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.
We strongly recommend that all personnel associated with this equipment be trained in the correct operational and safety procedures required for this product. This product has been designed and constructed according to general engineering standards, other local regulations may apply and must be followed by the operator. Use the sign-off sheet below to record initial and periodic reviews of this manual with all such personnel.

<table>
<thead>
<tr>
<th>Date</th>
<th>Employee Signature</th>
<th>Employer Signature</th>
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<tbody>
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</tbody>
</table>
**New in this Manual**

The following changes have been made in this revision of the manual:

<table>
<thead>
<tr>
<th>Description</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified manual format.</td>
<td>All sections</td>
</tr>
</tbody>
</table>
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11. Hutchinson | Mayrath Policies and Procedures
1. Introduction

Thank you for purchasing a Hutchinson | Mayrath Bin Sweep. 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 sweep 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. Intended Use

The bin sweep 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 sweep 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 sweep may relieve the manufacturer of liability for any resulting damage or injury.

Intended use for the bin sweep:

- Handling grain, pulse crops, treated seeds, or other similar materials that remains in the bin or storage structure after all the grain that can be emptied through the center and intermediate wells has flowed out of the bin or storage structure.

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

1.1.1 Misuse

Do not install/use the bin sweep for/with:

- transferring material other than dry, free-flowing food-grains.
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

It is the owner, operator, and maintenance personnel’s responsibility to read and understand all safety instructions, safety decals, and manuals and follow them when operating or maintaining the equipment.

- Owners must give instructions and review the information initially and annually with all personnel before allowing them in the work area. Untrained users/operators expose themselves and bystanders to possible serious injury or death.

- Use for intended purposes only.

- Do not modify the bin sweep in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety. Any unauthorized modification will void the warranty.

- Follow a health and safety program for your worksite. Contact your local occupational health and safety organization for information.
2.3. Rotating Flighting Safety

- 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 sweep 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

- 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

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

2.6. Guards Safety

- Keep guards in place. Do not operate with guard removed.
- 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

- 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.
Always try to work and solve problems without entering a bin.

⚠️ **WARNING** If you must enter the bin, follow the safety information below to safely enter through the roof, door or any access point:

- 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

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 by another attendant.

2.10. Bin Entrapment

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. Suffocation Hazards in Flowing Grain

2-3 SECONDS
AFTER THE UNLOADING EQUIPMENT STARTS, YOU HAVE 2-3 SECONDS TO REACT.

4-5 SECONDS
IN 4-5 SECONDS YOU ARE TRAPPED.

22 SECONDS
AFTER 22 SECONDS, YOU ARE COMPLETELY COVERED.
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 peak. 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. 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 the bin to break down grain that has set up. Break grain mass from top of the bin outside.

Figure 3. Suffocation Hazards from a Vertical Grain Wall

2.11. Combustible Dust

WARNING The bin sweep has been designed for safe use in areas where hazards due to combustible dust may potentially occur. Minimize the risk of a dust explosion by following the preventive measures below.

Control the dust:

To control dust, consider as part of your work-site safety program to:

- Clean the grain to reduce the fines.
- Use equipment to minimize the breakage. For example, corn that is broken exposes the starch, the most explosive element of the grain.
- Use a filtering system to capture the dust.
- Use an air system to reduce the dust.
- Spray edible mineral oil on the grain to reduce air-born dust when handling.
- Paint equipment that is in the interior of a facility with a coating that is slick, not allowing the dust to accumulate.
- Clean up dust deposits after operation of the equipment.
• Enclose all equipment to keep the dust from escaping.

**Control the ignition source:**

To prevent possible sources of ignition that could cause fires or dust explosions:

• Do not smoke in any potentially hazardous area.

• Use only explosion-proof lights.

• Do not use anything around or inside the equipment 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. Use brush-less electrical tools and explosion proof flash lights, for example.

• 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.

• Always purchase replacement parts from the manufacturer or authorized dealer/distributor. Original manufacturers parts are designed with explosion proof features where applicable.

## 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

**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.
- Ensure electrical wiring and cords remain in good condition; replace if necessary.

**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.

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

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.
2.15. Safety Decals

- 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 sweep and their messages are shown in the figure(s) that follow. Safe operation and use of the bin sweep 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.
Table 1. Safety Decals

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
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<tbody>
<tr>
<td>1</td>
<td><img src="image" alt="DANGER Decal" /></td>
<td>1002304–1</td>
</tr>
<tr>
<td></td>
<td><strong>ROTATING FLIGHTING HAZARD</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>To prevent serious injury or death:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• KEEP OUT of bin while sweep is operating.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• KEEP AWAY from rotating auger flighting.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• NEVER touch the auger flighting. Use a stick or other tool to remove an obstruction or clean out.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Shut off and lock out power before entering bin to adjust, service, or clean.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td><img src="image" alt="WARNING Decal" /></td>
<td>1002303–1</td>
</tr>
<tr>
<td></td>
<td><strong>WARNING</strong></td>
<td></td>
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<tr>
<td></td>
<td>Rotating flighting could kill or dismember.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flowing material could trap and suffocate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Crusted material could collapse and suffocate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Keep clear of all augers. DO NOT ENTER this bin!</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If you must enter the bin:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Shut off and lock out all power.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Use a safety harness and safety line.</td>
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<td></td>
<td>3. Station another person outside the bin.</td>
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<tr>
<td></td>
<td>4. Avoid the center of the bin.</td>
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</tr>
<tr>
<td></td>
<td>5. Wear proper breathing equipment or respirator.</td>
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</tr>
<tr>
<td></td>
<td>Failure to heed these warnings could result in serious injury or death.</td>
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</table>
3. Features

This section covers the main features of the bin sweep.

Figure 4. Bin Sweep Features

Table 2. Features

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Gearbox, 2.25:1 Reduction 2000 Series</td>
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<tr>
<td>2</td>
<td>Flight, 7” O.D. (178 mm O.D.)</td>
</tr>
<tr>
<td>3</td>
<td>Back Shield</td>
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<tr>
<td>4</td>
<td>Bearing Support Assembly</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Drive Wheel</td>
</tr>
<tr>
<td>6</td>
<td>Sweep Carrier</td>
</tr>
<tr>
<td>7</td>
<td>Truss System</td>
</tr>
<tr>
<td>8</td>
<td>Electric Cord Holder</td>
</tr>
</tbody>
</table>
4. Pre-Assembly

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. Check Shipment

Unload the bin sweep parts at the assembly site and compare the packing slip to the shipment. Ensure that all items have arrived and that none are damaged.

Report missing or damaged parts immediately to ensure that proper credit is received from Hutchinson | Mayrath or your distributor/dealer, and to ensure that any missing parts can be shipped quickly to avoid holding up the assembly process.

Important
Do not assemble or install damaged components.

4.2. Before You Begin

Before you assemble the bin sweep:

- Familiarize yourself with all the sub-assemblies, components, and hardware that make up the equipment.
- Have all parts and components on hand, and arrange them for easy access.
- Separate the hardware (bolts, nuts, etc.) and lay them out into groups for easier identification during assembly.
5. Assembly

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. Assembly Safety

- All electrical connections shall be made by a qualified electrician and must meet the applicable local codes and regulations.
- Do not take chances with safety. The components can be large, heavy, and hard to handle. Always use the proper tools, rated lifting equipment, and lifting points for the job.
- Carry out assembly in a large open area with a level surface.
- Always have two or more people assembling the bin sweep.
- Make sure you have sufficient lighting for the work area.
- Tighten all fasteners according to their specifications. Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied by the manufacturer.

5.2. Gearbox Pivot Mount Assembly

**Important**
- The gearboxes are shipped with oil already installed. It is recommended to check oil level before assembly to ensure level is correct. See Section 7.5 – Check the Gearbox Oil on page 44 for instructions on checking and adding oil to the gearboxes.
- Make sure to install the vent/relief plugs as stated in the instructions.

1. Insert the pivot clevis weldment into the mounting pipe in the center well.
2. Using 5/8” x 2” bolts and nylon locknuts, install the reducer pivot mount plate as shown in the illustration below.
3. Install the gearbox mounting angles to the sides of the gearboxes and secure using the 3/8” x 1” bolts and lock washers provided.
4. Attach the gearbox to the reducer mount plate using mounting angles.
   - Use the top holes of the mounting angles, when installing on center wells with the mounting pipe flush with the well flange
   - Use the bottom holes of the mounting angles, when the pipe protrudes above the well flange
5. Attach the shield to reducer mount plate.
   a. Use 3/8” x 1-1/2” bolts, flat washers and nylon locknuts when installing the shield mount plate.
   b. Use 3/8” x 1-1/4” bolts, flat washers and nylon locknuts for the remaining angle mounting hardware.
5.3. Motor Mount Assembly

1. Install the motor mount support to the reducer mounting plate.
2. Use the front holes of the motor mount support when attaching it to the reducer mount plate.
   a. For 3 HP (2.2 kW) and 5 HP (4 kW) motors use the top holes in the reducer mount plate.
   b. For 7.5 HP (5.5 kW) motors, use the bottom holes.
3. On the shield-to-reducer mount plate side of the gearboxes, attach the electric cord hanger.
4. Secure the cord hanger and motor mount support using 1/2” x 1-1/2” bolts and nylon locknuts.
5. Thread a 3/4” non-lock nut onto the threaded adjustment rod.
6. Install the adjustment rod into the nut welded to the motor mount support until there is approximately 2” (51 mm) of the rod protruding above the motor mount support.
7. Position the motor mount plate above the support.
8. Install the pivot shaft.
9. Secure each end of the shaft using the 3/16” x 1-1/2” cotter pins provided.
5.4. Belt Guard and Drive Assembly

1. Attach the belt guard brackets to the motor mount support as shown in the illustration below.
2. Secure the brackets using 5/16” x 1” bolts and nylon locknuts.
3. Install the belt guard to the brackets and secure using 5/16” x 1” bolts and nylon locknuts.
4. Install the sheave and 1/4” x 2” square key onto the upper gearbox shaft.
5. Slide the sheave as close to the back of the belt guard as possible without contacting the guard.
6. Secure the sheave into place.
7. Using the chart below, mount the electric motor into the appropriate mount holes as determined by the motor’s horsepower (kw) rating.

   **Note**
   The motor, the motor pulley and the motor’s mounting hardware are not furnished.

8. Use two 3/8” x 3/4” bolts, lock washers and non-lock nuts to secure the belt guard door in the closed position.
9. Route the electrical cord through the cord holder and connect cord to motor. Refer to Section 6.4 – Operation of the Bin Unload System on page 37 for more information on routing the cord to the power source.

![WARNING] Electric motors and controls shall be installed by a qualified electrician and must meet the standards set by the National Electric Code and all local and state codes.

**Figure 7. Assembling the Belt Guard and Drive**

![Diagram of assembly process](image)

**Table 3. Motor Mount Holes for Various Motor Sizes**

<table>
<thead>
<tr>
<th>Motor Size HP (kW)</th>
<th>Motor Frame</th>
<th>Bolt Dia. Req’d.</th>
<th>Mount in Holes Marked (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 hp (2.2 kW)</td>
<td>182T</td>
<td>3/8”</td>
<td>● ● ● ●</td>
</tr>
<tr>
<td>5 hp (4 kW)</td>
<td>184T</td>
<td>3/8”</td>
<td>● ● ● ●</td>
</tr>
<tr>
<td>7.5 hp (5.5 kW)</td>
<td>213T</td>
<td>3/8”</td>
<td>● ● ● ●</td>
</tr>
</tbody>
</table>

**5.5. Sweep Flight and Back Shield Assembly**

A Bin Sweep is made up of several sections of sweep flight and back shields. The number and lengths of the sweep flight and back shields vary depending on bin size. Refer to the following tables for information about the appropriate sections required, as determined by bin size.

For information on the sweep shields and flights, and their respective sequence as determined by bin diameter, see Table 4. The following tables list the components that are included in each of the bundle assemblies and show the sequence of the sections to be assembled.

The sweep flight with a cut-back must connect to the drive assembly, this will be the first section attached to the drive unit. Related information is shown in Table 5).
Information about bundles containing components included in subsequent sections, and their assembly sequence, is shown in Table 6.

### Charts

#### Table 4. Sweep Assembly Sequence

<table>
<thead>
<tr>
<th>810 Series Catalog No.</th>
<th>Bin Diameter</th>
<th>1st Section w/ Cutback attached to Drive Unit</th>
<th>2nd Section from Drive Unit</th>
<th>3rd Section from Drive Unit</th>
<th>4th Section from Drive Unit</th>
<th>5th Section from Drive Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BK10241SD</td>
<td>24'</td>
<td>6'-2 1/2&quot; (1.89 m)</td>
<td>4'-6 1/4&quot; (1.38 m)</td>
<td></td>
<td>10466808</td>
<td>1046661</td>
</tr>
<tr>
<td>BK10271SD</td>
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<td>6'-2 1/2&quot; (1.89 m)</td>
<td>6'-1/4&quot; (1.84 m)</td>
<td></td>
<td>1046808</td>
<td>1046683</td>
</tr>
<tr>
<td>BK10301SD</td>
<td>30'</td>
<td>7'-8 1/2&quot; (2.35 m)</td>
<td>6'-1/4&quot; (1.84 m)</td>
<td></td>
<td>1046812</td>
<td>1046683</td>
</tr>
<tr>
<td>BK10331SD</td>
<td>33'</td>
<td>7'-8 1/2&quot; (2.35 m)</td>
<td>7'-6 1/4&quot; (2.29 m)</td>
<td></td>
<td>1046812</td>
<td>1046685</td>
</tr>
<tr>
<td>BK10341SD</td>
<td>34'</td>
<td>6'-2 1/2&quot; (1.89 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td></td>
<td>1046808</td>
<td>1046820</td>
</tr>
<tr>
<td>BK10361SD</td>
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<td>7'-8 1/2&quot; (2.35 m)</td>
<td>9'-1/4&quot; (2.75 m)</td>
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<td>1046812</td>
<td>1046660</td>
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<td>1046820</td>
</tr>
<tr>
<td>BK10391SD</td>
<td>39'</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>9'-1/4&quot; (2.75 m)</td>
<td></td>
<td>1046816</td>
<td>1046660</td>
</tr>
<tr>
<td>BK10401SD</td>
<td>40'</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td></td>
<td>1046816</td>
<td>1046820</td>
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<tr>
<td>BK10421SD</td>
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<td>7'-8 1/2&quot; (2.35 m)</td>
<td>6'-1/4&quot; (1.84 m)</td>
<td>6'-1/4&quot; (1.84 m)</td>
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<td>1046683</td>
</tr>
<tr>
<td>BK10481SD</td>
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<td>7'-6 1/4&quot; (2.29 m)</td>
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<td>1046816</td>
<td>1046685</td>
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<td>BK10491SD</td>
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<td>6'-2 1/2&quot; (1.89 m)</td>
<td>7'-6 1/4&quot; (2.29 m)</td>
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<td>BK10551SD</td>
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<td>1046820</td>
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<td>BK10601SD</td>
<td>60'</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td>9'-11 3/4&quot; (3.04 m)</td>
<td>1046808</td>
<td>1046685</td>
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<tr>
<td>810 Series Catalog No.</td>
<td>Bin Diameter</td>
<td>1st Section w/ Cutback attached to Drive Unit</td>
<td>2nd Section from Drive Unit</td>
<td>3rd Section from Drive Unit</td>
<td>4th Section from Drive Unit</td>
<td>5th Section from Drive Unit</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------</td>
<td>---------------------------------------------</td>
<td>----------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
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<tr>
<td>BK10631SD</td>
<td>63’</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>7'-6 1/4&quot; (2.29 m)</td>
<td>7'-6 1/4&quot; (2.29 m)</td>
<td>6'-1/4&quot; (1.84 m)</td>
<td></td>
</tr>
<tr>
<td>BK10681SD</td>
<td>68'</td>
<td>7'-8 1/2&quot; (2.35 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td>6'-1/4&quot; (1.84 m)</td>
<td></td>
</tr>
<tr>
<td>BK10691SD</td>
<td>69’</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>9'-1/4&quot; (2.75 m)</td>
<td>9'-1/4&quot; (2.75 m)</td>
<td>6'-1/4&quot; (1.84 m)</td>
<td></td>
</tr>
<tr>
<td>BK10721SD</td>
<td>72’</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>9'-1/4&quot; (2.75 m)</td>
<td>9'-1/4&quot; (2.75 m)</td>
<td>7'-6 1/4&quot; (2.29 m)</td>
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<tr>
<td>BK10751SD</td>
<td>75’</td>
<td>7'-8 1/2&quot; (2.35 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
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<td></td>
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<tr>
<td>BK10781SD</td>
<td>78’</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BK10801SD</td>
<td>80’</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>9'-11 3/4&quot; (3.04 m)</td>
<td>9'-11 3/4&quot; (3.04 m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BK10821SD</td>
<td>82’</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td>9'-1/4&quot; (2.75 m)</td>
<td>7'-6 1/4&quot; (2.29 m)</td>
<td>4'-6 1/4&quot; (1.38 m)</td>
</tr>
<tr>
<td>BK10901SD</td>
<td>90’</td>
<td>6'-2 1/2&quot; (1.89 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td>9'-1/4&quot; (2.75 m)</td>
<td></td>
</tr>
<tr>
<td>BK10921SD</td>
<td>92’</td>
<td>9'-2 1/2&quot; (2.81 m)</td>
<td>9'-11 3/4&quot; (3.04 m)</td>
<td>9'-11 3/4&quot; (3.04 m)</td>
<td>9'-5 3/4&quot; (2.89 m)</td>
<td>6'-1/4&quot; (1.84 m)</td>
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Table 4  Sweep Assembly Sequence (continued)
Table 5. Bundle and Components for First Sections

<table>
<thead>
<tr>
<th>Sweep Bundle</th>
<th>Flight</th>
<th>Flight Length</th>
<th>Shield</th>
<th>Shield Length</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Entrance Bundles w/ Flight Cut Back</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1046808</td>
<td>1046805</td>
<td>6'-2 13/16” (1.9 m)</td>
<td>1046809</td>
<td>6'-2 1/2” (1.89 m)</td>
</tr>
<tr>
<td>1046812</td>
<td>1046806</td>
<td>7'-8 13/16” (2.36 m)</td>
<td>1046813</td>
<td>7'-8 1/2” (2.35 m)</td>
</tr>
<tr>
<td>1046816</td>
<td>1046807</td>
<td>9'-2 13/16” (2.81 m)</td>
<td>1046817</td>
<td>9'-2 1/2” (2.81 m)</td>
</tr>
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</table>

Table 6. Bundle and Components for Sections 2 through 5

<table>
<thead>
<tr>
<th>Sweep Bundle</th>
<th>Flight</th>
<th>Flight Length</th>
<th>Shield</th>
<th>Shield Length</th>
</tr>
</thead>
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<td></td>
<td></td>
<td>Regular Bundles</td>
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<td></td>
</tr>
<tr>
<td>1046681</td>
<td>1016708</td>
<td>4’–4” (1.32 m)</td>
<td>1046521</td>
<td>4’–6 1/4” (1.38 m)</td>
</tr>
<tr>
<td>1046682</td>
<td>1017705</td>
<td>5’–6” (1.68 m)</td>
<td>1046677</td>
<td>5’–8 1/4” (1.73 m)</td>
</tr>
<tr>
<td>1046683</td>
<td>5342H</td>
<td>5’–10” (1.78 m)</td>
<td>1046518</td>
<td>6’–1/4” (1.84 m)</td>
</tr>
<tr>
<td>1030071</td>
<td>1017607</td>
<td>7’–0” (2.13 m)</td>
<td>1030064</td>
<td>7’–2 1/4” (2.19 m)</td>
</tr>
<tr>
<td>1046685</td>
<td>1016622</td>
<td>7’–4” (2.24 m)</td>
<td>1046524</td>
<td>7’–6 1/4” (2.29 m)</td>
</tr>
<tr>
<td>1046686</td>
<td>1017709</td>
<td>8’–6” (2.59 m)</td>
<td>1046680</td>
<td>8’–8 1/4” (2.65 m)</td>
</tr>
<tr>
<td>1046660</td>
<td>5345H</td>
<td>8’–10” (2.69 m)</td>
<td>1046659</td>
<td>9’–1/4” (2.75 m)</td>
</tr>
<tr>
<td>1046820</td>
<td>62463</td>
<td>9’–3 1/2” (2.83 m)</td>
<td>1046821</td>
<td>9’–5 3/4” (2.89 m)</td>
</tr>
<tr>
<td>1031429</td>
<td>1015873</td>
<td>9’–9 1/2” (2.98 m)</td>
<td>1031428</td>
<td>9’–11 3/4” (3.04 m)</td>
</tr>
</tbody>
</table>

Attach Sweep Shields and Flight

Use the tables in the previous section to determine proper sequence of the sweep shields and flights, and lay out the sections in their respective order. This will help with placement and component identification prior to assembly.

1. Apply a coat of anti-seize compound to the shaft on the gearbox.
2. Attach the sweep flight with the cutback to the shaft and secure using two 1/2” x 3” bolts and nylon locknut. (A support can be placed at the end of the flight to help keep it level).
3. Attach the first sweep shield section to the mount plate attached to the reducer mount assembly (See Figure 8).
4. Secure the sweep shield to the mount plate using 5/16” x 1” carriage bolts and nylon locknuts. (A support can also be used to help keep the shield section level).
5. Apply anti-seize compound to the 1-1/2” diameter x 11-1/2” long flight stub.
6. Secure the stub into the end of the flight using two 1/2” x 3” bolts and nylon locknuts.
7. Position the shield splice plate in front of the sweep shield.
8. Loosely secure the splice plate to the shield using the first two holes closest to the center well with 5/16” x 1” bolts, flat washers and nylon locknuts.
9. Slide the bearing assembly onto the stub and secure the first two holes with a 5/16” x 1” bolt and nylon locknut. (The bolts pass through the splice plate and sweep shield). The second set of holes on the bearing assembly pass through the splice plate and the next sweep shield in succession.
10. Position the next sweep shield in succession.

11. Secure the splice plate and sweep shield using 5/16” x 1” bolts, flat washers and nylon locknuts.

12. Secure the bearing assembly using only 5/16” x 1” bolts and nylon locknuts.

13. Apply anti-seize compound to the flight stub.

14. Secure the next length of flight using 1/2” x 3” bolts and nylon locknuts.

15. Continue these procedures for the remaining sweep shield and flight sections.

16. When the last shield and flight section has been installed, mount the drive wheel.

**Note**
Depending on how many sections of sweep shield and flight is used in your application, a sweep carrier may need to be installed. (Install carrier in bins 48 ft and larger in diameter). Refer to Install Carrier on page 31.

17. Attach the drive wheel to the drive wheel mount using 1/4” x 3/4” bolts and lock washers.

18. Apply anti-seize compound to the stub on the drive wheel.
19. Slide the stub into the end of the flight while aligning the drive wheel mount with the mounting holes in the sweep shield.

20. Secure the drive wheel to the flight stub using 1/2” x 3” bolt and nylon locknut.

21. Secure the mount to the sweep shield with 5/16” x 1” bolts, flat washers and nylon locknuts.

22. When all sections have been assembled, a “crown” will need to be created at the midway point of the shields. Refer to Create Crown on page 30 for information on creating the crown.

Figure 9. Assembling Additional Sweep Shields and Flights

Create Crown

The sweep shields will need to have a “crown” created at the midway point of the length of the sweep. Make sure the hardware securing the sweep shields is loose, this includes the hardware securing the shield to the center well gearbox, the pivot bracket and the hardware securing the end wheel mount bracket to the shield.

1. Place a short length of 4” x 4” block under the flight at the location shown in the appropriate as shown in the following illustrations.

2. If a carrier will be installed (3 and 4 section sweeps) refer to Install Carrier on page 31 for instructions on carrier assembly.

Note

Ensure shields are not twisted or flexed and run square the entire length of the sweep, then tighten all hardware and remove block from beneath sweep.
Install Carrier

On applications where the bin diameter is 48 ft. or larger, a carrier will need to be installed to ensure the sweep auger remains supported due to the extra length. The sweep carrier mounts to the back of the sweep shields spanning the splice from shield-to-shield.

See the following illustrations for locating the carrier as determined by bin diameter. Sweeps with four or more shield sections also use a truss system for additional support.

1. Attach the carrier mount bracket to the shields using the same hardware that fastens the bearing stand to the shields. (See Figure 17).
2. Remove the four bolts securing the appropriate bearing stand.
3. Attach the carrier mount bracket to the rear side of the shields.
4. Loosely secure the bracket and bearing stand using the hardware previously removed.
5. Position the carrier over the sweep section.
6. Slide the carrier in between the mount tabs on the bracket.
7. Loosely secure the carrier to the bracket using 3/8” x 3–1/2” bolts and nylon locknuts.
8. Tighten all hardware.
9. Remove the support block from beneath the sweep.
10. Make any adjustments necessary to ensure:
    a. Sweep sections and carrier are level.
    b. Sweep shields and flights are positioned at the desired distance from the floor.
       (Carrier height can be adjusted using the adjustment bolts at each end of the carrier frame).
11. Check all hardware for tightness.
12. Install truss system, if applicable.

Figure 17. Attaching the Carrier

5.6. Truss Assembly

The truss and cable support is used on power sweep models with four and five flight and shield sections (63’ thru 92’ diameter bins). Install the truss support system as detailed below.

1. Attach the truss stand to the rear side of the carrier and secure using 3/8” x 1” bolts and nylon locknuts.
Figure 18. Attaching the Truss Stand to the Carrier

2. Install the attachment brackets to the sweep shields as shown in Figure 19. Use the hardware that was used to secure the splice plate to the shield.

   The bracket that attaches to the shield nearest the center well will only use the first set of holes to mount the bracket.

3. Fasten the cable anchor bracket to the attachment bracket farthest away from the center well.

4. Orient the anchor bracket so the loop on the bracket faces toward the center well.

5. Secure anchor bracket to attachment bracket using 3/8” x 1-1/4” bolts, flat washers and nylon locknuts.

6. Fasten the take-up plate to the attachment bracket nearest the center well. (Note the orientation of the take-up plate in Figure 19).

7. Secure the take-up plate to the attachment bracket using two 3/8” x 1-1/4” bolts, flat washers and nylon locknuts.

8. Locate the 5/16” (8 mm) diameter cable, cable clamps and the 5/8” x 11” long eyebolt from the box of parts.

9. Insert the eyebolt through the mount tab on the take-up plate as shown in Figure 19.

10. Slide a 5/8” flat washer onto the end of the eyebolt and thread on two 5/8” non-lock nuts.

11. Loop one end of the cable through the eyebolt and secure the cable using two 5/16” cable clamps (make sure the U-bolt portion of the clamp is against the loose end of the cable).

12. Route the cable through the small tube on the rear of the truss stand, to the anchor bracket previously installed.

13. Loop the cable through the loop on the bracket as shown Figure 19.

14. Pull excess slack from the cable and secure the cable using two 5/16” cable clamps. (Make sure the U-bolt portion of the clamp is against the loose end of the cable).

15. Check to make sure all hardware on the flight and shield sections are secure.

16. Tighten the cable by adjusting the non-lock nuts on the 5/8” x 11” eyebolt. (The cable should be reasonably tight).

17. Tighten the bottom nut against the top nut to secure into place.

18. Make sure to tie back or cut-off any excess cable so it cannot become entangled during sweep operation.
5.7. Machine Inspection

After delivery of your new bin sweep and/or completion of assembly and before each use, inspection of the machine is mandatory. The bin sweep should be frequently checked and serviced to operate freely. Use the assembly instructions in this manual as a reference to determine that the bin sweep is assembled properly. This inspection should include, but not be limited to:

1. Check to see that all guards and shields listed in the assembly instructions are in place, secured and functional.

2. Check all safety signs (decals) and replace any that are worn, missing or illegible. Safety signs may be obtained free of charge from your dealer or ordered from the factory.

3. Check all fasteners; nuts, bolts, set screws etc. for tightness.
4. Check oil level in gearboxes (See Lubrication section).
5. Check all electrical connections and wiring.
6. Check drive belts for proper tension. Also check belts for fraying, cracking or any other damage. Replace as necessary.
6. 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.

6.1. Operation Safety

**WARNING**
- Keep away from rotating and moving parts, including the auger/mixer flighting, drive components, shafts, and bearings.
- Do not enter the grain bin or truck while the bin sweep 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.

6.2. Bin Unload Overview

The bin unload system operates by first opening the center sump to remove 70-80% of grain by gravity (see “A” in Figure 20). Next, the intermediate sumps are opened when the center sump runs empty to free the sweep (see “B” in Figure 20). Lastly, the bin sweep is operated to remove the remaining 20-30% of grain (see “C” in Figure 20).

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

**NOTICE** Make certain there are adequate vents installed on the bin to prevent a vacuum from forming in the upper portion of the bin during unloading. The pressures on the roof caused by such a vacuum could damage or cause structural failure to the bin roof.

Figure 20. Grain Bin Overall Emptying Procedure
6.3. Before Filling the Bin with Grain

**Important**

Klean Sweeps are not designed to remain in a bin during filling, storage, or when unloading using the center and intermediate wells. Leaving the sweep in the bin during these operations may cause severe damage to the sweep, center well or bin. Hutchinson | Mayrath will not be responsible for such damage.

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

1. Perform a visual inspection (see Maintenance section) on the unload system and be aware of all adjustments and checks which should be performed.
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. Close the center sump gate and intermediate sump gates.

6.4. Operation of the Bin Unload System

**Important**

- Be familiar with the routine operating procedures before attempting start-up.

**WARNING** Never attempt to control operation of the bin sweep by pushing on the operating sweep auger with shovels, brooms or other devices. DO NOT attempt to restrain movement of bin sweep by attaching ropes, bars or other devices to be held by an operator.

- Remember to observe the following during the first hours of operation.
  - Any screw type auger when it is new or after it sits idle for a season should go through a “break-in” period. The unload auger should be run at partial capacity until several hundred tons of grain have been augered to polish the flight and housing. Once this is accomplished, the unload auger can be run at full capacity.
  - Never operate the unload auger when empty for any length of time as excessive wear will result. If possible, do not stop or start the auger under load, especially before the flight and housing have become well polished, as this may cause the auger to freeze-up.
  - During the first few minutes of operation, ensure that the unit is running properly and not vibrating excessively.

**NOTICE** Any unusual vibrations or noises would indicate a need for service or repair.

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

**Unload Grain From the Center Well and Intermediate Wells**

1. Start the motor for the unload auger.
2. Open the center sump gradually until desired flow is established.
3. Continue to open the center sump and watch for constant product flow at discharge.
Note
You should only need to open the gate approximately 3” to 6” (76 mm to 152 mm) to acquire a full load. Do Not overload the auger. This can cause high torque loads and possible damage to the auger. This kind of damage is not covered under warranty.

4. When the natural gravity flow of grain to the center well stops, close the center well gate and allow the unload auger to run until it cleans itself out.

5. Gradually open the center well and the intermediate wells until desired flow has been established.

Note
You should only need to open the wells 2” to 4” (51 mm to 102 mm) to acquire a full load.

6. After all grain has been removed that will gravity flow through the wells, close the well gates. Let auger clean itself out; then shut down and lockout power source.

Install the Sweep Auger Inside the Bin
1. Move the sweep auger inside the bin.

WARNING Follow all safety procedures and wear appropriate PPE equipment during all phases of the installation process to avoid injury.

2. Place sweep motor mount pivot pin into the pivot tube of the center well.

3. Lay the sweep auger assembly on the pile of sloping grain or in the area of the intermediate wells where additional grain has been removed.

The Bin Sweep is made with the sweep auger and back shield in two or more sections.

4. Use one section first by attaching the section to the drive unit and mounting the reduction wheel to the end of that section. See Figure 22.

Connect the Power
1. Attach suitable electric wiring to the motor in a manner that will permit the sweep to rotate several times about the bin.

2. Locate the motor starting controls outside the bin, but near the bin door so the operator has full view of the operation inside the bin.

Important
Controls must never be installed on the sweep auger inside the bin.

You are now ready to proceed with unloading grain with the bin sweep.
3. After the center portion of the bin has been emptied, shut down the sweep auger and lock out the power source.

**Attach Another Section of Sweep Auger and Back Shield**

1. Add another section of sweep auger and back shield and continue the unloading process.
2. If the sweep is equipped with a truss, be sure to tie-off extra cable length so it does not become tangled in the sweep auger.

**Figure 22. Unloading Process**
Important

- Using the gradual method of unloading described above helps to avoid situations where cascading grain can bury the sweep causing high torque loads and possible damage to the sweep assembly. This kind of damage is not covered under warranty.

- This type of operation may also be used to prevent the unloading of one side of the bin totally before any grain is removed from the other side. Total unloading of one side of large diameter bins without some unloading from the other side can cause structural damage to the bin. Refer to the recommendations and information supplied by the grain bin manufacturer for more complete details.

3. Once the sweep has cleared as much grain as possible from the bin, shut down the sweep.
4. Continue to run the unload auger until all grain has been discharged.
5. Shut down the sweep auger.
6. Lockout the power source.

6.4.1 Operating Capacities

Capacities of 810 Series Commercial Klean Sweep Auger can vary greatly under diverse conditions. Different materials, moisture content, amounts of foreign matter, angle of operation methods of feeding and flight speed all play a role in the performance of the bin sweep.

Maximum possible capacity will be less with high moisture grain (above 25%) than with dry grain. Twenty-five percent (25%) moisture could cut capacity back by as much as forty percent (40%) under some conditions.

6.4.2 Flight Speed Information

Proper auger flight speed is important for efficient operation of the 810 Series Commercial Klean Sweep Auger.

Important

- If the flight speed is too fast, excessive wear will result.
- If the flight speed is too slow and the auger flighting is permitted to "load-up", high torque will be required to turn the auger flighting. This can result in damage to the auger. Use the well slide-gates to control the amount of grain fed into the unloading tube.

Determine flight speed from the tables in the Specifications section.

6.5. Final Cleanout

The following procedures are recommended for cleaning the floor of the bin after the sweep auger has removed as much grain as possible.

⚠️ WARNING ⚠️ Close the intermediate well gates to prevent accidentally stepping into the well(s).

1. Shutdown and lockout the power source. Clean (scoop and sweep by hand) the outer area of the floor into a circular pile towards the center of the bin.
2. Make sure everyone is outside the bin and clear of the equipment. Restore power to unload auger and sweep. The circular pile towards the center of the bin will have been reduced.

3. Repeat these steps until all grain has been removed from the bin.

4. Remove sweep auger prior to filling the bin.

6.6. Shutdown

Stop the flow of grain into the unload auger and let the unit empty itself out before stopping. Before the operator leaves the work area, the power source shall be locked out.

6.7. Intermittent Shutdown

When an auger is stopped and restarted under full load, it may result in damage to the auger and components. Therefore if intermittent operation is to be carried out, it is advisable to reduce the load level.
6.8. Emergency Shutdown

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

6.9. 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.
   - 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.
   - 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.

6.10. Cleanup

1. Clean out any remaining grain with a grain vac, shovels, and/or brooms.
2. Clean up (remove) all settled dust deposits.
   - Buildup of dust inside the grain bin and around the bin sweep and bin sweep could lead to a dust explosion if not removed regularly.

6.11. Extended Shutdown / End of Season

After the season’s use, the bin sweep should be thoroughly inspected. Repair or replace any worn or damaged components and complete maintenance as described in Section 7. – Maintenance on page 43 to prevent any unnecessary downtime at the start of the next season.
7. 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.

7.1. Maintenance Safety

- 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.
- All electrical maintenance must be performed by a qualified electrician in accordance with all applicable local codes and standards.
- After maintenance is complete, replace all guards, service doors, and/or covers.
- Use only genuine Hutchinson | Mayrath replacement parts or equivalent. Use of unauthorized parts will void warranty. If in doubt, contact Hutchinson | Mayrath or your local dealer.

7.2. 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 sweep has been operated and the maintenance performed.

<table>
<thead>
<tr>
<th>Daily:</th>
<th>Section 7.3 – Visually Inspect the Equipment on page 43</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Annually:</th>
<th>Section 6.11 – Extended Shutdown / End of Season on page 42</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Section 7.5 – Check the Gearbox Oil on page 44</td>
</tr>
</tbody>
</table>

| As Required: | Section 7.4 – Belt Adjustment on page 44 |

7.3. Visually Inspect the Equipment

- Lock out power before inspecting.

Check the following during a visual inspection:

1. Ensure all guards are in place and in good working order.
2. Examine the bin sweep 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.

### 7.4. Belt Adjustment

1. Check belts frequently for fraying, cracking or other damage. Replace as necessary.
2. Check belts for proper tension. Belts should deflect approximately 9/16” (14 mm) when firmly pressed in the center of the span between the two sheaves.
3. To adjust belt tension,
   a. Loosen the 3/4” nut on the threaded adjustment rod located beneath the motor mount plate.
   b. Adjust the threaded rod until proper belt tension has been achieved.
   c. Retighten 3/4” nut to lock adjustment rod into place.

**Figure 25. Adjusting belts**

### 7.5. Check the Gearbox Oil

The gearboxes are shipped with oil already installed. It is recommended to check oil level before operation to ensure level is correct.

1. Check the oil level:
   a. Remove the plug from the side of the gearbox.
   b. Look for oil flowing from the opening.
2. If additional oil is needed:
   a. Remove the plug at the upper portion of each gearbox.
   b. Add oil until oil flows from the plug opening on the side.
For temperature ranges of 40°F to 120°F (4.4°C to 48.9°C) use only an SAE 80W-90 non-foaming multipurpose gear oil. Extra pressure additives may be of some value in severe applications.

For temperature ranges below 40°F (4.4°C) use an SAE 80W gear oil.

7.5.1 Gearbox Check Plug and Fill Locations

Gearbox oil capacity is approximately: 10.5 oz (0.318 l).

Figure 26. Gearbox check plug and fill locations
8. Troubleshooting

**WARNING** 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.

### Table 7. Sweep Related Problems

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweep running but not advancing.</td>
<td>Grain condition wet, hard-packed, moldy.</td>
<td>Sweep will perform poorly if grain is out of condition.</td>
</tr>
<tr>
<td>Belt is moving, motor is running, but sweep is not moving.</td>
<td>Set screws and keys on pulleys not installed or too loose.</td>
<td>Check set screws and keys to ensure they are tight.</td>
</tr>
<tr>
<td>Sweep advancing too rapidly, pushing sweep into pile aggressively.</td>
<td>Sweep operating too fast.</td>
<td>Lower set point. Decrease drive sheave to lower capacity.</td>
</tr>
<tr>
<td>Sweep stops traveling around the bin.</td>
<td>Sweep isn’t adjusted correctly and is hitting a high spot in the aeration floor.</td>
<td>Adjust sweep height.</td>
</tr>
<tr>
<td>Obstruction in sweep.</td>
<td></td>
<td>Remove obstruction.</td>
</tr>
<tr>
<td>Sweep will not function.</td>
<td>Obstruction in sweep.</td>
<td>Remove obstruction.</td>
</tr>
<tr>
<td>Sweep flight stops when moving product.</td>
<td>Electric motor belts are not tight enough.</td>
<td>Tighten belts.</td>
</tr>
<tr>
<td>Electric motor is not large enough to power entire system.</td>
<td></td>
<td>Replace electric motor with a larger model.</td>
</tr>
<tr>
<td>Obstruction in underfloor auger.</td>
<td></td>
<td>Remove obstruction.</td>
</tr>
<tr>
<td>Sweep will not turn or is noisy.</td>
<td>Check that flights are not catching on floor.</td>
<td>Raise flighting.</td>
</tr>
</tbody>
</table>
### Table 7  Sweep Related Problems (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweep is making loud distinct “squeak” noise.</td>
<td>Flight out of alignment on bushings.</td>
<td>Straighten flight, check alignment between flights.</td>
</tr>
<tr>
<td>Underfloor auger plugs when initially starting the sweep.</td>
<td>Intermediate wells are not closed.</td>
<td>Close intermediate wells.</td>
</tr>
<tr>
<td></td>
<td>Obstruction in underfloor auger.</td>
<td>Remove Obstruction.</td>
</tr>
<tr>
<td>Poor product flow from sweep.</td>
<td>Sweep flighting is not timed correctly.</td>
<td>Remove bolts, rotate flighting to next set of holes and replace bolts.</td>
</tr>
<tr>
<td></td>
<td>Obstruction in sweep.</td>
<td>Remove obstruction.</td>
</tr>
<tr>
<td></td>
<td>Damaged or bent flighting.</td>
<td>Bend flighting back to original shape. If this does not work, replace flighting.</td>
</tr>
<tr>
<td>Underfloor auger is not able to move grain that the sweep is dumping into the center well.</td>
<td>Obstruction in center well.</td>
<td>Remove obstruction.</td>
</tr>
<tr>
<td></td>
<td>Intermediate wells are open, flooding the underfloor auger.</td>
<td>Close intermediate wells.</td>
</tr>
<tr>
<td>Grain is flowing over backboard of sweep.</td>
<td>This is normal and grain will be picked up on the second pass of the sweep.</td>
<td>No solution needed, part of normal sweep operation.</td>
</tr>
</tbody>
</table>
9. Specifications

9.1. Power Requirements and Sweep Auger Speeds

Important
This unit is designed to run at auger flight speeds of 300 to 396 RPM’s. The flight speed of the sweep auger should not be altered from the way it has been initially provided.

The horsepower recommendations are based on clean, dry shelled corn or wheat. High moisture grain, above 15% will require greater power (the maximum possible capacity will be less with high moisture grain than with dry grain).

The maximum possible capacity will be less with high moisture grain than with dry grain. Use the tables below to determine size of motor required. Capacities range from 1591 BPH (43 mtph) up to 2049 BPH (55 mtph).

The following tables contain power requirements and sweep auger speeds for the Bin Sweep (8” and 10” bin unloaders).

Note
- Use a 60 Hz motor that operates at 1750 RPM (50 Hz @ 1460 rpm’s).
- Electric motor pulleys are not furnished.

Table 8. HP and Speeds for 8” Bin Unloader

<table>
<thead>
<tr>
<th>Bin Diameter</th>
<th>24’ to 42’</th>
<th>48’ to 72’</th>
<th>75’ to 92’</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.P. (kw) Electric</td>
<td>3 H.P. (2.2 kw)</td>
<td>5 H.P. (4 kw)</td>
<td>7.5 H.P. (5.5 kw)</td>
</tr>
<tr>
<td>Motor Pulley</td>
<td>3.4 P.D.</td>
<td>3.4 P.D.</td>
<td>3.4 P.D.</td>
</tr>
<tr>
<td>Operating Flight Speed</td>
<td>300 RPM</td>
<td>300 RPM</td>
<td>300 RPM</td>
</tr>
</tbody>
</table>

P.D. = Pitch Diameter

Table 9. HP and Speeds for 10” Bin Unloader

<table>
<thead>
<tr>
<th>Bin Diameter</th>
<th>24’ to 42’</th>
<th>48’ to 72’</th>
<th>75’ to 92’</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.P. (kw) Electric</td>
<td>3 H.P. (2.2 kw)</td>
<td>5 H.P. (4 kw)</td>
<td>7.5 H.P. (5.5 kw)</td>
</tr>
<tr>
<td>Motor Pulley</td>
<td>4.6 P.D.</td>
<td>4.6 P.D.</td>
<td>4.6 P.D.</td>
</tr>
<tr>
<td>Operating Flight Speed</td>
<td>396 RPM</td>
<td>396 RPM</td>
<td>396 RPM</td>
</tr>
</tbody>
</table>

P.D. = Pitch Diameter
# 10. Appendix

## 10.1. Bolt Torque

Table 10 gives the correct torque values for various hardware. Tighten all bolts to the torque specified, unless otherwise noted. Check tightness periodically, using Table 10 as a guide. Replace the hardware with the same strength bolt, contact Hutchinson | Mayrath if you are unsure.

### Table 10. Recommended Bolt Torque

<table>
<thead>
<tr>
<th>Size</th>
<th>Dry or Lubricated</th>
<th>Threads per inch (Course/Fine)</th>
<th>Area of Bolt (sq in.)</th>
<th>Recommended Torque (ft-lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coarse</td>
<td>Fine</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>Dry</td>
<td>20/28</td>
<td>0.0318</td>
<td>0.0364</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/16&quot;</td>
<td>Dry</td>
<td>18/24</td>
<td>0.0524</td>
<td>0.058</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>Dry</td>
<td>16/24</td>
<td>0.0775</td>
<td>0.0878</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/16&quot;</td>
<td>Dry</td>
<td>14/20</td>
<td>0.1063</td>
<td>0.1187</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Dry</td>
<td>13/20</td>
<td>0.1419</td>
<td>0.1599</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9/16&quot;</td>
<td>Dry</td>
<td>12/18</td>
<td>0.182</td>
<td>0.203</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/8&quot;</td>
<td>Dry</td>
<td>11/18</td>
<td>0.226</td>
<td>0.256</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Dry</td>
<td>10/16</td>
<td>0.334</td>
<td>0.373</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/8&quot;</td>
<td>Dry</td>
<td>9/14</td>
<td>0.462</td>
<td>0.508</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1&quot;</td>
<td>Dry</td>
<td>8/14</td>
<td>0.606</td>
<td>0.679</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1/8&quot;</td>
<td>Dry</td>
<td>7/12</td>
<td>0.763</td>
<td>0.856</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1/4&quot;</td>
<td>Dry</td>
<td>7/12</td>
<td>0.989</td>
<td>1.073</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>Dry</td>
<td>6/12</td>
<td>1.405</td>
<td>1.581</td>
</tr>
<tr>
<td></td>
<td>Lubricated</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Torque value for bolts and cap screws are identified by their head markings. Established at 75% of yield strength of bolt given the cross-sectional area.

**Note**

Torque figures in table are valid for non-greased or non-oiled threads and head unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.
Prices: Prices in effect at time of shipment will apply. Prices are subject to change without notice. All prices are F.O.B. Clay Center, Kansas. Orders shipped from locations other than Clay Center, Kansas will be subject to additional charges, such as back freight and/or additional freight.

Service Charge: A service charge will be assessed for all past due balances as permitted by state law not to exceed 1-1/2% per month.

Minimum Order: Processing and handling costs necessitate a minimum charge of $15.00 net on all orders.

Back Orders: Back orders will be shipped as they become available. Contact Hutchinson, Mayrath Customer Service for alternative shipping options or if cancellation is desired.

Damaged Goods: It is the consignee’s responsibility to check all shipments thoroughly upon receipt of goods. If any damage is discovered, it must be noted on the freight bill of lading before signing. The consignee must make necessary claims against the respective freight line. All damage claims must be submitted within 30 days of delivery receipt.

Shortages: All shortages must be noted at time of delivery. Shortages must be noted on the freight bill of lading before signing. Hutchinson, Mayrath must be advised of all concealed shortages upon discovery. Once notified of concealed shortages Hutchinson, Mayrath will advise corrective action to be taken.

Return of Goods: All returns must be approved by Hutchinson, Mayrath prior to shipment. All return requests will be issued a return authorization number. NO RETURNS WILL BE ACCEPTED WITHOUT A RETURN AUTHORIZATION NUMBER AND PRIOR AUTHORIZATION FROM THE FACTORY. All returns must be shipped prepaid. A 15% restocking charge will be applied to all returned merchandise. Custom Products may not be returned for credit. Only current products in new and salable condition may be returned. No safety devices may be returned for credit.

Modifications: It is the policy of Hutchinson, Mayrath to improve its product whenever possible and practical to do so. We reserve the right to make changes, improvements and modifications at any time without incurring the obligation to make such changes, improvements and modifications on any equipment sold previously.

Limited Warranty: (a) For a period of (1) year after receipt of goods by the original consumer buyer, Hutchinson, Mayrath will supply free of charge replacement parts for parts that prove defective in workmanship or material. Defective parts must be returned freight prepaid to a specified Hutchinson, Mayrath location. Only Hutchinson, Mayrath original repair parts may be used for warranty repairs. (b) This limited warranty does not extend to parts designed to wear in normal operation and be replaced periodically; or to damage caused by negligence, accident, abuse or improper installation or operation. (c) GOODS NOT MANUFACTURED BY HUTCHINSON, MAYRATH CARRY ONLY THE MANUFACTURER’S WARRANTY. (d) THIS UNDERTAKING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. FAILURE TO FOLLOW THE INSTRUCTIONS CONTAINED IN THE OWNER’S & OPERATOR’S MANUALS AND THE ITEMS LISTED BELOW WILL RESULT IN THE VOIDING OF THIS LIMITED WARRANTY.

1. Improper assembly, including failure to properly install all safety equipment.
2. Improper installation.
3. Unauthorized alternations of goods.
5. Use of unauthorized repair parts.
6. Irresponsible operation.
7. Used to handle materials other than free flowing, nonabrasive and dry materials, as intended.
8. Damaged through abusive use or accident.

Limitation of Liability: BUYER AGREES THAT IN NO EVENT SHALL HUTCHINSON,MAYRATH HAVE LIABILITY FOR DIRECT DAMAGES IN EXCESS OF THE CONTRACT PRICE OF THE GOODS IN RESPECT OF WHICH CLAIM IS MADE. BUYER FURTHER AGREES THAT IN NO EVENT SHALL HUTCHINSON,MAYRATH ON ANY CLAIM OF ANY KIND HAVE LIABILITY FOR LOSS OF USE, LOSS OF PROFITS, OR FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES.