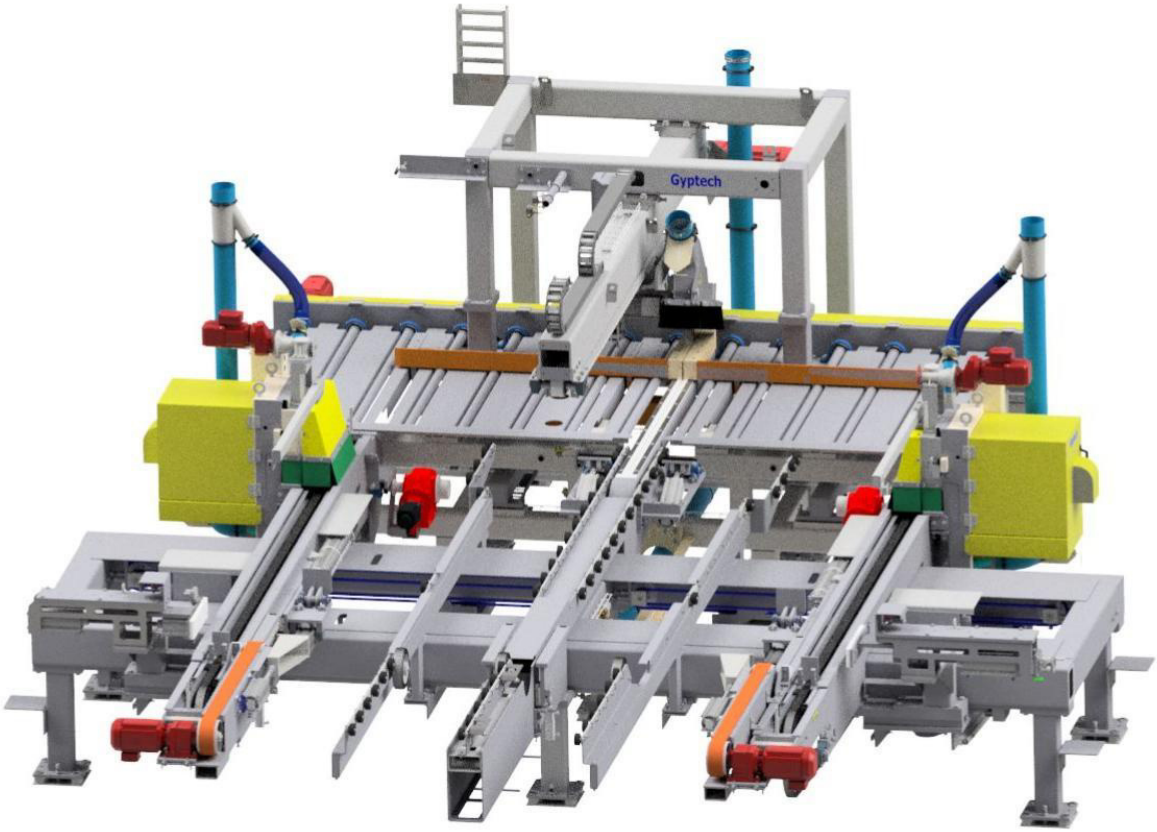
Finishing Saw

Maintenance Manual



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Introduction

This manual contains **Original Instructions** written to provide detailed technical information to assist in the maintenance of the Finishing Saw. For information regarding normal operation please refer to the Area Operator's Manual. Maintenance should only be performed by qualified, trained personnel.

TABLE OF CONTENTS

1 SAFETY OVERVIEW

Never put yourself at risk.

Many pieces of equipment have the potential to cause serious injury or even death. Be sure to understand the safety concerns related to a piece of equipment before undertaking or performing any maintenance or clean out procedure. Work with your supervisors to address any safety concerns prior to undertaking work.

Warning:

ALWAYS isolate, dissipate and lock out all energy sources before accessing the equipment. As with many types of equipment, parts of this machine may start moving as soon as the pneumatic circuits are pressurized or electrical connections are energized, which may result in injury to personnel or damage to the machine.

Section 2 of this manual provides detailed descriptions of the components of the Finishing Saw and how each fit into the overall production line. Having a thorough understanding of the equipment function is crucial to the safe operation. It is also important to know the demarcation of the lockout zones.

1.1 Set-Up Safety

Avoid locating equipment in any environment for which it was not designed, and which may create a dangerous operating condition such as an explosive atmosphere (i.e. gas, dust) or high moisture.

Avoid the use of unauthorized or substitute parts and materials in servicing the equipment. Substitute parts or materials could produce a hazardous operating condition.

Use only materials of adequate size and strength to suit the flows and pressures which will be present in the operating system. Use safety factors in selecting materials for strength to allow for shock and over-pressure conditions should they occur.

1.2 Start-up Safety

Ensure all pneumatic and electrical connections which may have been removed, replaced, or disconnected during an equipment shutdown have been reconnected securely before starting any equipment.

Return all valves (manual and control system operated) and movable machine members which may have been changed from their normal start-up condition during shutdown back to their normal start-up condition before starting any equipment.

Ensure that all personnel, product, etc., are clear of machinery prior to starting any equipment.

Caution should be taken around air cylinders when reapplying pressurized air to the Finishing Saw. Unexpected movement of the cylinders during re-energizing can cause personal injury.

1.3 During Operation

Maintain and keep in place all equipment guards.

Do not wear loose clothing or jewelry which could get caught in moving parts.

Do not reach into or climb on the equipment for any reason while the power is on. If it is necessary to reach into or climb on the machine it must only be done after proper lock-out procedures have been followed.

Stay well clear of the Finishing Saw when the length adjustment is running.

1.4 Shutdown Safety and Maintenance

Shut down and relieve pressure from all pressurized accumulators, actuators, and lines before removing, tearing down, or performing maintenance on any remotely located actuators, hoses, filters, valves, piping, etc.

Before removing or performing maintenance on any pneumatic system components that have an electrical interface (solenoid valve, switches, electric motors, etc.) DISCONNECT ELECTRICAL POWER.

Before removing or performing maintenance on Saw Blade Assemblies DISCONNECT ELECTRICAL POWER and ensure that Rotating Blades have come to a complete stop. Blade assemblies do not have brakes so they will continue to rotate after power has been disconnected due to their momentum.

Use caution when walking on top of raised machine surfaces due to trip and fall hazards.

Warning:

When performing any maintenance work always lockout all sources of energy (electrical, pneumatic, mechanical, electromagnetic, chemical, thermal, hydraulic, etc.).

1.5 General Safety

Refer to section **General Safety** in the Safety System manual

2 Finishing Saw Overview and Operation

The Finishing Saw is engineered to cut boards to desired lengths. The Finishing Saw system is comprised of two main sections; the End Trim and the Center Saw (if equipped). The purpose of the End Trim Section is to create a smooth finished cut on the ends of the board. The purpose of the Center Saw Section is to cut the board into two equal length pieces. Both sections of the Finishing Saw are composed of several devices to ensure the board stack is cut square and to an accurate length.

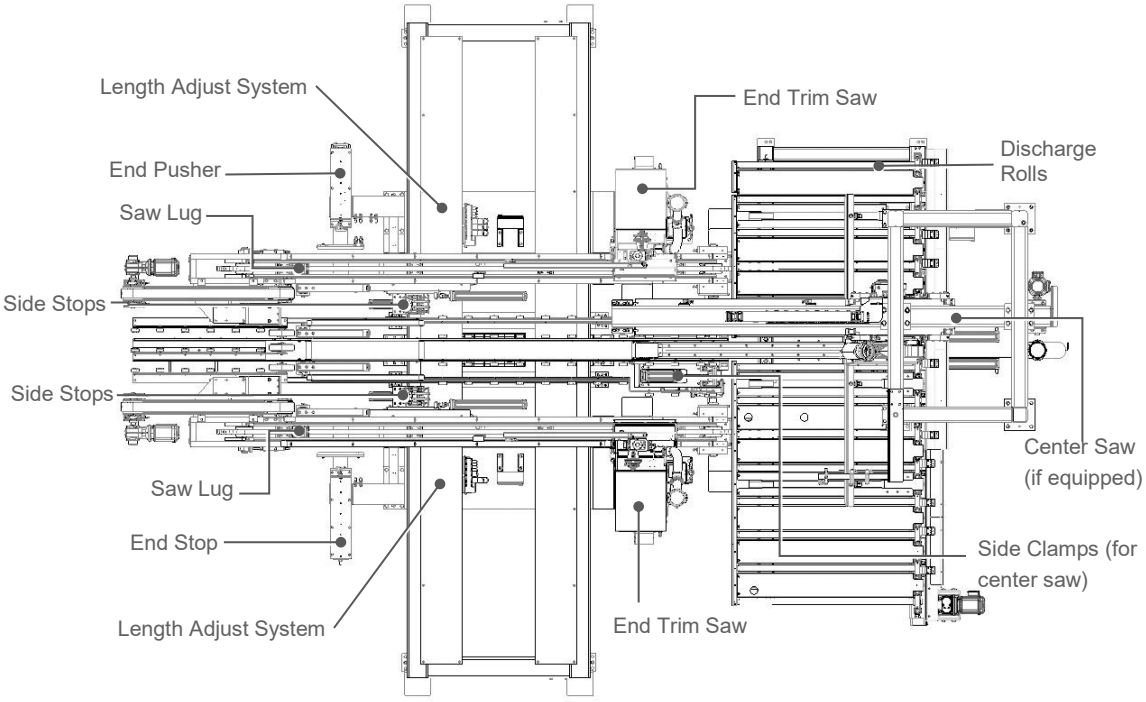

Figure 1: Part Identification (Top View) (this is a representative drawing, some equipment models may vary in appearance)

2.1 Major Components

2.1.1 End Stop & End Pusher

The End Stop is used to position the board in the length direction prior to entering the end trim saws. The end stop cylinder has higher operating pressure than the end pusher cylinder. When the end stop and end pusher cylinders even a board stack the end stop cylinder will extend full stroke while the end pusher cylinder will not. Length wise position of the board stack is defined by the extended position of the end stop.

Position of the End Stop Face is controlled by the Length Adjust Drive. To cut more, or less, off each end of the board stack manually adjust the position of the End Stop Face with the End Stop Position Adjustment.

To increase or decrease the overall board length use the Length Adjust Drive. The extended position of the End Stop determines how much material is cut from each end of the board stack.

Also mounted on the End Stop and End Pusher assemblies are the Board Overlength Sensors. If the incoming board stack is out of position in the board length direction or excessively over length, the Board Overlength Alarm will activate which stops the feed belts and activates a horn pulse. Normal recovery is to lock out and push the board into position by hand and reset the alarm.

It is important that the end stop cylinder reaches full stroke every cycle & the end pusher cylinder contacts the board stack and evens all the boards every cycle.

The Overlength Sensors will also be activated if the Finishing Saw length adjust is incorrectly set for a shorter length board.

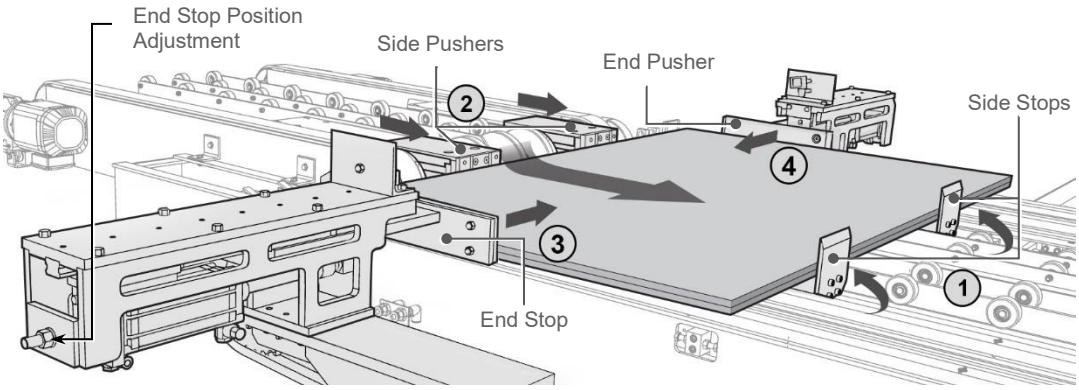

Figure 2: Evening Section

2.1.2 Side Stops (Flip Up)

The Side Stops in conjunction with the Side Pushers, even and position the board stack in the board width direction. Side stops are pneumatically actuated and will raise and lower every lug cycle under normal operating conditions. It is important that the side evening and end evening occurs every cycle as product will not be cut straight or to proper length if this cycle does not occur.

The side stop positions can be automatically adjusted to accommodate different board widths if the system is equipped to do so.

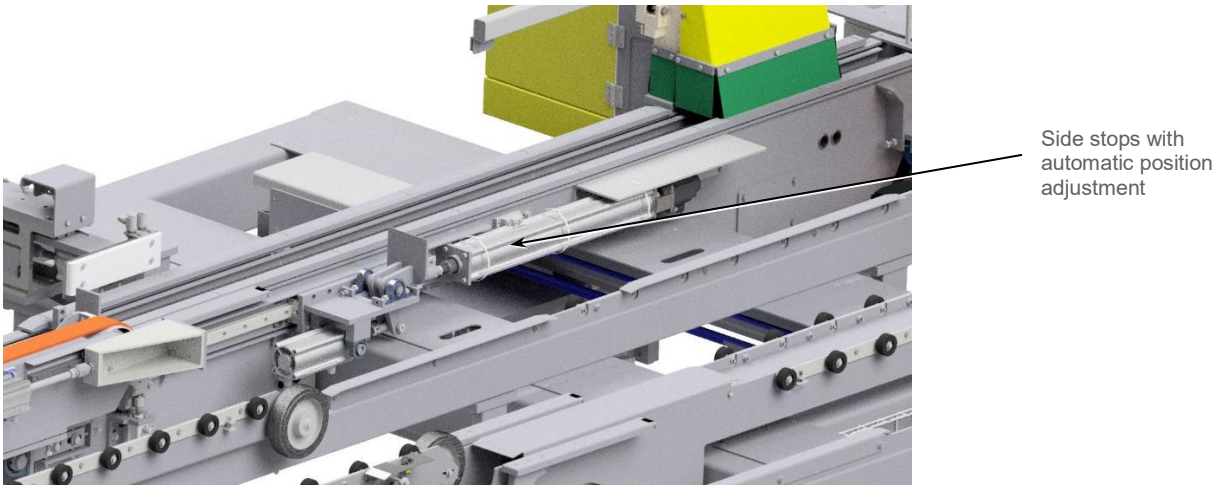

Figure 3: Side Stops with Automatic Position Adjustment

2.1.3 End Trim Saws

The end trim saws are located downstream of the evening section. The saw motors are mounted on dovetail slides that enable manual vertical and horizontal positioning of the saw blades. These adjustments are provided to achieve proper clearances to the saw anvil. To adjust the amount cut off the fixed end of the board see Section 2.1.1 “End Stop and End Pusher”.

It is recommended that saw blades with hoggers be used to chop up large pieces of cutoff board before conveying into the dust collection system. Long strips of board or paper may cause a blockage in the dust collection system which may result in dusting around the machine.

The saw anvils are made up of two pieces, a brass insert and the steel support. The anvils can be adjusted to move the brass insert closer to the face blade of the hogger assembly.

The hogger blade assembly is mounted directly on the saw motor shaft, ensure motor shaft keys are installed when installing hogger blade assemblies.

2.1.3.1 Sound Enclosure

The End Trim Saw Enclosure is hinged on the downstream end of the saw assembly and will rotate in front of the saw hogger blades. The sound enclosure reduces the cutting noise using a sound absorbing foam, board entry / exit areas of the saw are also covered with flexible material to reduce noise levels.

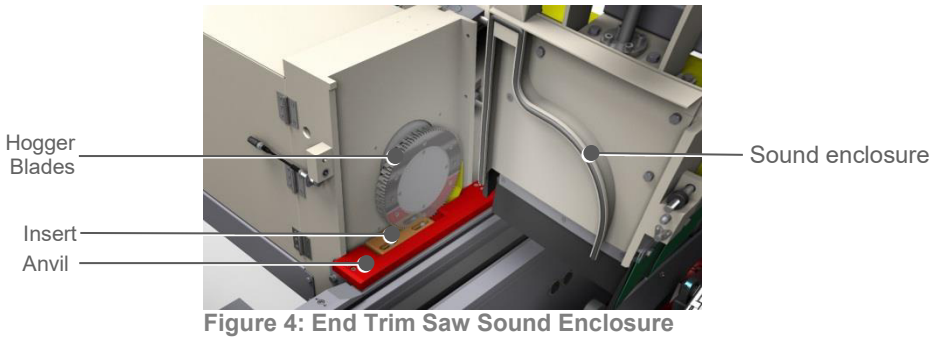

Figure 4: End Trim Saw Sound Enclosure

2.1.3.2 Saw Hold Downs

End Trim Saw Hold Down Wheels are lowered as the board stack enters the saws. The Hold Down Wheels are actuated by a gear motor mounted to a screw jack. The purpose of the hold down wheels is to firmly hold the board stack down on the saw anvil and dampen vibration of the board during the cutting process. The rollers should be compressed by approximately 1/8" - 1/4" (3-6mm) with a pair of boards in the machine. The Saw Hold Down Wheels are lowered when the zone is on and lift when the zone is off. The height is calculated automatically from the board thickness and stack set point. The stack height sensor will cause the lugs to pause and lift the wheels to a point above the sensor height temporarily and allow the cycle to continue. Whenever the Finishing Saw requires re-homing (for example in a jam situation) the hold down wheels automatically move to the fully raised position. The support anvil includes an adjustable brass insert that is situated right next to the saw blades. The material selection of brass is made so that damage to the saw teeth is avoided if contact is made. It is possible to cut into the brass to achieve the closest tolerance possible between the saw blade and the brass by lowering the vertical saw adjustment slide. The saw motor vertical adjustment is factory set at “0” when the bottom tips of the saw blade are at the same elevation as the top surface of the anvil. And the horizontal adjustment is set at “0” when the plane of cut is coincident with the edge of brass anvil. See Figure 6 below.

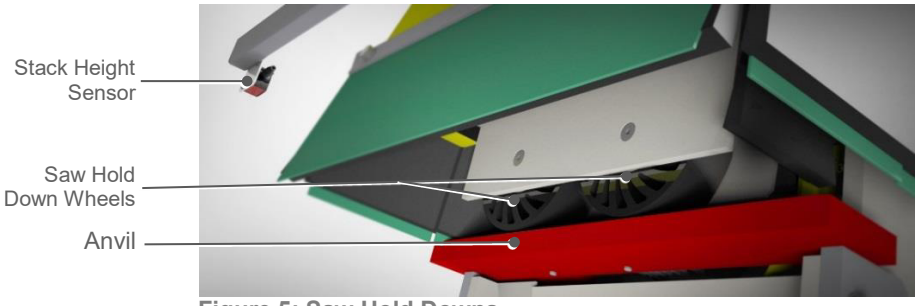

Figure 5: Saw Hold Downs

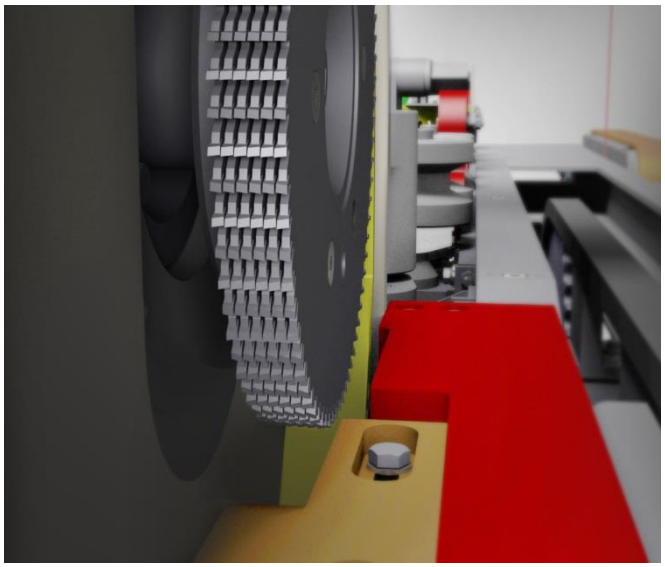

Figure 6: Saw Blade in the "0" vertical and "0" horizontal position

2.1.4 Saw Lugs

The Saw Lugs are pinned to a chain and independently driven on the left and right sides of the machine. Each lug has four combination bearings that are captured in a formed steel track. Specific pairing of the lugs is achieved by a lug ID feature machined in the base of each lug. At the end of the track the lugs drop backward, positioning the board for processing in the center saw section.

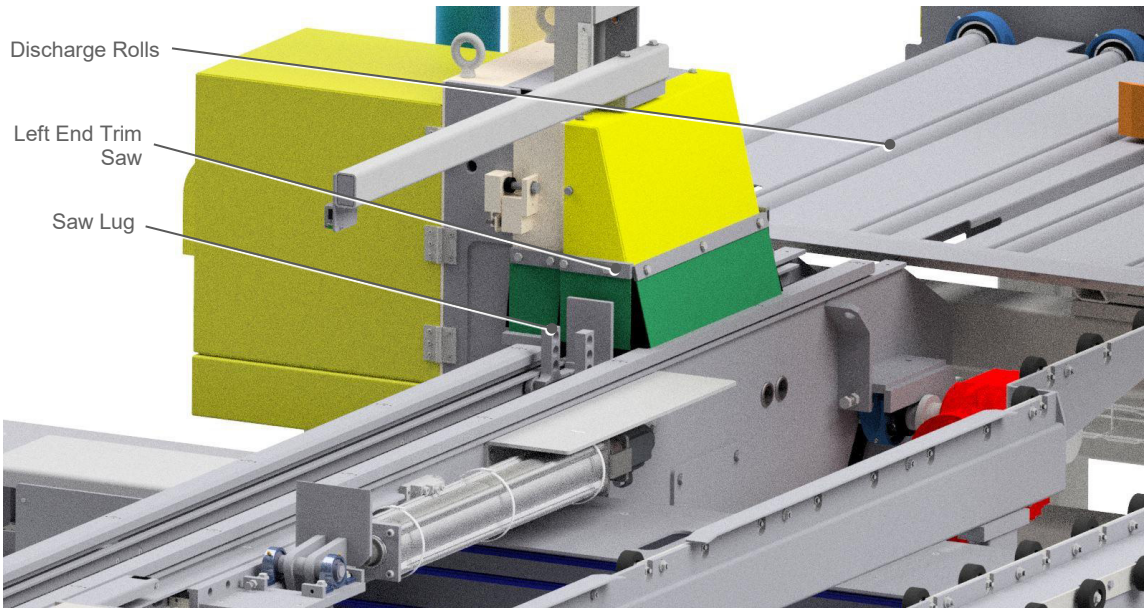

Figure 7: Saw Hold Downs

When the Finishing Saw is started, the control system will detect whether the lugs are in a known position, or a home sequence is required. If a home sequence is required, the pilot light on the Finishing Home button will flash. If the Home button is pushed, the reset sequence will start. The reset sequence consists of both lugs running forward until each is detected by an inductive proximity switch (home limit). After the lugs are detected by the home limits, they will continue moving forward to the ready position and wait for board to enter the Finishing Saw. In addition to the function of the Home button, manual control of the lugs is possible using the Saw Lugs selector switch on the HMI panel. Whenever the lugs are jogged manually the saws are also started. The movement of the lugs is delayed, allowing the saws to get up to speed before the lugs start. If the lugs are jogged, an “Auto Reset” will be required to initiate a home sequence which will enable them to run in auto again.

During each cycle the control system checks the positions of the left and right Saw Lugs as they cross the Home Limits. A correction is made to the Left Saw Lug to correct for minor variances. This automatic adjustment ensures that the squareness of the cut is maintained. It is also possible to shift the entire Saw Lug cycle forward or backward by a small amount. Both of these adjustments are available to the operator on the HMI.

During normal operation, the Saw Lugs wait just below the rails for board. The Saw Lugs move when the evening cycle is done, and the end trim section of the machine is ready to process board.

The Finishing Saw Lugs push the board stacks from the evening section, through the end trim saws. The Lugs cycle starts automatically when the Finishing Saw Side Stops drop. The Evening section can be emptied at any time, by manually pushing the cycle button on the HMI. This will also start the auto lug cycle.

- Squaring is performed electronically every cycle and therefore should not require mechanical adjustment.
- Controlled via servo drives and require a homing routine only at start up, if the control power has been off, or after a jam.
- The zone light will be blinking, and an alarm will be generated if the lugs need to be homed.
- If the zone is stopped part way through a lug cycle, the lugs will stop and hold that position until the zone is turned back on; the cycle will then resume.
- Can be “homed” or “initialized” from the HMI.
- Board over length scenario A: If the board is too long it will hit the over length limit; the lug cycle will not run, the feed belts will stop, an alarm will sound, and the long board will have to be repositioned or removed manually.
- The lug cycle will stop before the board enters the saw area if the discharge rolls are not yet clear of board from the previous cycle. The cycle will restart again automatically once the discharge rolls are clear.
- Lugs offset / square can be adjusted on the HMI.

2.1.5 Board Length Adjustment

The board length adjustment mechanism employs a rack and pinion, driven by a gear reducer with servo motor with an incremental encoder and the moving carriage is guided with a set of linear bearings.

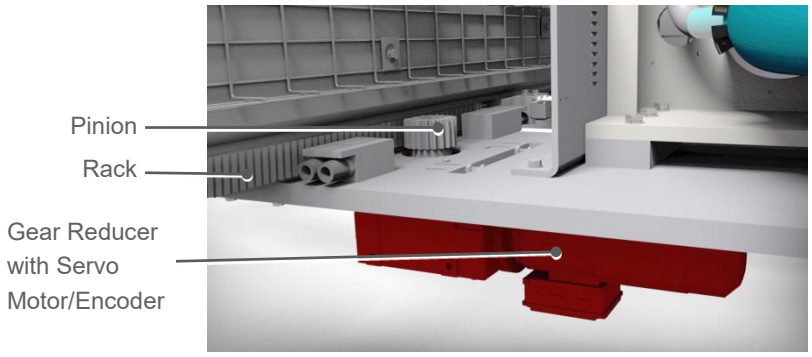

Figure 8: Length Adjustment System (this is a representative image, some equipment models may vary in appearance)

Over travel limits are provided for the in and out travel extremes. These limits do not come on during normal operation. The in limit is used for a homing routine that only needs to be run if any part of the drive train is disassembled for maintenance. The homing routine consists of running the Finishing Saw to the shortest board position until the in limit turns on.

The length adjustment system is programmed to compensate for backlash in the rack and pinion system by always approaching the final position from the outside inwards. When the Finishing Saw is adjusted to a longer board the gear motor is first driven a small amount past the desired position and then back in again.

To make the Finishing Saw move to a new position, a new board length set-point must first be entered on the HMI. When any of the change-over push buttons are pressed, the Finishing Saw will cycle first in order to clean out any board. The length adjustment system will not run if any of the limits in the Finishing Saw are blocked. Once the cleanout cycle is complete and all the limits are clear the length adjustment drive will run the Finishing Saw to the new board length set-point.

A calibration system is provided to adjust the board length in increments of 1/32” (0.8mm) on the fly. A selector switch is provided on the HMI. The Finishing Saw will adjust 1/32” (0.8mm) for every time the switch is pulsed in the corresponding direction. Due to the high precision of the rack and pinion and the gear motor drive system, calibration is not normally required.

2.1.6 Saw Clamps (if equipped)

Center Saw Clamps secure the board stack against a rigid side stop in preparation for the center cut process. The clamps are rubber faced and must remain compressed against the board stack during the Center Cutting process.

Discharge rolls convey the board stack out of the finishing saw after the center cut process.

2.1.7 Center Saw (if equipped)

The Center Saw cycle starts with the board stack clamped against the rigid side stop fences by the rubber faced side clamps. The saw is initially positioned upstream of the board stack with the saw motor running. The cutting blade is lowered pneumatically and the saw traverses in the direction of the side stop, cutting the board stack. After the blade exits the board stack, the saw is raised and returns to the starting position while the processed board exits the finishing saw on the Discharge Rollers.

During the cutting process the upper and lower ducting collect dust and debris. The interior of the ducting is maintained at a lower pressure creating air flow from the saw to the dust collection system.

Center Saw Forward & Reverse Limits are used to stop the Center Saw shuttle at the start & finish locations before and after the cutting process

Center Saw Raise Solenoid lifts the saw to allow it to return to the starting position while the board stacks are being conveyed out of the finishing saw.

Center Saw Raised Position Sensor indicates the saw blade is in a position above the board stack & it is safe to traverse back to the start position.

Center Saw

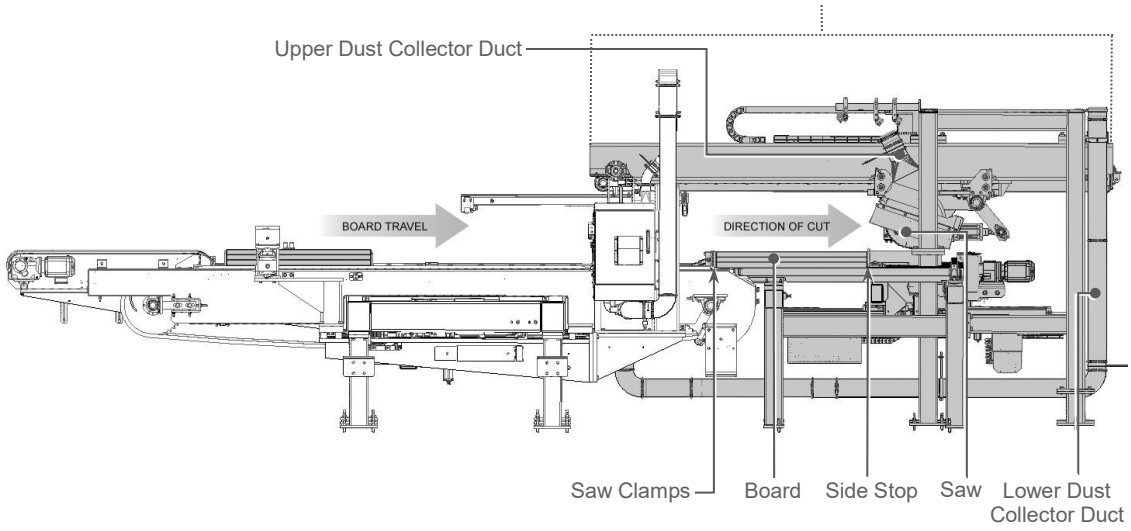

Figure 9: Center Saw (Side View)

2.1.8 Discharge Rolls

Discharge Rolls support the board stack during the Center Saw Process (if system is equipped with a center cut saw) and convey finished product from the Finishing Saw to the next machine.

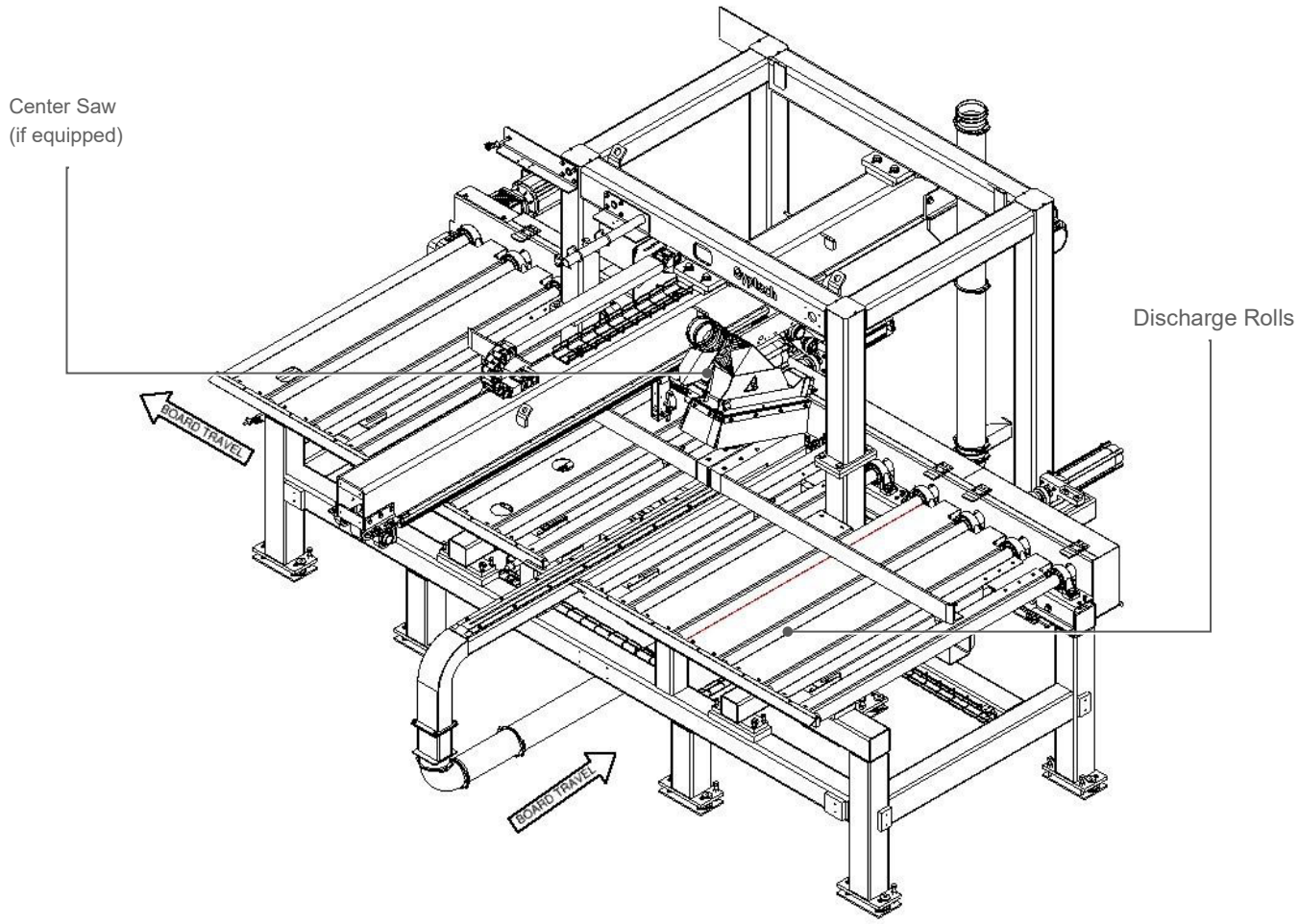

Figure 10: Discharge Rolls (Iso View)

3 Maintenance Procedures

The following refers specifically to the basic Finishing Saw. The instructions below may not encompass any customization or optional components on your machine.

3.1 Lockout Procedures

As equipment may start automatically, always lock out any source of motive power (electric, hydraulic, steam, compressed air, etc.) before performing maintenance or cleaning functions. Note that potential energy may also be stored in some equipment such as those held in a raised position by hydraulic or air pressure and that such equipment may move or fall suddenly if pressure is removed.

Depending on the equipment layout, electrical lock out may be performed at the electrical panel or locally with a safety switch or disconnect. Air pressure is removed and locked out at the manual air disconnect switch. As a further safeguard, you must confirm that any equipment in the system being worked on is not operational after being locked out. Test for this by using the normal means of starting, i.e. the operator controls on the HMI station or the manual HOA switch.

The above procedure is a general recommendation. Operating and maintenance staff must follow lockout procedures and operate in compliance with their company policy and local regulations.

3.2 Lubrication

A simple schedule of X number of shots of grease applied to sealed bearings every X number of months often results in over greasing which can damage the seals and cause premature failure due to bearing contamination.

All mounted bearings (including linear bearings) come with grease fittings installed, and some benefit may be realized by re-lubricating as long as careful attention is given to preserving the integrity of the seals.

Sealed ball bearings are commonly used on mechanical linkages such as the pivots points on either end of air cylinders. This has proven to be a very low maintenance design.

The roller chain for the saw lugs is heavily oversized in order to achieve a long service life without the need to lubricate. Lubrication by oil in this situation is likely to cause more problems than it solves due to the attraction of contamination. A weekly application of an aerosol type dry graphite may be beneficial.

The vendor documentation provides a detailed maintenance schedule for all gearboxes on the Finishing Saw. Note that the servo motors use the AQH and AQSH input adapter for which specific installation and maintenance instructions are provided. Many of the gearboxes have the hollow shaft mounting configuration for which specific installation instructions must be followed.

3.3 Saws

Warning:

When performing any maintenance work always lockout all sources of energy (electrical, pneumatic, mechanical, electromagnetic, chemical, thermal, hydraulic, etc.).

The quality of the saw cut in the Finishing Saw is dependent on many factors, some of which have nothing to do with the Finishing Saw such as the formulation of the board, set differentials between hard edges and main slurry, the drying process and how the board is handled before it gets to the saws. It is important to be aware of these external factors when trying to optimize the cut quality.

The basics of achieving a good quality cut from the perspective of ongoing maintenance includes using sharp tools, maintaining close clearances between the saw blade and the anvil, ensuring the anvil is providing solid support for the board as close to the cutting action as possible and ensuring that the hold down system is effectively preventing vibration during the cut process.

3.3.1 Saw Blade Change

Access to the saw blades for blade changes is provided by opening the dust collection hood that swings open towards the inside of the machine (see image below). The following steps outline the procedure for changing blades.

1. ALWAYS LOCKOUT ELECTRICAL POWER BEFORE OPENING THE SAW BLADE ACCESS DOOR.
2. Unfasten the single bolt that secures the door closed to open the door. Be very clear that the blades could be spinning due to inertia and or dust collection air flow even with the machine locked out. The VFD normally decelerates the blades before power is removed but these decelerating blades must come to a complete stop before it is safe to handle them. Take care to clean the sealing surfaces from accumulated gypsum before attempting to re-close the door.

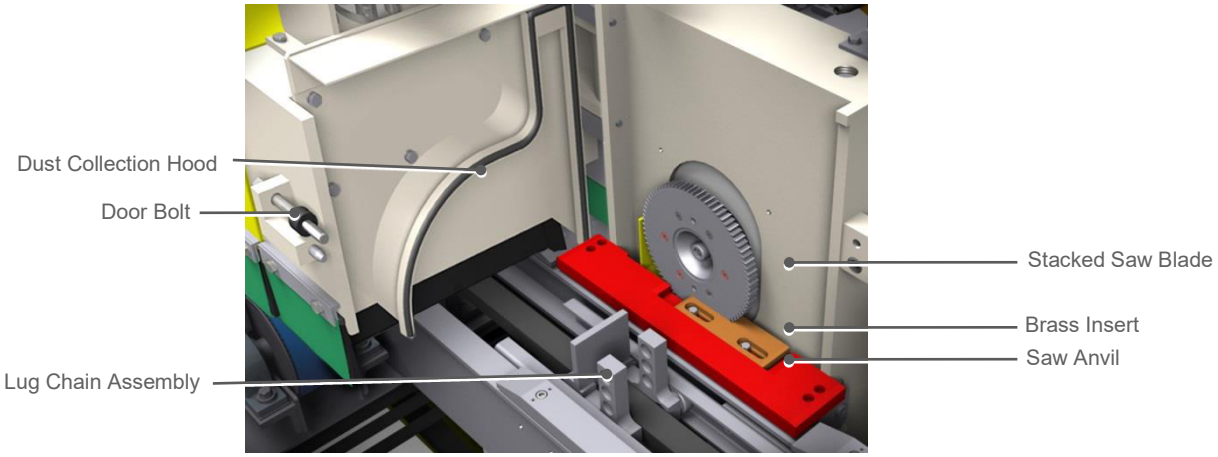

Figure 11: Access to Saw Blades (blade design may vary from image shown)

3. The saw blade assembly consists of multiple blades clamped together on a hub with spacers between the blades. The saw blades may be replaced as an entire assembly or one or more blades at a time while leaving the hub installed on the motor arbor. Remove center hub cover plate (if equipped) and remove center bolt to remove the complete assembly. To remove individual blades from the hub, remove the flat head cap crews that fasten the blade stack to the hub then remove and replace individual blades.
4. Make sure the blade teeth are pointing in the right direction when reinstalling.
5. All blades on the blade assembly are identical so the typical service procedure is to index the dull blades out from the center of the finishing saw and install new sharp blades next to the finished cut (closest to the center of the machine).
6. To get the blade out from behind the anvil raise the saw up using the vertical slide. Recording the position before doing so gives a reference for later. The saw motor can be adjusted vertically high enough so that the saw blades can be removed without disturbing the anvil.
7. The saw motor vertical adjustment is factory set at "0" when the bottom tips of the saw blade are at the elevation of the top of the anvil. The count reduces as the blade is lowered, so the position counter will read "9980.0" when the tips of the blade are ¾" (20mm) below the surface of the anvil. The horizontal adjustment is set at "0" when the plane of cut is coincident with the edge of the brass anvil, see photo below. The count increases as the blade is moved away from the center of the bundler. The counts may be re-zeroed as required by loosening the collar on the position counter and rotating it with respect to the adjustment slide screw shaft.
8. Properly torque all fasteners.
9. Move motor and blade assembly back to original recorded elevation and lock slide in position.

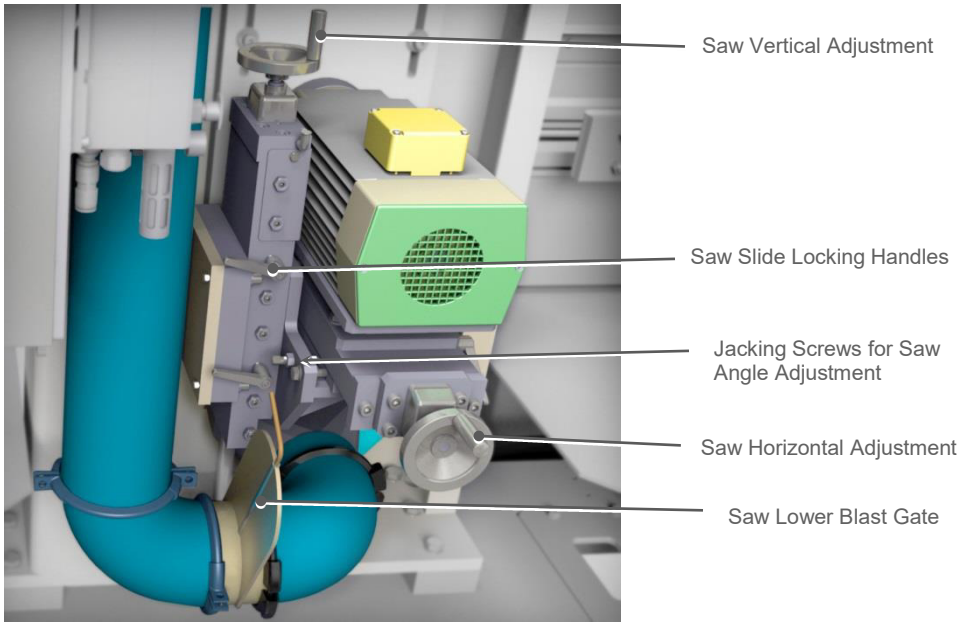

Figure 12: Saw Adjustments

3.3.2 Blade Clearances and Angles

Vertical and horizontal adjustments are provided for the saw motor via dovetail slides with position counters in order to maintain close clearances between the saw blades and the support anvils. Access to the adjustments may require that the optional sound reduction enclosure be opened.

The following steps outline the procedure for adjusting the blade and anvil clearance and blade angles.

1. ALWAYS LOCKOUT ELECTRICAL POWER BEFORE OPENING THE SAW BLADE ACCESS DOOR.
2. Adjustments may be made with the machine power locked out by visually observing the saw blade and the anvil with the saw blade access door open. Slowly spin the blade by hand and adjust vertical position of blade until desired gap between blade and anvil is set. Use caution when manually spinning blades due to the sharp teeth and pinch points.
3. It is also possible to make small adjustments while the saws are running by listening for the sound of the saw blade touching the brass anvil as the blade is slowly lowered towards the anvil. Great care must be taken to avoid cutting excessively into the brass and to avoid pushing the body of the blade into the brass, which can quickly generate heat and destroy the saw blades. Stop lowering the blade once a very slight contact is audibly detected.
4. To adjust the angle of the saw blade, loosen the bolts that secure the horizontal slide to the frame and then use the jack bolts noted in the photos to pivot the motor. The horizontal slide is pinned nearest to the board; the jacking bolts further out from the board then pivot the whole slide and motor assembly a small amount in order to adjust the blade angle.
5. The blade angle should be set almost parallel to board travel, with a small amount of clearance (approximately 0.015” or 0.4mm) on the trailing edge of the blade. This can be determined during operation by adjusting the angle so that the trailing end of the blade is touching the board, creating marks. The angle can then be adjusted until the marks disappear.

3.3.3 Clearance to the Brass Anvil: Avoiding Paper Streamers

In some operating conditions (such as with board having a poor paper to core bond) the saws are more likely to produce paper streamers rather than chipping up the paper into small pieces. This condition can be avoided by minimizing the clearance between the OD of the saw blades and the brass anvil just in front of the saw blade, so that there is no possibility for the paper to make it past the saws without being cut into pieces.

Maintaining this close clearance between the blade and the anvil requires daily attention since the brass anvil wears relatively quickly (depending on several factors such as production rates, abrasiveness of the gypsum, impurities in the core etc.). The saw motor can be adjusted downwards during production so that it cuts into the brass, eliminating any clearance that may have opened up due to wear of the brass. As the brass anvil wears it can also be adjusted closer to the saw blade so that the elevation of the saw blade does not get too low. The bottom of the saw blade should typically be adjusted between 1-2” (25 -50mm) below the surface of the anvil.

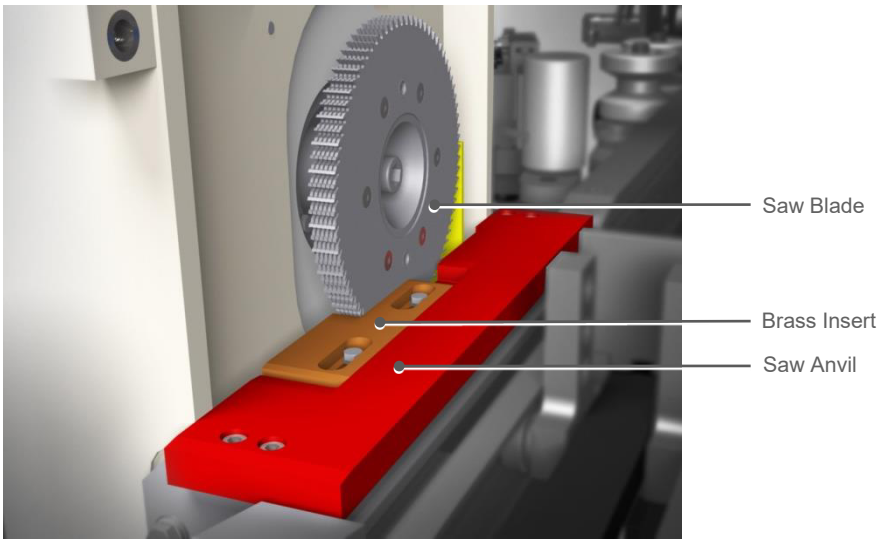

Figure 13: Brass Insert / Saw Anvil

3.3.4 Saw Hold Down Wheels

The hold down wheels are not visible during normal operation but can be checked for wear or damage when the Finishing Saw is shut down. The image below shows the hold down wheels as viewed from below. Inspection is most easily done when the Finishing Saw length is set at 10' (3m) or more. Check weekly for signs of wear or breakage on the webs and treads of the hold down wheels, and for entrapment of pieces of board or paper.

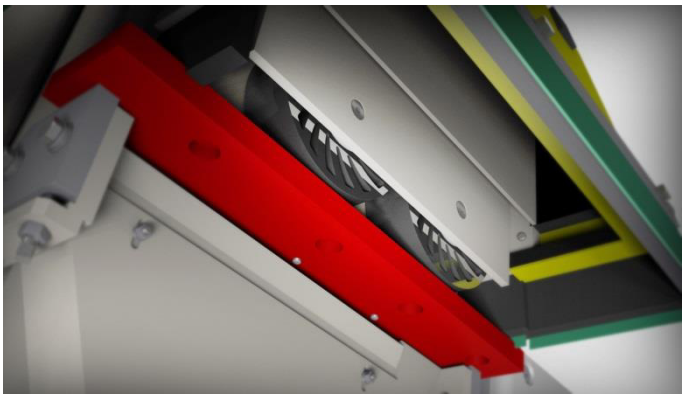

Figure 14: View of Saw Hold Down Wheels from below, for inspection purposes

Replacement wheels are supplied separately from the hub and are mounted by using the following procedure.

1. Remove the existing mounted wheel that requires replacement by sliding it off of the wheel hub.
2. Slide the wheel bore of the lip on the hub and fully seating it on the outer surface of the hub. Access to change the wheels is best achieved by opening the saw blade access door and removing the upper duct dust collection plate (the piece which is formed around the saw blade) from the inside of the door.

3.4 Lug Chain Assemblies

The lug chain assemblies should be inspected for wear every 6 months. Refer to section 4.4 for inspection details. Use the following procedure when replacing a lug chain assembly.

1. Move the take-up lug chain sprocket to the position where it is closest to the drive sprocket.
2. Position the new chain assembly so that it is centered on the upper chain guide with the disconnected ends resting on the floor and the chain properly meshed with the sprockets. Make sure that the lugs are facing in the correct direction (board pushing faces pointed towards outfeed end of machine) when positioning the chain.
3. Pull the ends of the chain together underneath the conveyor and connect them with the lug assembly and custom lug pin. Use a chain puller assembly if available to pull the ends of the chain together during the reconnection process.
4. Once chain is connected move the take-up sprocket away from the drive sprocket using the jack screws. Tension the chain until the return path sags by approximately 5 inches (127mm) [3-6" (76-152mm) of sag is normal and acceptable]. Ensure that the sprockets are aligned with each other, the chain guide track and the lug track after the chain has been properly tensioned.

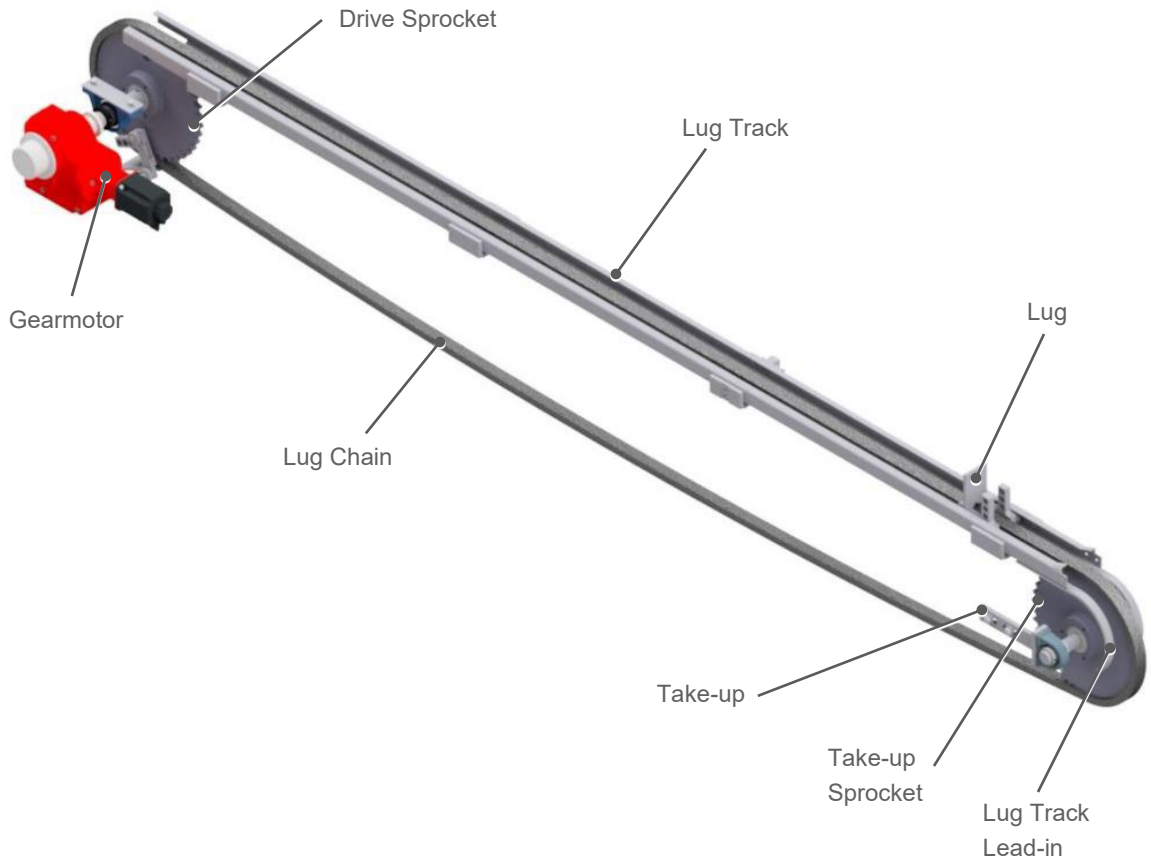

Figure 15: Lug Chain Assembly

4 Maintenance Schedule

The following table summarizes the optimal maintenance intervals.

4.1 Daily Tasks

Task	Notes
Inspect Finishing Saw Lugs	Dust and grit can accumulate to the point where the lug may bind. Clean if board jams and breaks in the machine.
Inspect Saw Motors (end trim and center cut if equipped)	Inspect for abnormal noises and misalignment.
Inspect Saw Blades (end trim and center cut if equipped) “Consumable Part”	Check for excessive wear or misalignment and sharpen or replace if necessary.
Inspect End Trim Saw Anvils (Brass) “Consumable Part”	Check for excessive wear or misalignment, Blade teeth should be touching the brass anvil at the upstream edge. Blade face should be < 1mm away from edge of brass anvil. Adjust or replace as necessary.
Inspect Center Cut Saw Anvil and Wood Blocks (if equipped)	Check for excessive wear, damage, misalignment and buildup or clogging.
Inspect Saw Ducting	Check it is clamped in position & free of debris blocking air flow.
Inspect Guarding	Ensure all guards are in place and properly secured.
Cleaning (saws)	Remove any excess build up.

4.2 Weekly Tasks

Task	Notes
Inspect Fasteners (choose a random sample set of critical fasteners over full span of machine for inspection)	Check fasteners for tightness. At first, check 12 hours after start up then every day for first 2-3 days then weekly moving forward.
Inspect Gear motors, gearboxes and servo motors	Inspect for leaks or abnormal noises and misalignment.
Inspect Electrical	Inspect for loose or damaged connectors and cables.
Inspect Air-lines and Fittings	Inspect air-lines and fittings for damage and leaks.
Inspect Sensors	Inspect for damage and clean to ensure proper operation.
Inspect Saw Hold Down Wheels	Inspect for free operation and wear or damage to wheels. Remove any broken board or paper that may be trapped.
Inspect Finishing Saw Feeder Belts	Check and replace if worn or excessively brittle and cracked.
Inspect Stub (Discharge) Rolls Drive Belts	Check and replace if worn or excessively brittle and cracked. Re-tension belts if loose.
Inspect Regulator Settings	Inspect pneumatic regulator settings and adjust as necessary.

4.3 Monthly Tasks

Task	Notes
Inspect Linear bearings	Grease as per manufacturer recommendations.
Inspect Pneumatic and Water Filters	Inspect and change filter cartridges as required.
Inspect Side Stops	Check condition of cylinder and proper function of side stops. (stop faces are inline, proper distance from side pushers, check stop face is vertical when in raised position)
Inspect Finishing Saw Lugs	Check lugs return to home position inline with each other. Check for wear on lug cam followers and track and replace if radial play is noticeable. Confirm lugs rotate freely on chain mounting pin. Check chain and chain guide for excessive wear.
Inspect End Pusher / Stop	Check condition of cylinder and proper function of end pusher and stop.
Inspect Side Pushers	Check condition of cylinder and proper function of side pushers.
Inspect Length Adjust System	Check Linear Bearings and Linear Bearing Rails for wear. Check Rack & Pinion for Wear and Backlash in the Pinion / Rack mesh. Replace any items if worn or damaged.
Inspect Center Saw Anvil (UHMW) (if equipped)	Check for excessive wear.
Inspect Center Saw Traverse (if equipped)	Check timing belt for proper tension, wear & tracking. Check cam followers for excessive wear. Check saw shuttle assembly for proper tracking with dial indicator across blade face.
Inspect Center Saw Lift (if equipped)	Check condition of cylinder
Inspect Center Saw Side Pushers (if equipped)	Check condition of cylinders & proper function of side pushers (pusher faces are inline, proper distance from side stop [-1/16 (1.5mm) board width] & pusher face is vertical with cylinder extended. Check rubber face is flexible & able to clamp the board.

Inspect Discharge Rolls (if equipped)	Check rolls for excessive runout and proper bearing function.
Inspect Synchronous Belt Drives for Discharge Rolls	Check condition, tracking and proper tension of belts.
Inspect Board Skids (Steel and UHMW)	Check for excessive wear.
Inspect Bearings	Check all bearings for proper function. Ensure bearing set screws are tight & shaft collars are in proper position.

4.4 Tasks for Every 6 Months

Task	Notes
Inspect Finishing Saw Lugs Roller Chain	Chain sag of 3-6” (76-152mm) on the return path is normal. Ensure sprocket alignment is maintained when adjusting tension. Observe operation after aligning sprockets. Lugs should not side shift as they enter the cam follower track. Check for worn bushings by attempting to move lug on bottom run of chain. Replace if more than half of bushing wall is worn through, or when replacing chain. Replace connecting link and pivot pin at same time. Replace if chain stretches to the point where the lugs do not enter the cam follower track smoothly because the position of the tail pulley is too far back. Replace lug bushings, connecting links and pivot pins at same time.
Inspect Length Adjustment Rack & Pinion	Inspect and replace if excessive axial play exists.
Inspect Linear Guide Bearings	Check for play. Replace if bearing is worn.
Inspect Chains for positioning inner rails	Maintain tension so that top and bottom runs don’t touch.

4.5 Tasks for Every 3 – 5 Years

Task	Notes
Inspect Finishing Saw Lug Track	**Replace if wear pattern is rough or excessive clearance is present top to bottom when new lug assemblies are fitted.**

4.6 As Required Tasks

Task	Notes
Inspect Rack and Pinion	Designed to operate dry. Use an aerosol based dry graphite or silicone if any lubrication is necessary.
Inspect Gearboxes	See vendor documentation.
Inspect Saw Motors (if equipped)	See vendor documentation.
Inspect Air Cylinders	See vendor documentation.

5 Troubleshooting

Refer to vendor manuals for any further details on troubleshooting.

5.1 General

Problem	Possible Cause(s)	Possible Solutions
Length Adjust will not move	1. No power to drive 2. VFD Drive has faulted, or overload protection device has tripped or malfunctioned 3. Gearbox issue 4. Brake is malfunctioning and not releasing 5. Rack and Pinion(s) or linear bearing are impeded or damaged	1. Check fuses/breakers. 2. Check and reset fault or reset device. 3. Check for restriction, damage or low oil and repair or replace as necessary. 4. Check and repair. 5. Check rack and pinion(s) and linear bearings and rails for foreign material or damage to any of the components that could be causing an impedance/jam. Clear, repair or replace as necessary.
Motors will not run (conveyors, lug chains and rolls and saw motors [if equipped])	1. No power to drive 2. VFD or Servo drive has faulted, or overload protection device has tripped or malfunctioned 3. Gearbox issue	1. Check fuses/breakers. 2. Check and repair fault or reset device. 3. Check for restriction, damage or low oil and repair or replace as necessary.
Lug Chains will not synchronize or align	1. Lug home sensor(s) is damaged or adjusted improperly 2. Lugs or track are worn or damaged	1. Check for proper adjustment and damage and re-adjust, repair or replace as necessary. The face of the sensor should be flush with the top of the bracket and there should be a ~1mm gap between the face of the sensor and the bottom of the lug. 2. Check for excessive play between the lug guide wheels and track caused by wear or damage that could be allowing variation in the gap between the sensor and the lug. Repair, adjust or replace as necessary.

5.2 Infeed Accumulator (if equipped) and Evening Section

Problem	Possible Cause(s)	Possible Solutions
Boards not evening properly	1. Side stops (if equipped) are not aligned 2. Board Cushions are not raising fully or at the same time and allowing board to skew 3. End stop and or end push pads are not extending to the proper position 4. End push and or stop pads are not properly aligned or are damaged 5. Side push pads are not extending to the proper position	1. Adjust hard stop positions for side stops to be properly aligned. Two or more hard stop positions are required for machines with automatic side stop changeover. Check for damage to side stop pivot and adjust, repair or replace as necessary. Side stop misalignment may also be caused by pivoting or changeover cylinder malfunction. Check the cylinders for damage and proper stroke range and operation and repair or replace as necessary. 2. Check cylinders, lines and valves for damage and malfunction and repair, replace or adjust as necessary. 3. Check cylinders, lines and valves for damage and malfunction and repair, replace or adjust as necessary. Check the cylinder stroke extent positions and adjust as necessary. 4. Check push and stop faces for damage and misalignment and repair or replace components as necessary. 5. Check cylinders, lines and valves for damage and malfunction and repair, replace or adjust as necessary.

5.3 End Trim Saw Section

Problem	Possible Cause(s)	Possible Solutions
Cut quality is poor	1. Blades are worn or damaged 2. The blade toe angle is set incorrectly 3. Hold down wheels not applying proper pressure on boards	1. Check blades and replace or sharpen as necessary. 2. Check blade toe angle and adjust as necessary. (see section 3.3.2) 3. Check hold down wheels for excessive wear or damage and replace as necessary. Check screw jack, air motor, linear shafts and bushings and pulse sensors for damage and malfunction and repair, replace or adjust as necessary.

END OF DOCUMENT

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