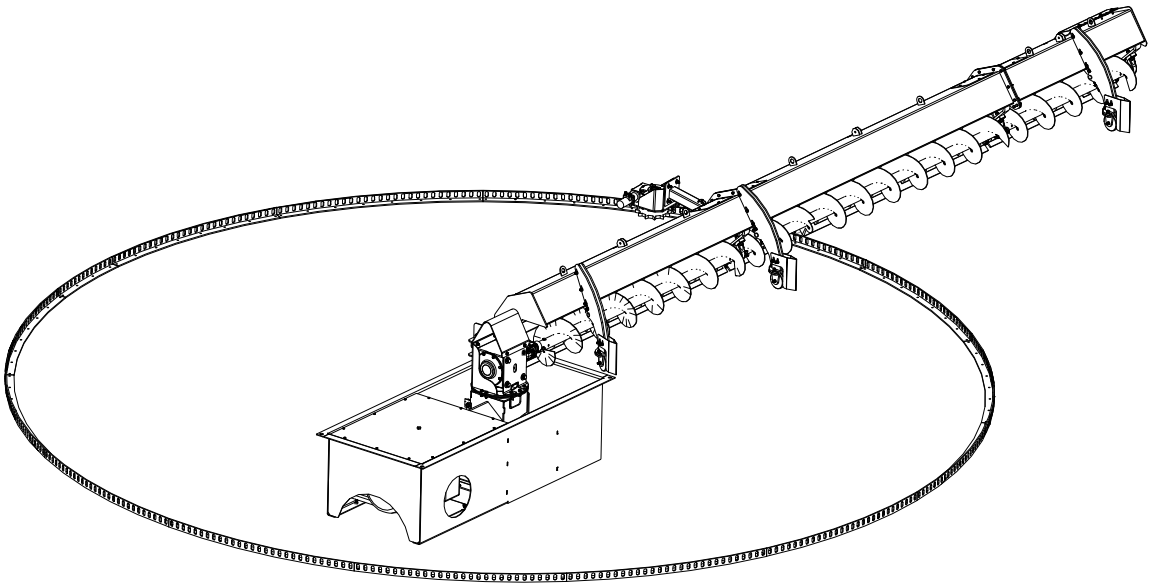
Hi-Flow 500 Series with Control Panel

Commercial Bin Sweep Operator's Manual

This manual applies to the following models:

BU-16-48, BU-16-48EX, BU-16-54, BU-16-54EX, BU-16-60, BU-16-60EX, BU-16-66, BU-16-66EX, BU-16-72, BU-16-72EX, BU-16-75, BU-16-75EX, BU-16-90, BU-16-90EX, BU-16-105, BU-16-105EX

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: 1052105 R0

Revised: March 2020

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.

Date	Employee Signature	Employer Signature

CONTENTS

1. Introduction

Thank you for purchasing a AGI Commercial Bin Sweep. Follow the instructions in this manual for safe use of the bin sweep. With proper care, yourbin 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 intended for use as listed below and described throughout this manual. Use in any other way is considered as contrary to the intended use.

The bin sweep should be operated, maintained, serviced, and repaired only by persons who are familiar with its particular characteristics and understand 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.

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

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 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

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

WARNING

- 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

WARNING

- 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

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.

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.

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

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.

If you become covered in flowing grain, cup your hands over your mouth and take short breaths. This may keep you alive until help arrives. A person outside can ventilate the bin by turning on the fan (if equipped). Do not run heaters as this will fill the bin with carbon monoxide

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

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

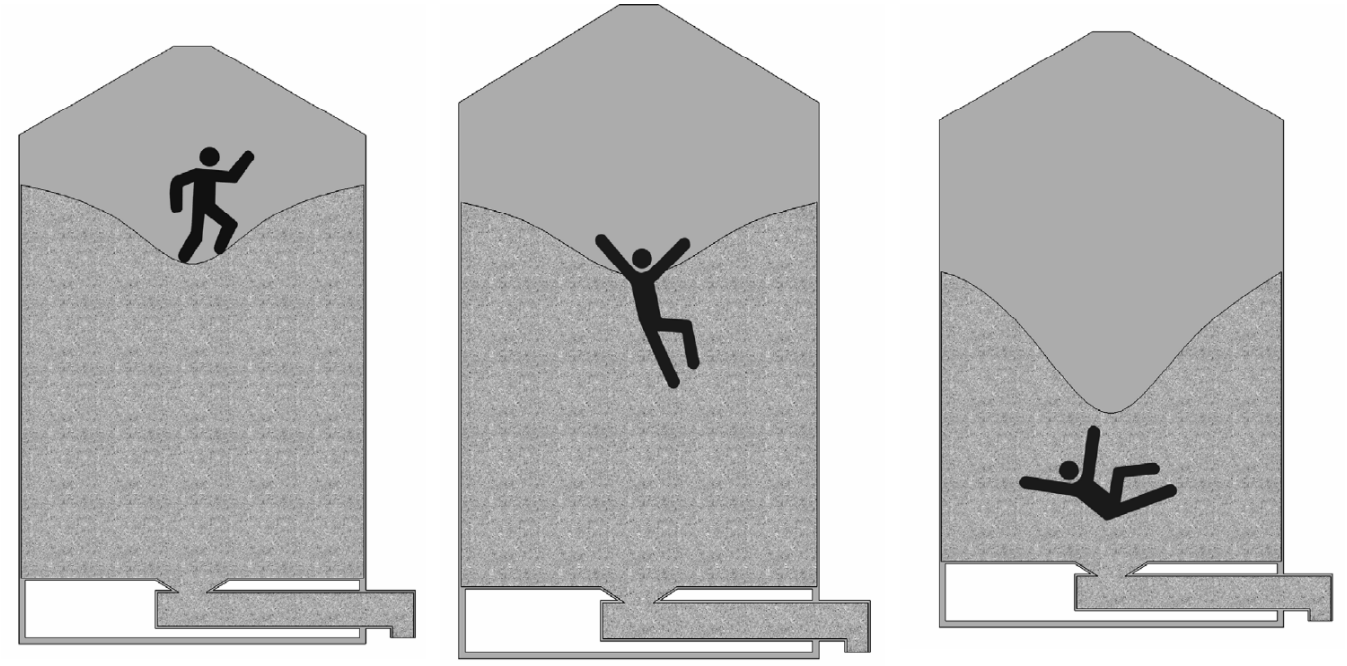
2.10.1 Flowing Grain

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.

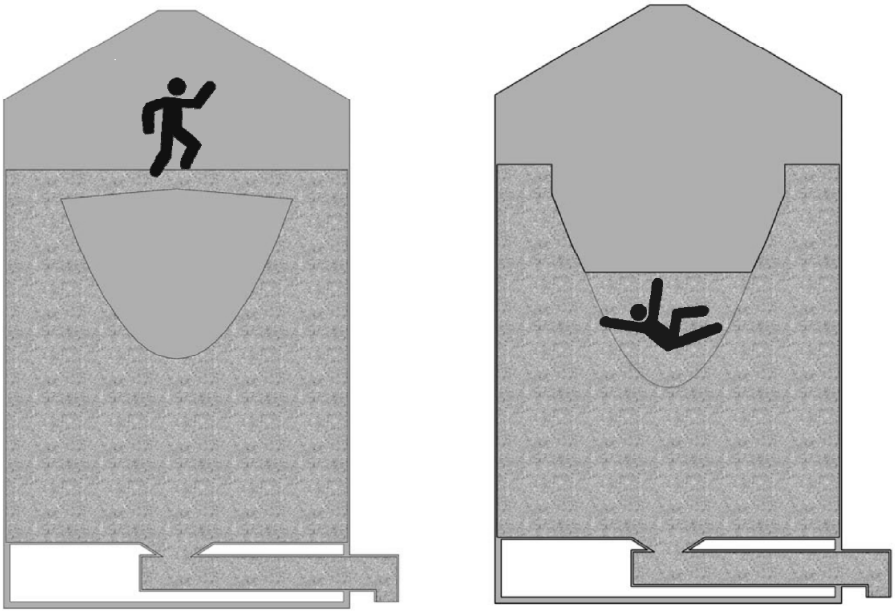
2.10.2 Collapse of Bridged Grain

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



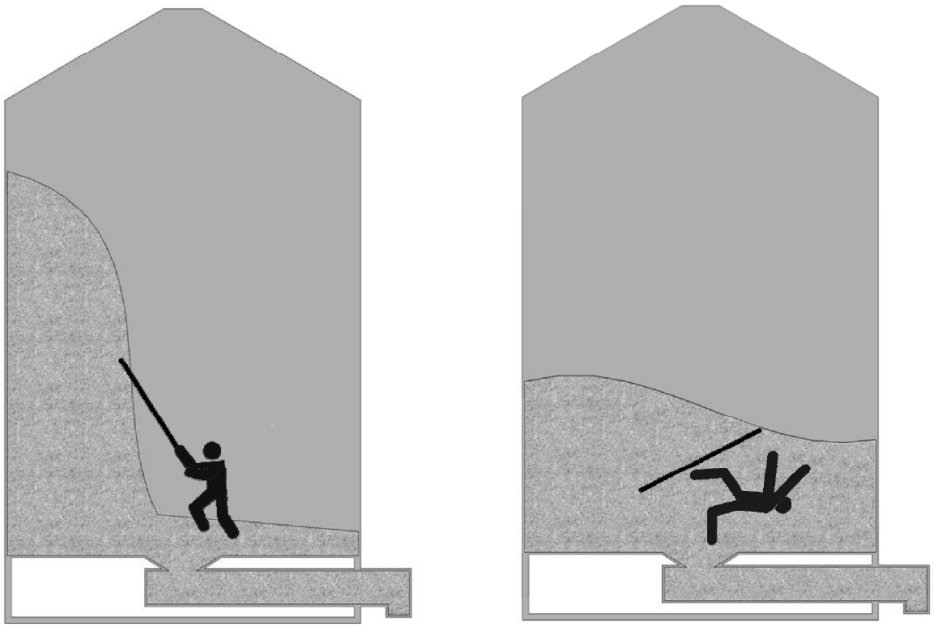
2.10.3 Collapse of a Vertical Wall of Grain

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:

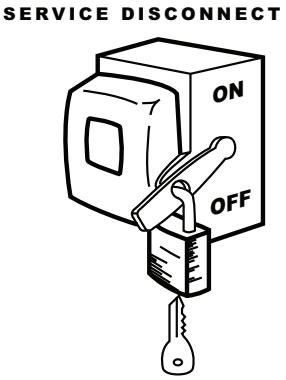
- Do not smoke in any potentially hazardous area.
- Use only explosion-proof lights.
- Do not use anything around or inside the equipment that may produce a flame, such as a match, a lighter, or anything that may produce a shower of sparks, such as a grinder or power saw, unless the air is free of dust 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

⚠ 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.
- 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.

2.12.2 Hydraulic Power Safety

⚠ WARNING **Power Source**

- Refer to the rules and regulations applicable to the power source operating your hydraulic drive.
- Do not connect or disconnect hydraulic lines while system is under pressure.
- Keep all hydraulic lines away from moving parts and pinch points.
- Escaping hydraulic fluid under pressure will cause serious injury if it penetrates the skin surface (serious infection or toxic reaction can develop). See a doctor immediately if injured.
- Use metal or wood as a backstop when searching for hydraulic leaks and wear proper hand and eye protection.
- Check all hydraulic components are tight and in good condition. Replace any worn, cut, abraded, flattened, or crimped hoses.
- Clean the connections before connecting to equipment.
- Do not attempt any makeshift repairs to the hydraulic fittings or hoses with tape, clamps, or adhesive. The hydraulic system operates under extremely high pressure; such repairs will fail suddenly and create a hazardous and unsafe condition.

Lockout

- Always place all hydraulic controls in neutral and relieve system pressure before disconnecting or working on hydraulic system.

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

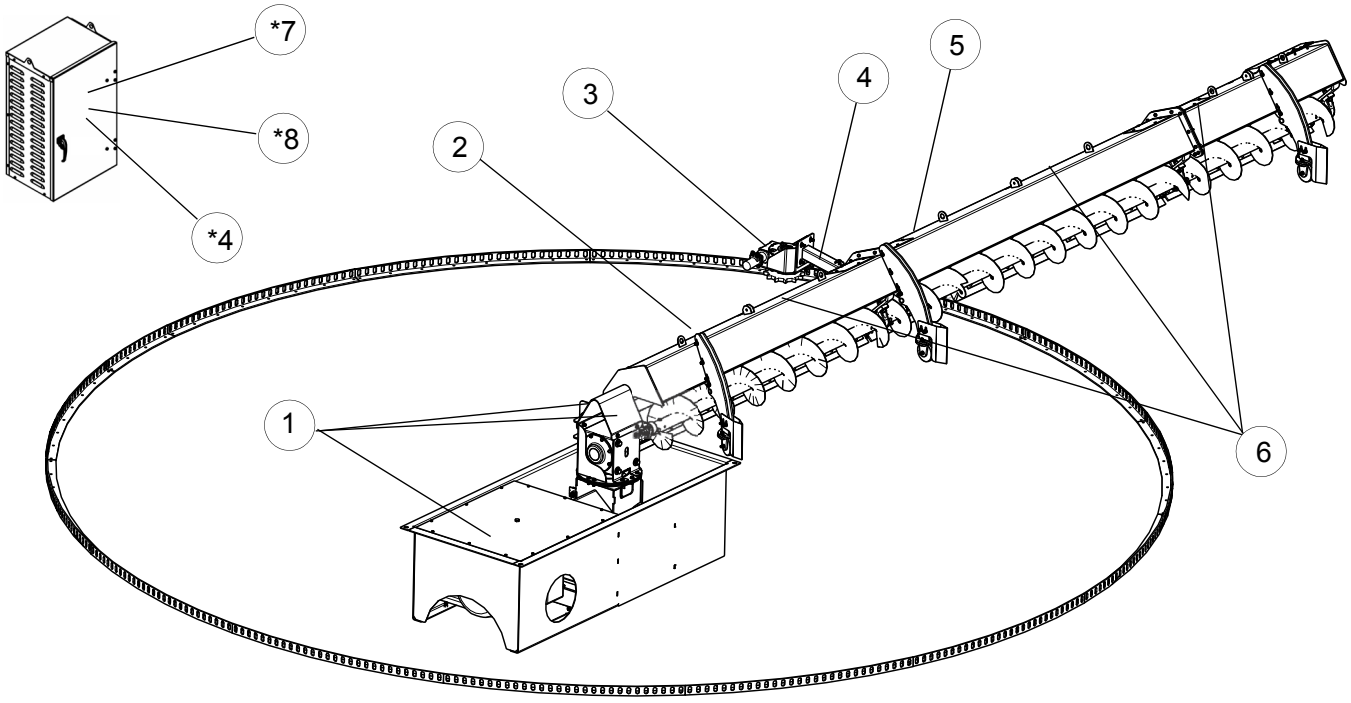
- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available **free of charge** from your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



Note

*Decals located on inside of the hydraulic power supply housing door. Representation shown above not to scale and not shown in exact placement.

Table 1. Safety Decals

Item	Description	Part Number
1		BU-0500418
2		BU-0000003
3		BU-0500420

Table 1 Safety Decals (continued)

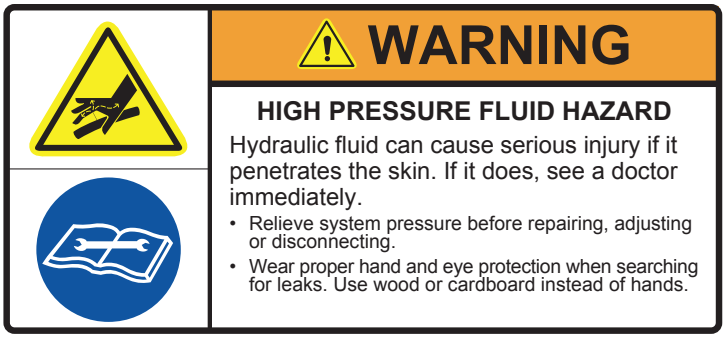
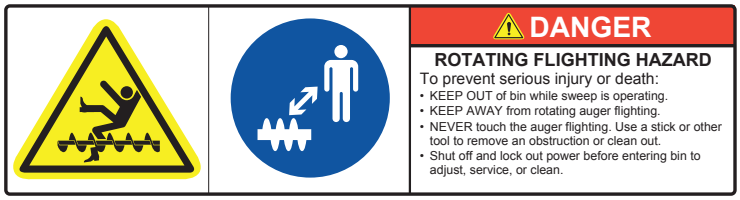
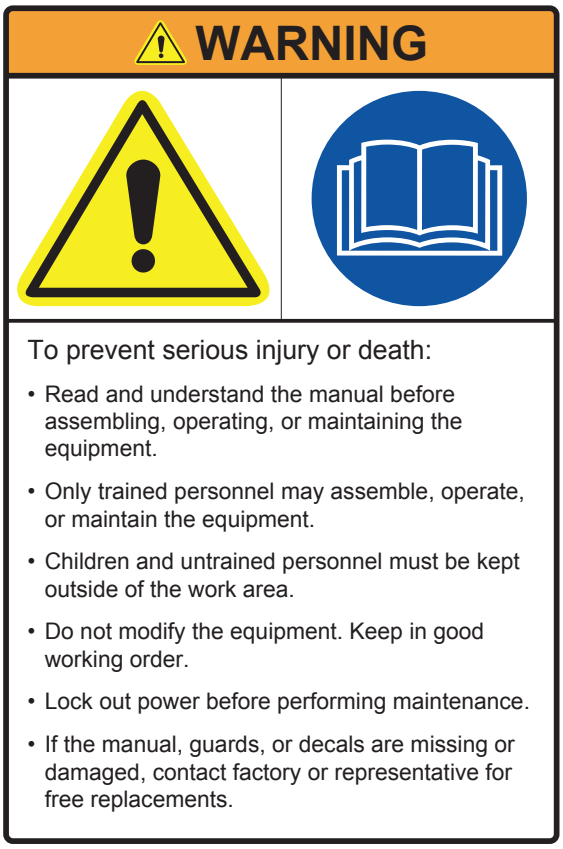
Item	Description	Part Number
4		BU-0500422
5		BU-0500419
6		BU-0100470 (one placed on every backboard section)

Table 1 Safety Decals (continued)

Item	Description	Part Number
7		BU-0020807
8		BU-0500417

3. Features

This section covers the main features of the bin sweep.

Figure 4. Typical Commercial Bin Sweep

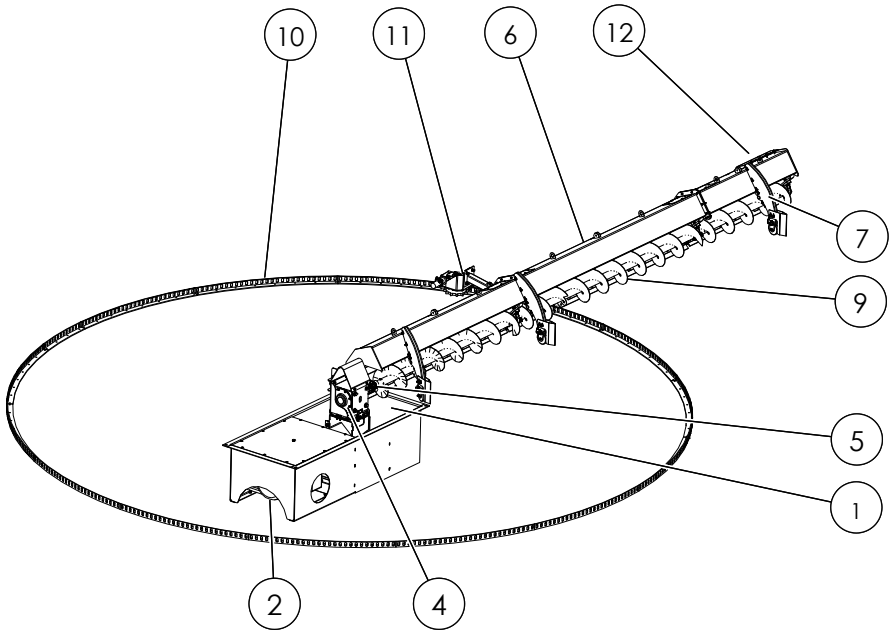


Figure 5. Open View of Center Sump

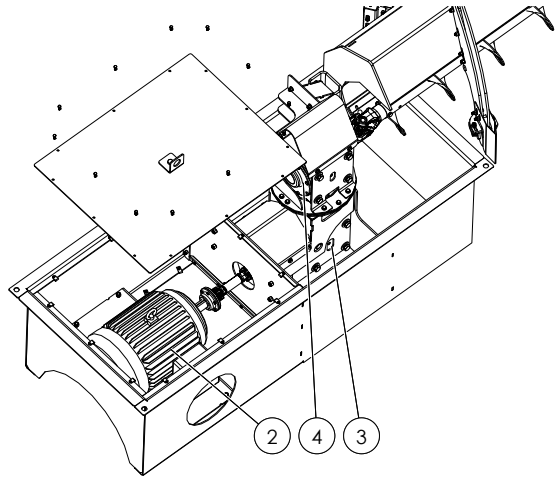


Figure 6. Rear View of Sweep

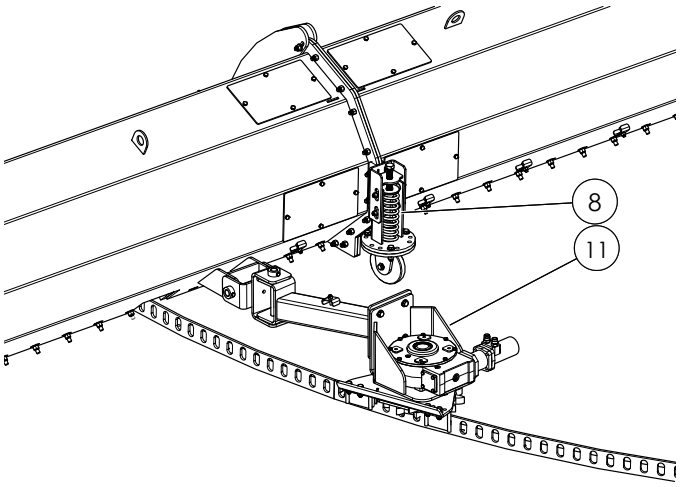


Figure 7. Housed Hydraulic Power Supply

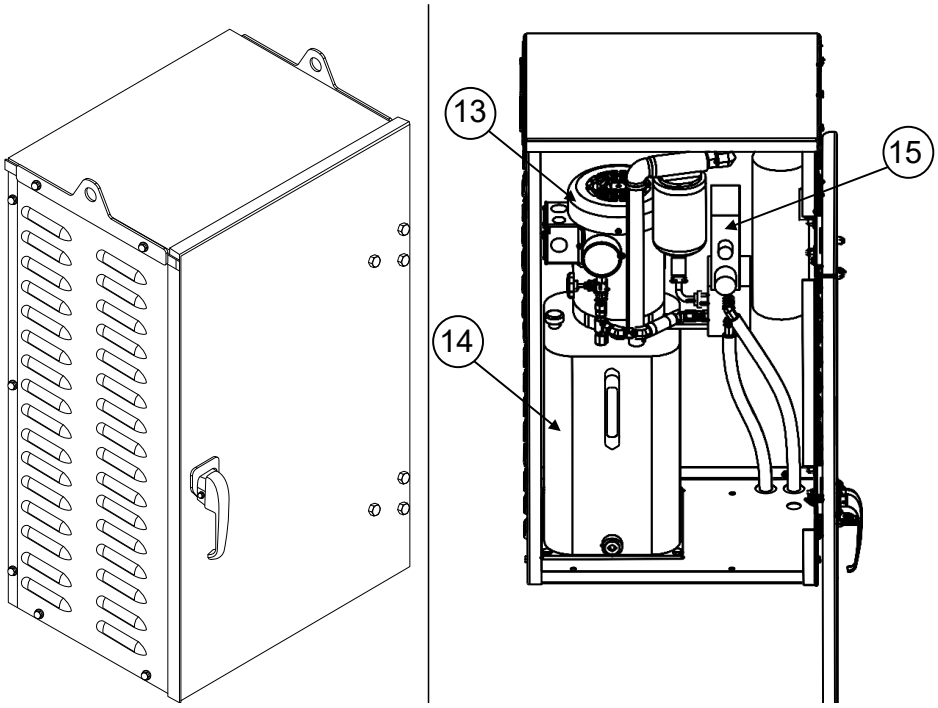


Table 2. Features

Item	Description
1	Center Sump
2	Electric Motor (in enclosure in center sump)
3	Lower Gearbox
4	Upper Gearbox
5	Universal Joint
6	Backboard
7	Front Wheel Sub-assembly

Item	Description
9	Flighting
10	Angle Drive Track
11	Track Drive (includes hydraulic motor, gearbox, and toothed wheel)
12	Sweep Extender
13*	Electric Motor
14*	Hydraulic Oil Tank (and Hydraulic Pump inside)
15*	Proportional Directional Flow Control Valve

*All housed within Hydraulic Power Supply.

Functional Overview

The Commercial Bin Sweep functions using helical flighting to transfer grain from the bin floor to the center sump. The flighting is mounted within a backboard which is held upright by front and rear wheel sub-assemblies. This sweep apparatus is revolved around the bin floor by a hydraulic track drive moving along an angle drive track, while the front and rear wheels ride on wheel tracks (not shown in figures above) when passing over the aeration floor.

The sweep uses an electric control system (not shown in figures above) outside the bin to power the electric motor enclosed within the center sump. This electric motor drives the lower gearbox, which drives the upper gearbox, which rotates on a swivel plate and drives the flighting through the universal joint as the sweep revolves around the bin.

The track drive hydraulic motor is powered through a hydraulic hose circuit routed from the hydraulic power supply in a galvanized, vented housing outside the bin door. The hydraulic power supply consists of an electric motor driving a hydraulic pump inside a hydraulic oil tank. The sweep's direction and speed is controlled by a proportional directional flow control valve using the control panel.

The sweep extender is adjusted in or out to maximize the amount of grain picked up by the end of the sweep nearest the bin wall.

Compatibility

- Intended Floor Types — This Commercial Bin Sweep is intended to be used with:
    1. aeration floor with one of the following patterns: double-H, 4-F, 4-parallel, 6-parallel, or other similar patterns, OR
    2. full concrete floor (no under-floor aeration).

        Important

        It is **not** intended to be used together with a full-floor aeration system.

- Bin Height — The recommended maximum bin height for use of this Commercial Bin Sweep is an overall height (to peak) of 120' (36.6 m). If your proposed bin height is higher than 120' (36.6 m), contact AGI for approval.

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/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.

4.2. Operating Overview

- Operating the bin unload system requires operating both physical controls such as the bin unload floor sump gates, and electronic controls on the NECO control panel.
- The NECO control panel is used to control bin sweep operations and functions, either locally (local control mode) or through a remote Command Centre (remote control mode).
- The NECO touch panel is used in Auto state to operate the sweep as part of the standard procedures for emptying the bin (see Section 4.6 – Operation of the Bin Unload System on page 40).
- The NECO panel is used in manual state to access the Settings screens and functions, and to directly control the sweep tractor functions if required.
- Access to the Settings screen and functions is restricted by a PIN code.

4.3. NECO Control Panel Operations

The NECO control panel is used to control all sweep operations and functions, either locally or through a remote Command Centre. The figure and table below show and describe the main sections of the NECO control panel Home screen.

Figure 8. Panel Home Screen Sections

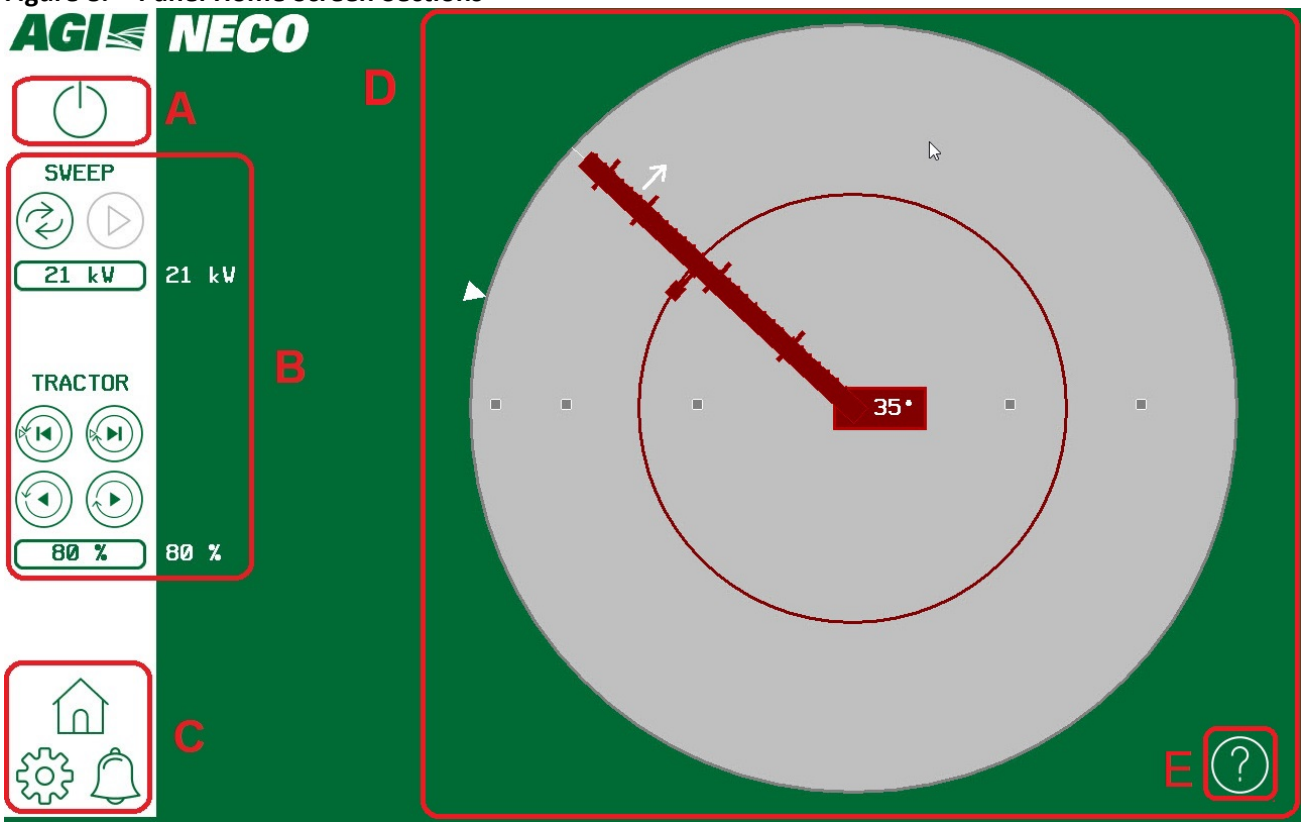


Table 3. Panel Home Screen Sections

Section	Function
A	**Control Mode:** Set local/remote control modes Section 4.3.2 – Control Modes (Home Screen) on page 27
B	**Sweep Local Controls:** Set manual/automatic local control states, and operate the sweep/tractor Section 4.3.3 – Setting the Local Control State (Home Screen) on page 28
C	**Screen Navigation:** Navigate Home, Settings, and Alarm Log screens Section 4.3.1 – Navigating Control Panel Screens on page 26
D	**Sweep Position Image:** Shows the current sweep position within the bin when in motion, and when stopped or in Park position. • Indicates sweep Park position as a white triangle on the edge of the sweep circle. • A white flashing arrow indicates the direction of motion when the sweep is moving. • The angle of the sweep (relative to the unload sump line) is shown at the centre of the image.
E	**Info:** Tap to access additional information

4.3.1 Navigating Control Panel Screens

The navigation section on every screen contains the buttons used to navigate to the three main screens (Home screen, Setting screen, Alarms screen)

Figure 9. Screen Navigation (Home Screen Shown)

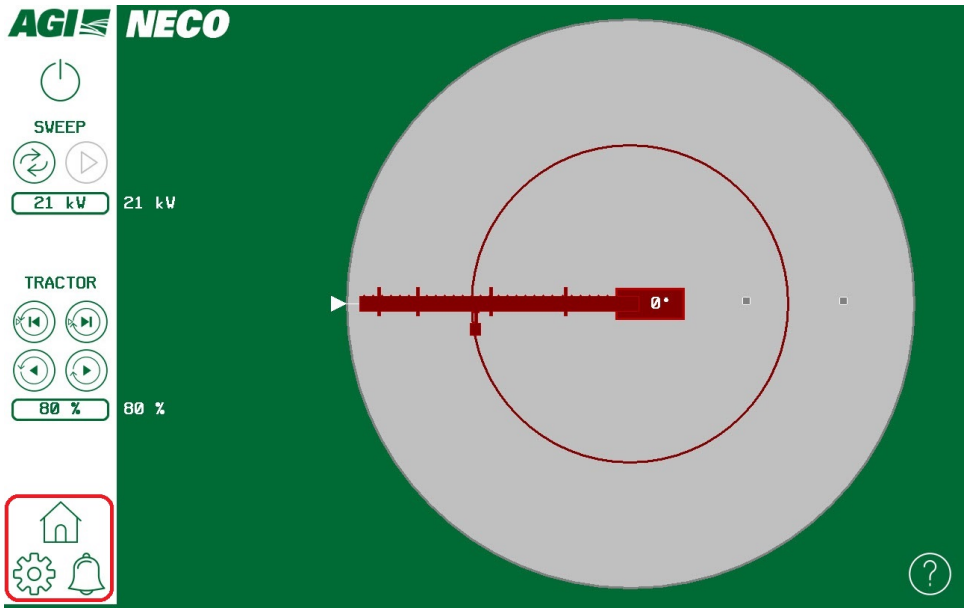


Table 4. Screen Navigation

	**Home:** used to control and operate the sweep. Tap to navigate from Settings or Alarm screens back to the Home screen.
	**Settings:** used to set the sweep Park position, and to correct any problems in synchronization between the physical sweep position and the panel sweep position graphic. Tap to navigate to the Settings screen
	**Alarm Log:** lists the alarms that have been raised, and is used to clear (Reset Alarms) current alarms. • Green when there are no alarms • Red (flashing) when alarms are present • Tap to navigate to the Alarm screen

4.3.2 Control Modes (Home Screen)

There are two control modes, Local and Remote:

- Local control: the operator can fully control the bin sweep using the NECO control panel.
- Remote control: the operator is blocked from using the NECO control panel to control the sweep. In this mode the sweep is exclusively controlled by a remote command centre.

The current control mode is displayed at the top of the panel sweep contols section (see figure and table below).

A NECO control panel user can use the touch screen to select the control mode, even if the panel is under Remote control.

Figure 10. Viewing/Setting the Control Mode

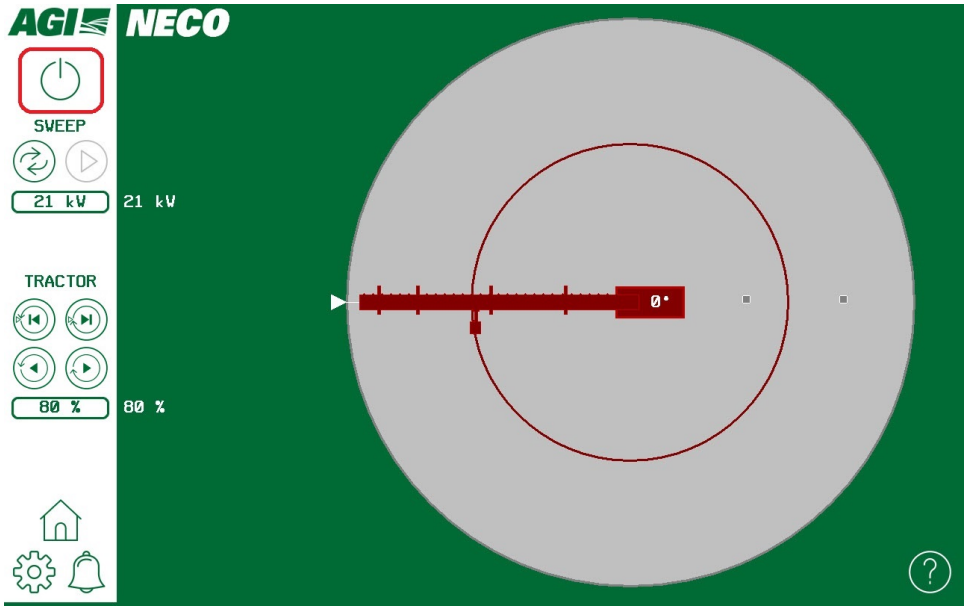


Table 5. Viewing/Setting the Control Mode

	Local control mode is set Tap to set Remote control mode
	Remote Control mode is set Tap to set Local control mode

4.3.3 Setting the Local Control State (Home Screen)

The local control state can be set as either Manual and Auto:

- Auto state is the standard operational state, that allows a panel user to start and stop the sweep, and set the sweep power limit.
- Manual state can only be used to manually position the sweep with tractor controls, and to access the Settings screen. Manual state cannot be used to sweep grain, because the auger is disabled in this state.

The current local control state is displayed near the top of the panel controls section, under the “SWEEP” control category.

A control panel user can use the touch screen to toggle between Manual and Auto control states by tapping the control state icon.

Figure 11. Viewing/Setting the Local Control State (Manual State Shown)

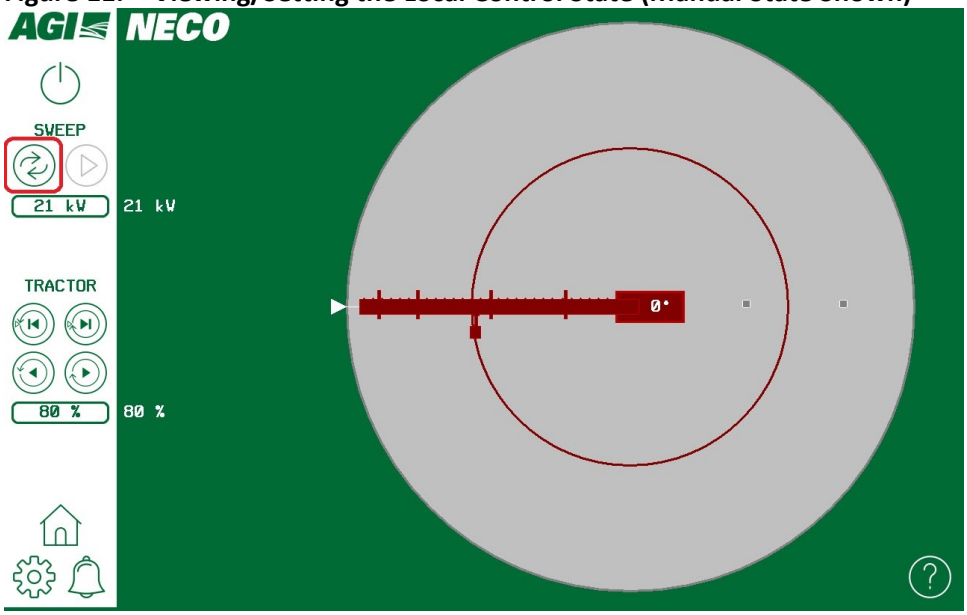


Table 6. Viewing/Setting the Local Control State

	Manual control state is set. Tap icon to switch to Auto control state.
	Auto control state is set. Tap icon to switch to Manual control state.

4.3.4 Operating Sweep in Auto State

Auto local control state is used to start and stop the sweep clearing grain.

Figure 12. Auto Local Control State Operations (Home Screen)

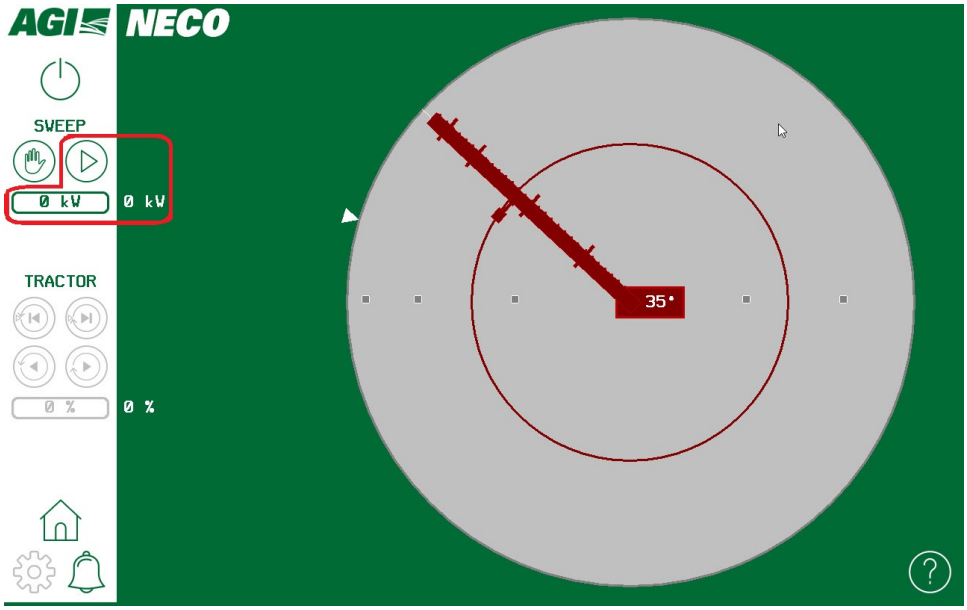


Table 7. Auto Local Control State Operations (Home Screen)

	**Sweep Start:** Indicates that sweep is stopped. Tap icon to start sweep. Sweep will run forward and stop in Park position.
	**Sweep Stop:** Indicates that sweep is running. Tap icon to stop sweep. If restarted, sweep will run forward and stop in Park position.
	**Power Limit Setting/Draw:** Displays (from left to right) the power limit setting and the current power draw Tap the setting icon to set the power limit (xx to xx kW)

4.3.5 Operating Sweep in Manual State

Manual local state is used to:

- move sweep position with the tractor controls
- access the Settings screen navigation button

Figure 13. Manual Local Control State Sweep Operation (Home Screen)

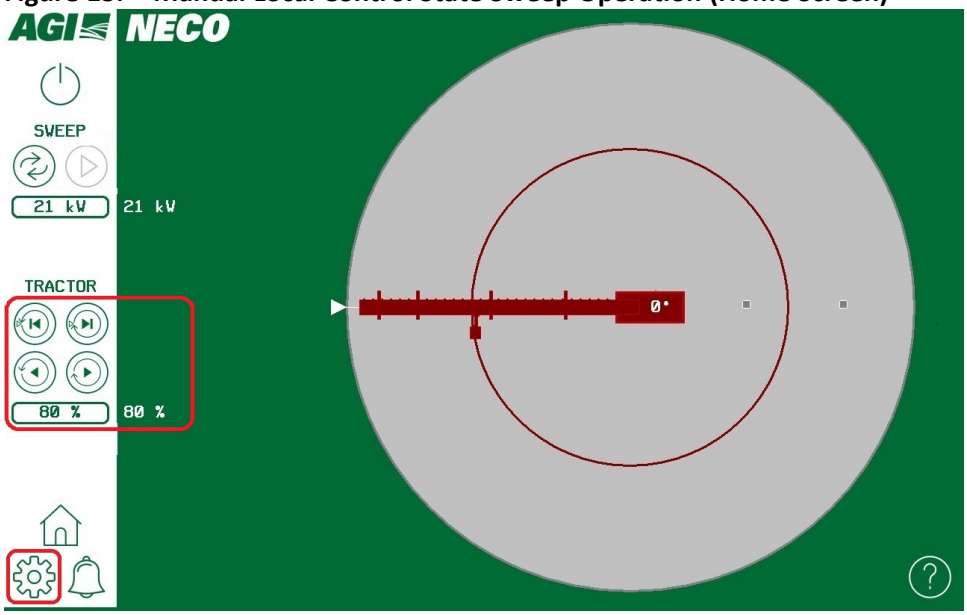


Table 8. Manual Local Control State Sweep Operation (Home Screen)

	**Run Tractor Forward to Park:** Tap icon to run sweep forward until it reaches Park position
	**Run Tractor Reverse to Park:** Tap icon to run sweep in reverse until it reaches Park position
	**Move Tractor Forward:** Press and hold to run the sweep tractor forward, release to stop
	**Move Tractor Reverse:** Press and hold run the sweep tractor in reverse, release to stop
	**Tractor Speed:** Displays (from left to right) the desired tractor speed and the actual tractor speed Tap the setting icon to set the tractor speed (0–100%)

4.3.6 Alarms

- Alarms are created by the system to alert the operator of serious problems with the system.
- Current alarms are indicated by the presence of a red bar at the top of all screens, and by the alarm screen navigation icon turning red instead of green (see figure below).
- The sweep shuts down when any alarms are present (current alarms), and must be restarted by the operator after the problem has been resolved and system alarms have been cleared (Reset).

Figure 14. Current Alarms (Home Screen Shown)

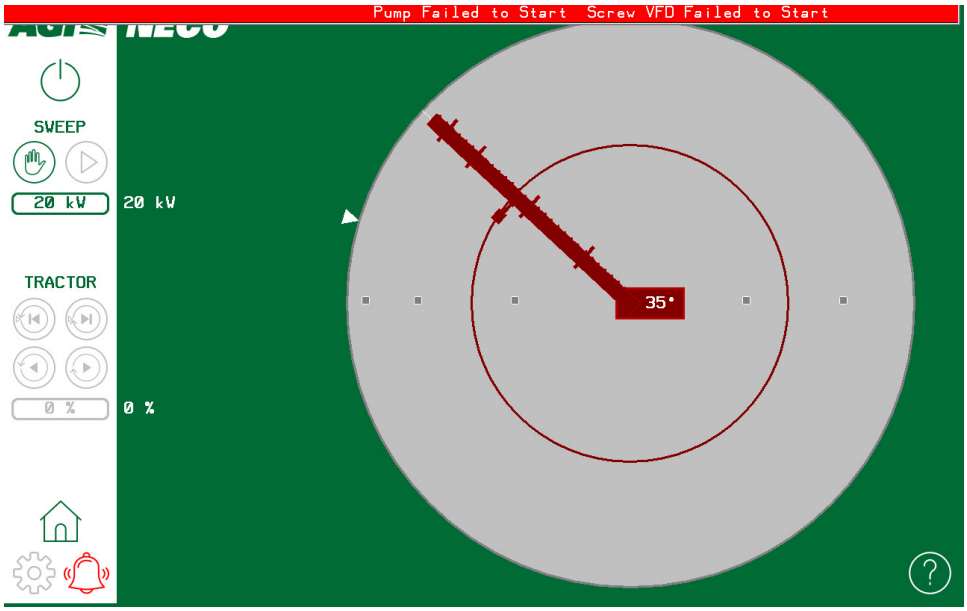


Table 9. Alarm Buttons/Icons

Icon/Button	Status/Action
	Alarm Screen Navigation Button: • Green when there are no alarms • Red when alarms are present • Tap to navigate to the Alarms Log Screen

Alarm Descriptions

The table below lists the possible alarms that can be raised by the system.

Table 10. Alarm Descriptions

Icon/Button	Description
Estop Pressed	The Emergency Stop Button has been pressed.
Screw VFD Faulted	A fault has been detected in the sweep VFD.
Pump Failed to Start	The hydraulic pump has failed to start when sweep is powered up.
Screw VFD Failed to Start	The sweep VFD did not start.
Sweep Failed to Move	The sweep did not begin to move (as detected by the system) when started.

Managing Alarms (Alarm Log Screen)

On the Alarms Log Screen,

- Current alarms can be cleared by tapping the Alarm Reset button
- A log listing the date, time, and description of past alarms is displayed

Figure 15. Alarm Log Screen

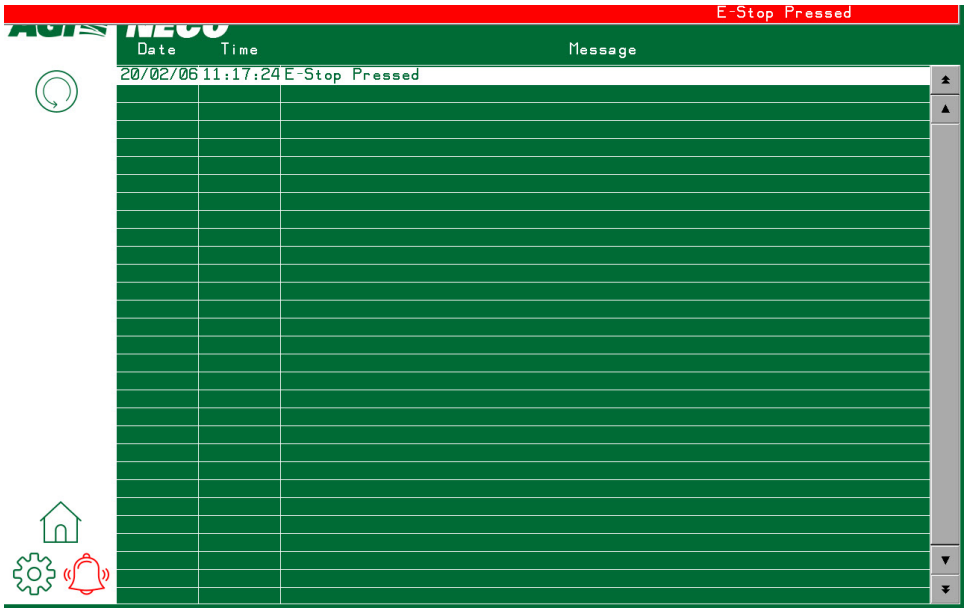


Table 11. Alarm Log Screen

	**Alarm Reset:** Tap the Alarm Reset button to acknowledge current alarms.

4.3.7 Settings (Setting Screen)

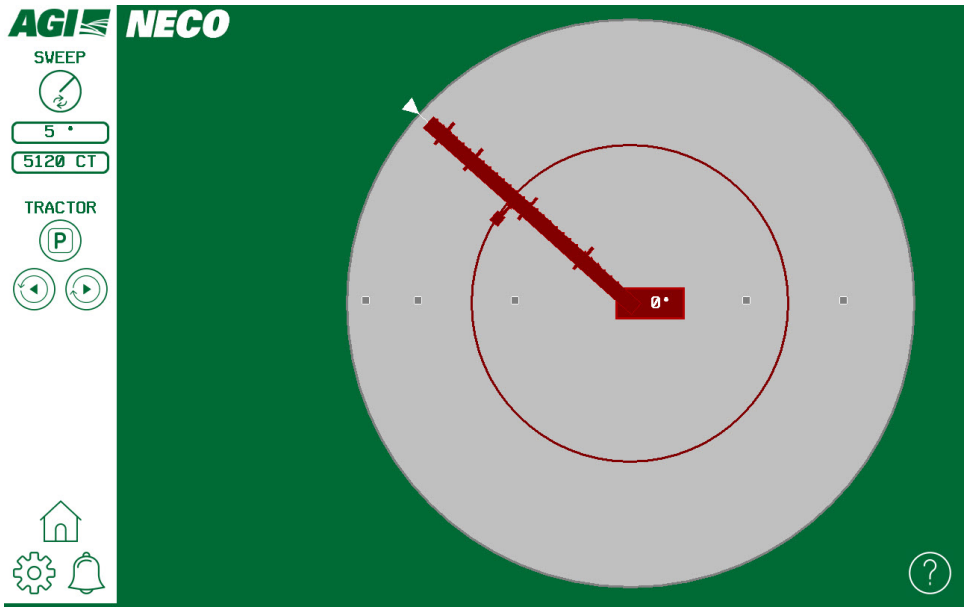
Note

Access to the Settings screen is protected by a PIN number.

The settings screen is used to:

- Set the park position
- Adjust the sweep image to match the physical sweep position.
- Adjust the Reversing Limit Angle
- Adjust the Sweep Cycle Encoder Count

Figure 16. Settings Screen



Setting the Park Position

1. Use the Tractor controls (press and hold) to position the sweep in a new Park position.
2. Press and hold the Set Park Position button until a confirmation dialog box appears.
3. Select the “check” icon in the dialog box to confirm setting the new Park position, or the “X” icon to exit.

Figure 17. Setting the Park Position

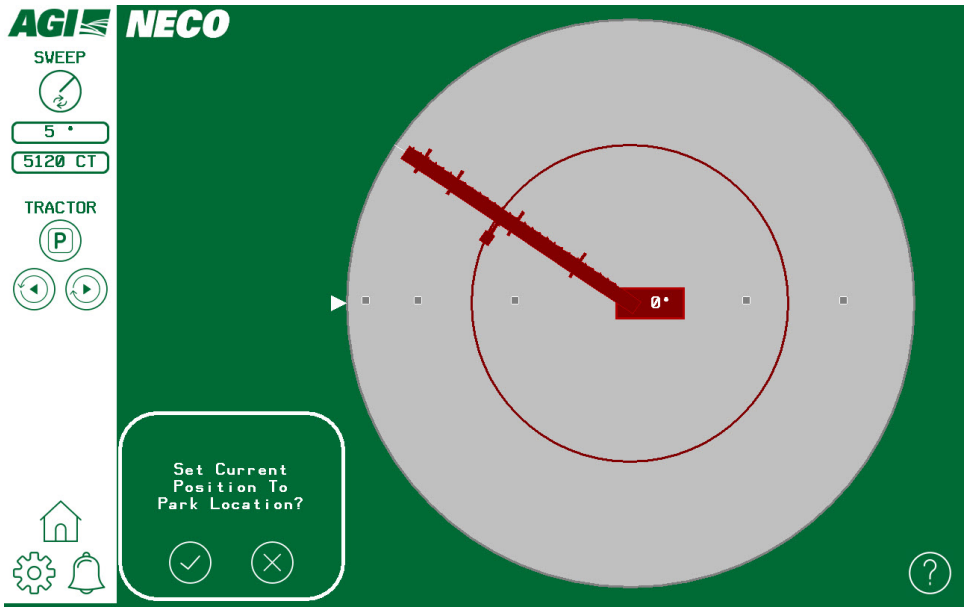


Table 12. Setting the Park Position

	Move Sweep Forward: Press and hold to run the sweep forward to a new Park position
	Move Sweep in Reverse: Press and hold to run the sweep in reverse to a new Park position
P	**Set Park Position:** Tap and hold icon to set current sweep position as new Park position (dialog box will open and require confirmation).
	Confirm: Tap and hold icon to set current sweep position as new Park position (dialog box will open and require confirmation).
	Cancel: Tap to cancel the Park position change and exit the dialog box.

Adjusting sweep image to match physical sweep position

In the rare case where the panel sweep image and the physical sweep positions become out of synchronization, adjust the sweep image to match physical sweep position as follows:

1. Press and hold the Sweep Image Adjust button until a dialog box appears.
2. Use the dialog box controls to position the sweep image to match the known physical position of the sweep. The “undo change” button can be used to return the image position to the state it was in at the beginning of the procedure.
3. Select the “check” icon in the dialog box to confirm setting the new sweep image position, or the “X” icon to exit.

Figure 18. Adjusting the Sweep Image

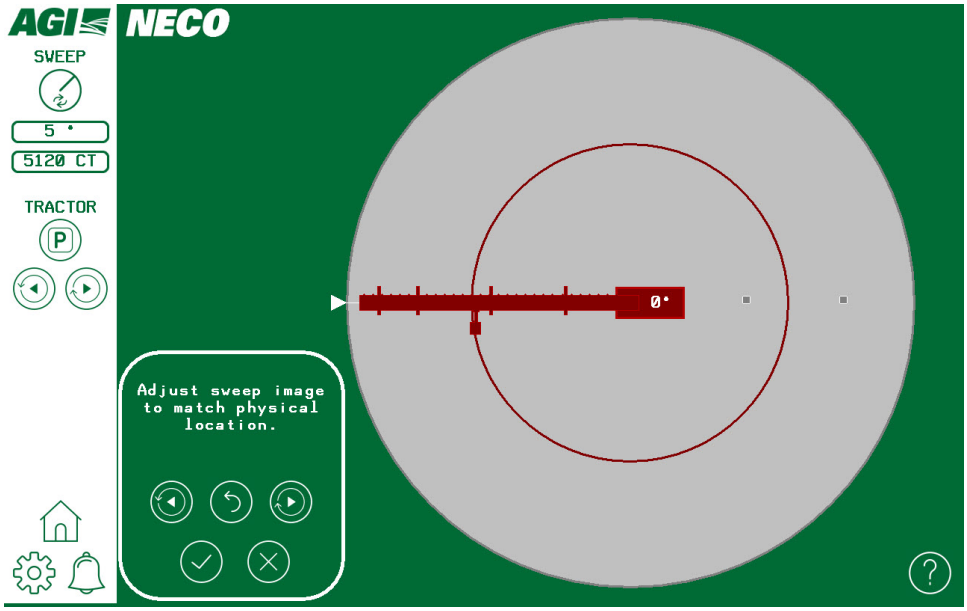


Table 13. Adjusting the Sweep Image

	**Sweep Image Synch:** Press and hold to open the Sweep Image Sync dialog box
	**Run sweep image forward:** Press and hold to move the sweep image forward to a new position
	**Run sweep image reverse:** Press and hold to move the sweep image in reverse to a new position
	**Undo change:** Undo change to sweep image position
	**Confirm:** Tap to confirm the sweep image change and exit the dialog box
	**Cancel:** Tap to cancel the sweep image change and exit the dialog box

Adjusting the Reversing Limit Angle

In the case of a sudden sweep power increase that exceeds the configured sweep power limit setting (e.g. caused by a grain-slide that covers the sweep), the system will respond automatically by slowing, stopping, or reversing the sweep. The Reversing Limit Angle can be adjusted by the operator to compensate for specific situations or preferences.

1. Tap the Reversing Limit Angle button until a dialog box appears.
2. Enter the new Reversing Limit Angle (5°–360°, default 5°).
3. Select the “Enter” in the dialog box to confirm the change, or “Esc” to exit.

Figure 19. Adjusting the Reversing Limit Angle

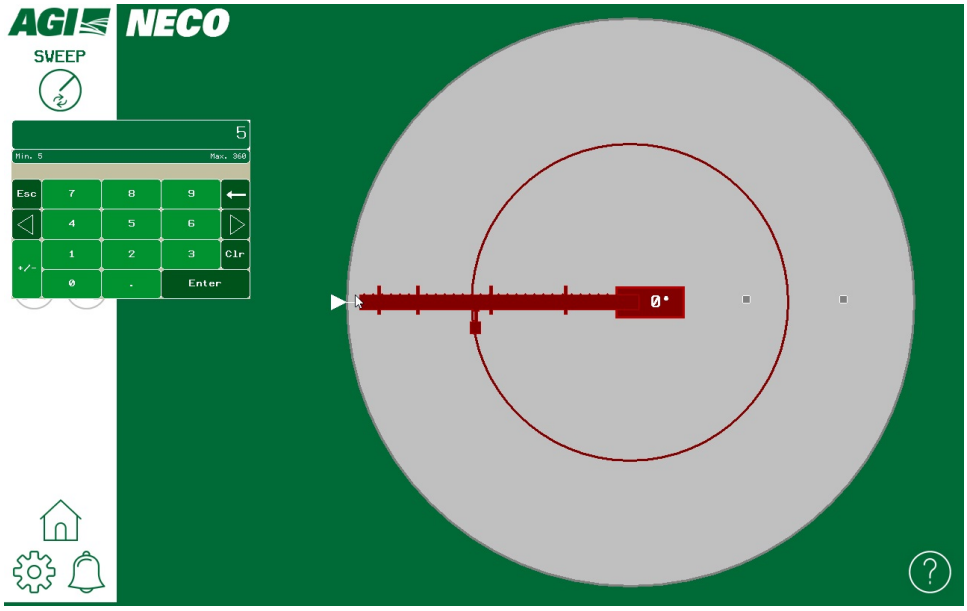


Table 14. Adjusting the Reversing Limit Angle

5 °	**Reversing Limit Angle:** Tap to adjust the Reversing Limit Angle (5° to 360°, default 5°)

Adjusting the Sweep Cycle Encoder Count

The standard sweep position encoder is a 1024 count encoder that turns five rotations for every full rotation of the sweep (5120 encoder counts). This value can be adjusted by the operator to compensate for specific situations (a replacement encoder with a different number of positions, or small inaccuracies in equipment that contribute to differences between the physical sweep and the panel sweep image over time.

1. Tap the Sweep Cycle Encoder Count button until a dialog box appears.
2. Enter the new Sweep Cycle Encoder Count (default 5120).
3. Select “Enter” in the dialog box to confirm the change, or “Esc” to exit.

Figure 20. Adjusting the Sweep Cycle Encoder Count

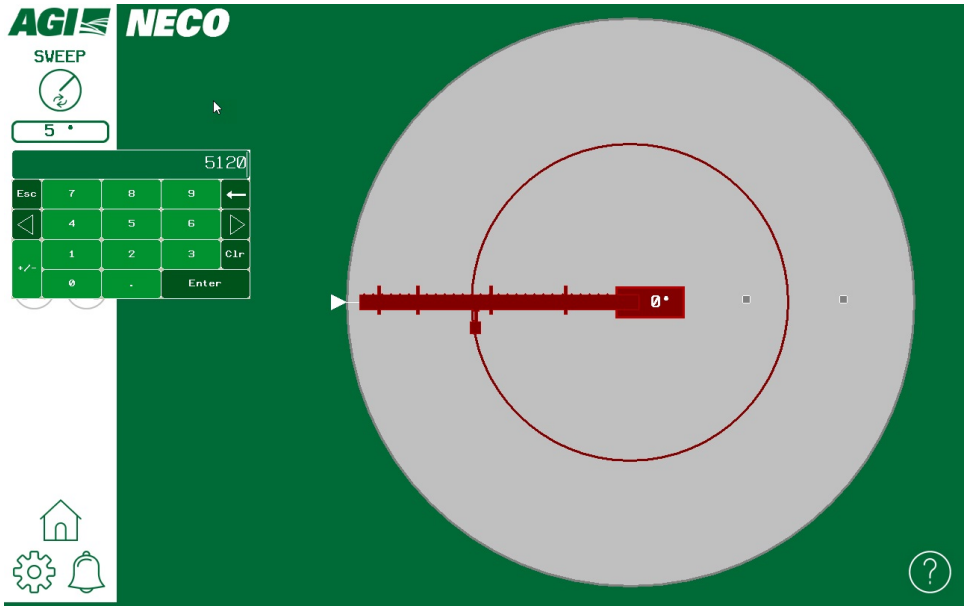


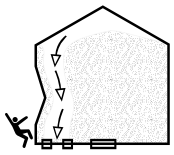
Table 15. Adjusting the Sweep Cycle Encoder Count

5120 CT	**Sweep Cycle Encoder Count:** Tap to adjust the Sweep Cycle Encoder Count (default 5120)

4.4. Bin Unload Overview

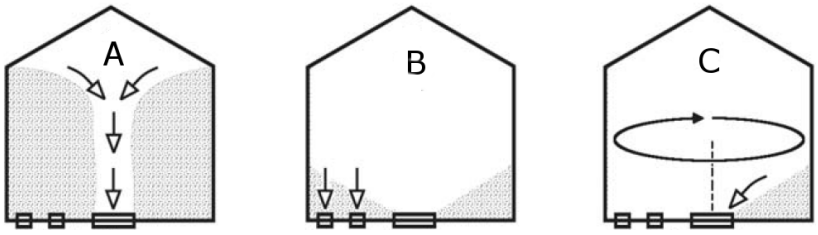
The bin unload system operates by first opening the center sump to remove 70-80% of grain by gravity (see “A” in Figure 21). Next, the intermediate sumps are opened when the center sump runs empty to free the sweep (see “B” in Figure 21). Lastly, the bin sweep is operated to remove the remaining 20-30% of grain (see “C” in Figure 21).

⚠ 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 21. Grain Bin Overall Emptying Procedure



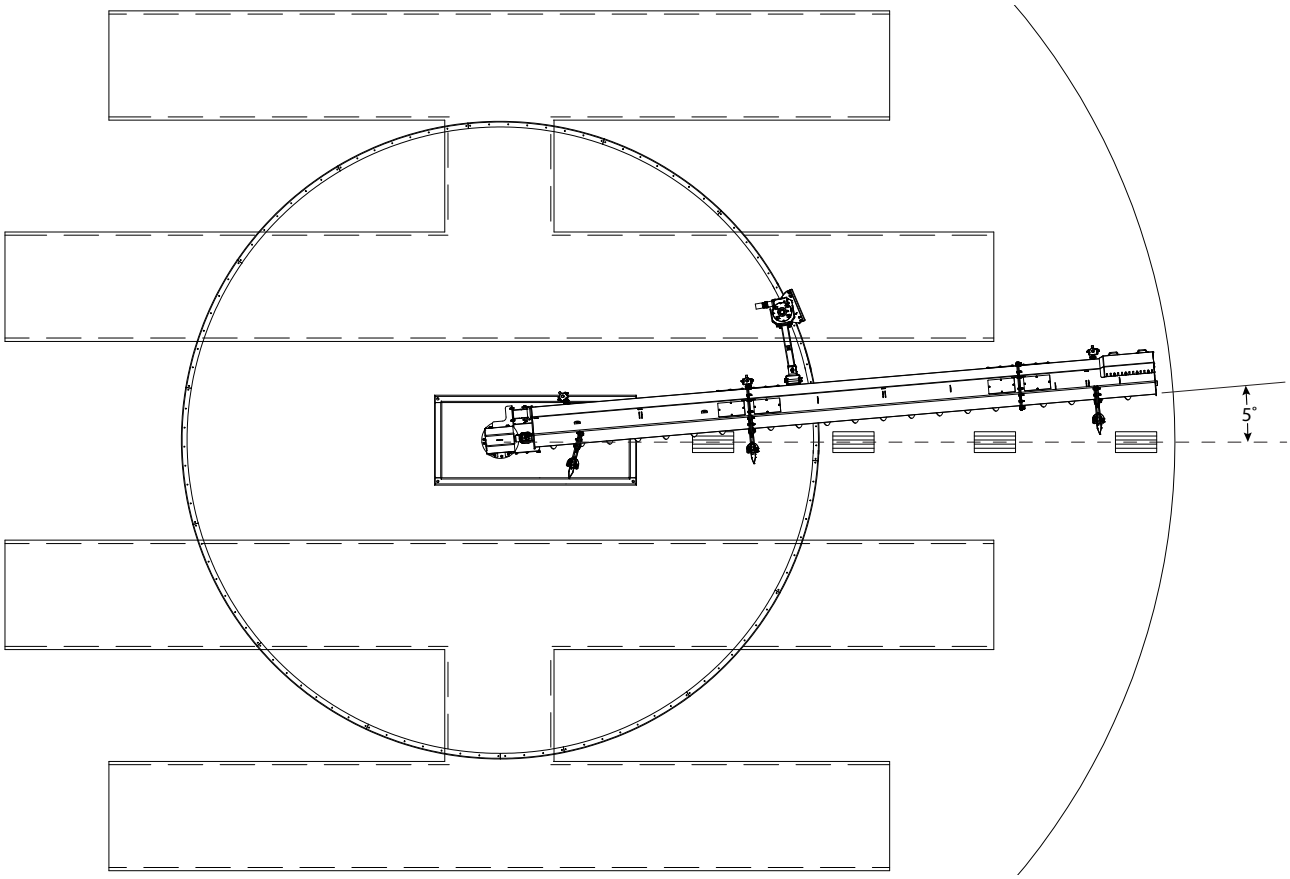
4.5. Before Filling the Bin with Grain

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.

Figure 22. Typical Park Position for Sweep



Important

Always park the sweep in the “park position” (typically slightly behind intermediate sumps with front and rear wheel sub-assemblies on solid concrete bin floor, prior to filling the bin each time).

4.6. 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. Lockout power to the sweep's electric motors and hydraulic system.
2. Close all sump gates (center, emergency-sump (if equipped), and intermediate sumps).
3. Start the underfloor auger.

   Note

   When starting for the first time, the flighting may run rough until the underfloor auger is polished.
4. Open the center sump slightly. Ensure that grain flows out of the discharge end at a constant rate.
5. Continue to open the center sump and watch for constant product flow at discharge. Do this until center sump is fully open.
6. 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. Perform a visual inspection of the sweep to ensure that operation will not cause any damage. Check that no foreign objects are in the flighting and that all hydraulic hoses are attached and secure.
2. Make sure the center sump gate is fully open.
3. Ensure that the NECO panel is in Auto local control state (see Section 4.3.3 – Setting the Local Control State (Home Screen) on page 28.)
4. Use the NECO control panel to start the sweep.
   - The sweep will move forward, sweeping grain into the centre-sump as it progresses.
   - Adjust the power limit setting to control the sweep speed.
   - The sweep will stop automatically in Park position.

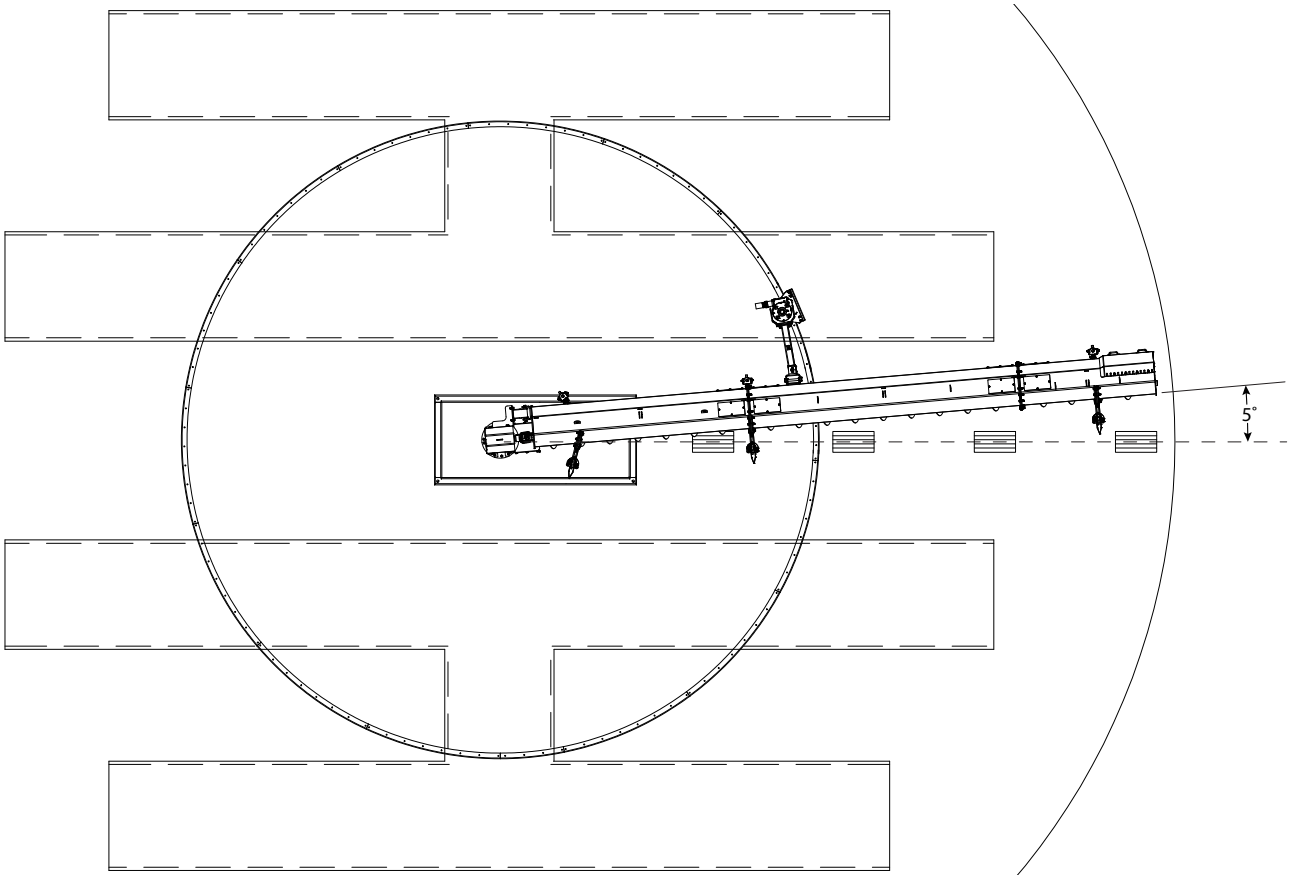
⚠ WARNING Never adjust the pressure relief valve. It is set at 1500 psi (10,300 kPa) and must remain at that setting to avoid injury or equipment damage.

If a problem with excessively slow operation of the sweep is encountered, the solution is NOT adjusting the pressure relief valve to increase the pressure. The root cause of the problem is elsewhere in the equipment system(s) and should be investigated for a solution by referring to the Troubleshooting Section.

5. When the sweep stops, verify that the sweep is in Park position.

NOTICE Failure to stop the bin sweep in the Park position could result in damage to the bin sweep, underfloor auger, and/or aeration floor.

Figure 23. Typical Park Position for Sweep



Important

Always park the sweep in the “park position” (typically slightly behind intermediate sumps with front and rear wheel sub-assemblies on solid concrete bin floor, prior to filling the bin each time).

4.7. 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.

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. Close all intermediate sump gates and center gate.
2. 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.

3. It may be necessary to tighten the drive belts slightly to handle the heavier than normal loads.
4. If guards or covers have been opened or removed, close or replace them before restarting the unit.
5. Once the problem is corrected, restart the machine.

   NOTICE **Never** attempt to start when under load. Starting under load may result in damage to the bin unload system if grain is not removed as much as possible. Such damage is considered abuse of the equipment and will not be covered under warranty.

6. 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. 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 5. – Maintenance on page 43 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.
- 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 AGI replacement parts or equivalent. Use of unauthorized parts will void warranty. If in doubt, contact AGI 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 sweep has been operated and the maintenance performed.

Daily:
Section 5.3 – Visually Inspect the Equipment on page 43
Every 250 hours:
Section 5.5 – Grease the Flighting Shaft Bearings, Universal Joint and Driveline on page 45
Every 500 – 1000 hours:
Section 5.6 – Change Oil in Center Sump Gearboxes and Track Drive Gearbox on page 48
As Required:
Section 5.10 – Grease Shaft Bearings of Center Sump Electric Motor on page 52
As Required:

5.3. Visually Inspect the Equipment

WARNING 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. Inspect hydraulic hoses and fittings for leaks and wear. Fix or replace where necessary.

5.4. Inspect Hydraulic Hoses and Fittings

➡ When equipped:

1. Pressurize the system.
2. Using a piece of cardboard or wood, run it along the length of the hose and around all fittings.

   ⚠ WARNING Escaping hydraulic fluid under pressure will cause serious injury if it penetrates the skin surface.
3. Replace the hose or tighten/replace the fitting if a leak is found. For replacement hoses, refer to Section 7. – Specifications on page 55.
4. Replace any hose that is badly cut, nicked, abraded, or is separating from the crimped end of the fitting.
5. Secure hoses to the machine.

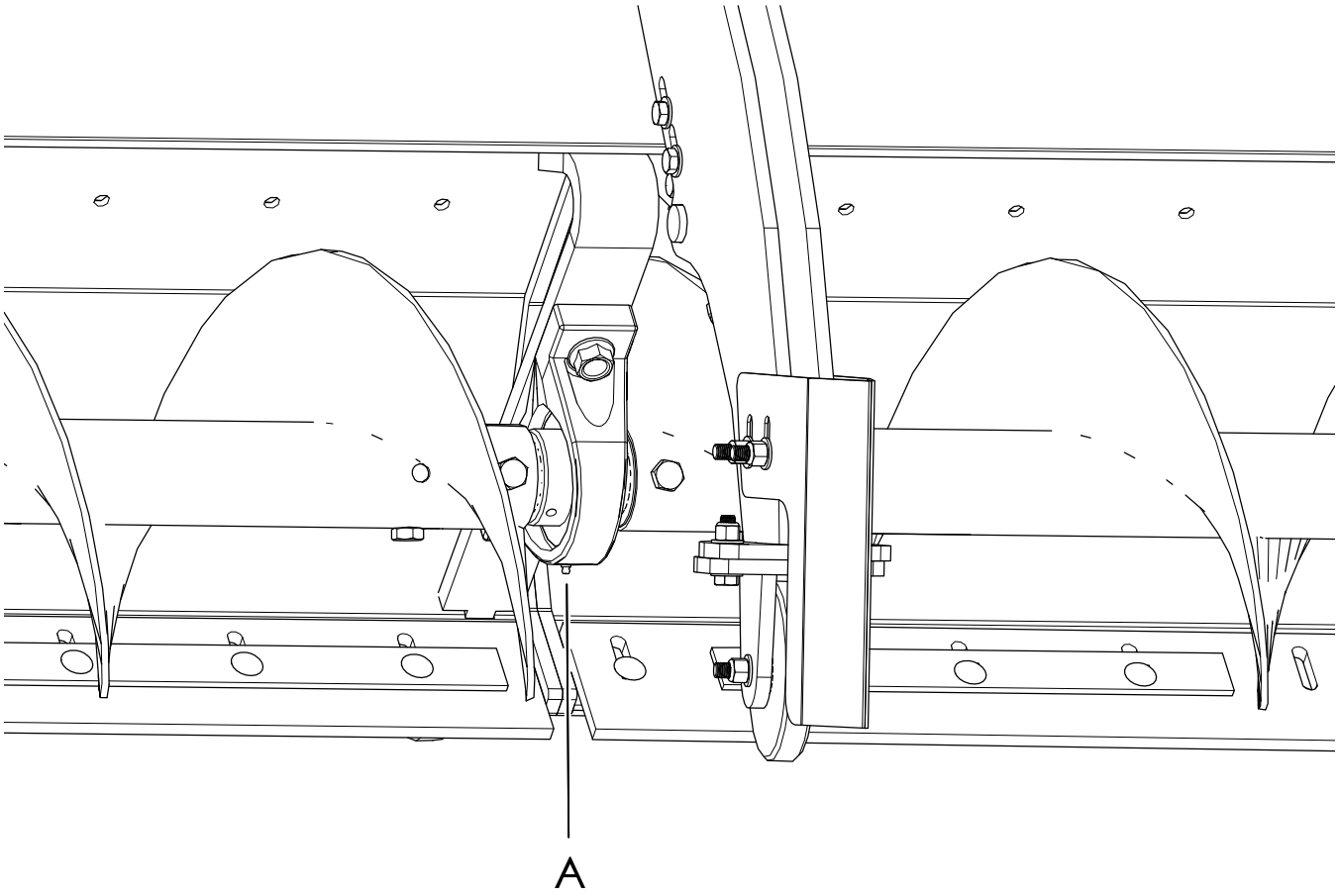
5.5. Grease the Flighting Shaft Bearings, Universal Joint and Driveline

See Appendix section for the recommended grease grade.

Grease Flighting Shaft Bearings

Grease the zerk for each pillow block bearing (see point A in Figure 24).

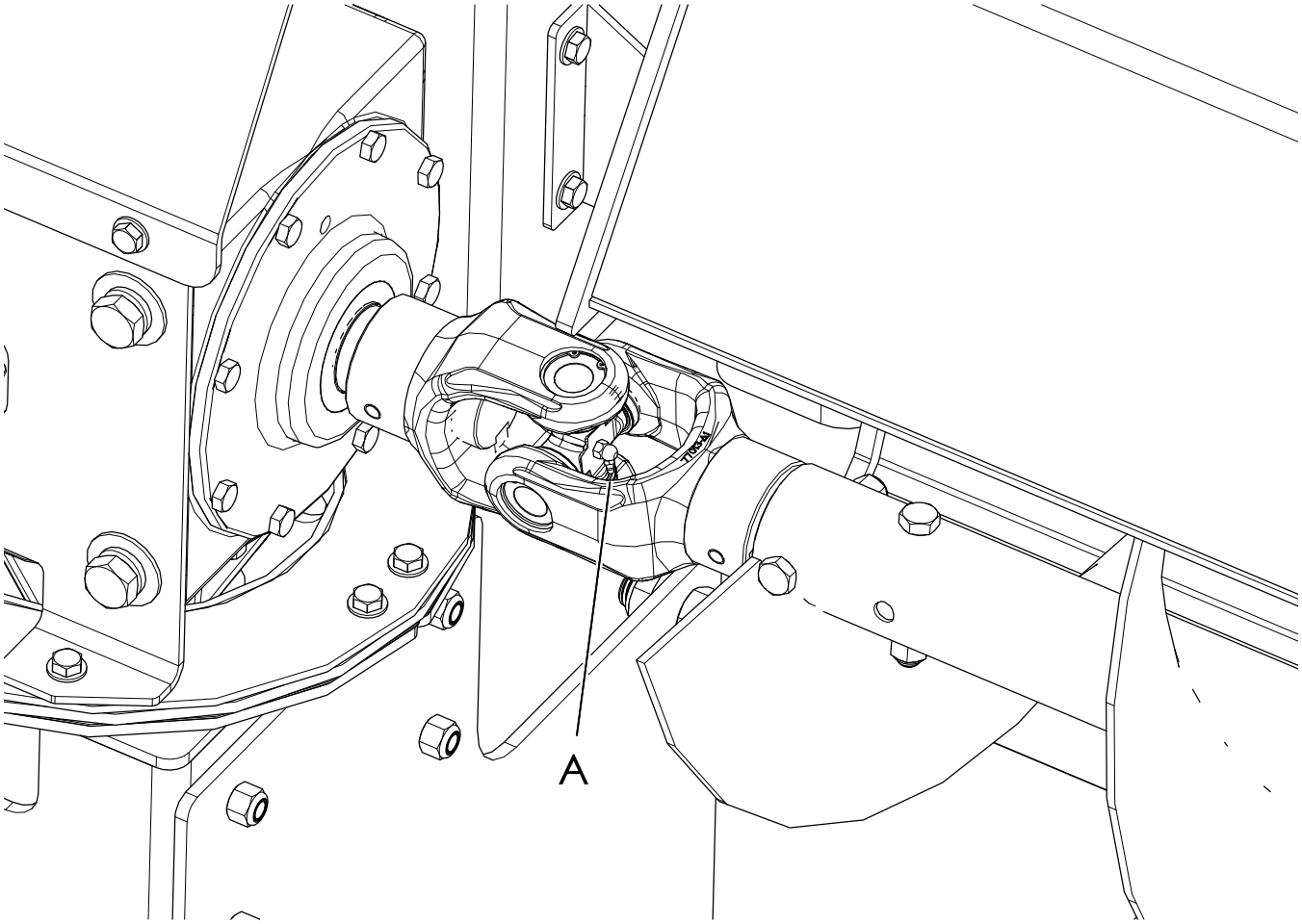
Figure 24. Grease Flighting Shaft Bearings



Grease Flighting Universal Joint

Grease the zerk on the universal joint between the upper gearbox and the sweep flighting (see point A in Figure 25).

Figure 25. Grease Flighting Universal Joint



Grease Center Sump Driveline

1. **Method Option A**

   If there is sufficient space in the tunnel underneath the center sump, the zerks described below in Step d (under Method Option B) can be greased by reaching them from this position.

2. **Method Option B**

   a. Remove the 12 bolts from the enclosure lid for the electric motor (see Figure 26 and Table 16).

   b. Obtain the lifting clevis for the motor enclosure lid.

      i. Remove the 3/4” bolt in the middle of the lid.

      ii. Fasten the clevis to the middle of the lid.

   c. Remove the motor enclosure lid.

      ⚠ CAUTION Lift the 160 lb (73 kg) motor enclosure lid by the recommended point (clevis), noted by A in 26 Grease Center Sump Driveline, page 47.

   d. As shown by detail view E, grease the 3 zerks (points B, C, D). See Figure 26.

e. Re-fasten the motor enclosure lid.

f. Remove the clevis on the top of the lid and place it in a location for safekeeping for future maintenance of the electric motor.

g. Re-fasten the 3/4” bolt from the clevis in the open bolt hole in the lid.

Figure 26. Grease Center Sump Driveline

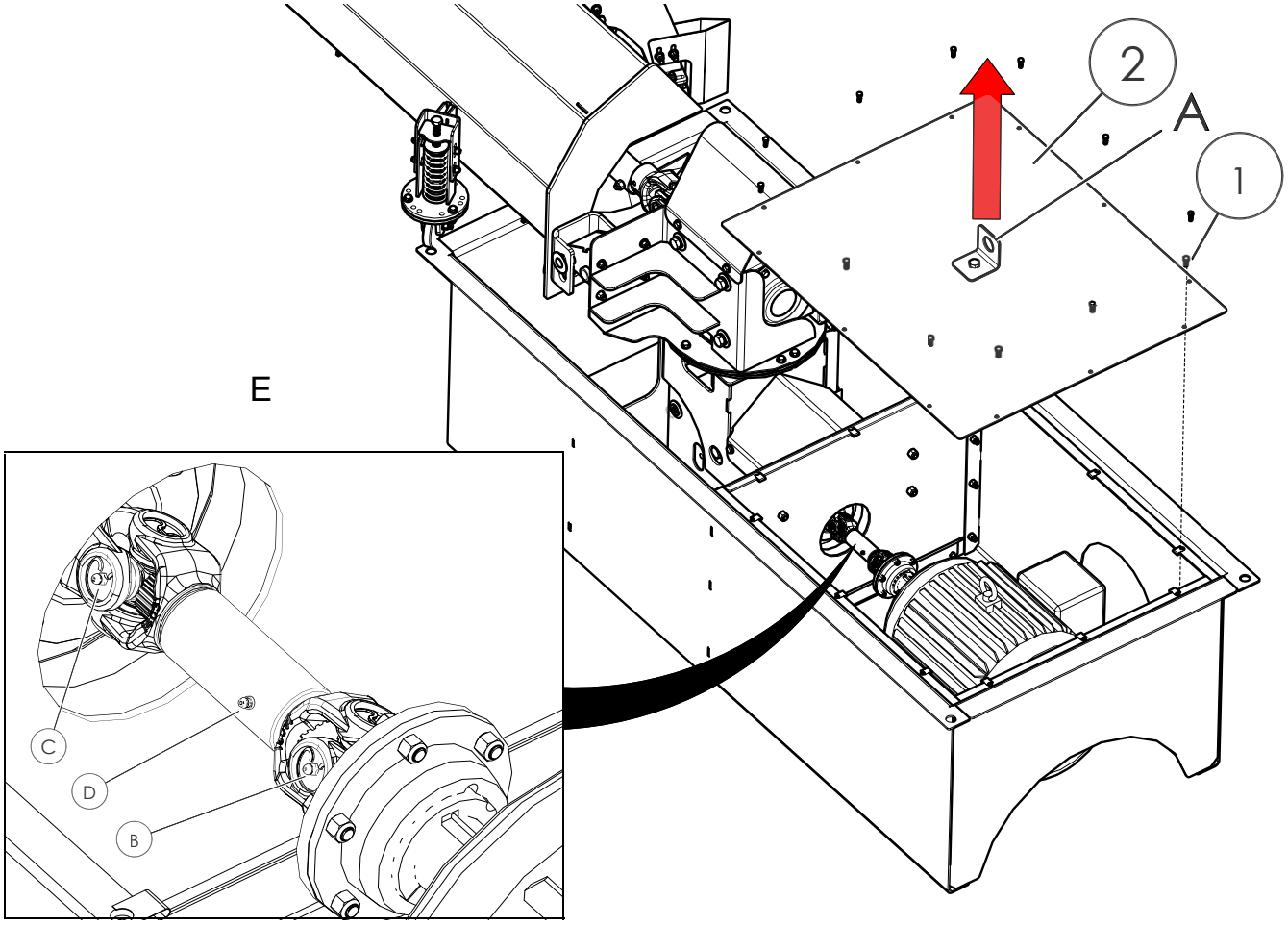


Table 16. Components for Motor Enclosure Lid

Item Number	Description
1	Hex Bolt 3/8 X 1"
2	Enclosure Lid for Electric Motor

5.6. Change Oil in Center Sump Gearboxes and Track Drive Gearbox

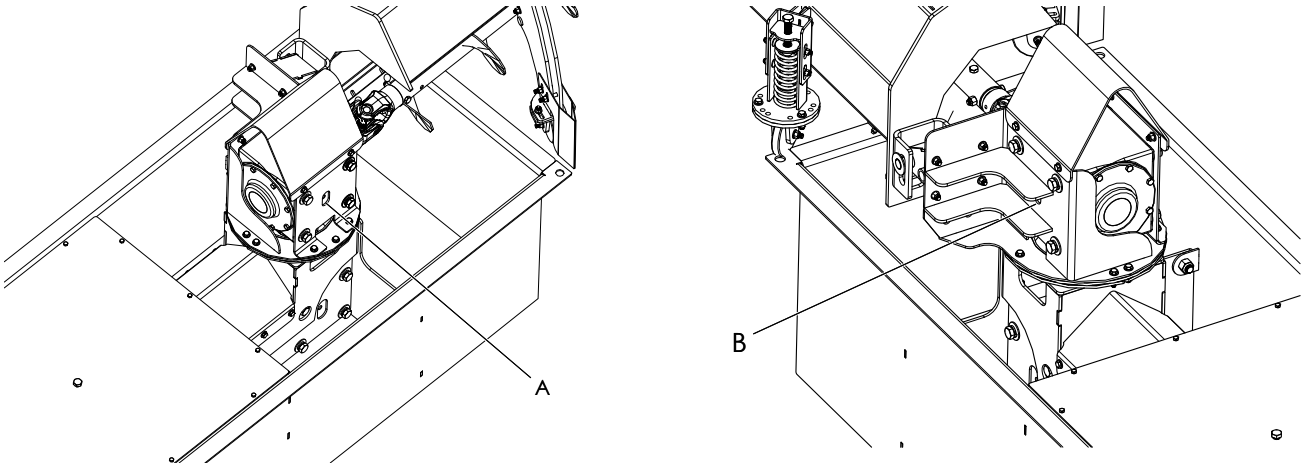
See Appendix section for the manufacturer's gearbox oil specification.

Change Oil in Center Sump Gearboxes

For each gearbox:

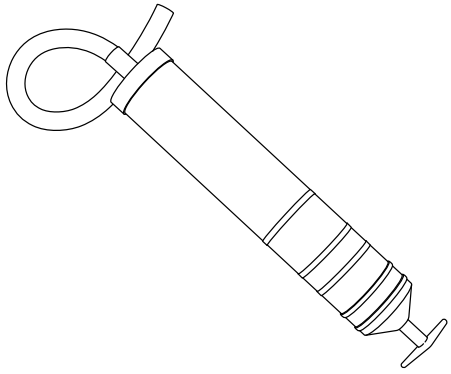
1. Remove the 1/4" NPT plugs from the two plug holes (one on each side of the gearbox; for example, A and B for upper gearbox; see Figure 27).

Figure 27. Example of Plug Locations for Center Sump Gearbox



2. Suction out the used oil with a small hose attached to a manual pump similar to that shown in Figure 28. Properly dispose of the used oil.

Figure 28. Manual Pump (with small hose attached)

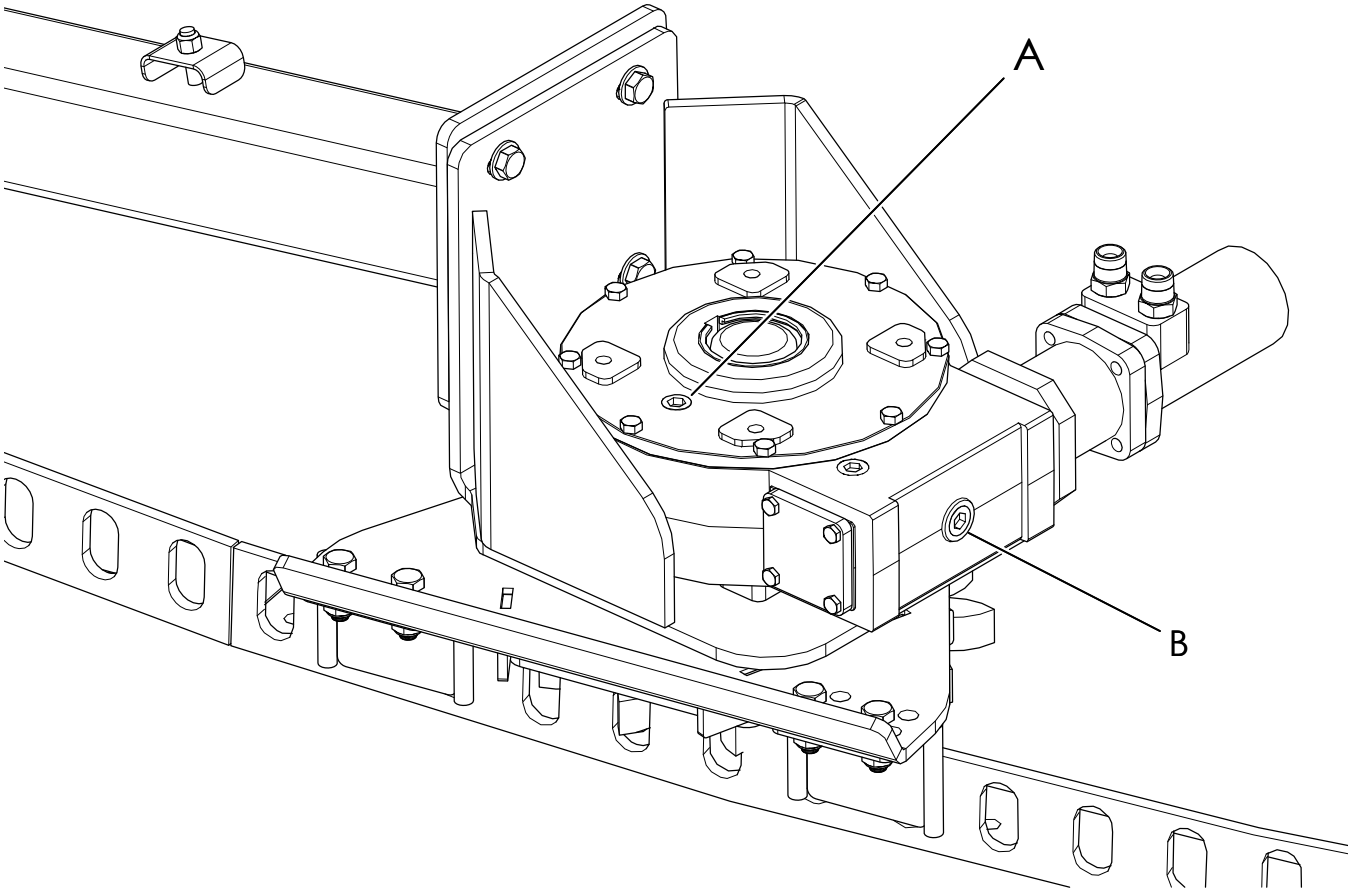


3. Pump approximately 3.5 US liquid gallons (13.2 L) of fresh oil into the gearbox using the manual pump.
4. Close the two plug holes.

Change Oil in Track Drive Gearbox

1. Remove the oil fill plug and the oil level plug shown as “A” and “B”, respectively, in Figure 29.

Figure 29. Fill and Level Plug Holes for Track Drive Gearbox



2. Suction out the old oil from both the oil fill plug hole and oil level plug hole using a small hose attached to a manual pump similar to that shown in Figure 28. Properly dispose of the used oil.
3. Pump approximately 0.38 US liquid gallons (1.4 L) of fresh oil into the gearbox through the oil fill plug hole using either the manual pump or simply a funnel, until the oil reaches the oil level plug hole.
4. Re-fasten the oil level plug and the oil fill plug.

5.7. Check Hydraulic Oil Level

1. Check the hydraulic oil level in the sight gauge (see Figure 30 and Table 17) and ensure it is at the middle level.
2. If the level is low, top up the hydraulic oil to the middle level. Do not overfill.

Important

- When adding hydraulic oil to the tank, make sure that the oil you are adding is compatible with the oil already in the tank.
- Topping up the hydraulic tank with an incompatible oil may decrease the equipment's performance, and may damage hydraulic components.

Figure 30. Hydraulic Power Supply Components for Maintenance

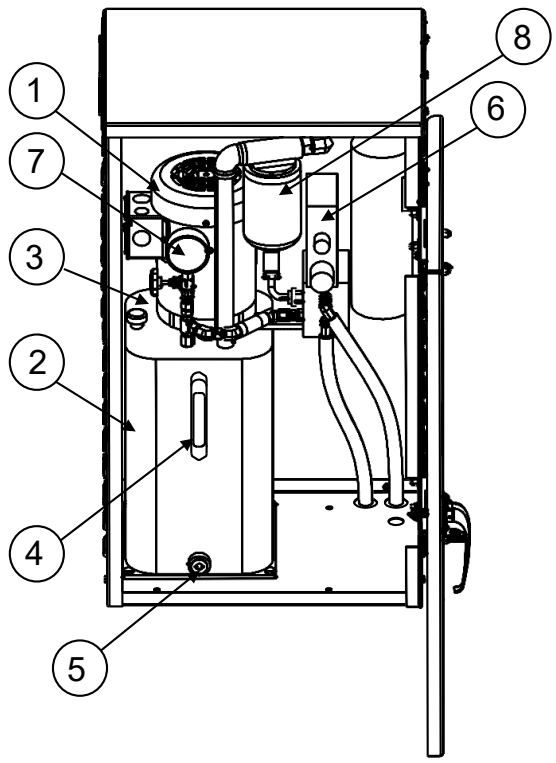


Table 17. Hydraulic Power Supply Components for Maintenance

Item Number	Description
1	Electric Motor
2	Hydraulic Oil Tank
3	Tank Cap (top of tank)
4	Sight Gauge
5	Tank Drain Plug
6	Proportional Directional Flow Control Valve

Table 17 Hydraulic Power Supply Components for Maintenance (continued)

Item Number	Description
7	Pressure Gauge
8	Hydraulic Oil Filter

5.8. Change Hydraulic Oil Filter

Filter Part Specification

- The sweep is provided with the following filter: Parker 921999
- The filter attributes are shown in Table 18.

Table 18. Hydraulic Oil Filter Attributes

Attribute	Specification
Outer Diameter	3.74”
Thread Size	3/4 – 14 NPTF
Length	5.68”
Efficiency Beta 2	50%
Efficiency Beta 1000	99.99%

Use the filter specified above, or a filter of equivalent performance and physical characteristics.

Changing Procedure

1. Remove the old oil filter (unscrew counter-clockwise, using an oil filter wrench or pliers if necessary) and properly dispose of it.
2. Replace the hydraulic oil filter with a new one. Ensure a good seal between the filter and the head by rubbing a small amount of clean hydraulic oil on the filter’s rubber seal. Install the filter by carefully aligning the threads of each part together, and then rotating the filter clockwise until a tight seal is achieved.

Changing Frequency

Change the hydraulic oil filter after the first 200 hours of operation (break-in period) in the sweep’s lifespan.

After the break-in period, change the hydraulic oil filter every 2 years or every 500 hours of operation, whichever comes first.

Replacement recommendations for equivalent filters may differ.

Important

Failure to change the hydraulic oil filter regularly will contribute to wear of hydraulic components, and may decrease the effective lifespan of the hydraulic fluid.

5.9. Inspect Hydraulic Oil Condition

1. Inspect the hydraulic oil condition by looking at the sight gauge (see and). Also, remove the tank cap and insert your own dipstick into the tank and observe the hydraulic oil condition on the dipstick.

   Note

   The lifespan of a hydraulic oil depends on the way the equipment has been operated and maintained, as well as the specifications of the oil used. Refer to the hydraulic oil manufacturer's specifications for information about oil lifespan.

2. If the hydraulic oil has exceeded its recommended number of hours of usage or if the inspection of the oil (according to the oil manufacturer's specifications) demonstrates that it has exceeded its lifespan, then the oil must be replaced according to the following steps:

   Important

   Failure to change the hydraulic oil after it has exceeded its recommended lifespan will lead to increased wear and damage of hydraulic components.

   a. Remove the tank cap.

   b. Drain the old oil by removing the plug at the bottom of the tank's vertical wall. Properly dispose of the used oil.

   c. Replace and tighten the plug.

   d. Change the hydraulic oil filter. See .

   e. Pour approximately 4.5 US liquid gallons (17.0 L) of hydraulic oil into the hydraulic tank up to the middle level in the sight gauge. See Appendix section for the manufacturer's hydraulic oil specification. Do not overfill.

   f. Replace the tank cap.

5.10. Grease Shaft Bearings of Center Sump Electric Motor

Refer to the electric motor manufacturer's manual for grease location points for the shaft bearings. Perform this greasing every 7500 hours.

5.11. Lubricant Storage and Handling

- Always follow manufacturer's guidelines for the safe and effective storage and handling of lubricants.
- Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contaminants.

6. 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 19. Sweep Related Problems

Problem	Cause	Solution
Excessive vibration, loud noise (including “squeaking”), or knocking.	Flighting bearing(s)/seal(s) worn out.	Replace affected flighting bearing(s).
	Driveline misalignment between electric motor and lower gearbox.	Adjust “torque stop bolt” on driveline (adjusts lower gearbox angle for proper alignment).
	Damaged/bent flighting or inadequate flighting clearances.	Bend flighting back to original shape. Ensure no tips are catching. If this doesn’t work, replace flighting.
	Loose set screw(s) on pillow block bearing(s), resulting in flighting moving toward bin wall.	Reset flighting clearance. Re-tighten set screw(s).
Sweep flighting will not function.	Obstruction in sweep flighting.	Remove obstruction.
	Bolts (5/8”) sheared on coupling shaft between lower and upper gearboxes.	Replace bolts.
	Universal joint key(s) sheared.	Replace key(s).
	Electric motor malfunctioning.	Check electrical systems.
Sweep advancing excessively slowly around bin.	Hydraulic oil leak.	Check hydraulic system hose lines and connections for leaks. Repair all defects and tighten connections. Add hydraulic oil to proper level. Slowly move sweep 3’ (0.9 m) forward and 3’ (0.9 m) in reverse until all air is displaced from hydraulic system (sweep responds properly to hydraulic controls). Double-check proper oil level maintained.
	Low hydraulic oil level.	
	Air trapped in the hydraulic hoses.	
	Grain condition wet, hard-packed, and/or moldy.	Sweep will perform poorly if grain is not in proper condition.

Table 19 Sweep Related Problems (continued)

Problem	Cause	Solution
Sweep stops advancing around bin.	Obstruction in sweep.	Remove obstruction.
	Toothed wheel binding on rock lodged in angle drive track slot.	
	Hydraulic oil leak.	Double-check hydraulic system hose lines and connections for leaks. Repair all defects and tighten connections. Add hydraulic oil if necessary.
	Malfunction of electric motor in hydraulic power supply.	Check electrical systems.
Poor grain movement by sweep flighting.	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.
Grain is flowing over backboard of sweep	Grain is avalanching faster than sweep flighting can remove it.	A second revolution around bin may be necessary.
		Slow down the sweep advance speed (flow control setting).
Poor grain removal by center sump.	Obstruction caught in center sump.	Remove obstruction.

7. Specifications

7.1. Overhead Layouts for Sweep Models

Note

- The double-H aeration pattern in Figure 31 to Figure 38 is shown as an example. Your aeration pattern may differ.
- In each model in Figure 31 to Figure 38, one size of center sump is shown (either Standard or Extended) as an example. Your particular center sump may have the other size (either Extended or Standard).

Figure 31. Overhead Layout for BU-16-48 and BU-16-48EX Models

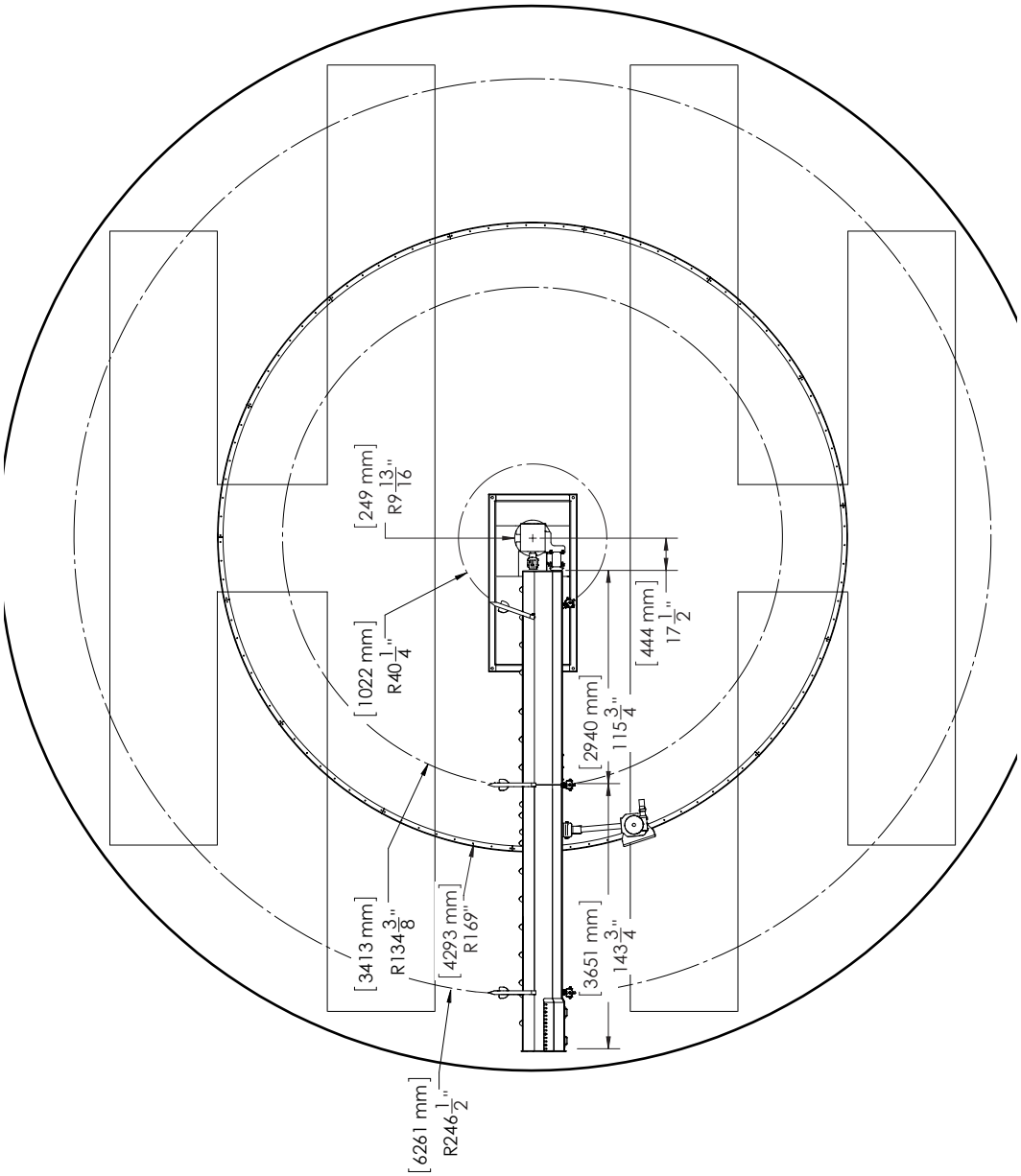


Figure 32. Overhead Layout for BU-16-54 and BU-16-54EX Models

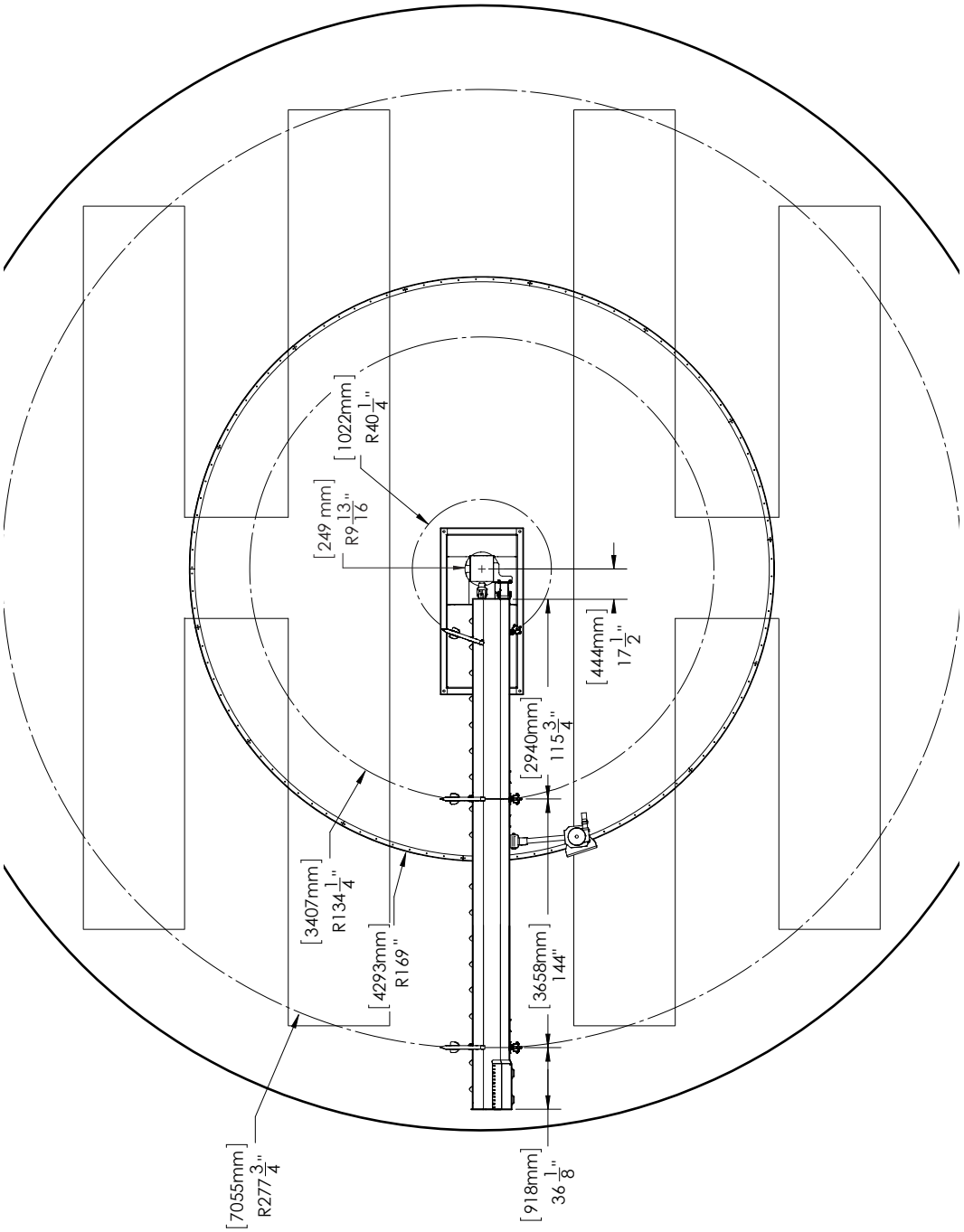


Figure 33. Overhead Layout for BU-16-60 and BU-16-60EX Models

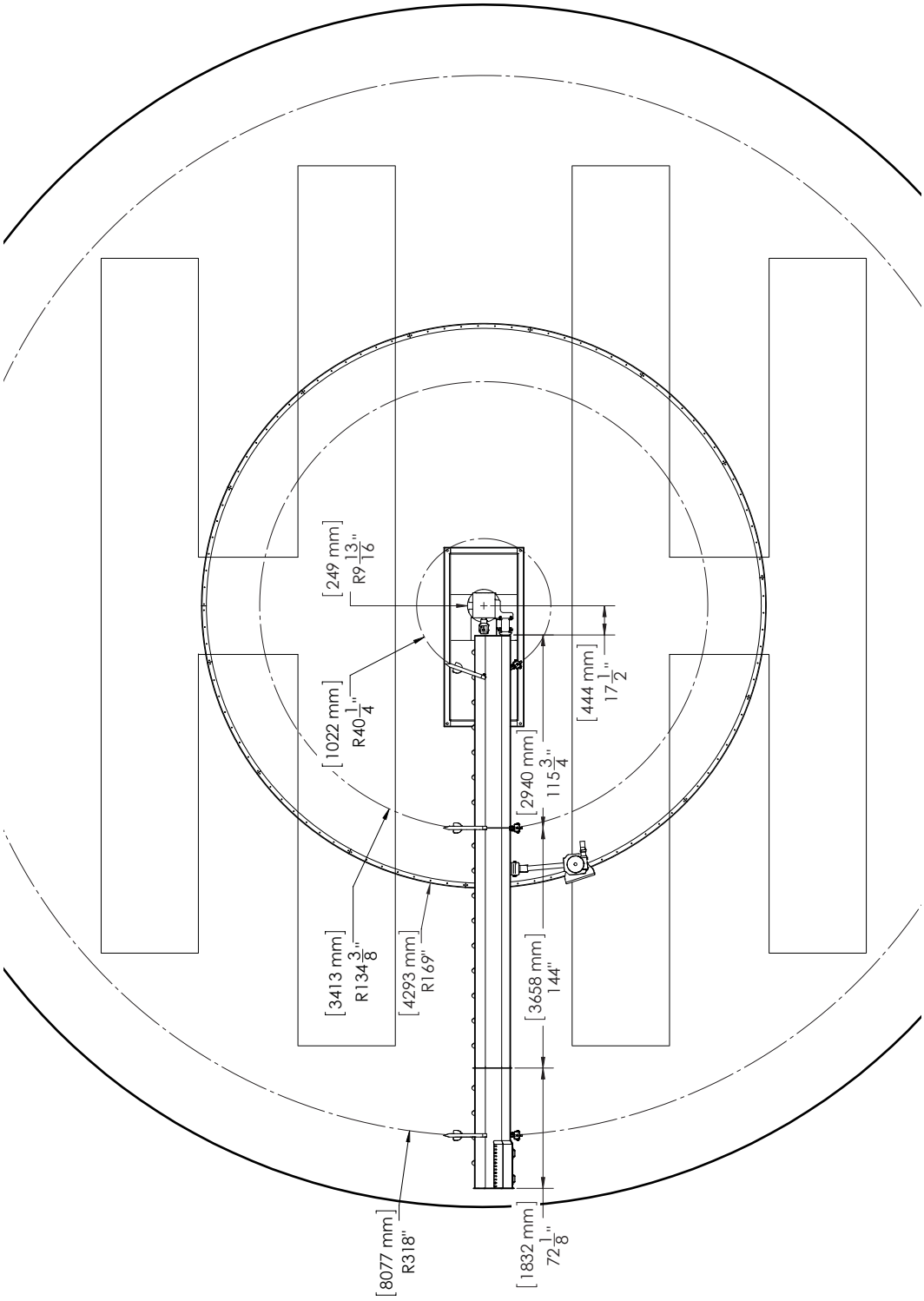


Figure 34. Overhead Layout for BU-16-66 and BU-16-66EX Models

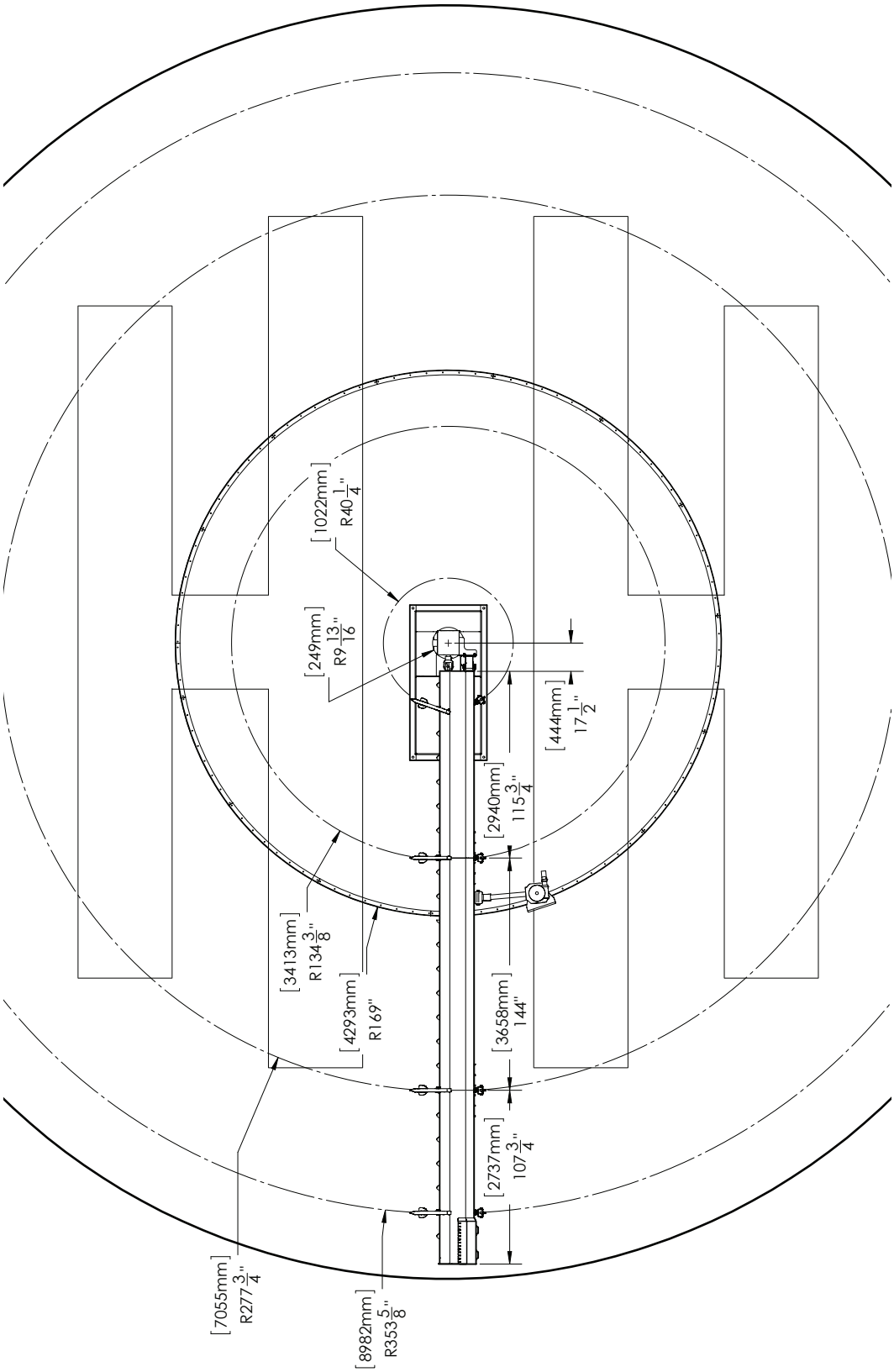


Figure 35. Overhead Layout for BU-16-72 and BU-16-72EX Models

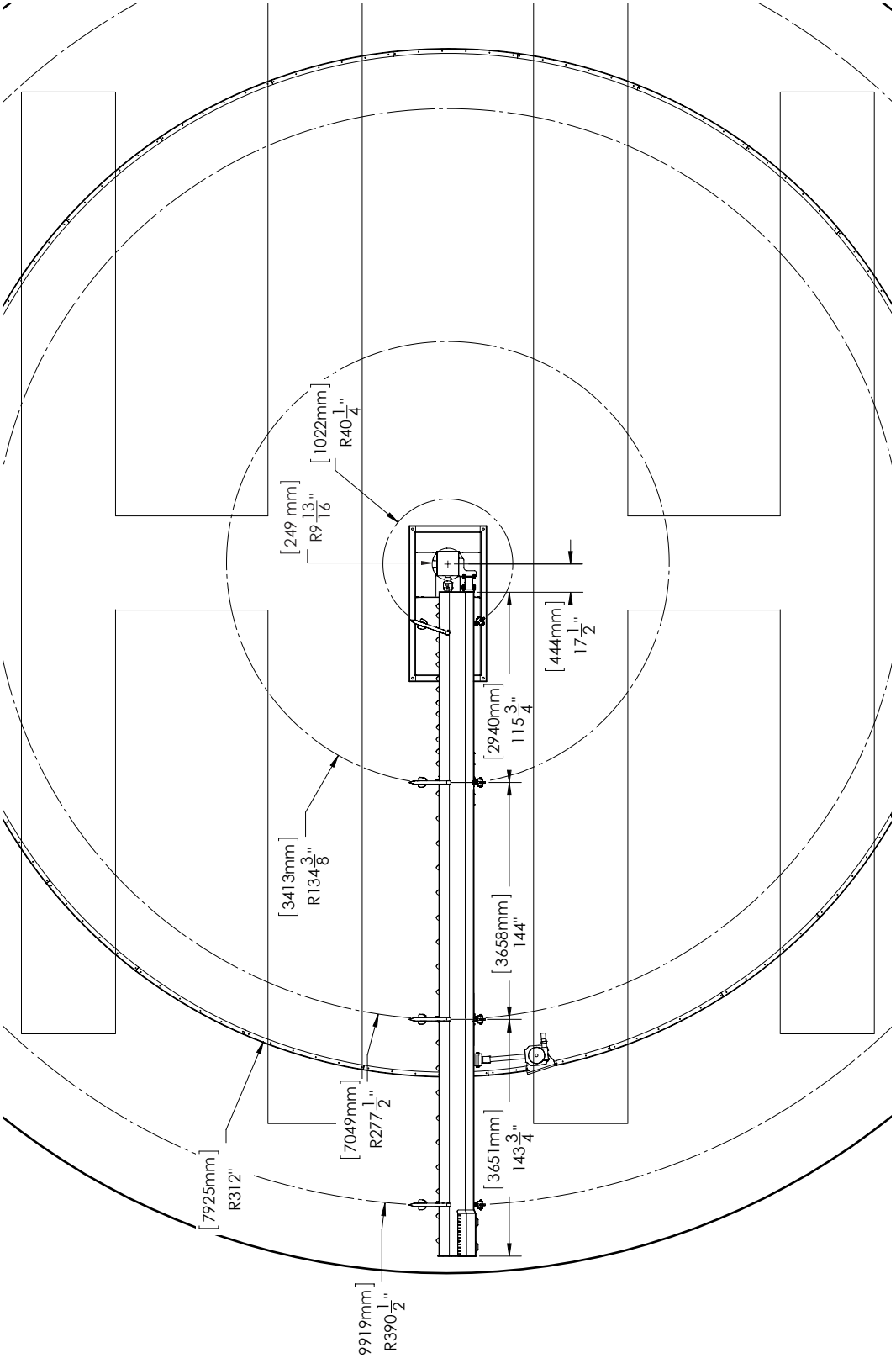


Figure 36. Overhead Layout for BU-16-75 and BU-16-75EX Models

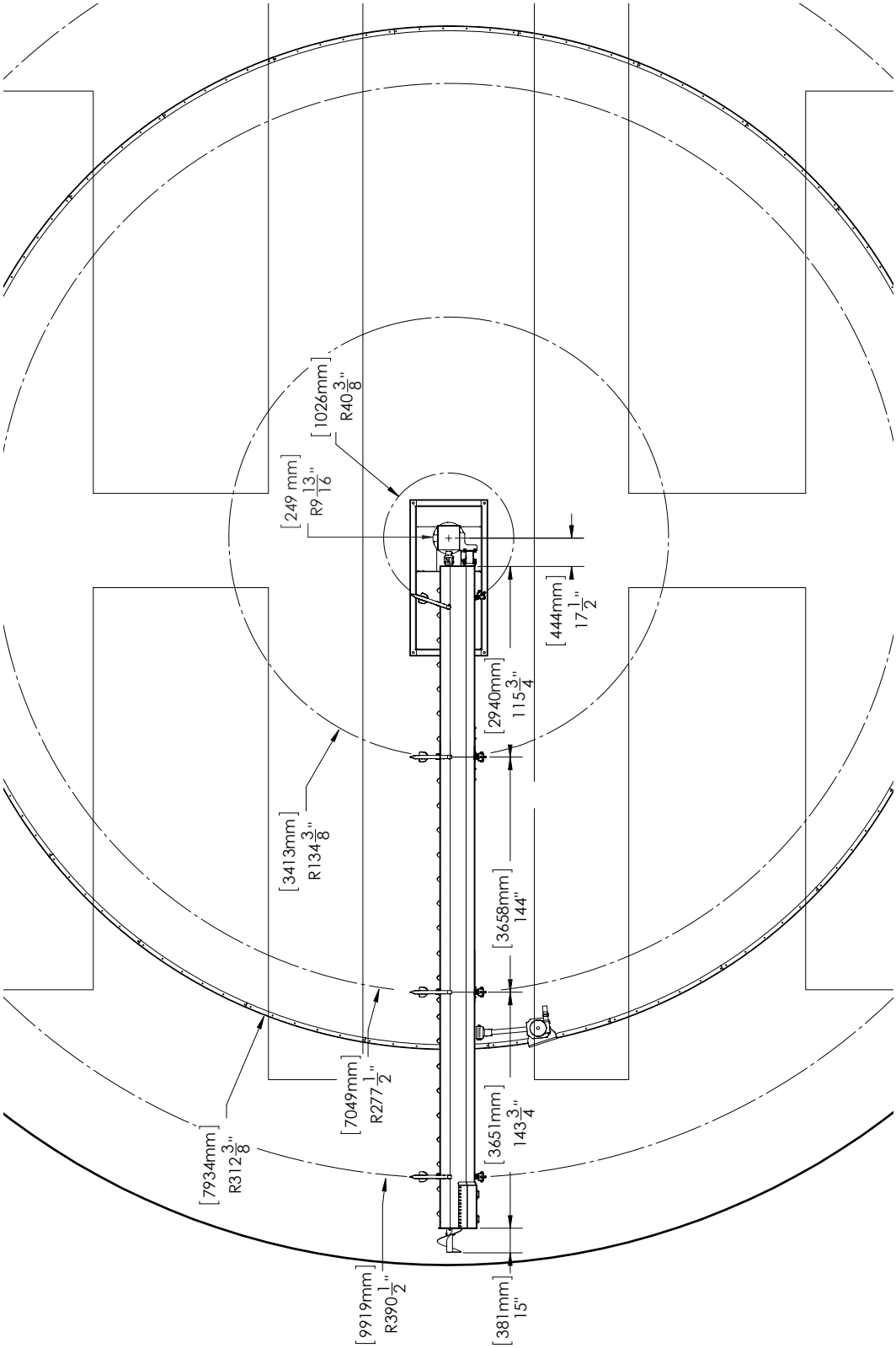


Figure 37. Overhead Layout for BU-16-90 and BU-16-90EX Models

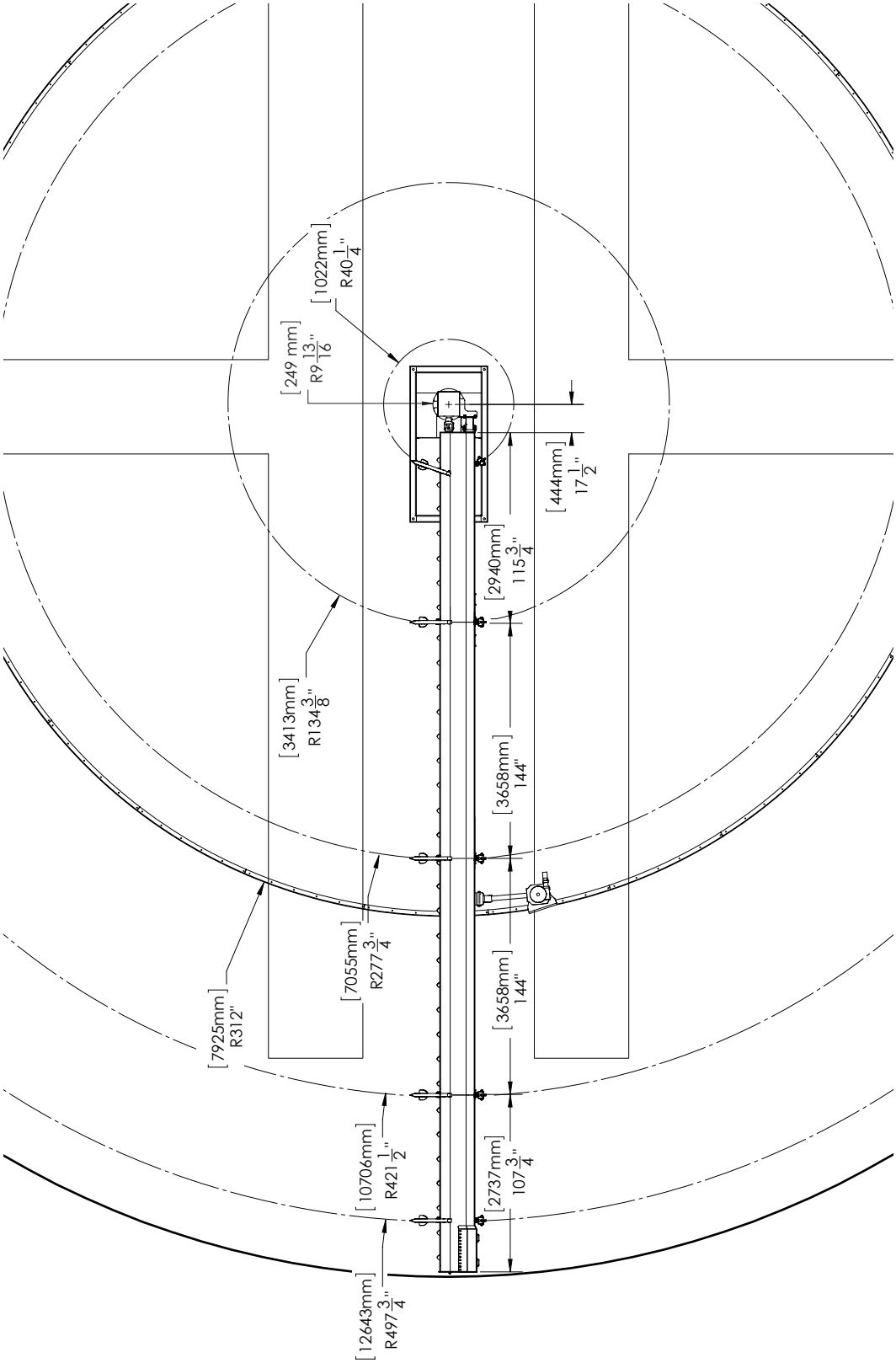
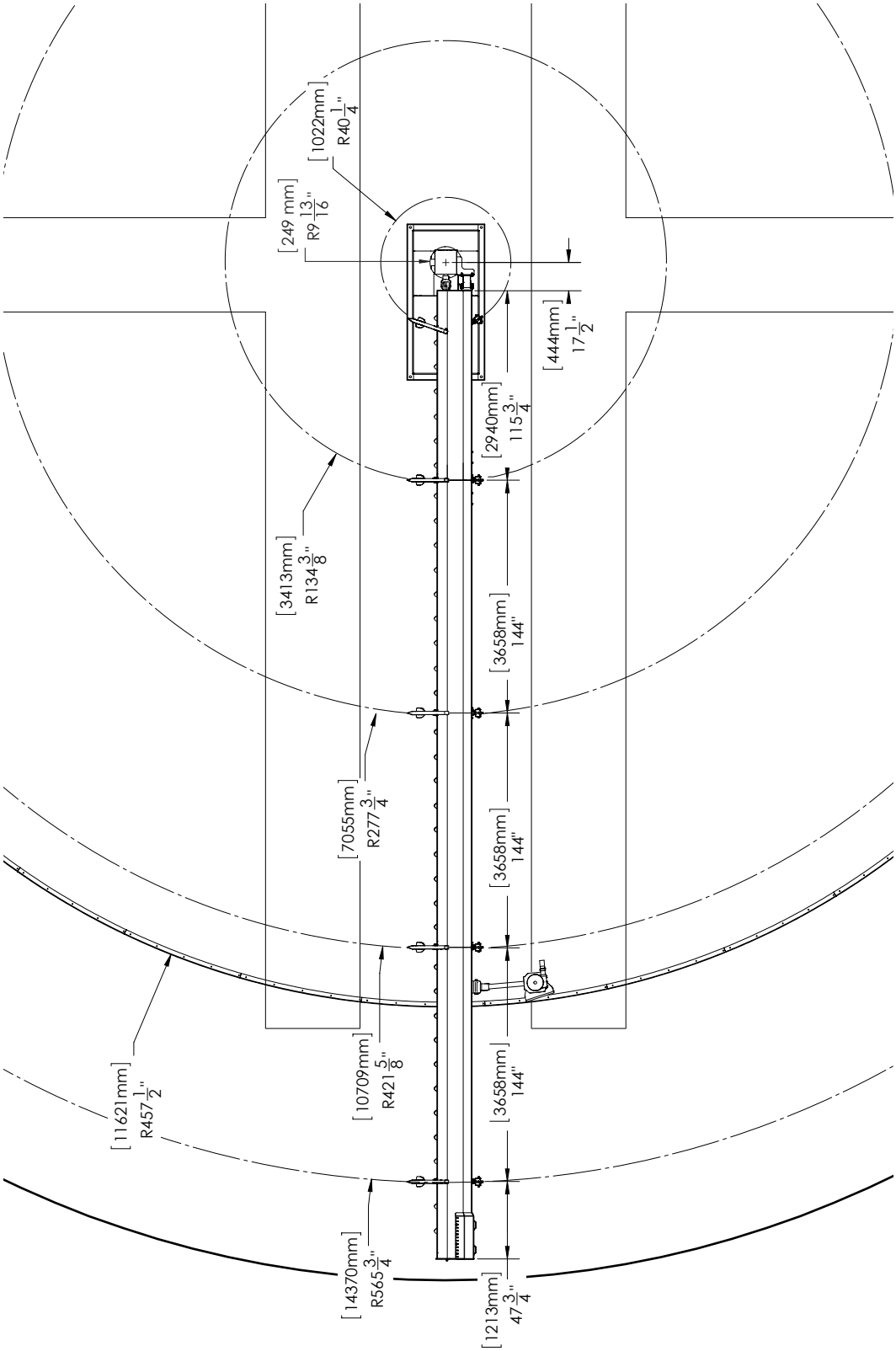


Figure 38. Overhead Layout for BU-16-105 and BU-16-105EX Models



8. Appendix

8.1. Fluids and Lubricants

Gearbox Oil (for both center sump gearboxes and track drive gearbox)

Use food-grade ISO 220 gearbox oil.

Hydraulic Fluid

Use food-grade ISO 32 synthetic hydraulic oil.

Grease

Use ISO viscosity grade (VG) 100 grease.

8.2. Bolt Torque

Table 20 gives the correct torque values for various hardware. Tighten all bolts to the torque specified, unless otherwise noted. Check tightness periodically, using Table 20 as a guide. Replace the hardware with the same strength bolt, contact AGI if you are unsure.

Table 20. Recommended Bolt Torque[1]

Size	Dry or Lubricated	Threads per inch (Course/ Fine)	Area of Bolt (sq in.)		Recommended Torque (ft-lb)							
					Grade 2		Grade 5		Grade 8		8.8 S/S	
			Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine
1/4"	Dry	20/28	0.0318	0.0364	5.5	6.3	8	10	12	14	6.3	7.8
	Lubricated				6.3	4.7	6.3	7.2	9	10	-	-
5/16"	Dry	18/24	0.0524	0.058	11	12	17	19	24	27	11	11.8
	Lubricated				8	9	13	14	18	20	-	-
3/8"	Dry	16/24	0.0775	0.0878	20	23	30	35	45	50	20	22
	Lubricated				15	17	23	25	35	35	-	-
7/16"	Dry	14/20	0.1063	0.1187	32	36	50	55	70	80	31	33
	Lubricated				24	27	35	40	50	80	-	-
1/2"	Dry	13/20	0.1419	0.1599	50	55	75	85	110	120	43	45
	Lubricated				35	40	55	65	80	90	-	-
9/16"	Dry	12/18	0.182	0.203	70	80	110	120	150	170	57	63
	Lubricated				55	60	80	90	110	130	-	-
5/8"	Dry	11/18	0.226	0.256	100	110	150	170	210	240	93	104
	Lubricated				75	85	110	130	160	180	-	-
3/4"	Dry	10/16	0.334	0.373	175	200	260	300	380	420	128	124
	Lubricated				130	140	200	220	280	310	-	-
7/8"	Dry	9/14	0.462	0.508	170	180	430	470	600	670	194	193
	Lubricated				125	140	320	350	180	180	-	-
1"	Dry	8/14	0.606	0.679	250	280	640	720	910	1020	287	289
	Lubricated				190	210	480	540	680	760	-	-
1-1/8"	Dry	7/12	0.763	0.856	350	400	790	890	1290	1440	288	290
	Lubricated				270	300	590	670	970	1080	-	-
1-1/4"	Dry	7/12	0.989	1.073	500	550	1120	1240	1820	2010	289	291
	Lubricated				380	420	840	930	1360	1510	-	-
1-1/2"	Dry	6/12	1.405	1.581	870	960	1950	2200	3160	3560	-	-
	Lubricated				650	730	1460	1640	2370	2670	-	-

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%.

8.3. Certifications

EC Declaration of Conformity

MANUFACTURER: AGI Clay Center
514 W. Crawford Street, Clay Center, Kansas, 67432 USA
Toll Free: 1- 800-523-6993 Phone: 1-785-632-2161 Fax: 1-785-632-5964
website: www.hutchinson-mayrath.com

AGI Clay Center is a Division of Ag Growth International Inc.
198 Commerce Drive, Winnipeg, Manitoba, R3P 0Z6
Phone: 1-204-489-1855 Fax: 1-204-488-6929
website: www.aggrowth.com

AUTHORIZED REPRESENTATIVE: Managing Director, AGI-PTM, Via Mario Tognato
10-35042 Este (PD), Italy Phone: +39 0429 600973

Authorized Representative: Contact in the European Community for information about AGI product compliance.

PRODUCT DESCRIPTION:

Description	For Bin Model	For Bin Diameter	
Commercial Bin Sweep	48 FT, 54 FT, 60 FT, 66 FT, 72 FT, 75 FT, 90 FT, 105 FT	47’9”, 53’9”, 59’8”, 65’6”, 71’7”, 74’7”, 89’6”, 104’5”	14.55m, 16.37m, 18.19m, 19.96m, 21.83m, 22.74m, 27.29m, 31.83m

APPLICABLE EUROPEAN DIRECTIVES AND STANDARDS:

Applicable Directives	Applicable Standards	Certification Method
Machinery Directive 2006/42/EC	EN ISO 12100, EN ISO 4413, ISO 3600, ISO 11684	Self Certified, per Article 12 of the Directive
ATEX Directive 94/9/EC	EN 1127-1, EN 13463-1	Self Certified, per Article 8 of the Directive

ATEX PRODUCT MARKING: CE Ex II 3 D T113° C

The product described in this Declaration of Conformity complies with the Applicable European Directives and relevant sections of the Applicable International Standards. A Technical Construction File is available for inspection by designated bodies.

8.4. End-of-Life Disposal and Recycling

After the equipment has surpassed its lifetime of operational usefulness, it should be disassembled into its base materials and properly disposed of. Disassembly should be performed with adequate tools and in accordance with safe work practices, that are consistent with the assembly procedure for this product (including safe lifting practices for heavy components). Once disassembly is complete, divide and sort the base materials into their respective categories. For each base material category, deliver that material to a well-recognized recycling facility or collection organization who knows how to correctly handle that material. Environmental sustainability is everyone’s responsibility.

9. 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 one (1) year 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 warrantied 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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Printed in USA

If you have any comments or questions on this manual, or find an error, email us at comments@aggrowth.com.
Please include the part number listed on the cover page in your message.