

U-Trough Direct Gear Drive Bin Sweep Auger Unload Systems

Installation Instructions and
Operator's Manual

PNEG-1735

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All information, illustrations, photos and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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Safety Guidelines

Safety guidelines are general-to-specific safety rules that must be followed at all times. This manual is written to help you understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Save these safety guidelines for future reference.

As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must stay out of the work area at all times.

Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in **SERIOUS INJURY** or **DEATH**.

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

When necessary, you must consider the installation location relative to electrical, fuel and water utilities.

Personnel operating or working around equipment must read this manual. This manual must be delivered with equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

ST-0001-3

Cautionary Symbols Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.



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



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in minor or moderate injury.**



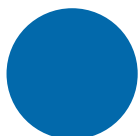
This symbol is used to address practices not related to personal injury.



This symbol indicates a general hazard.



This symbol indicates a prohibited activity.



This symbol indicates a mandatory action.

ST-0005-2

Safety Cautions

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection



Respiratory Protection



Foot Protection



Hearing Protection



Head Protection



Fall Protection



Hand Protection



- Wear clothing appropriate to the job.
- Remove all jewelry.
- Tie long hair up and back.

ST-0004-1

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



ST-0002-1

Maintain Equipment and Work Area

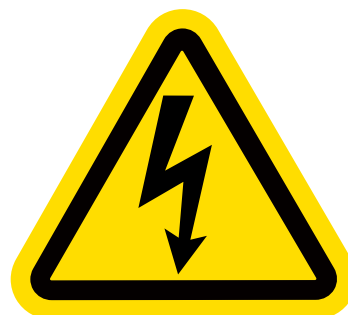
- Understand service procedures before doing work. Keep area clean and dry.
- Never service equipment while it is operating. Keep hands, feet, and clothing away from moving parts
- Keep your equipment in proper working condition. Replace worn or broken parts immediately.



ST-0003-1

Operate Motor Properly

- All electrical connections must be made in accordance with applicable local codes (National Electrical Code for the US, Canadian Electric Code, or EN60204 along with applicable European Directives for Europe). Make sure equipment and bins are properly grounded.
- Lock-out power 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 drive components.



ST-0009-3

Rotating Auger Hazard

- Keep clear of rotating augers and moving parts.
- Do not remove or modify guards or covers.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.
- Failure to follow these precautions will result in serious injury or death.



ST-0037-1

Stay Clear of Hoisted Equipment

- Always use proper lifting or hoisting equipment when assembling or disassembling equipment.
- Do not walk or stand under hoisted equipment.
- Always use sturdy and stable supports when needed for installation. Not following these safety precautions creates the risk of falling equipment, which could crush personnel and cause serious injury or death.



ST-0047-1

1. Safety

Stay Clear of Rotating Parts

- Do not enter the bin while the equipment is in operation.
- Entanglement in rotating augers will cause serious injury or death.
- Keep all shields and covers in place at all times.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.



ST-0008-2

Use Unload Equipment Properly

- Do not operate this equipment alone. Make sure someone nearby is aware of the proper shut down sequence in the event of an emergency.
- Do not allow any person intoxicated or under the influence of drugs to operate this equipment. All operators must be adequately rested and prepared to perform all functions of operating the equipment.
- Do not start equipment until all persons are clear of the work area and safety guards are in place.
- Do not allow anyone inside a bin, truck, or wagon which is being unloaded by an auger. Flowing grain can trap and suffocate in seconds.
- Use ample overhead lighting after sunset to light the work area.
- Always use caution to not hit the auger when positioning the load.
- Do not leave equipment operating while unattended.
- Be aware of pinch points, which can trap or catch objects and cause injury.
- Be sure all equipment is locked in position before operating.
- Always lock out all power sources to the equipment when unloading is finished.



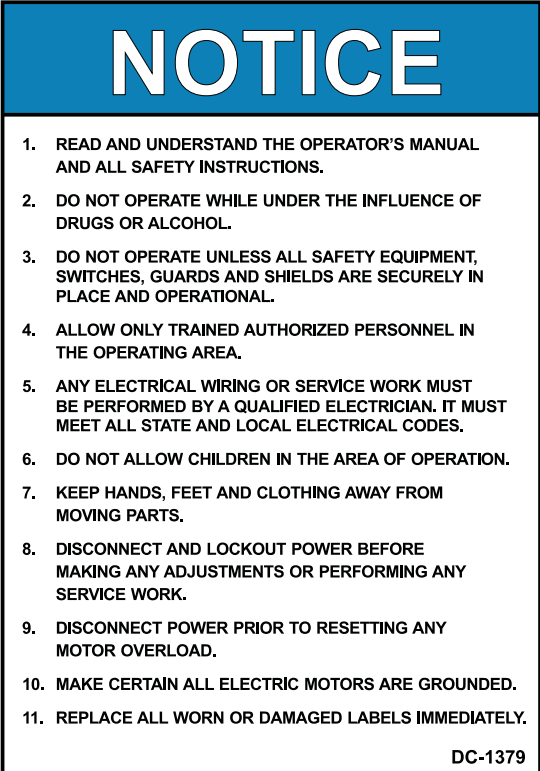


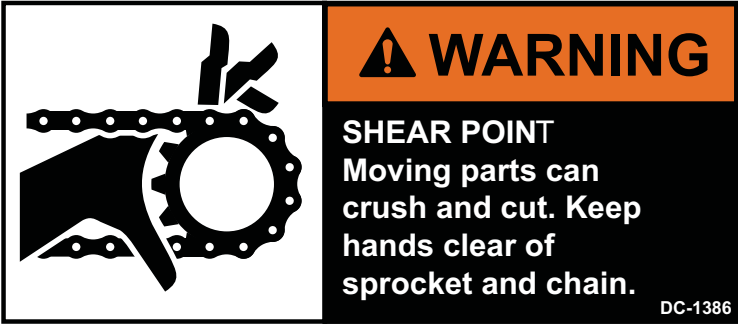
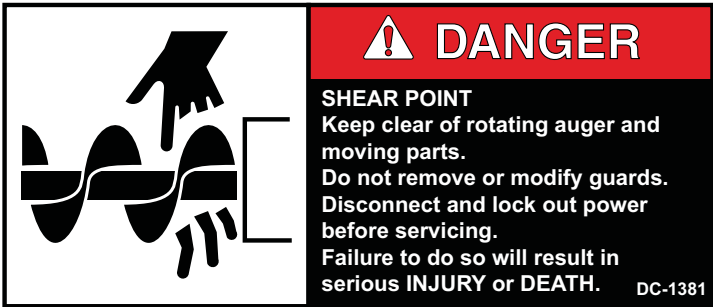
ST-0051-1

2. Decals

Safety Decal Location

The types of decals and locations on the equipment are shown below. Good safety requires that you familiarize yourself with the various safety decals, the type of warning and the area or particular function that related to the area, that requires your SAFETY AWARENESS.

Decal #	Decals	Description
DC-994		Decal, Danger Shear Point
DC-995		Decal, Warning Shear Point
DC-1379		Decal, Notice

Decal #	Decals	Description
DC-1386		Decal, Chain Warning
DC-1381		Decal, Auger Danger

3. Machine Components

U-Trough Unload Components

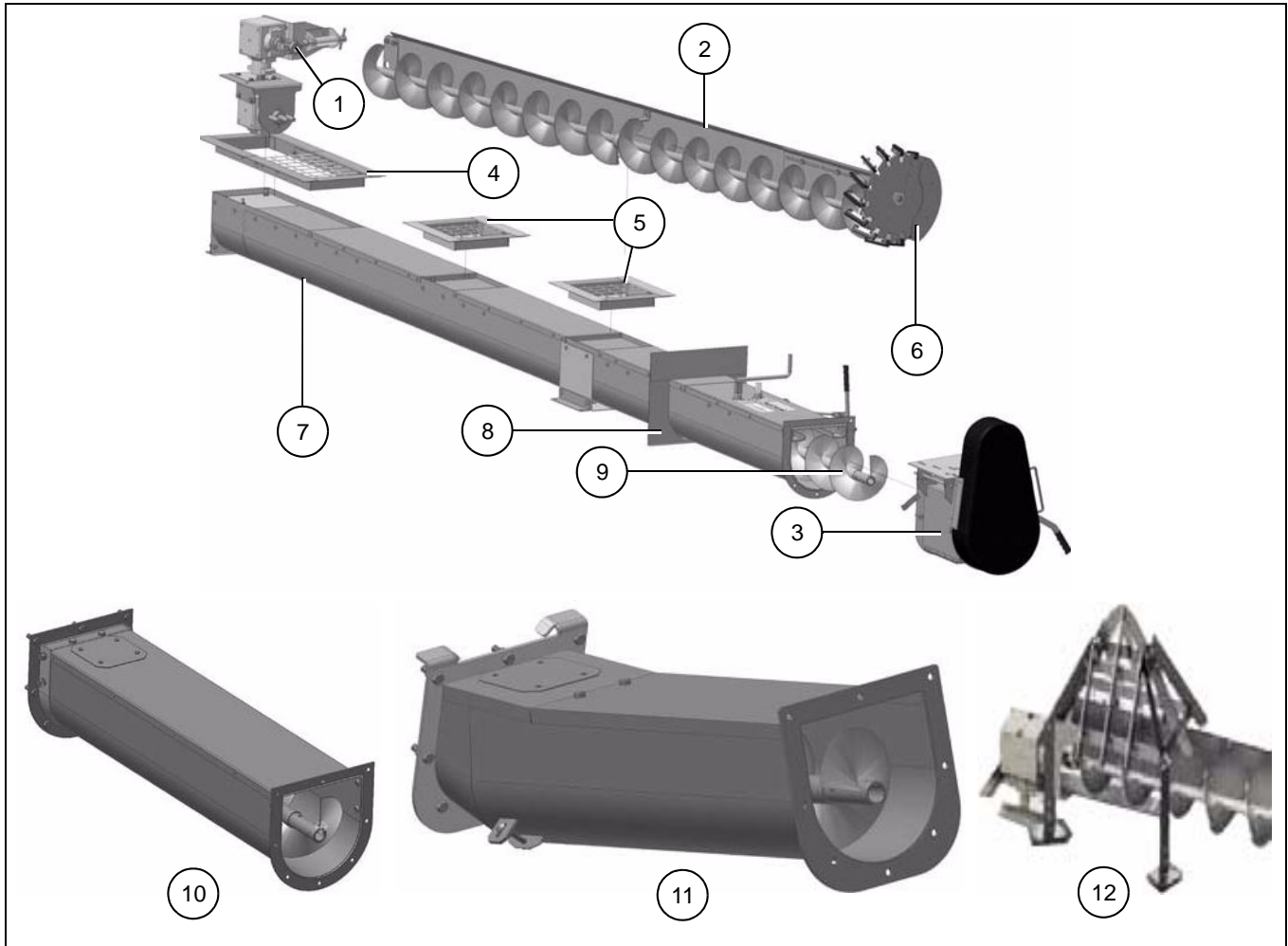


Figure 3A

Ref #	Description
1	Gearbox
2	Sweep
3	Drive Unit
4	Center Floor Flange
5	Intermediate Floor Flange
6	Elevator Drive Wheel
7	Trough
8	Bin Plate
9	Unload Flight

Optional Equipment	
Ref #	Description
10	U-Trough Extension
11	Incline Elbow
12	Grain Flow Maintainer

Installation Under Aeration Floor

1. Cut 12" x 12" (30 cm x 30 cm) opening in bin wall where unload is to exit bin. (See Figure 4A.)



Do not cut across bolted seams.

2. Insert unload and center it in the bin.
3. Secure unload with anchor bolts (not supplied) to the bin foundation.

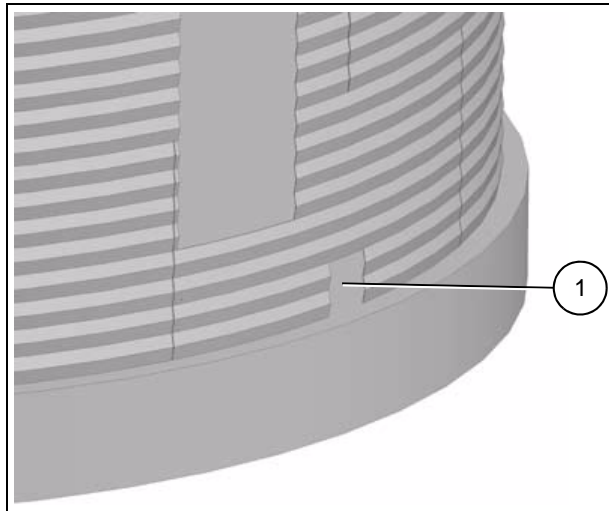


Figure 4A

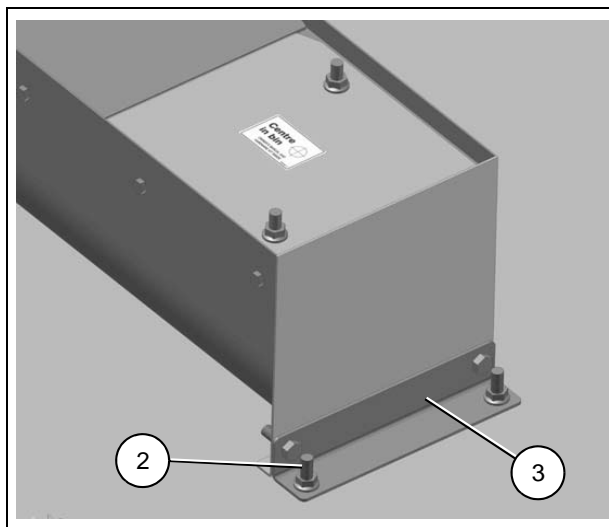


Figure 4B

Ref #	Description
1	Cut 12" x 12" access through bin wall.
2	Concrete Anchor Bolt
3	U-Trough unload. Center in bin and anchor to floor.

4. Installation

4. Layout aeration floor and cut opening around gates, approximately 1" larger than gate openings. (See Figure 4C.)
5. Attach floor flanges to floor with self-drilling screws. (See Figure 4E.)
6. Ensure that there is a minimum of 1/4" clearance between the bottom edge of the floor flange and the slide gate. (See Figure 4D.)



Figure 4C



Figure 4E

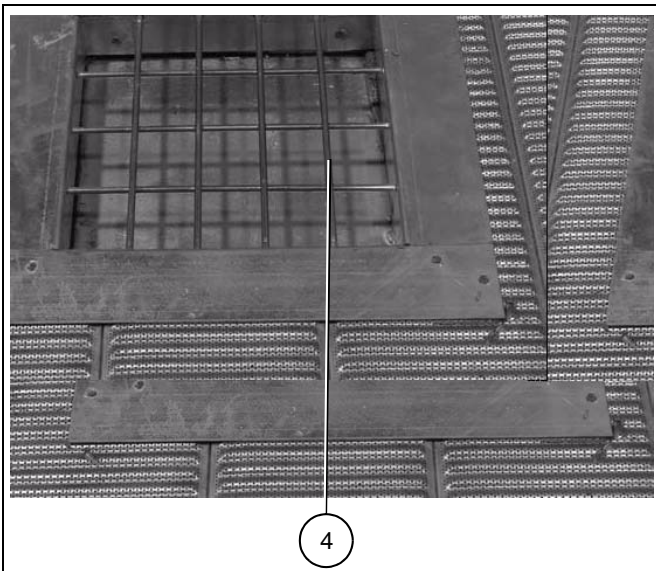


Figure 4D

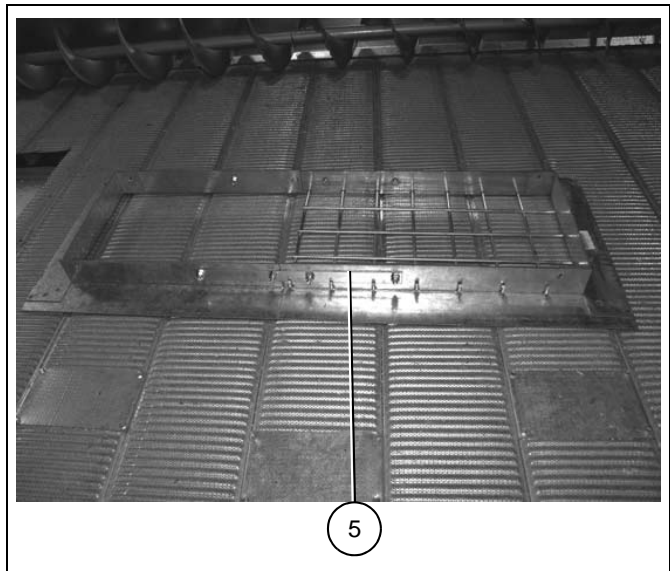


Figure 4F

Ref #	Description
4	Ensure clearance between bottom of floor flange and gate. If the clearance is larger than 1/4" (6.5 mm) additional sealing may be required. Clearance can not exceed 5/8" (16 mm). (Refer to Page 42 for dimensional view.)
5	U-Trough center floor flange comes in two parts. Before installing bolt together with joiner strips provided.

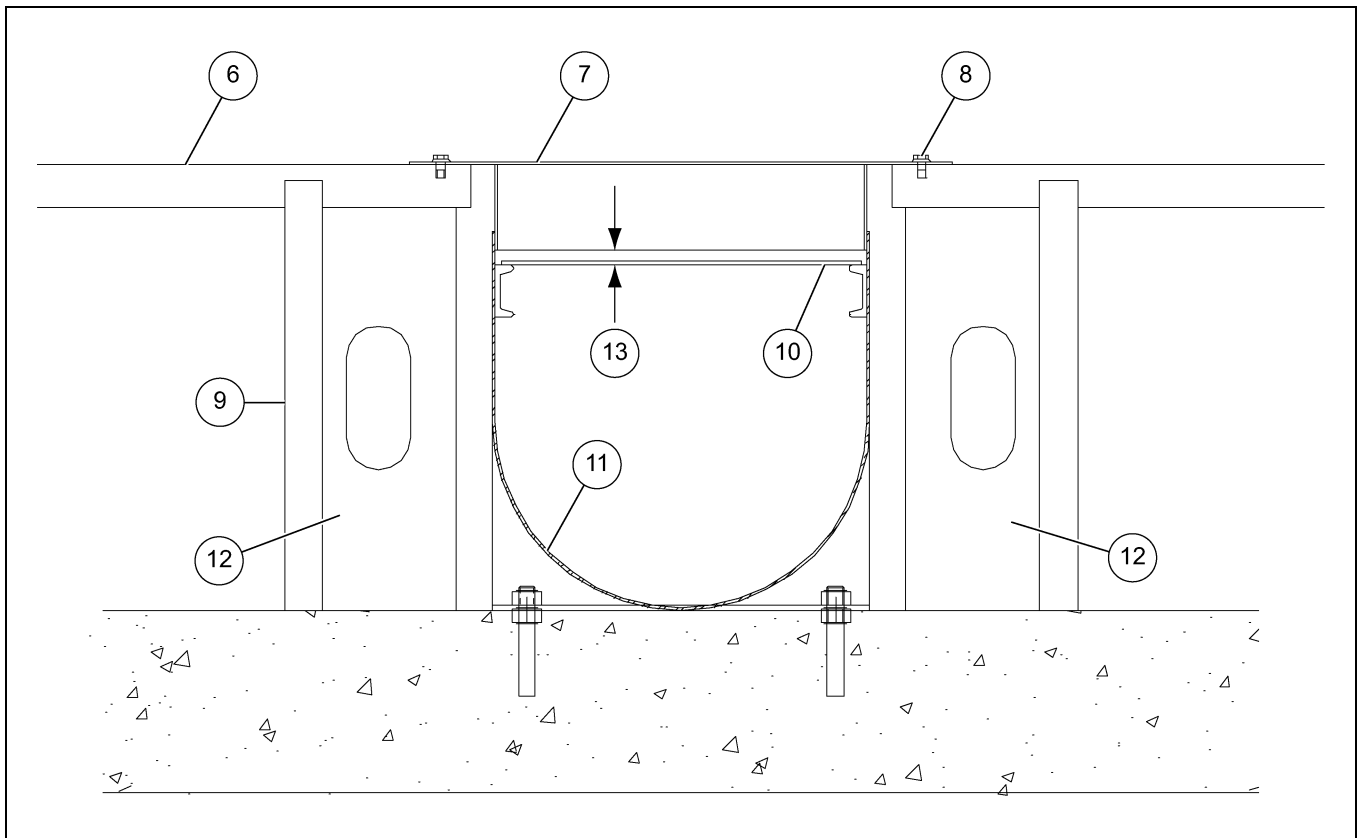


Figure 4G U-Trough Unload

Ref #	Description
6	Aeration Floor Plank
7	Floor Flange
8	Self-Drilling Screw
9	Aeration Floor Support

Ref #	Description
10	Gate
11	U-Trough
12	Place aeration supports close to unload.
13	1/4" Minimum

4. Installation

7. Install bin wall flange as shown in *Figure 4H* and *Figure 4I*.

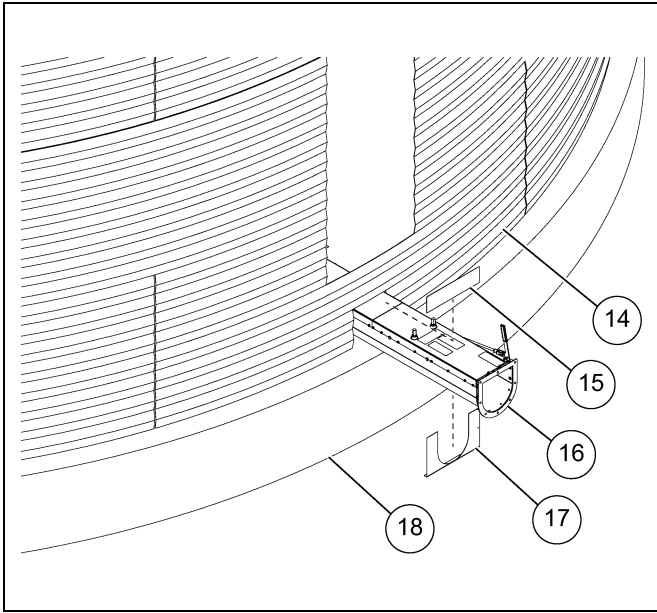


Figure 4H

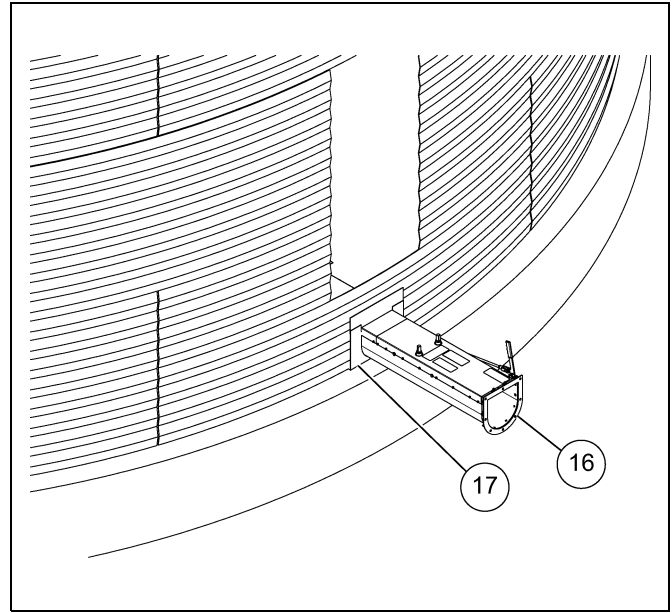


Figure 4I

Ref #	Description
14	Bin Wall
15	Bin Wall Flange - Upper
16	U-Trough Unloader
17	Bin Wall Flange - Lower
18	Bin Foundation

NOTE: Concrete must be level where the unload is positioned. Failure to do so can cause distortion the U-Trough when unit is anchored down. This distortion is likely to cause excessive operational noise from incorrect flight clearance.

Installation in Concrete Foundation

Concrete Knock-Out

1. When constructing the concrete foundation, form a knock-out for the unload as shown in [Figure 4J](#). This is the preferred method of installing the unload in concrete. When installed in this manner unloads can be removed at a later date.
 - a. Center the unload in the bin foundation.
 - b. Anchor to the bottom of the knock-out with concrete anchor bolts (not provided).
 - c. Install floor flanges over the gates.
 - d. Use wood or metal planking to cover exposed unload between gates.

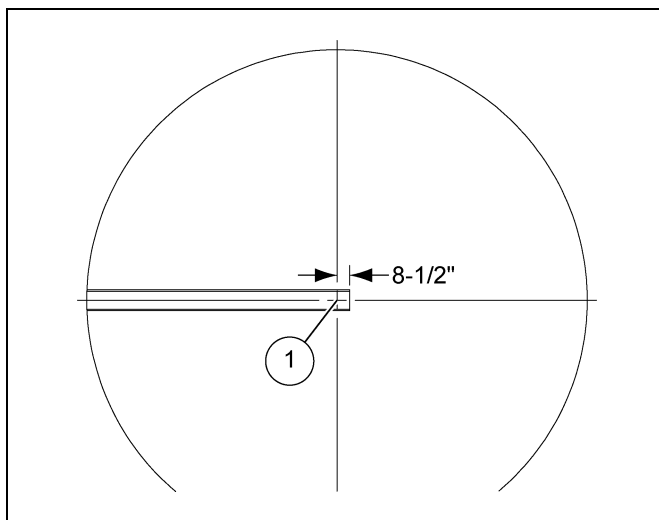


Figure 4J

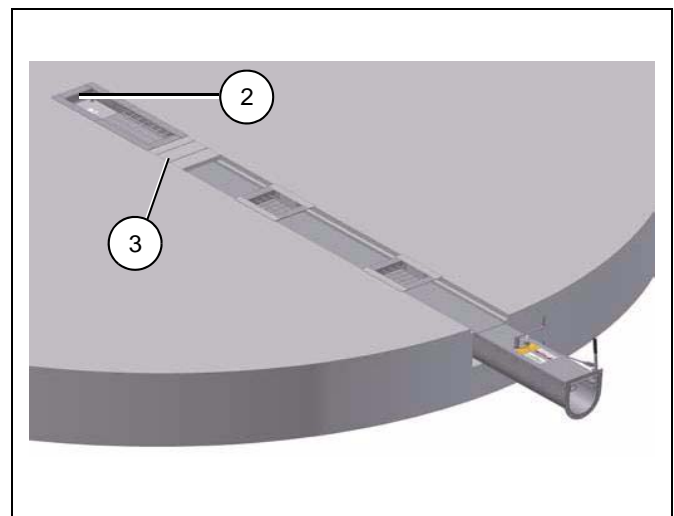


Figure 4L

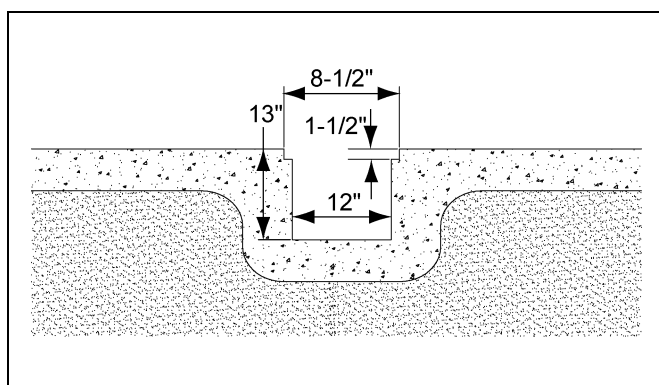


Figure 4K

Ref #	Description
1	Center of Bin Foundation
2	Center in Bin
3	Planking

4. Installation

Unload Cast Directly into Concrete

When casting unloads directly into concrete, center in the bin and adjust the height as shown in [Figure 4M](#). Use floor flanges to form around the gate openings.

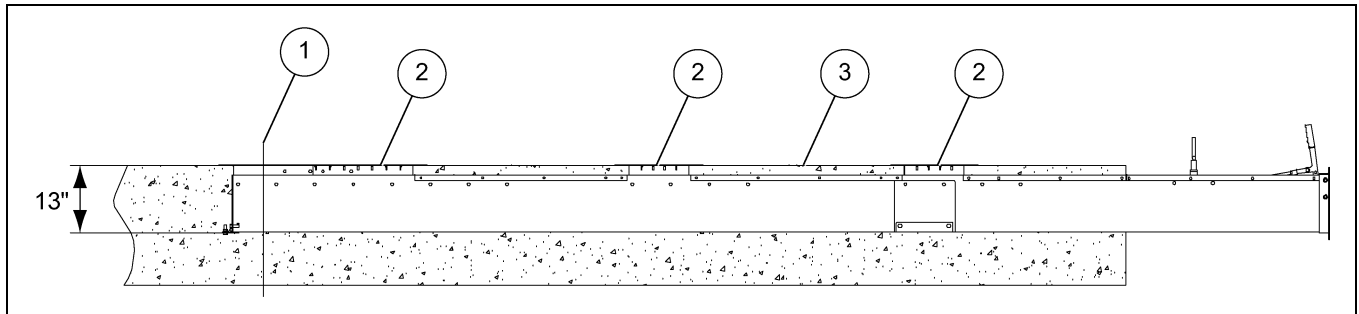


Figure 4M U-Trough Unload in Concrete

Ref #	Description
1	Center of Foundation
2	Floor Flanges
3	Install concrete reinforcing mesh above unload.

Sweep Drive

Install gearbox into unload. Ensure that the shifter arm on the gearbox slides into the shifter slot on the unload. Secure gearbox with two (2) flange nuts. ([See Figures 4N and 4O](#).)

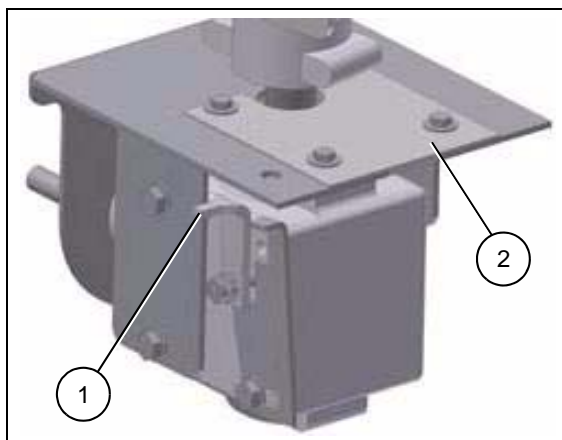


Figure 4N

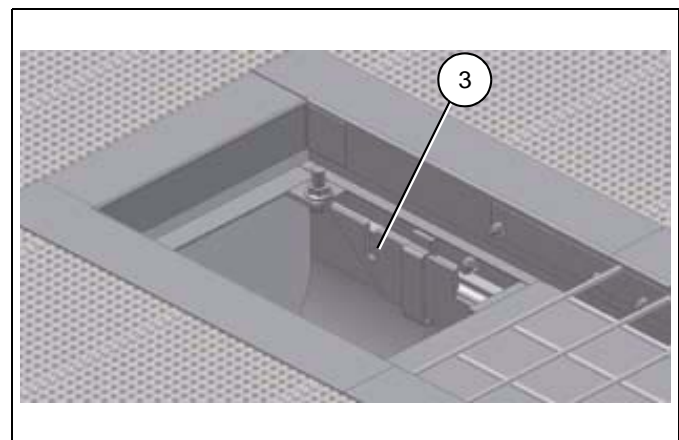


Figure 4O

Ref #	Description
1	Shifter Arm
2	Cover plate can be removed to access lower gearbox area.
3	Slot

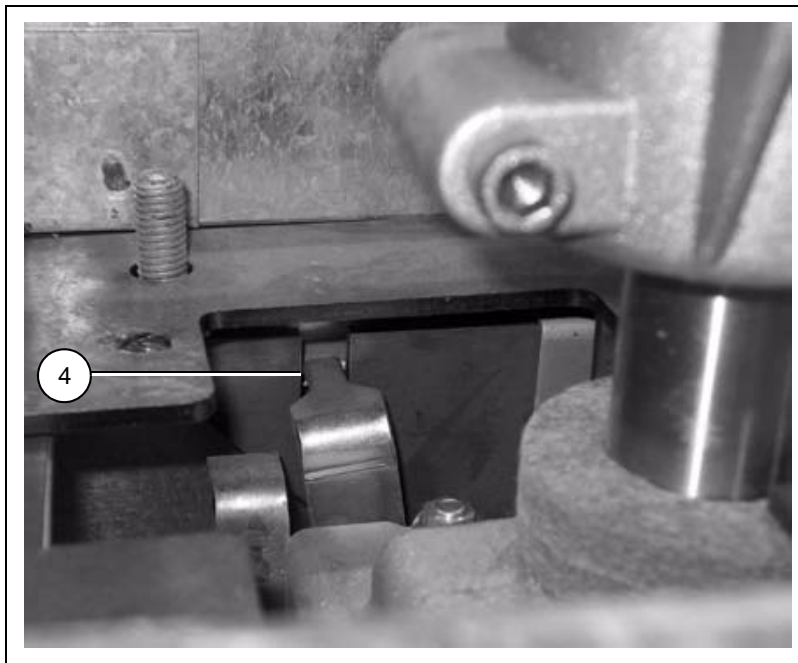


Figure 4P

Ref #	Description
4	Gearbox Shifter Arm in Shifter Slot

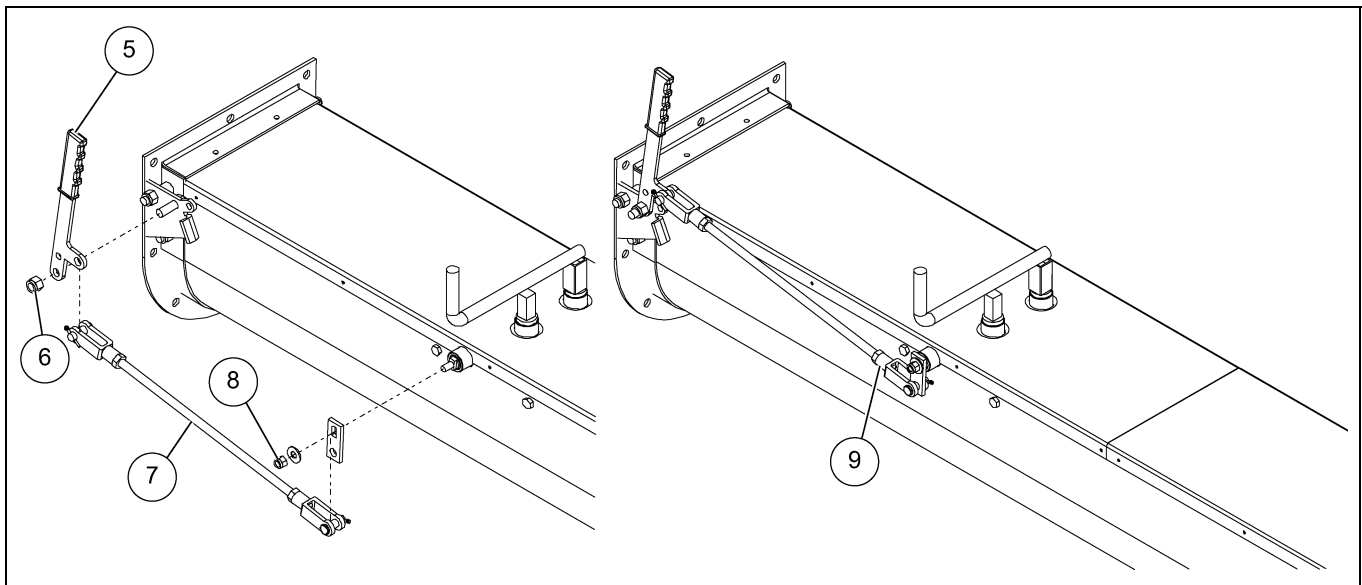


Figure 4Q

Ref #	Description
5	Shifter Handle
6	1/2" Lock Nut
7	Shifter Linkage

Ref #	Description
8	3/8" Lock Nut
9	U-Trough unload gearbox shifter handle installation.

4. Installation

1. Adjust gearbox shifter linkage such that when shifting into OFF position, there is some resistance when the lever overcenters into the OFF position.
2. Do not over tighten as this can damage the gearbox.
3. Before operating ensure that the gearbox is shifting properly.
4. Shift into OFF, turn unload flight by hand. (See Figure 4S.)
5. The top gearbox should not be turning.
6. Shift into ON position, top gearbox should turn when unload flight is turned. (See Figure 4R.)



Figure 4R Gearbox Shifter in ON Position

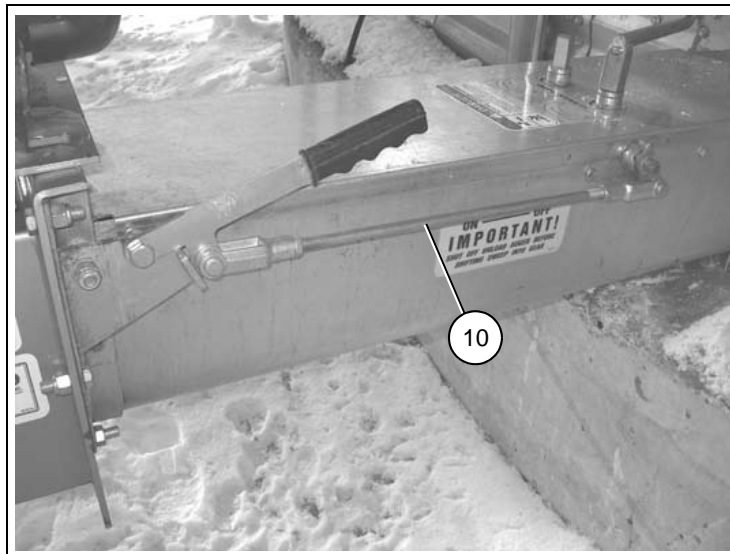


Figure 4S Gearbox Shifter in OFF Position

Ref #	Description
10	Adjust Shifter Linkage

Sweep Arm

Adjustments

1. Attach sweep to sweep gearbox drive.
2. To adjust overall sweep length, slack off four mounting bolts holding adjuster plate to sweep and slide in or out to set length. (See Figure 4T.)
3. The height of the sweep back plate can be adjusted both at the wheel and at the drive end. (See Figures 4U and 4V.)
4. The sweep back plate can be adjusted in and out at the center gearbox assembly to achieve desired sweep flight to sweep back plate spacing. (See Figure 4W.)

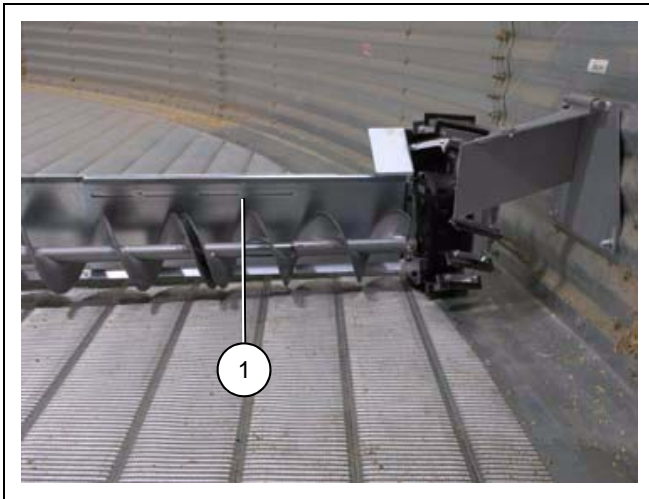


Figure 4T

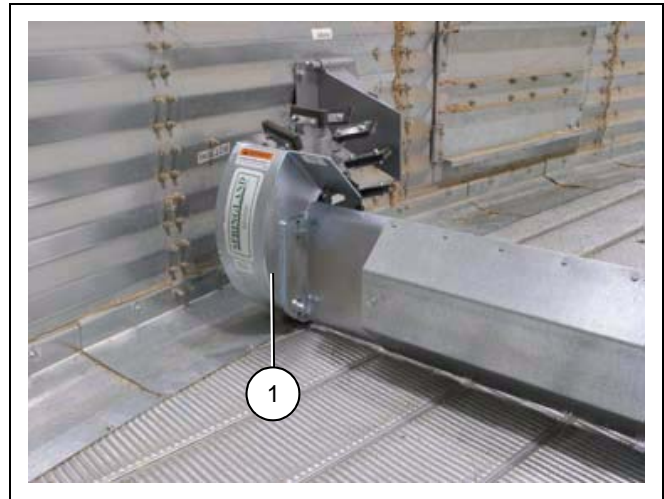


Figure 4V

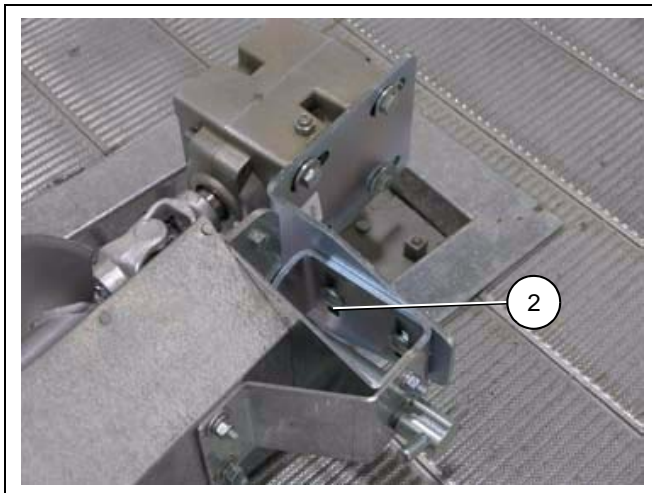


Figure 4U

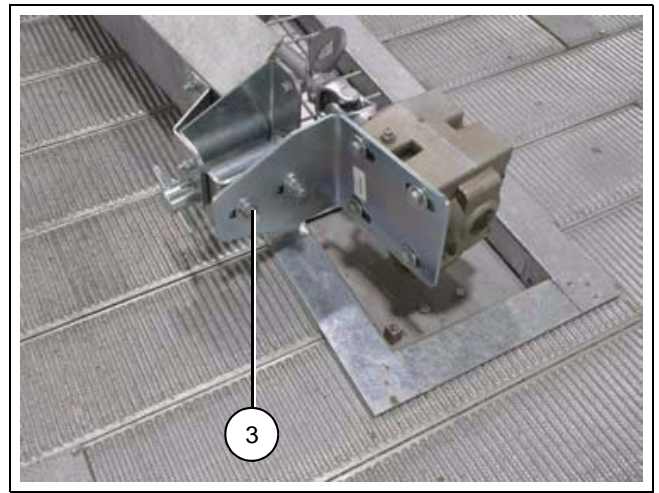


Figure 4W

Ref #	Description
1	Length Adjustment
2	Height Adjustment
3	Side Adjustment

4. Installation

Two (2) Section Bin Sweeps (54'-75' Diameter)

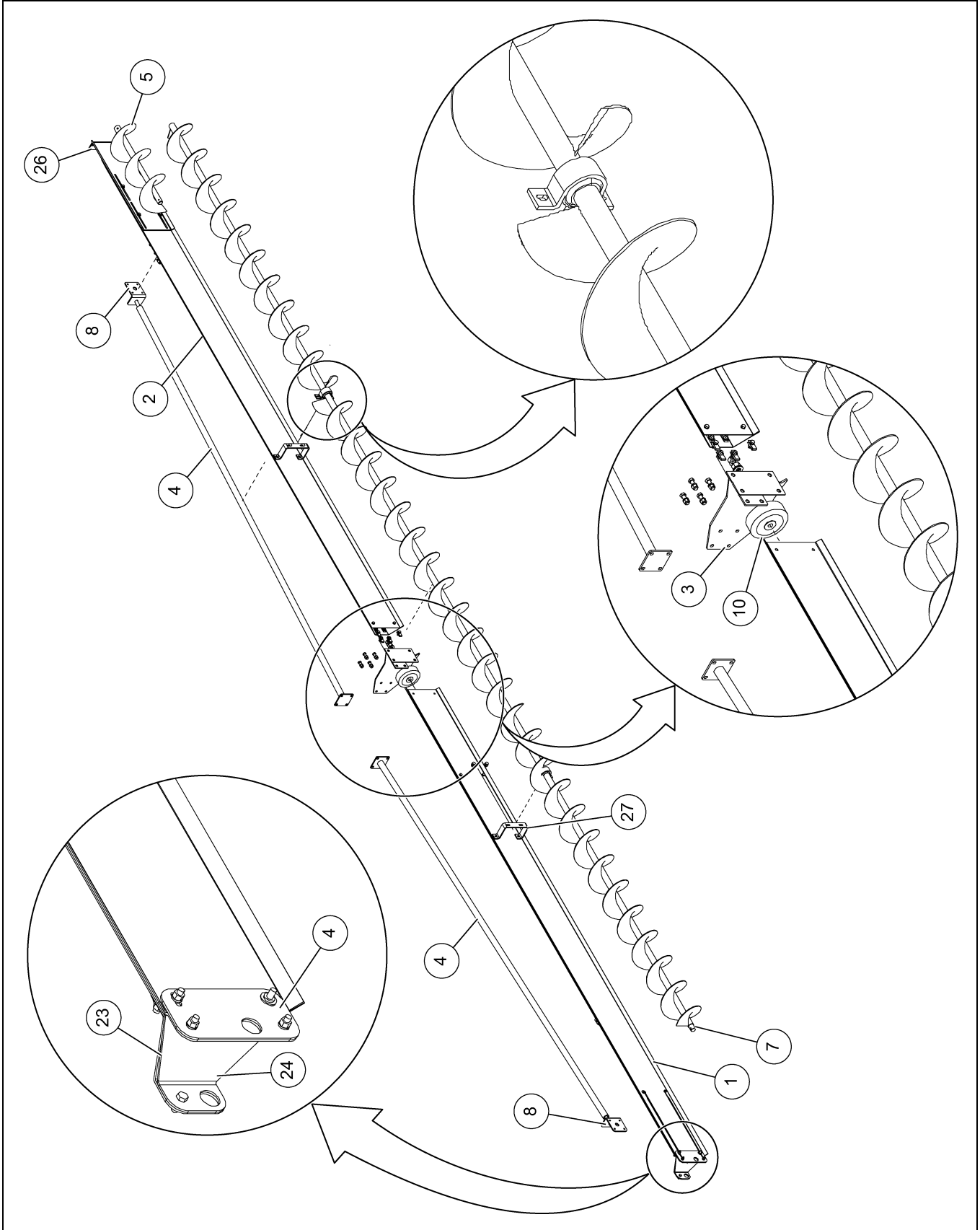


Figure 4X

Two (2) Section Bin Sweeps (54'-75' Diameter) Parts List

Ref #	Description	Qty
1	Sweep Back Plate 60' (Inner)	1
2	Sweep Back Plate 60' (Outer)	1
3	Back Plate Joiner	1
4	Sweep Brace	2
5	Sweep Wheel Flight 9"	1
6	1-1/2" Split PB Assembly	2
7	Sweep Flight 9"	1
8	Sweep Brace Mount	2
9	Hex Nut Grade 5 UNC 3/4"	6
10	6" Wheel with 3/4" Bearing	1
11	Flat Washer 3/4" Plated	6
12	Bolt, Grade 5 UNC Plated 3/4" x 5"	1
13	U-Nut 3/8"	8
14	Bolt, Grade 5 UNC Plated 1/2" x 1-1/2"	4
15	Lock Washer 1/2" Plated	4
16	Hex Nut Grade 5 UNC 1/2"	4
17	Flat Washer 3/8" Plated	10
18	Lock Washer 3/8" Plated	33
19	Bolt, Grade 5 UNC Plated 3/8" x 1-1/2"	2
20	Hex Nut Grade 5 UNC 3/8"	11
21	Carriage Bolt UNC Plated 3/8" x 1"	8
22	Sweep Center Plate Joiner	1
23	Sweep Center Mount Inner Plate	1
24	Sweep Center Mount	1
25	Bolt, Grade 5 UNC Plated 3/8" x 1"	23
26	Sweep End Adjuster Plate	1
27	Sweep PB Mount 9"	2
28	Lock Washer 3/4" Plated	3

4. Installation

Sweep Drive Wheel

Elevator Drive Wheel

To adjust the elevator wheel, loosen the top nut and move into position, then re-tighten hardware.

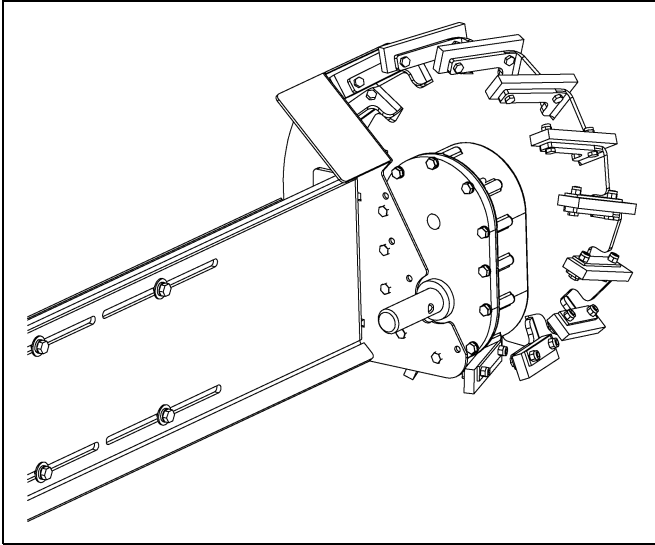


Figure 4Y Mounted for 7-1/4" Flight Position

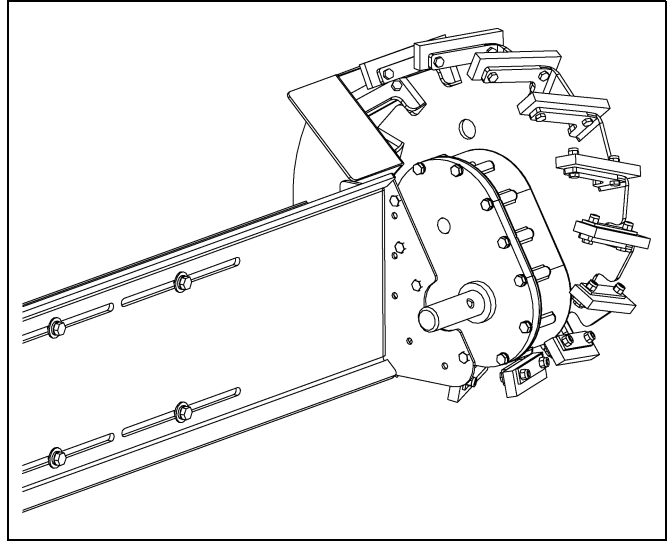


Figure 4Z Mounted for 8-1/4" and 9" Flight Position

Sweep Stop

Mount sweep stop such that it will stop the sweep before it reaches the walk through door.



Figure 4AA

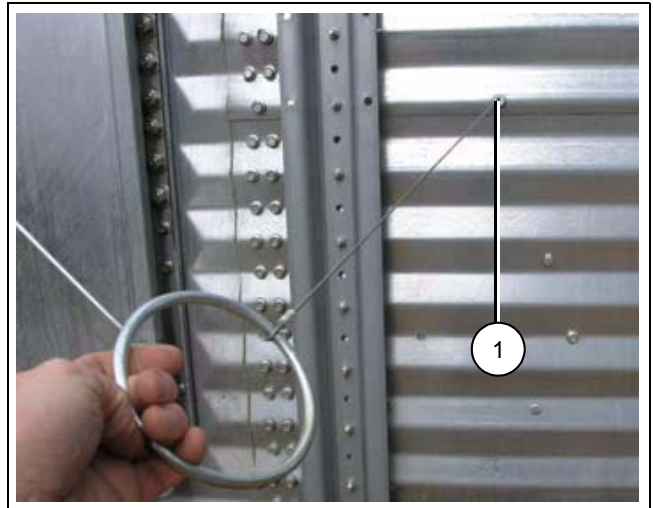


Figure 4AB

Ref #	Description
1	Install bolt containing a through hole at height shown. Feed cable through hole and reconnect to sweep stop.

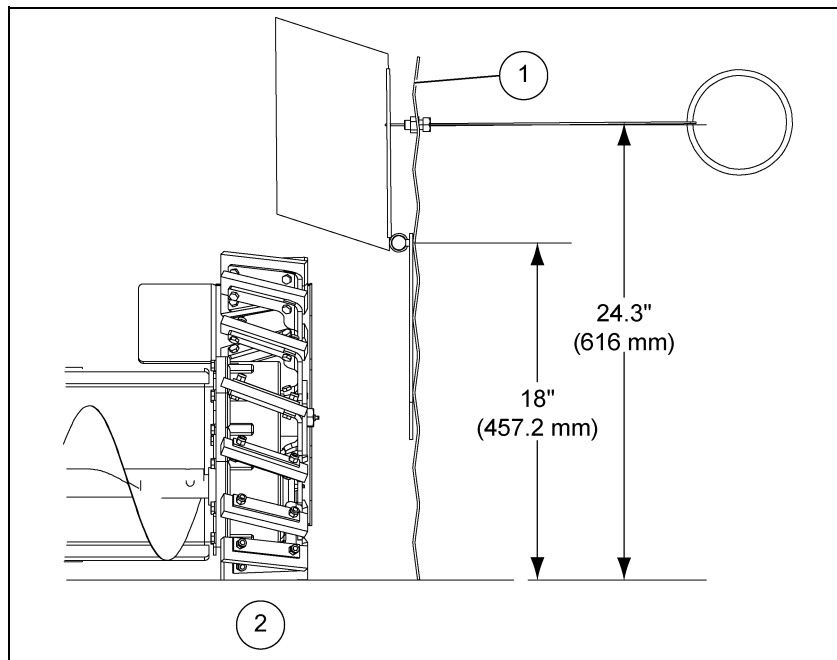


Figure 4AC

Ref #	Description
1	Install bolt containing a through hole at height shown. Feed cable through hole and reconnect to sweep stop.
2	Height of sweep stop with elevator drive wheel.

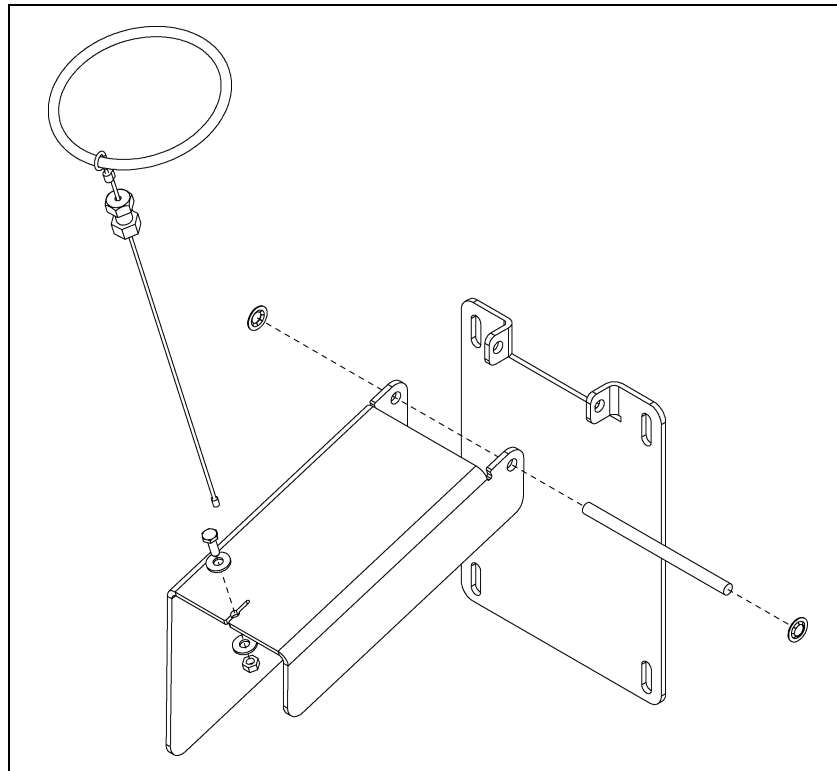


Figure 4AD

ONLY OPERATE SWEEP STOP FROM OUTSIDE THE BIN.

4. Installation

Horizontal Drive Unit

1. Attach drive unit to unload.
2. Attach drive shaft and bearing.
3. Lock bearing to shaft with eccentric locking collar. The eccentric locking collar is locked to the shaft with a punch and hammer (turn the collar clockwise to tighten) as well as with a locking set screw.
4. Note the flight rotation when installing and wiring the drive motor. Correct rotation is clockwise when looking at the drive unit.
5. Adjust belt tension with clevis on overcenter tensioner. (See Figure 4AE.)



Figure 4AE

Ref #	Description
1	Flight Rotation
2	Bearing Locking Collar

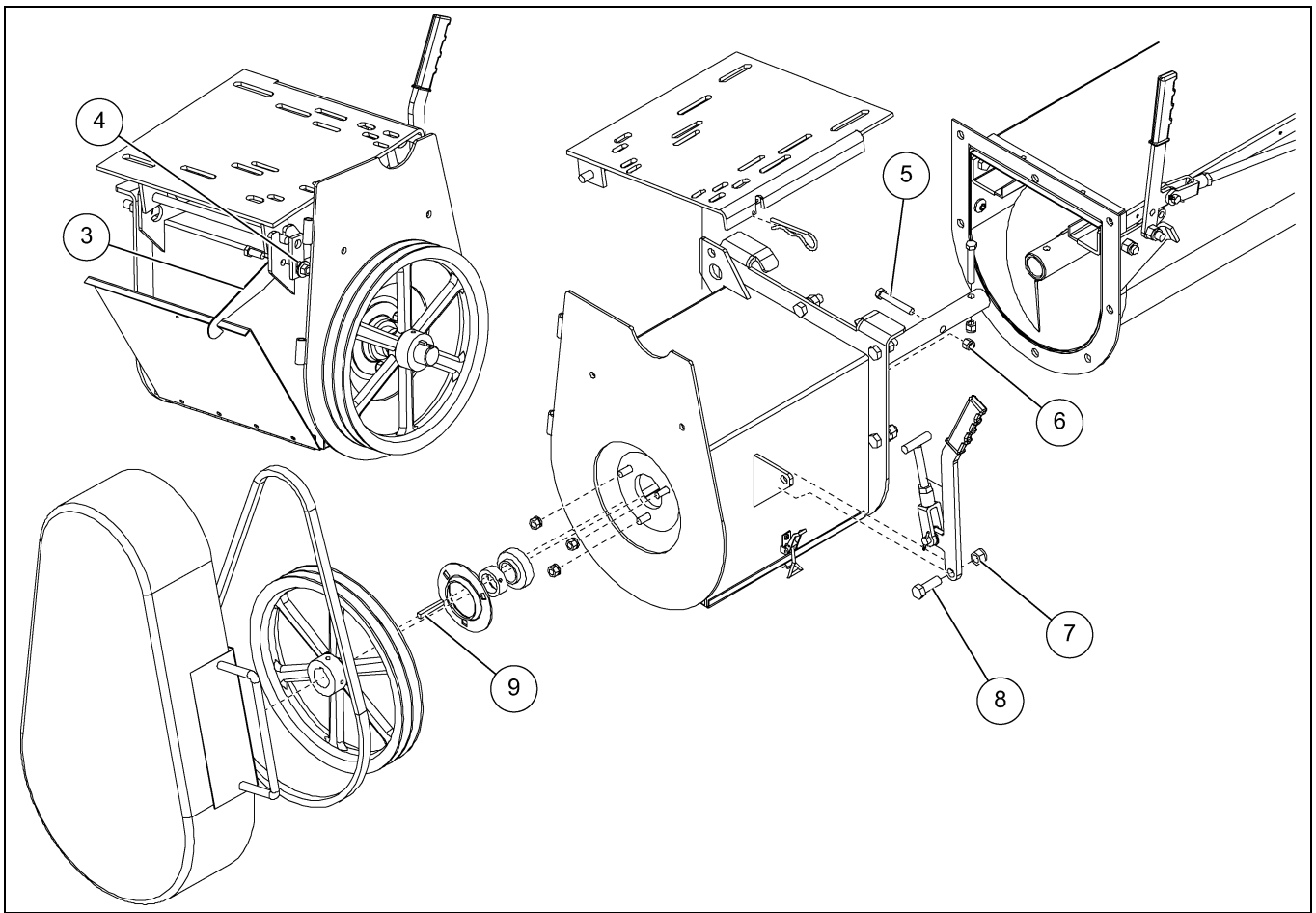


Figure 4AF

Ref #	Description
3	Door Catch
4	Motor Mount Lock
5	3/8" x 2-1/2" Grade 8 Bolt
6	3/8" Lock Nut
7	1/2" Lock Nut
8	Bolt, 1/2" x 1-1/2"
9	1/4" Key

4. Installation

Taper Bore Hub Installation

1. Be sure the tapered cone surfaces of the bushing and inside of pulley are clean and free of grease and oil.
2. Place bushing in pulley.
3. Place bolts and lock washers loosely in pull-up holes. Bushing remains fully expanded to assure sliding fit on shaft.
4. With key on shaft slide pulley to desired position on shaft. Be sure heads of bolts are on outside.
5. Tighten bolts alternately and progressively until they are pulled up tight. Tighten to 180 in. lbs. (20 N-m) torque. Do not allow pulley to be drawn in contact with flange of bushing. There should be a gap from 1/8" to 1/4". (See Figure 4AG.)

DO NOT OVER-TIGHTEN.

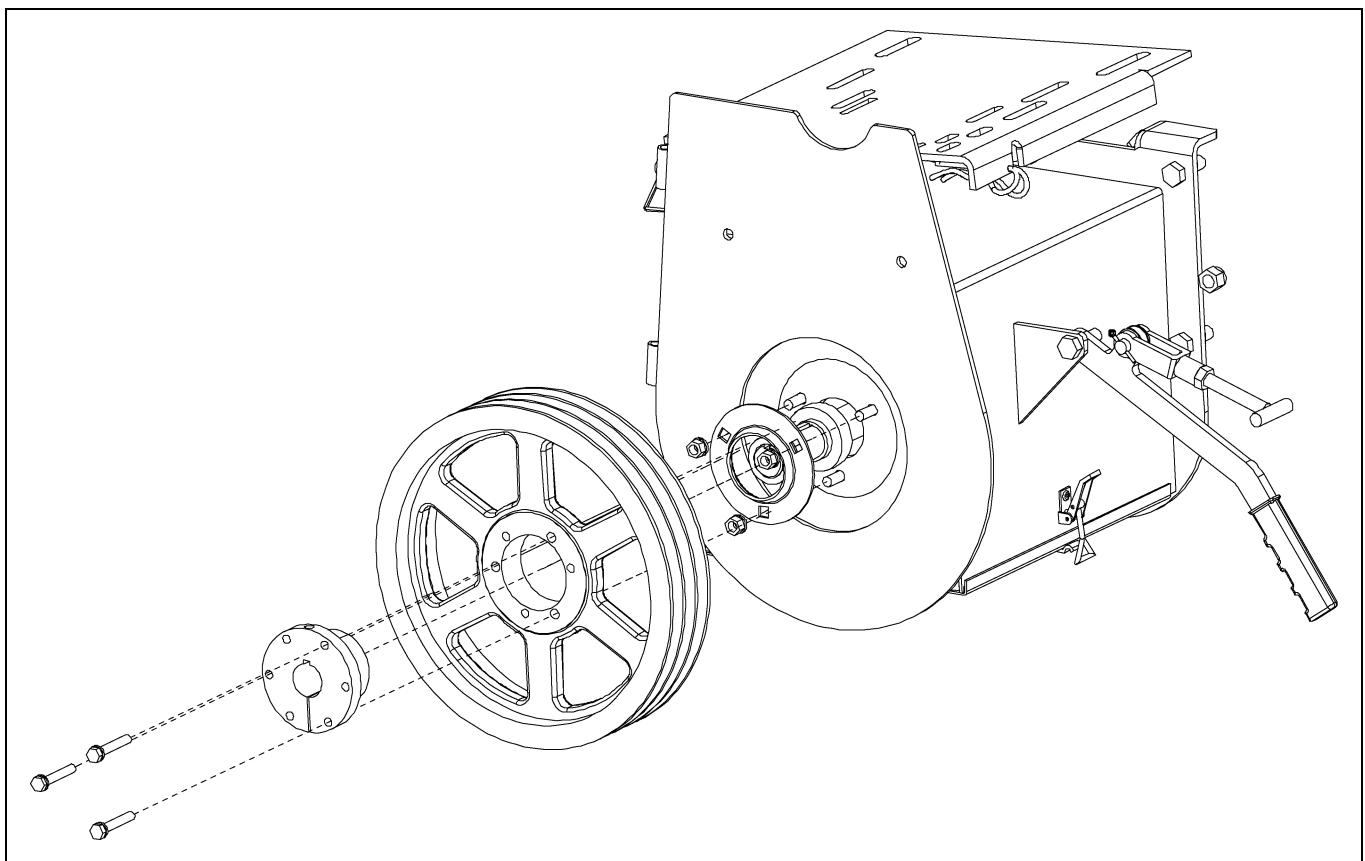


Figure 4AG

Incline Elbow

1. Attach the incline elbow shaft (hex round) to the unload flight.
2. Attach the incline elbow to the unload.
3. When installing the drive unit on the inline elbow ensure that the flight is adjusted so that the support bearing is centered in the flight gap. Slide the incline elbow flight up or down to set this adjustment. When incline elbows are used with heavy motors it is recommended to provide support back to the bin with cables (not provided). Support mount clips are provided. *(See Figures 4AH below and 4AI on Page 30.)*

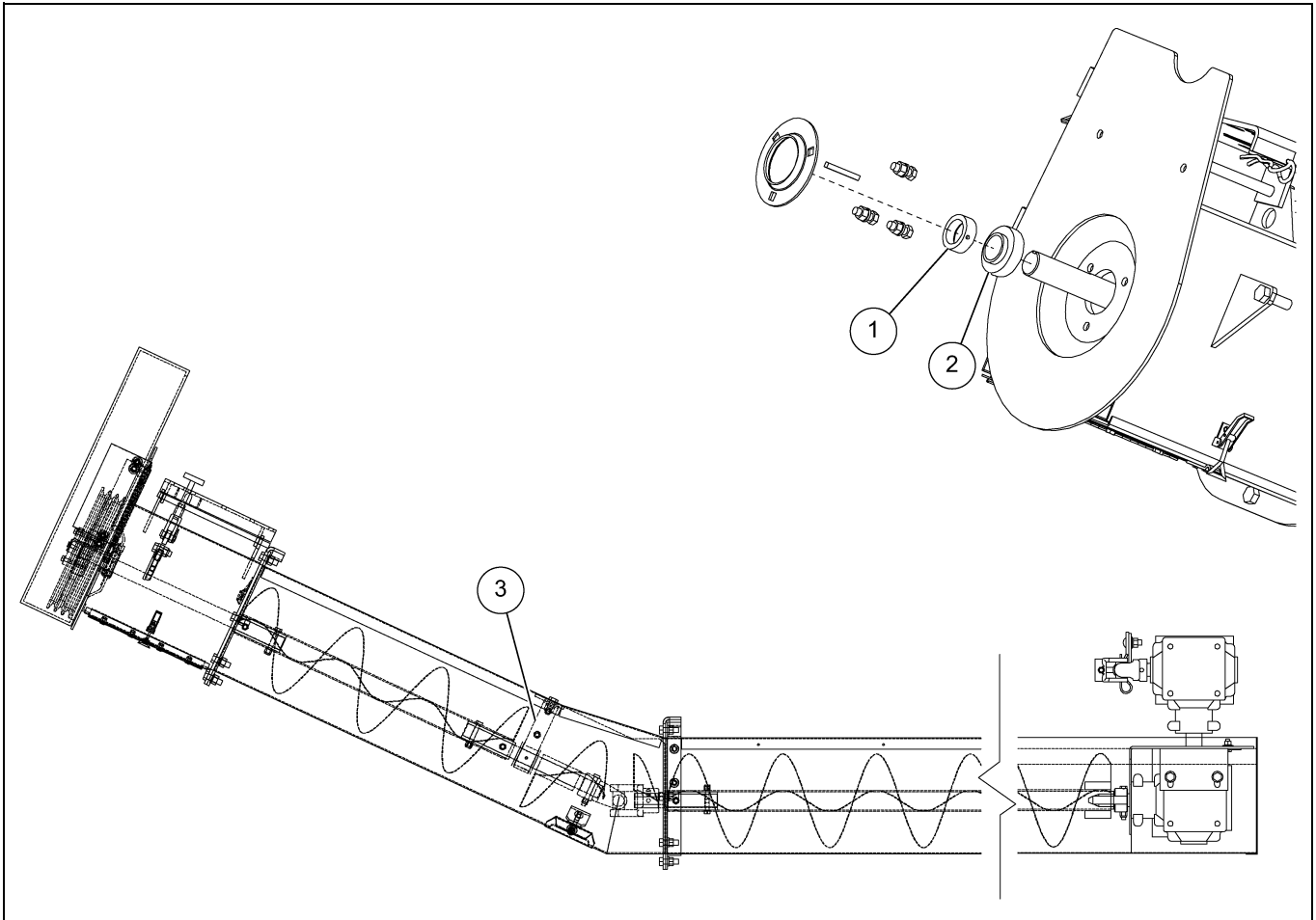


Figure 4AH

Ref #	Description
1	Locking Collar
2	Bearing
3	Support Bearing

4. Installation

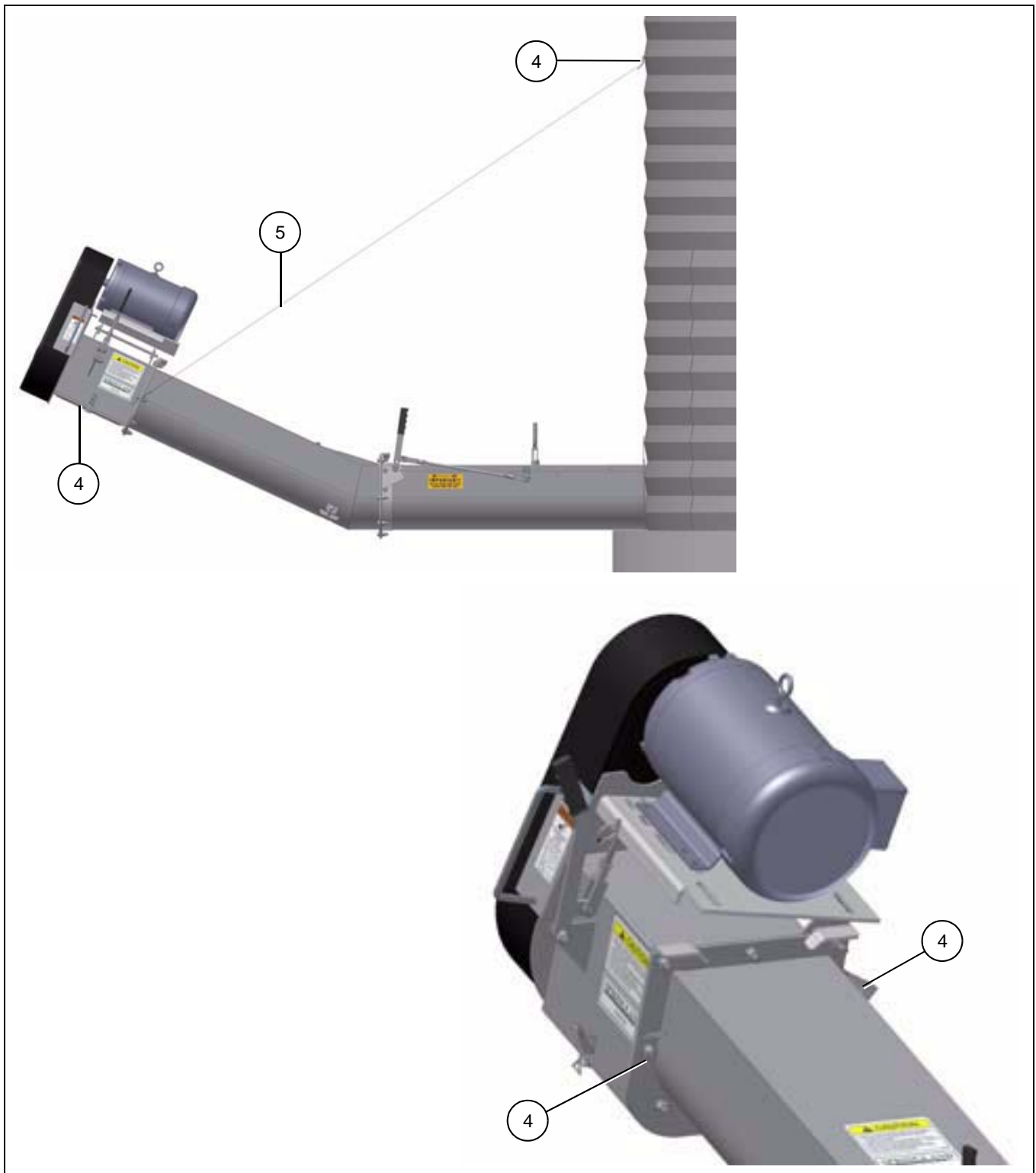


Figure 4AI

Ref #	Description
4	Support Mount Clip
5	Support Cable

Power requirements are dependent on grain type, condition and moisture level. Power requirements are suggestions and may vary in specific circumstances. Steps can be taken to reduce the power needed to operate the unload or sweep if power available to the site is limited. Operating the unload at a slower speed and reducing the flow of grain into the unload will reduce power requirement.

Electric Drive

All values in horsepower, (1 HP = 0.746 Kw).

A pulley for the electric drive motor is not provided.

For 1750 RPM motor use 3-1/2" - 3-3/4" diameter pulley, for 1460 RPM motor use 4-1/4" - 4-1/2" diameter pulley.

For power requirements from 1.5 HP - 7.5 HP use a two (2) groove pulley.

For power requirements from 10 HP - 25 HP use a three (3) groove pulley.

U-Trough Unloader with Sweep - Horizontal Powerhead

Bin Diameter	7-1/4" Sweep		8-1/4" Sweep		9" Sweep	
	12.4" Flight Pulley	18.4" Flight Pulley	12.4" Flight Pulley	18.4" Flight Pulley	12.4" Flight Pulley	18.4" Flight Pulley
18'	5	3	5	3	7.5	5
19'	5	5	5	5	7.5	5
21'	5	5	5	5	7.5	5
24'	7.5	5	7.5	5	7.5	5
27'	7.5	5	7.5	5	7.5	5
30'	7.5	5	7.5	5	10	7.5
33'	7.5	5	7.5	5	10	7.5
36'	10	7.5	10	7.5	10	7.5
42'	10	10	10	10	15	10
48'	15	15	15	15	15	15
54'	N/A	15	N/A	15	N/A	20
60'	N/A	20	N/A	20	N/A	20
66'	N/A	20	N/A	20	N/A	25

5. Power Requirements

U-Trough Unloader with Sweep - 25° Incline Elbow and Horizontal Powerhead

Bin Diameter	7-1/4" Sweep		8-1/4" Sweep		9" Sweep	
	12.4" Flight Pulley	18.4" Flight Pulley	12.4" Flight Pulley	18.4" Flight Pulley	12.4" Flight Pulley	18.4" Flight Pulley
18'	7.5	5	7.5	5	7.5	5
19'	7.5	5	7.5	5	7.5	5
21'	7.5	5	7.5	5	7.5	5
24'	7.5	5	7.5	5	10	7.5
27'	10	7.5	10	10	10	7.5
30'	10	7.5	10	10	10	7.5
33'	10	7.5	10	10	15	10
36'	10	7.5	10	10	15	10
42'	10	10	15	10	15	10
48'	15	15	15	15	20	15
54'	N/A	20	N/A	20	N/A	20
60'	N/A	20	N/A	25	N/A	20
66'	N/A	25	N/A	25	N/A	25

Unload Individually

Bin Diameter	Unload with 12.4" Pulley Horizontal Drive Unit	Unload with 18.4" Pulley Horizontal Drive Unit	Unload with 12.4" Pulley Incline Drive Unit	Unload with 18.4" Pulley Incline Drive Unit
	9" Diameter	9" Diameter	9" Diameter	9" Diameter
15'	5	3	7.5	5
18'	5	3	7.5	5
19'	5	5	7.5	5
21'	5	5	7.5	5
24'	7.5	5	7.5	5
27'	7.5	5	10	7.5
30'	7.5	5	10	7.5
33'	7.5	5	10	7.5
36'	10	7.5	10	7.5
42'	10	7.5	15	7.5
48'	10	7.5	15	10
54'	15	7.5	15	10
60'	15	10	15	10

Pulley Selection



Capacity requirements must be determined prior to ordering any unload/sweep system. Failure to do so may cause the sweep to overfeed the center gate. This could cause the electric motor to cut out and may damage the sweep back plate.

Listed on Pages 33-34 are the guidelines to assist with proper flight diameter and motor pulley selection. These are only theoretical values and will change with grain types, conditions and moisture content.

All capacities are shown in bushels per hour (BPH).

1750 RPM/60 Hz Motors

Below are charts outlining unload and sweep speeds and capacities when using a 1750 RPM motor. 1750 motor RPM is typically used in North America.

12" Pulley

U-Trough Unloader with Sweep		
3.5" Motor Pulley and 12.4" Flight Pulley		
Motor	RPM	Capacity (Bushels Per Hour)
	1750	
Unload		500
Sweep	7.25"	2500
	8.25"	3500
	9"	4500

U-Trough Unloader with Sweep		
4" Motor Pulley and 12.4" Flight Pulley		
Motor	RPM	Capacity (Bushels Per Hour)
	1750	
Unload		565
Sweep	7.25"	2800
	8.25"	4000
	9"	5300

18" Pulley

U-Trough Unloader with Sweep		
3.5" Motor Pulley and 18.4" Flight Pulley		
Motor	RPM	Capacity (Bushels Per Hour)
	1750	
Unload		333
Sweep	7.25"	1600
	8.25"	2300
	9"	3100

U-Trough Unloader with Sweep		
4" Motor Pulley and 18.4" Flight Pulley		
Motor	RPM	Capacity (Bushels Per Hour)
	1750	
Unload		380
Sweep	7.25"	1800
	8.25"	2600
	9"	3500

U-Trough Unloader with Sweep		
5" Motor Pulley and 18.4" Flight Pulley		
Motor	RPM	Capacity (Bushels Per Hour)
	1750	
Unload		475
Sweep	7.25"	2400
	8.25"	3400
	9"	4400

5. Power Requirements

1460 RPM/50 Hz Motors

Below are charts outlining unload and sweep speeds and capacities when using a 1460 RPM motor. 1460 motor RPM is typically used in Europe.

12" Pulley

U-Trough Unloader with Sweep			
4.25" Motor Pulley and 12.4" Flight Pulley			
Motor		RPM	Capacity (Bushels Per Hour)
		1460	
Unload		503	6000
Sweep	7.25"	335	2500
	8.25"		3500
	9"		4500

U-Trough Unloader with Sweep			
4.5" Motor Pulley and 12.4" Flight Pulley			
Motor		RPM	Capacity (Bushels Per Hour)
		1460	
Unload		531	6400
Sweep	7.25"	354	2700
	8.25"		3700
	9"		4800

18" Pulley

U-Trough Unloader with Sweep			
4.25" Motor Pulley and 18.4" Flight Pulley			
Motor		RPM	Capacity (Bushels Per Hour)
		1460	
Unload		340	4000
Sweep	7.25"	226	1600
	8.25"		2300
	9"		3100

U-Trough Unloader with Sweep			
4.5" Motor Pulley and 18.4" Flight Pulley			
Motor		RPM	Capacity (Bushels Per Hour)
		1460	
Unload		356	4300
Sweep	7.25"	237	1700
	8.25"		2500
	9"		3400

Capacity Chart

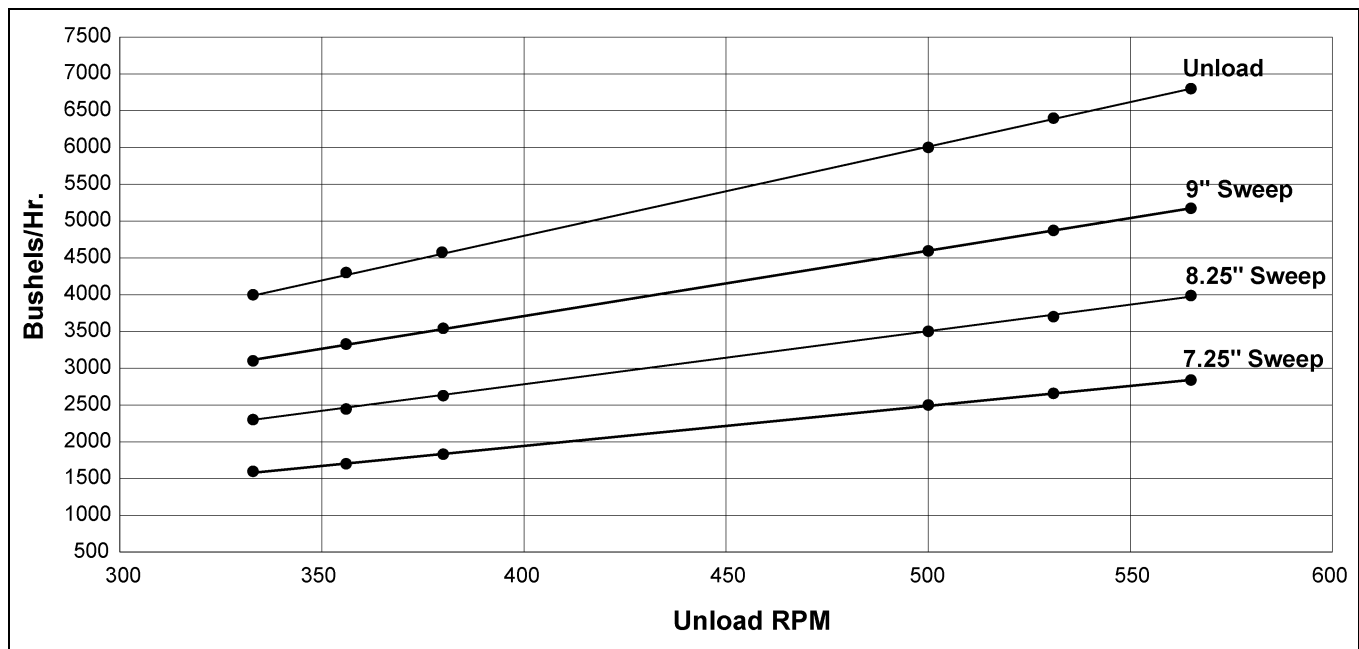


Figure 5A U-Trough Unload and Sweep Capacities

Pre-Operation Check List

1. Before filling the grain bin, check to ensure that all unload components are functioning properly.
2. Rotate drive unit and flight to ensure flight is free of obstruction and rotating smoothly.
3. Open and closed all unload gates to ensure that they are operating freely.
4. LEAVE GATES IN THE CLOSED POSITION WHEN FILLING THE BIN.
5. Operate gearbox shifter to ensure the clutch is functioning properly.
6. GEARBOX SHOULD BE DISENGAGED WHEN FILLING THE BIN.
7. Position the bin sweep above the intermediate gates or such that the intermediate gates are just in front of the sweep.
8. After the bin is filled with product, keep moisture from entering the grain bin at the center and draining down into the unload and sweep drive area.
9. Before beginning to unload grain, check the grain condition at the top of the bin. Remove any clumps of grain as they may restrict flow into the gates.

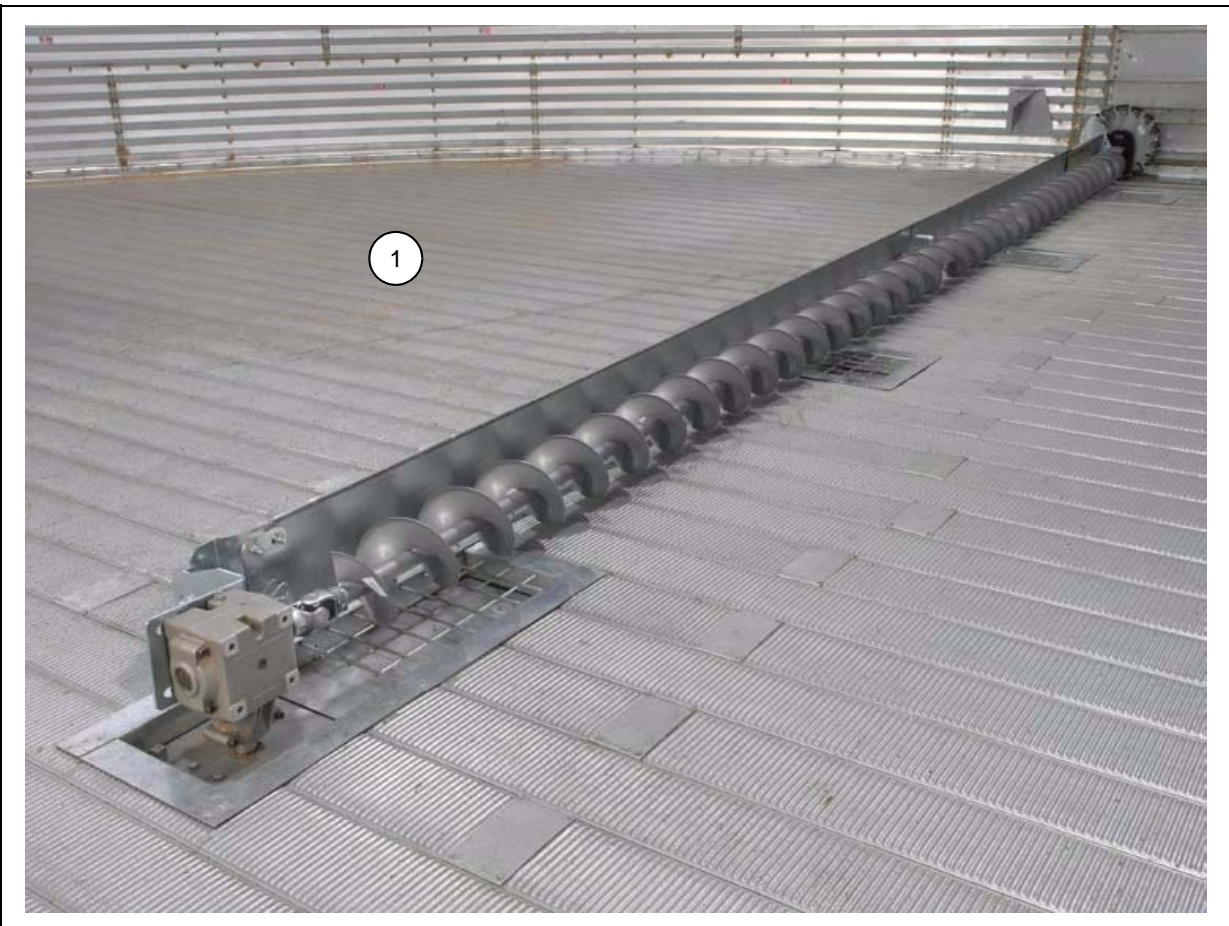


Figure 6A

Ref #	Description
1	Position sweep as shown before filling.

6. Operation



ALWAYS UNLOAD FROM THE CENTER GATE FIRST. Unloading from the intermediate gates when the bin is still mostly full, causes excessive stress on the grain bin and can cause the grain bin to be damaged or collapse.

For bin sizes 15'-36' the center gate is controlled independent of the intermediate gates. For bin sizes 42' diameter and larger the intermediate gate closest to the center gate is operated with the center gate control. When the center gate is 50% open, the next intermediate gate is opened together with the center gate such. Similarly, the center and next intermediate gate are closed together.

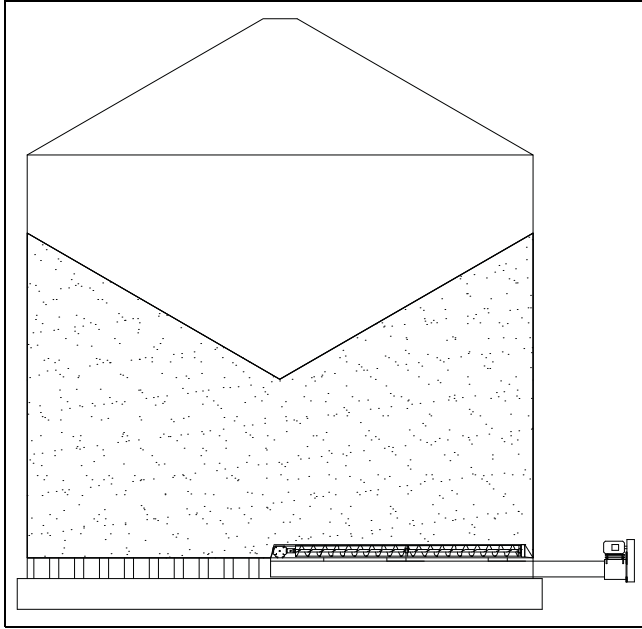


Figure 6B Center Unloading

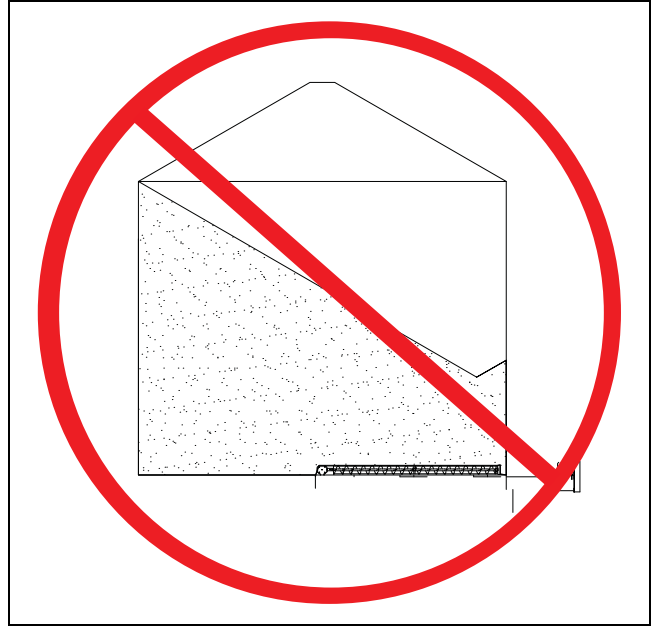


Figure 6C Off - Center Unloading

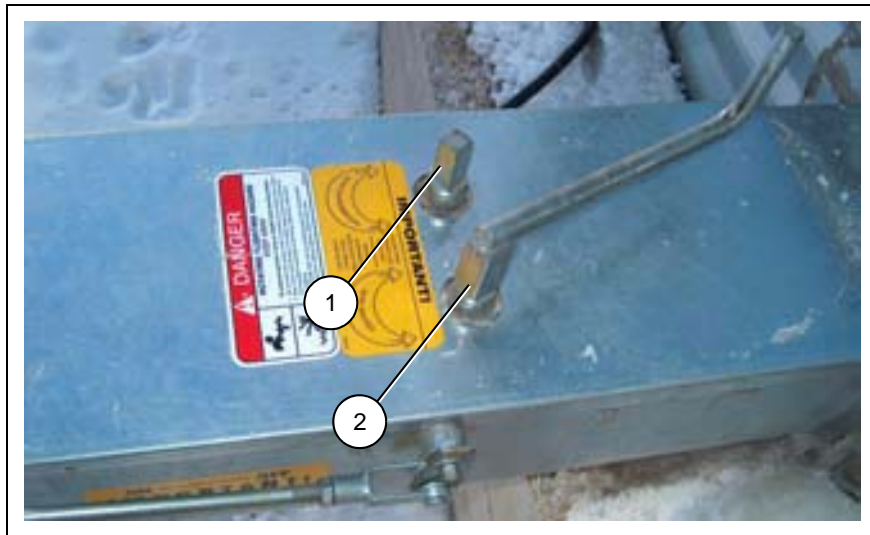


Figure 6D

Ref #	Description
1	Intermediate Gate Control
2	Center Gate Control

Gearbox Sweep Operation

Turn OFF unload before shifting gearbox into gear. Ensure that the gearbox shifter has engaged before starting unload.



Figure 6E Gearbox OFF



Figure 6F Gearbox ON

Gearbox Oil Level

(Check levels once per season or every 50 hours of operation.)

1. Fill top gearbox to side plug level.
2. Remove cover and fill bottom gearbox to line on dipstick.
3. Gearboxes are factory filled with USDA approved food grade oil ISO 150.
4. Oils such as SAE 80-90 gear oil are acceptable. Do not mix oil types.

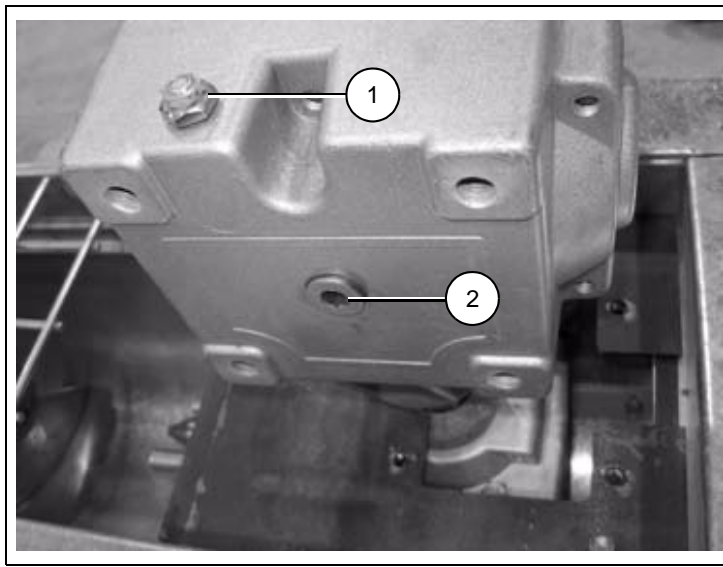


Figure 7A *Top Gearbox*

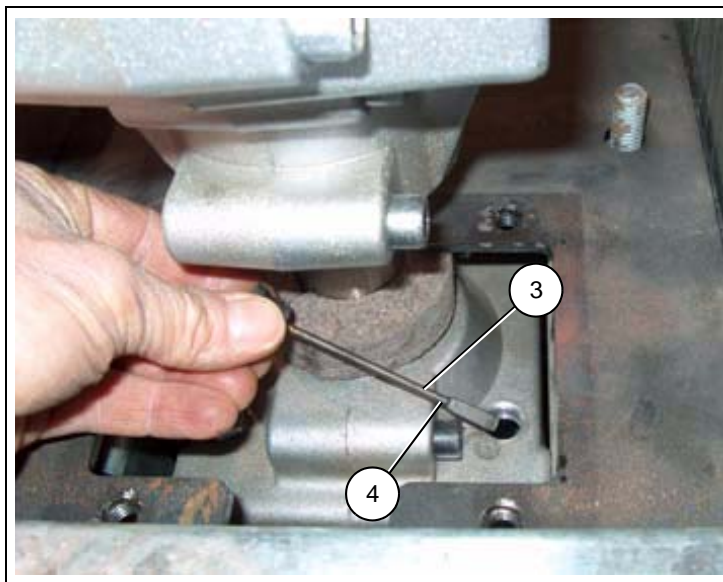


Figure 7B *Bottom Gearbox*

Ref #	Description
1	Vent Plug
2	Side Plug

Ref #	Description
3	Dipstick
4	Full Line

Grease Points

(Grease every 8 hours of operation.)

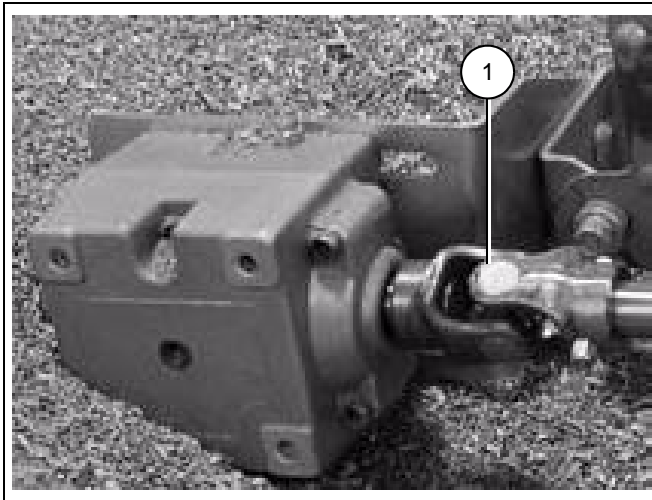


Figure 7C

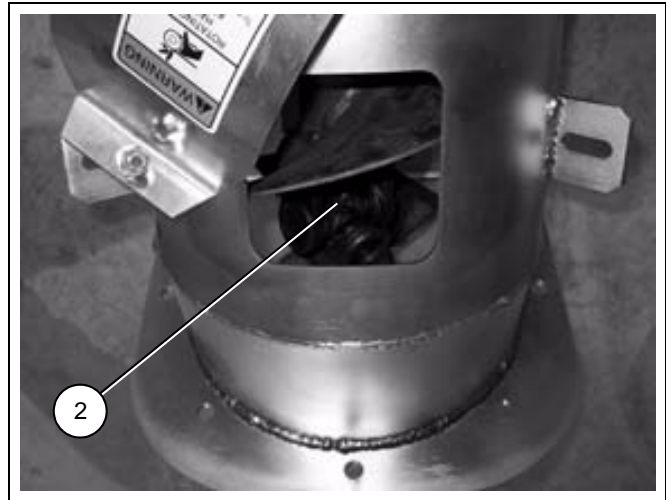


Figure 7D

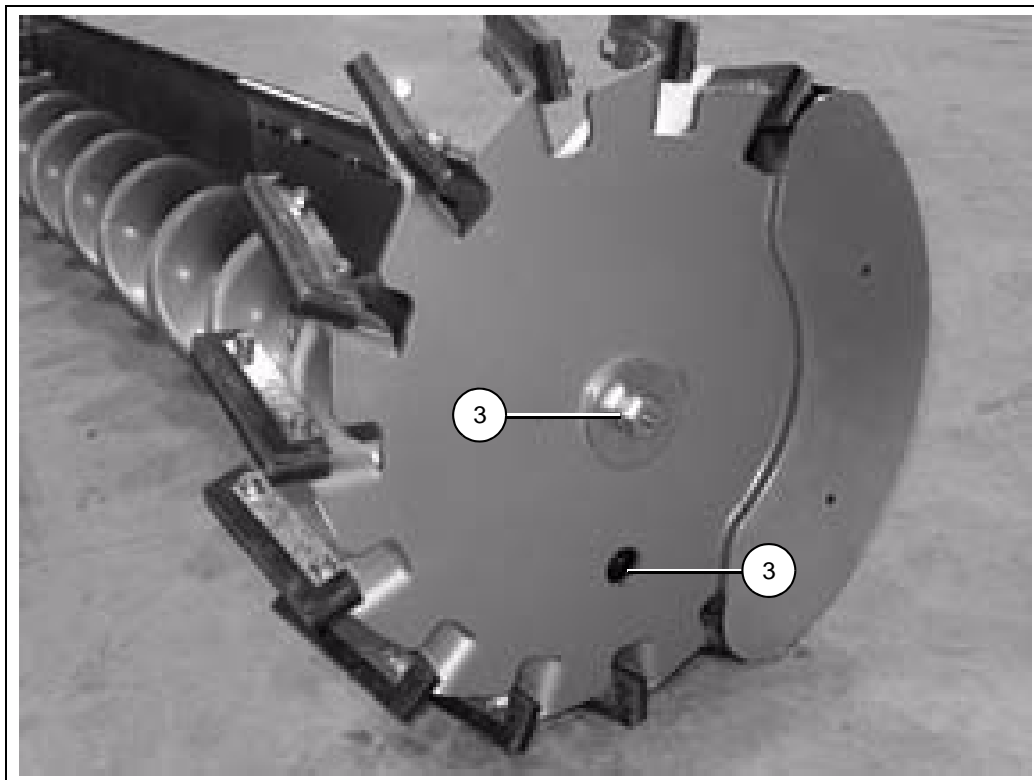


Figure 7E

Ref #	Description
1	Gearbox U-Joint
2	Incline Elbow U-Joint
3	Sweep Drive Wheel

8. Unload Dimensions

All dimensions are in inches unless specified otherwise.

U-Trough Unload Dimensions

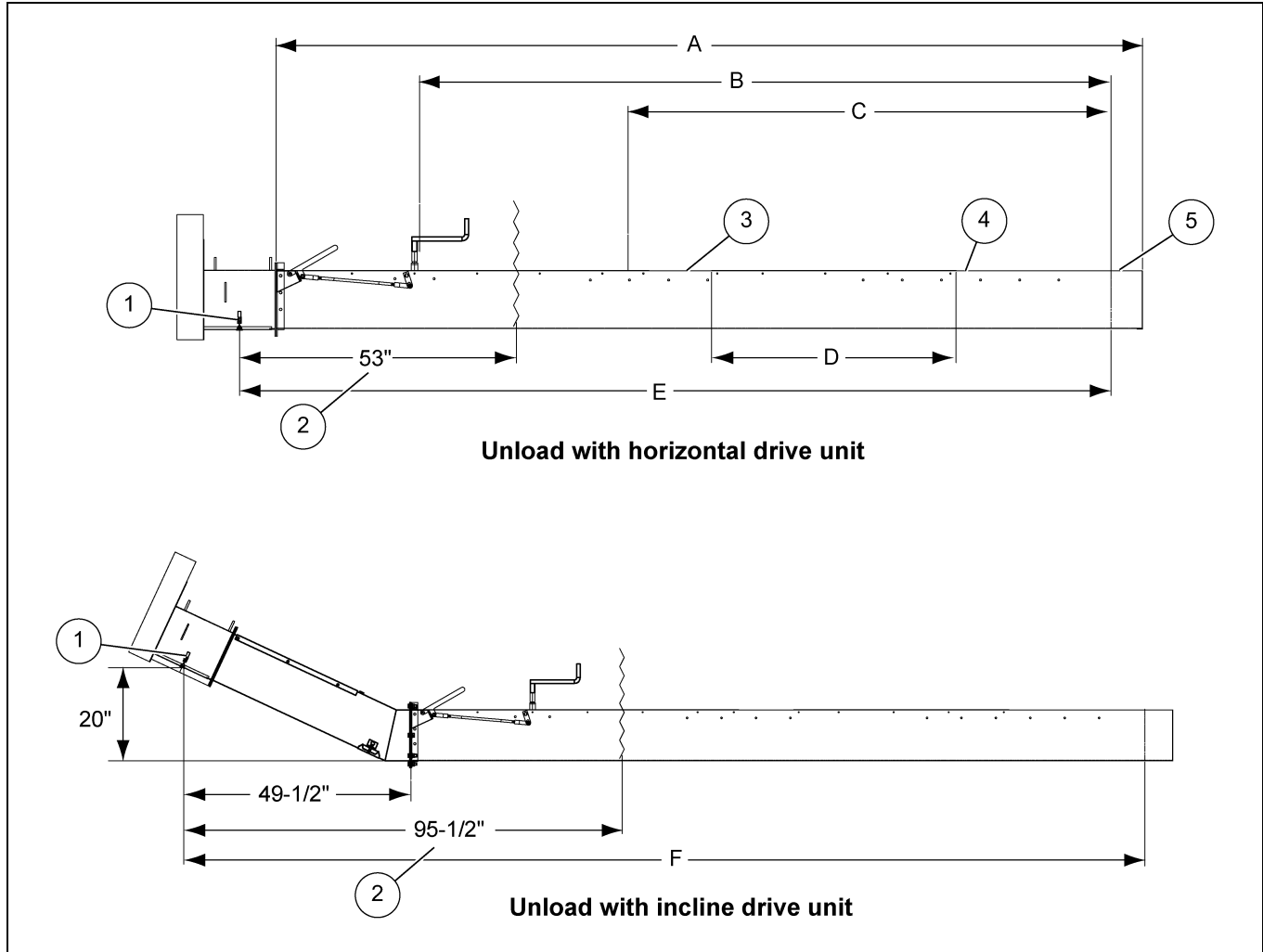


Figure 8A

Ref #	Description
1	Center of Discharge
2	Dimension for Standard Bin Size
3	Intermediate Gate
4	Center Gate
5	Center of Bin

8. Unload Dimensions

Standard Bin Diameter	# of Intermediate Gates	A	B	C	D	E	F
		Overall Unload Length	Maximum Bin Radius	Minimum Bin Radius	Distance Between Gates	Center of Bin to Center of Discharge Horizontal Drive Unit	Center of Bin to Center of Discharge Incline Drive Unit
15'	1	143.5	110	70	24.4	144.5	187
18'	1	160	126.5	86.5	40.9	161	203.5
19'	1	166	132.5	92.5	46.9	167	209.5
21'	1	178	144.5	104.5	58.9	179	221.5
24'	1	196	162.5	122.5	76.9	197	239.5
27'	2	214	180.5	140.5	41.4	215	257.5
30'	2	232	198.5	158.5	50.4	233	275.5
33'	2	250	216.5	176.5	59.4	251	293.5
36'	2	268	234.5	194.5	68.4	269	311.5
42'	3	304	270.5	230.5	53.6	305	347.5
48'	3	339	305.5	265.5	65.3	340	382.5
54'	3	376	342.5	302.5	77.6	377	419.5
60'	4	412	378.5	338.5	64.2	413	455.5
66'	4	452	396	356	74	451	497.38

8. Unload Dimensions

Bin Sweep Dimensions

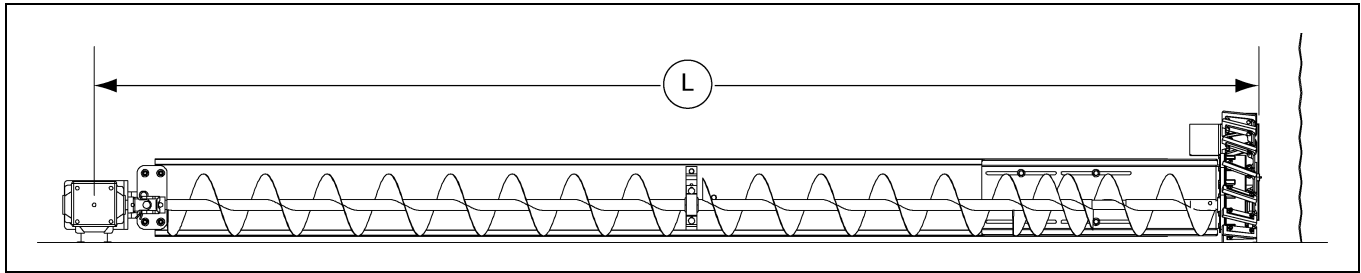


Figure 8B

Nominal Bin Diameter	Sweep Length (L) (in.)		Bin Diameter Range (ft.) Allowing 4-1/2" Clearance between Sweep and Bin Wall	
	Minimum Diameter	Maximum Diameter	Minimum	Maximum
18'	97.5	106.5	17.0	18.5
21'	115.5	124.5	20.0	21.5
24'	133.5	142.5	23.0	24.5
27'	151.5	160.5	26.0	27.5
30'	169.5	178.5	29.0	30.5
33'	187.5	196.5	32.0	33.5
36'	205.5	214.5	35.0	36.5
42'	241.5	250.5	41.0	42.5
45'	259.5	268.5	44.0	45.5
48'	277.5	286.5	47.0	48.5
54'	313.5	322.5	53.0	54.5
57'	331.5	340.5	56.0	57.5
60'	349.5	358.5	59.0	60.5

GSI Group, LLC 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	
AP Fans and Flooring	Performer Series Direct Drive Fan Motor	3 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%
	All Fiberglass Housings	Lifetime	
	All Fiberglass Propellers	Lifetime	
AP and Cumberland	Flex-Flo/Pan Feeding System Motors	2 Years	
Cumberland Feeding/Watering Systems	Feeder System Pan Assemblies	5 Years **	** Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 50%
	Feed Tubes (1-3/4" and 2.00")	10 Years *	
	Centerless Augers	10 Years *	
	Watering Nipples	10 Years *	
Grain Systems	Grain Bin Structural Design	5 Years	
Grain Systems Farm Fans Zimmerman	Portable and Tower Dryers	2 Years	† Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.
	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years	

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 (12th) month from the date of purchase and continuing until the sixtieth (60th) 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.

GSI shall not be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor.

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.



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