly 2" half bands. Bolt the head plate assembly half bands together with four (4) 5/16" x 1-1/2" bolts and hex nuts.

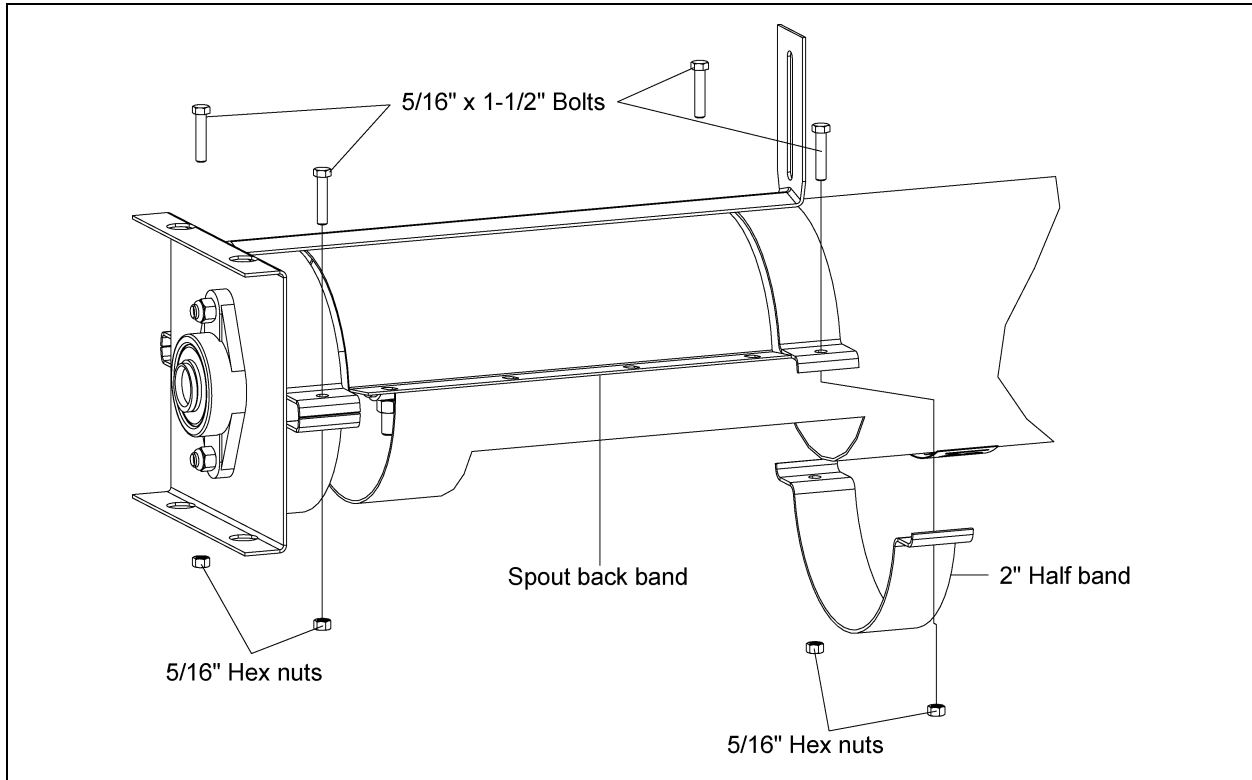


Figure 4C

- With the head plate assembly secured to the vertical tube, place the lock collar onto the drive shaft. Push the lock collar to the bearing and make them interlock. Using a hammer and center punch, drive the lock collar clockwise onto the drive shaft.

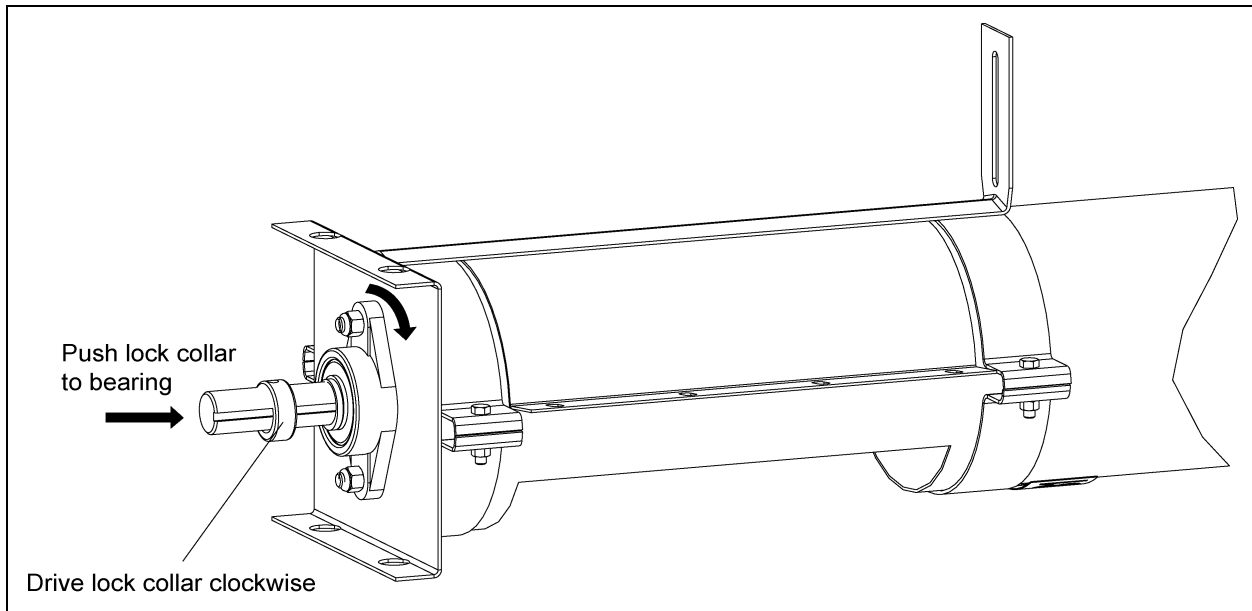
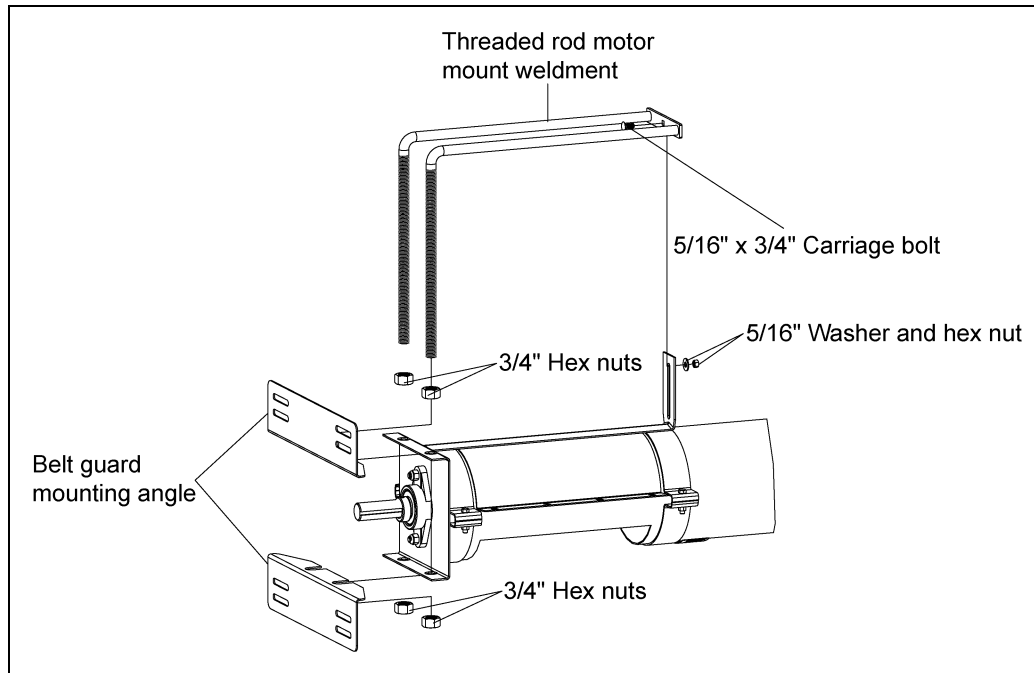


Figure 4D

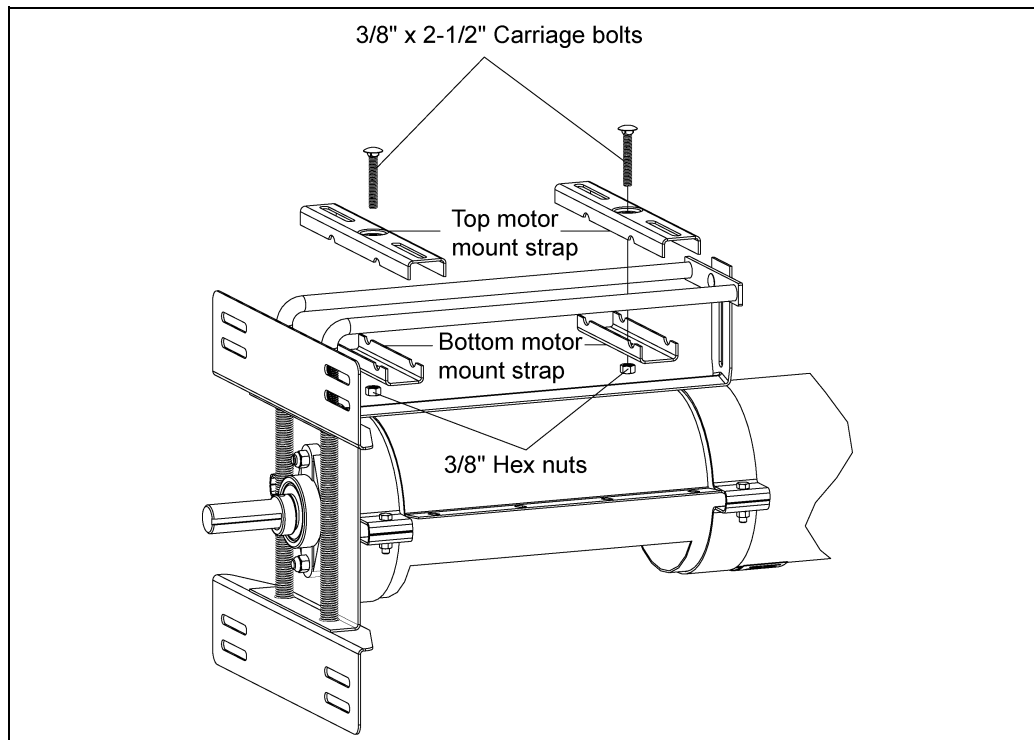
## 4. Installation

5. Place the belt guard mounting angles onto the head plate, with the tops of the brackets facing away from the drive shaft. Place the threaded rod motor mount weldment through the head plate, and sandwich it to the belt guard mounting angles using four (4) 3/4" hex nuts. Attach the back of the threaded rod motor mount weldment to the head plate assembly using one (1) 5/16" x 3/4" carriage bolt, washer, and hex nut.



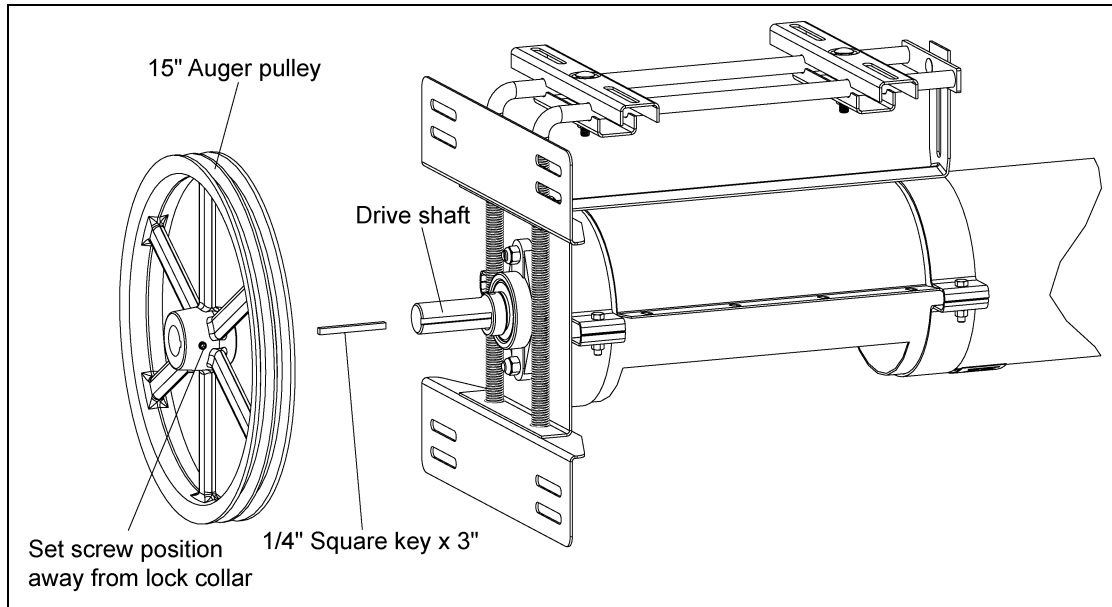
**Figure 4E**

6. Place the two (2) top motor mount straps onto the threaded rod motor mount weldment. Join them to the two (2) bottom motor mount straps using two (2) 3/8" x 2-1/2" carriage bolts and hex nuts.



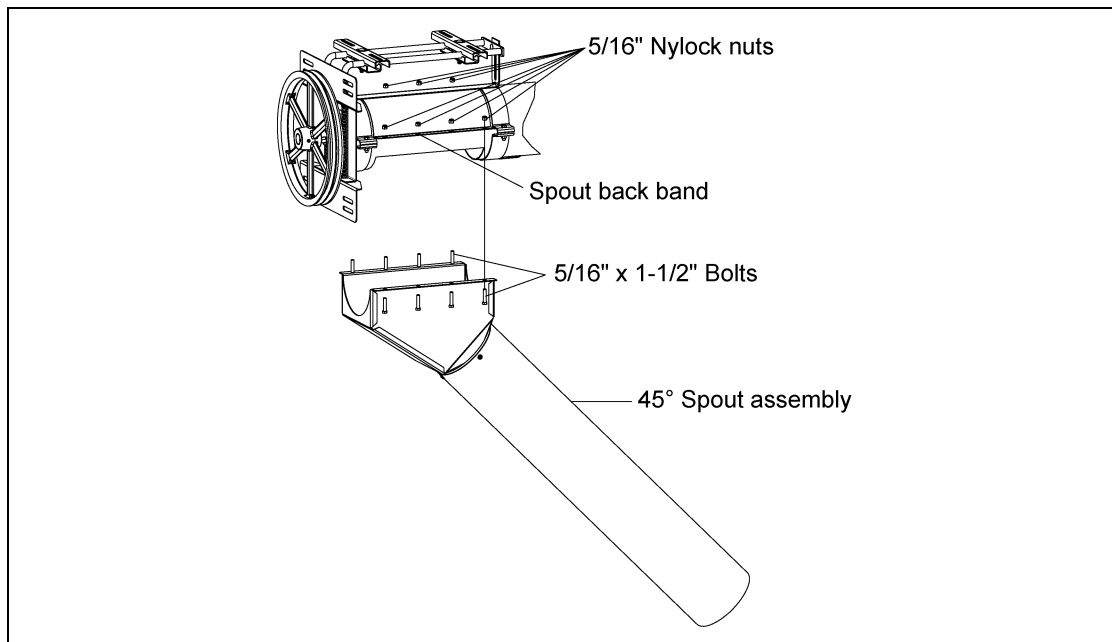
**Figure 4F**

7. Place and position the 1/4" square x 3" key into the keyway located on the drive shaft.
8. Place the 15" auger pulley onto the drive shaft with the set screw side of the auger pulley facing away from the head plate. Position the auger pulley so that it is as close to the lock collar as possible, but not touching it.
9. Once the pulley is appropriately positioned, tighten the set screw with a hex head wrench to secure it to the drive shaft.



**Figure 4G**

10. After the drive unit is raised, attached to the bin, and has the horizontal drive completely assembled, the remaining vertical drive assembly can be completed.
11. At this time, assemble the 45° spout assembly to the spout back band, with eight (8) 5/16" x 1-1/2" bolts and nylock nuts.



**Figure 4H**

## 4. Installation

12. Begin assembly of the mounting legs. Join the two (2) 4" half bands together with the adjustable mounting ears using two (2) 5/16" U-bolts and hex nuts.

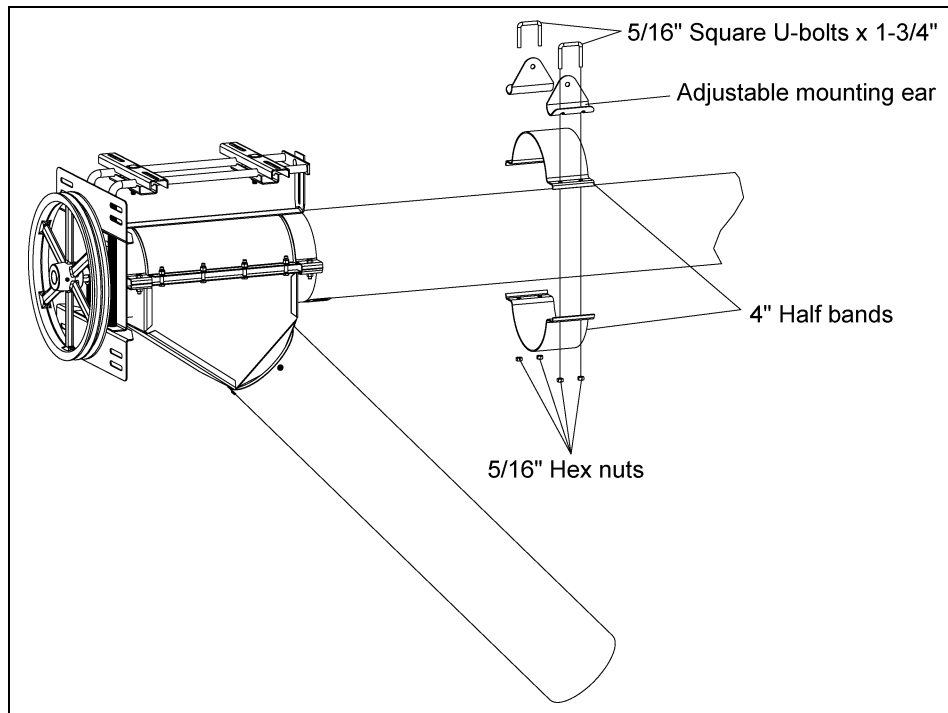


Figure 4I

13. Attach the two (2) telescoping outer legs to the adjustable mounting ears with two (2) 3/8" x 3/4" hex bolts and nylock nuts.

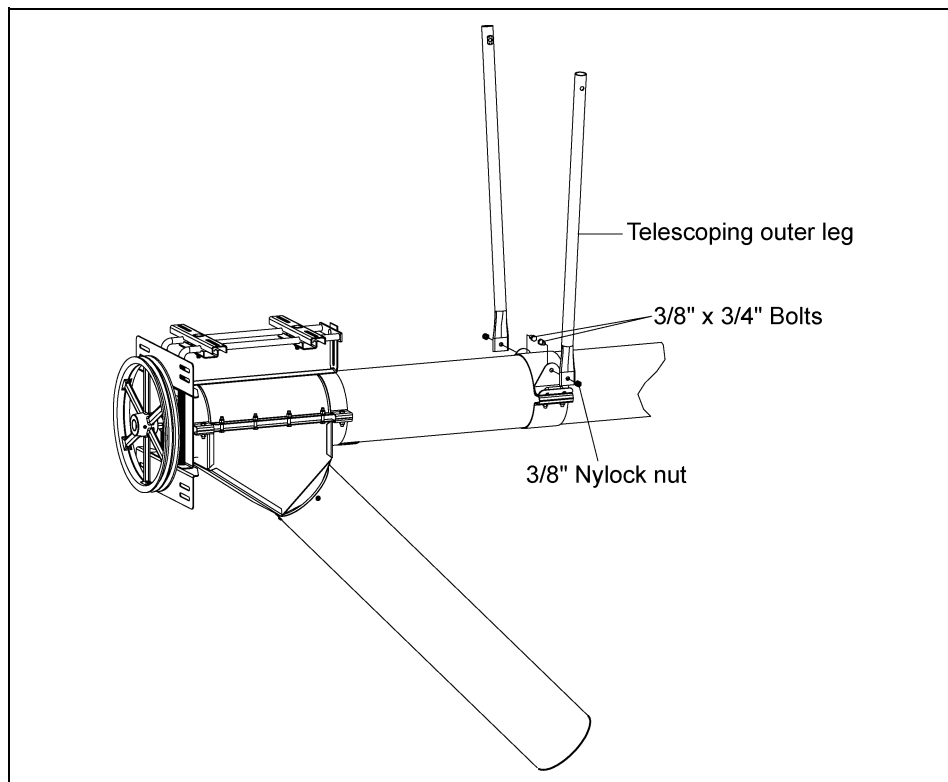
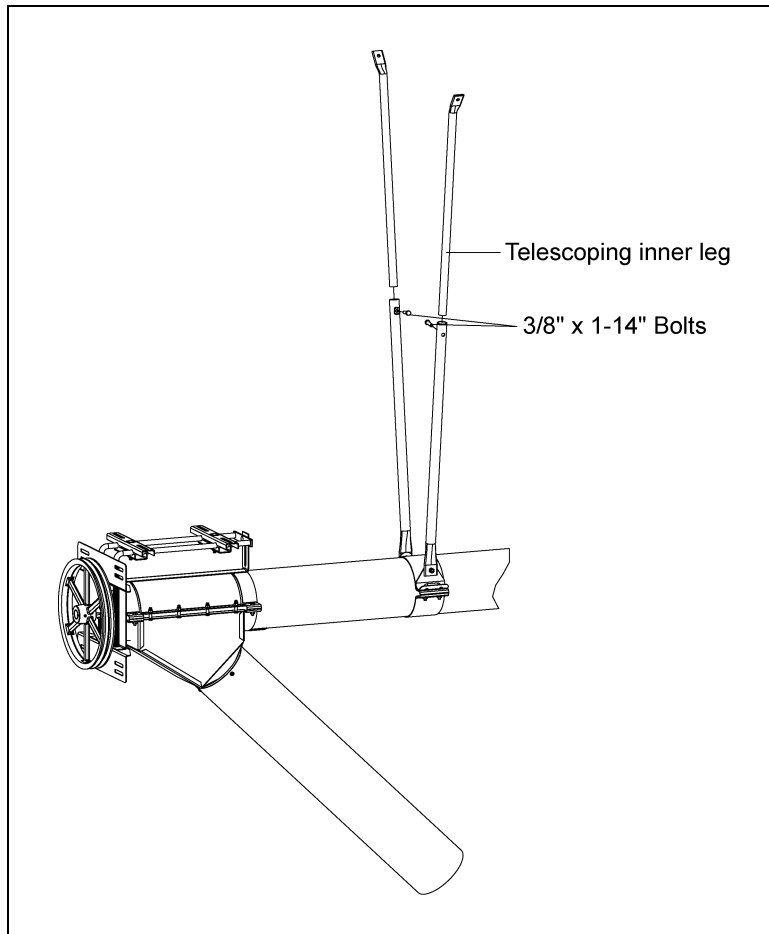


Figure 4J



- Slide the two (2) telescoping inner legs into the telescoping outer legs and install the two (2)  $\frac{3}{8}$ " x 1- $\frac{1}{4}$ " bolts. As the drive unit is attached to the bin, the final position of the legs will be set. All connections should be loose at this time.

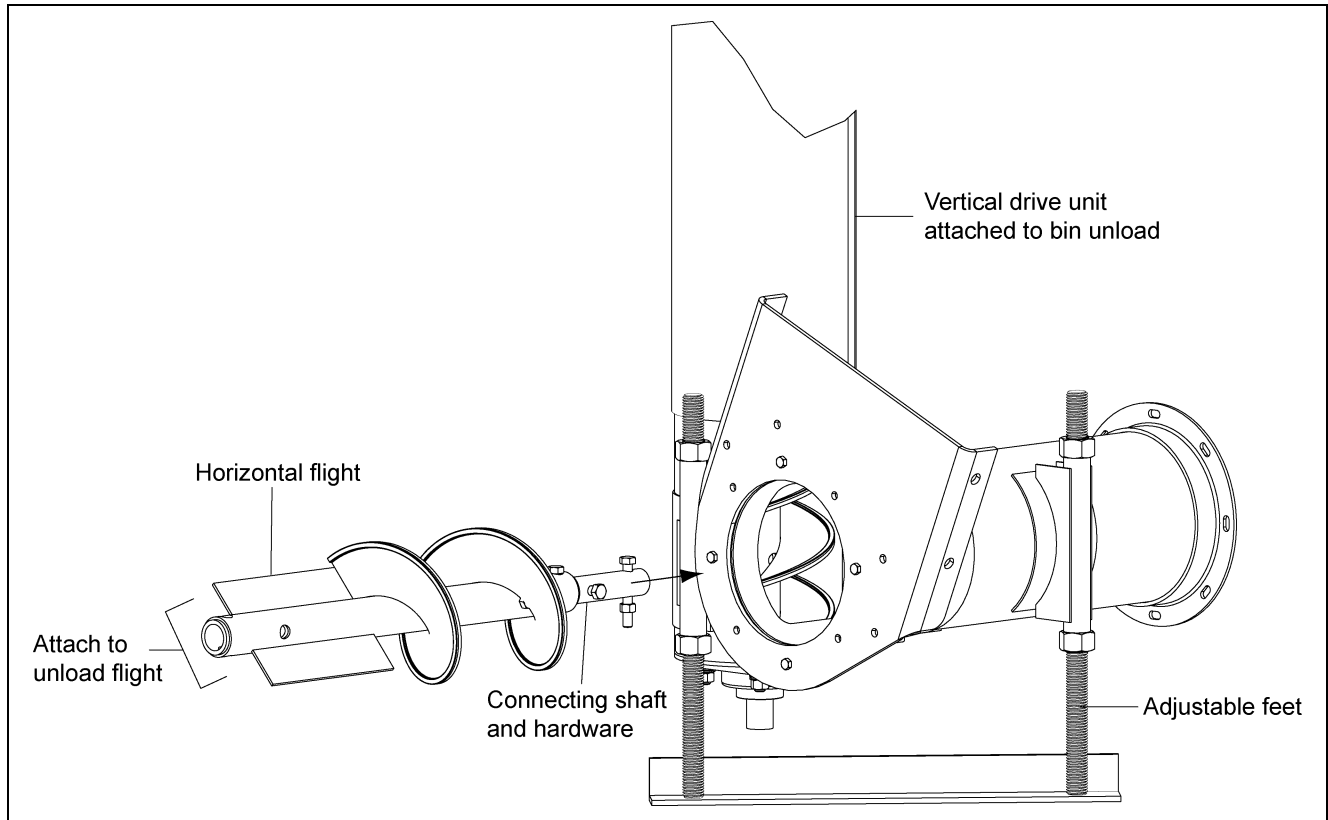


**Figure 4K**

- If the application requires an adapter plate, secure it to the bin unload tube before attaching the drive unit. Make sure that the adapter plate has a bolt located at 12 O'clock, when facing the unload tube.
- Set aside the horizontal drive unit flight assembly. This connection will be made to the unload flight after the drive unit is attached to the bin.
- Raise the drive unit and bolt the angle ring on the drive unit to the angle ring on the unload tube.
- Adjust the feet at the bottom of the drive unit to support the weight, at a minimum of 12" below the center of the unload tube.
- Adjust the 4" half bands for the mounting legs below the discharge spout, so that they are  $\frac{1}{3}$  of the distance between the discharge spout and the top of the bin door.
- Attach the telescoping inner legs to the bin wall. The legs should be no more than  $30^\circ$  from the center plane of the drive unit vertical tube. Therefore, the angle between both telescoping legs should be no more than  $60^\circ$ .
- Adjust and tighten all the hardware for the telescoping legs.
- Slide the bin unload flight out through the drive unit. In some applications the flight may have to be unbolted from the center well.

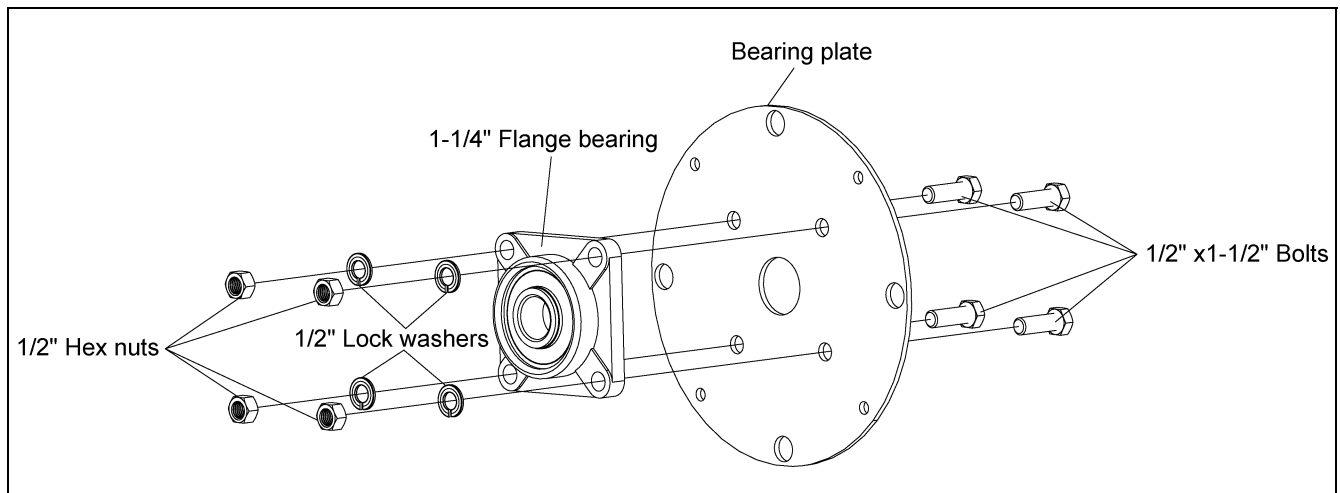
## 4. Installation

23. Attach the horizontal drive unit flight assembly to the unload flight with the supplied 7/16" x 3" grade 8 bolts and stover nuts.



**Figure 4L**

24. Bolt the 1-1/4" flange bearing to the bearing plate using four (4) 1/2" x 1-1/2" bolts, lock washers, and hex nuts.



**Figure 4M**

25. Slide the bearing plate assembly over the drive shaft and line it up with the open holes in the head plate. Bolt the bearing plate assembly to the head plate using four (4) 5/16" x 1" bolts and serrated flange nuts.

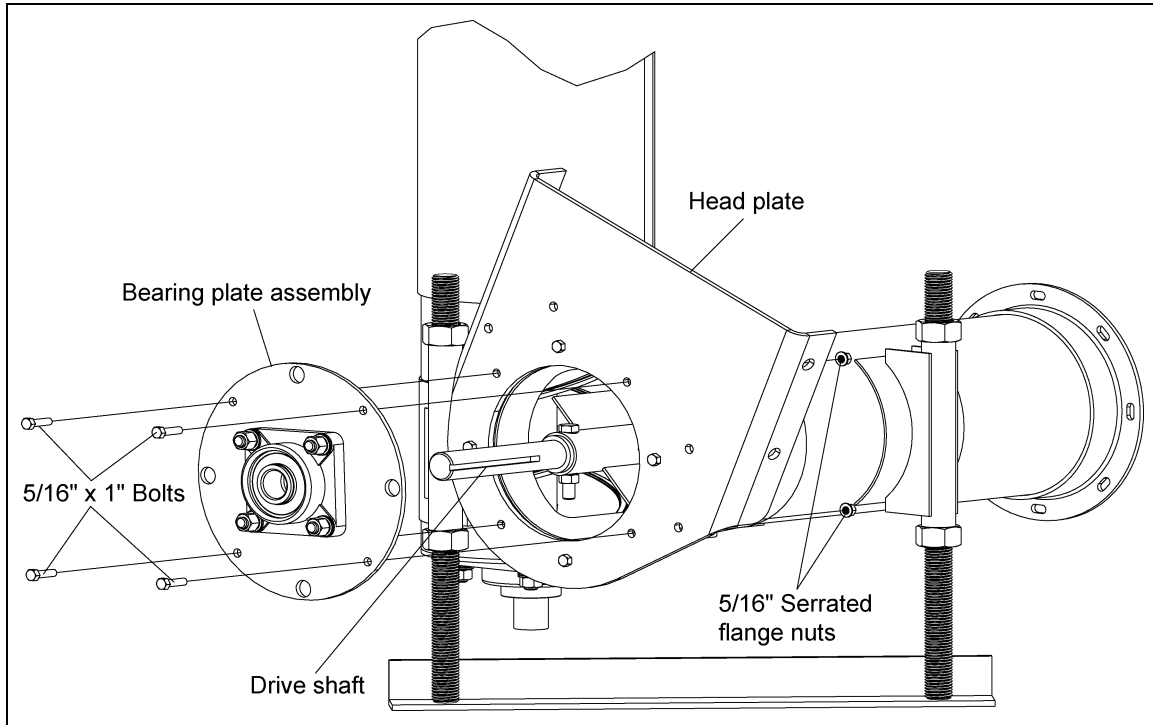


Figure 4N

26. Place the lock collar onto the drive shaft. Push the lock collar to the bearing and make them interlock. Using a hammer and center punch, drive the lock collar clockwise onto the drive shaft.

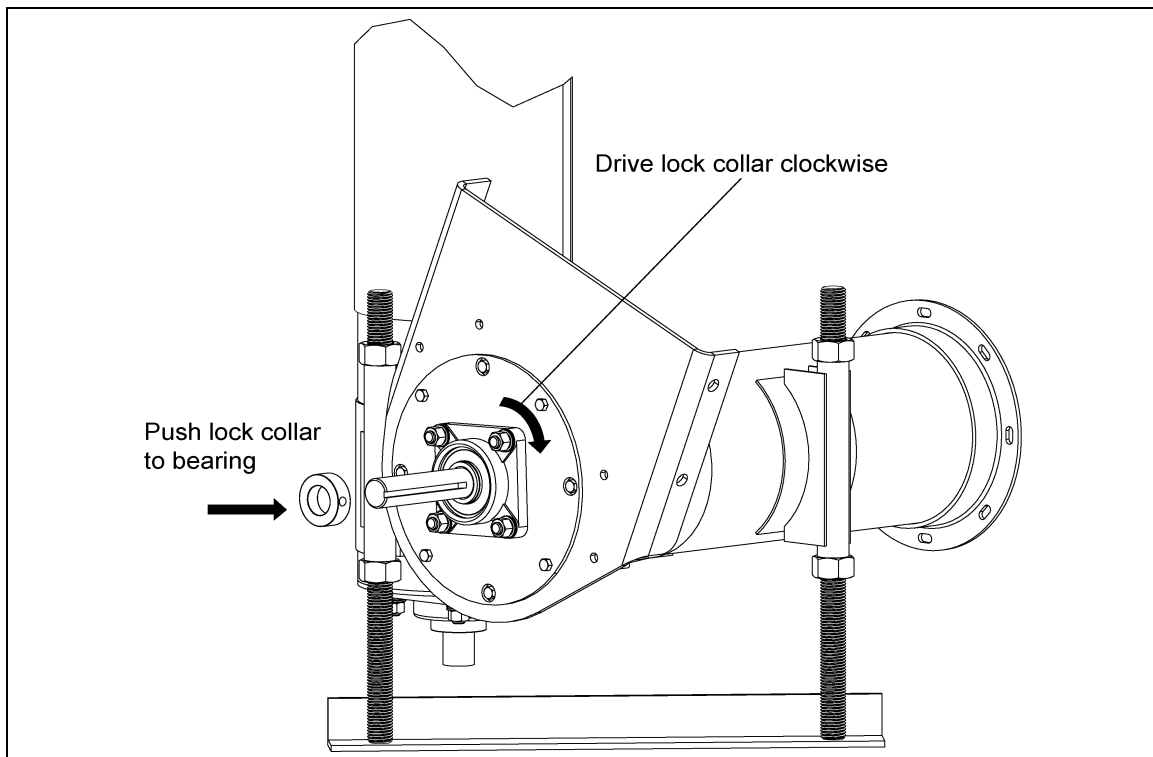
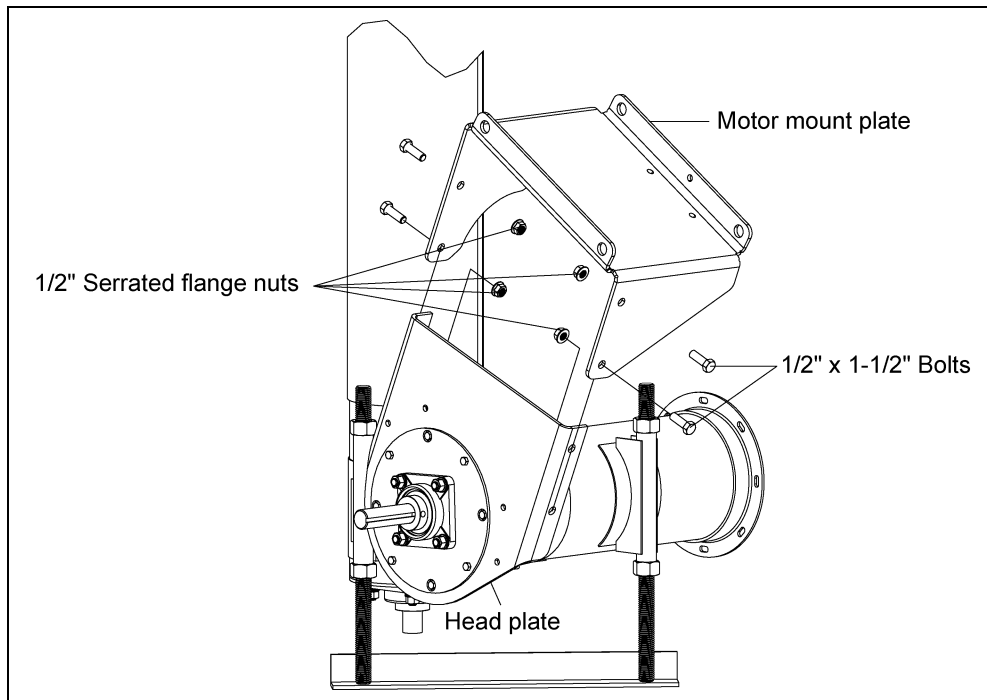


Figure 4O

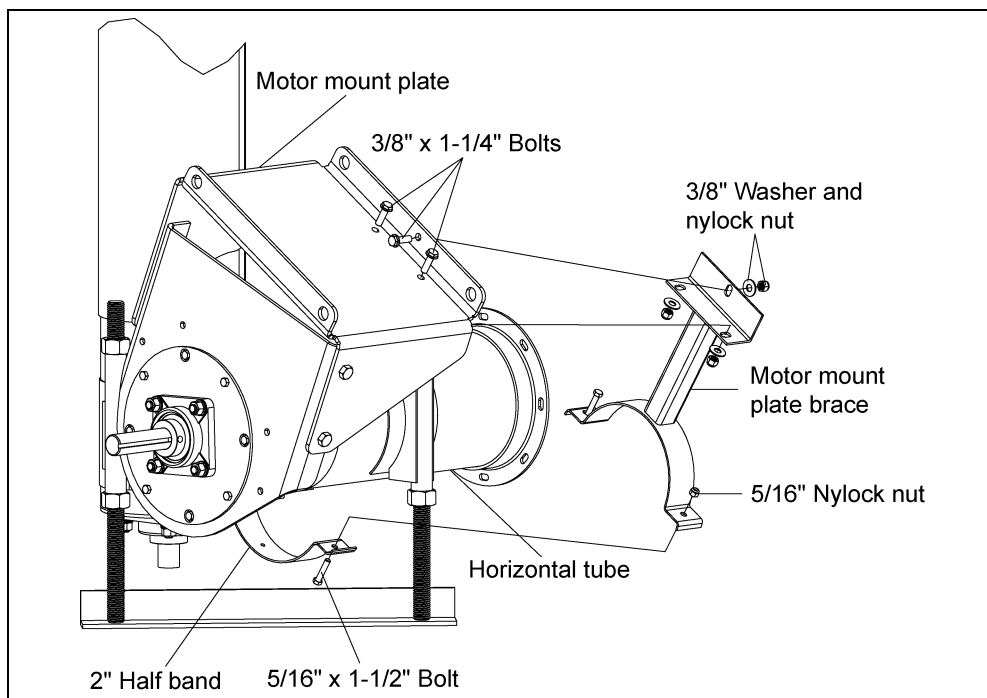
## 4. Installation

27. Bolt the motor mount plate to the head plate using four (4) 1/2" x 1-1/2" bolts and serrated flange nuts.



**Figure 4P**

28. Place the motor mount plate brace onto the horizontal tube, aligning the angle bracket holes to the holes in the motor mount plate. Insert the three (3) 3/8" x 1-1/4" flange bolts through the motor mount plate, and secure with three (3) 3/8" washers and nylock nuts.
29. Clamp the 2" half band to the motor mount plate brace using two (2) 5/16" x 1-1/2" bolts and nylock nuts around the horizontal tube.



**Figure 4Q**

30. Place the motor mount adjuster between the bottom pivot holes on the motor mount plate.
31. Insert the pivot rod through the front bottom pivot hole, the motor mount adjuster, and the back bottom pivot hole. Secure the pivot rod in place with two (2) 3/16" x 2" cotter pins.

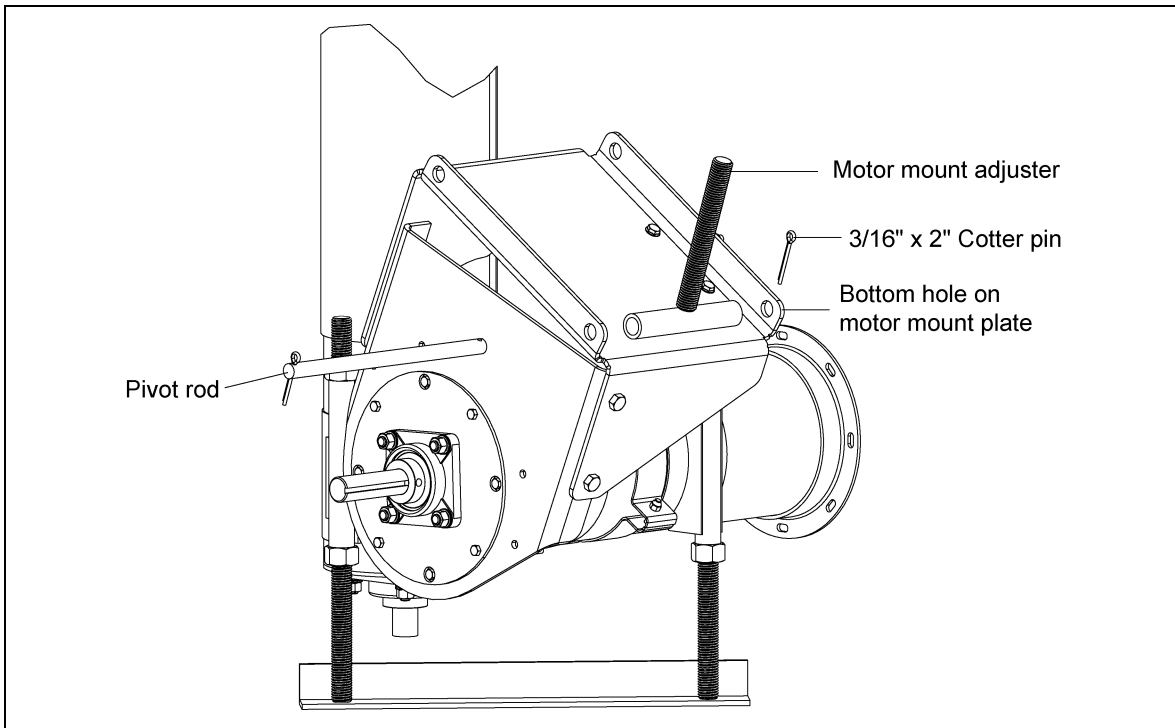


Figure 4R

32. With the cotter pins in the pivot rod, bend one (1) tab of the cotter pin back so that it touches the pivot rod, and bend the other tab of the cotter pin away from the first tab.

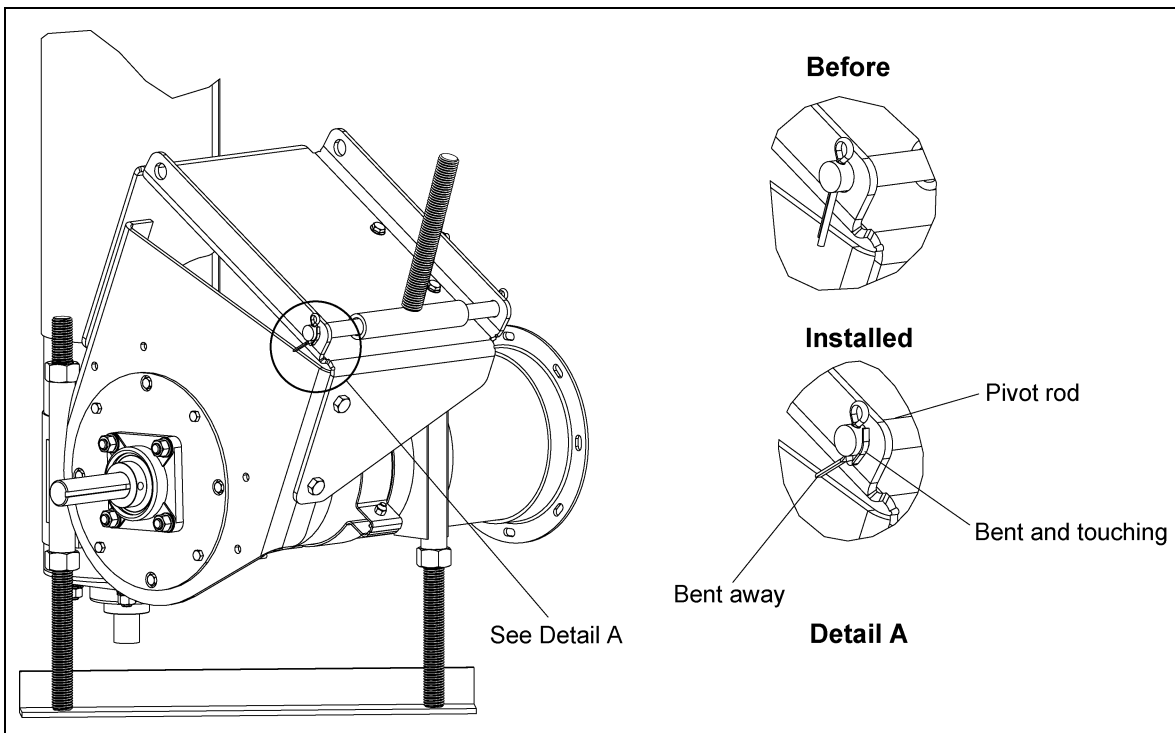


Figure 4S

## 4. Installation

33. Thread one (1) of the motor mount adjustment nuts and one (1) the motor mount adjustment washers approximately 3/4" of the way down the motor mount adjuster threaded rod.
34. Once the nut and washer are in place, slip the motor plate over the adjuster and align its pivot holes with the top pivot holes on the motor mount plate.

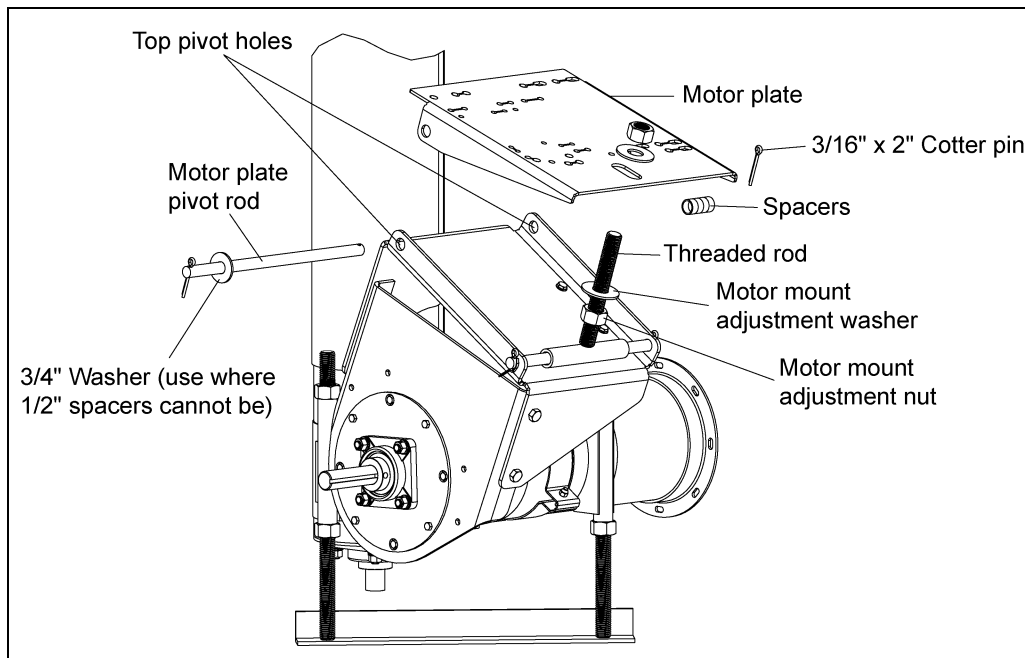


Figure 4T

35. Slide the motor mount pivot rod through the pivot holes on the motor plate and motor mount plate. Insert the 3/4" flat washer between the motor plate and the motor mount plate for the front pivot hole.
36. When the pivot rod begins to extend through the back pivot hole on the motor mount plate, install the spacers BETWEEN it and the inner face of the motor plate.

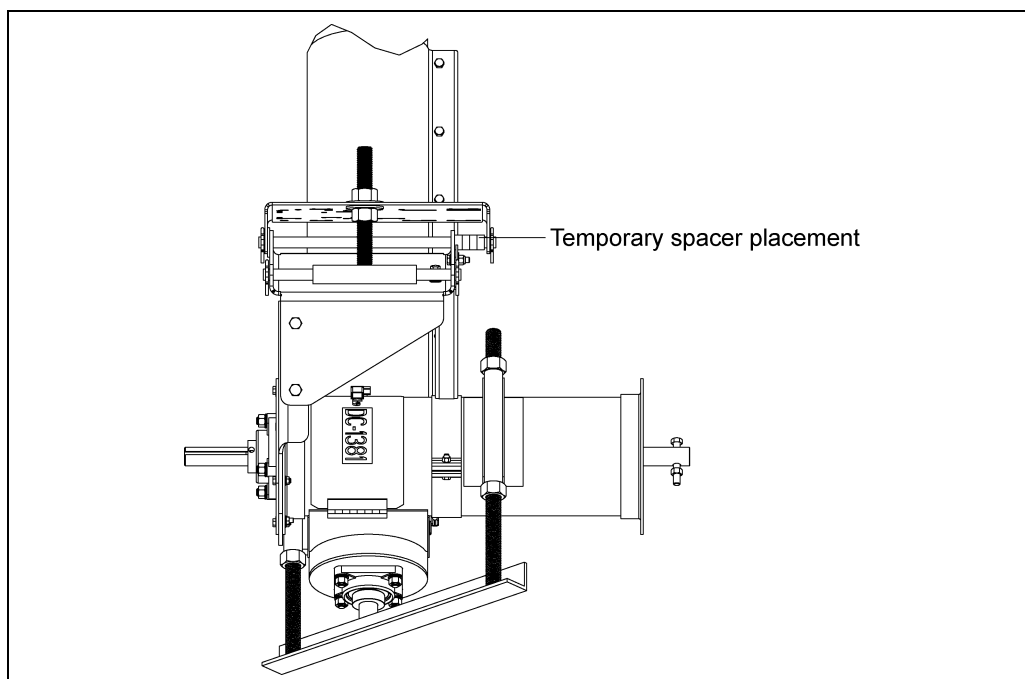
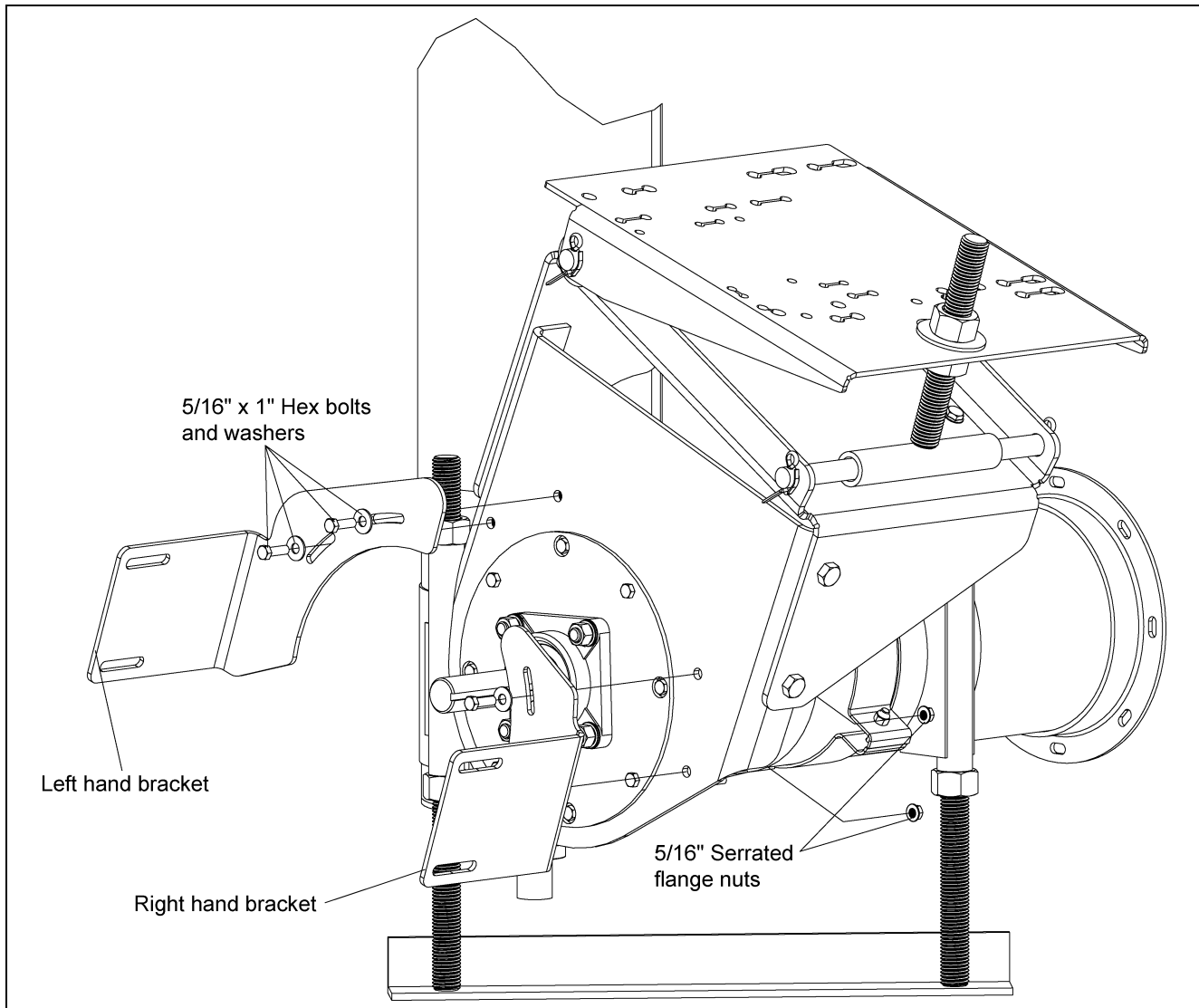


Figure 4U

37. Secure the motor mount pivot rod in place with two (2) 3/16" x 2" cotter pins. With the cotter pins in the pivot rod, bend one (1) tab of the cotter pin back so that it touches the pivot rod, and bend the other tab of the cotter pin away from the first tab.
38. Loosely install the upper motor mount adjustment washer and nut onto the threaded rod, over the motor mount plate.
39. Place the left and right hand belt guard brackets up to the head plate. The left hand bracket is longer than the right hand bracket.

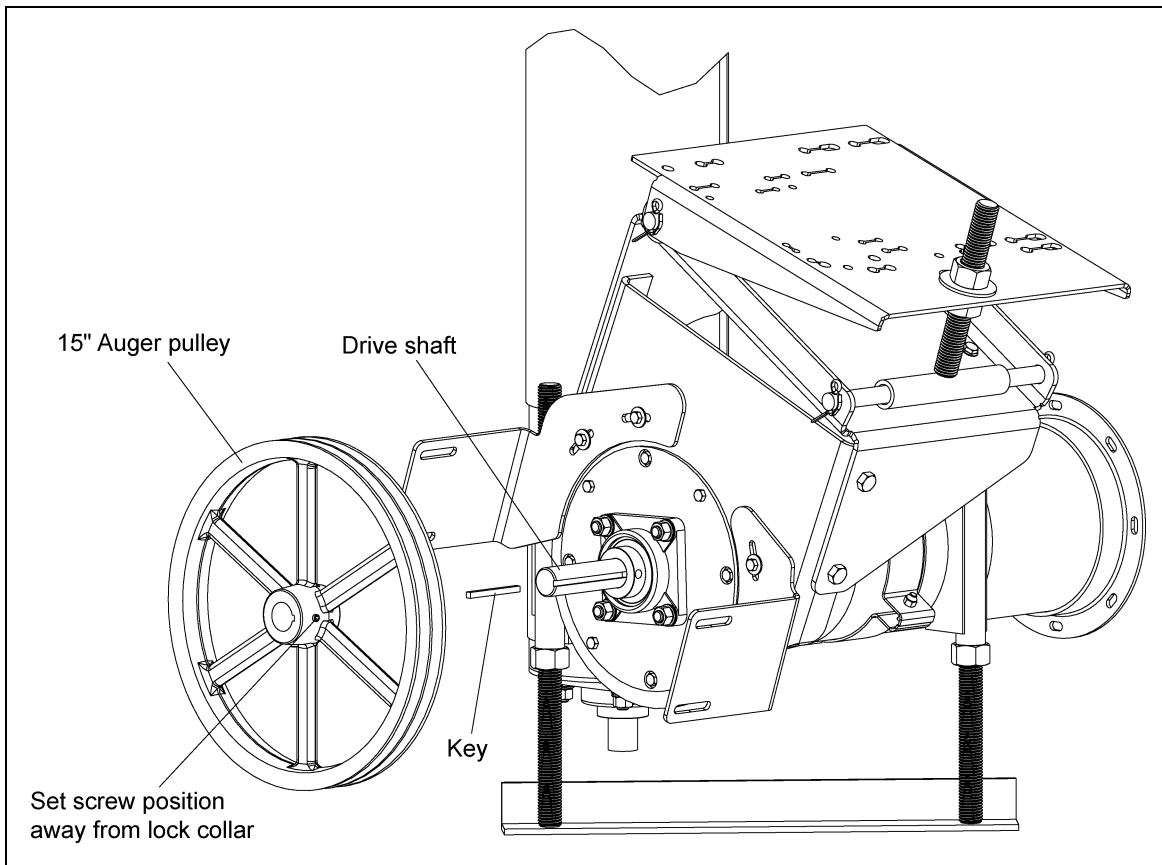


**Figure 4V**

40. Loosely bolt the brackets to the head plate using four (4) 5/16" x 1" bolts, flat washers, and serrated flange nuts.
41. Place and position the 1/4" square x 3" key into the keyway located on the drive shaft.
42. Place the 15" auger pulley onto the drive shaft with the set screw side of the auger pulley facing away from the head plate. Position the auger pulley so that it is as close to the lock collar as possible, but not touching it.

## 4. Installation

43. Once the pulley is appropriately positioned, tighten the set screw with a hex head wrench to secure it to the drive shaft.



**Figure 4W**

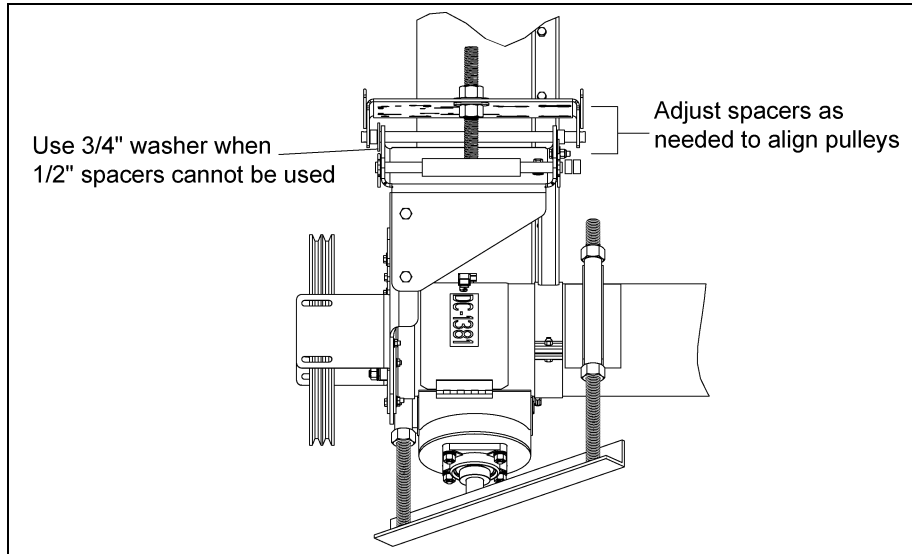
44. Attach the motor to the motor mount plate on the horizontal drive, using appropriate bolts, lock washers, and hex nuts.

### Motor Bolt Selection

| Motor Frame | Hex Bolt Size     | Qty |
|-------------|-------------------|-----|
| 56          |                   |     |
| 143T        | 5/16"-18 x 1-1/4" | 4   |
| 145T        |                   |     |
| 182T        |                   |     |
| 184T        | 3/8"-16 x 1-1/4"  | 4   |
| 213T        |                   |     |
| 215T        |                   |     |
| 254T        | 1/2"-13 x 1-3/4"  | 4   |
| 256T        |                   |     |

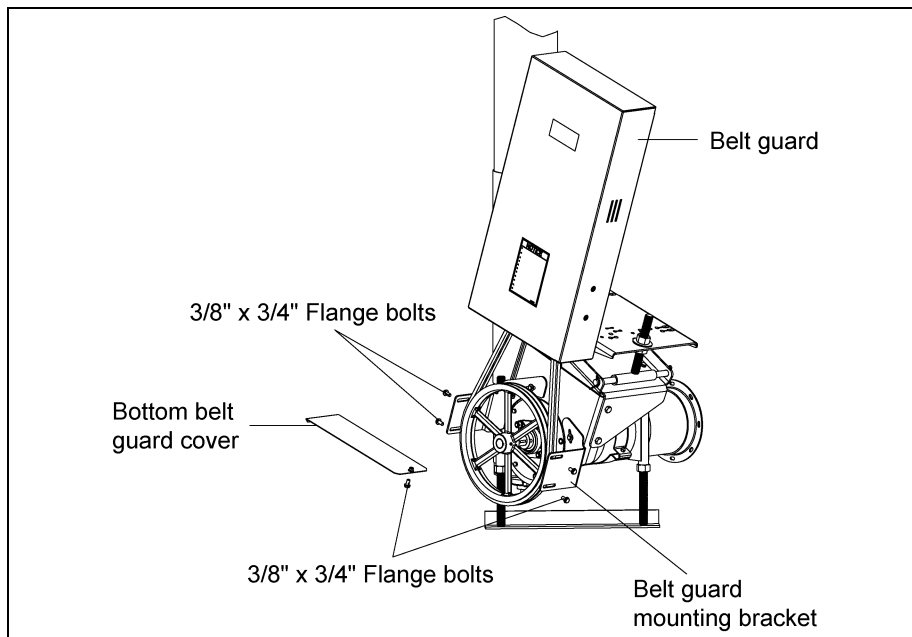


45. Install the drive pulley onto motor shaft making sure that it is aligned with the auger pulley. It may be necessary to move spacers to gain shaft alignment. Use the 3/4" flat washer where the 1/2" spacers cannot be used.



**Figure 4X**

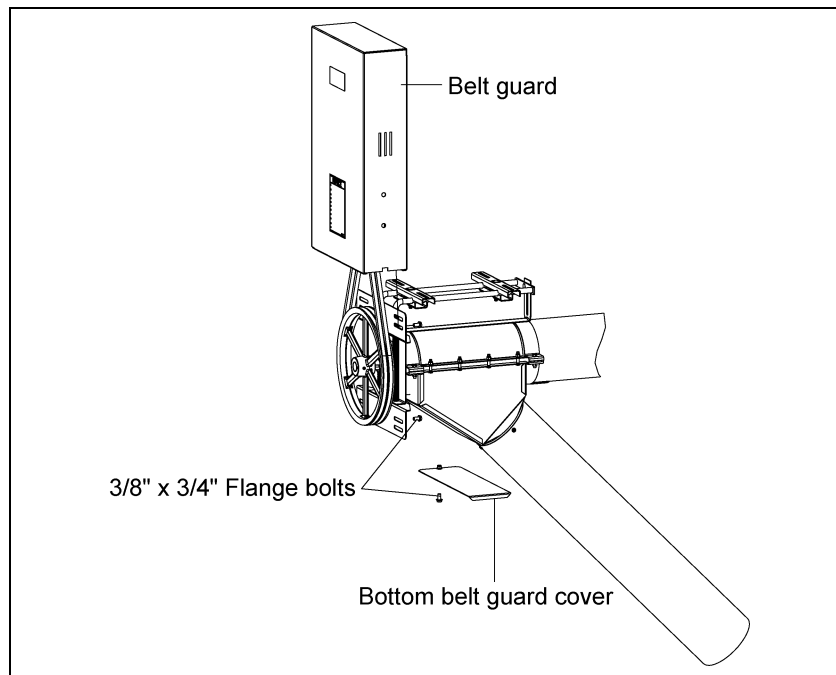
46. Place the belts onto the pulleys.
47. First, screw the lower motor mount adjustment nut upward, raising the motor mount plate and putting tension on the belts.
48. Once the desired tension is reached, tighten the upper motor mount adjustment nut down onto the motor plate locking it into place.
49. With the belts properly tensioned, remove the bottom belt guard cover.
50. Slip the belt guard down over the motor and drive pulleys, enclosing the drive belts.
51. Bolt the belt guard loosely to the belt guard brackets with four (4) 3/8" x 3/4" flange bolts.



**Figure 4Y**

## 4. Installation

52. Center the belt guard slot with the motor shaft and the auger drive shaft. Make sure the belt guard DOES NOT contact the pulleys, belts, or bearing, and tighten the belt guard to the belt guard mounting brackets.
53. Once the belt guard is secured, slide the bottom belt guard cover back into place and secure it with the 3/8" x 3/4" flange bolt previously removed.
54. With the horizontal drive completely assembled, complete the vertical drive installation.
55. Attach the motor to the top motor mount straps, assembled in [Step 6 on Page 14](#), with appropriate bolts, lock washers, and hex nuts.
56. Install the drive pulley onto motor shaft making sure that it is aligned with the auger pulley.
57. Place the belts onto the pulleys.
58. Adjust the position of the threaded rod motor mount weldment to obtain proper belt tension.
59. Once the desired tension is reached, tighten the 3/4" nuts to the head plate locking them into place.
60. Tighten all motor mount component nuts and bolts on the vertical drive.
61. Remove the 3/8" x 3/4" flange bolt from the bottom belt guard cover, holding it in place
62. Remove the bottom belt guard cover.
63. Slip the belt guard down over the motor and drive pulleys, enclosing the drive belts.
64. Bolt the belt guard loosely to the belt guard mounting brackets with the supplied four (4) 3/8" x 3/4" flange bolts.
65. Center the belt guard slot with the motor shaft and the auger drive shaft. Make sure the belt guard DOES NOT contact the pulleys, belts, or bearing, and tighten the belt guard to the belt guard mounting brackets.



**Figure 4Z**

66. Once the belt guard is secured, slide the bottom belt guard cover back into place and secure it with the 3/8" x 3/4" flange bolt previously removed.



**A qualified electrician should install electrical controls and wiring. The motor disconnect switches and conductor cables should comply with the National Electrical Code and any local codes which apply. Reset and motor starting stations should be located so that the operator can see that all personnel are clear of the equipment.**

1. Knowing the bin size and the length of horizontal flight being used will be necessary to determine how many horsepower is required for the job.
2. Use the following tables to determine the size of motor required. Use a larger motor when encountering high moisture or when high capacity is required. *(See Tables 8" Flights and Motors below and Belt Selection on Page 28.)*
3. The following horsepower recommendations are for moving fairly dry grain. Use an electric motor of the proper size that operates at 1750 RPM. Motor pulleys are not furnished with the auger. *(See Tables 8" Flights and Motors below and Belt Selection on Page 28.)*

**8" Flights and Motors**

| Product # | Part # | Description                            | Bin Diameter | Unloader HP |          |              |          |
|-----------|--------|--|--------------|-------------|----------|--------------|----------|
|           |        |  |              | Horizontal  | Vertical |              |          |
| GFC82400  | GK1799 | 14'-6" x 7" O.D. Flight                | 24'          | <b>3</b>    |          |              |          |
| GFC82700  | GK1800 | 16'-0" x 7" O.D. Flight                | 27'          |             |          |              |          |
| GFC83000  | GK1801 | 17'-6" x 7" O.D. Flight                | 30'          |             |          |              |          |
| GFC83300  | GK1802 | 19'-6" x 7" O.D. Flight                | 33'-34'      |             |          |              |          |
| GFC83600  | GK1803 | 20'-6" x 7" O.D. Flight                | 36'          |             |          |              |          |
| GFC83800  | GK1804 | 22'-6" x 7" O.D. Flight                | 37'-39'      |             |          |              |          |
| GFC84000  | GK1805 | 23'-0" x 7" O.D. Flight                | 40'          |             |          |              |          |
| GFC84200  | GK1806 | 24'-0" x 7" O.D. Flight                | 42'          |             |          |              |          |
| GFC84800  | GK1807 | 7'-0" x 7" O.D. Flight (Intake)        | 48'-49'      | <b>5</b>    |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC85400  | GK5878 | 10'-0" x 7" O.D. Flight (Intake)       | 54'-55'      |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC86000  | GK1810 | 13'-0" x 7" O.D. Flight (Intake)       | 60'          |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC86300  | GK5880 | 14'-6" x 7" O.D. Flight (Intake)       | 63'          |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC86800  | GK5881 | 17'-6" x 7" O.D. Flight (Intake)       | 68'-69'      |             |          | <b>7-1/2</b> | <b>5</b> |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC87200  | GK5882 | 19'-0" x 7" O.D. Flight (Intake)       | 72'          |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC87500  | GK5883 | 20'-6" x 7" O.D. Flight (Intake)       | 75'          |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC87800  | GK5884 | 22'-6" x 7" O.D. Flight (Intake)       | 78'          |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC88000  | GK5885 | 4'-6" x 7" O.D. Flight (Intake)        | 80'          |             |          |              |          |
|           | GK1130 | 20'-0" x 7" O.D. Flight (Intermediate) |              |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC88200  | GK5886 | 5'-6" x 7" O.D. Flight (Intake)        | 82'          | <b>10</b>   |          |              |          |
|           | GK1130 | 20'-0" x 7" O.D. Flight (Intermediate) |              |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC89000  | GK5887 | 9'-6" x 7" O.D. Flight (Intake)        | 90'          |             |          |              |          |
|           | GK1130 | 20'-0" x 7" O.D. Flight (Intermediate) |              |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |
| GFC89200  | GK5888 | 10'-6" x 7" O.D. Flight (Intake)       | 92'          |             |          |              |          |
|           | GK1130 | 20'-0" x 7" O.D. Flight (Intermediate) |              |             |          |              |          |
|           | GK1808 | 20'-0" x 7" O.D. Flight (Discharge)    |              |             |          |              |          |

## 5. Electric Drive Motor Selection

### Belt Selection

| Horizontal Drive |          |                   |               |     |                  |               |           |               |           |
|------------------|----------|-------------------|---------------|-----|------------------|---------------|-----------|---------------|-----------|
| Auger            | Part #   | Motor Sheave Size | Flight Sheave |     | NEMA Motor Frame | Motor HP      | Belt Size | Belt Quantity | Belt Type |
|                  |          |                   | Size          | RPM |                  |               |           |               |           |
| 8"               | MHC00487 | 3-1/2"            | 15"           | 409 | 182T and 184T    | 3-5 HP        | 71        | 2             | BX        |
|                  |          |                   |               |     | 213T and 215T    | 7-1/2 - 10 HP |           | 3             |           |

| Vertical Drive |        |                   |               |     |                  |          |           |               |           |
|----------------|--------|-------------------|---------------|-----|------------------|----------|-----------|---------------|-----------|
| Auger          | Part # | Motor Sheave Size | Flight Sheave |     | NEMA Motor Frame | Motor HP | Belt Size | Belt Quantity | Belt Type |
|                |        |                   | Size          | RPM |                  |          |           |               |           |
| 8"             | GK1346 | 5"                | 15"           | 584 | 184T             | 5 HP     | 57        | 2             | B         |



**WARNING**

***1750 RPM electric motors and controls shall be installed by a qualified electrician, and must meet the standards set by the National Electrical Code and all local and state codes. Reset and motor starting controls shall be located where the operator has unrestricted access to the controls.***

4. A magnetic starter should be used for the operator's protection and for the protection of the motor. This is to protect the operator against accidental restart caused by power interruption, conductor fault, low voltage, circuit interruption or motor overload. Therefore, the motor must be restarted manually. If using a motor with built-in thermal overload protection, make sure this type of motor has a manual reset.



**WARNING**

***Disconnect and lock out power before resetting motor overloads. Make certain electric motors are grounded.***

## Perform Pre-Start Checks



**Failure to perform any or all of these pre-start checks may cause damage to the equipment and/or cause *SERIOUS INJURY* or *DEATH* to those in the work area.**

**Failure to perform any or all of these pre-start checks may also be a misuse of the equipment. Any misuse of the equipment may void the warranty.**

1. Make sure ALL belts are tensioned properly.
2. Make sure ALL shields are in place and that the belt(s) and pulley(s) are able to move freely.
3. Inspect the drive unit for any problems or potential problems.
4. Be aware of any emergency shut down procedures. Two (2) people must always be in a position where the operation of the equipment can be monitored.
5. Before starting the auger for the first time, make sure that all parts are assembled correctly according to the instructions in this manual.
6. The bin well inside the bin should have a control gate. The gate should be closed before start-up.



**ALWAYS keep ALL guards and shields in place, until all the power is disconnected and locked out.**



**Make certain *ONLY* trained operators are in the work area before operating or moving the machine. Two (2) people must always be in a position where the operation of the equipment can be monitored.**

## Start the Auger

1. Start the auger.



**DO NOT start or stop the auger while it is under load. Doing so may cause the auger to “jam”.**

2. Run the auger through a “break-in” period, if it is being used for the first time or for the first time of the season. This “break-in” consists of running the auger at half capacity until the screw becomes polished and smooth before attempting to run at full capacity.
3. The bin well inside the bin should have a control gate. The gate should be closed before start-up and closed before shut down to allow the machine to clean out.
4. The controls for the control gate should either pull or push open, depending on the type of well in use. Use the control gate to regulate a flow of less than full capacity until several hundred bushels of grain have been run to polish the flight assembly and tube.



**Failures may occur if the auger is run full before it has been “polished” during the “break-in” period.**

## 6. Start-Up



***NEVER operate the auger empty. Operating augers empty for any length of time will cause excessive wear.***

***NEVER operate the auger at speeds higher than recommended. Auger flights running in excess of recommended speeds will cause excessive wear.***

5. Do not stop or start augers under load, especially before the flight and tube become well polished, as this may cause the auger to “lock up”. Make sure to use the control gate as a flow control so the vertical auger cannot become plugged.



***Be aware of any unusual vibration or noises during the initial start-up and “break-in” period. If anything unusual is detected, immediately shut down the auger, and disconnect and lock out the power supply before servicing.***



***Excessive wear will result if auger is run at speeds in excess of what is recommended.***

## Operate the Auger

**NOTE:** *The auger capacity can fluctuate greatly under varying conditions. Moisture content, different commodities, amount of foreign matter and speeds all play a part in the performance of the auger. Twenty-five percent (25%) moisture may cut capacity by as much as 40% under some conditions.*

1. Make certain there are at least two (2) people in the work area to monitor operations at all times.
2. Visually inspect the auger periodically during operation



***Be alert for any unusual vibrations, noises and the loosening of any fasteners. If anything unusual is detected, immediately shut down the auger, disconnect and lock out the power source before servicing.***

3. When augers are stopped and restarted under full load, it may result in damage to the auger. Using a larger diameter auger and reducing its load level will be far better than subjecting a smaller diameter auger to big loads. If an auger is kept from absolute filling, it will make start-up easier and will convey more efficiently.

## Maintain the Auger



***ALWAYS shut down, lock out, and disconnect the power supply before adjusting, servicing or cleaning the equipment.***

1. Use caution when repairing or replacing equipment parts.
2. Make sure ALL decals are legible and tightly attached to the auger. If necessary, replace them **FREE OF CHARGE** by contacting your dealer or the manufacturer.
3. Ensure that ALL electric motors, etc., are operating at the proper speed.
4. Maintain proper adjustments on the belt(s).
5. Mount controls for any electric motors at a safe distance from the machine and in a location accessible in case of an emergency.
6. Make sure ALL electrical wiring is not damaged, and that it meets proper wiring codes.
7. Make sure ALL components are in good working condition before use.
8. Check the auger flight to make sure it is in good working condition.
9. Grease the bearings at least two (2) times each season.

## 8. Shut Down

### Normal Shut Down

1. Before shutting down the unit, make certain that bin well and unloading tubes are empty.
2. Disconnect and lock out the power source before leaving the work area.

### Emergency Shut Down

1. Know how to shut down the auger in case of an emergency.
2. Disconnect and lock out the power source.
3. Do not restart the auger under load.
4. Close the bin well control gates.
5. Clear out as much grain from the auger and hopper as possible.
6. Unlock and reconnect the power source.
7. Gradually clear the auger until there is no grain or obstruction.



***Never restart when under a full load. Starting unit under load may result in damage to the machine. Such damage is considered abuse of the equipment.***

### Lock Out

1. Always stop and disconnect the power source whenever the operator must leave the work area or for maintenance of the machinery.
2. Make sure no one can operate the unload auger while the operator is not in the work area.



***Use the type of main power disconnect switch that is capable of being locked only in the OFF position.***

### Storage Preparation

1. Close all wells to discharge auger.
2. Be sure the unload tube is empty.
3. Shut down the auger.
4. Make sure power source is locked out and disconnected.
5. Make sure all fasteners are tight.

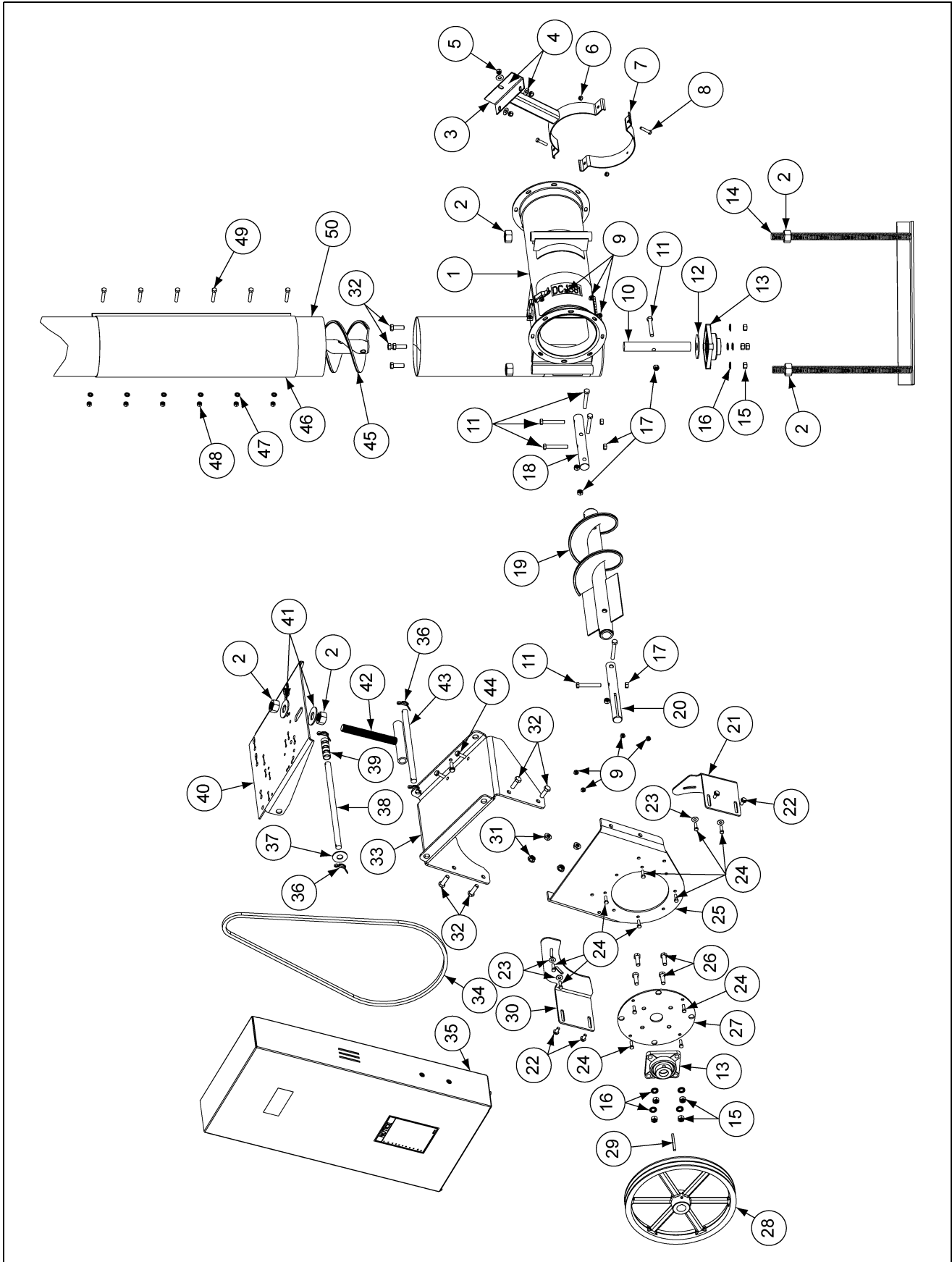


**1. Horizontal Drive Parts**

**2. Vertical Drive Parts**

**3. Spout and Legs**

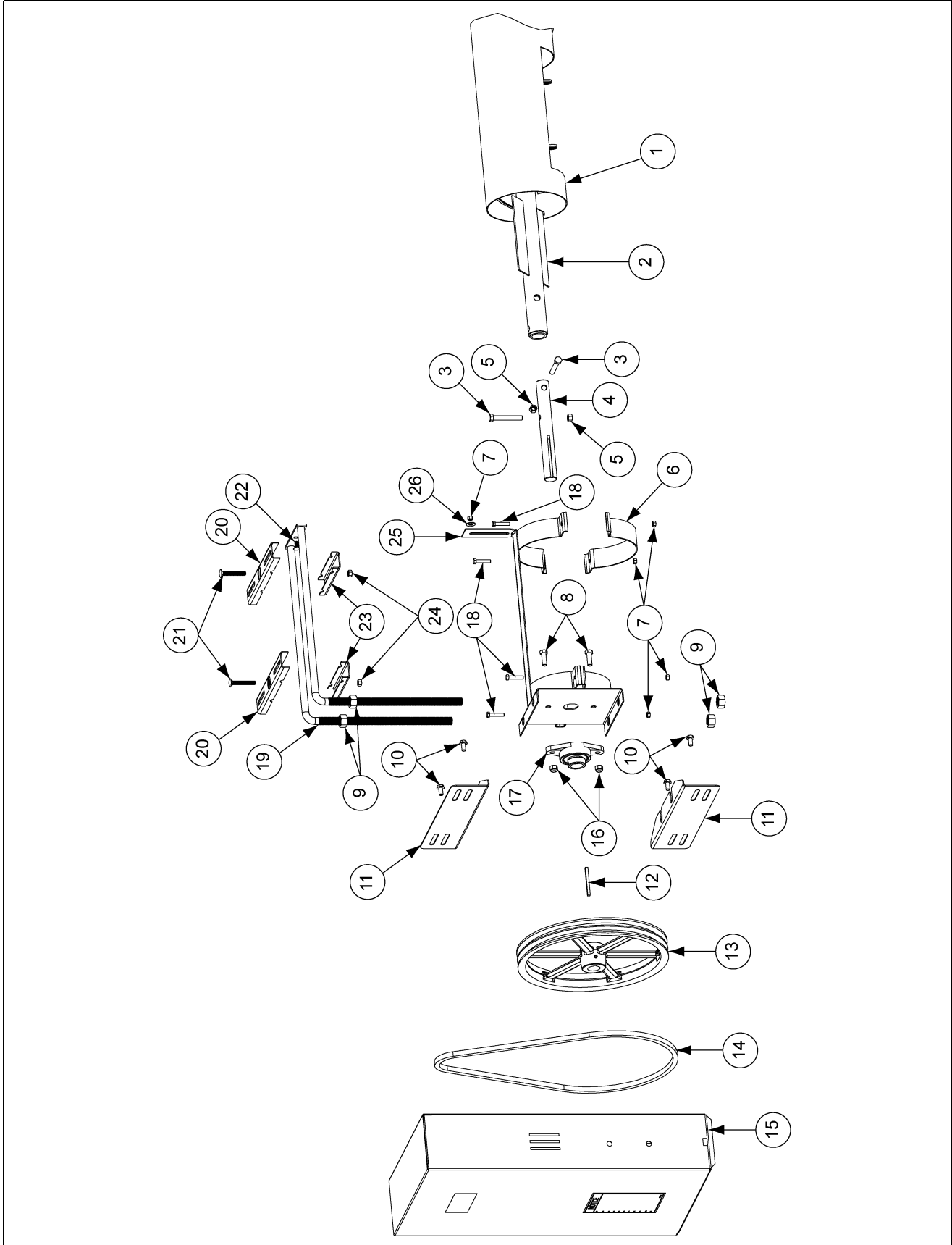
# Horizontal Drive Parts



## Horizontal Drive Parts

| Ref # | Part #   | Description                                    |
|-------|----------|--|
| 1     | GK3090   | 8" Vertical Cross Assembly                     |
| 2     | S-240    | 1"-8 Hex Nut Zinc Grade 5                      |
| 3     | GK7882   | Motor Mount Brace                              |
| 4     | S-248    | 3/8" Flat Washer YDP                           |
| 5     | S-7383   | 3/8"-16 Nylock Nut Zinc Grade 5                |
| 6     | S-7382   | 5/16"-18 Nylock Nut Zinc Grade 5               |
| 7     | GK1055   | 8" x 2" Half Band - 12 Gauge                   |
| 8     | S-2741   | 5/16"-18 x 1-1/2" HHCS Zinc Grade 5            |
| 9     | S-3611   | 5/16"-18 Serrated Flange Nut YDP Grade 2       |
| 10    | GK1884   | Intake Stub Shaft 1-1/4" O.D. x 9"             |
| 11    | S-8316   | 7/16"-14 x 3" HHCS Zinc YDP Grade 8            |
| 12    | GK1113   | 3-14" O.D. Rubber Gasket                       |
| 13    | GK1017   | 1-1/4" Flange Bearing with Lock Collar, 4 Hole |
| 14    | GK3088   | Vertical Support Stand                         |
| 15    | S-7510   | 1/2"-13 Hex Nut Zinc Grade 2                   |
| 16    | S-236    | 1/2" Lock Washer Zinc                          |
| 17    | S-8317   | 7/16"-14 Stover Nut Zinc Grade C               |
| 18    | GK1328   | Connecting Shaft 1-1/4" O.D. x 9-1/2"          |
| 19    | GK3087   | Horizontal Flight                              |
| 20    | GK1331   | Drive Shaft 1-1/4" O.D. x 10-1/2"              |
| 21    | GK7767   | Right Belt Guard Bracket                       |
| 22    | S-9067   | 3/8"-16 x 3/4" Flange Bolt Zinc Grade 5        |
| 23    | S-845    | 5/16" Flat Washer YDP Grade 2                  |
| 24    | S-1196   | 5/16"-18 x 1" HHCS Zinc Grade 5                |
| 25    | GK7769   | Head Plate                                     |
| 26    | S-7528   | 1/2"-13 x 1-1/2" HHCS Zinc Grade 2             |
| 27    | GK7768   | Bearing Plate                                  |
| 28    | GK1869   | 15" O.D. 1-1/4" I.D. 2 Groove Sheave           |
| 28    | GK2234   | 15" O.D. 1-1/4" I.D. 3 Groove Sheave           |
| 29    | S-8276   | 1/4" x 3" Square Key                           |
| 30    | GK7770   | Left Belt Guard Bracket                        |
| 31    | S-8506   | 1/2"-13 Serrated Flange Nut Zinc               |
| 32    | S-8760   | 1/2"-13 x 1-1/2" HHCS Zinc Grade 5             |
| 33    | GK7771   | Motor Mount Plate                              |
| 34    | MHC00487 | V-Belt, BX71                                   |
| 35    | GK7773   | Horizontal Drive Belt Guard                    |
| 36    | S-6994   | 3/16" x 2" Cotter Pin Zinc Grade 2             |
| 37    | S-866    | 3/4" Flat Washer Zinc Grade 2                  |
| 38    | GK7013   | Motor Plate Pivot Rod                          |
| 39    | GK7014   | Pivot Spacer Tube                              |
| 40    | GK6986   | Motor Plate                                    |
| 41    | S-7835   | 1" Flat Washer Zinc                            |
| 42    | GK6942   | Motor Plate Adjustment Rod                     |
| 43    | GK7012   | Motor Plate Adjustment Pivot Rod               |
| 44    | S-9066   | 3/8"-16 x 1-1/4" Flange Bolt Zinc Grade 5      |
| 45    | GK1004-2 | Vertical Flight                                |
| 46    | GK1015   | 8" x 27" Connecting Band                       |
| 47    | S-1054   | 3/8" Lock Washer Zinc                          |
| 48    | S-456    | 3/8"-16 Hex Nut YDP Grade 5                    |
| 49    | S-7522   | 3/8"-16 x 2" HHCS Zinc Grade 2                 |
| 50    | GK1019-2 | Vertical Unload Tube                           |

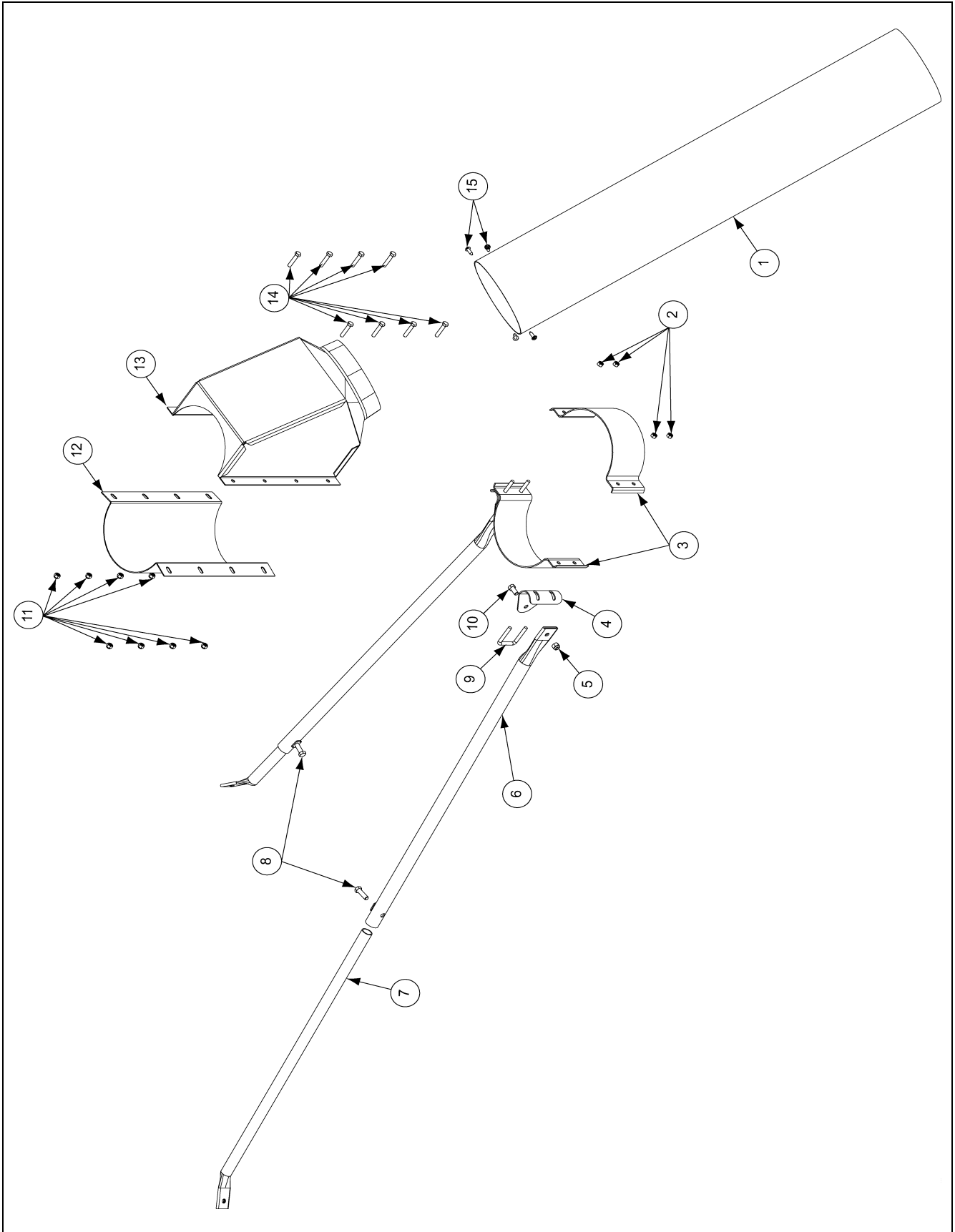
# Vertical Drive Parts



## Vertical Drive parts

| Ref # | Part #   | Description                                    |
|-------|----------|--|
| 1     | GK1019-2 | Vertical Unload Tube                           |
| 2     | GK1004-2 | Vertical Flight                                |
| 3     | S-8316   | 7/16"-14 x 3" HHCS Zinc YDP Grade 8            |
| 4     | GK1331   | Drive Shaft 1-1/4" O.D. x 10-1/2"              |
| 5     | S-8317   | 7/16"-14 Stover Nut Zinc Grade C               |
| 6     | GK1055   | 8" x 2" Half Band - 12 Gauge                   |
| 7     | S-396    | 5/16"-18 Hex Nut YDP Grade 2                   |
| 8     | S-3886   | 7/16"-14 x 1-1/4" HHCS Zinc Grade 5            |
| 9     | S-234    | 3/4"-10 Hex Nut Zinc Grade 5                   |
| 10    | S-9067   | 3/8"-16 x 3/4" Flange Bolt Zinc Grade 5        |
| 11    | GC11544  | Belt Guard Mounting Angle                      |
| 12    | S-8276   | 1/4" x 3" Square Key                           |
| 13    | GK1869   | 15" O.D. 1-1/4" I.D. 2 Groove Sheave           |
| 14    | GK1346   | V-Belt B57                                     |
| 15    | GK7532   | Vertical Drive Belt Guard                      |
| 16    | S-8234   | 7/16"-14 Nylock Nut Zinc Grade 2               |
| 17    | GK1330   | 1-1/4" Flange Bearing with Lock Collar, 2 Hole |
| 18    | S-2741   | 5/16"-18 x 1-1/2" HHCS Zinc Grade 5            |
| 19    | GK1327   | Threaded Rod Motor Mount Weldment              |
| 20    | GK1063   | Top Motor Mount Strap                          |
| 21    | S-6995   | 3/8"-16 x 2-1/2" Carriage Bolt Zinc Grade 5    |
| 22    | S-6076   | 5/16"-18 x 3/4" Carriage Bolt Zinc Grade 2     |
| 23    | GK1064   | Bottom Motor Mount Strap                       |
| 24    | S-456    | 3/8"-16 Hex Nut YDP Grade 5                    |
| 25    | GK1329   | 8" Head Plate Assembly                         |
| 26    | S-845    | 5/16" Flat Washer YDP Grade 2                  |

# Spout and Legs



### Spout and Legs

| Ref # | Part # | Description                         |
|-------|--------|-------------------------------------|
| 1     | GK1039 | 8" Spout Extension, 44"             |
| 2     | S-396  | 5/16"-18 Hex Nut YDP Grade 2        |
| 3     | GK1059 | 8" x 4" Half Band - 12 Gauge        |
| 4     | GK1034 | Adjustable Mounting Ear             |
| 5     | S-7383 | 3/8"-16 Nylock Nut Zinc Grade 5     |
| 6     | GK1892 | Telescoping Outer Leg - 36"         |
| 7     | GK1891 | Telescoping Inner Leg - 32"         |
| 8     | S-2071 | 3/8"-16 x 1-1/4" HHCS Zinc Grade 5  |
| 9     | S-7079 | 5/16"-18 x 1-3/4" Square U-Bolt     |
| 10    | S-7105 | 3/8"-16 x 3/4" HHCS Grade 5         |
| 11    | S-7382 | 5/16"-18 Nylock Nut Zinc Grade 5    |
| 12    | GK1505 | 8" x 14" Half Band Galvanized       |
| 13    | GK6509 | 8" 45° Spout Weldment               |
| 14    | S-2741 | 5/16"-18 x 1-1/2" HHCS Zinc Grade 5 |
| 15    | S-6497 | 1/4" x 3/4" Screw                   |

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# NOTES





## Limited Warranty

The GSI Group, LLC. ("GSI") warrants products which it manufactures to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user's sole remedy (and GSI's only obligation) is to repair or replace, at GSI's option and expense, products that in GSI's judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

**Warranty Extensions:** The Limited Warranty period is extended for the following products:

|  | Product   | Warranty Period |
|--|---|-----------------|
| <b>AP Fans and Flooring</b>                | Performer Series Direct Drive Fan Motor                     | 3 Years         |
|  | All Fiberglass Housings                                     | Lifetime        |
|  | All Fiberglass Propellers                                   | Lifetime        |
| <b>Cumberland Feeding/Watering Systems</b> | Feeder System Pan Assemblies                                | 5 Years **      |
|  | Feed Tubes (1.75" & 2.00")                                  | 10 Years *      |
|  | Centerless Augers   | 10 Years *      |
|  | Watering Nipples  | 10 Years *      |
| <b>Grain Systems</b>                       | Grain Bin Structural Design                                 | 5 Years         |
| <b>Grain Systems Farm Fans Zimmerman</b>   | Portable & Tower Dryers                                     | 2 Years         |
|  | Portable & Tower Dryer Frames and Internal Infrastructure † | 5 Years         |

\* Warranty prorated from list price:  
 0 to 3 years – no cost to end-user  
 3 to 5 years – end-user pays 25%  
 5 to 7 years – end-user pays 50%  
 7 to 10 years – end user pays 75%

\*\* Warranty prorated from list price:  
 0 to 3 years – no cost to end-user  
 3 to 5 years – end-user pays 50%

† Motors, burner components and moving parts not included. Portable Dryer screens included. Tower Dryer screens not included.

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12<sup>th</sup>) month from the date of purchase and continuing until the sixtieth (60<sup>th</sup>) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

### Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH ABOVE. SPECIFICALLY, GSI MAKES NO FURTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (i) PRODUCT MANUFACTURED OR SOLD BY GSI OR (ii) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

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GSI assumes no responsibility for claims resulting from construction defects or unauthorized modifications to products which it manufactured. Modifications to products not specifically delineated in the manual accompanying the equipment at initial sale will void the Limited Warranty.

This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which apply to the location and installation of products manufactured or sold by GSI.

This equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

G S I G R O U P



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