



# Farm U-Trough Bin Unload System

## 100 Series Operator's Manual

This manual applies to:

U-Trough Unload	Bin Diameters: 24', 27', 30', 33', 36', 39', 42', 45', 48', 51', 54', 60'
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Original Instructions



Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

Part Number: BU-0101743 R3

Revised: June 2018





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# 1. Introduction

Thank you for purchasing a Westfield Farm U-Trough Bin Unload System. This equipment will allow safe and efficient operation when you read and follow all of the instructions contained in this manual. With proper care, your bin unload will provide you with many years of trouble-free operation.

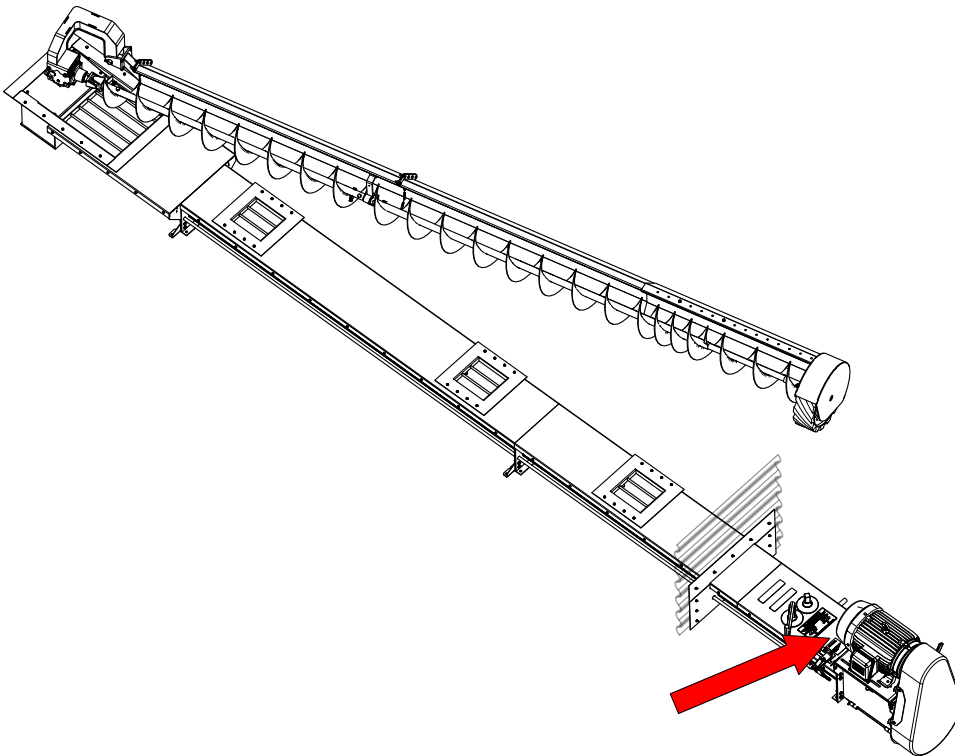
Keep this manual handy for frequent reference and to review with new personnel. A sign-off form is provided on the inside front cover for your convenience. If any information in this manual is not understood or if you need additional information, please contact your local distributor or dealer for assistance.

This manual should be regarded as part of the equipment. Suppliers of both new and second-hand equipment are advised to retain documentary evidence that this manual was provided with the equipment.

## 1.1. Serial Number Location

Always give your dealer the serial number on your bin unload (shown below) when ordering parts or requesting service or other information. Please record this information in the table below for easy reference.

<b>Model Number</b>	
<b>Serial Number</b>	
<b>Date Received</b>	



## 1.2. Intended Use

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The bin unload is designed solely for use in the intended agricultural use as listed below. Use in any other way is considered as contrary to the intended use. Compliance with and strict adherence to the conditions of operation and maintenance as specified by the manufacturer, also constitute essential elements of the intended use.

The bin unload should be operated, maintained, serviced, and repaired only by persons who are familiar with its particular characteristics and who are acquainted with the relevant safety procedures.

Accident prevention regulations and all other generally recognized regulations on occupational health and safety must be observed at all times.

Any modifications made to the bin unload may relieve the manufacturer of liability for any resulting damage or injury.

### **Intended use for the bin unload:**

- Handling grain, pulse crops, treated seeds, or other similar materials.

Use in any other way is considered as contrary to the intended use and is not covered by the warranty.

### **1.2.1 Misuse**

Do not use the bin unload for/with:

- transferring material other than dry, free-flowing food-grains.
- commercial or off-farm use.


# 2. Safety


## 2.1. Safety Alert Symbol and Signal Words





This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury or death, carefully read the message that follows, and inform others.

**Signal Words:** Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.

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

 **WARNING** Indicates a hazardous situation that, if not avoided, could result in serious injury or death.

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

 **NOTICE** Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

## 2.2. General Product Safety

**YOU** are responsible for the **SAFE** use and maintenance of your bin unload. **YOU** must ensure that you and anyone else who is going to work around the bin unload understands all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. All accidents can be avoided.

- It is the bin unload owner, operator, and maintenance personnel's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them when assembling, operating, or maintaining the equipment.
- Owners must give instructions and review the information initially and annually with all personnel before allowing them to operate the bin unload. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- The bin unload is not intended to be used by children.
- Use the bin unload for its intended purposes only.
- Do not modify the bin unload in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety, and could affect the life of the bin unload. Any unauthorized modification of the bin unload will void the warranty.



## 2.3. Rotating Flighting Safety

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### DANGER

- KEEP AWAY from rotating flighting.
- DO NOT remove or modify flighting guards, doors, or covers. Keep in good working order. Have replaced if damaged.
- DO NOT operate the bin unload without all guards, doors, and covers in place.
- NEVER touch the flighting. Use a stick or other tool to remove an obstruction or clean out.
- Shut off and lock out power to adjust, service, or clean.



## 2.4. Rotating Parts Safety

---

### WARNING

- Keep body, hair, and clothing away from rotating pulleys, belts, chains, and sprockets.
- Do not operate with any guard removed or modified. Keep guards in good working order.
- Shut off and remove key or lock out power source before inspecting or servicing machine.



## 2.5. Work Area Safety

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- Have another trained person nearby who can shut down the bin unload in case of accident.
- The work area should be kept clear of bystanders.
- Keep the work area clean and free of debris.

## 2.6. Guards Safety

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### WARNING

- Keep guards in place and do not operate unless all guards are in place.
- Do not walk on, step on, or damage guards.
- Lock out power before removing a guard.
- Ensure all guards are replaced after performing maintenance.

## 2.7. Bin Unloading Safety

---

### WARNING

- Never enter a bin when loading or unloading.
- Unload only as described in the operation section of this manual.
- Lock the bin door (where equipped) and close/lock all other access doors when not in use.



## 2.8. Bin Entry Safety

---

The information in this section applies to entry through any access point.

**⚠ WARNING** Always try to work and solve problems without entering a bin.

**If you must enter the bin, follow the safety information below to safely enter through the roof or door:**

- Stop the unloading process if the bin is being unloaded and lockout/tagout power before entering the bin, refer to Lockout/Tagout Safety.
- Always wear a dust-filtering respirator when entering the bin. Grain dust and spores when inhaled into the lungs can cause severe reactions leading to hospitalization in some cases. Persistent exposure may cause “farmer’s lung,” which can eventually be fatal.
- Before working inside the bin, ventilate the area by opening the vent or by other equivalent means to force air into the bin to prevent oxygen-deficient atmosphere. Inadequate oxygen is very harmful to your health and can cause death. Exposure to carbon dioxide can cause drowsiness, headache and even death due to suffocation. Test the atmosphere. If the carbon dioxide hazard cannot be reduced or eliminated or you cannot test the atmosphere, use correctly fitted and appropriate respirator.
- Never walk on grain to make it flow.

If you ignore the safety precautions above and enter the bin, you could die from being submerged.

### 2.8.1 Roof Entry

The information in this section applies to entry through the bin roof only.

- ⚠ WARNING**
- Never enter a bin from the roof if you don’t know its unloading history. Bridges of stored material can form above a void space below, causing potential for entrapment.
  - Have body harness tethered to a lifeline controlled by two others outside the bin. One worker should be able to see inside worker through the inspection hatch. If there is an accident, one worker can focus on the victim while the other goes/calls for help.
  - In the event that you are trapped in the bin as it is unloading, move as quickly as possible toward the bin wall; keep yourself elevated above the material by walking on the flowing mass while staying as close as possible to the bin wall.

## 2.9. Bin Emergency Entry

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In an emergency situation:

- Follow protocols set by your local occupational safety and health agency.
- If you need to rescue somebody inside the bin, call emergency responders and only attempt to rescue using non-entry rescue procedure/equipment. Do not enter the bin unless you are trained for rescue, equipped and relieved.

## 2.10. Bin Entrapment

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It takes more than 1000 lb (4.5kN) of force to remove someone buried below the surface.

The following sections cover common ways a person gets submerged or trapped:



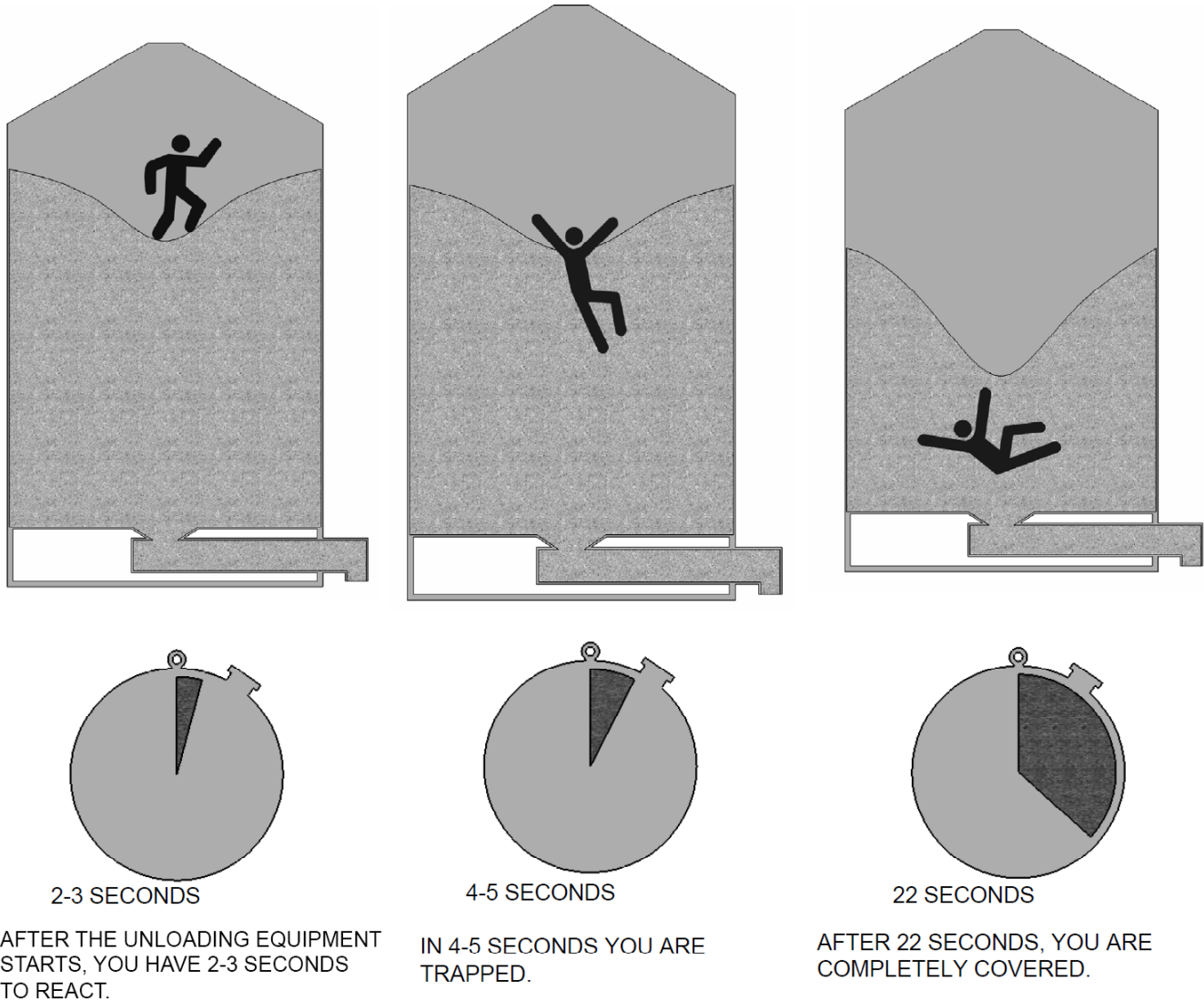
### 2.10.1 Flowing Grain

This procedure may also apply to fertilizer where the bin is intended for fertilizer storage.

**⚠ WARNING**

- Grain flows in a funnel-shaped path when unloading. This vortex of grain behaves very much like a water drain. Velocity increases as grain flows from the bin wall at the top of the grain mass into a small vertical column at the center of the bin.
- Flowing grain will not support the weight of a person. Submersion happens within seconds.

**Figure 1. Bin Suffocation Hazards in Flowing Grain**



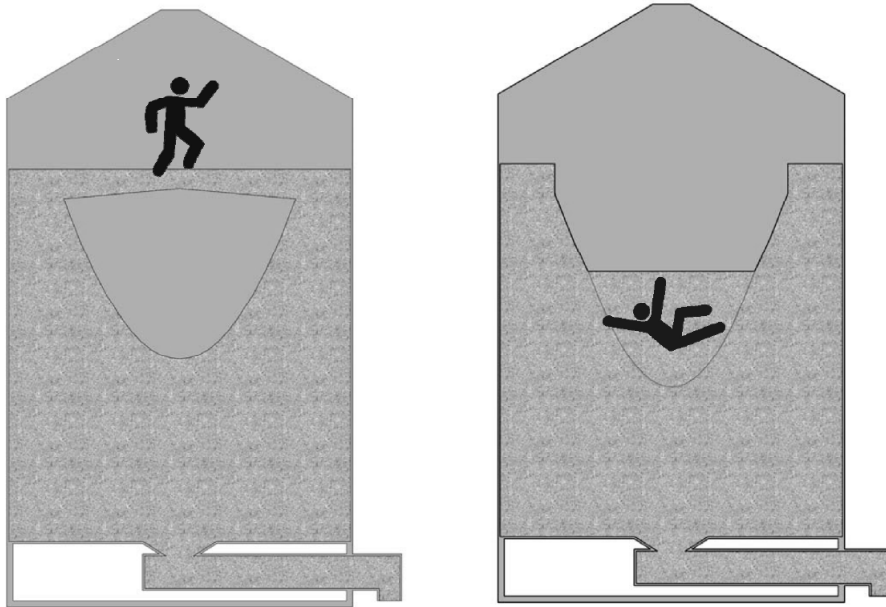
### 2.10.2 Collapse of Bridged Grain

This procedure may also apply to fertilizer where the bin is intended for fertilizer storage.

**⚠ WARNING**

- Grain can “bridge” across a bin, creating an empty air space below. A person can easily break through this bridge and become trapped, risking suffocation.
- To identify bridged grain, look for a funnel shape on the surface of the grain after having removed some of the grain. If surface is undisturbed, the grain has bridged and formed a crust.
- Never walk on the grain crust. The crust rarely becomes strong enough to support the weight of a person.
- To remove bridge, try breaking the bridge from the inspection hatch or filler cap. Use a pole to hit the surface, securing it with a rope in case it is dropped. Be aware that chunks of crusted grain can move down to the auger and limit flow.

**Figure 2. Bin Suffocation Hazards in Bridged Grain**



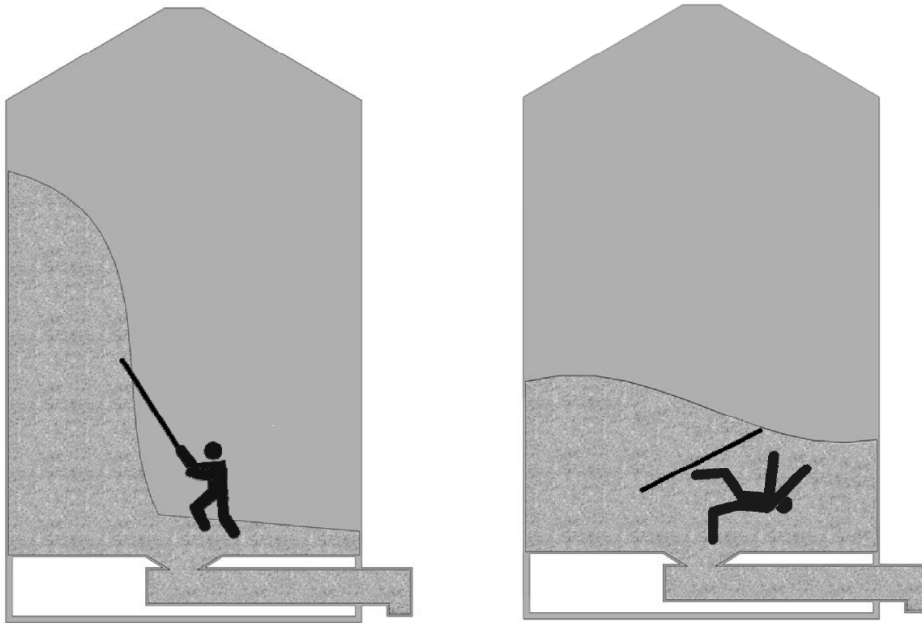
### 2.10.3 Collapse of a Vertical Wall of Grain

This procedure may also apply to fertilizer where the bin is intended for fertilizer storage.

#### **WARNING**

- Vertical walls of grain are created when the bin is partially empty. Poking at the wall can make the grain avalanche and submerge a person.
- Do not enter bin to break down grain that has set up. Break grain mass from top of bin outside.



**Figure 3. Bin Suffocation Hazards from a Vertical Grain Wall**

## 2.11. Combustible Dust

**WARNING** The bin unload has been designed for safe use in areas where hazards due to combustible dust may potentially occur. To fully minimize the risk of a dust explosion:

- Clean up dust deposits after operation of the equipment.
- Always purchase replacement parts from the manufacturer or authorized dealer/distributor. Original manufacturers parts are designed with explosion proof features.
- Follow the maintenance schedule to keep equipment operating at normal conditions. This will further help to prevent the risk of components overheating or wearing out which may lead to explosion risks.
- Do not use anything inside the bin that may produce a flame, such as a match, a lighter, or anything that may produce a shower of sparks, such as a grinder or power saw, unless the air is free of dust and all dust deposits have been removed from the work area, or the work area is wet such that dust cannot be dispersed in the air and smoldering processes from sparks cannot develop.

## 2.12. Drives and Lockout Safety

Inspect the power source(s) before using and know how to shut down in an emergency. Whenever you service or adjust your equipment, make sure you shut down the power source and follow lockout and tagout procedures to prevent inadvertent start-up and hazardous energy release. Know the procedure(s) that applies to your equipment from the following power source(s). Ensure that only 1 key exists for each assigned lock, and that you are the only one that holds that key. Ensure that all personnel are clear before turning on power to equipment.



## 2.12.1 Electric Motor Safety

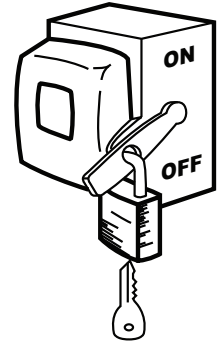
### **WARNING** Power Source

- Electric motors and controls shall be installed and serviced by a qualified electrician and must meet all local codes and standards.
- A magnetic starter should be used to protect your motor.
- You must have a manual reset button.
- Reset and motor starting controls must be located so that the operator has full view of the entire operation.
- Locate main power disconnect switch within reach from ground level to permit ready access in case of an emergency.
- Motor must be properly grounded.
- Guards must be in place and secure.
- Ensure electrical wiring and cords remain in good condition; replace if necessary.
- Use a totally enclosed electric motor if operating in extremely dusty conditions.

### Lockout

- The main power disconnect switch should be in the locked position during shutdown or whenever maintenance is performed.
- If reset is required, disconnect all power **before** resetting motor.

### SERVICE DISCONNECT



## 2.13. Personal Protective Equipment

The following Personal Protective Equipment (PPE) should be worn when operating or maintaining the equipment.

### Safety Glasses

- Wear safety glasses at all times to protect eyes from debris.



### Work Gloves

- Wear work gloves to protect your hands from sharp and rough edges.



### Steel-Toe Boots

- Wear steel-toe boots to protect feet from falling debris.



**Coveralls**

- Wear coveralls to protect skin.

**Hard Hat**

- Wear a hard hat to help protect your head.

**Hearing Protection**

- Wear ear protection to prevent hearing damage.



## 2.14. Safety Equipment

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The following safety equipment should be kept on site:

**Fire Extinguisher**

- Provide a fire extinguisher for use in case of an accident. Store in a highly visible and accessible place.

**First-Aid Kit**

- Have a properly-stocked first-aid kit available for use should the need arise, and know how to use it.

**Eyewash Kit**

- Keep a portable eye wash kit available or make sure a permanent eyewash station is available should the need arise to flush materials from the eyes. Review instructions for use before working with the bin unload.

**Salvage Container**

- Keep a sealable salvage container on site, such as a spill containment pallet.

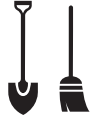
**Absorbent Materials**

- Keep granular absorbent materials on hand to clean up any chemical spills.



### Aluminum Shovel and Broom

- Keep an aluminum shovel and broom for cleanup of spilled materials.



## 2.15. Safety Decals

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- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available **free of charge** from your distributor, dealer, or factory as applicable.

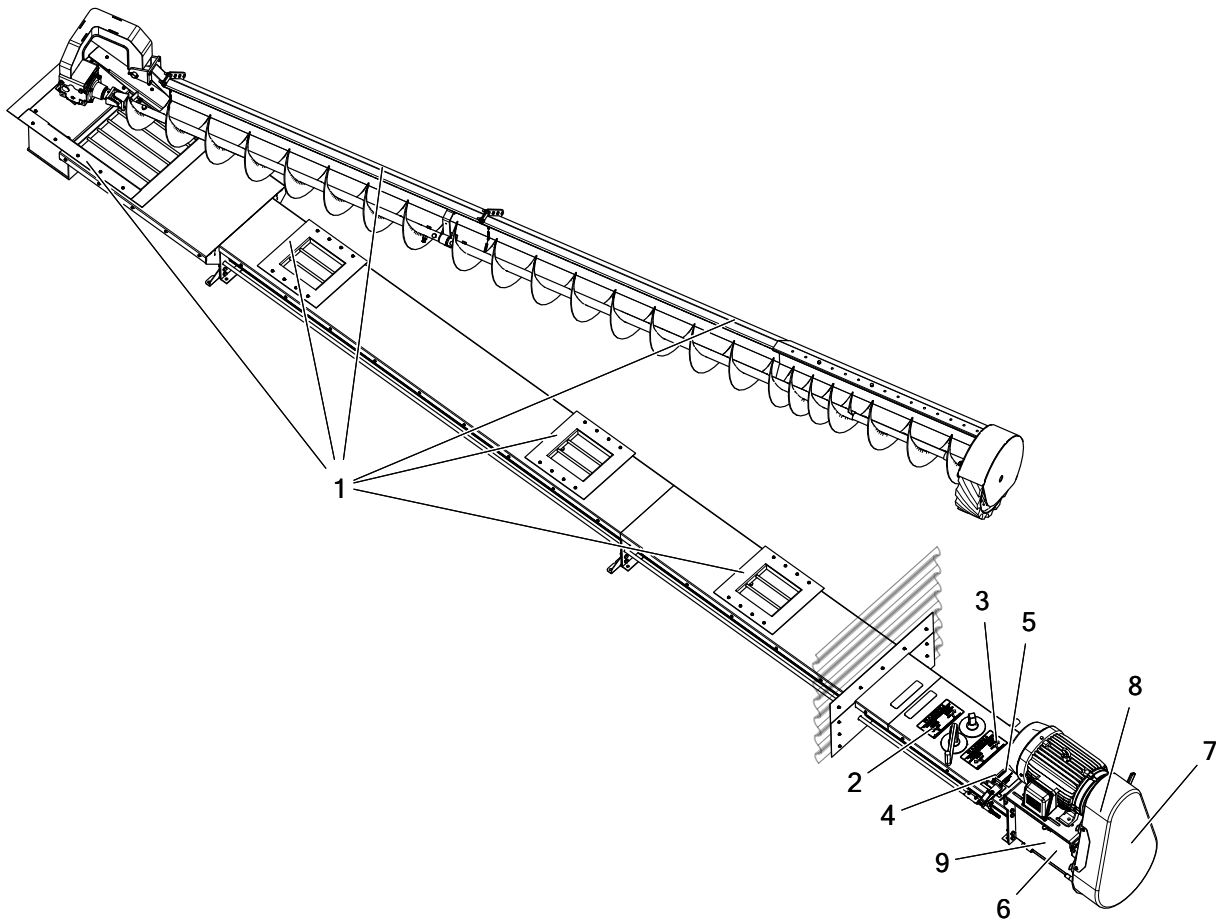
### 2.15.1 Decal Installation/Replacement

1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
5. Small air pockets can be pierced with a pin and smoothed out using the sign backing paper.

### 2.15.2 Safety Decal Locations and Details

Replicas of the safety decals that are attached to the bin unload and their messages are shown in the figure(s) that follow. Safe operation and use of the bin unload requires that you familiarize yourself with the various safety decals and the areas or particular functions that the decals apply to, as well as the safety precautions that must be taken to avoid serious injury, death, or damage.


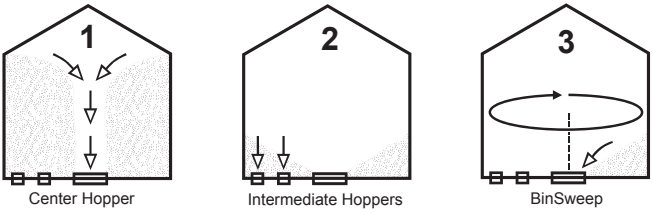




**Note**

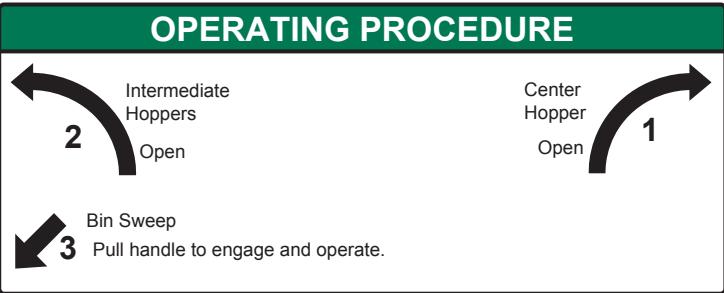
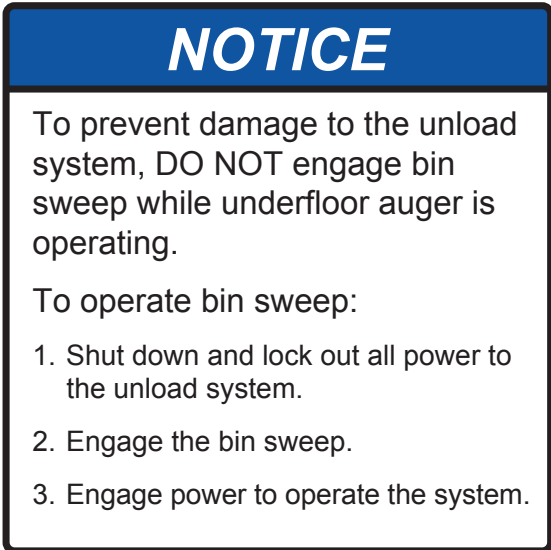

Decal locations same on incline discharge.

**Table 1. Safety Decals**

Item	Description	Part Number
1	 <div data-bbox="711 1339 1031 1522" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;"><b>⚠ DANGER</b></p> <p><b>ROTATING FLIGHTING HAZARD</b></p> <p>To prevent serious injury or death:</p> <ul style="list-style-type: none"> <li>• KEEP OUT of bin while sweep is operating.</li> <li>• KEEP AWAY from rotating auger flighting.</li> <li>• NEVER touch the auger flighting. Use a stick or other tool to remove an obstruction or clean out.</li> <li>• Shut off and lock out power before entering bin to adjust, service, or clean.</li> </ul> </div>	BU-0100470
2	<div data-bbox="305 1564 1031 1858" style="border: 1px solid black; padding: 10px;"> <p style="text-align: center; background-color: #008000; color: white; margin: 0;"><b>OPERATING PROCEDURE</b></p>  <p style="text-align: center; margin: 0;"> <span style="margin-right: 100px;">Center Hopper</span> <span style="margin-right: 100px;">Intermediate Hoppers</span> <span>BinSweep</span> </p> </div>	BU-0101800



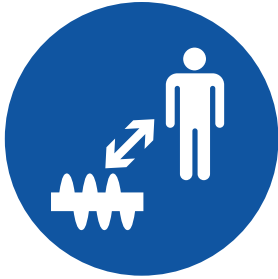


**Table 1 Safety Decals (continued)**



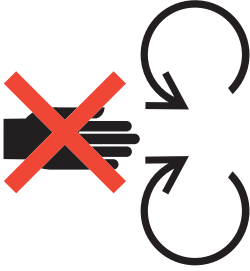


Item	Description	Part Number
3	 <p><b>OPERATING PROCEDURE</b></p> <p>2 Intermediate Hoppers Open</p> <p>Center Hopper Open 1</p> <p>3 Bin Sweep Pull handle to engage and operate.</p>	BU-0100472
4	 <p><b>NOTICE</b></p> <p>To prevent damage to the unload system, DO NOT engage bin sweep while underfloor auger is operating.</p> <p>To operate bin sweep:</p> <ol style="list-style-type: none"> <li>1. Shut down and lock out all power to the unload system.</li> <li>2. Engage the bin sweep.</li> <li>3. Engage power to operate the system.</li> </ol>	BU-0100476
5	 <p><b>WARNING</b></p> <p><b>BIN COLLAPSE HAZARD</b></p> <p>Center hopper must be opened first to empty bin. Failure to follow could result in serious injury or death.</p>	BU-0000002



**Table 1 Safety Decals (continued)**




Item	Description	Part Number
6	<div style="border: 2px solid black; padding: 10px;"> <div style="background-color: red; color: white; text-align: center; padding: 5px;">  <b>DANGER</b> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;">   </div> <div style="text-align: center; margin-top: 10px;"> <p><b>ROTATING FLIGHTING HAZARD</b></p> <p>To prevent death or serious injury:</p> <ul style="list-style-type: none"> <li>• KEEP AWAY from rotating auger flighting.</li> <li>• DO NOT remove or modify auger flighting guards, doors, or covers. Keep in good working order. Have replaced if damaged.</li> <li>• DO NOT operate the auger without all guards, doors, and covers in place.</li> <li>• NEVER touch the auger flighting. Use a stick or other tool to remove an obstruction or clean out.</li> <li>• Shut off and lock out power to adjust, service, or clean.</li> </ul> </div> </div>	20813

**Table 1 Safety Decals (continued)**

Item	Description	Part Number
7	<div data-bbox="311 275 954 1045" style="border: 1px solid black; padding: 10px;"> <div style="background-color: #f4a460; padding: 5px; text-align: center;">  <b>WARNING</b> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="text-align: center; margin-top: 10px;"> <p><b>ENTANGLEMENT HAZARD</b></p> <p>To prevent serious injury or death:</p> <ul style="list-style-type: none"> <li>• Keep body, hair, and clothing away from rotating pulleys, belts, chains, and sprockets.</li> <li>• Do not operate with any guard removed or modified. Keep guards in good working order.</li> <li>• Shut off and remove key or lock out power source before inspecting or servicing machine.</li> </ul> </div> </div>	20804
8	<div data-bbox="311 1094 857 1402" style="border: 1px solid black; padding: 10px;"> <div style="background-color: #f4a460; padding: 5px; text-align: center;">  <b>WARNING</b> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 20%; text-align: center;">  </div> <div style="width: 80%;"> <p><b>MISSING GUARD HAZARD</b></p> <p>To prevent serious injury or death, shut off power and reattach guard before operating machine.</p> </div> </div> </div>	20803



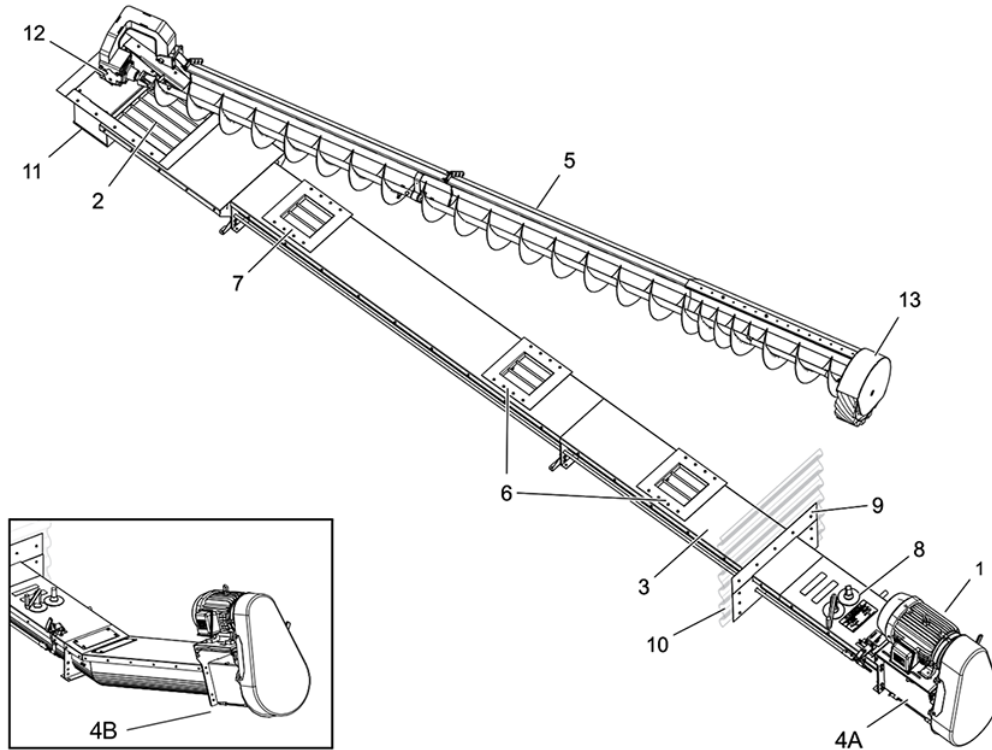
**Table 1 Safety Decals (continued)**

Item	Description	Part Number
9	<div style="border: 2px solid black; padding: 10px;"> <div style="background-color: #f4a460; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">  <b>WARNING</b> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="margin-top: 10px;"> <p>To prevent serious injury or death:</p> <ul style="list-style-type: none"> <li>• Read and understand the manual before assembling, operating, or maintaining the equipment.</li> <li>• Only trained personnel may assemble, operate, or maintain the equipment.</li> <li>• Children and untrained personnel must be kept outside of the work area.</li> <li>• Do not modify the equipment. Keep in good working order.</li> <li>• If the manual, guards, or decals are missing or damaged, contact factory or dealer for replacements.</li> <li>• Lock out power before performing maintenance.</li> </ul> </div> </div>	BU-0020807

# 3. Features

This section covers the main features of the bin unload.

**Figure 4. Bin Unload System Features**




**Table 2. Bin Unload System Features**

Item	Description	Item	Description
1	Electric Power Head	7	Emergency Sump (E-Sump) (optional on 30' bin diameter model and greater)
2	Center Sump (Hopper)	8	Controls
3	Underfloor Auger	9	Bin Adapter
4A	Horizontal Discharge	10	Bin Wall
4B	Incline Discharge	11	Lower Gearbox
5	Bin Sweep	12	Upper Gearbox
6	Intermediate Sump (Hopper)	13	Sweep Drive Wheel

Optional u-trough extensions are available in lengths of 1.5', 3', 4.5', 6' and 9'.




# 4. Operation

 Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

## 4.1. Operation Safety

- WARNING**
- Keep away from rotating and moving parts, including the auger flighting, drive components, shafts, and bearings.
  - Do not enter the grain bin while the bin unload is operating.
  - Always operate with guards, covers, and shields in place.
  - Have another trained person nearby who can shut down the equipment in case of accident.
  - Keep the work area clear of bystanders.
  - Keep the work area clean and free of debris.
  - Ensure maintenance has been performed and is up to date.

 Refer to your bin operation manual for specific operating and safety information for your bin.

## 4.2. Overview

The bin unload system operates by first opening the center sump to remove 70-80% of grain by gravity. Next, the intermediate sumps are opened when the center sump runs empty to free the sweep. Lastly, the bin sweep is operated to remove the remaining 20-30% of grain.

Refer to [Figure 5 on page 22](#)

**WARNING** To prevent serious injury or death from bin collapse, the center hopper must be open first to empty bin.

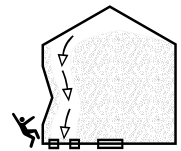
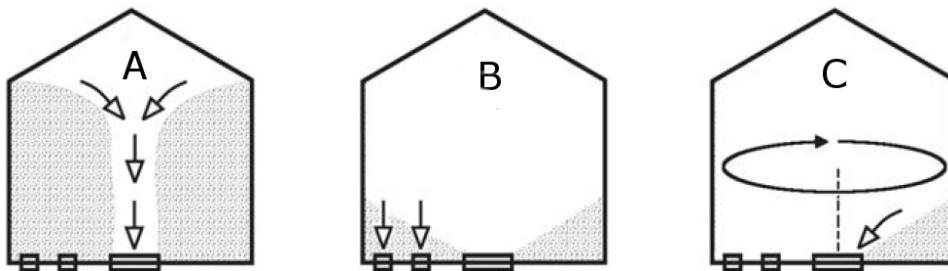


Figure 5. Grain Bin Overall Emptying Procedure



## 4.3. Before Filling the Bin with Grain

Following this list will prevent problems that may otherwise occur during the unloading process.

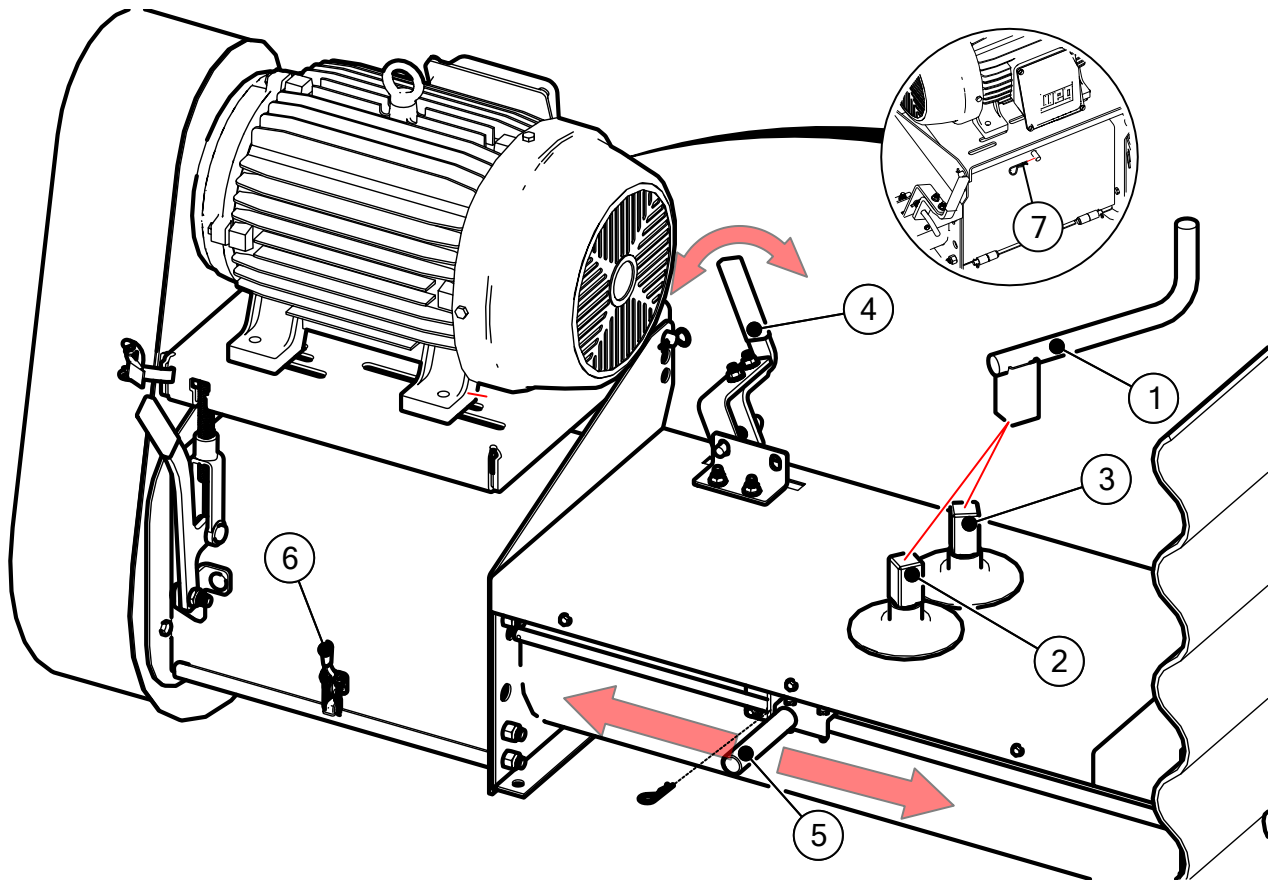
1. Check for damage or unusual wear, especially on flighting and bearings.
2. Make sure there are no obstructions in the following locations:
  - sweep path along the bin floor bin sweep and underfloor auger flighting
  - center or intermediate sumps
3. Prior to filling the bin each time, run the bin unload system to check for proper operation.
4. Close the center sump gate and intermediate sump gates.
5. Park the sweep in the “start/park position” slightly behind intermediate sumps prior to filling the bin each time.

### NOTICE

Failure to park the sweep in the “start/park position” could result in damage to the sweep, under-floor conveyance system, and/or aeration floor.

## 4.4. Operating Controls

Figure 6. Bin Unload System Controls



**Table 3. Bin Unload System Controls**

Item	Description	Operation
1	Gate Control Handle	Place on Center Sump Control or Intermediate Sumps Control
2	Center Sump Control	Turn clockwise to open center sump or counter-clockwise to close center sump.
3	Intermediate Sumps Control	Turn counter-clockwise to open intermediate sumps or clockwise to close intermediate sumps.
4	Bin Sweep Engage Lever	Pull away from bin wall to engage. Push toward bin wall to disengage. Lock into place in both positions.
5	Emergency Sump Control (Optional)	Push toward bin wall to open. Pull away from bin wall to close.
6	Discharge Cover	Open the latch and secure with hairpin before operating. Close when not operating.
7	Hairpin for Discharge Cover	Place the discharge cover on the tab and insert hairpin when operating.

## 4.5. Operation of the Bin Unload System

Perform the following sections, in order, to fully unload the grain bin.

### Unload Grain From the Center Sump

1. Disengage the bin sweep gearbox (push gearbox shift handle towards bin wall to disengage bin sweep).
2. Close all sump gates (center, emergency-sump (if equipped), and intermediate sumps).
3. Open the bottom cover before operating the bin unload system.

**Note**

The bottom cover is intended to keep rodents out when the bin unload system is not in use.

4. Start system.

**Note**

When starting for the first time, the flighting may run rough until the underfloor auger is polished.

5. Open the center sump slightly. Ensure that grain flows out of the discharge end at a constant rate.
6. Continue to open the center sump and watch for constant product flow at discharge. Do this until center sump is fully open.
7. For the first 30 minutes, check that the underfloor auger flighting functions without excessive vibration. Once the grain mass has been fully drawn down, you are now ready to proceed with unloading grain from the intermediate sumps.

### Unload Grain From the Intermediate Sumps

1. When grain flow from the center sump stops flowing from the discharge, open intermediate sump(s) halfway.
2. Monitor grain flow for consistency before opening intermediate sump(s) any further.
3. After grain has stopped flowing into intermediate sump(s), shut down and lock out all power to the bin unload system. Close all intermediate sump gates.



You are now ready to proceed with unloading grain with the bin sweep.

### Unload Grain with the Bin Sweep

**NOTICE** To prevent damage, do not operate the bin sweep until it is fully exposed.

1. Shut down and lockout all power to the bin unload system.

**NOTICE** To prevent damage to the unload system, do not engage the binsweep while underfloor auger is operating.

2. Release the locking pin and engage the bin sweep (by shifting the lever away from bin wall). Lock the shift lever into place.
3. Start the bin unload system.
4. Make sure the center sump is fully open, and maintain a constant grain flow.
5. When grain flow stops and the bin is clean, allow the bin sweep to travel around the bin so that it lines up next to the intermediate sumps.

**NOTICE** Failure to park the bin sweep in the “start/park position” could result in damage to the bin sweep, underfloor auger, and/or aeration floor.

## 4.6. Emergency Shutdown

---

In an emergency situation:

1. Stop or shut down the power source immediately and lockout power.
2. Ensure the bin unload components come to a stop before inspecting.
3. Correct the emergency situation before resuming work.

## 4.7. Emergency Sump

---

➡ The Emergency Sump is an optional component for the Bin Unload System.

If grain flow slows considerably or stops while unloading from the center sump, it may be blocked with clumped grain. Open the emergency sump to allow grain to continue unloading.

### Note

The emergency sump cannot be opened while the center sump is open. Close the center sump before using the emergency sump.

## 4.8. Restarting with a Full Underfloor Auger

---

When the bin unload system is shut down inadvertently or due to an emergency, the system may still be filled with grain.

1. Lock out power and remove as much of the grain as possible from the bin unload system using a grain vac or other tool.



**WARNING** Do not use your hands, feet, or other similar bodily means.

2. Once obstruction is clear, disengage sweep (if applicable). Remove locking pin, shift lever towards bin wall, and lock into place.
3. Close all intermediate sump gates, center and e-sump (if applicable) gate.
4. It may be necessary to tighten the drive belts slightly to handle the heavier than normal loads.
5. If guards or covers have been opened or removed, close or replace them before restarting the unit.
6. Once the problem is corrected, restart the machine.

**NOTICE** Starting under load may result in damage to the bin unload system if grain is not removed as much as possible.

7. Once the bin unload system has been started, you may resume normal operation.

## 4.9. Cleanup

1. Clean out any remaining grain with a grain vac, shovels, and/or brooms.
2. Clean up (remove) all settled dust deposits.

**WARNING** Buildup of dust inside the grain bin and around the bin sweep and underfloor auger could lead to a dust explosion if not removed regularly.

## 4.10. Relocating the Electric Drive to Another Grain Bin

The bin unload system's electric drive (motor and mount) may be moved between bins using a front end loader. Follow the procedure below to relocate the drive. Do not relocate the electric drive to a bin that requires more power to operate, refer to [Section 7. – Specifications on page 44](#).

1. Shut down and lock out power to the bin unload system.
2. Use the handle (1) to disengage the belts, open the pulley guard (2) and remove the belts from the motor pulley.
3. Attach a strap or chain (minimum 500 lb rated) to the electric motor eyebolt (5) and lift slightly with a front end loader. Lift only enough to relieve the weight of the electric drive (motor and mount) from the powerhead.
4. Remove the threaded rod (6) from the motor mount.
5. Remove the hairpin (3) and hinge pin (4).
6. Lift the electric drive and move it to another identical bin unload system.
7. Attach the electric drive to the next bin unload system similarly to how it was removed.
8. Set the tension of the belt with the hole positions at (A) and use the threaded rod (6) to fine tune belt tension and level the mount. Tighten/lock the threaded rod in the clevis with the 5/8" hex nut (not shown). Refer to Maintenance for belt tensioning instructions.

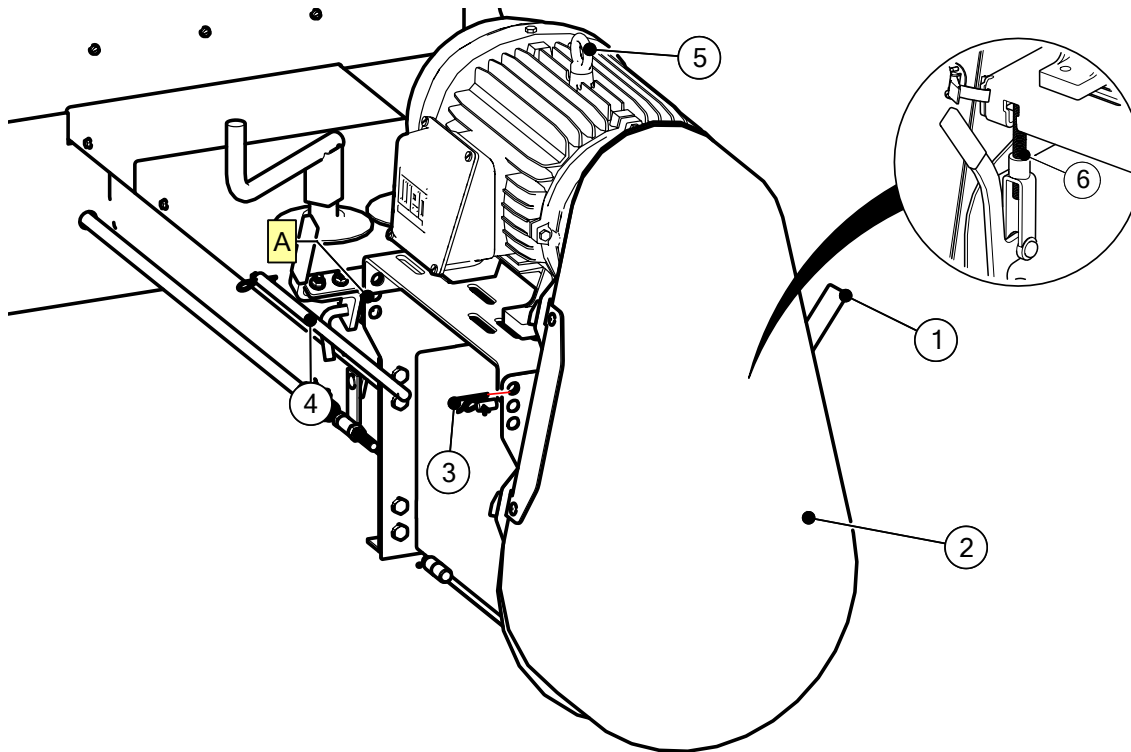
**Table 4. Relocating the Electric Drive**

Item	Description
1	Belt Engage/Disengage Handle

**Table 4 Relocating the Electric Drive (continued)**

2	Pulley Guard
3	Hairpin
4	Hinge Pin
5	Electric Motor Eyebolt
6	Threaded Rod

**Figure 7. Relocating the Electric Drive**



### 4.11. Extended Shutdown / End of Season

After the season’s use, the bin unload should be thoroughly inspected. Repair or replace any worn or damaged components and complete maintenance as described in [5. Maintenance on page 28](#) to prevent any unnecessary downtime at the start of the next season.



# 5. Maintenance



Before continuing, ensure you have completely read and understood this manual’s Safety section, in addition to the safety information in the section(s) below.

## 5.1. Maintenance Safety

**WARNING**

- Keep components in good condition. Follow the maintenance procedures.
- Ensure the service area is clean, dry, and has sufficient lighting.
- Do not modify any components without written authorization from the manufacturer. Modification can be dangerous and result in serious injuries.
- Shut down and lock out power before maintaining equipment.
- After maintenance is complete, replace all guards, service doors, and/or covers.
- Use only genuine Westfield replacement parts or equivalent. Use of unauthorized parts will void warranty. If in doubt, contact Westfield or your local dealer.

## 5.2. Maintenance Schedule

Proper maintenance habits mean a longer life, better efficiency, and safer operation. Please follow the Maintenance Schedule below. Keep good records of the hours the bin unload has been operated and the maintenance performed.


<b>Daily:</b>
<a href="#">Section 5.3. – Visually Inspect the Equipment on page 29</a>
<b>Annually:</b>
<a href="#">Section 5.4. – Clean and Wash the Equipment on page 29</a>
<a href="#">Section 5.5. – Check the Gearbox Oil on page 29</a>
<b>As Required:</b>
<a href="#">Section 5.6. – Change the Gearbox Oil on page 30</a>
<a href="#">Section 5.7. – Tension the Drive Belts on page 30</a>
<a href="#">Section 5.8. – Align the Drive Belts on page 32</a>
<a href="#">Section 5.9. – Replace the Drive Belts on page 32</a>
<a href="#">Section 5.10. – Replace the Sweep Drive Wheel on page 32</a>
<a href="#">Section 5.11. – Adjust the Bin Sweep Backboard on page 33</a>
<a href="#">Section 5.12. – Adjust the Bin Sweep Engage Handle on page 34</a>

## 5.3. Visually Inspect the Equipment

---

Check the following during a visual inspection:

1. Ensure all guards are in place and in good working order.
2. Examine the bin unload for damage or unusual wear.
3. Check tightness of bolts/nuts, fasteners, and hardware (re-torque if necessary).
4. Be sure all safety decals are in place and are legible.
5. Check that the discharge and intake area are free of obstructions.
6. Inspect all moving or rotating parts to see if anything has become entangled in them. Remove any entangled material.

 **WARNING** Lock out power before inspecting.

## 5.4. Clean and Wash the Equipment

---

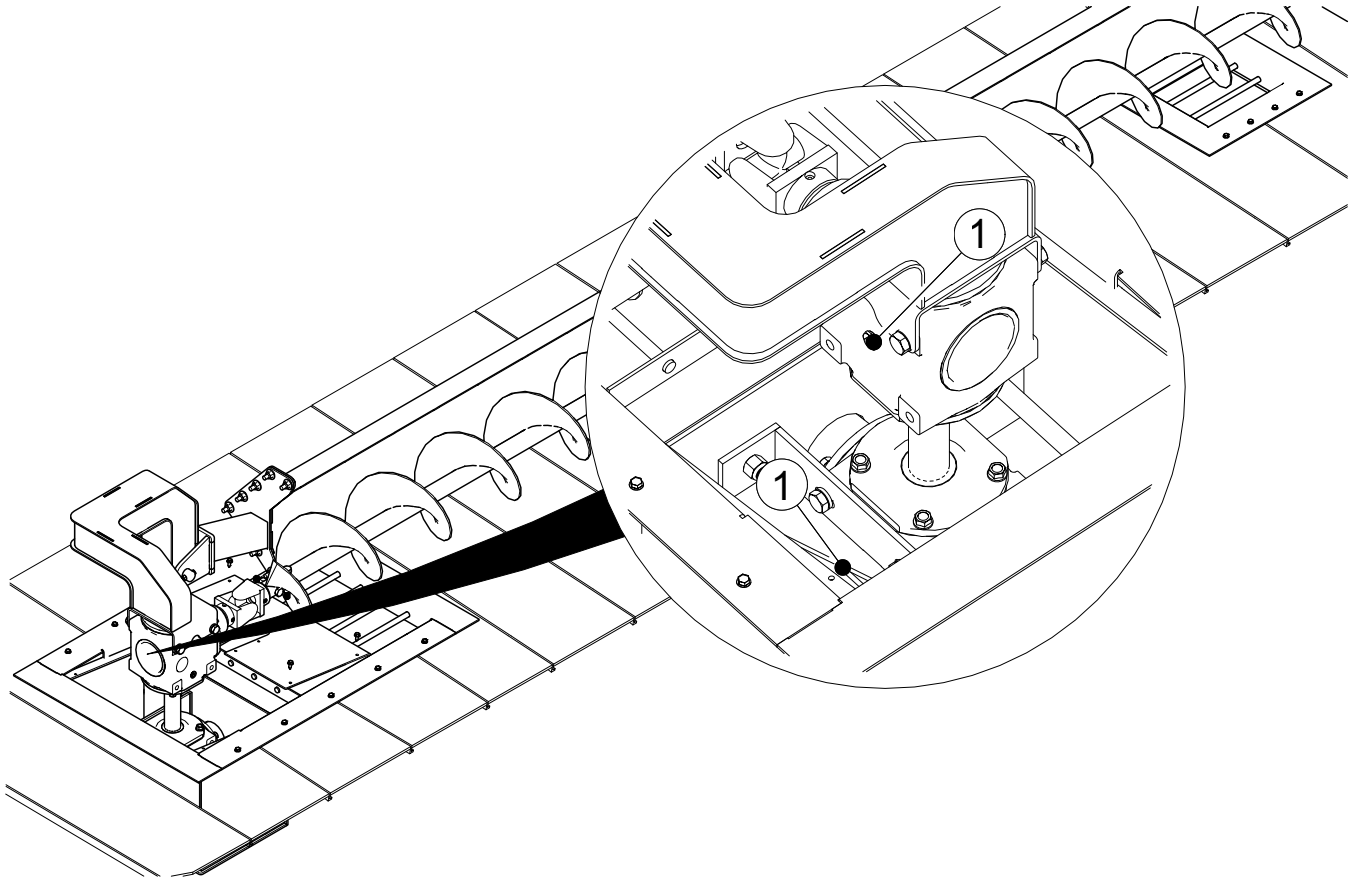
1. Clean out excess grain from all areas of the equipment.
2. Wash the unload auger that extends outside of the bin with a water hose or pressure washer until all dirt, mud, debris, or residue is gone.
3. Provide sufficient time for the equipment to dry.

## 5.5. Check the Gearbox Oil

---

1. Remove access panels at center to expose lower gearbox, [Figure 8 on page 30](#).
2. Remove fill/vent plug to check gearbox oil level. Insert an improvised dipstick (rolled paper or plastic tie) into the oil filler hole to determine the oil level.
3. Note the level and the condition of the oil. Maintain oil level at half full (center of cross shaft) with 90W or equivalent gear oil, adding as necessary or drain and refill if condition is poor.
4. Ensure gearbox is level when checking or refilling.
5. Do not overfill when adding oil.
6. Replace fill/vent plug.
7. Replace access panels when complete.



**Figure 8. Gearbox Oil Fill Points**

## 5.6. Change the Gearbox Oil

---

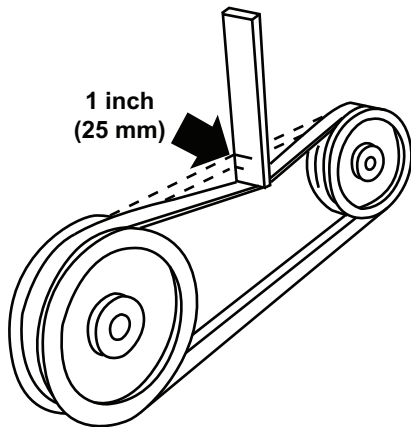
Use SAE approved 90W or equivalent gear oil.

1. Remove gearbox from the bin unload.
2. Place a pan under the drain plug.
3. Use a wrench and remove the drain plug.
4. Loosen the filler plug so air can enter the gearbox and the oil will drain freely.
5. Allow the oil to drain completely.
6. Replace the drain plug.
7. Add oil until the gearbox is half full (center of cross shaft) and replace filler plug. A flexible funnel may be required. Gearbox should be level when checking or refilling. **Do not overfill.**
8. Reinstall the gearbox and guards.

## 5.7. Tension the Drive Belts

---

1. Remove guard and push on the center of the belt span with a force of approximately 5 lb.
2. The belts will deflect approximately 1" (25 mm) when properly tensioned.

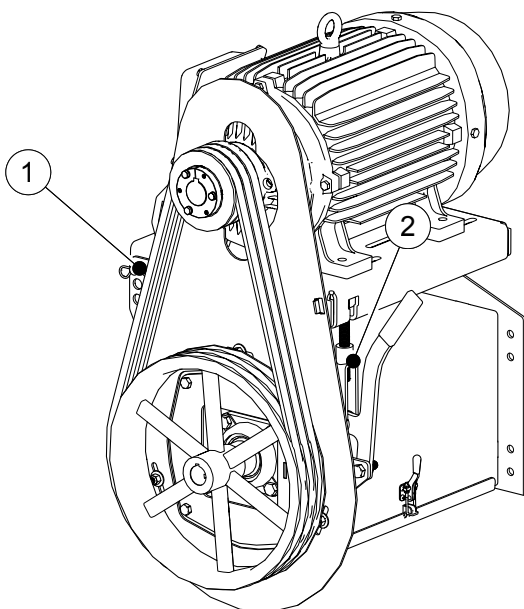
**Figure 9. Typical Drive Belt Tensioning**

3. Tighten or loosen the drive belts (or idler pulley when equipped) to achieve the proper tension.

**Important**

The drive belt should be just tight enough to not slip on the drive pulley when operating. If the belt is too loose, it will slip, possibly causing a squeaking sound and slowing the belt down. If the belt is too tight, it will cause excess wear.

4. The belt tension can be adjusted at (1) and (2) in [Figure 10 on page 31](#).

**Figure 10. Belt Tension Adjustment Points**

5. Reattach and secure guard. Start system to ensure proper operation.

## 5.8. Align the Drive Belts

---

➡ When equipped:

1. Lay a straight edge across the pulley faces to check the alignment.
2. Use the pulley hub to move the pulley to the required position for alignment.
3. Tighten the hub bolts to secure pulley on the drive shaft.
4. Check the belt tension.
5. Reattach and secure the guard.

## 5.9. Replace the Drive Belts

---

➡ When equipped:

1. Fully loosen the drive belts.
2. Remove and replace the old belts.
3. Tighten the drive belts as described in Belt Tension.
4. Align the drive belts as described in Belt Alignment.
5. Reattach and secure the guard.

## 5.10. Replace the Sweep Drive Wheel

---

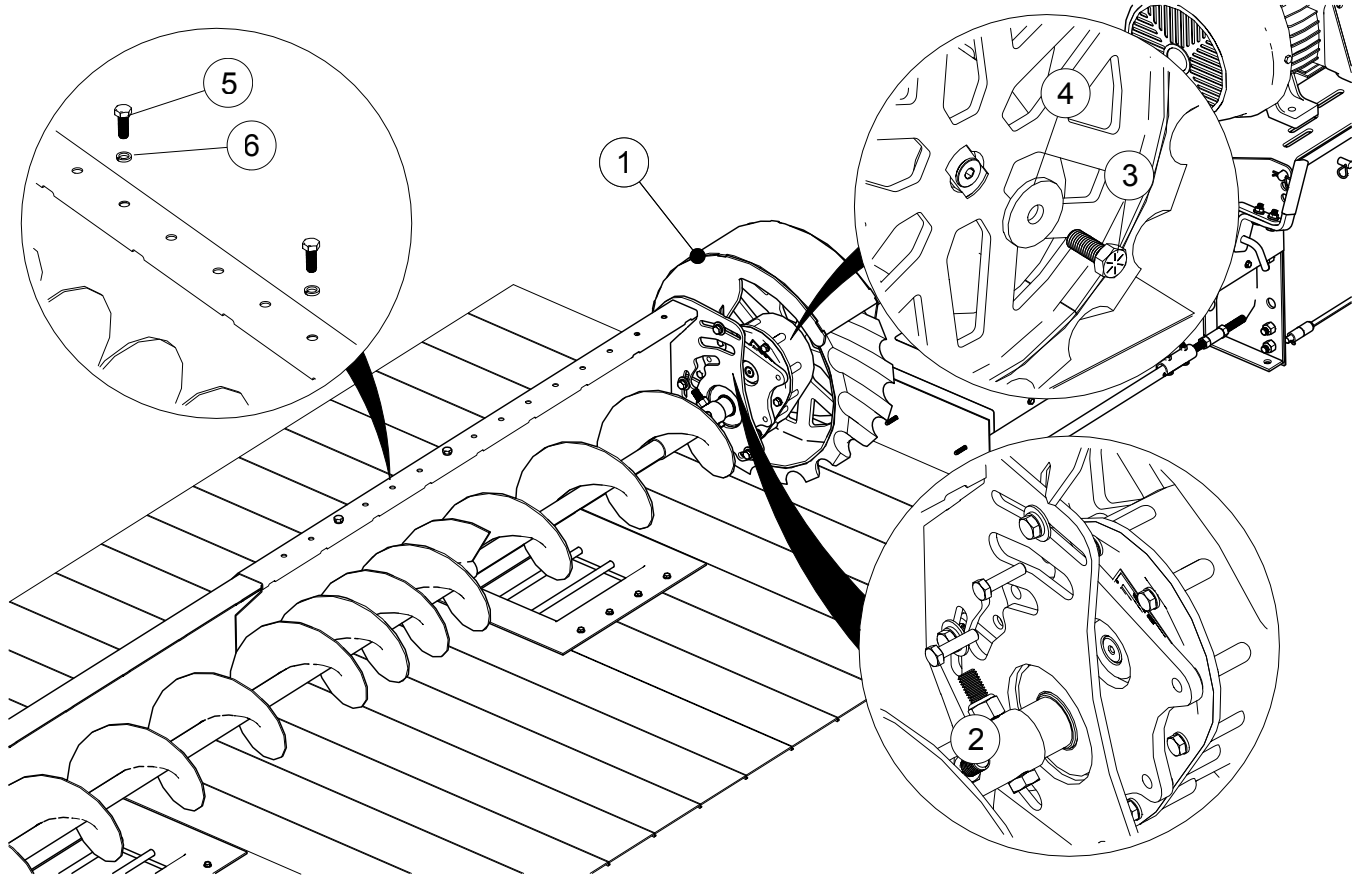
1. Remove bolts (2) and lift the shield (1) out to free up the drive wheel.
2. Remove the bolt (3) and flat washer (4) and pull the old drive wheel out.

**Note**

If the drive wheel does not come out due to bin wall interference, remove the bolt (5) and lockwasher (6) and turn and push the flighting inward to move the drive wheel away from the wall until it can be removed.



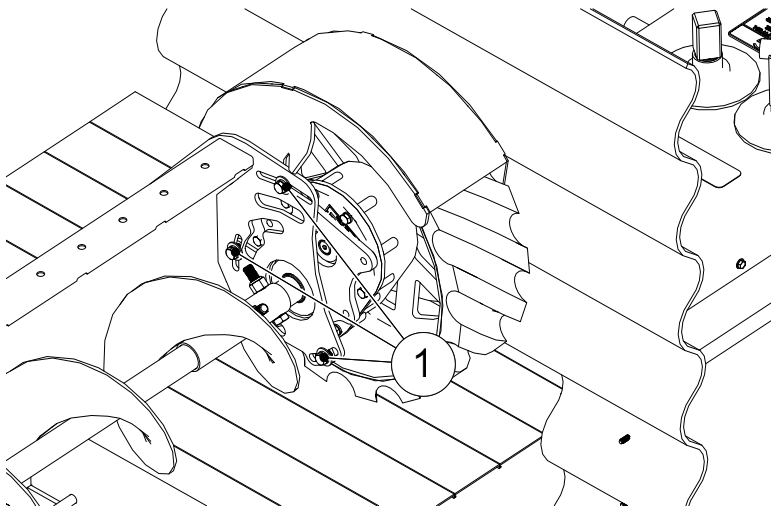
**Figure 11. Replacing the Sweep Drive Wheel**

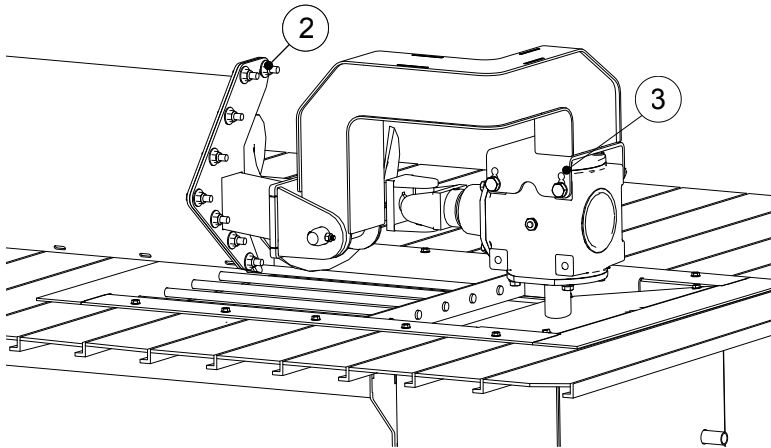


## 5.11. Adjust the Bin Sweep Backboard

The bin sweep backboard should not normally require adjustment. The backboard can be adjusted in cases where the bin sweep is leaving grain on the bin floor or if the backboard gets stuck on the bin floor. To adjust, loosen the bolts/nuts (1, 2, 3) as shown in the below figures. Tighten bolts/nuts after adjusting.

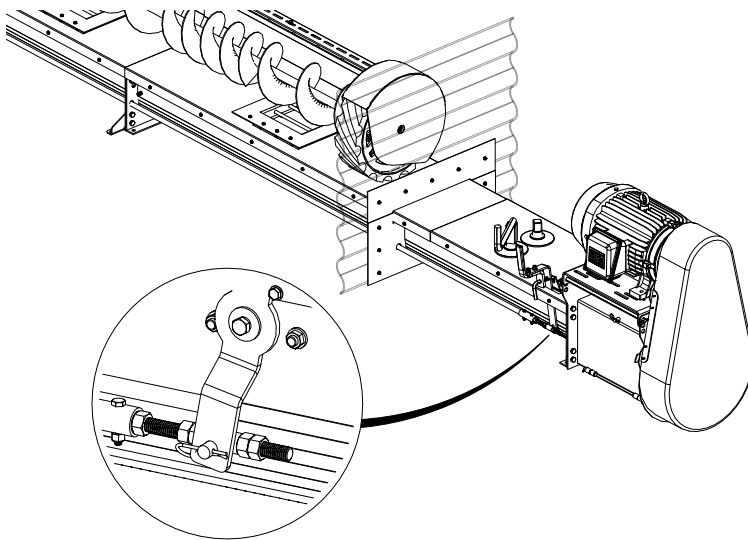
**Figure 12. Adjusting the Bin Sweep Backboard**



**Figure 13. Adjusting the Bin Sweep Backboard**

## 5.12. Adjust the Bin Sweep Engage Handle

The bin sweep engage handle should not require adjustment, however can be adjusted if bin sweep is not engaging or comes out of gear. Loosen the nuts to adjust the position and tighten when bin sweep engages normally. Follow normal operating procedures when testing operation.

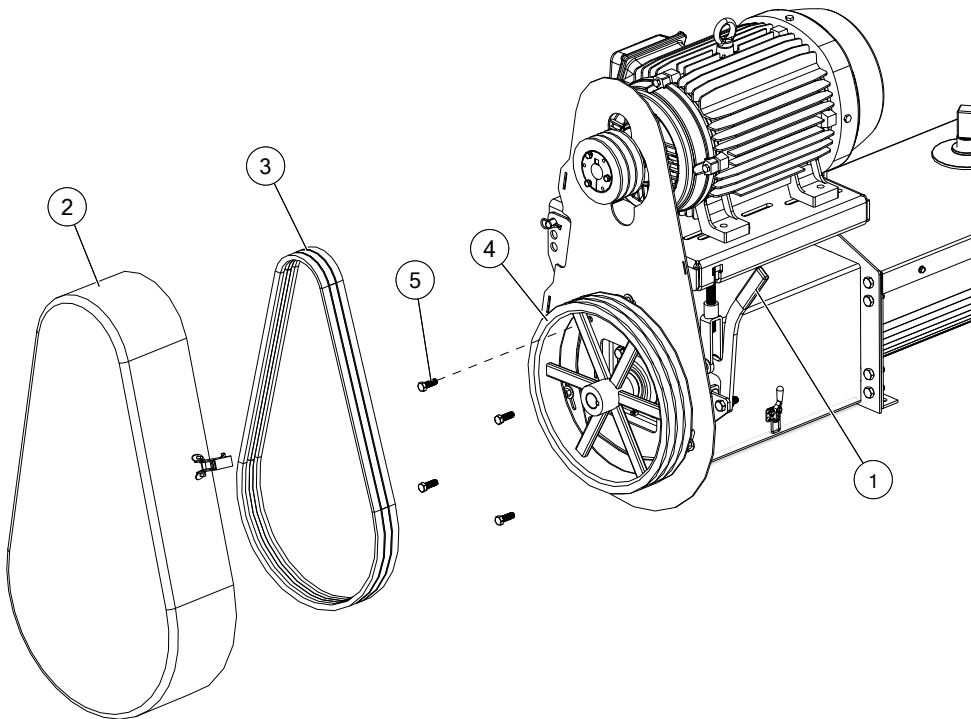
**Figure 14. Adjusting the Bin Sweep Engage Handle**

## 5.13. Removing the Underfloor Auger Flighting

In certain circumstances (such as general maintenance or troubleshooting), it is possible to remove the underfloor auger flighting **when the bin unload is equipped with a horizontal discharge**, without removing the electric motor.

**To Remove the Flighting:**

1. Shut down and lock out power to the bin unload system.
2. Use the handle (1) to disengage the belts (see [Figure 15](#)).
3. Remove the pulley guard (2).
4. Remove the belts (3) from the large unload pulley (4).
5. Remove the four 7/16" x 1-1/4" bolts (5) and locknuts from the bearing mount.

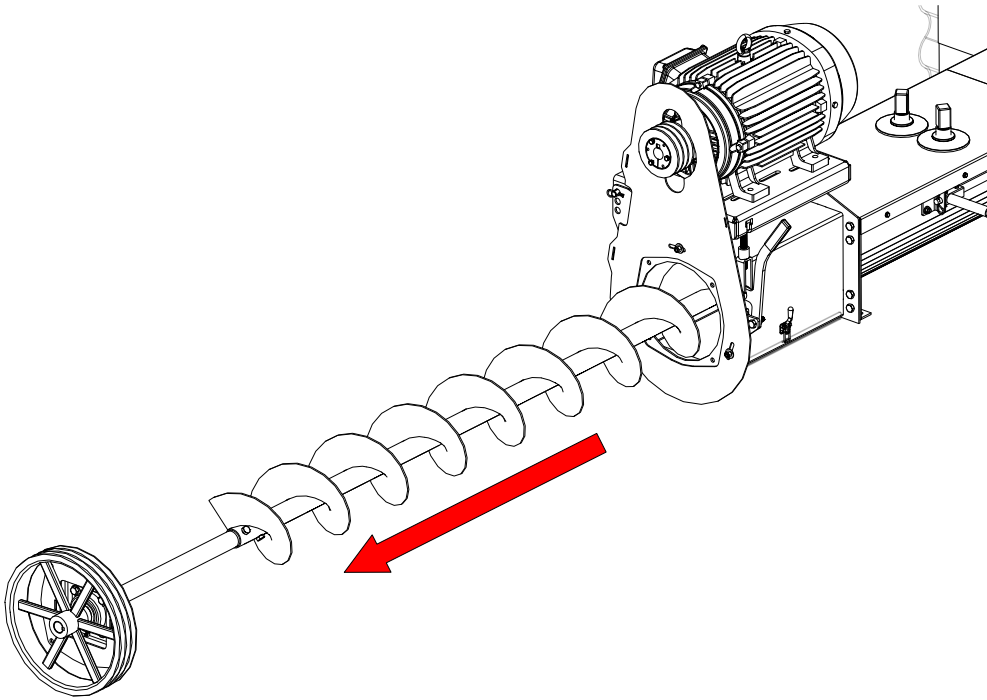
**Figure 15. Remove the Pulley Components**

6. Grasp the bearing mount and pull the flighting out of the underfloor auger (see [Figure 16](#)).

**NOTICE**

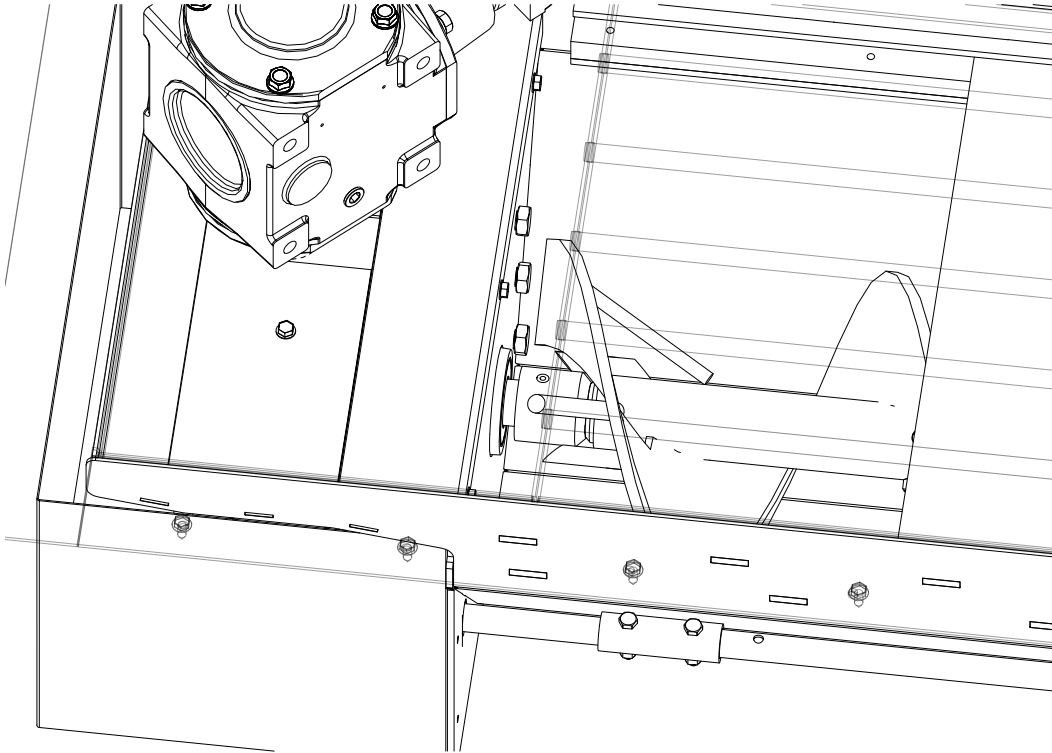
Ensure the end does not slam on the ground, because that could damage the flighting, which could negatively affect the performance of the bin unload.

**Figure 16. Removing Flighting from Underfloor Auger**

**To Reinstall the Flighting:**

1. Push the flighting all the way back into the underfloor auger, ensuring that the opposite end of the flighting is securely fitted onto the flighting coupler connected to the lower gearbox shaft in the center sump (see [Figure 17](#)).

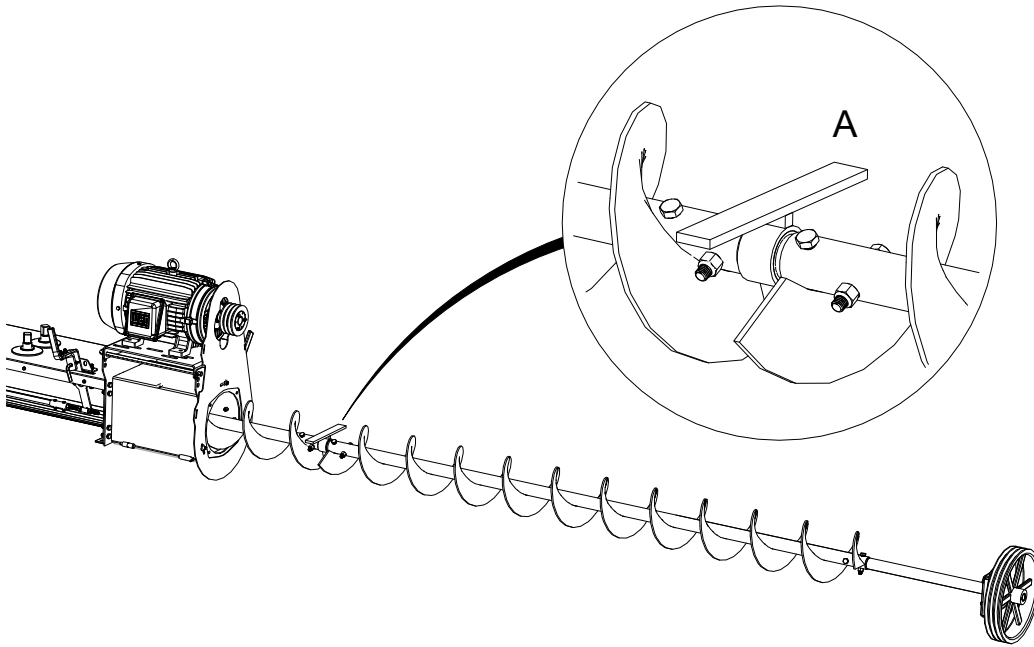
**Figure 17. Underfloor Flighting Fitted into Lower Gearbox Shaft Coupler**

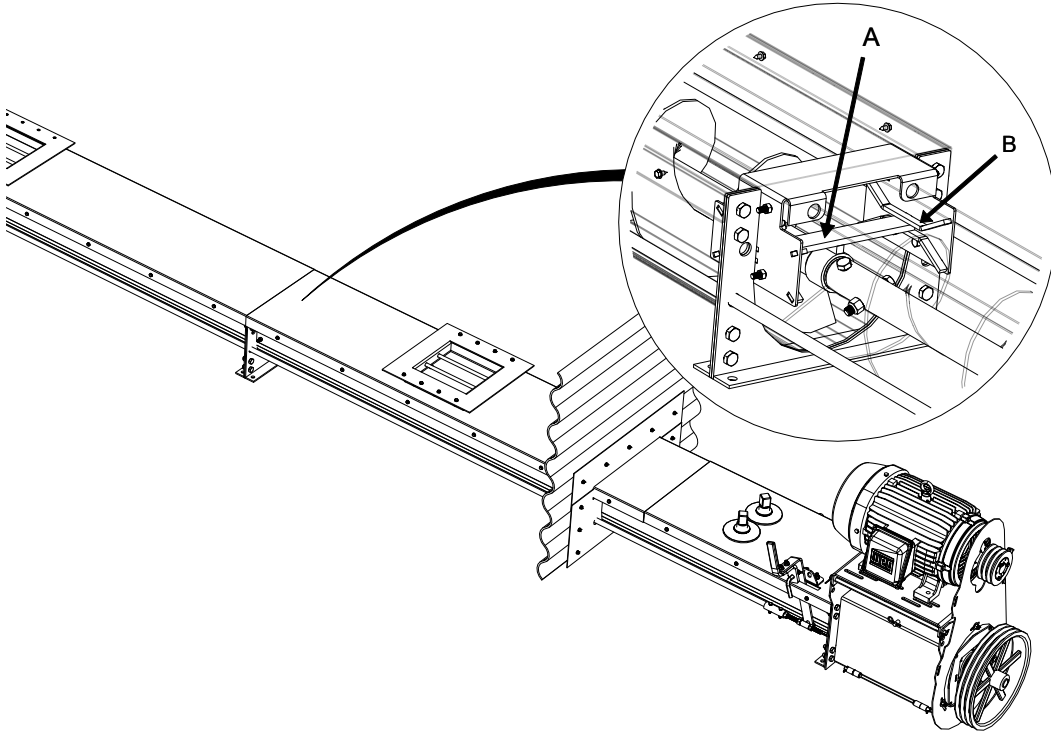


**Important**

U-Trough models for 42' diameter bins and greater come equipped with a hanger bearing bushing assembly attached to the underfloor flighting. With the underfloor flighting out far enough to see the hanger bearing bushing assembly (A), ensure it is positioned horizontally before and during pushing the underfloor flighting back into the underfloor auger, so it can properly slide into and be seated in its support bracket (B) on the inside of the trough on both sides (see [Figure 18](#) and [Figure 19](#)). Failure to do so could cause the underfloor flighting to bind and stop rotating.

**Figure 18. Ensure Hanger Bearing Bushing Assembly is Horizontal**



**Figure 19. Hanger Bearing Bushing Assembly Properly Seated in its Support Bracket**

2. Install the four 7/16" x 1-1/4" bolts and locknuts to secure the bearing mount.
3. Install the drive belts on the large unload pulley and tension as described in [Section 5.7. – Tension the Drive Belts on page 30.](#)
4. Install the pulley guard.



# 6. Troubleshooting



Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.



Shut down and lock out all power sources before diagnosing any of the causes or attempting any of the solutions below.

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

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

Problem	Cause	Solution
Gearbox won't engage.	Gearbox shift adjust bolt is not adjusted correctly.	Adjust bolt. Flighting needs to be turned so that the gears can mesh appropriately.
Gearbox won't stay engaged.	Lock pin not in place. Gearbox shift adjust bolt is not adjusted correctly. Obstruction in sweep.	Secure lock pin into place. Adjust bolt. Remove obstruction.
Hopper slide gates are difficult to open.	Hopper slide plates are damaged. Obstruction in hopper. Slide gate interference with aeration floor planking. Control rods are binding (hoppers not level to each other).	Replace plastic slide plates. Remove obstruction. Level intermediate hoppers to each other. 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 it. Remove obstruction.
Underfloor auger plugs when initially starting the sweep.	Intermediate hoppers aren't closed. Obstruction in underfloor auger.	Close intermediate hoppers. Remove obstruction.



<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Sweep drive wheel doesn't function when sweep is activated.	Key or pin sheared or missing in drive wheel housing.	Replace damaged part.
	Chain isn't adjusted correctly inside drive wheel housing.	Adjust chain correctly.
Sweep stops travelling around the bin.	Sweep isn't adjusted correctly and is hitting a high spot in the aeration floor.	Adjust sweep in 2 places: Drive wheel and upper gearbox plate.
	Sweep drive wheel isn't fully functioning correctly (chain slipping, key missing etc...)	Check to ensure chain is functional and that all keys / roll pins are in place.
	Obstruction in sweep.	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.	Remove bolts, rotate flighting to next set of holes and replace bolts.
	Obstruction in sweep.	Remove obstruction.
	Damaged or bent flighting.	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.	Remove obstruction.
	Intermediate hoppers are open, flooding the underfloor auger.	Close intermediate hoppers.
	Flighting not timed correctly on the underfloor auger.	Pull out underfloor flighting, ensure that it is timed correctly (flighting must make a continuous spiral).
Grain is flowing over backboard of sweep.	This is normal, and grain will be swept up on the second pass of the sweep	No solution needed. Part of normal operation.
Underfloor system stops when moving product.	Electric motor belts not tight enough.	Tighten belts.
	Electric motor is not large enough to power entire system.	Replace electric motor with a larger model.
	Obstruction in underfloor auger.	Remove obstruction.



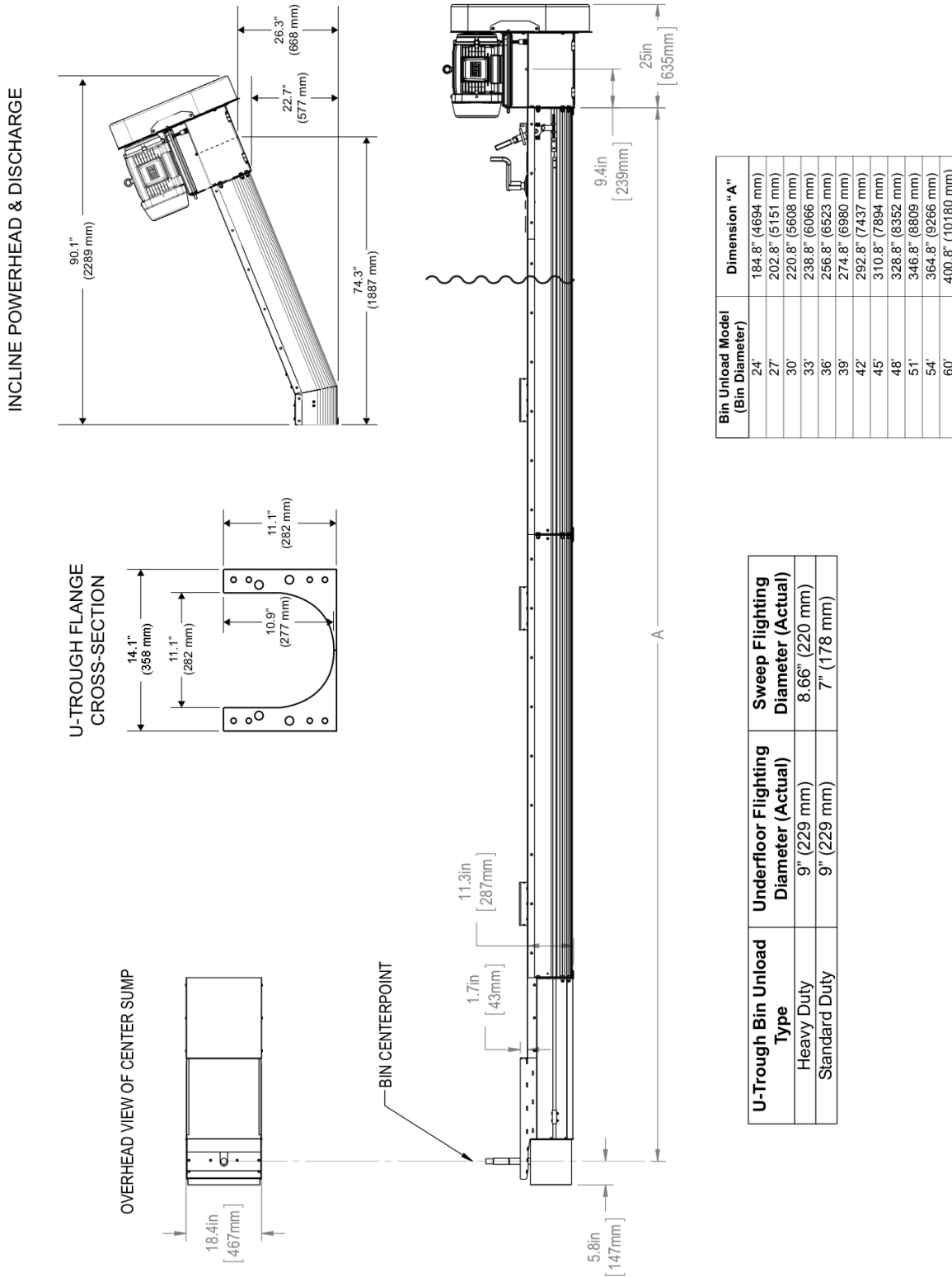
Problem	Cause	Solution
	On models for 42' diameter and greater, the hanger bearing bushing assembly is not seated properly in its support bracket, causing binding and preventing the flighting from rotating.	Pull out the underfloor flighting far enough to see the hanger bearing bushing assembly. Ensure this assembly is positioned horizontally before and during pushing the underfloor flighting back into the underfloor auger, so it slides into the support bracket.
Sweep will not turn or is noisy.	Check flights to ensure they're not catching.	Cut the flights back so that there is a 1/4" (6 mm) clearance from hanger.
Sweep is knocking.	Gearbox adjustment incorrect.	Check to ensure adjustment is correct and is fully engaged.
Belt is moving, motor is running, but sweep and underfloor auger not moving.	Set screws and key ways on pulleys not installed or too loose.	Disengage system and check set screws and key ways to ensure they're installed and tight.
Sweep engaged, underfloor auger and motor running, but sweep flight and/or upper gearbox not turning.	<p>Under floor gearbox shift linkage is out of adjustment.</p> <p>Sheared bolt and key way in gearbox coupler.</p> <p>Roll pin and key way in center well sheared on the lower gearbox drive stub shaft.</p> <p>Sheared roll pin in gearbox shaft where it is attached to u-joint at the beginning of the sweep flight (key way may be missing).</p>	<p>Adjust shift linkages to fully engage sweep (see Sweep Owner's Manual).</p> <p>Replace key way and bolts and check coupler for cracks.</p> <p>Replace key way and roll pin.</p> <p>Replace key way and roll pin and install set screw tighten.</p>

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Sweep is making a loud, distinct “squeak” noise.	Center flighting tube rubbing on nylon carrier bushing.	Loosen all 4 bolts on center gearbox and tap hanger bracket with a hammer to adjust and provide adequate clearance between bushing and center tube.
Sweep engaged and running, but not advancing.	<p>Sweep catching on Tek screws (backboard or gearbox).</p> <p>Backboard catching on the floor.</p> <p>Rubber on wheel worn down.</p> <p>Grain condition wet, hard-packed, moldy.</p> <p>End wheel gearbox contacting bin wall and/or bolts in bin wall.</p>	<p>Ensure Tek screws are fully screwed down.</p> <p>Ensure backboard clearance is 1/4” -1/2” (6 mm - 12 mm). Tighten set screws.</p> <p>Replace with new rubber drive wheels. Sweep will perform poorly if grain is out of condition.</p> <p>Cut obstructive bolt ends off. Use sweep adjustments.</p>



# 7. Specifications

## 7.1. Mechanical

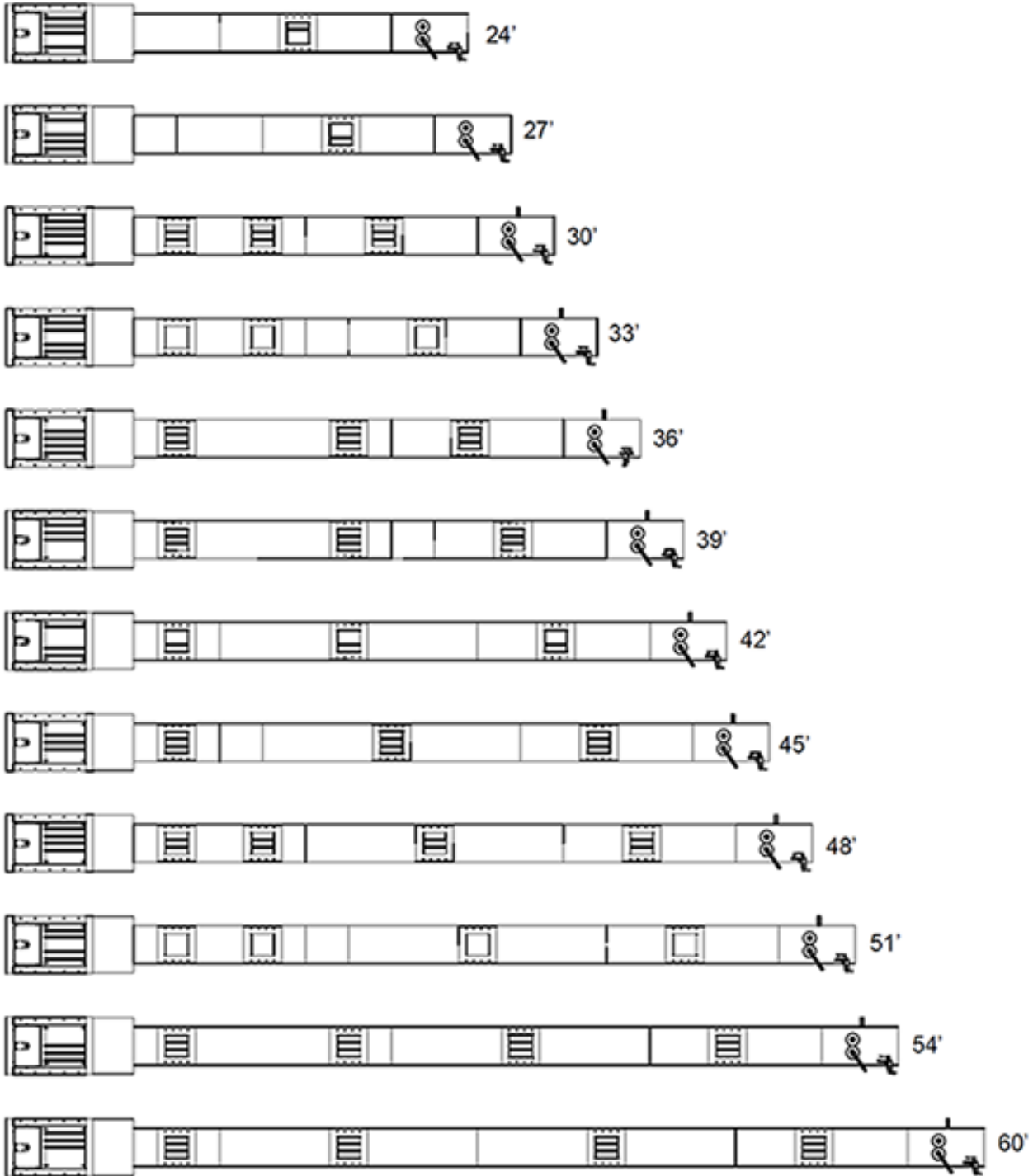


Bin Unload Model (Bin Diameter)	Dimension "A"
24'	184.8" (4694 mm)
27'	202.8" (5151 mm)
30'	220.8" (5608 mm)
33'	238.8" (6066 mm)
36'	256.8" (6523 mm)
39'	274.8" (6980 mm)
42'	292.8" (7437 mm)
45'	310.8" (7894 mm)
48'	328.8" (8352 mm)
51'	346.8" (8809 mm)
54'	364.8" (9266 mm)
60'	400.8" (10180 mm)

U-Trough Bin Unload Type	Underfloor Flighting Diameter (Actual)	Sweep Flighting Diameter (Actual)
Heavy Duty	9" (229 mm)	8.66" (220 mm)
Standard Duty	9" (229 mm)	7" (178 mm)

## 7.2. Bin Unload System Sizes

Bin Unload System Models (Bin Diameters)



## 7.3. Power Requirements

**Table 5. Electric Motor Requirements**

Bin Unload Model (Bin Diameter)	System Horsepower (hp) Requirements with Sweep	
	Standard Duty (7" Sweep Flighting)	Heavy Duty (8.66" Sweep Flighting)
24'	7.5	10
27' / 30' / 33'	10	10
36' / 39'	10	15
42' / 45'	15	15
48' / 51'	15	20
54' / 60'	20	20

**Table 6. Recommended Pulley Size Combinations**

Unload Pulley	Drive Motor Pulley	Pulley Type	Belt Size	Flighting Speed (rpm)
15"	4-3/4"	Triple Groove	B62	554
16"	4"	Triple Groove	B62	438

Flighting Speed is calculated using a 1750 rpm electric motor. To determine flighting speed (rpm), divide the motor speed (rpm) by the outside diameter of the large unload pulley, then multiply by the outside diameter of the small motor pulley. Example:  $1750 \text{ rpm} / 15" \times 4\text{-}3/4" = 554 \text{ rpm}$ .

If a slower flighting speed is desired, install a smaller motor pulley.

For 51', 54', and 60' bin unload models used in dense crops (such as wheat or canola), a flighting speed of 438 rpm is recommended.

## 8. Bin Unload Limited Warranty

Ag Growth International (“AGI”) warrants all new equipment manufactured by it or one of its divisions, and purchased from an authorized dealer or distributor, to be free from defects in materials or workmanship for a period of two (2) years from the date of original purchase or initial installation (“Warranty Period”).

AGI’s obligation under this warranty is limited to repairing, replacing, or refunding defective part(s) during the Warranty Period. Labor costs associated with the repair of the warranted equipment are not covered by AGI. Any defects must be reported to AGI before the expiry of the Warranty Period and defective parts identified during the Warranty Period must be returned to the factory, or an authorized AGI dealer or distributor, with transportation charges prepaid.

Bin Unload systems are designed for use with free flowing, properly conditioned grains and are not warranted for use with other substances. Any other use is considered misuse. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance shall not be considered defects under this warranty. This warranty shall be void if components of the system are not original equipment supplied by AGI, or if the equipment has not been assembled, installed, operated, and maintained in accordance with instructions published by AGI.

***The total liability of AGI on any claim, whether in contract, tort or otherwise, arising out of, connected with, or resulting from the manufacture, sale, delivery, repair, replacement or use of the equipment or any part thereof, shall not exceed the price paid for the equipment. AGI 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 equipment. 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.***

The warranty provisions herein constitute the full extent of the warranties supplied by AGI for the equipment. Without limiting the generality of the foregoing and to the extent permitted by law, AGI EXPRESSLY DISCLAIMS AND EXCLUDES ALL WARRANTIES AND CONDITIONS OF MERCHANTABILITY & FITNESS FOR PURPOSE OR PERFORMANCE, WHETHER EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE.

Notwithstanding anything contained herein to the contrary, the foregoing sets out the purchaser’s sole and exclusive remedies for breach of warranty by AGI in respect of the equipment.

Dealers are not authorized to make any modifications on behalf of AGI, to any of the terms, conditions or limitations of this warranty.

AGI reserves the right to change models and specifications at any time without notice or obligation to improve previous models.



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**AGI** 

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