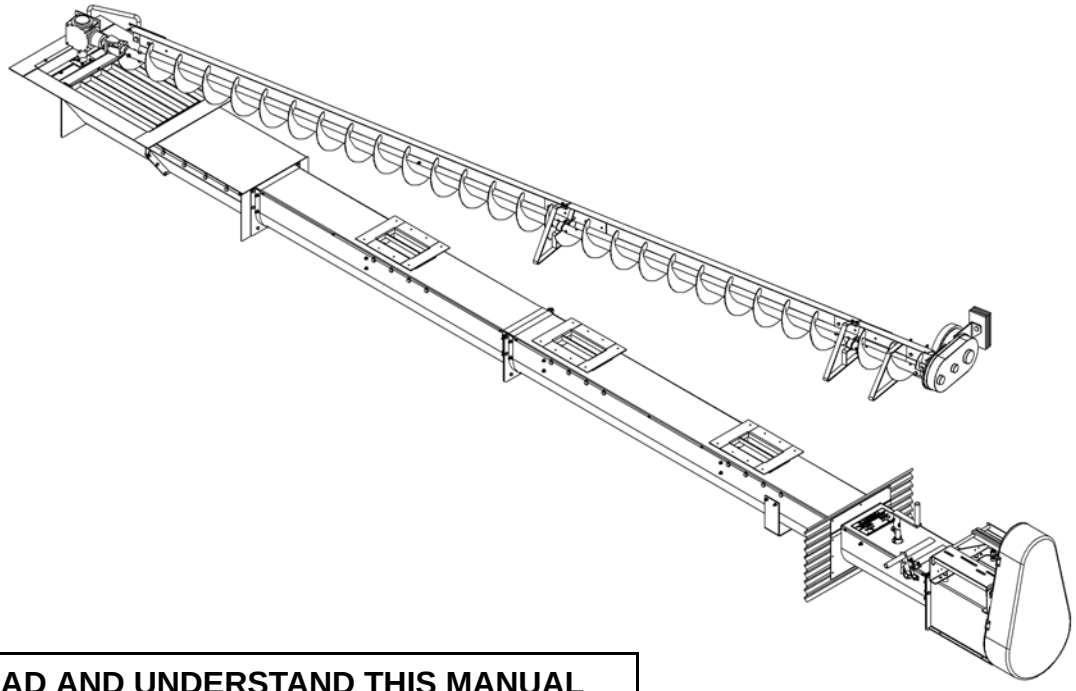
U-TROUGH BIN UNLOAD SYSTEM
ALL MODELS
ASSEMBLY & OPERATIONS MANUAL



READ AND UNDERSTAND THIS MANUAL BEFORE OPERATING!

- Never enter bin when power is supplied to sweep auger.
- Power must be shut down and locked out before making any adjustments.

Part Number: 30553 R1

Revised: 10/3/08

This product has been designed and constructed according to the general standards specified by the American Society of Agricultural and Biological Engineers (ASABE). Other local regulations may apply and must be followed by the operator. For this reason, we strongly recommend that all personnel associated with this equipment be trained in the correct operational and safety procedures required for this product. Periodic reviews of this manual with all employees should be standard practice. For your convenience, we include this sign-off sheet so you can record your periodic reviews.

Date	Employee Signature	Employer Signature

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1. General Safety

Remember! Think Safety First!

Safe operation is BROCK's number-one priority when designing products. This symbol is used throughout this Manual to identify particular stages where the Contractor, Installer, Owner, and Operator need to take special note and precautions regarding the danger described in these Instructions. Please read all the SAFETY information and the instructions completely prior to beginning the construction.

Support Information

BROCK® products are designed for free flowing materials. **Using this equipment for any other purpose or in a way not within the operating recommendations specified in this Manual will void the Warranty and may cause injury or death.** This Manual is designed to provide comprehensive planning and construction information for BROCK® products. The Table of Contents provides a convenient overview of the information in this manual.

Dealers: Please provide the Customer with the information to complete the easy reference below.

Dealer or Customer: Complete the following information about your BROCK® product. Store this Manual in a safe, dry place for future reference.

Distributor’s Name	
Distributor’s Address	
Distributor’s Phone #	
Date of Purchase	
Installer’s Name	
Installer’s Address	
Installer’s Phone #	
Date of Installation	
System Specifications	

Recognize SAFETY Information

This is the Safety-Alert Symbol. When you see this symbol on your equipment or in this Manual, be alert to the potential for personal injury.

Signal words DANGER, WARNING, or CAUTION are used with the Safety-Alert Symbol.

Be sure to follow ALL National and Local Safety Standards governing each installation site.

Understand Signal Words

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

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

CAUTION indicates a hazardous situation that, if not avoided, **MAY** result in minor or moderate injury.

ATTENTION! Bin Unload System Contractor, Installer, Owners, Operators: Read and Follow This Manual - Especially This SAFETY Section!

DO NOT operate this equipment before reading and understanding this Operations Manual. For operation, maintenance, and servicing of your Bin Unload System, read and understand this Manual. Untrained operators subject themselves and others to serious risks. Read and follow all precautions and recommended SAFETY practices. Failure to read this Manual by owners, operators and supervisors is a misuse of the equipment and could result in death, serious injury, and/or equipment damage.

Read this Manual carefully before servicing or repairing. This Manual is supplementary to any law or code covering fire or health regulations.

Follow SAFETY Instructions

Carefully read all SAFETY messages in this Manual and on your equipment SAFETY Decals. Follow recommended precautions and safe operating practices. Keep SAFETY Decals in good condition. Replace missing or damaged SAFETY Decals.

Do not operate this equipment unless all SAFETY devices and guards are in place. Visually inspect all of this equipment prior to operation. Correct any hazardous situation. Repair any faulty equipment. Do not adjust, service, lubricate, clean, unclog, or move this equipment while in operation.

Make certain the power source is shut off and locked out before any maintenance or repairs are performed.

Make sure the power source is shut off and locked out before entering the bin. Do not, under any circumstances, enter the bin while the equipment is in operation.

Keep hair, loose clothing, shoe strings, etc., away from rotating and moving parts. Wear close-fitting clothing when working around augers, etc. **Never** operate or work on machinery if intoxicated or under the influence of liquor or drugs.

Equipment Maintenance and Repair

Always shut off, disconnect, and lock out all power before adjusting, servicing, or cleaning this equipment.

Use suitable precautionary measures when repairing or replacing equipment parts.

Make sure all SAFETY signs are readable and tightly attached.

Ensure that electric motors are operating at the proper speed.

Make sure any **electrical wiring** is not frayed or cracked and meets proper gauge specifications. Maintain proper adjustments on any chains or belts.

Mount controls for any electric motor at a convenient place, which is a safe distance from the machine. Make sure controls are readily accessible in the event of an emergency.

Restricted and/or Enclosed Areas

Prohibit untrained personnel, visitors, and children from entering the Bin Sweep area. Designate a safety zone for unauthorized personnel or visitors.

Be sure the area is clear before turning power on to the Bin Sweep.

“No Bin Entry” Decal

When the electric operations of the Bin Sweep are controlled remotely from outside the bin a “No Bin Entry” Decal should be used.

DANGER	
	Do not enter bin while equipment is running. Failure to heed will result in serious injury or death.

The Manufacturer strongly recommends that all persons who will be operating or working around this equipment be trained in the proper operational and safety procedures required. We also recommend that all operators perform periodic reviews of those procedures.

Read carefully before servicing or repairing! Untrained operators subject themselves and others to serious injury or death!

BROCK® Bin Unload Systems are built with your safety in mind - however, accidents can happen with improper installation or use.

Carefully read and follow these SAFETY procedures whenever you are around or operating the equipment.

Read and follow the SAFETY procedures in your Manuals to supplemental equipment and accessories, and on your equipment SAFETY Decals.

Follow recommended precautions and safe operating practices of national and/or local codes at each installation site.

Keep this Manual in a safe, dry place where the Operator can easily obtain it.

Contact your BROCK® Dealer to replace this Manual should it become lost or damaged.

For operation and use of your Brock equipment, read and understand this Manual. Failure to follow proper operational procedures may cause damage to equipment or personal injury.

It is important that all those who will operate this equipment use good common sense and always be aware of and understand the following SAFETY rules:

Personnel SAFETY

Keep children and other unqualified personnel out of the working area at all times.

Never start equipment until all persons are clear of the equipment.

Make certain a qualified operator is in attendance at all time when this equipment is in operation.

Initially, and periodically thereafter, insist that all operating personnel review the SAFETY sections of this Manual. Additional safety information will be found in other areas of this Manual. Read and obey these instructions.

Any worker who is tired and/or under pressure is more apt to have an accident.Give extra breaks and/or varied jobs to all workers. If necessary, delay operation of this equipment until the operator is adequately rested.

2. Safety Decals

Important: Check all equipment for WARNING, DANGER, CAUTION Decals and their proper placement BEFORE equipment is operated. Never use equipment if decals are missing, hidden, improperly placed, damaged, or altered. Keep them clean and grease-free. Contact your BROCK Dealer for replacements.

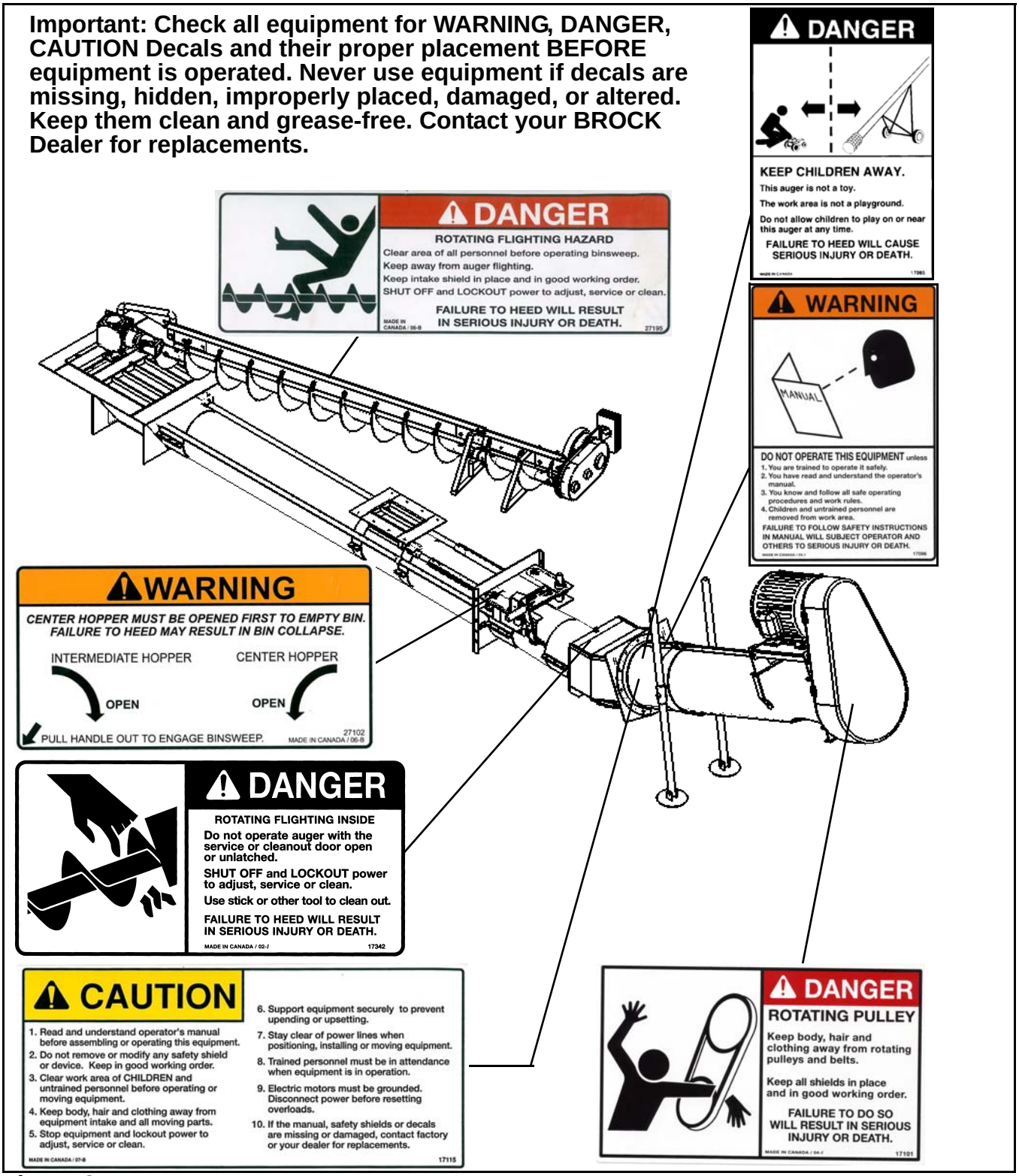


Figure 2.1

SAFETY information has been provided by the Manufacturer to help ensure the safe and proper use of this product. This SAFETY information has been placed on components throughout the structure to provide proper access to the user. Read all SAFETY Decals on your equipment and in this Manual.

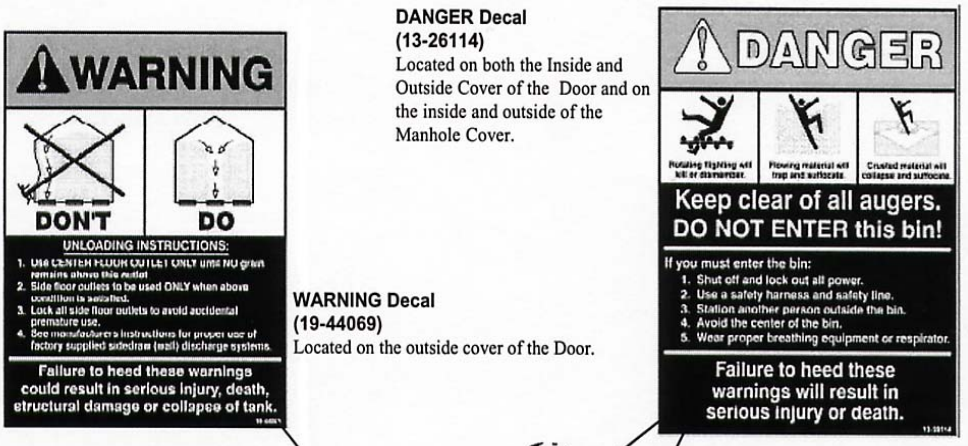
Important: Check all equipment for SAFETY Decals and their proper placement before equipment is operated. **Never use equipment if Decals are missing, improperly placed, damaged, or altered.** If the Safety Decals are not properly placed or if they are in any way damaged or altered, call the Manufacturer for immediate replacement. Keep them clean and grease-free.

Bin SAFETY Decals

If you are installing your BROCK® Bin Sweep into a new or existing BROCK® grain bin, refer to **Figure 2** for the proper BROCK® Decals and their placement on the BROCK bin. If the Safety Decals are not properly placed or if they are in any way damaged or altered, call the Manufacturer for immediate replacement.

Check all equipment for proper SAFETY Decals and correct placement BEFORE operation.

DANGER Decal
(13-26114)
Located on both the Inside and Outside Cover of the Door and on the inside and outside of the Manhole Cover.



WARNING Decal
(19-44069)
Located on the outside cover of the Door.

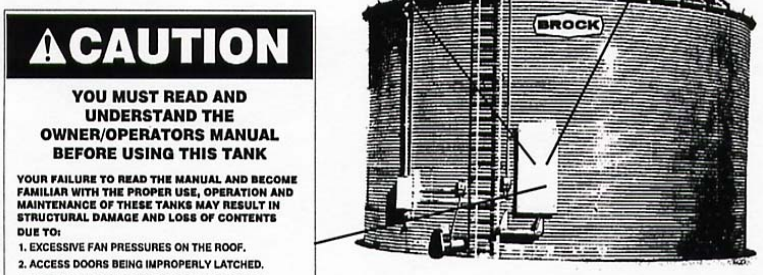
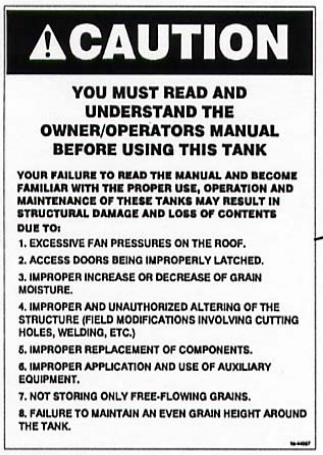


Figure 2. Decal Placement on BROCK Bin



CAUTION Decal
(19-44067)
Located on the Outside Cover of the Door.

DANGER	
	Do not enter bin while equipment is running. Failure to heed will result in serious injury or death.

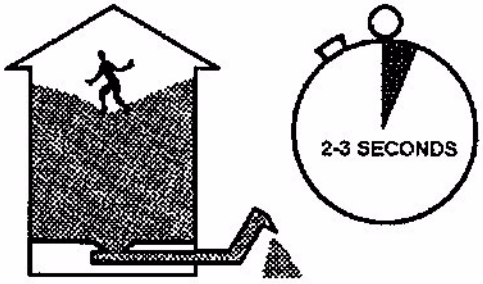
DANGER! **There are Suffocation Hazards in Flowing Grain!**

You CAN suffocate under material in a grain bin/tank.
Entry into ANY grain bin is a potential hazard.
NEVER enter the tank during loading or unloading.

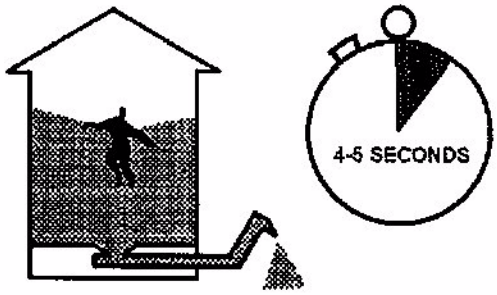
Flowing material may trap and suffocate, as shown in **Figures 3, 4 and 5.**

Figure 3.
Flowing Material
Traps and Suffocates

From the time the auger starts, you have 2-3 seconds to react.



In 4-5 seconds, you are trapped.



After 22 seconds, you are completely covered.

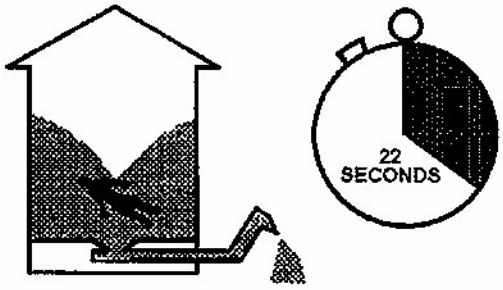


Figure 5. Suffocation Hazards

Figure 4. Crusted Material
Collapses and Suffocates

If you should need to enter the grain bin, enter only if you:

1. Shut off and LOCK OUT all power.
2. Use a safety HARNESS and a safety LINE.
3. Wear proper BREATHING equipment.
4. AVOID the center of the tank.
5. Station people to help from OUTSIDE the tank.

Safety Hazards and Recommendations

1. **Never** enter a bin of flowing grain.
2. **Never** enter a bin when bin unloading equipment is running, whether or not grain is flowing.
3. **Never** enter a bin that has automatic unloading equipment without locking out the control circuit.
4. **Never** enter a bin that you do not know the nature of previous grain removal, especially if there is any crusting evident.
5. **Always** be cautious before walking on any surface crust.
6. It is **always** advisable to have three people involved, two on the outside and one inside, when entering a questionable bin / storage circumstance. The person in the bin should be secured or fastened to a safety rope with the two persons outside capable of lifting that person out without entering the bin. One person outside cannot do this, and cannot go for help and maintain preliminary aid.
7. **Never** work in obviously dusty-moldy grain without a respirator. Never work in such conditions, no matter what the protection, without a second person on safety standby. Use a respirator capable of filtering fine dust.
8. Be aware that your tolerance to a given material may be limited, and that you should not deliberately and knowingly expose yourself on the idea that "it won't hurt me." Later in life, you may have used up all your tolerance.
9. **Always** be cautious when you are working with grain that is not in good condition. You can have molds, blocked flow, cavities, cave-offs, crusting - it is time to be alert.
10. Never depend on a second person, either on the bin roof, on the ground, or any other remote point to whom you shout instructions to start or stop equipment.
    a. Equipment noise can block out commands or cries for help.
    b. The second person may fall or over-exert in the panic and haste of getting off the bin or running to the control point.

In the event of EMERGENCY: Possible Corrective Measures

If you must enter a grain bin with evident danger, use a rope and safety harness to support and lift you in the event of trouble.

Act responsibly NOW to reduce the risk of Emergency. Be sure to advise your children, your co-workers, and your neighbors about the above SAFETY information.

General Safety Standards:

1. Application:

Bin sweep equipment shall be used to convey only the specified commodities or materials within the rated capacity and the rated speed. Where special use is not indicated, or ratings are not available, good industry practise shall be used.

2. Safety Devices

All safety devices, including wiring of electrical safety devices, shall be arranged to operate such that a power failure or failure of the device itself will not result in a hazardous condition.

3. Emergency Stops and Restarts

Equipment controls shall be so arranged that, in case of emergency stop, manual reset or start at the location where the emergency stop initiated shall be required for the equipment to resume operation.

Before restarting equipment that has been stopped because of an emergency, an inspection of it shall be made and the cause of the stoppage be determined. The starting device shall be locked or tagged out before any attempt is made to remove the cause of the stoppage, unless operation is necessary to determine the cause or to safely remove the stoppage.

3. Assembly

Before starting assembly of your new bin unloading system, please read the following instructions carefully and familiarize yourself with all the sub-assemblies and hardware making up the underfloor system. Ensure that all parts are on hand, arranging them for easy access as required.

Important: *These instructions are written on the assumption that two or more people will be available for the assembly procedure. Because of the weight, it is unwise to attempt assembly of underfloor alone.*

Note: *The bin unload system is available with a horizontal discharge or an inclined discharge in various combinations of bin sizes. In most instances, the assembly instructions will apply to all models. However, where the instructions vary for a particular model or models, additional instructions will be included either in table form or where indicated by an arrow.*

3.1. CENTER HOPPER LAYOUT

Note: *Before starting, ensure that lower gearbox (installed on center hopper) is half full of EP90 Lube oil. See “Maintenance” on page 41 for more details.*

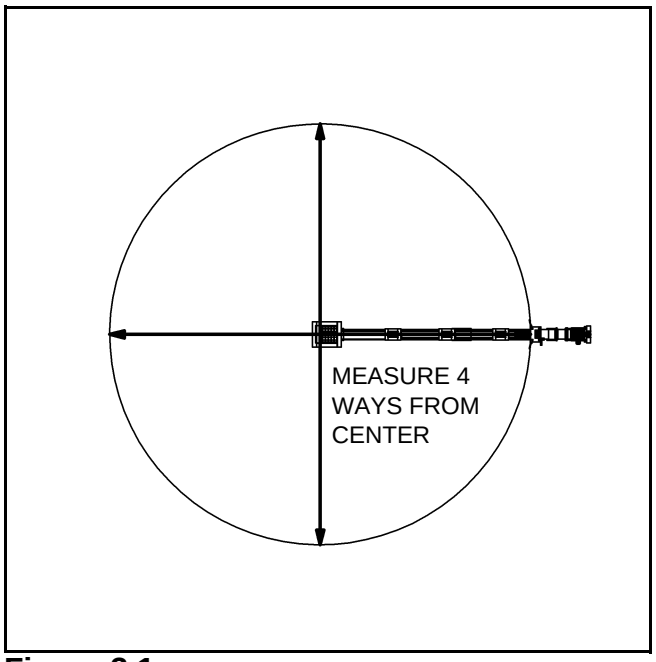


Figure 3.1

1. Set center hopper in center of bin. Do this by measuring in 4 directions from center (see Figure 3.1).
2. EXACT CENTER OF BIN should line up with center of gearbox shaft protruding from center hopper (see Figure 3.4).

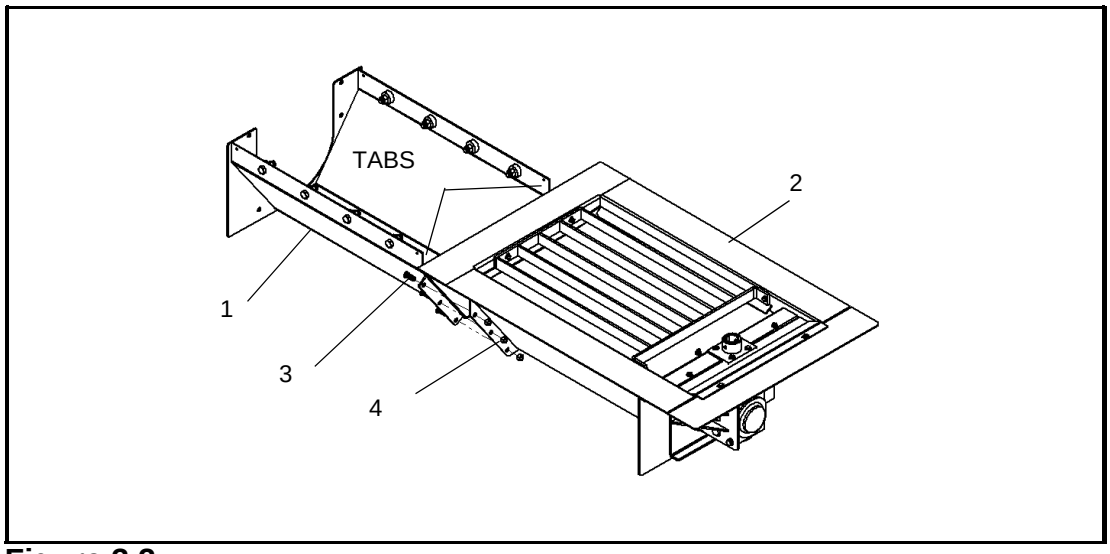


Figure 3.2

3. Insert tabs in extension hopper to notches in center hopper (see Figure 3.2). Bolt center hopper extension (1) onto center hopper (2) with six 3/8” x 1” bolts (3) and 3/8 locknuts (4); do not tighten.

CAUTION	
	Do not drop tube sections. Damage to equipment or personal injury will result.

3.2. FLIGHT SUPPORT ASSEMBLY (OPTIONAL)

See Figure 3.3.

1. Remove access cover from center hopper.
2. Place support tube inside of flight support base. Secure with a 5/16" x 1-3/4" bolt and locknut. Tighten securely.
3. Replace access cover on center hopper, and secure with two self-tapping screws (removed previously).

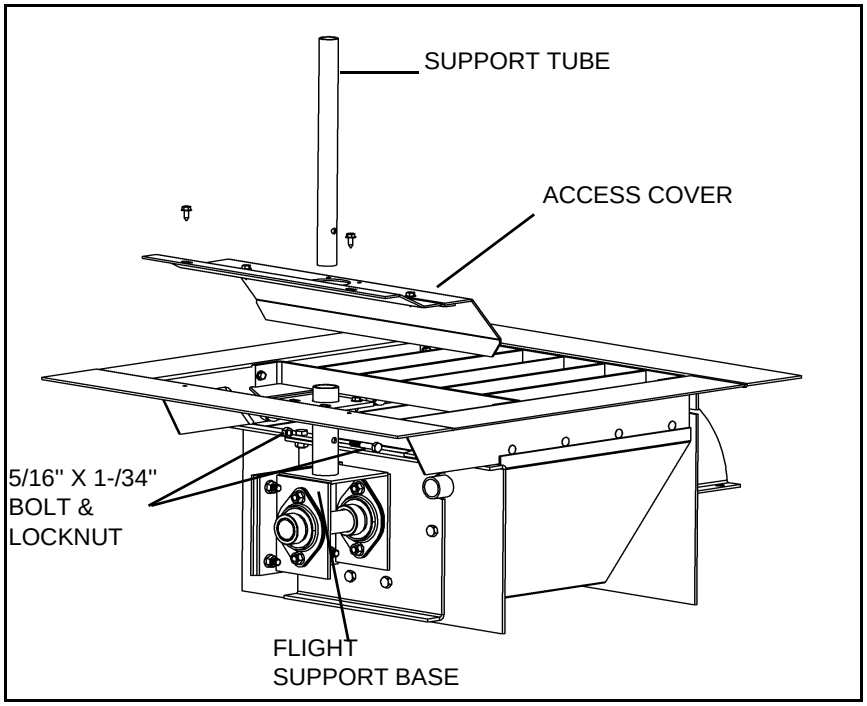


Figure 3.3

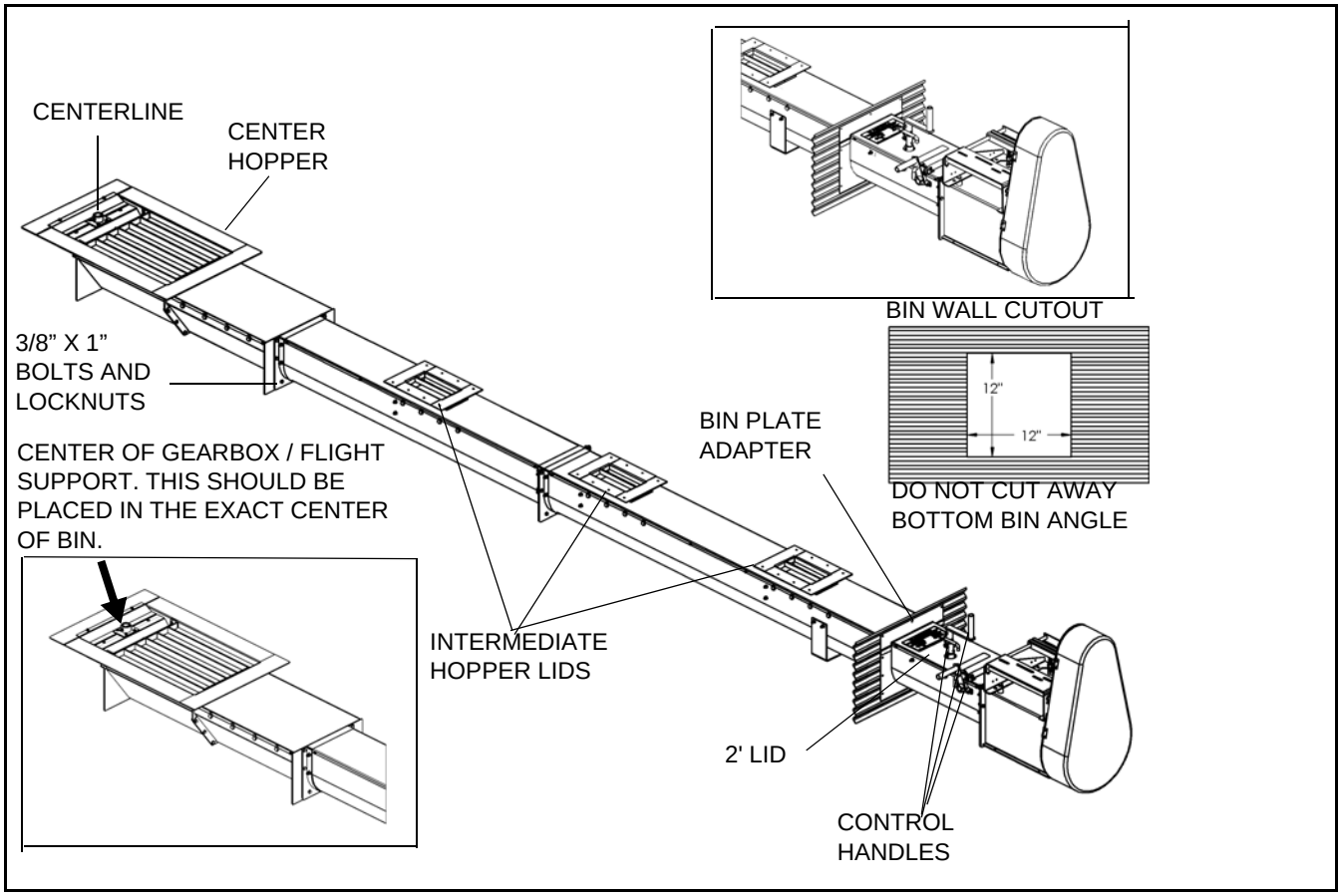


Figure 3.4

3.3. UNLOAD TROUGH ASSEMBLY

Note: *Remove flighting before installing galvanized u-trough section. This ensures better handling and ease of assembly.*

1. Install galvanized trough section as seen in the figures in the parts listing under ‘U-Trough Sections.’ Match the trough configurations to the figure corresponding to your bin diameter.
2. Cut hole in bin wall at location designated for discharge spout. Cut a hole that measures approximately 12" wide x 12" high (as seen in Figure 3.5).
3. When measuring the hole, measure 12" down from the bottom of the aeration floor (see Figure 3.6). Try not to cut the bottom bin angle.
4. Place galvanized trough section inside the bin and make sure that the control handles are outside of the bin wall and that the 2' lid clears the bin wall by at least 1/4". Connect the opposite u-trough end to the center hopper with six 3/8" x 1" bolts and locknuts. Tighten securely.

3.4. BIN PLATE ADAPTER ASSEMBLY

1. Two corrugated sponge pieces (not supplied) can be arranged as seen in Figure 3.5. Drill nine holes through the pilot holes in the bin plate adapter (top & bottom) and the bin wall. Using the six 7/16" x 1" bolts and locknuts provided, secure the bin plate adapter to the outside of the bin. Tighten securely.

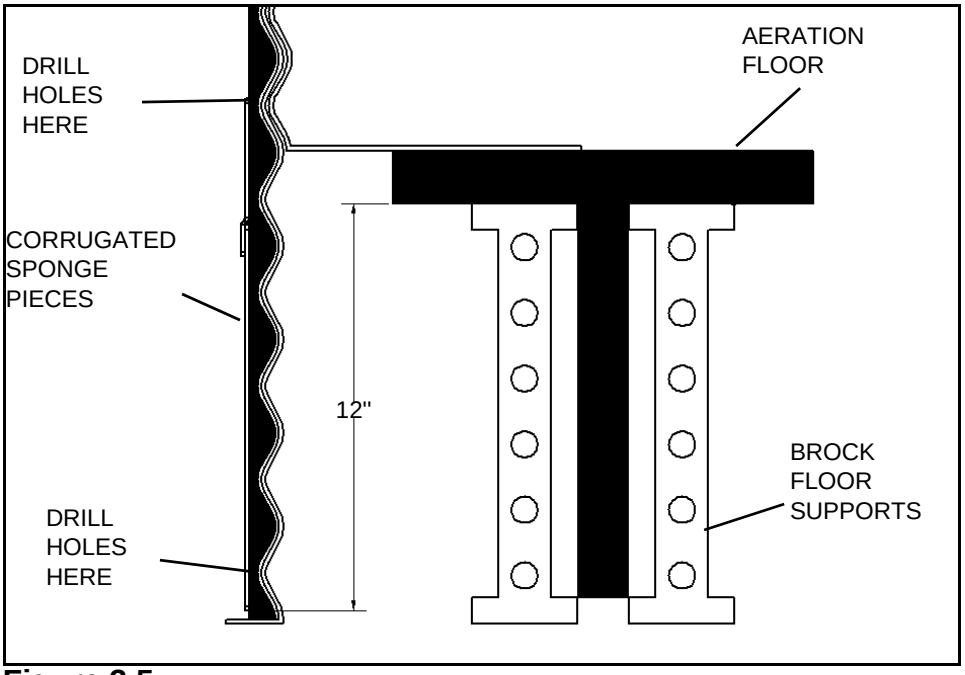


Figure 3.5

2. Ensure that the 2’ lid does not interfere with the bin plate adapter. If it does, adjustment of the u-trough position may be necessary.

DANGER

Ensure that center hopper, intermediate hoppers, and bin plate adapter are all level with each other during installation.

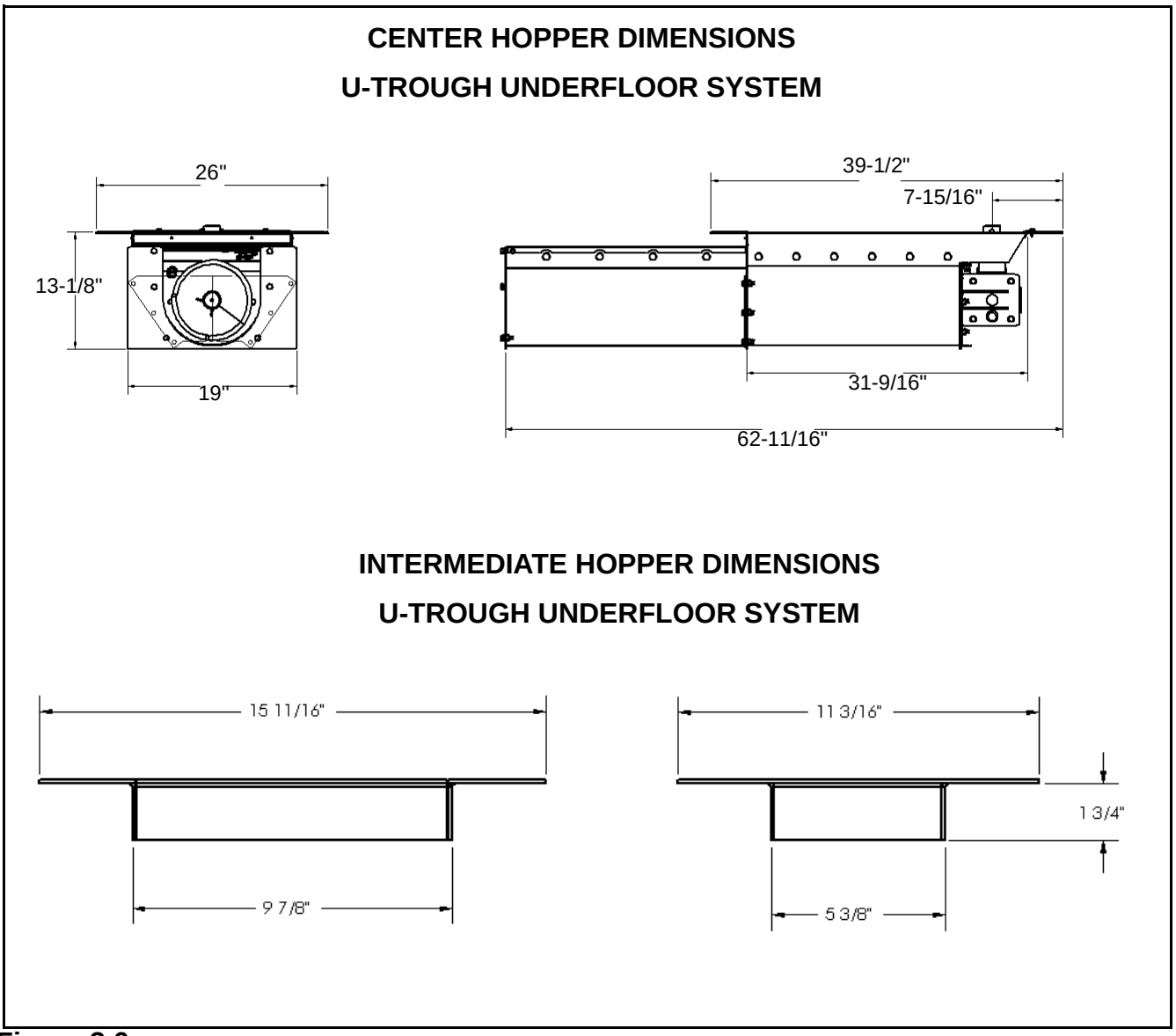


Figure 3.6

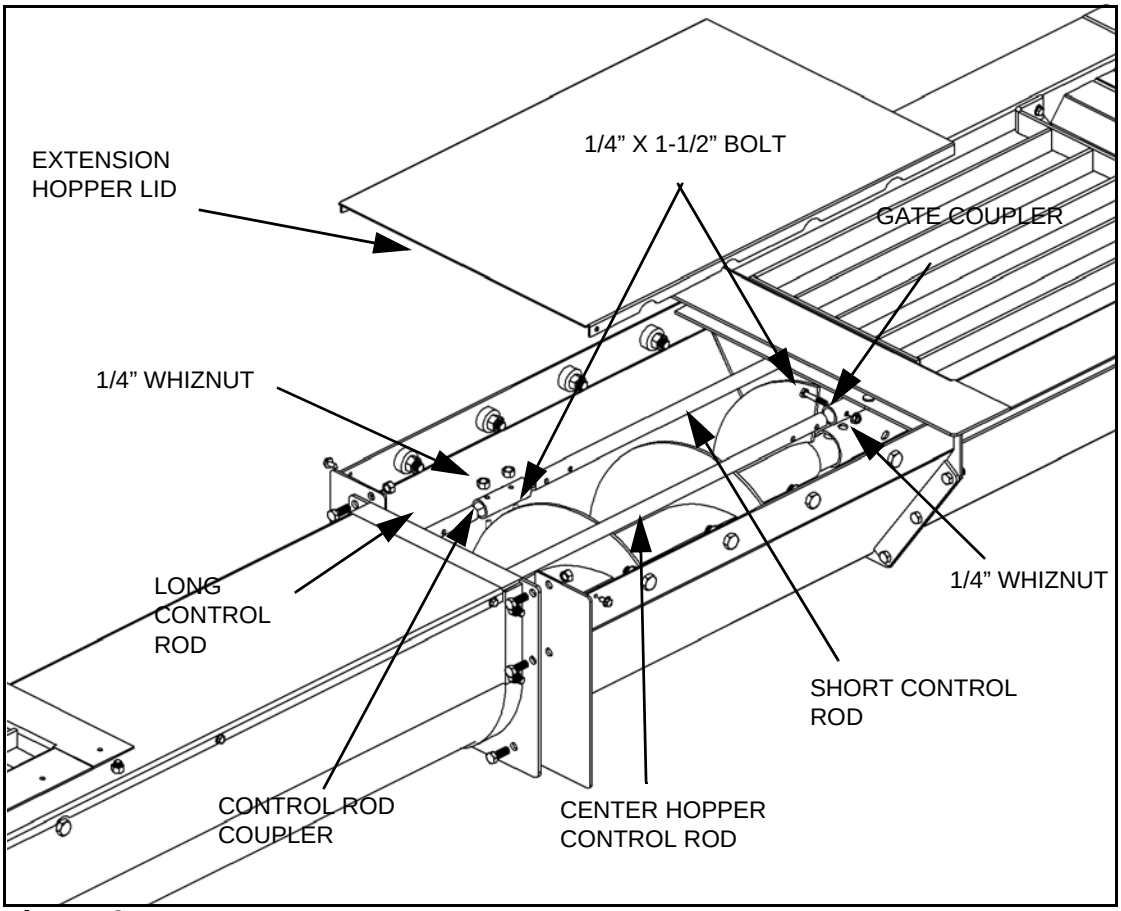


Figure 3.7

3.5. CONTROL ROD ASSEMBLY

Note: *The bin unload system is supplied with three different sizes of control rods which are already installed. It is up to you, the installer, to connect them into the proper places.*

1. Insert the center hopper control rod to the gate coupler and secure with two 1/4” x 1-1/2” bolts and whiznuts. (See Figure 3.7.)
2. The shorter length of control rod is for the lower gearbox (on center hopper). Couple the short control rod to the long control rod with a control rod coupler and two 1/4” x 1-1/2” bolts and whiz nuts. (See Figure 3.7.)

Important: *If flight support option has been purchased, installation of the gearbox control rod should still be carried out; it may be needed at a later date.*

3. Adjust gearbox shift lever (on gearbox) until it is aligned straight up and down - this is the "disengaged" position where the bottom gearbox shaft is disengaged from the top gearbox shaft; see Figure 3.8.

4. With gearbox shift lever locked in "disengaged" position (lever is forward; see Figure 3.9), tighten shift adjust tube into place using two 1/2" hex nuts on either side. Then remove the lock pin and try shifting the gearbox between "disengaged" and "engaged", ensuring a smooth operation.
5. Install the extension hopper lid with two self-tapping screws.
6. Tighten the 3/8" locknuts holding the center hopper to the extension hopper.

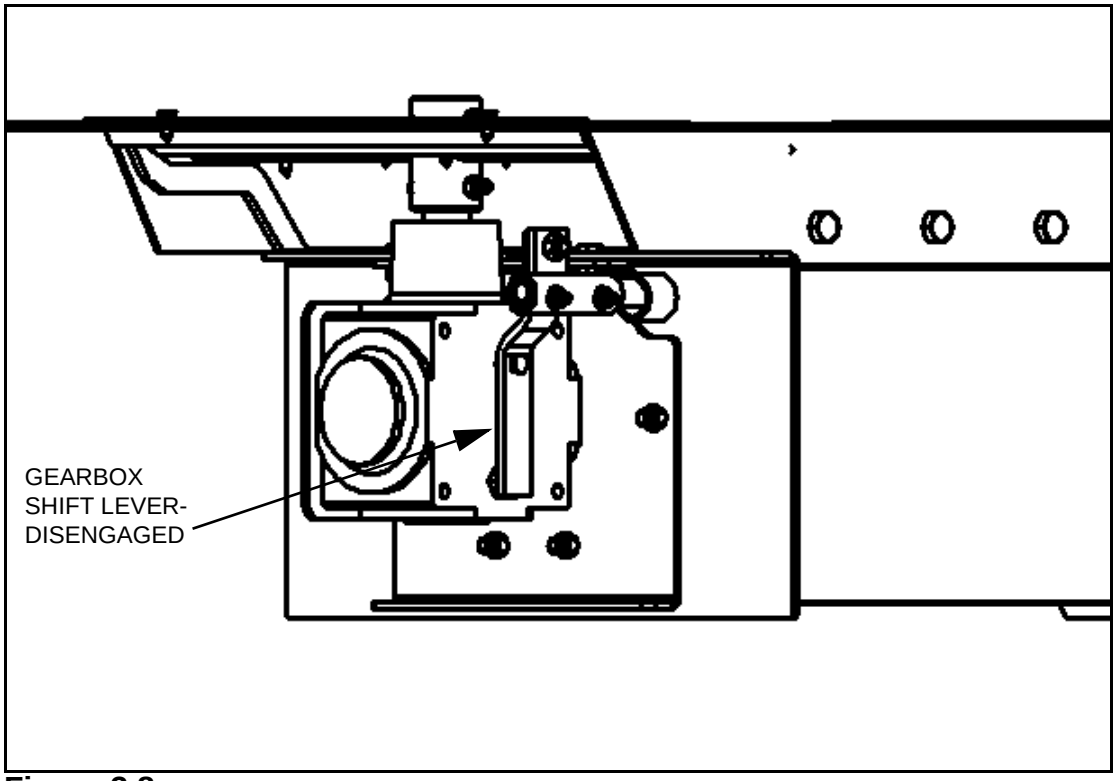


Figure 3.8

Important: *Gearbox shift lever should be locked into position at all times. Failure to do so will result in damage to gearbox.*

7. Now you can finish installing the aeration floor (use Figure 3.4 for reference). Floor planks should run perpendicular to the trough and auger.

Note: *Ensure all bolts and nuts are tightened before floor installation.*

8. Once aeration floor installation is finished, screw the top plates of each intermediate hopper to the bin floor using the self-tapping screws provided.

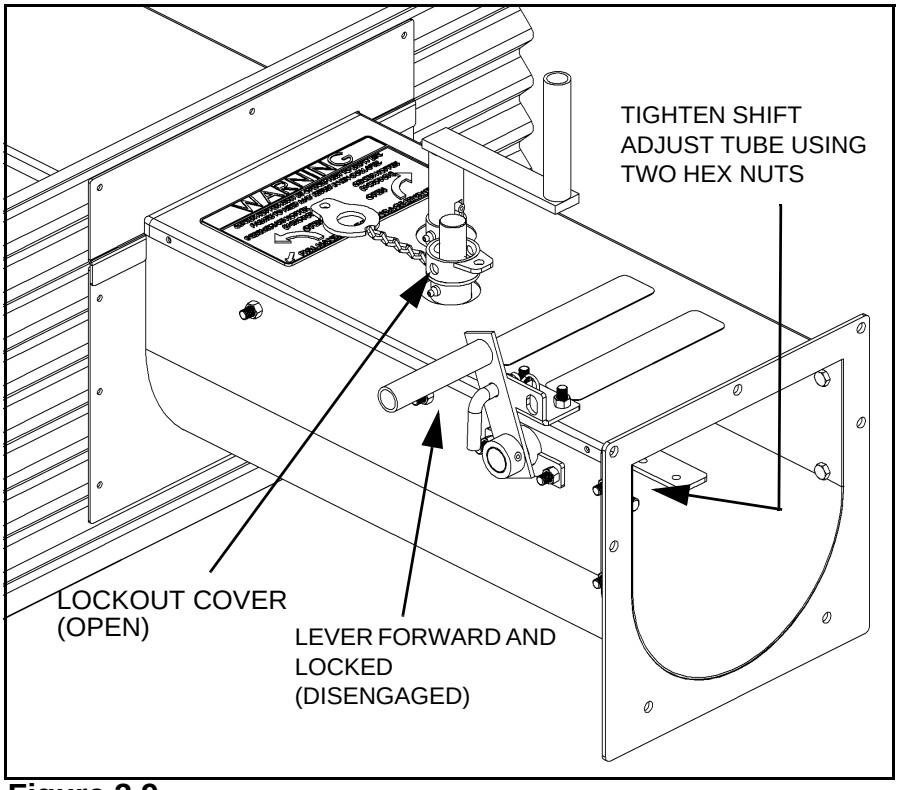


Figure 3.9

3.6. INTERMEDIATE HOPPER LOCKOUT PROCEDURES

1. Once the underfloor u-trough installation is finished, close all the intermediate hopper lids completely. Flip the lockout cover over the shaft and lock out the cover to the bin plate adapter with a padlock (supplied by customer). (See Figure 3.9 and Figure 3.10.)
2. Keep the key to the padlock in a safe place. You will need to unlock the padlock for operation of the bin unload system. (See “Bin Unloading Procedure” on page 37).

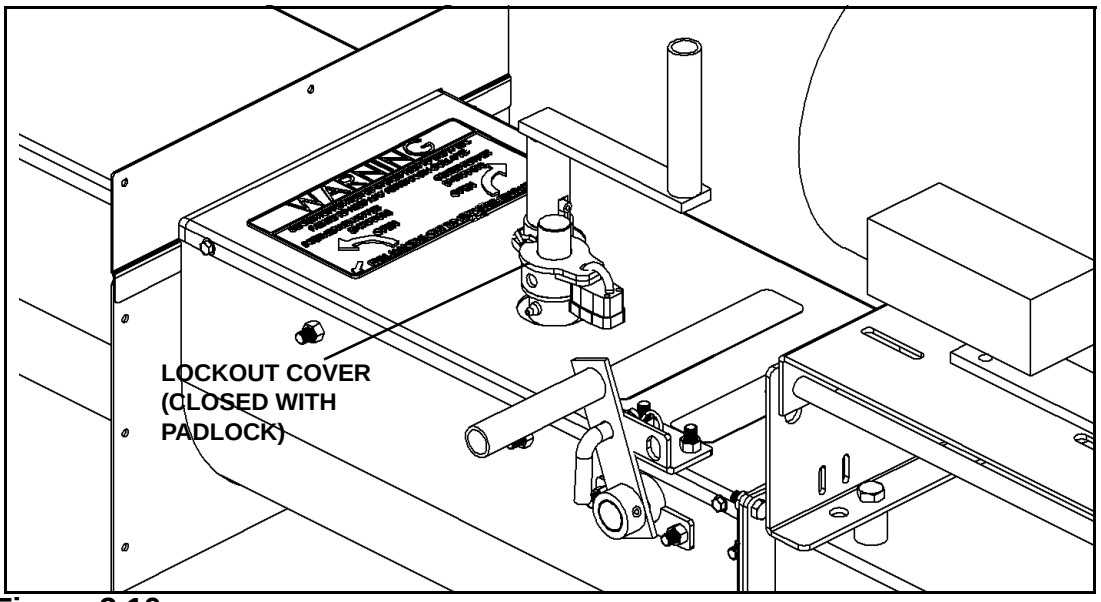


Figure 3.10

3.7. UNDERFLOOR FLIGHTING INSTALLATION

1. Attach the short center hopper flighting piece to the appropriate end of underfloor flighting. As shown in Figure 3.11, slide the connector stub into the short flighting piece.
2. To ensure a continuous flow, make sure the flight ends butt together.
3. Fasten these pieces together using two 1/2" x 2-3/4" bolts and locknuts. Tighten securely.

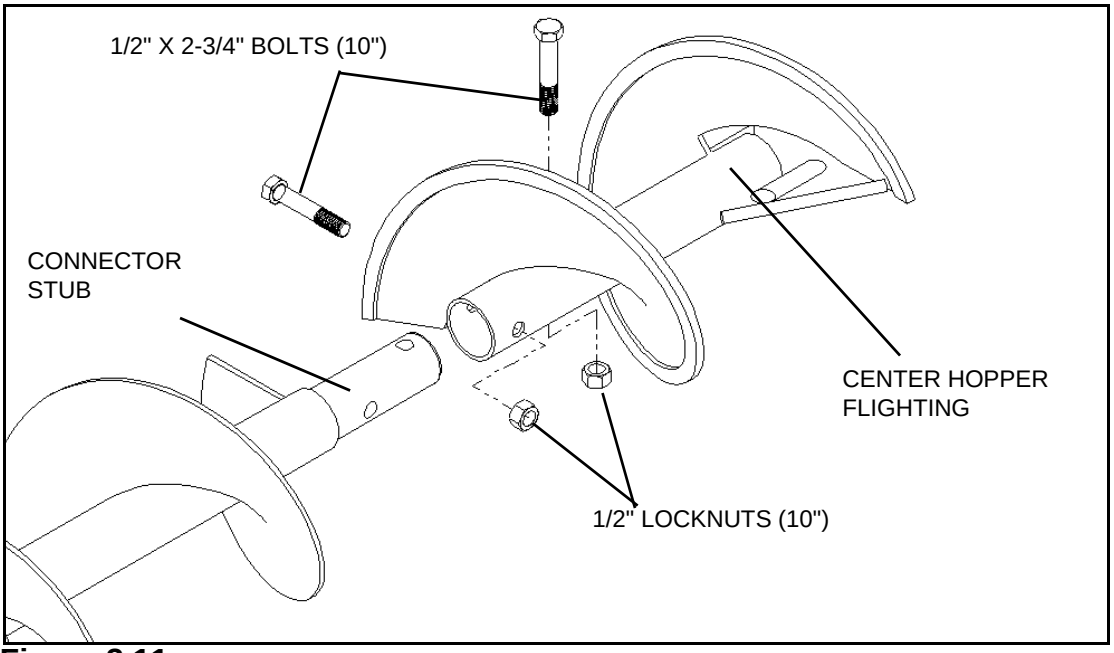


Figure 3.11

CAUTION	
	Do not drop tube sections. Damage to equipment or personal injury will result.

4. Slide flighting sections into open end of galvanized u-trough with center hopper flighting first. Slide flighting almost all the way into center of bin, leaving only a short section sticking past the end of the trough in preparation for the installation of the powerhead.

3.8. POWERHEAD & ELECTRIC MOTOR INSTALLATION

Note: *Refer to Figure 3.12, 3.13, and 3.14 for assembly of the powerhead and discharge units.*

1. Mount 1-1/4" bearing with 4-bolt flanges (1) to power-head (2) with four 1/2" x 1-1/2" bolts (3) and 1/2" locknuts (4) (see Figure 3.7).

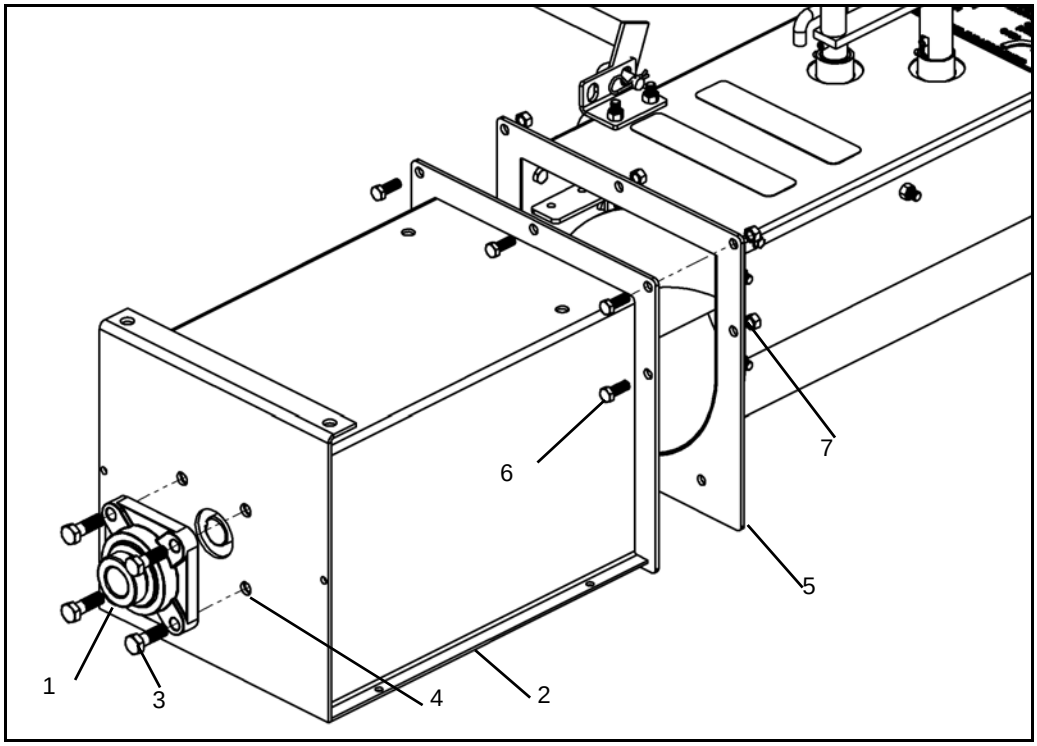


Figure 3.12

2. Push flighting all the way into the underfloor trough, ensuring that opposite end of the flighting is secured against the stub shaft in the center hopper.
3. Mount power-head (2) on u-trough assembly (5) with 3/8” x 1” bolts (6) and 3/8” locknuts (7).
4. Place bearing collar onto flighting shaft. Tighten securely to shaft using set screws.
5. Place mount spacers (8) on power-head (2) (see Figure 3.13).
6. Place mount plate (9) on mount spacers (8) and attach loosely to powerhead (2) with 1/2” x 2-1/2” bolts (15) and 1/2” locknuts (16).
7. Place mount plate (10) on powerhead (2) and attach securely with 1/2” x 1-1/4” bolts (11) and 1/2” locknuts (12).
8. Place motor mount (13) between the two mount plates (9,10), and insert hinge rod; see Figure 3.13. Secure with a 1/8" x 1-1/2" cotter pin (19).
9. Adjust mount plates (9,10) if necessary for the mount (13) to fit properly and tighten the 1/2” locknuts (12,16).
10. Thread a 5/8” nut (18) on each adjust bolt (17) and place 5/8" adjust bolts through available hole in front mount plates (9,10). Secure in place using two 5/8" hex nuts (18). Leave adjust bolt loose to allow for later adjustment.

Note: *The 5/8" nuts and adjust bolt are used to adjust belt tension as described later in this section.*

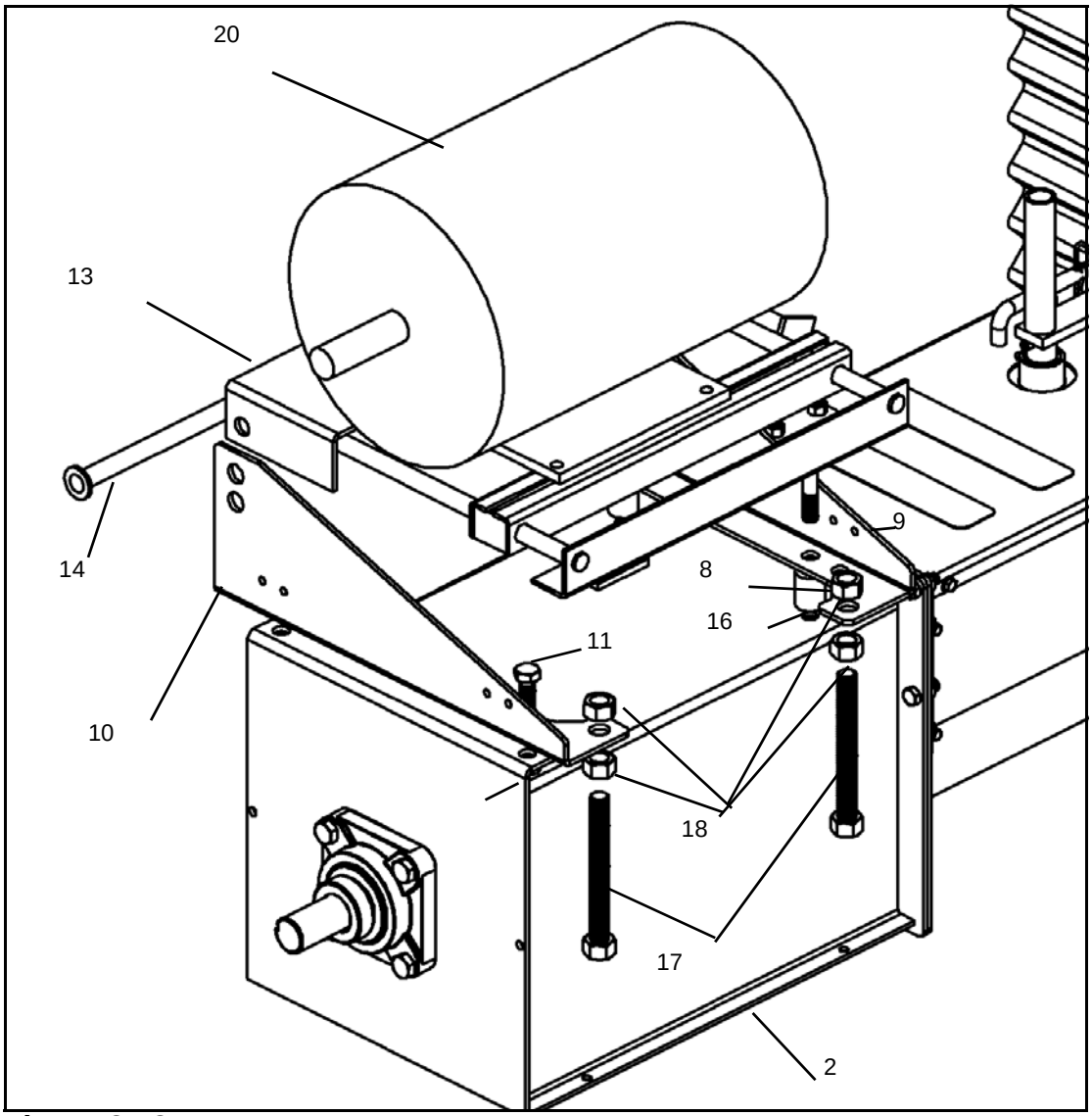


Figure 3.13

ELECTRIC MOTOR INSTALLATION / ALIGNMENT

Note: *See Table 3.1 for electrical motor requirements and Figure 3.13 for the electric motor installation.*

1. Place electric motor (20) (supplied by customer) onto motor mount (13) and secure. Ensure that motor shaft is parallel to and centered on discharge. Do

not tighten adjust bolts (17). End of motor shaft and flight shaft should be aligned using a straight edge

Table 3.1 Electric HP Requirements

Bin Diameter (FT)	Recommended Horsepower (HP)	
	W/Sweep	W/O Sweep
24	10	7.5
27	10	7.5
30	10	10
33	10	10
36	15	10
42	15	10
48	20	15
54	20	15
60	20	20

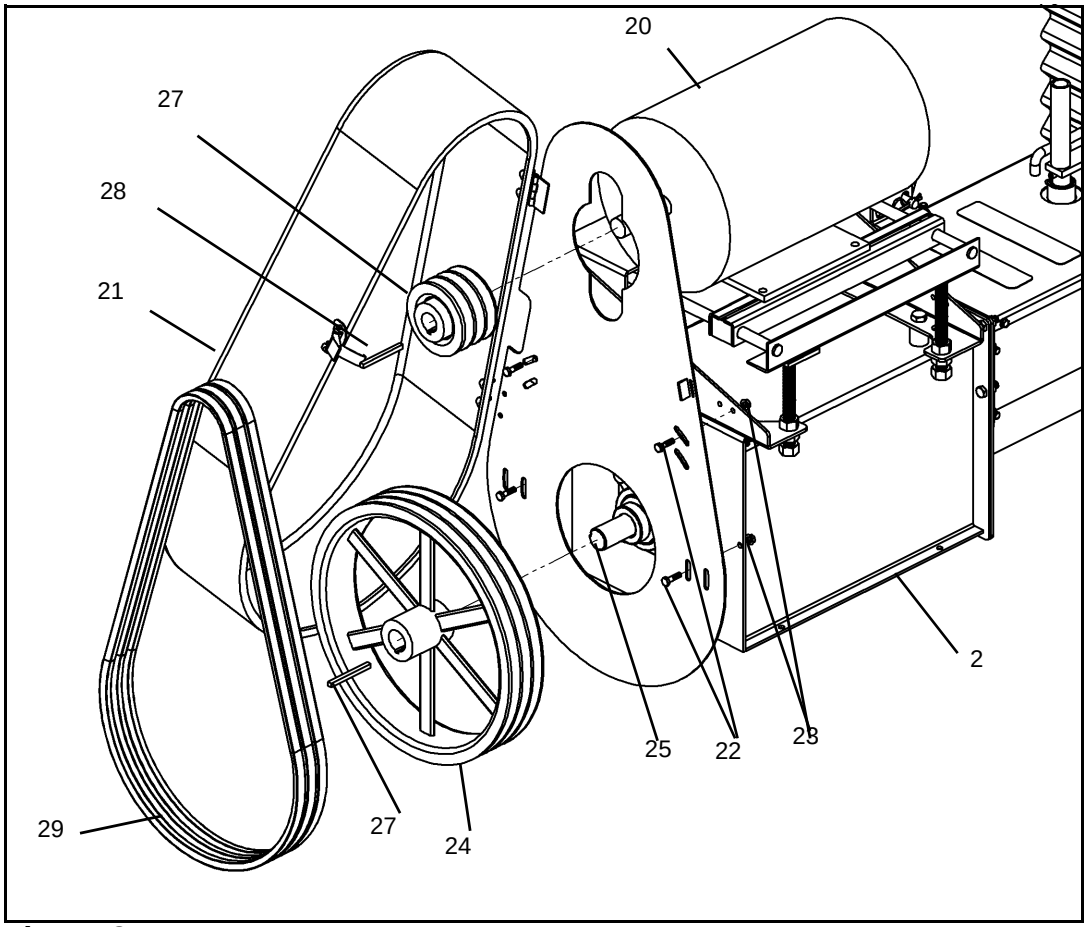


Figure 3.14

Important: *When using an electric motor, the following steps will apply:*

a. The motor and controls should be installed by a qualified electrician in accordance with all local and national codes.

b. A magnetic starter should be incorporated to protect the motor.

c. The motor must have a manual reset button.

d. Reset and starter controls must be located so that the operator has full view of the entire operation.

e. A main power disconnect switch should be located within reach from ground level to permit ready access in case of an emergency.

f. A main power disconnect switch capable of being locked (in the off position only) must be provided.

2. Attach the pulley shield backplate (21) to the face of the power-head (2) using four 1/4" x 1/2" bolts (22) and whiznuts (23). The backplate should sit flush with the head plate. Do not tighten bolts/nuts at this time, as the pulley backplate will need to be aligned later on.

Table 3.2 Pulley Size / Combinations[a]

Recommended Sizes		
Auger Pulley	**Motor Pulley**	**Flight Speed (rpm)[b]**
15	4.7	540
15	5.2	598

a. If a slower flight speed is desired, install a smaller motor pulley.
b. Speed is calculated using a 1725 rpm electric motor. To determine flight speed (prm), divide the speed (rpm) of the motor by the outside diameter of the large auger pulley, then multiply by the outisde diameter of the small motor pulley. Example: 1725 (rpm) / 15” x 4.7” = 540 rpm.

3. Install large belt pulley (24) onto flighting shaft (25) using appropriate size of square key (26). DO NOT tighten set screws. See Table 3.2 for suggested size.
4. Slide drive pulley (27) onto motor shaft. (See Table 3.2 for suggested sizes.) Insert the appropriate size of square key (28). Do not tighten set screw until belts are aligned.

Note: *We recommend using the three belt and triple groove pulley on all u-trough augers.*

5. Place belts (29) on pulleys (24,27). Adjust the 5/8" adjust bolts (17) on front mount plate until the belts have the proper tension, with about a 1/4"-1/2" deflection when a 5lb force is applied at the belt center.

Note: *The correct operating tension is the lowest tension at which the belts will not slip under peak load conditions.*

6. Align the two pulleys using a straight edge, ensuring that the large belt pulley is flush against the bearing collar. Once belts are aligned and under tension, lock the 5/8" hex nuts (18) and tighten pulley set screws.

Note: *Once all bolts and set screws are tightened, re-check alignment. Proper alignment will prolong belt life.*

7. Once belt alignment is complete, move the pulley backplate (21) to a desired position where the motor shaft will cause the least interference. Tighten the 1/4" mount bolts (22) and whiznuts (23) securely. Close and lock the plastic shield using the quickclip.

3.9. TOP GEARBOX INSTALLATION (OPTIONAL)

See Figure 3.15.

1. Using the 1/4" x 3" square key as guide, slide top gearbox shaft into the 1-1/4" driveshaft coupler as shown. Secure tightly with a 5/16" x 2-1/2" bolt and locknut.

Note: *Recommended Maximum Bin Heights:*

- *For 60' diameter bins, maximum height is 67'.*
- *For 54' diameter bins, maximum height is 77'.*
- *For 48' diameter bins, maximum height is 88'.*
- *For 42' bins (and under), no restriction on height.*

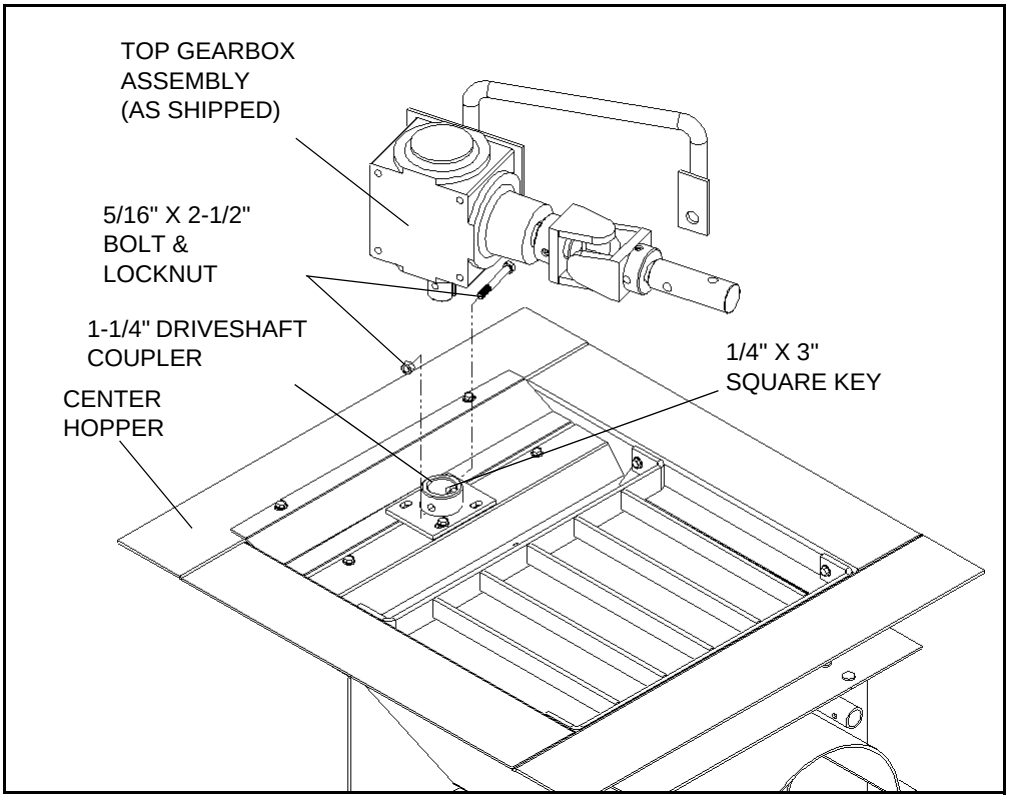


Figure 3.15

3.10. SWEEP INSTALLATION (OPTIONAL)

1. Before beginning with sweep assembly, refer to Figure 3.18. Always begin with longest sweep section at center of the bin and work your way out.
2. Connect sweep pivot plate to back of sweep backboard as shown in Figure 3.16. Use four 3/8" x 1" bolts w/ whiznuts, and secure tightly.
3. Assemble sweep pivot plate to top gearbox assembly using a 5/8" x 1-1/2" bolt and locknut. Tighten this bolt until snug - leave enough slack in bolt so that sweep pivot plate (and backboard) pivots freely.
4. Connect sweep flighting to gearbox assembly by placing stub shaft inside flighting tube. Secure tube to shaft using two 7/16" x 2-1/4" bolts and locknuts. Tighten securely.

Note: *Only continue with the following steps if there are additional (more than one) sweep sections to assemble. If not, continue to next section.*

5. Install 1-1/2" plastic bushing loosely onto sweep bushing mount (as seen in Figure 3.17). This bushing remains in place while completing the following steps.
6. Place two sweep backboards together. Couple the sweep bushing mount and sweep backboards together using eight 3/8" x 1" bolts and whiznuts. Tighten securely.

7. Insert sweep joiner shaft through plastic bushing and into sweep flighting section. Secure tightly using two 7/16" x 2-1/4" bolts and locknuts.
8. Insert other piece of sweep flighting into opposite end of sweep joiner shaft and secure tightly with two 7/16" x 2-1/4" bolts and locknuts.
9. Install anti-tip bar to the sweep backboards with four 3/8" x 3/4" bolts & locknuts as shown in Figure 3.17. Tighten securely.
10. Ensure that the plastic bushing is supported properly with the anti-tip bar. Insert a 1/4" x 1-1/2" bolt complete with the 5/16" flat washer and 1/4" whiznut (as shown). Tighten securely.

Note: *Anti-tip bar is installed inside sweep backboard, directly in line with the plastic bushing.*

11. Repeat Steps 5-8 for any additional sweep sections.

DANGER	
	Do not enter bin while equipment is running. Failure to heed will result in serious injury or death.

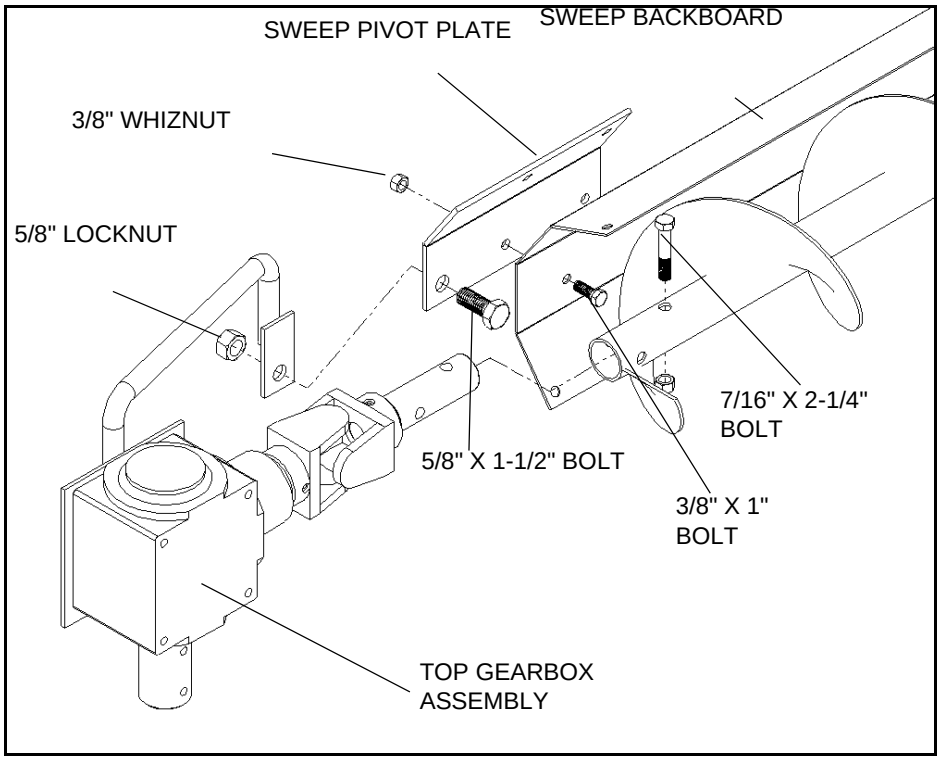


Figure 3.16

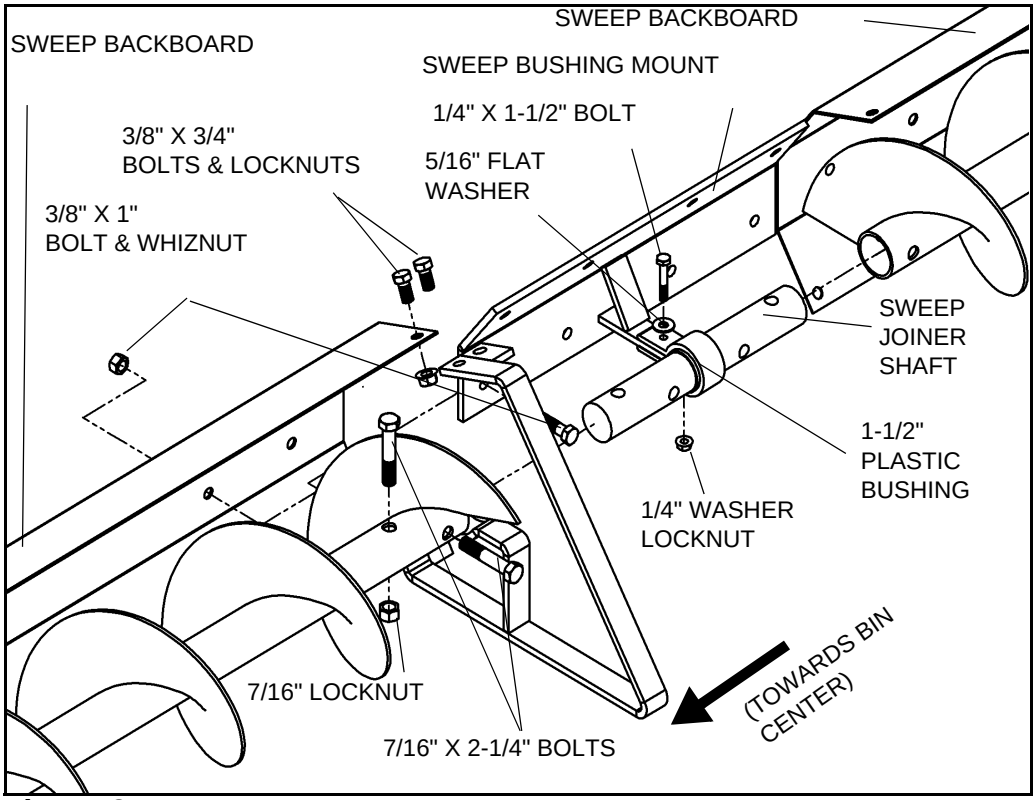

SWEEP BACKBOARD
SWEEP BACKBOARD
SWEEP BUSHING MOUNT
1/4" X 1-1/2" BOLT
3/8" X 3/4"
BOLTS & LOCKNUTS
5/16" FLAT
WASHER
3/8" X 1"
BOLT & WHIZNUT
SWEEP
JOINER
SHAFT
1-1/2"
PLASTIC
BUSHING
1/4" WASHER
LOCKNUT
(TOWARDS BIN
CENTER)
7/16" LOCKNUT
7/16" X 2-1/4" BOLTS

Figure 3.17

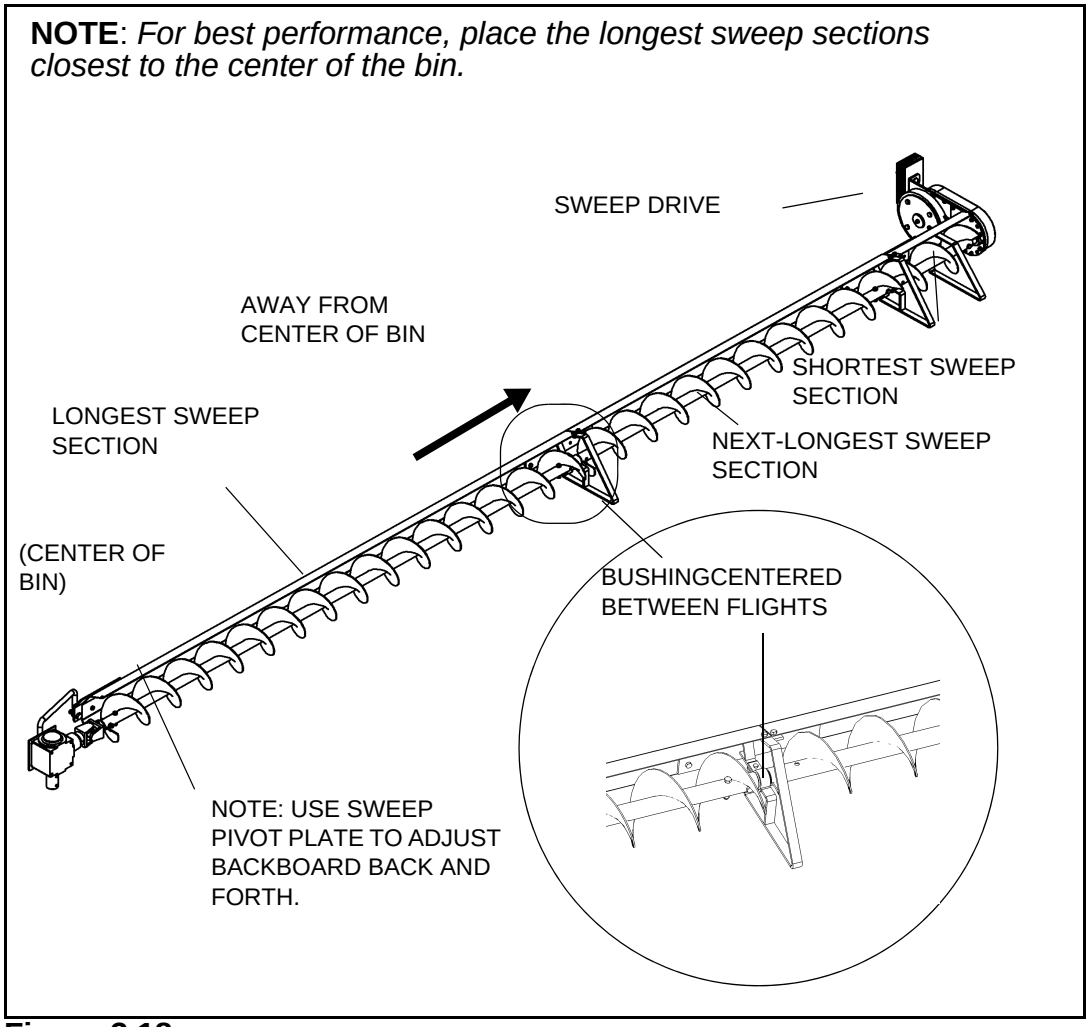


Figure 3.18

3.11. SWEEP DRIVE INSTALLATION (OPTIONAL)

Note: *Ensure sweep backboard doesn't catch on high spots on the aeration floor.*

1. See Figure 3.19 to install sweep drive onto the end of sweep sections. The sweep backboard attaches onto the back of the sweep gearbox mount plate (as shown) using four 3/8" x 1" bolts and whiznuts. Adjust for best fit and tighten securely.
2. At the same time, the shaft protruding from the sweep drive is inserted into the sweep flighting section. Secure this with two 7/16" x 2-1/4" bolts and locknuts. Tighten securely.

Note: *Inspect the sweep section as a whole, and ensure that the plastic bushings (between sweep sections) are not interfering with the sweep flighting. Use the adjustable slots on the sweep pivot plate and on the upper gearbox (Figure 3.18) to ideally position the backboard and plastic bushing mounts.*

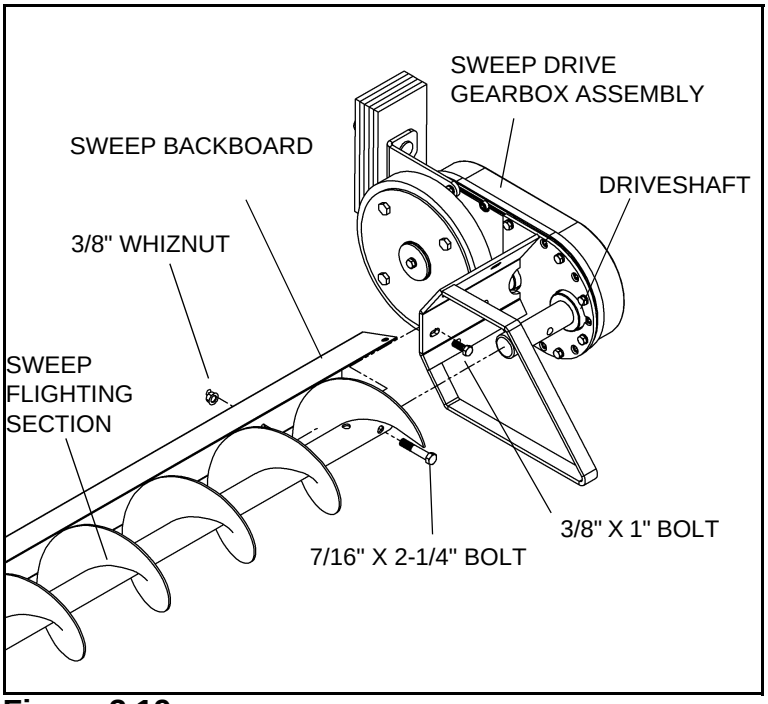

SWEEP DRIVE
GEARBOX ASSEMBLY
SWEEP BACKBOARD
DRIVESHAFT
3/8" WHIZNUT
SWEEP
FLIGHTING
SECTION
3/8" X 1" BOLT
7/16" X 2-1/4" BOLT

Figure 3.19

4. Operation

Efficient operation of the bin unload system requires that operators follow a checklist before each start-up and demands that safety procedures be observed at all times. To do otherwise is endangering life and limb and is a misuse of equipment.

CAUTION	
	Keep children and all unauthorized personnel clear of work area. Do not operate bin unload system with any of the safety shields removed. Always have another person nearby to shut down auger in case of accident. Keep body, hair, and clothing away from any moving parts. Wear hearing protection during operation. Shut down and lock out all power before servicing, cleaning, or adjusting.

4.1. PRE-OPERATIONAL CHECKLIST

Before operating bin unload system for the first time, and each time thereafter, the operator must follow a prescribed checklist. The checklist should confirm the following:

- All fasteners are secured as per assembly instructions.
- All safety shields are in place and secure.
- Drive belts are not frayed or damaged.
- Drive belts are properly adjusted.
- Discharge spout is free of obstructions.
- Inspect tube supports (where applicable) frequently.
- Proper maintenance has been performed.
- Operators are aware of all safety precautions.

4.2. BIN UNLOAD SYSTEM DRIVE AND LOCKOUT

Correct operation of the bin unload system requires pre-inspection of the drive system, operator knowledge on how to shut down the system, and a general monitoring of the system during operation.

Drive System - Electric Motor:

Before starting motor, ensure that:

1. The motor is properly grounded.
2. The pulley shield is in place and secure.
3. The work area is clear of all unauthorized personnel.

Lockout - Electric Motor:

1. The electric motor should be equipped with a main power disconnect switch capable of being locked in the off position only. The switch should be in the locked (off) position during shutdown or whenever maintenance is performed on the auger.
2. If reset is required, disconnect all power before resetting motor.

4.3. START-UP AND BREAK-IN

Start-up and break-in procedures for the bin unload system are as follows:

1. Ensure that you have completed the “Pre-Operational Checklist” on page 35.

CAUTION	
	Do not start bin unload system until area is clear of all unauthorized personnel.

2. Start motor and feed grain (in accordance with instructions in “Bin Unloading Procedure” on page 37) immediately. For the first 30 minutes, check that underfloor auger functions normally.

Important: *When starting underfloor auger for the first time, be prepared for an emergency shutdown in case of excessive vibration or noise. Note that the auger may run rough until tube is polished.*

3. Upon completion of initial run, decrease grain input until underfloor auger is empty and stop.
4. Lock out motor and conduct a complete inspection of bin unload system, following the “Pre-Operational Checklist” on page 35.
5. After the initial start up and inspection, the bin unload system should be shutdown and inspected at least three times during the first 10 hours of operation.
6. Keep operation of empty underfloor auger to a minimum as this results in excessive wear.
7. Once bin unload system is broken in, the checklist should be a part of the daily routine before operating the system.

4.4. BIN UNLOADING PROCEDURE

Refer to Figure 4.1.

Note: *Read and understand instructions outlined on decal #27102 (as seen in "Safety Decals" on page 9).*

1. Sweep gearbox must be disengaged (push gearbox shift handle towards bin wall to disengage sweep).
2. Ensure all hopper gates are closed (i.e. both center and intermediate hoppers).
3. Start system to ensure proper operation.

Important: *When starting underfloor auger for the first time, be prepared for an emergency shutdown in case of excessive vibration or noise. Note that the auger may run rough until tube is polished.*

4. Open center hopper slightly. Ensure product flows out of discharge end at a constant rate.

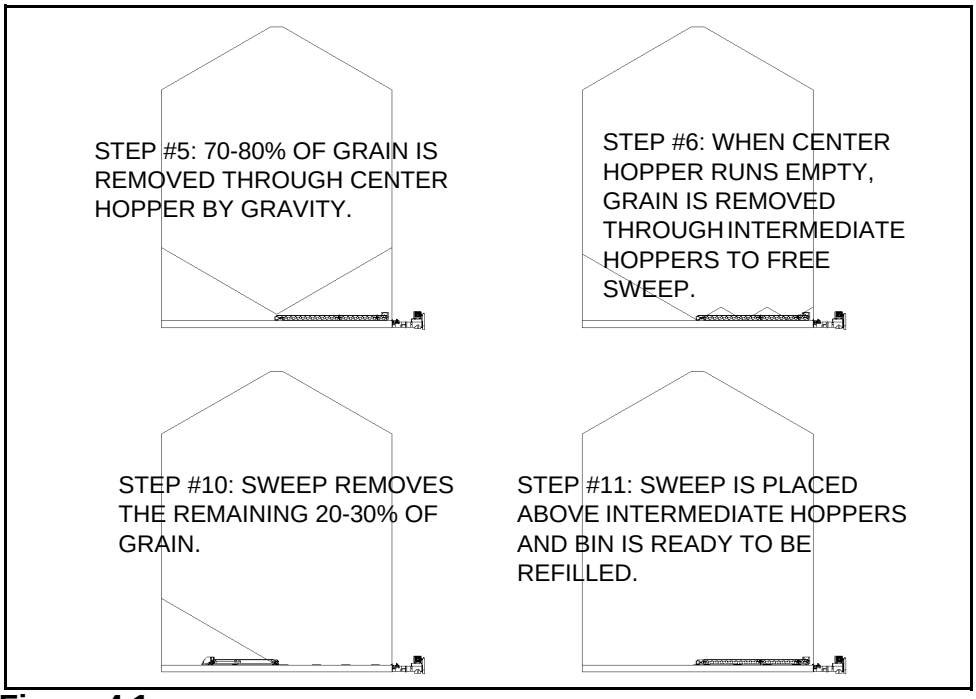


Figure 4.1

5. Continue to open center hopper; keep in mind to look for constant product flow at discharge end. Do this until center hopper is fully open.
6. When product flow (from discharge end) stops, unlock the padlock to open the intermediate hopper lockout cover. Open intermediate hopper(s) halfway. Monitor product flow for consistency before opening intermediate hopper(s) any further.

7. After grain has stopped flowing into intermediate hopper(s), shut down and lock out all power to the underfloor system. Close all intermediate hopper gates.
8. Release locking pin and engage bottom gearbox (by shifting the lever away from bin wall). Lock shift lever into place.
9. Start system.

DANGER	
	Do not enter bin while sweep system is running. Failure to heed will result in serious injury or death.

10. Make sure center hopper is fully open and maintain a constant product flow.
11. When product flow stops (and bin is clean), allow sweep to travel around bin so that it lines up over the intermediate hoppers and underfloor tube.
12. Shut down and lock out all power to bin unload system.

4.5. FULL LOAD PROCEDURE

For normal bin unload operations, the following procedure and safety precautions are strongly recommended:

1. When operating the bin unload system, always work with a second person in a position to monitor the operation and initiate a shutdown in case of an emergency.
2. Monitor the bin unload system during actual operation for abnormal noises or vibrations.
3. Observe the work area restrictions. If unauthorized personnel enter the hazard zone, shut down the unload auger and clear the area before restarting.
4. Shut down and lock out all power before making adjustments, servicing, or clearing the machine.

4.6. EMERGENCY SHUTDOWN

In the event of an intermittent or emergency shutdown, restart as follows:

1. If underfloor auger is full of grain, ensure that there is no blockage before restarting auger.

Important: *Starting the vertical auger under full load may result in damage to the unit. Be sure there is no blockage.*

2. If the system is shut down for an emergency, lock out motor before correcting problem. If the problem is clogging, clear as much of the grain as possible using a piece of wood, vacuum cleaner, or other tool (not your hands) before restarting unit. (See “Bin Unload System Drive and Lockout” on page 35 for lockout procedures).
3. Once obstruction is clear, disengage sweep (if applicable). Remove locking pin, shift lever towards bin wall and lock into place.
4. Close all intermediate hopper gates and close center hopper gate.
5. Restart bin unload system and follow Steps 4 - 11 of “Bin Unloading Procedure” on page 37 to finish unloading your bin.

5. Maintenance

Proper maintenance habits on the bin unload system mean a longer life for the machine, and a more efficient, safer operation.

CAUTION	
	Keep children and all unauthorized personnel clear when performing maintenance. Before performing any maintenance, ensure that power is shut down and locked out. Replace all shields.

5.1. GENERAL MAINTENANCE PROCEDURES

We recommend the following maintenance steps for the general maintenance of this bin unload system:

1. Observe the “Pre-Operational Checklist” on page 35on a daily basis when bin unload system is in use.
2. Check all operating components. Replace damaged or worn parts before using bin unload system.

Note: *To replace a damaged part, refer to “Assembly” on page 15.*

3. Drive Belt (Electric Motor Drive):

a. Belt Tension: Push on center of belt span with a force of approximately 5lbs. The belts will deflect ¼" - ½" when properly tensioned. Move the motor base to set drive belt tension.

b. Belt Alignment: Lay a straight edge across the pulley faces to check alignment. Use pulley hub to move pulley to required position for alignment. Tighten the hub set screws to secure pulley to shaft. Then check belt tension.

c. Belt Replacement: Move motor base to its loosest position. Remove old belt and replace with new one. Check pulley alignment and adjust if required.

CAUTION	
	Rreplacement parts are not lubricated. Replacement parts must be lubricated at time of assembly. Follow lube recommendations outlined in this section for lubing intervals. Ensure that all set screws are tight.

4. **Rack and Pinion System**: Ensure proper operation of gate opening system. Inspect bushing, chain and sprocket. Lubricate after every 8 hours of operation.
5. **Gearboxes**: Check lower gearbox shift handle for proper engagement/ disengagement. Maintain oil level at half full (center of cross shaft). Gearbox should be level when checking or refilling. **DO NOT OVERFILL**. Use only EP90 Lube Oil when filling gearboxes.
6. **Center and Intermediate Hoppers**: Ensure safety mesh is installed. Ensure slide gates open and close properly, and without interference. Replace slide gate rollers if necessary.

For **Binsweep Option**:

7. **Universal Joint**: Lubricate grease fitting in the U-joint after every 8 hours of operation. Check set screws and re-tighten if necessary.

Use only genuine BROCK replacement parts or equivalent. Replacement parts such as intake shields and pulley shields MUST MEET ASAE Standards or serious injury may result. Use of unauthorized parts will void warranty. If in doubt, contact BROCK or your BROCK dealer. Do not modify any bin unload system components.

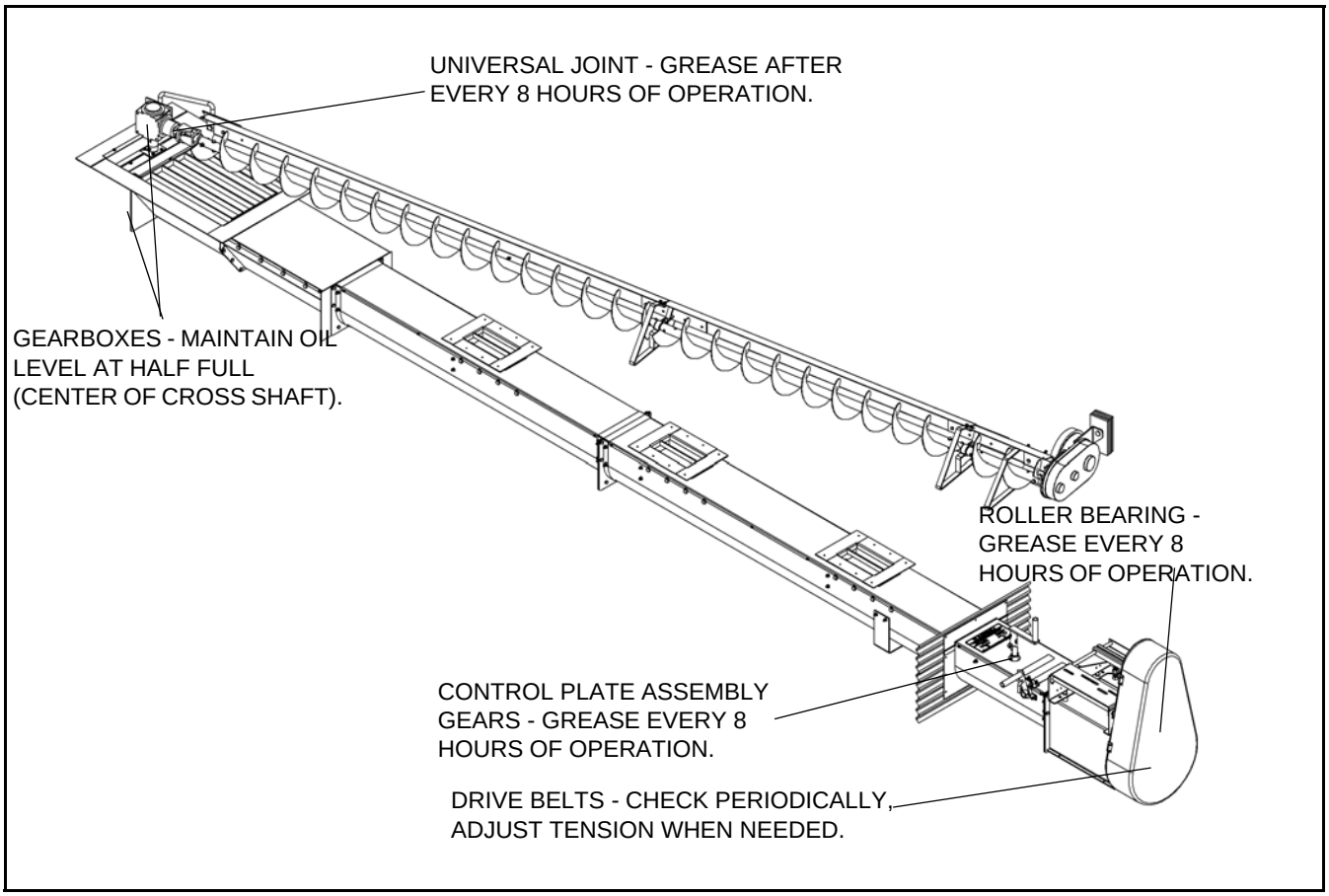
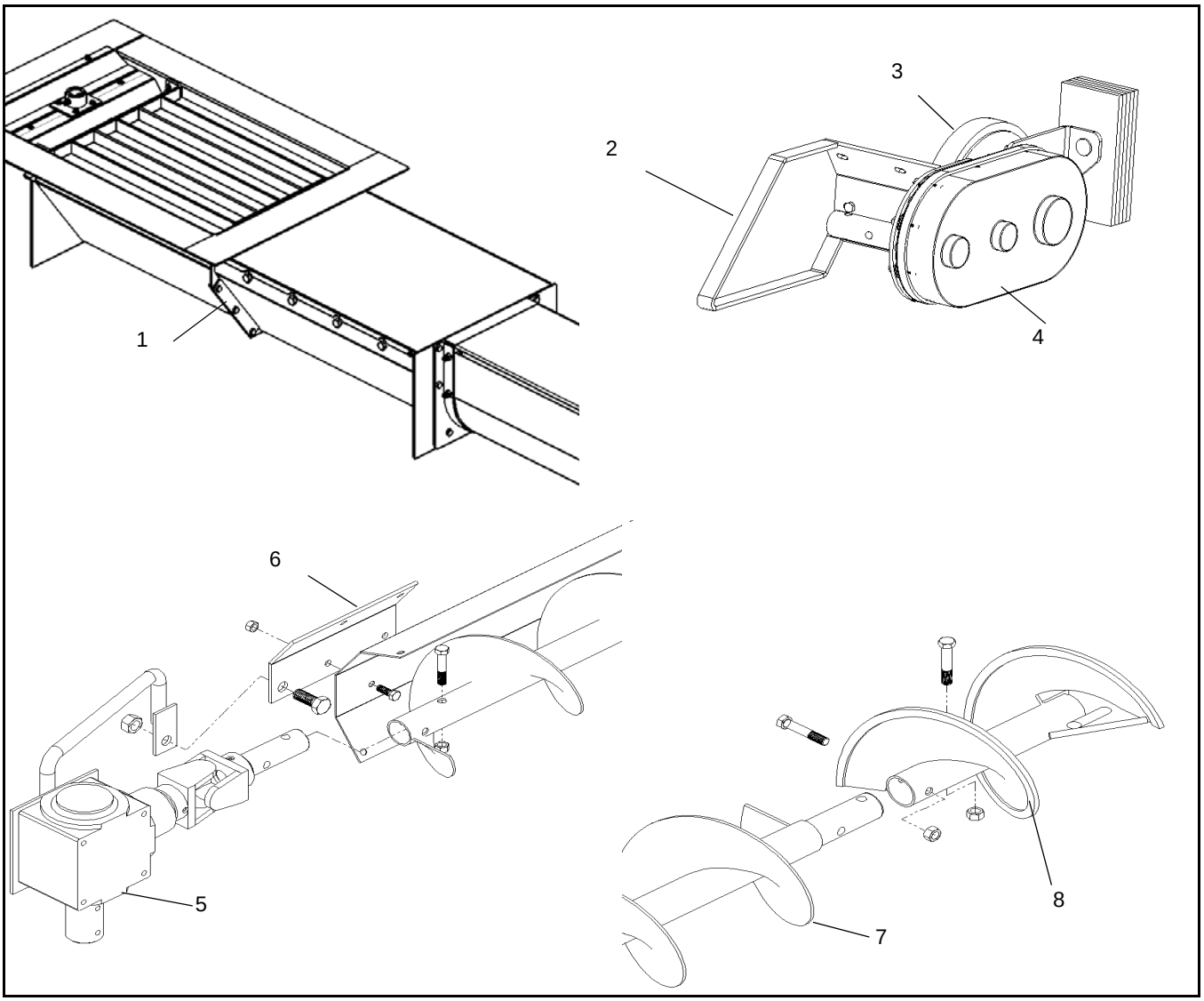


Figure 5.1 Maintenance of Bin Unload System

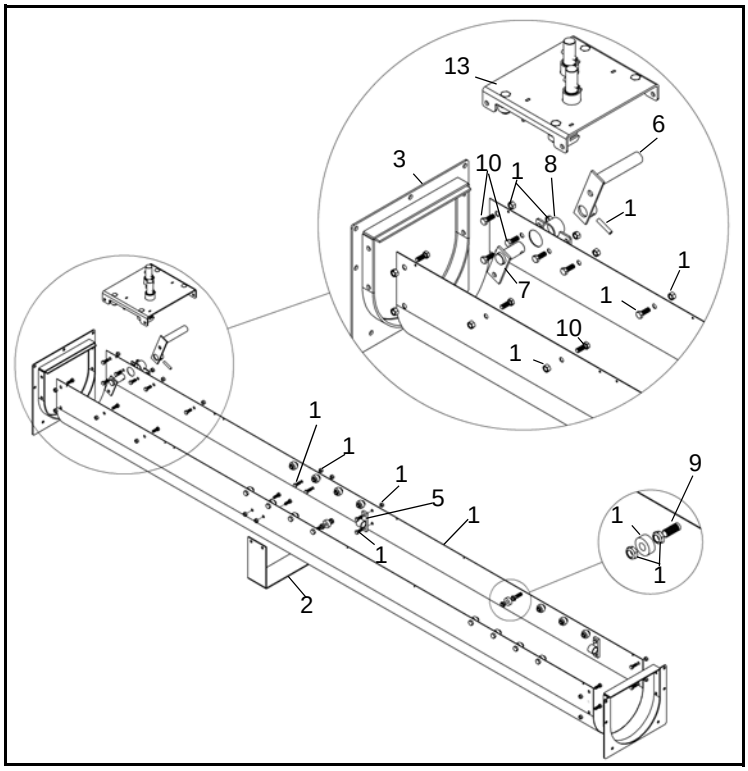
6. Parts Listing

6.1. UT300

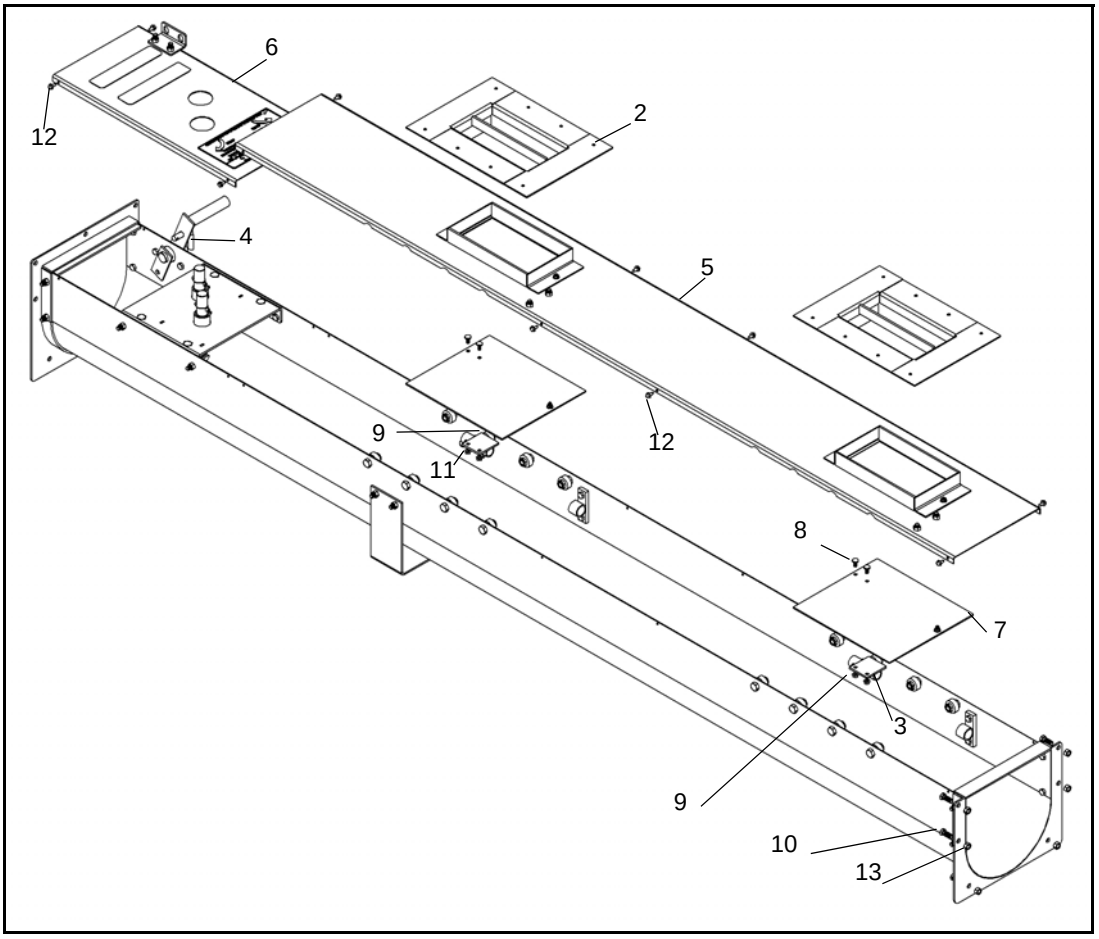


ITEM NO.	PART NO.	PARTS DESCRIPTION	QTY
1	UT300	CENTER HOPPER ASSEMBLY WITH GEARBOX	1
2	27784	SWEEP DRIVE GEARBOX MOUNT	1
3	27783	SWEEP DRIVE GEARBOX WHEEL	1
3A	28304	REPLACEMENT RUBBER ONLY (SWEEP DRIVE WHEEL)	1
4	27782	SWEEP DRIVE GEARBOX	1
5	27649	TOP GEARBOX ASSEMBLY	1
6	27160	SWEEP PIVOT PLATE	1
7	28418	24’ UNDERFLOOR FLIGHT	1
7	28419	27’ UNDERFLOOR FLIGHT	1
7	28420	30’ UNDERFLOOR FLIGHT	1
7	28421	33’ UNDERFLOOR FLIGHT	1
7	28330	36’ UNDERFLOOR FLIGHT	1
7	28331	42’ UNDERFLOOR FLIGHT	1
7	28332	48’ UNDERFLOOR FLIGHT	1
7	28333	54’ UNDERFLOOR FLIGHT	1
7	28334	60’ UNDERFLOOR FLIGHT	1
8	28359	CENTER HOPPER FLIGHT WELDMENT	1

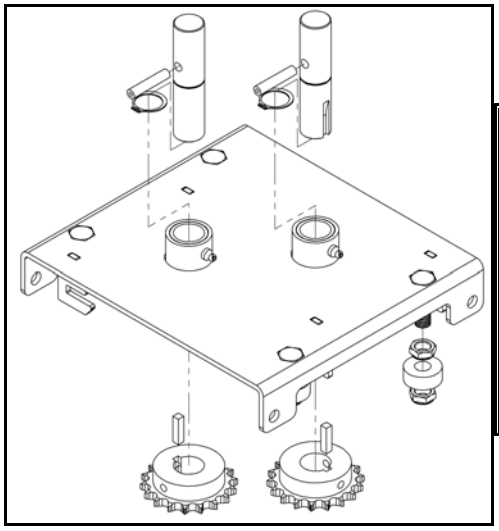
6.2. U-TROUGH DISCHARGE SECTION ASSEMBLY



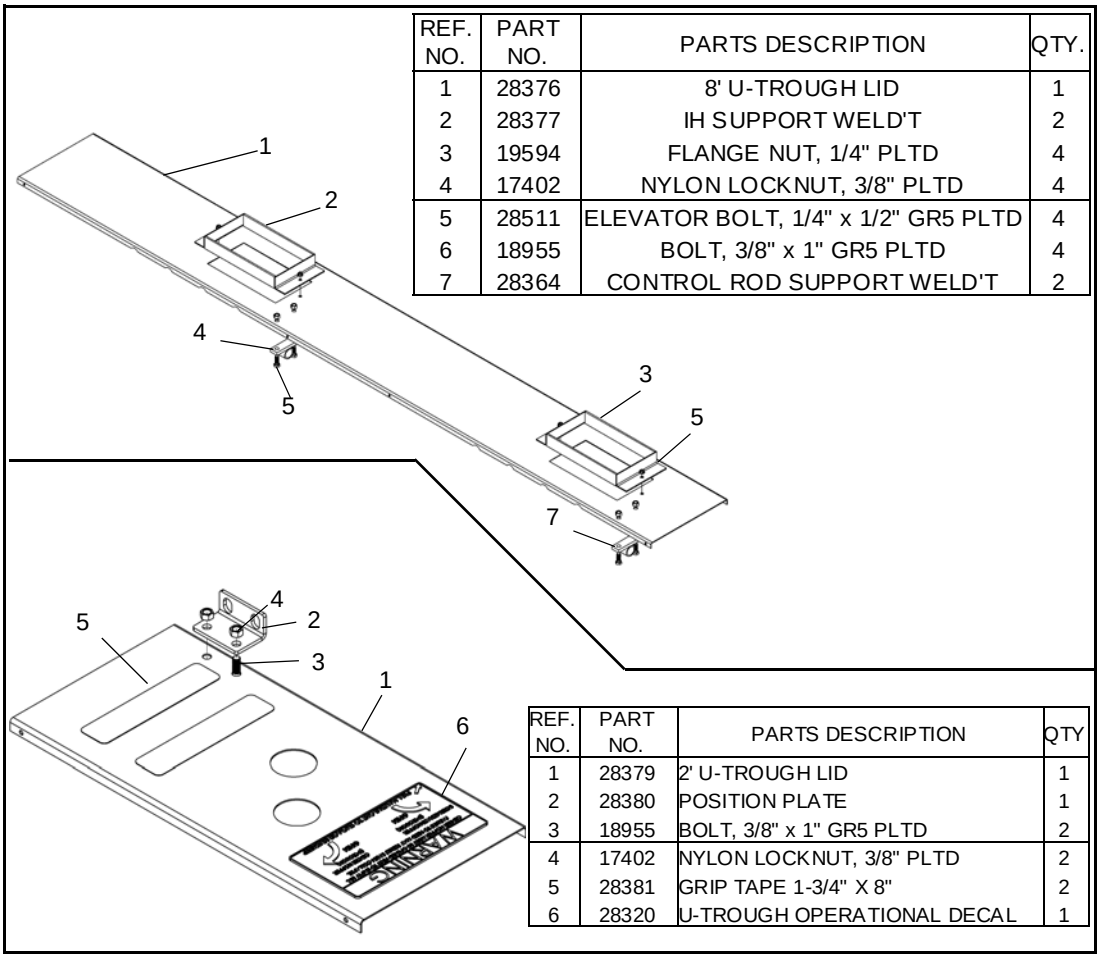
REF. NO.	PART NO.	PARTS DESCRIPTION	QTY
1	28534	10' TROUGH SECTION	1
2	28361	TROUGH SUPPORT	1
3	28362	POWERHEAD FLANGE WELD'T	1
4	28363	TROUGH FLANGE	1
5	28364	CONTROL ROD SUPPORT WELD'T	2
6	28365	GEARBOX SHIFT LEVER OUTER	1
7	28366	GEARBOX SHIFT LEVER INNER	1
8	16235	GEARBOX LEVER SUPPORT WELD'T	1
9	19588	BOLT, 1/2" x 1 1/4" GR5 PLTD	16
10	18955	BOLT, 3/8" x 1" GR5 PLTD	22
11	17756	JAM NUT, 1/2" BLK	32
12	27107	GATE GUIDE ROLLER	16
13	16325	CONTROL PLATE ASMBLY	1
14	17402	NYLON LOCKNUT, 3/8" PLTD	22
15	17682	5/16" x 1-1/2" ROLL PIN	1



REF. NO.	PART NO.	DESCRIPTION	QTY.
1	28555	10' TROUGH ASMBLY	1
2	27724	INTERMED HOPR WELD'T - TOP	2
3	27111	GATE COUPLER WELD'T	2
4	27192	SHIFTER LOCK PIN	1
5	28370	8' LID ASMBLY	1
6	28371	2' LID ASMBLY	1
7	28372	INTERMEDIATE HOPPER GATE	2
8	27113	CARRIAGE BOLT, 1/4" x 3/4" GR2 PLTD	6
9	19594	FLANGE NUT, 1/4" PLTD	14
10	18955	BOLT, 3/8" x 1" GR5 PLTD	6
11	19985	BOLT, 1/4" x 1 1/2" GR2 PLTD	8
12	19274	SMS, #14 x 5/8" w/ WASHERHEAD	12
13	17402	NYLON LOCKNUT, 3/8" PLTD	6



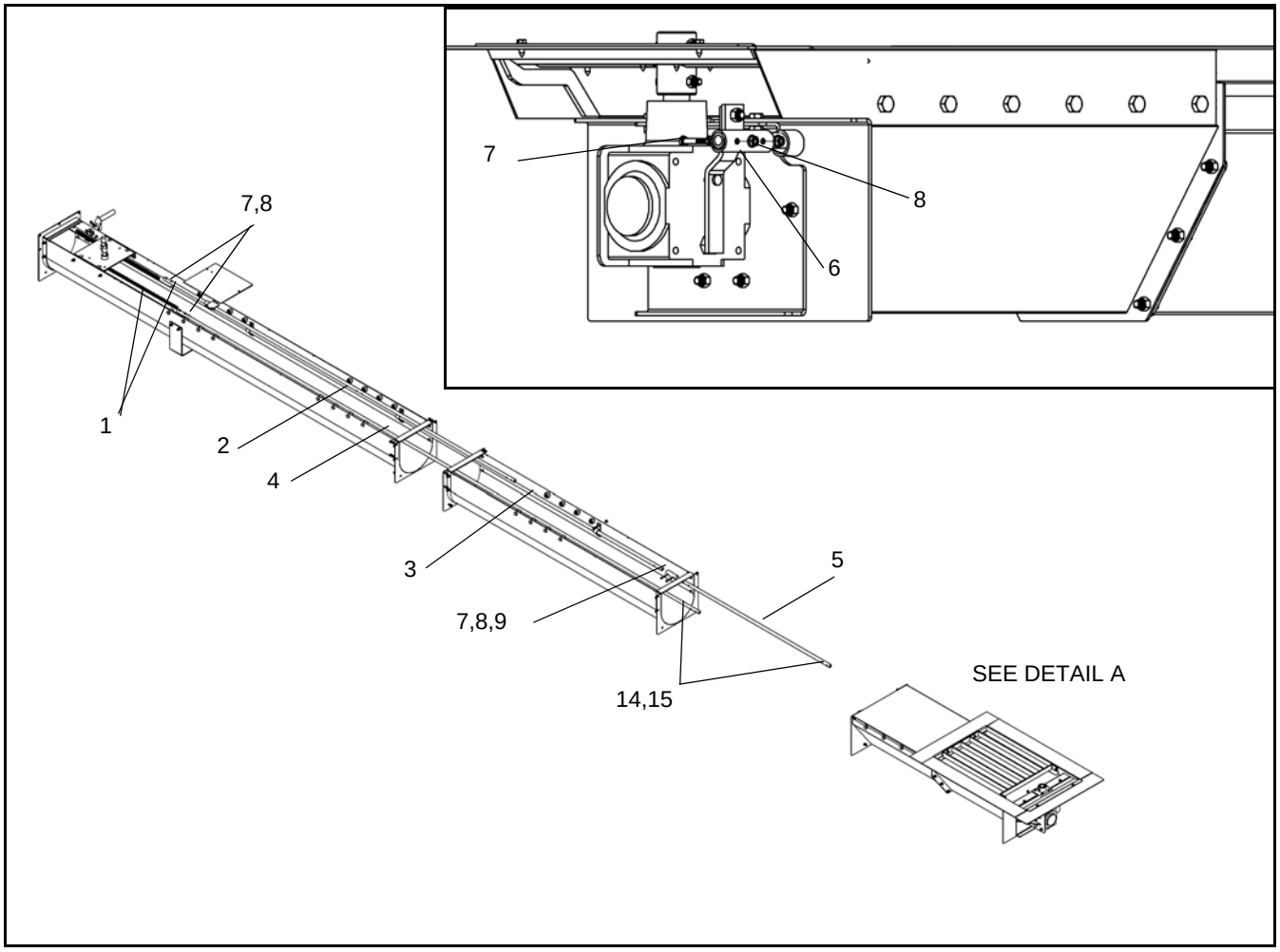
REF. NO.	PART NO.	PARTS DESCRIPTION	QTY
1	16241	CONTROL PLATE WELD'T	1
2	27107	GATE GUIDE ROLLER	4
3	17756	JAM NUT, 1/2" BLK	4
4	50697	DRIVESHAFT, CONTROL PLATE	2
5	27121	SPROCKET, 40B18 w/ 1" I.D.	2
6	17682	5/16" x 1-1/2" ROLL PIN	2
7	50732	1" EXTERNAL SNAP RING	2
8	27287	1/4" x 1" SQUARE KEY (# 27287)	2
9	19599	LOCKNUT, 1/2" PLTD	4



REF. NO.	PART NO.	PARTS DESCRIPTION	QTY.
1	28376	8' U-TROUGH LID	1
2	28377	IH SUPPORT WELD'T	2
3	19594	FLANGE NUT, 1/4" PLTD	4
4	17402	NYLON LOCKNUT, 3/8" PLTD	4
5	28511	ELEVATOR BOLT, 1/4" x 1/2" GR5 PLTD	4
6	18955	BOLT, 3/8" x 1" GR5 PLTD	4
7	28364	CONTROL ROD SUPPORT WELD'T	2

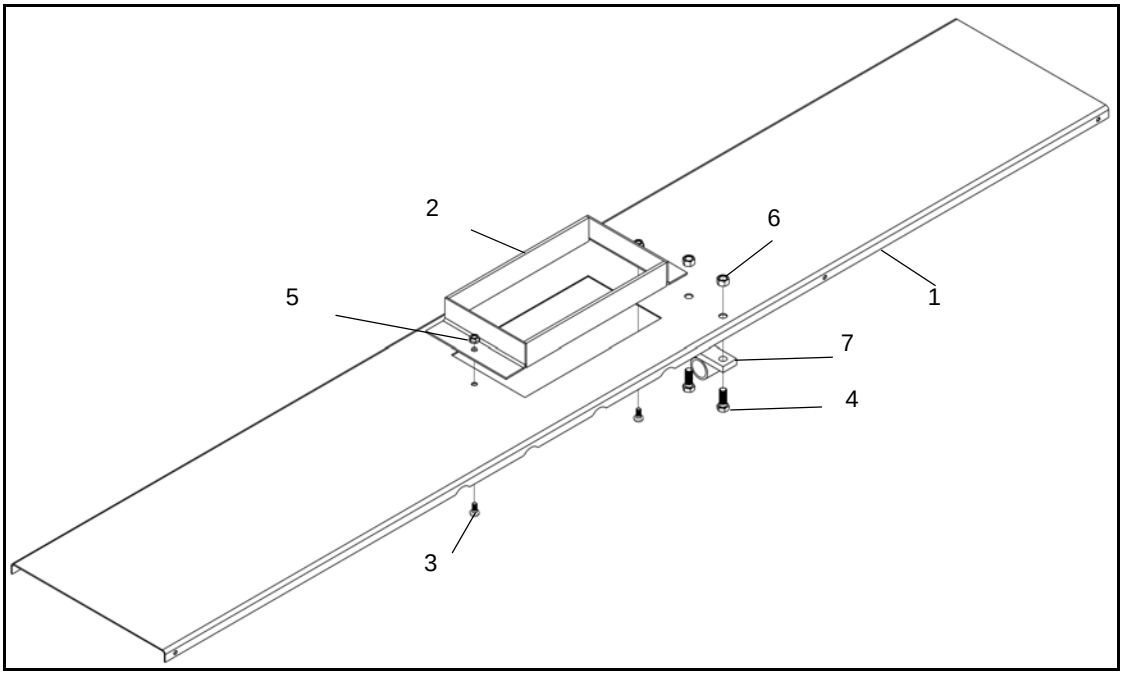
REF. NO.	PART NO.	PARTS DESCRIPTION	QTY
1	28379	2' U-TROUGH LID	1
2	28380	POSITION PLATE	1
3	18955	BOLT, 3/8" x 1" GR5 PLTD	2
4	17402	NYLON LOCKNUT, 3/8" PLTD	2
5	28381	GRIP TAPE 1-3/4" X 8"	2
6	28320	U-TROUGH OPERATIONAL DECAL	1

6.3. CONTROL ROD ASSEMBLY

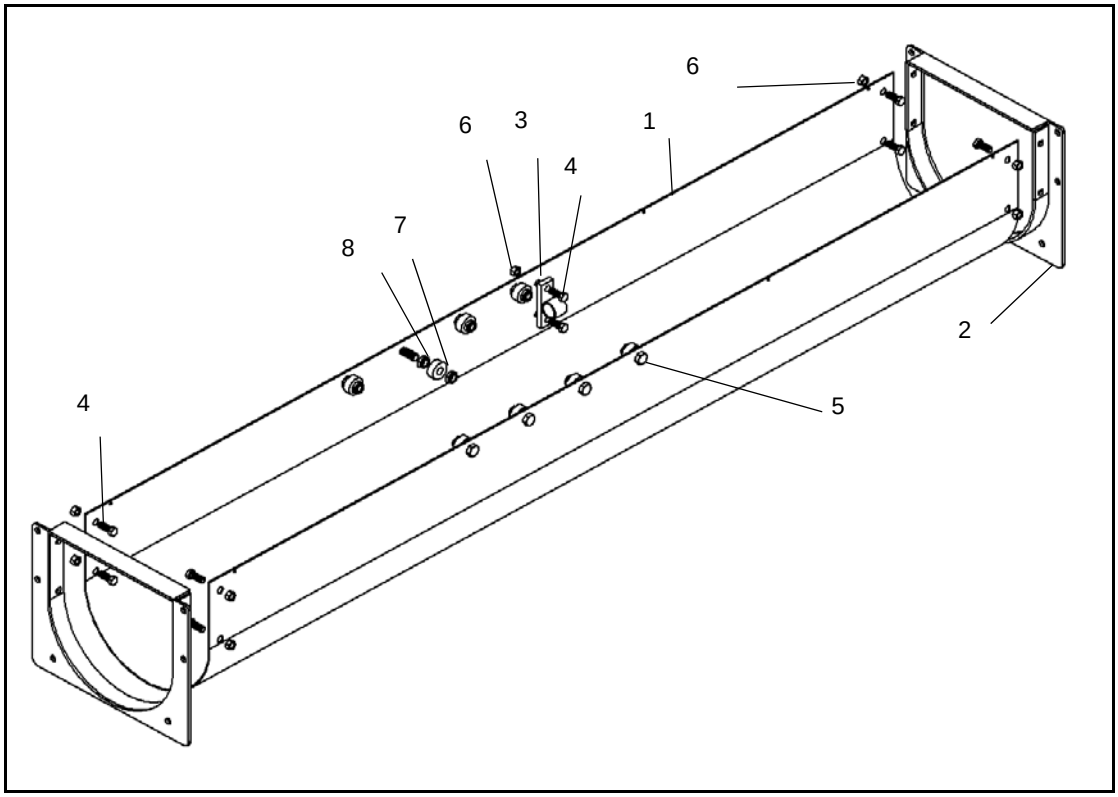


REF NO.	PART NO.	PARTS DESCRIPTION	QTY.								
			24’	27’	30’	33’	36’	42’	48’	54’	60’
1	28382	RACK WELDMENT	2	2	2	2	2	2	2	2	2
2	28538	CONTROL ROD	1	-	-	-	-	-	-	-	-
2	28538	CONTROL ROD	-	1	-	-	-	-	-	-	-
2	28541	CONTROL ROD	-	-	1	-	-	-	-	-	-
2	50766	CONTROL ROD	-	-	-	1	-	-	-	-	-
2	28383	CONTROL ROD 190”	-	-	-	-	1	-	-	-	-
2	28384	CONTROL ROD 226”	-	-	-	-	-	1	-	-	-
2	28385	CONTROL ROD 262”	-	-	-	-	-	-	1	-	-
2	28386	CONTROL ROD 298”	-	-	-	-	-	-	-	1	-
2	28387	CONTROL ROD 334”	-	-	-	-	-	-	-	-	1
3	28543	CONTROL ROD	1	-	-	-	-	-	-	-	-
3	28544	CONTROL ROD	-	1	-	-	-	-	-	-	-
3	28545	CONTROL ROD	-	-	1	-	-	-	-	-	-
3	28546	CONTROL ROD	-	-	-	1	-	-	-	-	-
3	28547	CONTROL ROD 118”	-	-	-	-	1	-	-	-	-
3	28548	CONTROL ROD 172”	-	-	-	-	-	1	-	-	-
3	28549	CONTROL ROD 190”	-	-	-	-	-	-	1	-	-
3	28550	CONTROL ROD 244”	-	-	-	-	-	-	-	1	-
3	28551	CONTROL ROD 262”	-	-	-	-	-	-	-	-	1
4	28539	CONTROL ROD	1	-	-	-	-	-	-	-	-
4	28537	CONTROL ROD	-	1	-	-	-	-	-	-	-
4	28540	CONTROL ROD	-	-	1	-	-	-	-	-	-
4	28535	CONTROL ROD	-	-	-	1	-	-	-	-	-
4	28393	CONTROL ROD 175-1/2”	-	-	-	-	1	-	-	-	-
4	28394	CONTROL ROD 211-1/2”	-	-	-	-	-	1	-	-	-
4	28395	CONTROL ROD 247-1/2”	-	-	-	-	-	-	1	-	-
4	28396	CONTROL ROD 283-1/2”	-	-	-	-	-	-	-	1	-
4	28397	CONTROL ROD 319-1/2”	-	-	-	-	-	-	-	-	1
5	28398	CONTROL ROD 50”	1	1	1	1	1	1	1	1	1
6	28399	GEARBOX SHIFTER	1	1	1	1	1	1	1	1	1
7	N/A	1/4 X 1-1/2 BOLT	8	8	8	8	8	8	8	8	8
8	19594	1/4 FLANGE NUT	8	8	8	8	8	8	8	8	8
9	27110	CONTROL ROD COUPLER	1	1	1	1	1	1	1	1	1

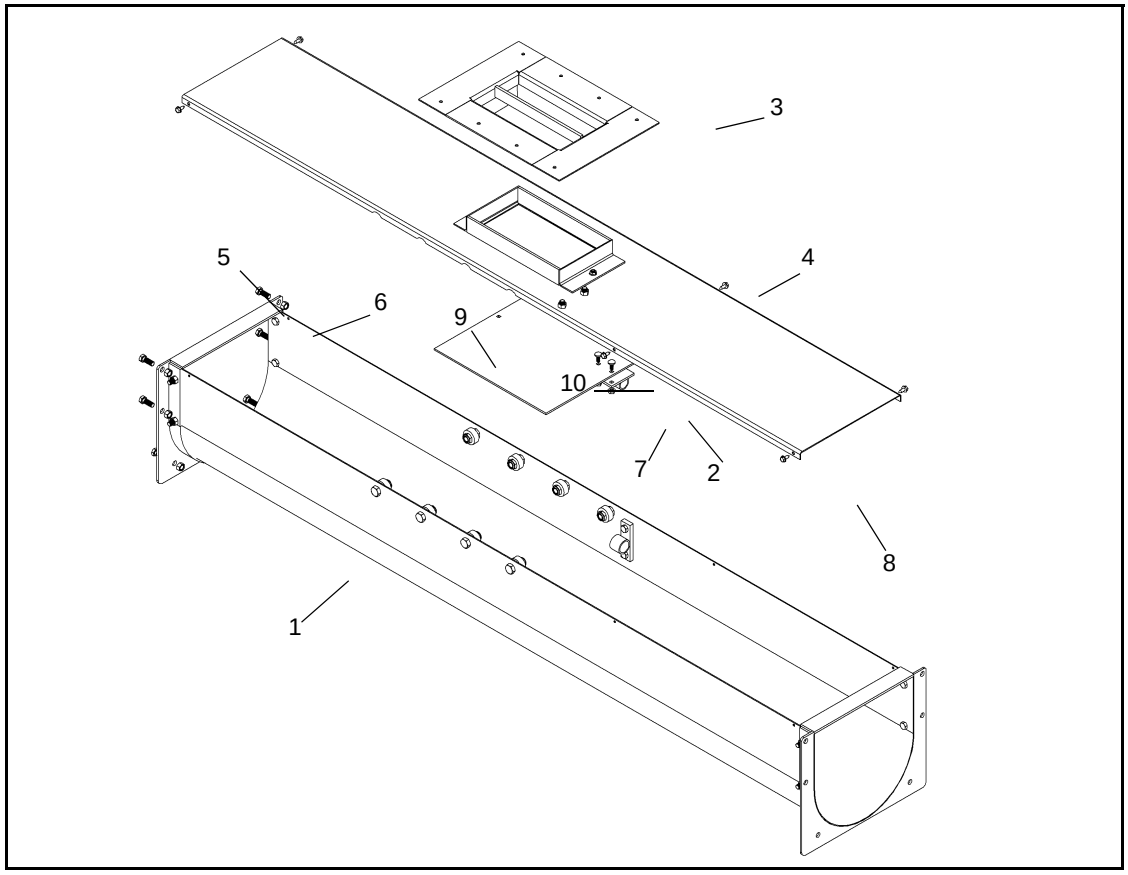
6.4. U-TROUGH SECTION ASSEMBLY



REF. NO.	PART NO.	PARTS DESCRIPTION	QTY.	
			3	'6'
1	28400	3' U-TROUGH LID	1	-
1	28401	6' U-TROUGH LID	-	1
2	28377	IH SUPPORT WELD'T	1	1
3	28511	BOLT, 1/4" x 1/2" GR5 PLTD	2	2
4	18955	ELEVATOR BOLT, 3/8" x 1" GR5 PLTD	2	2
5	19594	FLANGE NUT, 1/4" PLTD	2	2
6	17402	NYLON LOCKNUT, 3/8" PLTD	2	2
7	28364	CONTROL ROD SUPPORT WELD'T	1	1



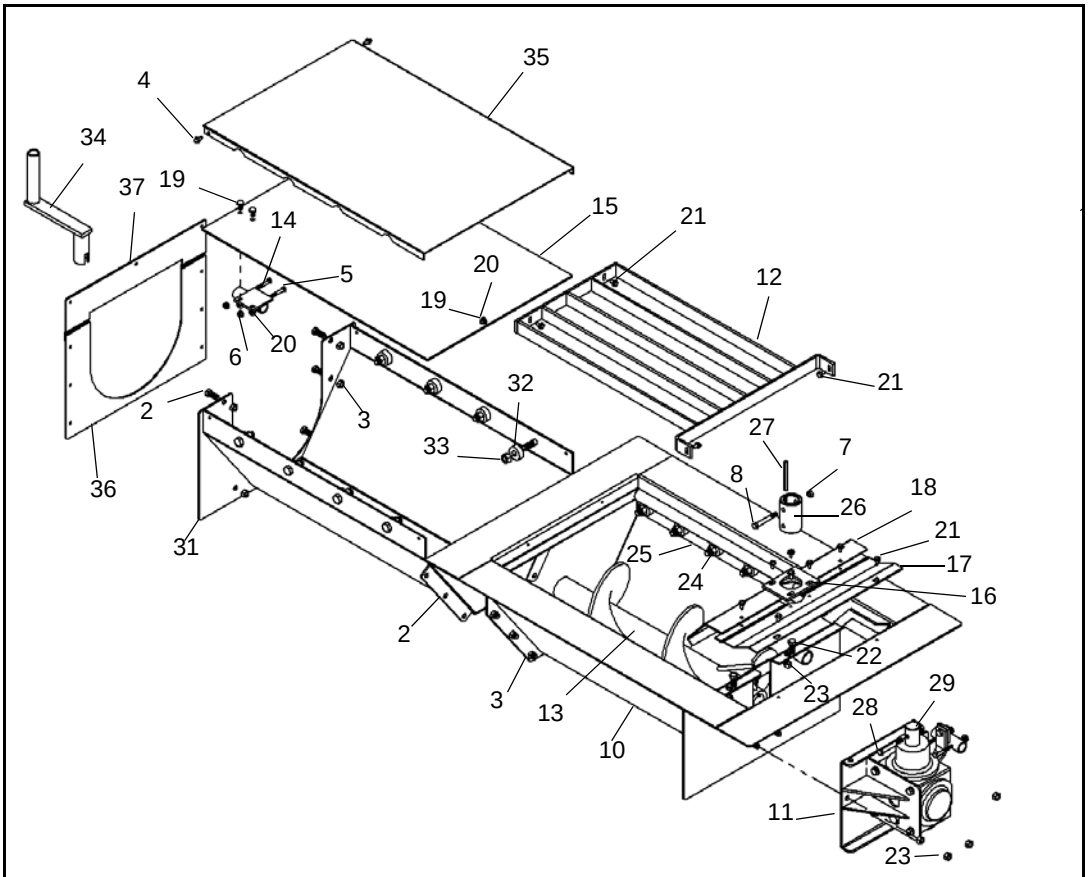
REF. NO.	PART NO.	PARTS DESCRIPTION	QTY.		
			18"	3'	6'
1	28531	18" U-TROUGH SECTION	1	-	-
1	28533	6' TROUGH SECTION	-	1	-
1	28532	3’ TROUGH SECTION	-	-	1
2	28363	TROUGH FLANGE	2	2	2
3	28364	CONTROL ROD SUPPORT	-	1	1
4	18955	BOLT, 3/8" x 1" GR5 PLTD	8	10	10
5	19588	BOLT, 1/2" x 1 1/4" GR5 PLTD	-	8	8
6	17402	NYLON LOCKNUT, 3/8" PLTD	8	10	10
7	28357	JAM NUT, 1/2" PLTD	-	16	16
8	28531	GATE GUIDE ROLLER	-	8	8

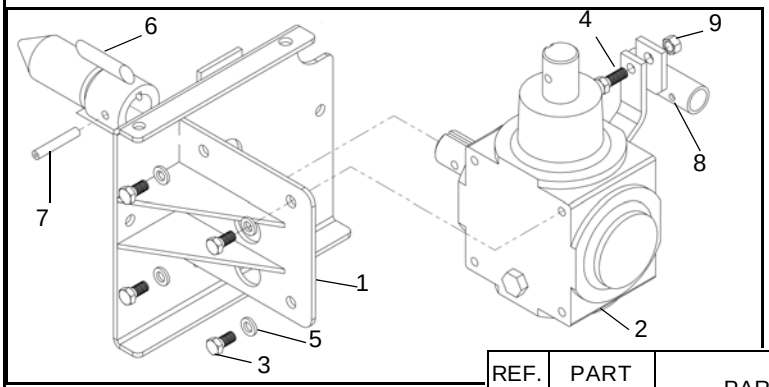


REF. NO.	PART NO.	DESCRIPTION	QTY	
			3	'6'
1	28553	3' TROUGH ASMBLY	1	-
1	28554	6' TROUGH ASMBLY	-	1
2	27111	GATE COUPLER WELD'T	1	1
3	27724	INTERMED HOPR WELD'T - TOP	1	1
4	28411	3' LID ASMBLY	1	-
4	28412	6' LID ASMBLY	-	1
5	18955	BOLT, 3/8" x 1" GR5 PLTD	6	6
6	17402	NYLON LOCKNUT, 3/8" PLTD	6	6
7	19594	FLANGE NUT, 1/4" PLTD	2	2
8	19274	SMS, #14 x 5/8" w/ WASHERHEAD	6	6
9	28312	INTERMEDIATE HOPPER GATE	1	1
10	27113	CARRIAGE BOLT, 1/4" x 3/4" GR2 PLTD	2	2

6.5. U-TROUGH INTAKE ASSEMBLY

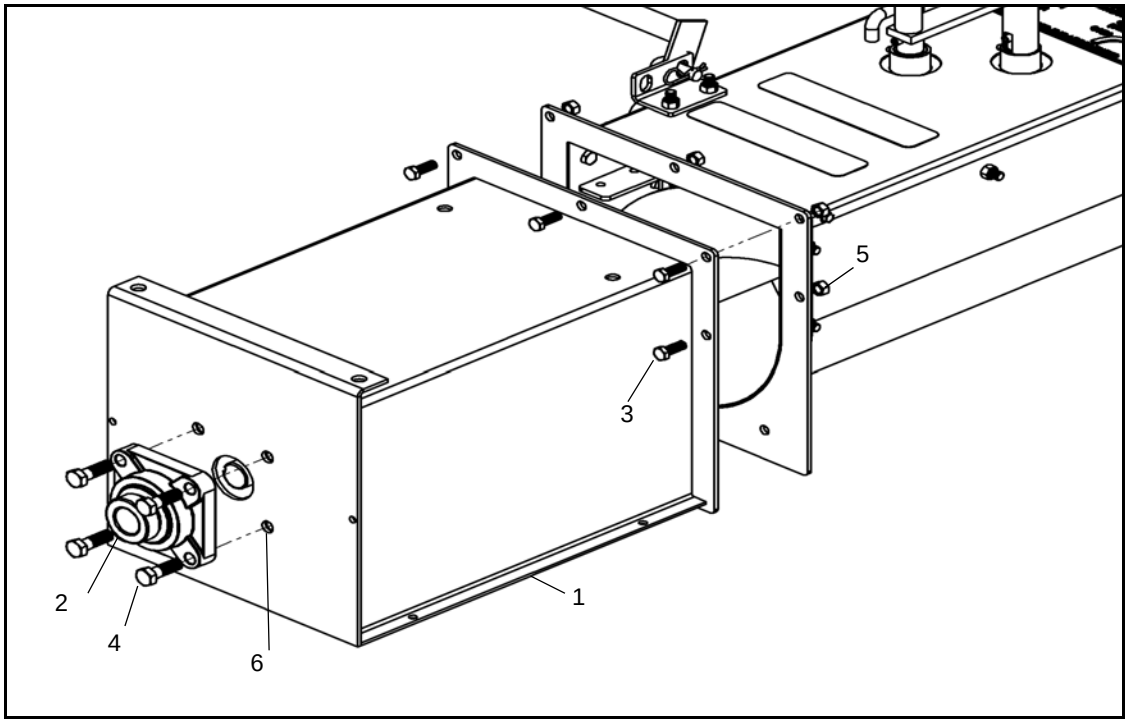
REF. NO	PART NO.	DESCRIPTION	QTY.
1	16245	UT 200/300 BOLT BAG	1
2	18955	BOLT, 3/8" x 1" GR5 PLTD	12
3	17402	NYLON LOCKNUT, 3/8" PLTD	12
4	19274	SMS, #14 x 5/8" w/ WASHERHEAD	2
5	19985	BOLT, 1/4" x 1 1/2" GR2 PLTD	4
6	19594	FLANGE NUT, 1/4" PLTD	4
7	19980	NYLON LOCKNUT, 5/16" PLTD	1
8	17631	BOLT, 5/16" x 2 1/2" GR2 PLTD	1
9	UT300-1	CH W/ GBOX	1
10	28378	U-TROUGH CH WELD'T	1
11	28402	10" BOTTOM GEARBOX SUB-ASS'Y	1
12	28403	U-TROUGH CH GUARD WELDM'T	1
13	28359	CENTER HOPPER FLIGHT WELD'T	1
14	27111	GATE COUPLER WELD'T	1
15	28406	CENTER HOPPER GATE	1
16	27572	PLASTIC SEAL - GEARBOX	1
17	27570	CH ACCESS PANEL - TOP	1
18	28407	UT CH ACCESS PANEL - BOTTOM	1
19	27113	CARRIAGE BOLT, 1/4" x 3/4" GR2 PLTD	3
20	19594	FLANGE NUT, 1/4" PLTD	3
21	19274	SMS, #14 x 5/8" w/ WASHERHEAD	12
22	18955	BOLT, 3/8" x 1" GR5 PLTD	6
23	17402	NYLON LOCKNUT, 3/8" PLTD	6
24	27107	GATE GUIDE ROLLER	12
25	19599	LOCKNUT, 1/2" PLTD	12
26	27574	1-1/4" GEARBOX CONNECTOR	1
27	19607	1/4" x 3" SQUARE KEY (# 19607)	1
28	17631	BOLT, 5/16" x 2 1/2" GR2 PLTD	1
29	19980	NYLON LOCKNUT, 5/16" PLTD	1
30	UT 300-2	U-TROUGH EH	1
31	28410	U-TROUGH EH WELD'T	1
32	27107	GATE GUIDE ROLLER	8
33	19599	LOCKNUT, 1/2" PLTD	8
34	27124	CRANK HANDLE WELDMENT	1
35	28413	EXTENSION HOPPER LID	1
36	28414	BIN WALL ADAPTER,LOWER	1
37	28415	BIN WALL ADAPTER,UPPER	1





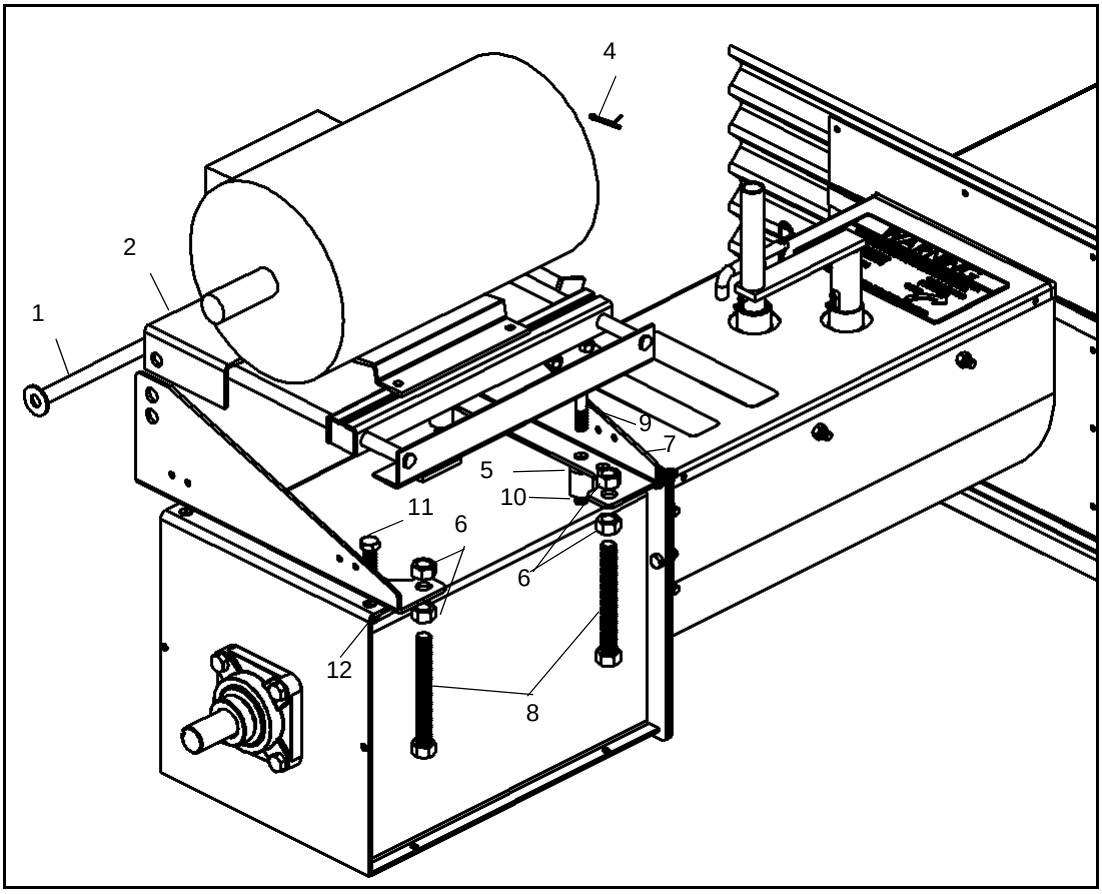
REF. NO.	PART NO.	PARTS DESCRIPTION	QTY
1	28416	GEARBOX PLATE WELD'T	1
2	27100	BOTTOM GEARBOX	1
3	18184	BOLT, 3/8" x 3/4" GR2 BLK	4
4	18955	BOLT, 3/8" x 1" GR5 PLTD	1
5	19604	LOCKWASHER, 3/8"	4
6	27112	10" QUICK ATTACH STUB WELD'T	1
7	18079	ROLL PIN, 5/16" x 2"	1
8	28399	GEARBOX SHIFTER	1
9	17402	NYLON LOCKNUT, 3/8" PLTD	1

6.6. U-TROUGH POWERHEAD ASSEMBLY

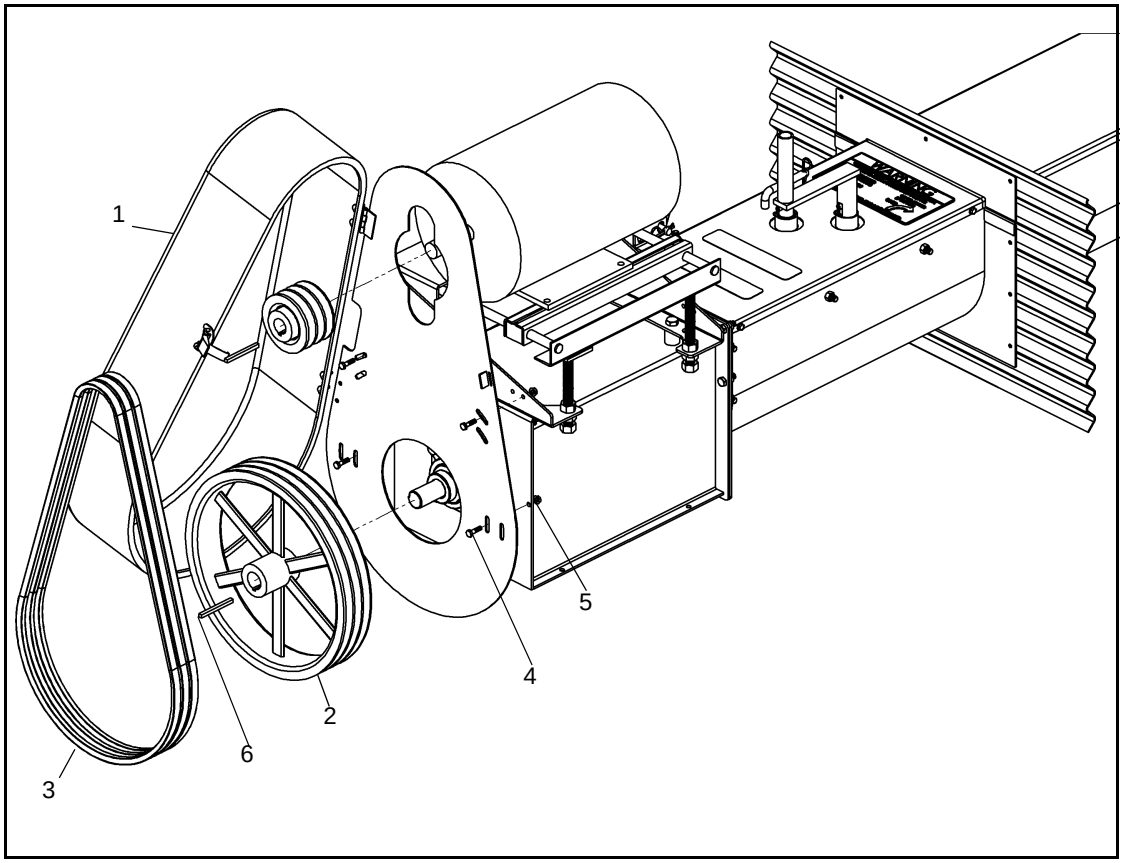


REF. NO.	PART NO.	PARTS DESCRIPTION	QTY
1	28417	POWERHEAD WELD'T	1
2	19567	1-1/4" BEARING, W/4 BOLT FLANGE	1
3	18955	BOLT, 3/8" x 1" GR5 PLTD	7
4	19589	BOLT, 1/2" x 1 1/2" GR5 PLTD	4
5	17402	NYLON LOCKNUT, 3/8" PLTD	7
6	19599	LOCKNUT, 1/2" PLTD	4

6.7. U-TROUGH DRIVE UNIT ASSEMBLY

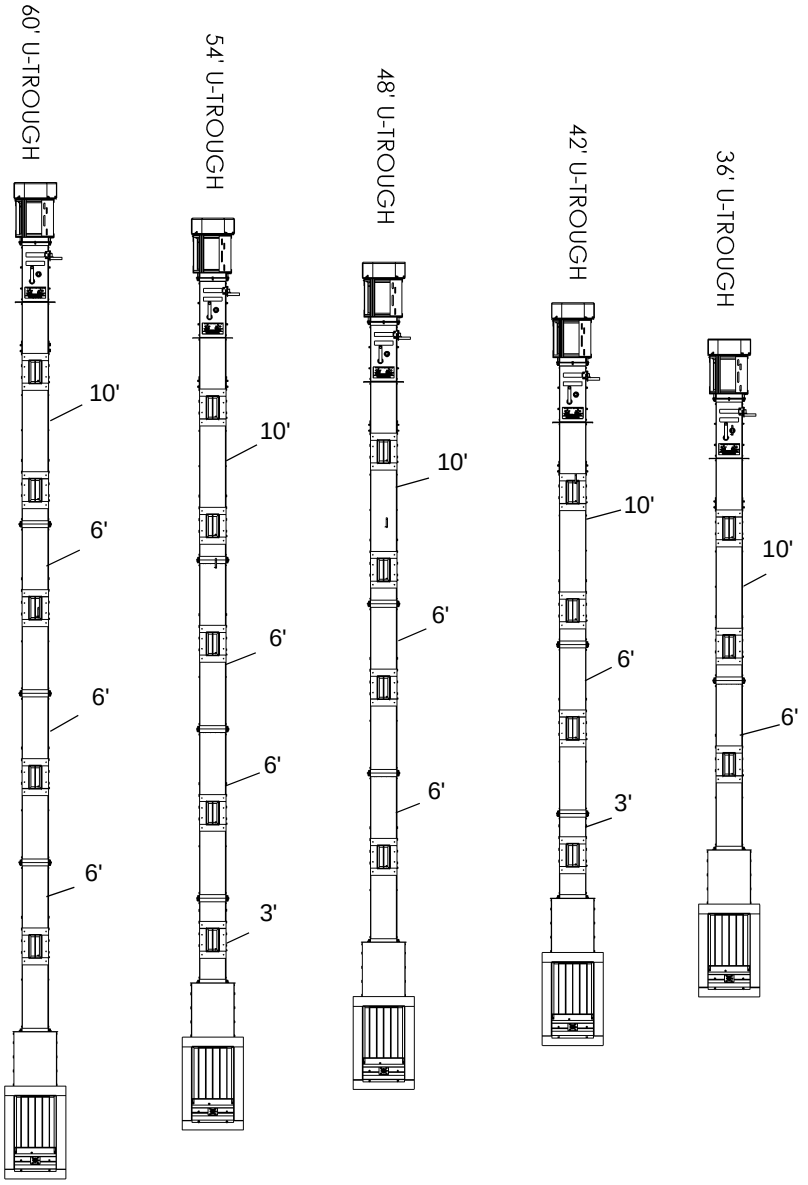


REF. NO.	PART NO.	PARTS DESCRIPTION	QTY
1	27468	10/13 HINGE ROD WELD	1
2	27467	10/13 MOTOR MOUNT WELD	1
3	28336	FRONT MOUNT PLATE	1
4	19271	19271 1/8 X 1-1/2 COTTER PIN	1
5	28353	M MOUNT SPACER	2
6	19864	5/8 HEX NUT	4
7	28335	BACK MOUNT PLATE	1
8	27249	ADJUST BOLT	2
9	17403	1/2 X 2-1/2 BOLT	2
10	17750	1/2 LOCKNUT	4
11	19588	1/2 X 1-1/4 BOLT	2

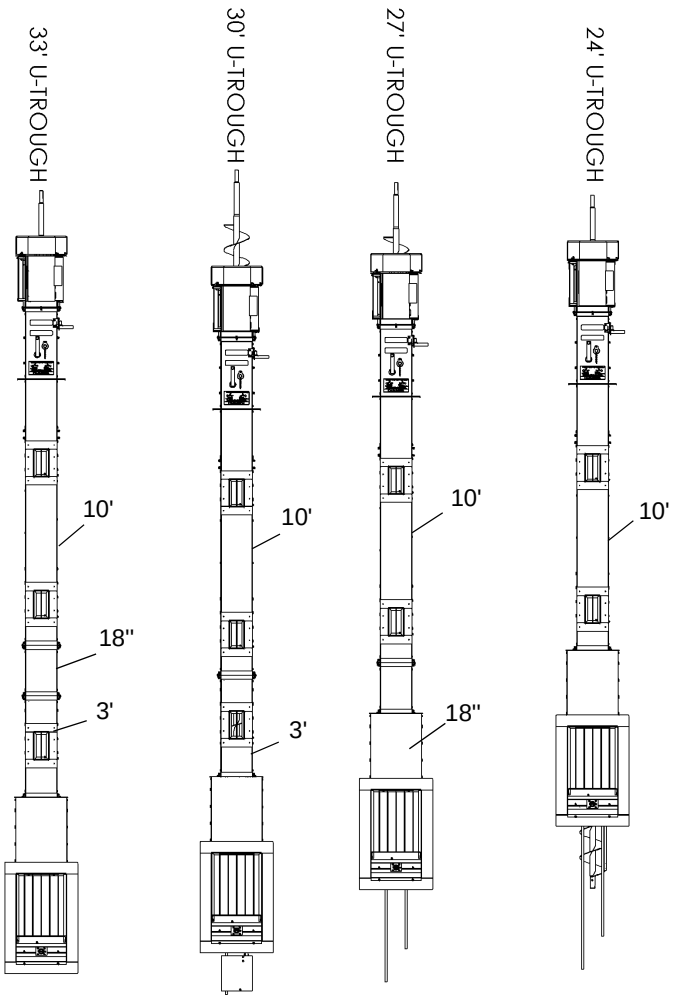


REF. NO.	PART NO.	PARTS DESCRIPTION	QTY
1	28052	UT10/13 PULLEY GUARD ASSM	1
2	19933	15" X 1-1/4" TRIPLE B GROOVE PULLEY	1
3	19935	B67 BELT	3
4	19988	1/4 X 1 BOLT	4
5	19594	1/4 FLANGE NUT	4
6	19607	1/4 X 3 KEY	1

6.8. U-TROUGH SECTIONS

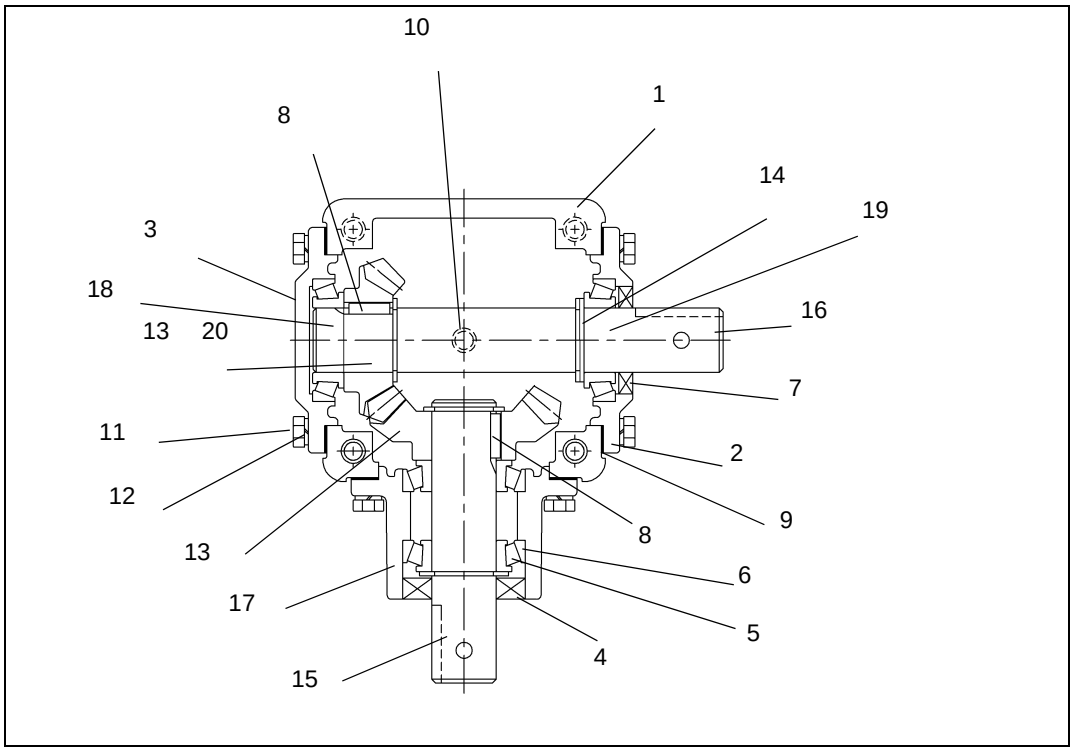


NOTE: WHEN LAYING SECTIONS ON CONCRETE, SHIM UP U-TROUGH EVERY 4' TO KEEP UNDERFLOOR LEVEL WITH FLOOR. THIS WILL PROLONG LIFE AND ENSURE A



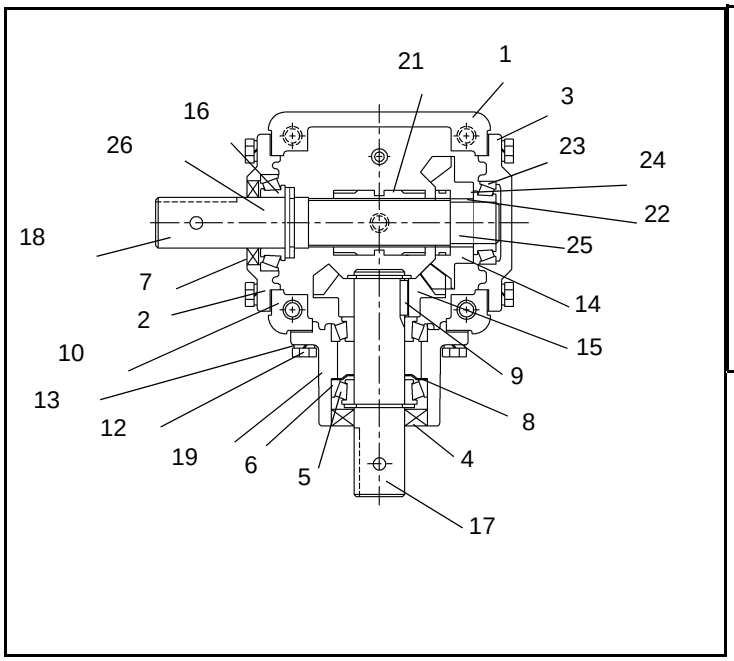
NOTE: WHEN LAYING SECTIONS ON CONCRETE, SHIM UP U-TROUGH EVERY 4' TO KEEP UNDERFLOOR LEVEL WITH FLOOR. THIS WILL PROLONG LIFE AND ENSURE A SMOOTH OPERATION.

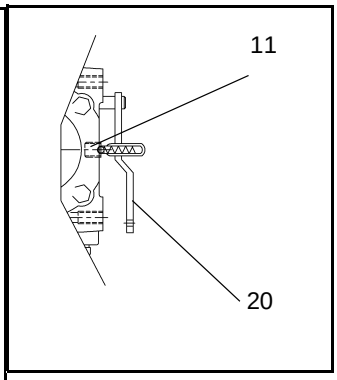
6.9. UPPER GEARBOX - U-TROUGH UNDERFLOOR SYSTEM



REF. NO.	10" system (no reduction)	8" system (1.35 reduction)	PARTS DESCRIPTION
1	27790	27790	Housing
2	27791	27791	End Cap
3	27792	27792	End Cap
4	18427	18427	Seal, NAT #471808, CR#12614
5	19265	19265	Bearing Cone, Timken #LM 67048
6	19266	19266	Bearing Cup, Timken #LM 67010
7	18403	18403	Seal, NAT #470563, CR #12458
8	27793	27793	Key, 1/4" SQ. x 3/4" LG.
9	18390	18390	Shim Kit, .05, .0075, .20
10	27794	27794	Pipe Plug, 1/4" NPT (1/4" HEX)
11	27795	27795	Cap Screw, 5/16" UNC X 3/4"
12	27796	27796	Lockwasher, 5/16"
13	27797	27797	Gear, DP6, 19 TEETH
14	18962	18962	Snap Ring
15	27798	27798	Input Shaft
16	27799	27799	Output Shaft
17	27800	27800	Quill
18	18411	18411	0.007 Shim (1.25" I.D.)
19	18426	18426	Spacer
20	---	27801	Gear, DP6, 17 TEETH

6.10. LOWER GEARBOX W/SHIFTER - U-TROUGH UNDERFLOOR SYSTEM





REF. NO.	PART NO.	PARTS DESCRIPTION
1	27808	Housing
2	27791	End Cap
3	27792	End Cap
4	18427	Seal, NAT#471808, CR#12614
5	19265	Bearing Cone, Timken #LM 67048
6	19266	Bearing Cup, Timken #LM 67010
7	18403	Seal, NAT#470553, CR #12458
8	18965	Grease Washers
9	27793	Key, 1/4" SQ. x 3/4" LG.
10	18390	Shim, .05"
11	27794	Pipe Plug, 1/4" NPT (1/4" HEX)
12	27795	Cap Screw, 5/16" UNC x 3/4"
13	27796	Lockwasher, 5/16"
14	27807	Gear no keyway, 19 TEETH
15	27797	Gear with keyway, 19 TEETH
16	18962	Snap Ring
17	27805	Input Shaft
18	27806	Output Shaft
19	27800	Quill
20	27802	Complete Lever
21	27803	Dog
22	27804	Bronze Bushing
23	18383	Bearing Cone, Timken #L 44643
24	18382	Bearing Cup, Timken #L 44610
25	18411	0.007 Shim (1.25" I.D.)
26	18426	Spacer

7. Troubleshooting

This bin unload system uses an 8" diameter sweep to empty into an 11" wide underfloor auger. It is a simple and reliable system that requires minimal maintenance.

In the following section, we have listed some causes and solutions to some of the problems you may encounter in the field.

If you encounter a problem that is difficult to solve, even after having read through this troubleshooting section, please contact your local Brock dealer or distributor. Before you contact them, please have this Operator's Manual and the serial number from your machine ready.

PROBLEM	CAUSE	SOLUTIONS
Gearbox won't engage.	Gearbox shift adjust bolt is not adjusted correctly.	• Adjust shift adjust bolt . • Flighting needs to be turned so that the gears can mesh appropriately.
Gearbox won't stay engaged.	Lock pin is not in place. Gearbox shift adjust bolt is not adjusted correctly Obstruction in sweep.	• Secure lock pin into place. • Adjust shift adjust bolt. • Remove obstruction.
Hopper slide gates are difficult to open.	Hopper rollers damaged. Obstruction in hopper. Slide gate interference with aeration floor planking. Control rods are binding (hoppers not level to each other).	• Repair rollers. • Remove obstruction. • Level intermediate hoppers to each other.
Sweep will not function.	Underfloor auger not engaging lower gearbox stub. Shift gearbox is not engaged. Obstruction in sweep.	• Ensure underfloor auger flighting is fully meshing with quick attach coupler on lower gearbox. • Engage shift gearbox. • Remove obstruction.

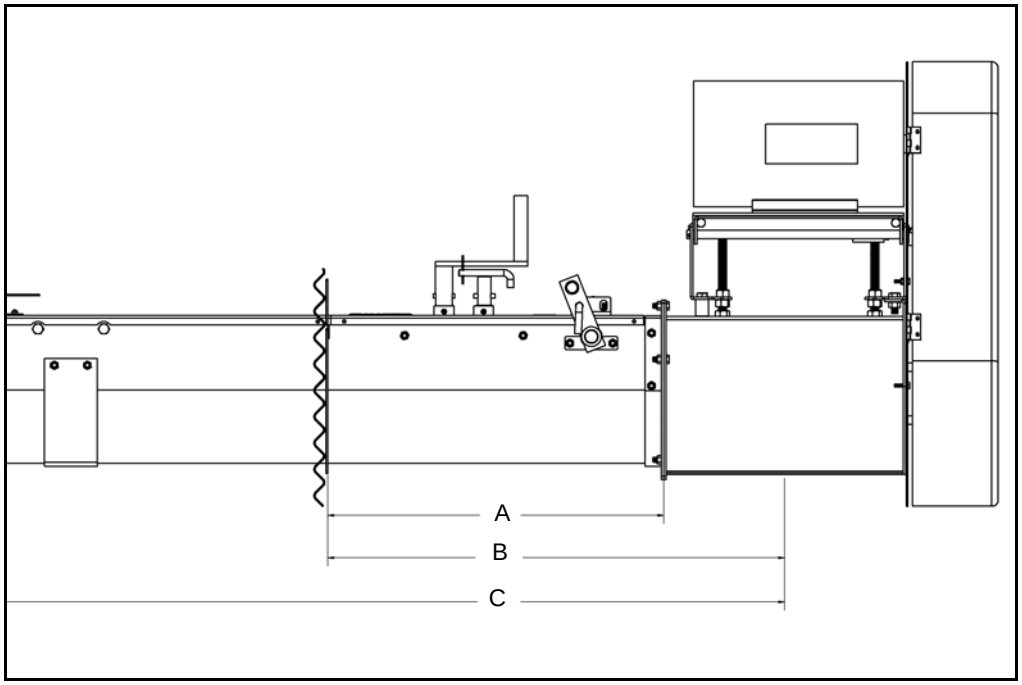
PROBLEM	CAUSE	SOLUTIONS
Underfloor auger plugs when initially starting the sweep.	Intermediate hoppers aren't closed. Obstruction in underfloor auger.	• Close intermediate hoppers. • Remove obstruction.
Sweep drive wheel doesn't function when sweep is activated.	Key or pin sheared or missing in drive wheel housing. Chain isn't adjusted correctly inside drive wheel housing.	• Replace damaged part. • Adjust chain correctly.
Sweep stops travelling around the bin.	Sweep isn't adjusted correctly and is hitting a high spot in the aeration floor. Sweep drive wheel isn't functioning correctly (chain slipping, key missing, etc.). Obstruction in sweep.	• Adjust sweep correctly in two places: drive wheel and upper gearbox plate. • Check to ensure chain is functional, and that all keys / roll pins are in place. • Remove obstruction.
Sweep drive wheel contacts bin wall.	Center hopper not centered during installation.	• Shorten sweep section to allow it to travel all the way around bin.
Poor product flow from sweep.	Sweep flighting is not timed correctly. Obstruction in sweep. Damaged flighting (bent).	• Remove bolts, rotate flighting to next set of holes, and replace bolts. • Remove obstruction. • Bend flighting back to original shape. If this doesn't work, replace flighting.
Underfloor auger is not able to move the grain that the sweep is dumping into the center hopper.	Obstruction in center hopper. Flighting not timed correctly on the underfloor auger. Intermediate hoppers are open, flooding the underfloor auger.	• Remove obstruction. • Pull out underfloor flighting, ensure that it is timed correctly. • Close intermediate hoppers.

PROBLEM	CAUSE	SOLUTIONS
Grain is flowing over backboard of sweep.		• This is normal, and grain will be swept up on the second pass of the sweep.
Underfloor system stops when moving product.	Belts on electric motor aren't tight enough. Electric motor is not large enough to power entire system. Obstruction in under-floor auger.	• Tighten belts. • Replace electric motor with a larger model. • Remove obstruction.

8. Appendix

8.1. DISCHARGE DISTANCES

For all Bin Unload Configurations:



BIN DIAMETER (FT)	TUBE DISTANCE "A"	HORIZONTAL DISTANCE "B"	HORIZONTAL DISTANCE TO CENTER OF BIN "C"
24'	25.5"	34.5"	189.5"
27'	25.5"	34.5"	207.5"
30'	25.5"	34.5"	225.5"
33'	25.5"	34.5"	243.5"
36'	25.5"	34.5"	261.5"
42'	25.5"	34.5"	297.5"
48'	25.5"	34.5"	339.5"
54'	25.5"	34.5"	375.5"
60'	25.5"	34.5"	411.5"

WARRANTY

Brock Manufacturing (“BROCK”) warrants each new BROCK® Harvest-Time Bin Unload System manufactured by it to be free from defects in material or workmanship for one (1) year from and after the date of initial installation by or for the original purchaser. If such a defect is found by the Manufacturer to exist within the one-year period, the Manufacturer will, at its option, (a) repair or replace such product free of charge, F.O.B. the factory of manufacture, or (b) refund to the original purchaser the original purchase price, in lieu of such repair or replacement. Labor costs associated with the replacement or repair of the Bin Unload System are not covered by the Manufacturer.

CONDITIONS AND LIMITATIONS:

1. The product must be installed and operated in accordance with instructions published by the Manufacturer or Warranty will be void.
2. Warranty is void if all structural components of the system are not original equipment supplied by the Manufacturer.
3. Bin Unload Systems are designed for free flowing materials and are not warranted for other distribution or substances. Other use will void Warranty.
4. This product must be purchased from and installed by an authorized dealer or Certified Representative thereof or the Warranty will be void.
5. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance shall not be considered defects under this Warranty.

The Manufacturer shall not be liable for any consequential or special damage which any purchaser may suffer or claim to suffer as a result of any defect in the product. “Consequential” or “special damages” as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.

THIS WARRANTY CONSTITUTES THE MANUFACTURER’S ENTIRE AND SOLE WARRANTY AND THE MANUFACTURER EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

Brock Dealers are not authorized to modify or extend the terms and conditions of this Warranty in any manner or to offer or grant any other warranties for Brock products in addition to those terms expressly stated above.

An officer of CTB, Inc., must authorize any exceptions to this Warranty in writing. The Manufacturer reserves the right to change models and specifications at any time without notice or obligation to improve previous models.

Effective 05/2003

Different by Design TM

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