

OPERATION AND MAINTENANCE MANUAL

001080

BLADE™ SAW



CAUTION:

MiTek recommends printing this manual in high resolution using color ink. Many of the graphics may be unclear and may create an unsafe condition if this recommendation is not followed.

001080

BLADE™ SAW



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Patents

Made and sold under one or more of the following patents:

U.S. 4,986,052	U.S. 5,837,014	U.S. 6,219,975
U.S. 5,385,339	U.S. 5,854,747	U.S. 6,260,263
U.S. 5,493,834	U.S. 5,873,567	U.S. 6,317,980
U.S. 5,568,862	U.S. 5,884,448	U.S. 6,389,762
U.S. 5,630,697	U.S. 5,885,731	U.S. 6,401,422
U.S. 5,636,494	U.S. 5,906,264	U.S. 6,412,246
U.S. 5,638,658	U.S. 5,934,866	U.S. 6,418,601
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U.S. 5,702,095	U.S. 6,048,165	U.S. 6,758,022
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U.S. 5,735,087	U.S. 6,134,775	U.S. 6,834,470
U.S. 5,810,341	U.S. 6,170,688	U.S. 6,907,820
U.S. 5,819,412	U.S. 6,205,637	Other patents may apply
U.S. 5,833,222	U.S. 6,212,849	

These patents may apply to saws and infeed or outfeed equipment for saws:

U.S. 6,539,830	U.S. 6,702,096
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These patents may apply to presses:

U.S. RE37,797	U.S. 6,079,325	U.S. 6,651,306
U.S. 5,454,687	U.S. 6,145,684	U.S. 6,807,903
U.S. 5,553,375	U.S. 6,330,963	
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These patents may apply to stackers:	U.S. 6,969,054
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Other patents pending. Other patents may apply.

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Corrections and Improvements

To report errors or recommend improvements to this manual, please send an email to autodoc@mii.com.

Use this page to record service bulletins and notices that you receive to keep your manual updated.

Number	Date	Title

TABLE OF CONTENTS

Safety (English)	1
Safety Indicator Signal Words	1
General Safety & Equipment Rules	2
E-Stop Locations	4
General Warnings	5
Lockout/Tagout	6
Lockout/Tagout Guidelines	6
Electrical Lockout/Tagout Procedures	7
Hydraulic or Pneumatic System Lockout/Tagout Procedure	10
Troubleshooting with an Energized Machine	10
Treatment for Hazardous Substances	11
Safety Tests	12
General Inspection	12
Inspecting Indicators	13
Interlock Door Test	13
E-Stop Test	15
Testing Movement While E-Stop is Active	16
Restricted Zone	17
Marking the Restricted Zone	17
Safety Symbol Definitions	18
Declaration of Safety Conformity	24
Declaration of Noise Emissions	24
Seguridad (Español)	25
Indicadores de seguridad: Palabras de aviso	25
Reglas de seguridad para el equipo de general	26
Ubicación de un paro de emergencia	28
Advertencias generales	29
Bloqueo/Etiquetado	30
Pautas de bloqueo/etiquetado	30
Procedimientos de bloqueo/etiquetado eléctricos	31
Cuando trabaja en una máquina fuera del gabinete eléctrico principal de la máquina	31
Cuando trabaje en una máquina dentro del gabinete eléctrico principal de la máquina o en la línea de transmisión eléctrica a la máquina	33
Procedimiento de bloqueo/etiquetado del sistema hidráulico o neumático	34
Cuando no se requiere bloqueo/etiquetado	34
Cuando se requiere bloqueo/etiquetado	34
Solución de problemas con una máquina energizada	34
Tratamiento en caso de contacto con sustancias peligrosas	35
Pruebas de seguridad	36
Inspección general	36
Indicadores de inspección	37
Prueba de las puertas interbloqueadas	38
Prueba de los paros de emergencia	40
Prueba de movimiento mientras el paro de emergencia está activo	41

BLADE SAW: TABLE OF CONTENTS

Zona Restringida	42
Marcar la zona restringida	42
Información adicional	42
Introduction	43
Introduction to the Manual	43
Understanding the Manual	44
Operator Training Outline	45
Additional Resources	46
Website	46
Contact Us	46
General Information	47
Introduction to the Equipment	47
Purpose of the Equipment	47
Description of the Equipment	47
Safety Compliance of the Equipment	47
Main Components	48
Graphical Overview	48
Descriptions	48
Optional Components	49
Descriptions	50
Additional Printer Options	50
Second Display Support	51
Dust Extraction Methods	51
Technical Specifications	51
Installation & Startup	54
Requirements to Meet for Installation	54
Moving the Equipment Into Place	54
Transportation Equipment Requirements	54
Lift Points for Forklift	54
Infeed Rail	54
Saw Chamber	55
Skewed Conveyor	55
Auto Deck	56
Your Responsibilities	56
During Installation	56
Before Selling or Re-Installing	56
Startup Procedures	57
Marking Restricted Zone	57
Safety Tests	57
Operation	58
Safety Operating Notes	58
Safety-Related Operating Procedures	59
Stopping Methods	59
Cycle Stop	59
Emergency Stop	59
Restart After E-Stop Procedure	62
Disconnect Switch	63
Interlocked Doors or Guards	64
Saw Chamber Door Switch	64
Stroke/Elevation Chamber Door Switch	64
Safety-Related Indicators on the Machine	66

BLADE SAW: TABLE OF CONTENTS

Light and Horn Beacon	66
Operator Interface Indicator Lights	67
Hardware Overview	68
Operator Hardware Controls	68
Powering Up or Down	70
Software Overview	72
Overview of Home Screen	72
Lumber Yard	74
Key In Part	75
Cut List Screen	77
Main Menus in Detail	80
Quick Software Troubleshooting	83
Board Stretcher Software	83
Operating Procedure	84
Operating Procedure Overview (Auto Mode)	84
Specialized Operating Procedures	85
Calibration	92
Maintenance	93
Introduction to Maintaining Your Machine	93
Overview Graphics	93
Maintenance Terminology	94
Major Components	95
Axes and Home Positions	97
Cleaning	101
Cleaning Saw Dust and Debris	101
Cleaning Surfaces	102
Calibrating	102
Lubricating	102
Using a Manual Grease Gun	102
Motors and Gearboxes	103
Motor Locations	103
Motor Maintenance	104
Checking and Changing Gearbox Oil	104
Checking and Changing The Bevel Gearbox Grease (Nabtesco Only)	105
Lubricating Saw Blade Motor Bearings	107
Slippage Errors and Tightening Motor Couplings	108
Slippage Errors	108
Tightening Motor Coupler on Servo Motors	111
Elevation Jack Screw	113
Saw Blade	113
When to Replace the Saw Blade	113
Printer	119
Ordering Printer Supplies	119
Placing Your First Supplies Order Through Matthews	119
Printer Components Overview	120
Maintaining the Printer	121
General Maintenance Reminders	121
Cleaning the Print Heads	122
Flushing the Printer	123
Replacing an Ink or Cleaner Fluid Bottle	126
Replacing the Bottle Filter and Lid Assembly	126
Setting the Printer Air Pressure	127
Printer Tab in Software Option Menu	128

BLADE SAW: TABLE OF CONTENTS

Printer Sensors States	129
Bearings (Lubrication)	129
Lubricating the Linear Bearings	129
Grease Recommended	129
Grease Gun Recommended	129
Lubrication Amount	130
Location and Number	130
LASM Linear Module	132
Cam Followers (Outfeed Assembly)	133
Lumber Exit Chain Bearings	133
Waste Conveyor Drive Shaft	134
Auto Deck Drive Shaft (Infeed Component)	135
Wheels	136
Lubricating Wheels	136
Skewed Conveyor Wheels	136
Chains	136
Lubricating Chains	136
Auto Deck Chain	137
Skewed Conveyor Chain	137
Adjusting Chain Tension / Positioning	137
Lumber Exit Chain Tension	138
Lumber Exit Chain Positioning	138
Lumber Exit Chain Guide Bracket	139
Auto Deck Chain Tension	139
Belts	140
Gripper	140
Adjusting Gripper Belt Tension	140
Adjusting the Gripper Belt Tracking	140
Stroke Axis	141
Adjusting Stroke Belt Tension	141
Waste Conveyor	142
Adjusting Waste Conveyor Belt Tension	142
Adjusting Waste Conveyor Belt Tracking	142
Skewed Conveyor	143
Adjusting Skewed Conveyor Belt Tension	143
Adjusting Skewed Conveyor Belt Sheaves	144
Wear Items	144
Bumpers	144
Brushes	145
Replacing Brushes	146
LASM Brush Orientation	146
LASM	147
Fixed Jaw	147
LASM Spikes	147
Felt Strips	147
Shock Absorbers	148
Replacing a Shock Absorber	148
Adjusting a Shock Absorber	149
Pneumatic System	151
Removing Pressure from the Pneumatic System	152
Maintaining the Filter / Regulators	152
Purchasing a Main Filter / Regulator	152
Adjusting the Pressure on the Main Filter / Regulator	152
Draining Condensation & Sludge from the Main Filter/Regulator	153

BLADE SAW: TABLE OF CONTENTS

Replacing Filter Element on the Main Filter / Regulator	153
Replacing Filter Element for Touch Screen Cooler	154
Adjusting the Main Pressure Sensor	155
Air Knives	156
Adjusting The Cabinet Cooler	157
Clamps	157
Adjusting Clamp Speed.	157
Aligning Outfeed Clamp	158
Raising the Top Clamp	159
Cylinders	160
Adjusting Flow Control Valves	160
Electrical System	161
Sensors Overview	161
Sensor Maintenance	166
Sensor Gaps for Prox Switches (Home Sensors)	166
Troubleshooting Home Sensors	167
Adjusting & Troubleshooting the Crooked Lumber Sensor	168
Auto Deck Lumber Sensor Adjustment	171
Main Electrical Enclosure	171
VFD (Variable Frequency Drive)	172
Safety Controller	172
PLC (Programmable Logic Controller)	172
Select Component Overview and Maintenance	173
Gripper.	173
Cleaning the Gripper	173
Manually Turning the Gripper Belt to Find Obstructions	173
Removing Top Gripper Assembly	173
Outfeed Assembly	174
Pull-Cord E-Stop	175
Resetting the Pull-Cord Switch	175
Adjusting the Pull-Cord Tension	175
Skewed Conveyor	176
Aligning the Skewed Conveyor	176
Component Replacement	177
Linear Guide Bearings	177
Outfeed Clamp Cam Follower	179
Outfeed Clamp Assembly	180
Removing the Outfeed Clamp Assembly	180
Installing the Existing Outfeed Clamp Assembly (2016)	181
Saw Blade Motor Power Cable Replacement	183
Waste Conveyor Belt	183
Troubleshooting	185
Navigating the Troubleshooting Appendix	185
Getting Started with Troubleshooting	186
Safety Notes for Troubleshooting	186
Tools Required	187
First Steps	188
Mechanical Troubleshooting	188
Electrical Troubleshooting	188
Mechanical Problems and Solutions	189
Pneumatic Problems and Solutions	194
Electrical and Software Problems and Solutions	196

BLADE SAW: TABLE OF CONTENTS

Maintenance Checklist	211
Using the Maintenance Checklists	211
Safety Notes for the Maintenance Checklists	211
Daily Checklist	212
Weekly Checklist	213
Monthly / Annual Checklist	214
Ordering Parts	216
Ordering Parts	216
Safety Notes for Replacing Parts	216
Drawing Set	217
Glossary	218
Index	222

SAFETY (ENGLISH)

Safety Indicator Signal Words



Refiérase a la página 25 para español.

For safety information in Spanish, refer to page 25.

The following signal words and colors are used throughout this document to indicate safety hazards. Pay careful attention when you see them. The level of severity differs for each signal word and color.

Signal words are accompanied by graphics showing what personnel should or should not do. The graphics are called safety symbols and are defined starting on page 18, but more specific text is provided every time a graphic is used throughout the manual.

Failure to comply with the instructions accompanying each signal word may result in property damage, personal injury, or even death. Personnel must follow all safety procedures and practices to ensure the safest possible operation of this equipment. However, at no time is this document a substitute for common sense. Personnel must ensure that the work environment is safe and free of distractions.

Danger

Indicates an imminently hazardous situation which, if not avoided, is likely to result in death or serious injury.

Warning

Indicates a potentially hazardous situation, which, if not avoided, may result in death or serious injury.

Caution

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Notice

Calls attention to information that is significant to understanding the operation at hand or the potential for property damage.

Environmental

Applies to conditions that may affect the environment but do not have an immediate, direct effect on personnel or equipment.



Signal words are used in conjunction with safety symbols to give hazard messages throughout this manual. Common safety symbols are defined starting on page 18.

General Safety & Equipment Rules

Because it is impossible to anticipate every circumstance that might involve a hazard, the safety information provided in this equipment manual and on the machine is not all-inclusive. If this machine is operated or serviced using a procedure not specifically recommended by the manufacturer, the procedure shall be approved by a professional engineer to ensure it will not render the equipment unsafe. Use extreme caution and common sense at all times.

Know Your Equipment

- Read this manual completely before using or maintaining the equipment. Do not operate this machine unless you have a thorough knowledge of the controls, safety devices, emergency stops, and operating procedures outlined in this manual.
- Read and follow all safety notes. Failure to comply with these instructions may result in economic loss, property damage, and/or personal injury including death.
- Refer to the lockout/tagout guidelines on the following pages to safely perform maintenance and troubleshooting of this equipment.
- Observe and obey all safety labels. Replace worn labels immediately.
- Use this equipment solely for the purpose described in this manual.
- Only qualified personnel should attempt to operate or perform maintenance on this equipment. “Qualified personnel” is defined as:

...a person or persons who, by possession of a recognized degree or certificate of professional training, or who, by extensive knowledge, training, or experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work—ANSI B30.2-1983

...one who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved—NEC 2002 Handbook

Personal Safety


- Always wear personal protective equipment (for example, safety glasses and hearing protection) in an industrial environment.
- Utilize a filtering face piece (dust mask) when working near sawdust.
- Wear proper clothing. Do not wear loose clothing or jewelry. Confine long hair by tying it back.
- Use caution when lifting heavy parts or material.

Installing the Equipment

- Follow installation instructions completely.
- Use proper lifting equipment rated for the proper weight.
- This equipment is not for use in a residential area.

Keeping a Safe Environment

- Pay attention to your surroundings.
- Keep children away. All visitors should be kept a safe distance from the work area. Hazards may not be apparent to individuals unfamiliar with the machine.
- Keep work areas well lit.
- Keep the work area clean and free of any trip or slip hazards.
- Do not use the equipment in damp or wet locations, or expose it to rain or snow.
- Minimize dust clouds and protect your equipment by cleaning dust in this manner:
 - a) Shut down electrical power and sources of ignition

	NOTICE
	Never use compressed air inside an electrical enclosure. It may force contaminants into electrical connections. Use a vacuum to remove dust from electrical enclosures. Canned air is acceptable after vacuuming.

- b) Vacuum dust prior to blowing with air
 - c) Powered cleaning equipment such as vacuums must be consistent with local governmental codes for use in dusty conditions.

Operating and Maintaining the Equipment

- Ensure that all people, tools, and foreign objects are clear of the restricted zones before operating this equipment. **The restricted zones are shown on page 17.**
- Perform safety tests to ensure all E-stops are working properly before operating the equipment at the initial startup, after performing any maintenance, and in accordance with the maintenance schedule.
- Always push an E-stop button before approaching a machine for any reason. An E-stop may cause components to move without warning.
- Only use procedures described in this manual. Any other procedures should be discussed with MiTek to verify it is done safely. For topics not covered in this manual or online, contact MiTek for advice.
- In case of machine malfunction, stop the machine immediately using an E-stop, lockout/tagout, and report the malfunction to a supervisor.
- Never leave the machine running unattended. Turn the power off! Do not leave the machine until all parts have come to a complete stop and all electrical power has been shut off. If an equipment manual specifies a machine is designed for automated use, ensure safety devices prevent unauthorized entry before moving away from the machine.
- Check for worn or damaged parts regularly. Repair or replace them immediately.

BLADE SAW: SAFETY

- Only use exact replacement parts specified. Using unapproved parts may void the warranty and can be a safety risk.
- Keep the hydraulic, pneumatic, and electrical systems in good working order at all times. Repair leaks and loose connections immediately. Never exceed the recommended pressure or electrical power.
- Check that all guards and safety devices are in place and in working order before each shift starts. All protective guards and safety devices must be in place before and during use of the machine. Never disconnect or bypass any safety device or electrical interlock.
- Torque bolts and fasteners to the specifications given by MiTek. If no torque specification is given, use industry standards.
- Only qualified maintenance personnel shall make adjustments or remove, repair, or install safety devices. Only qualified electricians should perform electrical work.
- Periodically inspect the quality of the finished product.
- Document all preventive and repair maintenance over the life of the machine to improve machine efficiency and reduce the risk of accidents.



Electrical Safety Notes



- Do not use any liquids in the interior of electrical cabinets.
- When using solvents on and around the machine, remove power to the machine to eliminate the chance of sparking, resulting in explosion or fire. Wear a respirator approved for use with solvents.



E-Stop Locations



See [Emergency Stop on page 59](#) for E-stop locations.

General Warnings

	 WARNING
	HIGH VOLTAGE ELECTRICITY! May cause serious personal injury or death. Ensure only qualified electricians perform electrical service work.

	 WARNING
	Read the equipment manual, safety labels, and all safety information provided before operating or maintaining this equipment.

	 WARNING
	CRUSH OR CUT HAZARD Guards must always be in place during operation to avoid serious injury and possibly death. Always replace guards after completing maintenance and before removing the lockout/tagout device.

	 WARNING
	Many components are manufactured from high carbon, heat-treated steel. Do not attempt to straighten, bend, or weld these components, as they may fail under load causing serious personal injury or death.

Lockout/Tagout

Lockout/Tagout Guidelines

Lockout/tagout all energized systems before performing maintenance on them.

All lockout/tagout guidelines must be met according to OSHA 29 CFR 1910.147. A specific procedure should be included in your company's energy control program. This manual is not intended to replace your company's de-energizing or lockout/tagout procedure required by OSHA, but merely to provide general guidance.

The term "lockout," as used in this manual, means placing a lockout device, such as a keyed padlock, on any and all energy sources to ensure that the energy isolating device and the equipment being controlled cannot be re-energized or operated until the lockout device is removed. See [Electrical Lockout/Tagout Procedures on page 7](#) and [Hydraulic or Pneumatic System Lockout/Tagout Procedure on page 10](#) for more information about each type of lockout/tagout procedure.

- Energy sources include electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- In the case of electrical energy sources, the main power and control power to the machinery must be turned off and physically locked in the Off position.
- Before performing maintenance on the pneumatic or hydraulic systems, bleed the lines prior to lockout/tagout to eliminate pressure.

If more than one person is working in a restricted zone, use a group lockout device that will allow each person to use a lock that can be removed only by the person performing the maintenance.

"Tagout" means that a prominent warning is securely fastened to an energy-isolating device to indicate that the equipment shall not be operated.

Whenever you see this symbol in the margin, lockout/tagout!





Electrical Lockout/Tagout Procedures

Working on a Machine Outside the Machine's Main Electrical Enclosure



If you are working on the electrical transmission line to the machine, follow the procedure on page 8.

Before performing maintenance on any machine with electrical power, lockout/tagout the machine properly. When working on a machine outside of the machine's main electrical enclosure, not including work on the electrical transmission line to the machine, follow your company's approved lockout/tagout procedures which should include, but are not limited to the steps here.

1. If applicable, close the machine software and shut down the PC using the **Power > Shut down** method in Windows.
2. Engage an E-stop on the machine.
3. Turn the disconnect switch handle to the Off position. See [Figure 1-1](#).



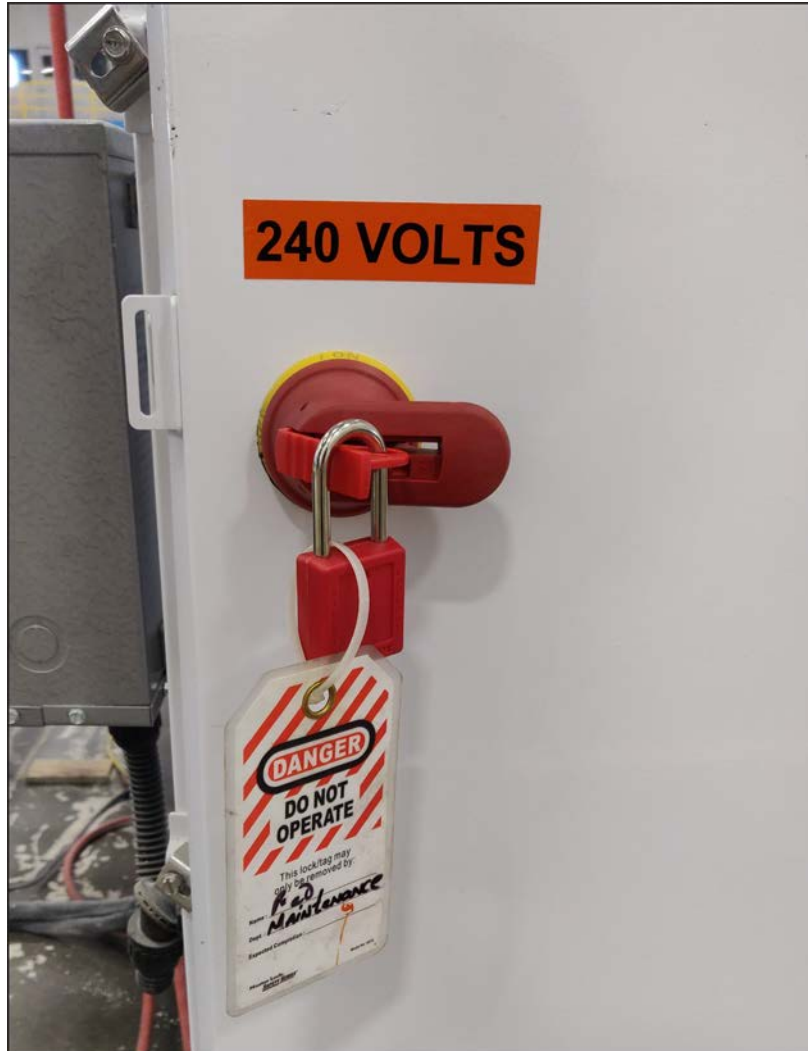
	 WARNING
	ELECTROCUTION HAZARD. When the disconnect switch is off, there is still live power within the disconnect switch's enclosure. Always turn off the power at the building's power source to the equipment before opening this electrical enclosure.

Figure 1-1: Example of a Disconnect Switch in Off Position



4. Attach a lock and tag that meet OSHA requirements for lockout/tagout.

Figure 1-2: Example of a Lockout/Tagout Mechanism on an Electrical Enclosure



5. Restrain or de-energize all pneumatic components, hydraulic components, and other parts that could have live or stored power.



Working on a Machine Inside the Machine's Main Electrical Enclosure or in the Electrical Transmission Line to the Machine

Before opening the main electrical enclosure, or attempting to repair or replace an electrical transmission line to the machine, lockout/tagout the machine properly. Follow your company's approved lockout/tagout procedures which should include, but are not limited to the steps here.

1. If applicable, close the machine software and shut down the PC using the **Power > Shut down** method in Windows.

BLADE SAW: SAFETY

2. Engage an E-stop on the machine.
3. Shut the power to the machine off at the machine's power source which is usually an electrical service entry panel on the facility wall. One example of a locked-out power source panel is shown in [Figure 1-3](#).
4. Attach a lock and tag that meets OSHA requirements for lockout/tagout.
5. Open the door to the enclosure in which you need access, and using a multimeter, verify that the power is off.

Figure 1-3: Sample of a Lockout/Tagout Mechanism on a Power Source Panel



Hydraulic or Pneumatic System Lockout/Tagout Procedure

Before working on or near hydraulic or pneumatic components, bleed the lines of pressure.

When Lockout/Tagout Is Not Required

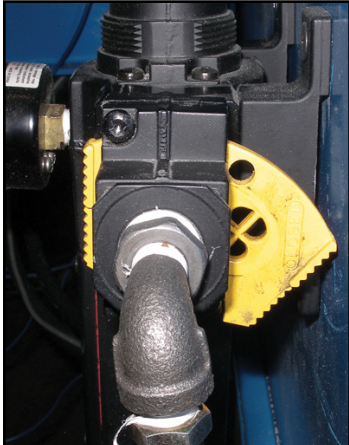
If working on components other than the hydraulic or pneumatic system that require you to be in the vicinity of movable hydraulic or pneumatic components, you must, at a minimum, physically restrain those components from moving. If this is not possible, lockout/tagout the entire hydraulic or pneumatic system.

When Lockout/Tagout Is Required

Before attempting repair or performing maintenance on a hydraulic or pneumatic line or component, lockout/tagout the machine properly. Follow your company's approved lockout/tagout procedures.



Figure 1-4: How to Lockout/Tagout the Pneumatic System



Main Pneumatic Filter/Regulator

- Located on the outfeed end of saw.
- Yellow plate is shown in lockout position. Place lock and tag through holes in yellow plate.
- Pneumatic lines will bleed naturally when yellow plate is in lockout position.
- Ensure gauge reads 0 before performing replacing a supply bottle for the printer or performing any maintenance!

Troubleshooting with an Energized Machine

Only a qualified electrician, using the personal protective equipment and following the procedures recommended in NFPA 70E should ever attempt service or repair of or near an energized area or component of the machine.

Whenever maintenance is performed while the equipment is electrically energized, there is a potential electric arc flash hazard. Refer to NFPA 70E for the personal protective equipment required when working with electrically energized components. Pneumatic and hydraulic components may move unexpectedly if not de-energized. Physically restrain any components capable of movement when working on or near those components.

Treatment for Hazardous Substances




	 WARNING
 	<p>PRINTER INK AND CLEANER IS HIGHLY FLAMMABLE!</p> <p>Keep away from extreme heat, sparks, or open flame.</p> <p>No smoking near these substances.</p>

Table 1-1: Hazardous Substances Used in Normal Maintenance



	Printer Ink	Printer Cleaner
Primary Hazards	Flammable	Flammable
Method of extinguishing fire	Alcohol-resistant foam, carbon dioxide, dry powder, water fog-- NOT water	Alcohol-resistant foam, carbon dioxide, dry powder, water fog-- NOT water
Protective Equipment	Gloves Goggles Eyewash station	Gloves Goggles Eyewash station

Table 1-2: How to Treat Contact With a Hazardous Substance

If Substance Gets On...	Then Do This...	
	Printer Ink	Printer Cleaner
Skin/Clothing	Rinse, remove clothing, then wash skin w/soap	Rinse, remove clothing, then wash skin w/soap
Hair	Wash with soap and water	Wash with soap and water
Eyes	Flush with water	Flush with water, remove contact lenses if possible, continue flushing
Ingested	Do NOT induce vomiting; consult physician immediately	Do NOT induce vomiting; consult physician immediately.
Inhalation	Move to fresh air	Move to fresh air

Safety Tests

These test procedures **MUST** be performed by qualified personnel at startup and after ANY maintenance, adjustment, or modification. Testing ensures that the safety system and machine control system work together to properly stop the machine.

	 CAUTION
	CRUSH AND CUT HAZARD. Before turning on the equipment, make sure that all personnel and equipment are clear.

General Inspection

1. Lockout/tagout the machine.
2. Make sure sharp objects are clear of all pneumatic and electrical system cables.
3. Check the *BLADE* saw for debris or tools that would block the path of parts. Remove any that you may find. The following locations are especially important:
 - Infeed component (Auto Deck or *Ranger*)

BLADE SAW: SAFETY




- Infeed Rail
 - LASM clamp
 - Infeed and Outfeed clamps
 - Outfeed component (Outfeed Table, Skewed Conveyor, or CDS)
4. Check saw blade condition (see [When to Replace the Saw Blade on page 113](#))
 5. Remove lockout/tagout and return electrical power and pneumatic pressure to the machine.
 - Power up the saw using the instructions on [Powering Up or Down on page 70](#).
 6. Press the illuminated blue Reset button. The Reset button light should turn off to indicate the machine is ready for normal operation.
 7. The main filter / regulator and other sub-regulators should match the pressure ratings detailed in [Overview of Pneumatic Components on page 151](#).
 8. Without pressing the open-door pushbutton, pull on the door handle for each door (3 total) to verify all doors are closed and locked.

Inspecting Indicators

1. While performing any of the following safety tests, check to ensure the red **Blade In Motion** light located on the operator interface panel lights up when the blade is running.
2. While performing any of the following safety tests, check to ensure the beacon on top of the main electrical enclosure lights up when cutting is taking place.
3. Verify that all safety labels are present and legible.

Interlock Door Test

Certain doors are interlocked with the E-stop system and should not open when certain parts are in motion.

	 CAUTION
 	CRUSH AND CUT HAZARD. Before turning on the equipment, make sure that all personnel and equipment are clear.

BLADE SAW: SAFETY





SAW CHAMBER DOOR should not open if the blade is moving.

STROKE/ ELEVATION CHAMBER door should not open if any axes are in motion.

Test that the SAW CHAMBER DOOR interlock is functioning by performing this procedure:

1. Turn the saw blade on (see [Powering Up or Down on page 70.](#)).
2. Attempt to open the saw chamber door while pressing the **Request to Unlock** button (see [Interlocked Doors or Guards on page 64.](#)).
 - The door should NOT open while the saw blade is running.
3. Press the **STOP** button.
4. Watch the lights on the operator interface panel.
 - A red **Blade In Motion** light should be illuminated when blade is moving.
 - A green **Blade Motion Stopped** light should illuminate when blade stops.
5. Wait until the blade stops spinning, then attempt to open the saw chamber door again as described in step 2.
 - The door should open now.
6. With the door open, attempt to start the blade by pressing the green **START** button on the saw's operator interface panel.
 - The blade should NOT move.
7. Resolve any inconsistencies:
 - a) If the door opens while the blade is still moving OR the blade spins with the door open, lockout/tagout the saw and arrange for a qualified service technician to repair the equipment.
 - b) If the indicator lights are not behaving as expected, replace the bulb or repair the light.




	 CAUTION
	CUT AND CRUSH HAZARD. Never attempt to stop the saw blade with your hand or a hand-held object.



There may be instances when access is given to the saw chamber while the saw blade is coasting at a speed less than 5 RPM. This is normal and not a cause for alarm. Do not force the blade to stop.




BLADE SAW: SAFETY

Test that the STROKE/ELEVATION CHAMBER DOOR interlock is functioning by performing this procedure:

	 CAUTION
 	CRUSH AND CUT HAZARD. Before turning on the equipment, make sure that all personnel and equipment are clear.

1. Open the stroke/elevation chamber door (see [Interlocked Doors or Guards on page 64](#)).
2. Ensure that the E-stop circuit is not engaged (no E-stops active).
3. Attempt to manually move either the angle, elevation, or stroke axis using the touch screen.
 - The axis should NOT move while a door is open.
4. If an axis moves while the door is open, lockout/tagout the saw and arrange for a qualified service technician to repair the equipment.




E-Stop Test

	 CAUTION
 	CRUSH AND CUT HAZARD. Before turning on the equipment, make sure that all personnel and equipment are clear.

1. Start running the saw and all integrated components:
 - a) Power up the saw using the instructions on [Powering Up or Down on page 70](#).
 - b) Place the machine in MANUAL mode using the switch on the operator interface.
 - c) Start the saw motor by pressing the Saw Motor **START** button on the operator interface.
 - d) Wait approximately 5 seconds until the blade is up to full speed.
2. Prepare a stopwatch to time how long it takes for the saw blade to stop.

3. Activate any one of the E-stops listed here and measure the time between pressing the E-stop and when the blade comes to a complete stop.
 - Operator interface E-stop
 - Electrical enclosure E-stop
 - Infeed Rail E-stop
 - Infeed Rail Pull-Cord (only present in older models)
 - Other Infeed or Outfeed Component E-stops (will vary depending on setup)
4. Ensure that the blade and integrated components stop motion in a timely manner:
 - If the saw blade does not stop within 5-10 seconds, contact Automation Support immediately for resolution.
 - If all integrated components do not stop in a timely manner, lockout/tagout the entire wood processing system and arrange for a qualified service technician to troubleshoot and repair the equipment.
 - If the saw blade and integrated components stop as expected, repeat the procedure to test all E-stops listed in step 3.

Testing Movement While E-Stop is Active

	 CAUTION
 	CRUSH AND CUT HAZARD. Before turning on the equipment, make sure that all personnel and equipment are clear.

1. With an E-stop activated, use the touch screen to attempt to manually move an axis.
2. Watch the axis that was chosen to see if it moves. Because an E-stop is activated, no movement should occur.
3. If movement does occur, Lockout/Tagout immediately and contact Automation Support.

Restricted Zone



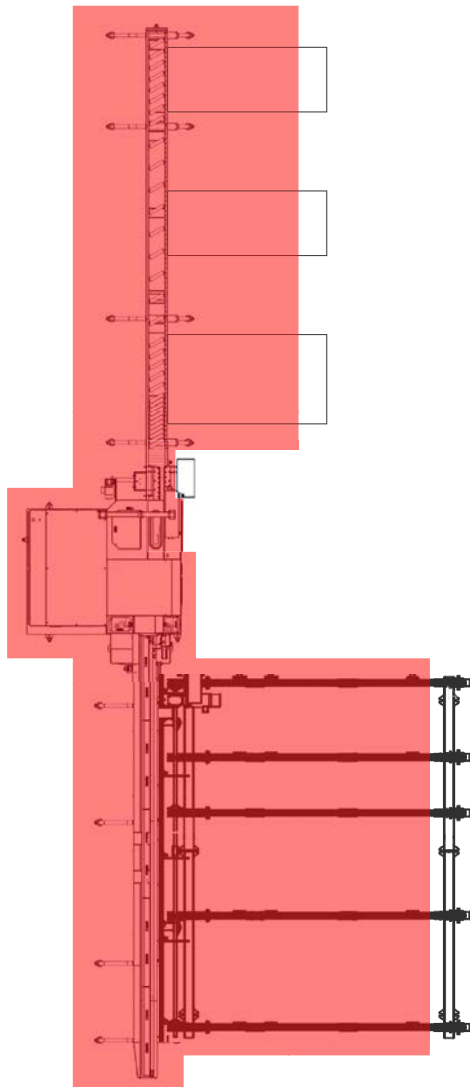
	 DANGER
	<p>Stay out of the restricted zone when equipment is in use. Serious injury or death may result if personnel are in the restricted zone.</p> <p>Always look for personnel in the restricted zone before operating equipment.</p>

Figure 1-5: Know the Restricted Zone



Marking the Restricted Zone

The restricted zone must be marked so everyone near the equipment can clearly see the area where danger may exist. See [page 57](#) for more details.

Safety Symbol Definitions

The safety symbols shown in this section are found throughout the manual to indicate hazards related to this machine. All personnel expected to operate or maintain this machine should be familiar with these safety symbols and their meanings.



User caution. It indicates a condition where equipment damage resulting in injury could occur if operational procedures are not followed. To reduce risk of damage or injury, refer to accompanying documents, and follow all steps or procedures as instructed.



Electrical hazard. It indicates dangerous high voltages inside of an enclosure and/or the presence of a power source. To reduce the risk of fire or electric shock, do not attempt to open the enclosure or gain access to areas where you are not instructed to do so. Refer servicing to qualified service personnel only.

This equipment should be operated only from the type of source indicated on the manufacturer's identification label. Installation should be in compliance with applicable sections of the national electric code. Consult your local building code before installing.



Crush hazard. Keep hands and other body parts clear.



Noise hazard. Equipment produces loud noise in excess of 100 DBA during operation. Use appropriate PPE to protect hearing when in the vicinity of this equipment.



Slip hazard. Use of appropriate footwear is required.



Trip hazard. Pay attention when walking in this area.



Kickback hazard.



Keep hands clear of cutting parts.



BLADE SAW: SAFETY



Keep hands and body clear.



Hot surface. Surface temperature can exceed 158°F (70°C) during normal operation. Do not touch.



Ventilate. Slots and openings in the cabinet are provided for ventilation to ensure reliable operating of the equipment. To protect the equipment from overheating, those openings must not be blocked or covered. This equipment should not be placed in a built-in installation, such as a wall cutout, unless proper ventilation is provided because hot temperatures result.



Operation of this equipment may result in flying debris and excessive noise. To reduce the risk of eye injury, wear only approved PPE.



Keep hands away from moving parts.

BLADE SAW: SAFETY



High pressure hose. Use appropriate PPE when working on equipment. Maintain safe pressure level at all times.



Equipment has automatic restarting capability. Lockout/tagout on the upstream disconnect before servicing.



The operation of this equipment requires the use of PPE.
Do not operate without wearing the required protective clothing.

BLADE SAW: SAFETY



Refer to manual. After installation, read the user's guide carefully before operating. Follow all operating and other instructions carefully.



Circuits are live. Lockout/tagout on the upstream disconnect prior to servicing.



Lockout in a de-energized state.



Lift point. In order to decrease the likelihood of damage to the equipment, use only the lift points indicated in the manual.



Open switch before adjusting equipment.

BLADE SAW: SAFETY



To reduce the risk of equipment damage or injury to personnel, maintain pressure at safe levels.



Consult material safety data sheet.



Unplug equipment before servicing.



No smoking in this area.



Hazardous moving parts are located behind this access panel. Do not operate this equipment without all guards and covers in place.



Do not place containers with liquids such as coffee, water, soda, etc. on this equipment.
Do not operate this equipment in a wet environment.
Do not expose to water.



No lift point. Do not lift this device with a hook/crane assembly. Equipment damage occurs. Refer to the installation instructions.



Do not step or stand upon this equipment. Stepping or standing on this equipment may result in serious injury.
Not a step. Do not step or stand at this location.



Do not use unapproved lubricants in this equipment.



Unauthorized personnel are not allowed beyond this point.



Do not operate without guards in place.



Do not weld.



Do not discard into the municipal waste stream.



Indicates notes regarding lubrication.

Declaration of Safety Conformity

SEGURIDAD (ESPAÑOL)

Indicadores de seguridad: Palabras de aviso

Las siguientes palabras y colores de aviso se utilizan a lo largo de este documento para indicar riesgos de seguridad. Preste suma atención cuando los vea. El nivel de gravedad es diferente por cada palabra o color de aviso.

Las palabras de aviso van acompañadas por gráficos que muestran al personal lo que deben y no deben hacer. Los gráficos se llaman símbolos de seguridad y se definen en la page 42, pero se proporciona un texto más específico cada vez que se utiliza un gráfico por todo el manual. Todas las personas que estén cerca de una máquina tienen que ser capacitadas en cómo leer estos indicadores de seguridad.

No cumplir las instrucciones que acompañan cada palabra de aviso puede producir daños a la propiedad, lesiones personales e incluso la muerte. El personal debe seguir todos los procedimientos y prácticas de seguridad establecidos para asegurar el uso más seguro posible de este equipo. No obstante, en ningún caso este documento reemplaza el sentido común. El personal debe asegurarse de que el entorno de trabajo sea seguro y esté libre de distracciones.

Peligro	Indica una situación de peligro inminente que, si no se evita, ocasionará la muerte o graves lesiones.
Advertencia	Indica una situación potencialmente peligrosa que, si no se evita, podría producir la muerte o lesiones graves.
Precaución	Indica una situación potencialmente peligrosa que, si no se evita, puede producir lesiones menores o moderadas.
Aviso	Llama la atención a información importante para entender la operación que se desea realizar o daños a la propiedad probables.
Ambiental	Se aplica a condiciones que pueden afectar el entorno pero que no tienen un efecto inmediato o directo sobre el personal o el equipo.

Reglas de seguridad para el equipo de general

Debido a la imposibilidad de anticipar todas las circunstancias que podrían constituir un riesgo, la información de seguridad suministrada en este manual del equipo y sobre la máquina no es exhaustiva. Si se utiliza o realiza el mantenimiento de esta máquina utilizando un procedimiento no recomendado específicamente por el fabricante, el procedimiento deberá ser aprobado por un ingeniero profesional para asegurarse de que no afecte la seguridad del equipo. ¡Manéjese siempre con suma precaución y sentido común!

Conozca su equipo

- Lea este manual en su totalidad antes de utilizar o mantener el equipo. No utilice esta máquina a menos que esté perfectamente familiarizado con los controles, los dispositivos de seguridad, los paros de emergencia y los procedimientos operativos que se describen en este manual.
- Lea y siga todas las notas de seguridad. El no cumplimiento de estas instrucciones podría producir pérdidas económicas, daños a la propiedad y/o lesiones personales, incluida la muerte.
- Refiérase a las pautas de bloqueo/etiquetado proporcionadas en las siguientes páginas para realizar el mantenimiento y solucionar problemas de este equipo en forma segura.
- Observe y cumpla con todas las etiquetas de seguridad. Cambie las etiquetas gastadas inmediatamente.
- Utilice este equipo únicamente para el propósito que se describe en este manual.
- Sólo personal calificado debe intentar utilizar o realizar el mantenimiento de este equipo. Por "personal calificado" se entiende:

...una persona o personas que, por el hecho de poseer un título o certificado de capacitación profesional reconocido o que, por sus amplios conocimientos o experiencia, han demostrado con éxito estar capacitados para resolver problemas relacionados con el tema y el trabajo en cuestión—ANSI B30.2-1983

...una persona que posee habilidades y conocimientos relacionados con la construcción y uso de equipos e instalaciones eléctricas y que ha recibido capacitación en seguridad sobre los riesgos posibles—NEC 2002 Handbook

Seguridad personal

- Use siempre un equipo de protección personal (por ejemplo, lentes de seguridad y protección auditiva) en un entorno industrial.
- Utilice una máscara protectora cuando trabaje cerca de aserrín.
- Use ropa adecuada. No use ropa suelta ni joyas. Si tiene el cabello largo, áteselo para atrás.
- Proceda con precaución cuando levante piezas o materiales pesados.


Instalación del equipo

- Siga las instrucciones de instalación al pie de la letra.

- Use el equipo de elevación adecuado para el peso adecuado.
- No utilizar este equipo en zonas residenciales.

Cómo mantener un entorno seguro

- Preste atención a su entorno.
- Mantenga alejados a los niños. Todos los visitantes deben mantenerse a una distancia segura del área de trabajo. Los riesgos pueden no ser evidentes a las personas no familiarizadas con la máquina.
- Mantenga las áreas de trabajo bien iluminadas.
- Mantenga el área de trabajo limpia y libre de cualquier riesgo de tropiezo o resbalamiento.
- No utilice el equipo en lugares húmedos o mojados y no lo exponga a la lluvia o a la nieve.
- Minimice las nubes de polvo y proteja su equipo quitando el polvo de la siguiente manera:
 - a) Apague la alimentación eléctrica y todas las fuentes de ignición

	NOTICE
	<p>¡No utilice nunca aire comprimido dentro de una caja eléctrica! Puede forzar sustancias contaminantes hacia el interior de las conexiones eléctricas.</p> <p>Utilice un aspirador para eliminar polvo de las cajas eléctricas. Es aceptable utilizar aire comprimido después de aspirar.</p>

- b) Aspire el polvo antes de soplarlo con aire
 - c) El equipo eléctrico de limpieza como las aspiradoras debe cumplir con los códigos del gobierno local para uso en condiciones polvorientas.

Uso y mantenimiento del equipo

- Asegúrese de que no haya personas, herramientas y objetos extraños en las zonas restringidas antes de utilizar este equipo. **Las zonas restringidas se indican en la página 17.**
- Realice pruebas de seguridad para verificar que todos los paro de emergencia funcionen adecuadamente antes de utilizar el equipo al principio de la puesta en marcha y después de realizar cualquier tarea de mantenimiento.
- Presione siempre el pulsador de un paro de emergencia antes de acercarse a una máquina por cualquier motivo. Un paro de emergencia puede causar que los componentes se muevan sin previo aviso.
- Use solamente los procedimientos descritos en este manual. Cualquier otro procedimiento debe analizarse con MiTek para verificar que sea seguro. Para los temas que no se traten en este manual o en línea, póngase en contacto con MiTek para recibir asesoramiento.

- En caso de que la máquina no funcione correctamente, deténgala inmediatamente utilizando un freno de emergencia e informe el problema a un supervisor.
- No deje nunca la máquina encendida si no está junto a ella. ¡Apáguela! No la abandone hasta que todas las piezas se detengan completamente y hasta que se haya apagado la alimentación eléctrica.
- Verifique periódicamente que no haya piezas gastadas o dañadas. Repárelas o cámbielas inmediatamente.
- Use solamente las piezas de repuesto exactas que se especifican. El uso de piezas no aprobadas puede anular la garantía y plantear un riesgo de seguridad.
- Mantenga los sistemas neumáticos y eléctricos en buen funcionamiento en todo momento. Repare las fugas y las conexiones sueltas inmediatamente. No exceda nunca la presión ni potencia eléctrica recomendadas.
- Verifique que todos los dispositivos de seguridad estén en buen funcionamiento antes de comenzar cada turno. Todos los dispositivos protectores y de seguridad deben estar en su lugar antes y durante el uso de la máquina. No desconecte ni evite nunca ningún dispositivo de seguridad ni interbloqueo eléctrico.
- Apriete los pernos y tornillos al par de apriete especificado por MiTek. Si no se especifica el par de apriete, use los estándares de la industria.
- Solo el personal de mantenimiento calificado puede quitar o instalar los dispositivos de seguridad. Solo electricistas calificados deben realizar trabajos eléctricos.
- Inspeccione periódicamente la calidad del producto terminado.
- Documente todas las tareas de mantenimiento preventivo y de reparación durante la vida útil de la máquina para mejorar su eficiencia y reducir el riesgo de accidentes.



Seguridad eléctrica



- No utilice líquidos en el interior de los gabinetes eléctricos.
- Cuando utilice disolventes sobre o alrededor de la máquina, desconecte la alimentación para eliminar las probabilidades de chispas, que pueden producir una explosión o incendio. Use un respirador aprobado para el uso con disolventes. Use ropa protectora, guantes y lentes de seguridad.



Ubicación de un paro de emergencia



Refiérase a la página [59](#) para ubicación de un paro de emergencia.

Advertencias generales

	 WARNING
	<p>¡ELECTRICIDAD DE ALTO VOLTAJE!</p> <p>Puede causar lesiones personales graves o la muerte. Asegúrese de que solo electricistas calificados realicen trabajos de servicio eléctrico.</p>

	 WARNING
	<p>Lea el manual del equipo, las etiquetas de seguridad y toda la información de seguridad suministrada antes de operar o hacerle mantenimiento a este equipo.</p>

	 WARNING
	<p>RIESGO DE APLASTAMIENTO O CORTE</p> <p>Los protectores siempre deben estar colocados durante la operación para evitar lesiones graves y posiblemente la muerte.</p> <p>Reemplace siempre los protectores después de terminar las tareas de mantenimiento y antes de quitar el dispositivo de bloqueo/etiquetado.</p>

	 WARNING
	<p>Muchos componentes se fabrican en acero duro tratado térmicamente. No intente enderezar, doblar ni soldar estos componentes, ya que pueden fallar al someterse a cargas y causar lesiones personales o la muerte.</p>



Bloqueo/Etiquetado

Pautas de bloqueo/etiquetado

Deben cumplir con todas las pautas de bloqueo/etiquetado conforme a la norma OSHA 29 CFR 1910.147. El programa de control de energía de la compañía debe incluir un procedimiento específico. El objetivo de este manual no es reemplazar el procedimiento de desenergización o bloqueo/etiquetado requerido por la OSHA, sino proporcionar pautas orientativas generales.

El término "bloqueo", según se utiliza en este manual, se refiere a la colocación de un dispositivo de bloqueo en las fuentes de energía para asegurar que el dispositivo aislador de energía y el equipo controlado por éste no puedan reenergizarse o utilizarse hasta que se retire dicho dispositivo. Consulte los [Procedimientos de bloqueo/etiquetado eléctricos en la página 31](#) y el [Procedimiento de bloqueo/etiquetado del sistema hidráulico o neumático en la página 34](#) para obtener más información sobre cada tipo de procedimiento de bloqueo/etiquetado

- Las fuentes de energía incluyen energía eléctrica, mecánica, hidráulica, neumática, química, térmica y otras.
- En el caso de fuentes de energía eléctrica, la alimentación principal y la alimentación de control a la maquinaria deben apagarse y bloquearse físicamente en la posición "off" (apagado).
- Por lo general, como dispositivo de bloqueo se utiliza un candado con llave.

Si hay más de una persona trabajando en una zona restringida, utilice un dispositivo de bloqueo grupal que permita a cada persona utilizar un candado que sólo pueda ser retirado por la persona que realiza el mantenimiento.

Siempre que vea este símbolo, ¡Bloquee/Etiquete!

Procedimientos de bloqueo/etiquetado eléctricos

Cuando trabaja en una máquina fuera del gabinete eléctrico principal de la máquina



Si trabaja en la línea de transmisión eléctrica a la máquina, siga el procedimiento de la page 33.



Antes de realizar el mantenimiento de cualquier máquina con alimentación eléctrica, bloquee y etiquete la máquina de forma adecuada. Cuando trabaje en una máquina fuera del gabinete eléctrico principal de la máquina, salvo en el caso de trabajos en la línea de transmisión eléctrica a la máquina, siga los procedimientos de bloqueo/etiquetado aprobados por la compañía, los cuales deberían incluir, entre otros, los pasos aquí indicados.

1. Coloque un paro de emergencia sobre la máquina.
2. Coloque el mango del interruptor con fusibles en la posición "apagado". Vea la Figura 2-1.



	 WARNING
	RIESGO DE ELECTROCUCIÓN. Cuando el interruptor con fusibles está apagado, sigue habiendo energía dentro del gabinete del interruptor. ¡Apague siempre la alimentación en la fuente de alimentación del edificio antes de abrir este gabinete eléctrico!

Figura 2-1: El gabinete eléctrico principal



3. Coloque un candado y una etiqueta que cumplan con los requisitos de bloqueo/etiquetado de la OSHA.

Figura 2-2: Mecanismo de bloqueo/etiquetado en un gabinete eléctrico principal



4. Trabe o desenergice todos los componentes neumáticos y otras piezas que tengan alimentación directa o almacenada.



Cuando trabaje en una máquina dentro del gabinete eléctrico principal de la máquina o en la línea de transmisión eléctrica a la máquina

Antes de abrir el gabinete eléctrico principal o intentar reparar o reemplazar una línea de transmisión eléctrica a la máquina, bloquee y etiquete la máquina en forma adecuada. Siga los procedimientos de bloqueo/etiquetado aprobados por la compañía, los cuales deberían incluir, entre otros, los pasos aquí indicados.

1. Coloque un paro de emergencia sobre la máquina.
2. Apague la alimentación a la máquina en la fuente de alimentación, que, por lo general, es un panel de entrada de suministro eléctrico que se encuentra en una pared de las instalaciones. En la Figura 2-3 se muestra un ejemplo de panel de fuente de alimentación bloqueado.
3. Coloque un candado y una etiqueta que cumplan con los requisitos de bloqueo/etiquetado de la OSHA.
4. Abra la puerta del gabinete al que necesita acceder y usando un multímetro verifique que la alimentación esté apagada.

Figura 2-3: Ejemplo de un mecanismo de Bloqueo/Etiquetado en un panel de entrada de suministro eléctrico



Procedimiento de bloqueo/etiquetado del sistema hidráulico o neumático

Antes de realizar el mantenimiento de los sistemas neumáticos, purgue las líneas para eliminar la presión.

Cuando no se requiere bloqueo/etiquetado

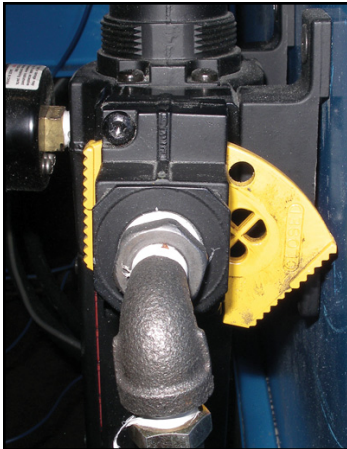
Si trabaja con componentes que no son del sistema neumático pero que requieren su presencia en la proximidad de componentes neumáticos móviles, debe, como mínimo, trabar físicamente estos componentes para que no se muevan. Si no es posible, bloquee/etiquete todo el sistema neumático.

Cuando se requiere bloqueo/etiquetado

Antes de intentar reparar o realizar el mantenimiento de una línea o componente neumático, bloquee/etiquete la máquina en forma apropiada. Siga los procedimientos de bloqueo/etiquetado aprobados por la compañía.



Figura 2-4: Cómo bloquear y etiquetar el sistema neumático



Filtro/regulador neumático principal

(ubicado del lado derecho de la sierra)

- Se encuentra del lado derecho de la sierra.
- La placa amarilla se muestra en posición bloqueada. Coloque el bloqueo y la etiqueta a través de los orificios en la placa amarilla.
- Las mangueras neumáticas sangrarán de manera natural cuando la placa amarilla se encuentre en posición de bloqueo.
- Verifique que la lectura del indicador sea 0 antes de reemplazar un frasco de suministro para la impresora o de realizar cualquier tipo de mantenimiento.

Solución de problemas con una máquina energizada

Sólo un electricista calificado que utilice el equipo de protección personal y siga los procedimientos recomendados en la norma NFPA 70E debe intentar realizar tareas de reparación o mantenimiento en un área o componente energizados de la máquina o en su proximidad.

Cada vez que se realizan tareas de mantenimiento mientras el equipo está eléctricamente energizado, existe un riesgo potencial de formación de un arco eléctrico. Consulte en la norma NFPA 70E el equipo de protección personal requerido para trabajar con componentes eléctricamente energizados. Los componentes neumáticos e hidráulicos pueden moverse de manera imprevista si no se desenergizan. Trabe físicamente cualquier componente que pueda moverse cuando deba trabajar en ellos o en su proximidad.

Tratamiento en caso de contacto con sustancias peligrosas




	 WARNING
 	<p>LA TINTA Y EL LIMPIADOR DE LA IMPRESORA SON ALTAMENTE INFLAMABLES.</p> <p>Manténgalos alejados del calor extremo, las chispas o las llamas expuestas.</p> <p>No se debe fumar cerca de estas sustancias.</p>

Table 2-1: Sustancias peligrosas que se utilizan en el mantenimiento normal

	Tinta de impresora	Limpiador de impresora
Peligros principales	Inflamable	Inflamable
Método de extinción	Espuma resistente al alcohol, dióxido de carbono, polvo seco, agua nebulizada; NO agua	Espuma resistente al alcohol, dióxido de carbono, polvo seco, agua nebulizada; NO agua
Equipo de protección	Guantes Gafas protectoras Estación de lavado de ojos	Guantes Gafas protectoras Estación de lavado de ojos



Table 2-2: Cómo tratar el contacto con una sustancia peligrosa

Si una sustancia entra en contacto con...	Haga esto...	
	Tinta de impresora	Limpiador de impresora
La piel/ropa	Enjuague, quítese la ropa y lave la piel con jabón	Enjuague, quítese la ropa y lave la piel con jabón
El cabello	Lave con agua y jabón	Lave con agua y jabón

Si una sustancia entra en contacto con...	Haga esto...	
	Tinta de impresora	Limpiador de impresora
Los ojos	Enjuague con agua	Enjuague con agua, quítese los lentes de contacto si es posible y continúe enjuagando
Ingestión	NO provoque el vómito; consulte inmediatamente a un médico	NO provoque el vómito; consulte inmediatamente a un médico
Inhalación	Salga al aire libre	Salga al aire libre

Pruebas de seguridad

Este procedimiento de prueba DEBE ser realizado por personal calificado durante la puesta en marcha y después de CUALQUIER tarea de mantenimiento, ajuste o modificación. La prueba permite comprobar si el sistema de seguridad y el sistema de control de la máquina funcionan juntos y detienen la máquina de manera adecuada.

	 CAUTION
	PELIGRO DE APLASTAMIENTO Y CORTE. Antes de encender el equipo, asegúrese de que todo el personal y los equipos estén alejados.

Inspección general

1. Realice el procedimiento de bloqueo/etiquetado de la máquina.
2. Asegúrese de que los objetos afilados estén alejados de todos los cables del sistema neumático y eléctrico.
3. Verifique que la *sierra BLADE* no tenga desechos ni herramientas que pudieran obstruir sus piezas. Retire todo lo que encuentre. Los siguientes lugares son especialmente importantes:
 - Componente de alimentación (Auto Deck o *Ranger*)
 - Riel de alimentación
 - Prensa del LASM
 - Prensas de alimentación y de salida




- Componente de salida (mesa de salida, banda transportadora inclinada, o CDS)
- 4. Verifique el estado de la cuchilla de la sierra (consulte Cuándo reemplazar la cuchilla de la sierra en la página [113](#))
- 5. Quite el bloqueo y etiquetado y restablezca la energía eléctrica y la presión neumática a la máquina.
 - Encienda la sierra según las instrucciones de Encendido o apagado en la página [70](#).
- 6. Presione el botón azul iluminado “Reset” (restablecer). La luz del botón “Reset” debe apagarse para indicar que la máquina está lista para el funcionamiento normal.
- 7. El filtro/regulador principal y otros subreguladores deben coincidir con los valores nominales de presión detallados en Descripción general de los componentes neumáticos en la página [151](#).
- 8. Sin presionar el pulsador de apertura de la puerta, jale de la manija de cada puerta (3 en total) para verificar que todas las puertas están cerradas y bloqueadas.

Indicadores de inspección

1. Mientras realiza cualquiera de las siguientes pruebas de seguridad, compruebe que la luz roja “*Blade In Motion*” (cuchilla en movimiento) en el panel de la interfaz del operador se encienda cuando la cuchilla esté funcionando.
2. Mientras realiza cualquiera de las siguientes pruebas de seguridad, compruebe que la luz en la parte superior de la caja eléctrica principal se encienda cuando se realicen los cortes.
3. Verifique que todas las etiquetas de seguridad estén presentes y sean legibles.

Prueba de las puertas interbloqueadas

Ciertas puertas están interbloqueadas con el sistema de botón pulsador de freno de emergencia y no deben abrirse cuando ciertas piezas se estén moviendo.

	 CAUTION
 	RIESGO DE APLASTAMIENTO Y CORTE. Antes de encender el equipo, asegúrese de que todo el personal y el equipo estén alejados.





La **PUERTA DE LA CÁMARA DE LA SIERRA** no debe abrirse si la cuchilla está en movimiento.

La puerta de la **CÁMARA DE LA CARRERA/ELEVACIÓN** no debe abrirse si algún eje está en movimiento.

Pruebe que el interbloqueo de la **PUERTA DE LA CÁMARA DE LA SIERRA** funcione realizando este procedimiento:

1. Encienda la sierra según las instrucciones de Encendido o apagado en la página 70.
2. Trate de abrir la puerta de la cámara de la sierra mientras presiona el botón **Request to Unlock** en la página 64.
 - La puerta **NO** debe abrirse mientras esté funcionando la cuchilla de la sierra.
3. Presione el botón **STOP** (alto).
4. Observe las luces por la interfaz del operador.
 - Una luz roja (**Blade In Motion**) debe estar encendida cuando la cuchilla se esté moviendo.
 - Una luz verde (**Blade Motion Stopped**) debe encenderse cuando se detenga la cuchilla.
5. Espere hasta que la cuchilla deje de dar vueltas y luego trate de nuevo de abrir la puerta de la cámara de la cuchilla, como se describió en el paso 2.
 - La puerta debe abrirse ahora.
6. Con la puerta abierta, trate de arrancar la cuchilla presionando el botón **START** (Iniciar) verde en la interfaz del operador de la sierra.
 - La cuchilla **NO** debe moverse.
7. Resuelva cualquier incongruencia:
 - a) Si se abre la puerta mientras la cuchilla todavía está en movimiento O la cuchilla gira con la puerta abierta, realice los procedimientos de bloqueo/etiquetado en la sierra y pida a un técnico de servicio calificado que repare el equipo.




- b) Si las luces indicadoras no se comportan como se esperaba, reemplace la bombilla o repare la luz.

	 CAUTION
	RIESGO DE APLASTAMIENTO Y CORTE. Nunca trate de detener la cuchilla de la sierra con la mano o con un objeto que sostenga con la mano.






Podría haber casos en que se permita el acceso a la cámara de la sierra mientras la cuchilla de la sierra se desacelera a una velocidad menor de 5 RPM. Esto es normal y no es causa de alarma. No fuerce la cuchilla para que se detenga.

Pruebe que el interbloqueo de la PUERTA DE LA CÁMARA DE LA CARRERA/ELEVACIÓN funcione realizando este procedimiento:

	 CAUTION
 	RIESGO DE APLASTAMIENTO Y CORTE. Antes de encender el equipo, asegúrese de que todo el personal y el equipo estén alejados.

1. Abra la puerta de la cámara de carrera/elevación (vea las páginas [64](#)).
2. Asegúrese de que el circuito del botón pulsador del freno de emergencia no esté acoplado (no hay botones pulsadores del freno de emergencia activos).
3. Use la pantalla táctil para mover un eje manualmente
 - El eje NO debe moverse mientras una puerta esté abierta.
4. Si se mueve un eje mientras la puerta está abierta, realice los procedimientos de bloque/etiquetado en la sierra y pida a un técnico de servicio calificado que repare el equipo.




Prueba de los paros de emergencia

	 CAUTION
 	<p>PELIGRO DE APLASTAMIENTO Y CORTE.</p> <p>Antes de encender el equipo, asegúrese de que todo el personal y los equipos estén alejados.</p>

1. Comience haciendo funcionar la sierra y todos los componentes integrados:
 - a) Encienda la sierra según las instrucciones de Encendido o apagado en la página 70.
 - b) Coloque la máquina en modo MANUAL con el interruptor en la interfaz del operador.
 - c) Arranque el motor de la sierra presionando el botón **START** (arrancar) en la interfaz del operador.
 - d) Espere aproximadamente 5 segundos hasta que la cuchilla avance a toda velocidad.
2. Prepare un cronómetro para medir el tiempo que tarda en detenerse la cuchilla de la sierra.
3. Active cualquiera de los paros de emergencia indicados aquí y mida el tiempo transcurrido entre que presiona el paro de emergencia y el momento en que la cuchilla se detiene completamente.
 - Paro de emergencia de la interfaz del operador
 - Paro de emergencia de la caja eléctrica
 - Paro de emergencia del riel de alimentación
 - Las cuerdas de parada de emergencia del riel de alimentación (sólo presente en modelos más antiguos)
 - Otros paros de emergencia de los componentes de alimentación o salida (variará en función de la configuración)
4. Asegúrese de que la cuchilla y los componentes integrados detengan el movimiento sin demoras:
 - Si la cuchilla de la sierra no se detiene en un intervalo de 5 a 10 segundos, póngase en contacto de inmediato con el Soporte técnico de automatización para que lo solucionen.
 - Si todos los componentes integrados no se detienen a tiempo, realice procedimientos de bloqueo/etiquetado en todo el sistema de procesamiento de madera y pida a un técnico de servicio calificado que diagnostique y repare el equipo.

- Si la cuchilla de la sierra y los componentes integrados se detienen según lo esperado, repita el procedimiento para probar todos los paros de emergencia indicados en step 3.

Prueba de movimiento mientras el paro de emergencia está activo

	 CAUTION
 	<p>PELIGRO DE APLASTAMIENTO Y CORTE.</p> <p>Antes de encender el equipo, asegúrese de que todo el personal y los equipos estén alejados.</p>

1. Con el paro de emergencia activado, use la pantalla táctil para intentar mover manualmente un eje.
2. Observe si el eje que eligió se mueve. Como el paro de emergencia está activado, no debería moverse.
3. Si se mueve, realice de inmediato los procedimientos de bloqueo/ etiquetado y póngase en contacto con el Soporte técnico de automatización.

Zona Restringida



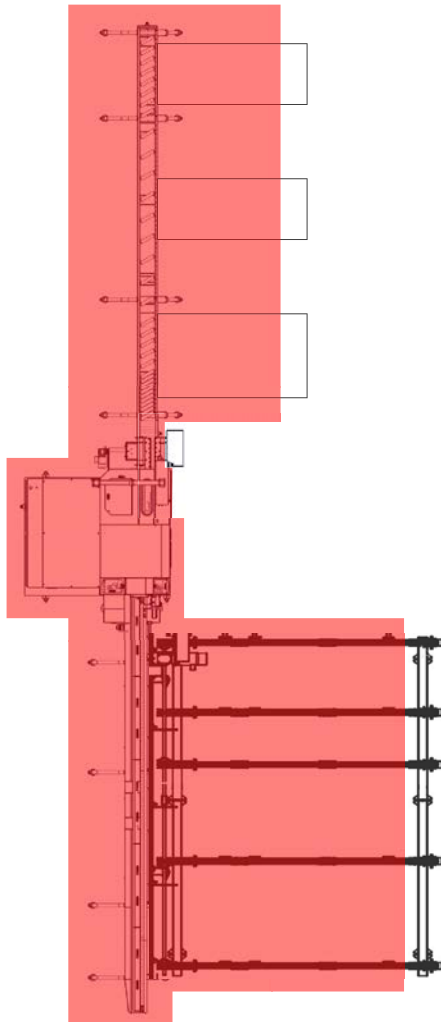
	 DANGER
	<p>Manténgase afuera de la zona restringida cuando el equipo esté en uso. Pueden producirse lesiones graves o incluso la muerte si el personal está en la zona restringida.</p> <p>Asegúrese que no haya personal en la zona restringida antes de operar el equipo.</p>

Figura 2-5: Conocer la zona restringida





Marcar la zona restringida

La zona restringida deberá marcarse de tal manera que todas las personas que se encuentren cerca del equipo puedan ver claramente el área donde pueda haber peligro. Refiérase a la página [57](#).

INTRODUCTION

Introduction to the Manual

	 WARNING
	<p>Read this manual completely before using this equipment.</p> <p>Do not operate this equipment until you have a thorough understanding of all controls, safety devices, emergency stops, and operating procedures outlined in this manual.</p> <p>All hazard instructions must be read and observed. Failure to do so may result in economic loss, property damage, and/or personal injury.</p> <p>This manual must always be available to personnel.</p>

In order for this manual to be useful, the appropriate sections must be easily accessible by operators and maintenance personnel.

This manual addresses the most recent version of the equipment as of the date listed on the title page. For earlier revisions, contact MiTek as described on page 46.

Understanding the Manual

Hyperlinks

All text references [colored blue](#) (in form of page numbers, headings, etc.) can be selected to immediately take you to the relevant section.





The Drawing Set

A list of drawings can be found in the back of this equipment manual or in a separate 11x17 binder.

Navigational Aids

The graphics used in Table 3-1 are used throughout the manual to communicate a specific type of information quickly.

Table 3-1: Navigational Aids

Graphic	Definition
	This icon is an important safety note. It indicates that you must lockout/tagout at the disconnect switch located on the equipment using approved methods described in OSHA CFR 1910.147 before continuing with the procedure.
	This icon specifies that certain tools are needed before a procedure begins.
	This icon provides additional information to supplement the main text.
	This icon indicates how to locate additional relevant information or resources.

Operator Training Outline

Subject	Training and Related Links
Using the Manual	<ul style="list-style-type: none">• Show the operator how to access the manual on the MiTek website.
Safety	<ul style="list-style-type: none">• Review the lockout/tagout procedures for all machine systems: Lockout/Tagout on page 6.• Walk the operator through all procedures in the Safety Tests section: Safety Tests on page 12.• Instruct the operator to read the entire Safety chapter before operating the machine for the first time: Safety (English) on page 1.
Operation	<ul style="list-style-type: none">• Walk the operator through all procedures in the Safety-Related Operating Procedures section and make note of the location of all E-stops: Safety-Related Operating Procedures on page 59.• Walk the operator through the Operating Procedure section: Operating Procedure on page 84.
Maintenance	<ul style="list-style-type: none">• Walk the operator through the process of replacing a saw blade: Saw Blade on page 113.• Instruct the operator to review the Maintenance chapter to learn more about the necessary maintenance to keep their machine running optimally: Maintenance on page 93.• Walk through the Maintenance Checklist with the operator. Make note of the daily, weekly, and monthly/annual task structure and demonstrate how selecting the page numbers will take you to the related section: Maintenance Checklist on page 211.

Additional Resources

Website

Visit the [MiTek website](#) for up-to-date information on all MiTek equipment. You may also find the following information there:

- The latest revisions of this manual
- Service bulletins pertaining to your equipment
- Support, safety, and training information
- Part numbers for ordering parts

Contact Us

MiTek Automation Support
301 Fountain Lakes Industrial Drive
St. Charles, MO 63301

Parts Orders (with part number)
Email: mitekparts@mii.com

Technical Assistance
Phone: 800-523-3380
Fax: 636-328-9218
machinerysupport@mii.com

Website
mitek-us.com

Videos
Search for "MiTek Inc" to find us on [YouTube®](#).

GENERAL INFORMATION

Introduction to the Equipment

Purpose of the Equipment

The *BLADE* wood processing system is a fast, accurate, and economical method of cutting a wide array of components for wood truss manufacturing. It is capable of cutting lumber for virtually all of your roof truss, floor truss, and wall panel needs.

Description of the Equipment

The *BLADE* saw includes the following components:

- The **Infeed** component takes the lumber, in the correct order, to the infeed rail of the saw for cutting.
- The **Saw** component contains the board printer, the saw blade itself, and the waste conveyor.
- The **Outfeed** component receives and manages cut parts.

Aspects of these components can be further customized according to customer need. See the following pages for a more detailed overview of the entire system and the options available.

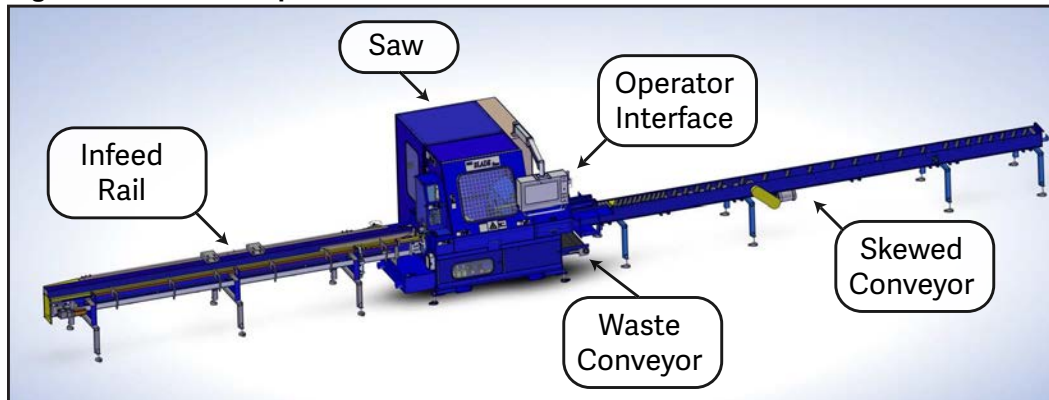
Safety Compliance of the Equipment

Equipment shipped to a U.S. destination is compliant NFPA 79, NEC 2009, and applicable OSHA regulations.

Main Components

Graphical Overview

Figure 4-1: Main Components of the **BLADE** saw



See [Optional Components on page 49](#) for other components not shown here.

Descriptions

Table 4-1 lists the components that are included with the different configurations of this equipment

Table 4-1: Machine Components

Name	Description
Infeed Component	Your machine will include one of two options determined during the ordering process: <ul style="list-style-type: none">• An Auto Deck that transports the lumber (placed there by operator) and advances 1 piece at a time for automatic loading onto the Infeed Rail (16' and 20' options available).• An automated <i>Ranger</i> lumber retrieval system that picks the correct lumber (without an operator) and delivers it, in order, to the Infeed Rail.
Infeed Rail	Receives 1 piece of lumber and feeds it into the saw chamber. (16' and 20' options available)
Saw	Saw component where the printing and cutting occurs.
Outfeed Component	Your machine will include one of the following options determined during the ordering process: <ul style="list-style-type: none">• Outfeed table (unpowered) for manual board removal• A powered skewed conveyor that arranges boards for operator removal (16' and 20' options available).• A Component Delivery System (CDS) that moves members from the saw to the tables without the need for manual sorting. The CDS is only offered as part of the DirectDrive system. See the Mitek website for more information.
Waste Conveyor	Moves waste from the saw to the point of removal. A standard and extended size are available.

Optional Components

Graphical Overview

Figure 4-2: Auto Deck (Infeed Component)



Figure 4-3: Ranger (Infeed Component)



BLADE SAW: GENERAL INFORMATION

Figure 4-4: Component Delivery System (Outfeed Component)



Descriptions

Table 4-2 lists the optional components that may be added at the point of sale or added later as a paid upgrade. Contact MiTek for more information (see [Contact Us on page 46](#)).

Table 4-2: Optional Saw Components

Name	Description
Additional print heads (up to 3 total)	The standard saw comes with one front face printer. You may also purchase or upgrade to an additional rear face printer and edge printer. See for more information on printing options.
AGS+	Assembly Guide System; prints joint and component locations and plates. Requires printer option E or F.
Incline waste conveyor	Works with the saw waste conveyor to move waste up an incline to reach the top of a dumpster.
Second monitor	Allows a second monitor for displaying truss/part data and production metrics. See Second Display Support on page 51 .
Transformer for voltages other than 230 volt.	If the site voltage is anything other than 230 volts, a transformer is necessary.

Additional Printer Options

The **BLADE** saw can be customized to use a number of different printer configurations. Note that the printer hardware in earlier machine models may need to be upgraded to support all options listed in [Table 4-3](#).

BLADE SAW: GENERAL INFORMATION

Table 4-3: *BLADE* saw Print Head Configurations

Option	Description	Valve Configuration
A	Standard with every saw. 1 print head prints standard print fields (text) on front face.	16 Front
B	Uses 2 print heads to print standard print fields, joint and plate information, and joint alignment marks all on the face-up side of boards.	16 Front / 7 Rear
C	Same as A, plus a 2 nd print head to print on the top edge of boards.	16 Front / 7 Edge
D	Same as B, plus a 3 rd print head to print on the top edge of boards.	16 Front / 7 Rear / 7 Edge
E	AGS+: Uses 2 print heads to print everything in B, plus plate outlines in correct location, and basic graphics all on the face-up side of boards.	32 Front / 32 Rear
F	AGS+: Same as E, plus a 3 rd print head to print on the edge of boards.	32 Front / 32 Rear / 7 Edge

Second Display Support

The *BLADE* saw supports outputting truss/part data and production metrics to a second display. When purchasing a monitor for this use, it is highly recommended to obtain the specifications listed here:

- Recommended screen size: 65"
- Supported screen resolution: 1920x1080
- Ports required: HDMI

Dust Extraction Methods

One port is provided for dust extraction from the saw chamber. We recommend working with a location dust extraction method to find a solution that meets the following criteria:

Airflow rate: 2100 scfm

Technical Specifications

Table 4-4: General Specifications

Specification	Data
Saw Blade	432 mm diameter (17")
Accuracy of each axis	1/32" and 0.1 degree
Printer	16 valves, front face (see Additional Printer Options on page 50)

BLADE SAW: GENERAL INFORMATION

Table 4-5: Lumber and Cut Capacity

Specification	Data
Edge of board	1-3/8" to 1-5/8"
Face of board	2-1/2" to 11-7/8"
Maximum length of board	16' (20' option available)
Shortest length to exit saw chamber	2"
Shortest length to enter saw via Auto Deck	6' (option available for shorter)
Min. or max. length of cut	infinite
Number of angle cuts	infinite

Table 4-6: Motor Specifications

Specification	Data
Saw blade	5 hp, 4200 rpm
Waste conveyor and lumber exit chain	.5 hp
Skewed Conveyor	1 hp
Auto Deck	1 hp

Table 4-7: Pneumatic Specifications

Specification	Data
Air source tank (if needed)	60 gallons minimum
Volume	73 scfm at 110 psi

Table 4-8: Electrical Specifications

Specification	Data
Voltage (VAC)	230 VAC (other voltages require transformer)
FLA plus controls (amps)	67
Disconnect switch fuses (amps)	100
Cycles (Hz)	60
Phases	3

Table 4-9: Dimensional Specifications

Specification	Data
Saw	6' 10" L x 8' W x 6' 5 1/2"
System: Saw, 16' Infeed Rail, 10' deep Auto Deck, 20' Skewed Conveyor	42' 10" L x 18' 5" W x 6' 5 1/2"
System: Saw, 20' Infeed Rail, 10' deep Auto Deck, 20' Skewed Conveyor	51' 10" L x 18' 5" W x 6' 5 1/2"

BLADE SAW: GENERAL INFORMATION

Table 4-10: Weight Specifications

Specification	Data
Saw	8,000 lbs
Infeed rail - 16'	1360 lbs
Infeed rail - 20'	1600 lbs
Skewed Conveyor - 16'	900 lbs
Skewed Conveyor - 20'	1100 lbs

Table 4-11: Environmental Requirements

Operating temperature	40 to 122 degrees Fahrenheit (4 to 50 degrees Celsius).
Relative humidity	45 to 85 percent humidity
Transportation and storage	-13 to 158 degrees Fahrenheit (-25 to 70 degrees Celsius). It has been packaged to prevent damage from the effects of normal humidity, vibration, and shock
Environment for scanners must be:	Free of rain, fog, mist, sand, and bright sunlight

INSTALLATION & STARTUP

Requirements to Meet for Installation

Refer to your original Pre-Installation document for all requirements that must be met before or during installation.

Refer to the General chapter for machine specifications and requirements.

Moving the Equipment Into Place

Follow these guidelines to safely move this equipment with a forklift or crane.

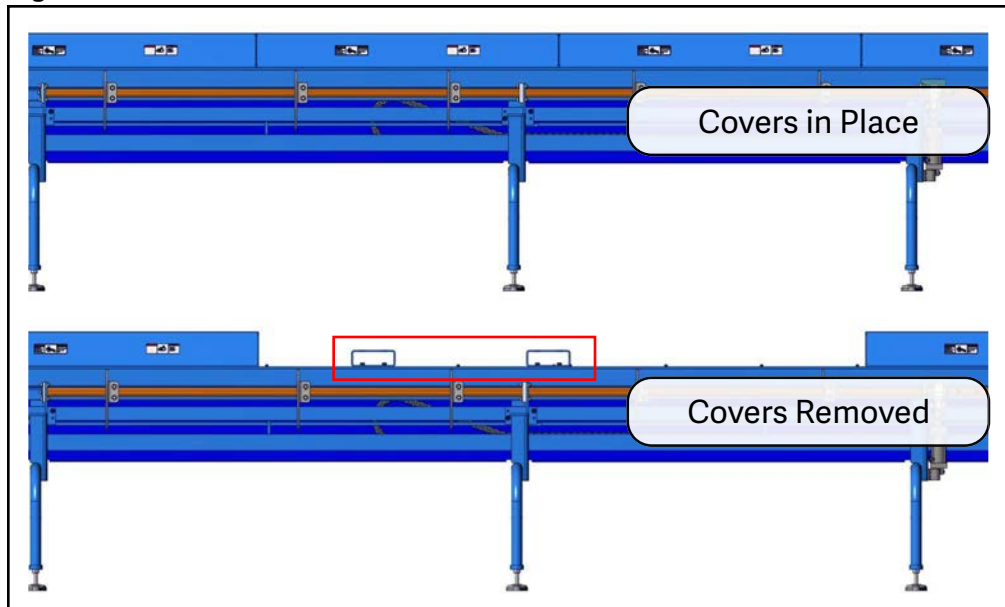
Transportation Equipment Requirements

The forklift, crane, chains, clevises, and all moving equipment must be rated for 150% of the weights listed on [Technical Specifications on page 51](#) to abide by general safety rules.

Lift Points for Forklift

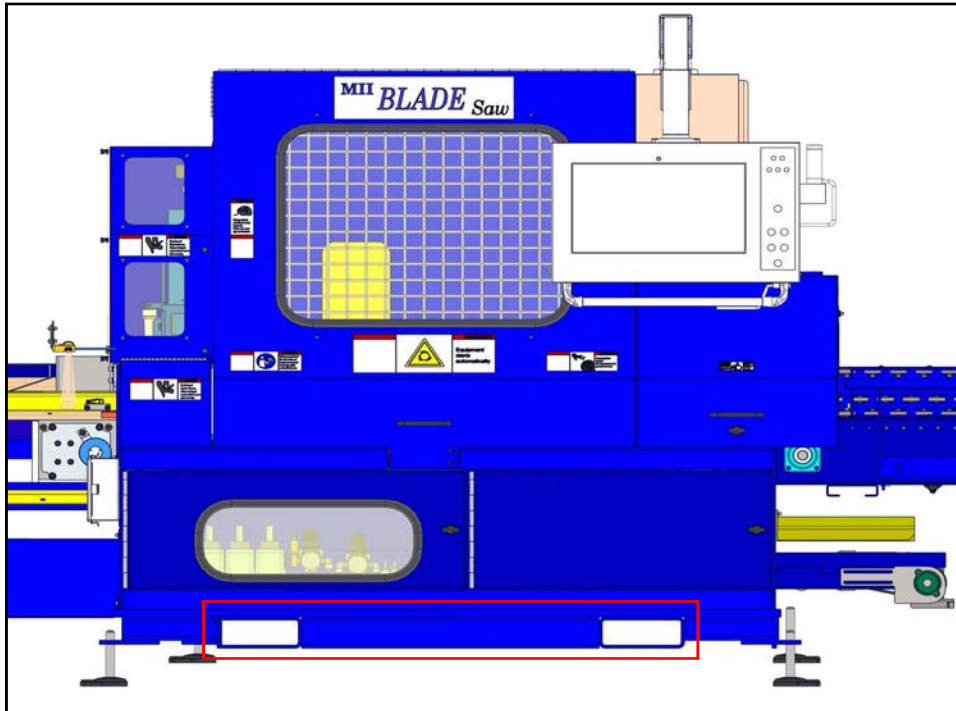
Infeed Rail

Figure 5-1: Infeed Rail Lift Points



Saw Chamber

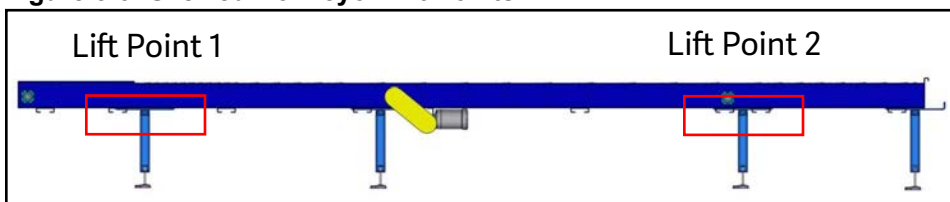
Figure 5-2: Saw Chamber Lift Points



Skewed Conveyor

The skewed conveyor does not include dedicated lift points. MiTek recommends using two forklifts to lift the skewed conveyor at the points shown in [Figure 5-3](#). Lifting the skewed conveyor with a single fork lift may result in damage to the conveyor.

Figure 5-3: Skewed Conveyor Lift Points

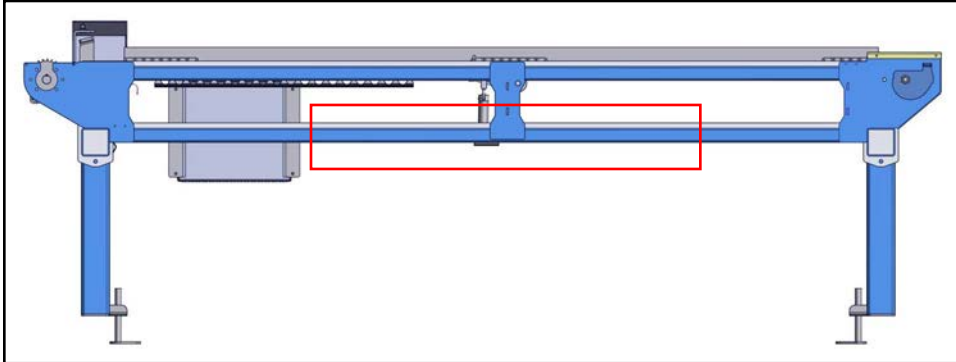


BLADE SAW: INSTALLATION

Auto Deck

Depending on length, an Auto Deck is shipped in 2 to 3 sections. To lift a section, place forklift forks under the bottom, flat surface. Ensure the forks cover as much of a section as possible.

Figure 5-4: Auto Deck Lift Points





Your Responsibilities

During Installation

MiTek supervises the installation to ensure that the system is installed properly and operates correctly. MiTek will also provide operating and maintenance training at the time the equipment is installed. The customer is responsible for providing all labor and equipment needed to complete the installation.



Before Selling or Re-Installing

If you determine that you want to move your equipment to another location or you want to sell your system to another company, refer to the Pre-Installation document received when you first purchased this equipment. If you need another copy of that document, request it from MiTek.

	 WARNING
	Moving the system without proper planning may result in equipment damage or serious injury.

Startup Procedures

Before operating your new equipment for the first time, perform these procedures.

	 WARNING
	<p>Do NOT attempt to start the system for the first time without a MiTek representative present.</p> <p>Starting the system without a MiTek representative present may result in equipment damage, serious injury, and/or death.</p>

Marking Restricted Zone

The restricted zone must be marked and maintained so everyone near the equipment can clearly see the area where danger may exist. The customer is responsible for marking the restricted zone prior to startup, and maintaining the markings so it is clearly visible throughout the life of the machine.



Your equipment arrived with Service Bulletin SB181, which includes restricted zone tape and instructions for installing it. Additional restricted zone kits can be ordered as needed using the contact information found on [Ordering Parts on page 216](#).



Safety Tests



Perform all tests listed in [Safety Tests on page 12](#).

OPERATION

Safety Operating Notes

	 WARNING
	<p>ELECTROCUTION, HIGH PRESSURE, CRUSH, CUT, AND CHEMICAL HAZARDS.</p> <p>Read this section AND the safety section in the preliminary pages before operating or maintaining this machine.</p> <p>Do not operate this machine until you have a thorough understanding of all controls, safety devices, E-stops, and operating procedures outlined in this manual.</p> <p>Read and observe all warnings. Failure to do so may result in economic loss, property damage, and/or personal injury.</p> <p>This manual must always be available to personnel operating and maintaining this machine.</p>

	 WARNING
	<p>CRUSH AND CUT HAZARD.</p> <p>Before turning on the machine, make sure that all personnel and other machines are out of the restricted zone (see Marking the Restricted Zone on page 17).</p>

	 WARNING
	<p>Do not operate this machine unless all guards and safety devices are in place.</p> <p>Only qualified maintenance personnel shall repair, remove, or replace guards and safety devices.</p>

Safety-Related Operating Procedures

Stopping Methods

This *BLADE* saw may be stopped by using a cycle stop or an emergency stop (E-stop). Engaging an E-stop will stop all movement on the Auto Deck, infeed rail, saw component, and skewed conveyor. It does NOT include other material handling systems, even those supplied by MiTek.



A cycle stop may be slower than an E-stop, but a cycle stop is the preferred stopping method unless there is a safety emergency. Using an E-stop to stop the machine regularly causes excessive wear on components.

Cycle Stop

To initiate a cycle stop on this machine, select STOP CUTTING from the software tool bar (see [Figure 6-12](#)). This will stop the auto cutting sequence and turn off the saw blade motor after the last cut on the active board is complete.

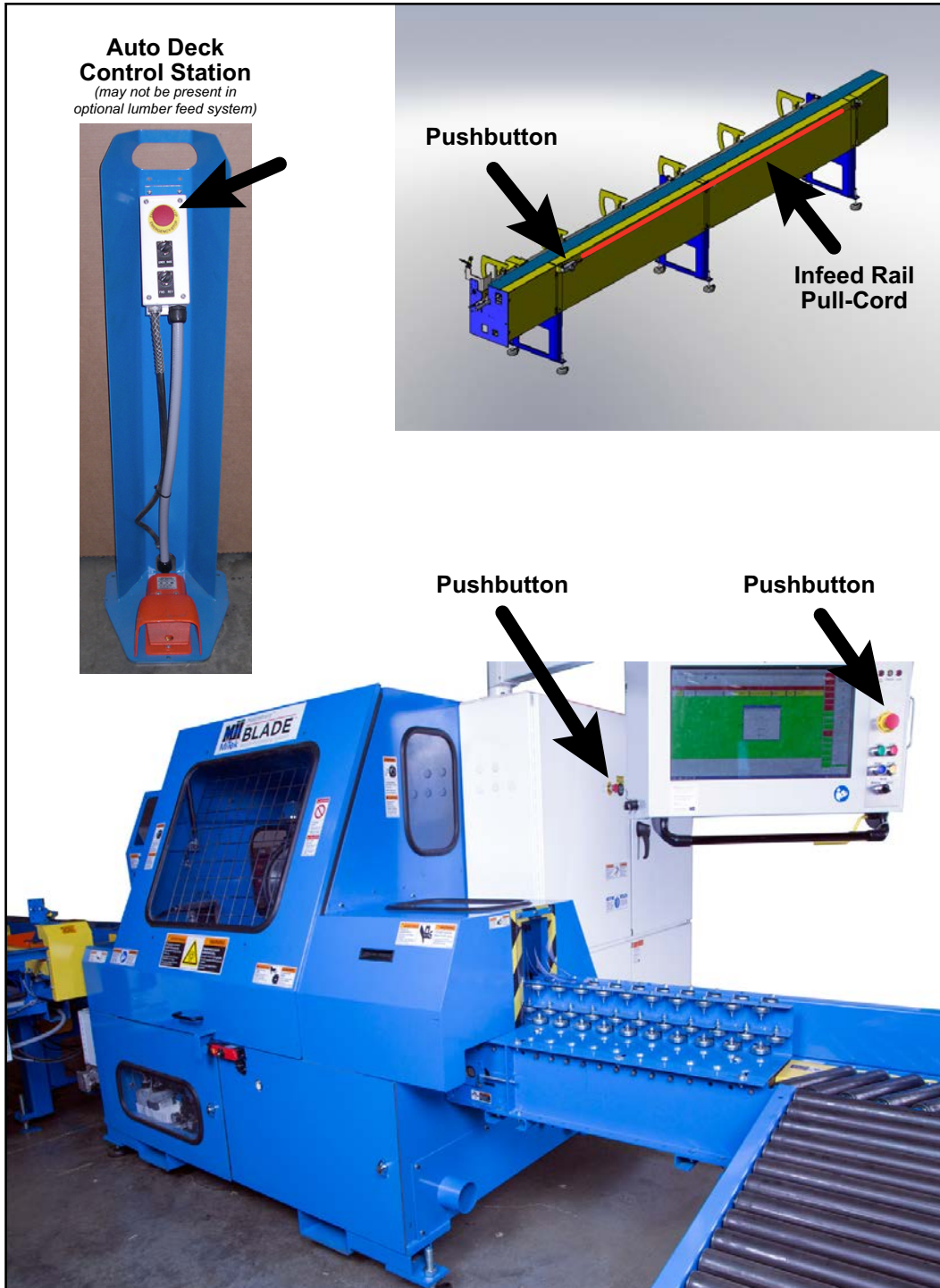
Emergency Stop

There are 5-6 E-stops (depending on equipment configuration) located on the main components of the *BLADE* saw.

	 CAUTION
	CRUSH HAZARD. When an E-stop is released, the load arms on the Infeed Rail may automatically raise with high force.

BLADE SAW: OPERATION

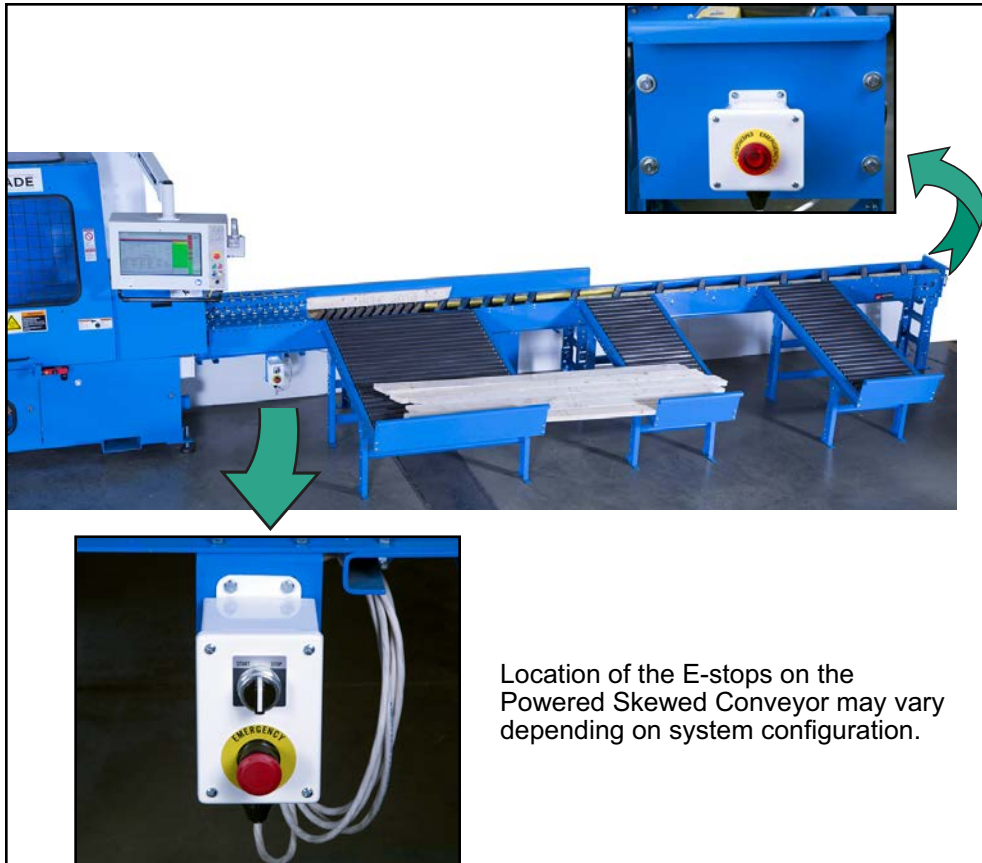
Figure 6-1: E-Stops on Saw, Infeed Rail, and Auto Deck



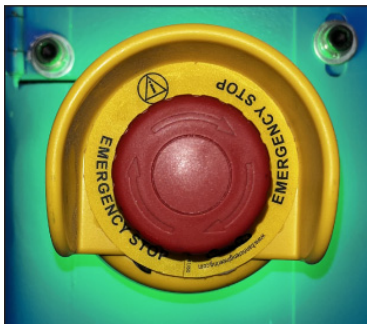
Optional equipment may have an E-stop that is or is not integrated with the system. Each site must post signage to inform operators if this condition exists.

BLADE SAW: OPERATION

Figure 6-2: Typical E-Stop Locations on Optional Skewed Conveyor



How to Operate an E-Stop Pushbutton



To activate a pushbutton, push the button in. The machine no longer operates.

To release a pushbutton, twist the pushbutton (left) or pull the pushbutton to release (right).

How to Operate a Pull-Cord E-Stop (Perimeter Safety Cable)

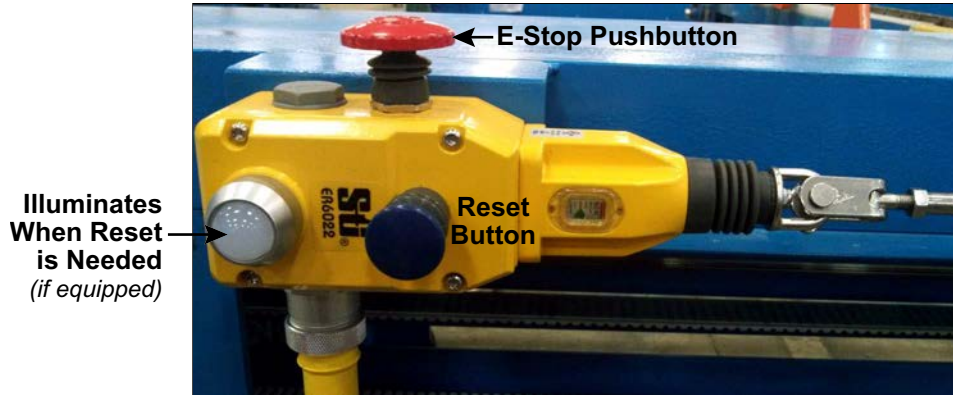
A pull-cord is an E-stop that has a cord that can be pulled anywhere along its length.

Once a pull-cord is pulled, the red light on the pull-cord switch illuminates. Reset the E-stop by turning the blue Reset button, located on the pull-cord switch, in the direction of the arrow (see [Figure 6-3](#)).

See [Adjusting the Pull-Cord Tension on page 175](#) for instructions to adjust the tension of the pull-cord cable.

BLADE SAW: OPERATION

Figure 6-3: Pull-Cord Switch With Reset Button



Restart After E-Stop Procedure

1. Release all activated E-stops.
 - A list of which E-stops need to be released is shown by selecting the **Doors/E-Stops** indicator on the home screen.
2. Press the blue **RESET** button on the operator interface panel (see [Figure 6-9](#)).
3. Resume normal operation. See [Operating Procedure Overview \(Auto Mode\)](#) on page 84.

Disconnect Switch

There are disconnect switches located on the main components of the *BLADE* saw.

Figure 6-4: Everything You Need to Know About Disconnect Switches

Electrical Enclosure
Disconnect Switch





Turning the disconnect handle to the On position supplies electrical power to the entire machine. To remove power to the machine, turn the disconnect handle to the Off position. The disconnect handle should be turned off when the machine is not in use

Auto Deck
Disconnect Switch



Skewed Conveyor
Disconnect Switch





	<div> WARNING</div>
<div></div>	<p>Always turn off power at the main power source before opening the electrical enclosure.</p> <p>Even when the disconnect switch is turned to the Off position, there is still live power to the enclosure where the disconnect switch is mounted. This live power may cause severe electric shock.</p>



None of the servo axes can move when either door is open.

Interlocked Doors or Guards

	 CAUTION
	NEVER TOUCH A MOVING SAW BLADE! The saw blade may still have slight coasting motion when the interlocked doors are allowed to open.

The saw chamber and stroke/elevation chamber both have door switches that are interlocked with the electrical system to stop the appropriate movement before the door is opened.

Saw Chamber Door Switch

The saw chamber door is on the front of the machine and encloses the saw blade. Lights on the saw's operator interface panel indicate if the blade is moving or stopped. When the blade stops, the **Blade Stopped** light illuminates, and the door can be opened. Refer to [Figure 6-5 on page 65](#) and this procedure to open the door.

1. Stop the saw blade motion by pressing the **STOP** button.
2. Wait for the **Blade Motion Stopped** light to illuminate.
3. Press the request-to-unlock button and hold it in while pulling open the door.

Stroke/Elevation Chamber Door Switch

The stroke/elevation chamber door is located on the left side of the saw. The door can only be opened when all axes are without movement. The release of the stroke/elevation chamber door switch shuts down the stroke and elevation servo motors. There are no indicator lights. Refer to [Figure 6-5 on page 65](#) and the following procedure to open the door.

1. Unlatch the mechanical latches.
2. Press the request-to-unlock button and hold it in while pulling open the door.



The RESET button must be pressed after using an E-stop pushbutton or pull-cord.

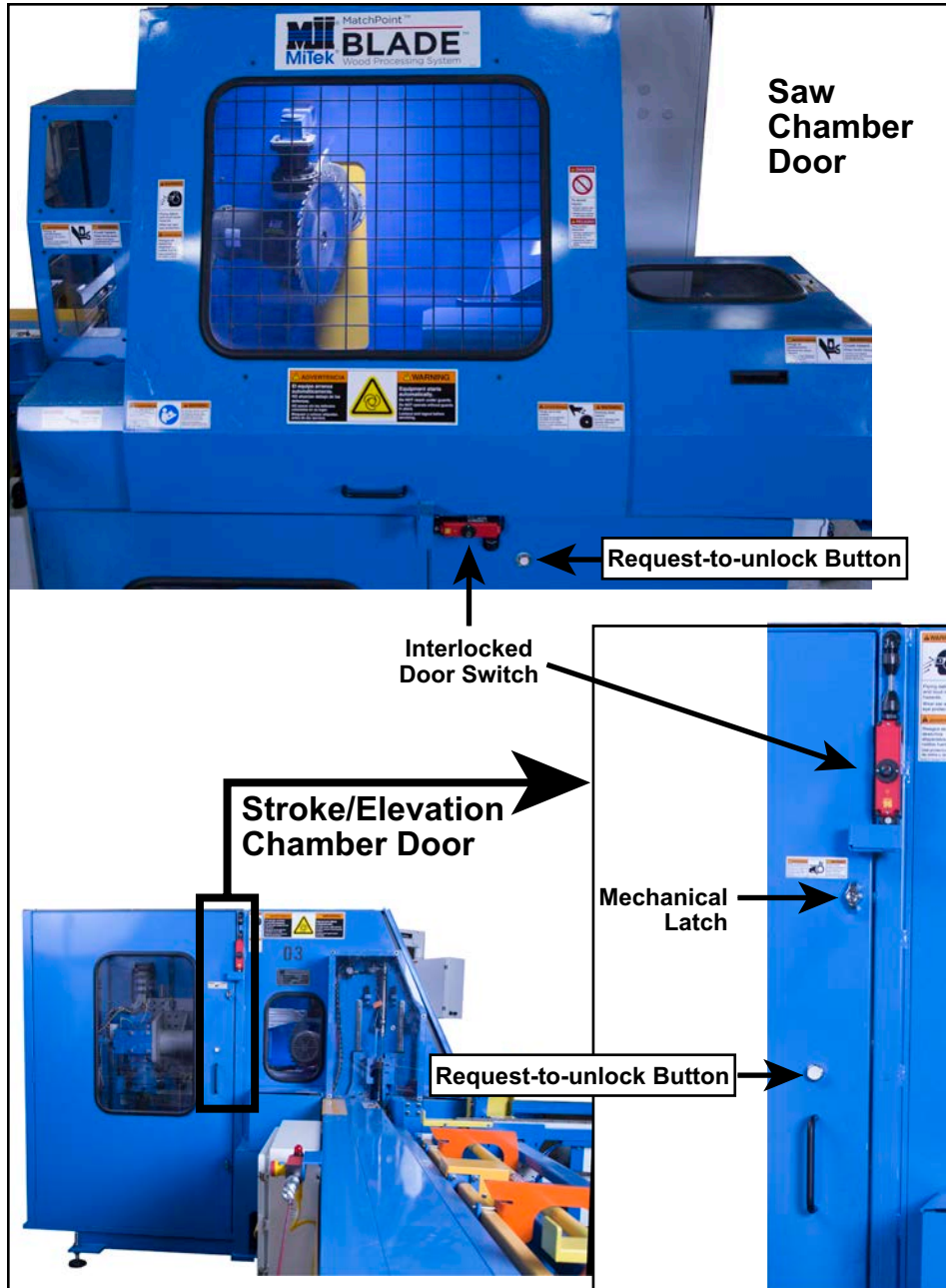


DOOR OPENING TIP!

You may need to push the door in to relieve pressure before pulling the door open, all while simultaneously pressing the *Request to Unlock* button.

BLADE SAW: OPERATION

Figure 6-5: Interlocked Door Switch Locations



The keyholes in the stroke/elevation door lock and the saw chamber door lock are intended for maintenance personnel to override the door interlock for emergency or troubleshooting purposes only. Using the key allows the door to open without electrical power. The maintenance office should store the key in a safe and secure location. Two keys for each door (total of 4 keys) were delivered during installation or startup.

BLADE SAW: OPERATION

Maintenance Doors

There are a variety of maintenance doors located on this equipment. These doors are NOT tied into the electrical system. Live power is still present to allow the following components to be moved when needed:

- Gripper clamp
- LASM clamp
- Top clamp
- Side clamp
- Outfeed clamp
-

Safety-Related Indicators on the Machine

This section covers visual and audio indicators that communicate important information about the status of the machine.

Light and Horn Beacon

The beacon and horn is located on top of the machine's main electrical enclosure. It indicates the following:

Red: A fault exists. The machine software will communicate what the fault is and what the next step should be. Some faults allow the system to continue cutting, other shut down all movement.

Yellow (flashing): The system is waiting for one of the following actions to occur:

- The Auto Deck to place a board on the Infeed Rail.
- The printer trigger to be turned on.
- The CLS to complete its reading

Green: System is operable and is in Auto Mode with no active faults.

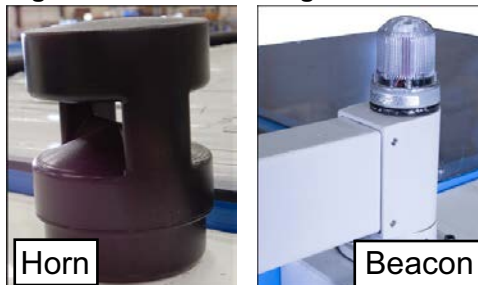
The horn notifies the operator of errors and faults when in Auto Mode. The sound continues until the operator does one of the following:

- Acknowledge the error/fault on the HMI screen
- Turns the saw to Manual Mode
- Activates an E-stop

Figure 6-6: Light and Horn Beacon on Main Enclosure



Figure 6-7: Horn and Light Beacon on Top of the Saw



BLADE SAW: OPERATION

Operator Interface Indicator Lights



The layout and number of indicator lights on the operator interface may vary on earlier machine models.

The lights located on the operator interface indicate the following:

BLADE IN MOTION: Red light turns on when the blade is spinning. Certain doors can not be opened while this light is on.

BLADE STOPPED: Green light turns on when the blade is not spinning. This light must be on for certain doors to be opened

E-STOP: Red light turns on when an E-stop is activated. This light must be off before the machine can operate.

RESET: Blue light turns on after the machine is first powered on, an E-stop is active, or a door is open.

Figure 6-8: Operator Interface Indicator Lights



Hardware Overview

Operator Hardware Controls

This section describes the hardware controls available to an operator in a complete system.

Operator Interface

Figure 6-9: Operator Interface Controls

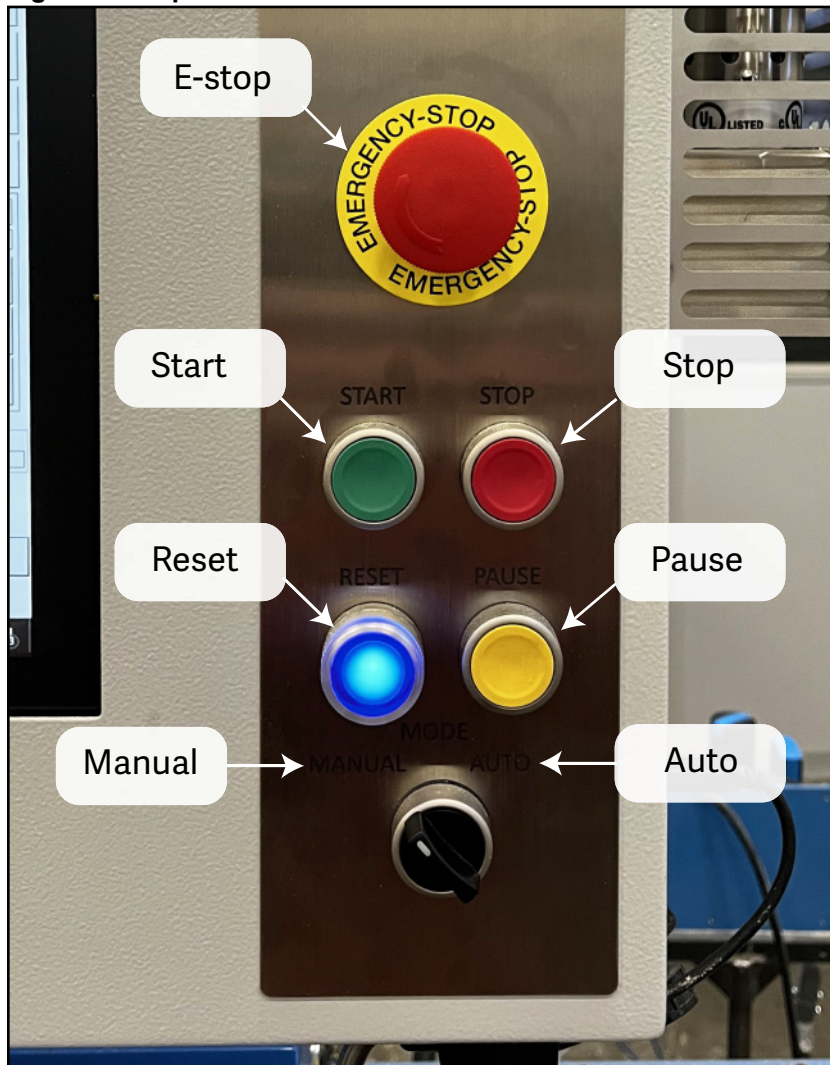


Table 6-1: Description of Operator Interface Controls

Name	Function
E-stop	Stops all movement on the entire <i>BLADE</i> .
Start	Starts the blade motor
Stop	Stops the blade motor (Manual Mode)

BLADE SAW: OPERATION

Name	Function
Reset	Restores the safety controller and re-enables main power to the system.
Pause	Pause the cutting process after completing the current cut.
Mode	Switches between Auto and Manual Modes using a 2-position switch
USB Ports	Can be used to connect a mouse or keyboard or other USB devices

Skewed Conveyor

To turn the Skewed Conveyor on or off, turn the selector switch to either the STOP or START position and release the switch. It is a spring-return switch, so it will always return to center when released.



If a *BLADE* saw has been modified with SB259 (Skewed Conveyor Automatic Startup Conversion), the Skewed Conveyor will automatically start running when a cutting job has been initiated.

Figure 6-10: Skewed Conveyor Controls



BLADE SAW: OPERATION

Auto Deck

The Auto Deck operation is integrated within the machine software in Auto Mode, but manual operation occurs at the control station pedestal shown in [Figure 6-11](#).

Figure 6-11: Auto Deck Controls



Table 6-2: Description of Auto Deck Controls

Name	Function
E-stop	Stops all movement on the entire <i>BLADE</i> .
Forward/Reverse (Deck Direction)	Controls which direction the Auto Deck staging conveyor chains run.
Raise/Lower (Lumber Stops)	Controls the lumber stops. The lumber stops serve two purposes: <ul style="list-style-type: none">• To separate two different jobs that may be on the Auto Deck staging conveyor at the same time.• To create space within a job to reduce the amount of pressure or clutter near the load arms, especially when using a mixture of lumber lengths.
Foot Pedal	Press down and hold down to cause chain to travel. Load arms must be up for forward travel. See Preparing the Auto Deck .

Powering Up or Down

Daily Startup

1. Rotate the saw's disconnect switch to the ON position.
2. Rotate the disconnect switch for the Auto Deck or other lumber feed or outfeed system to the ON position

BLADE SAW: OPERATION

3. Start the skewed conveyor (see [Skewed Conveyor on page 69](#)).
4. Double-click the *BLADE* software icon and wait for it to launch.
5. Press the blue RESET button on the operator interface.
 - The blue light goes out if all E-stops are cleared. If the RESET button light stays lit, determine which E-stop is activated and reset it (see [Emergency Stop on page 59](#)).

Daily Shutdown

1. Select the machine software **Exit** icon on the ribbon menu and select **Yes** to verify.
2. Shut down the computer using the **Power > Shut down** method in Windows.
3. After the computer powers down, rotate the saw's disconnect switch to the OFF position.
4. Turn off the skewed conveyor (see [Skewed Conveyor on page 69](#)).
5. Rotate the disconnect switch for the Auto Deck or other lumber feed or outfeed system (if equipped) to the OFF position.

Software Overview

This section covers the *BLADE* saw software that is accessible through the operator interface. This software controls all of the main components that form the complete wood processing system. Other software (such as *Board Stretcher*) that also impacts the production process may be operated remotely.

The *BLADE* saw operator interface is designed as a touch first device but it can also be used with a mouse and keyboard. See below for a list of terms that will be used throughout the manual and their mouse equivalents:

Select:

- 1 tap on the screen
- 1 left mouse click

Double-tap:

- 2 quick taps on the screen
- 2 quick left mouse clicks

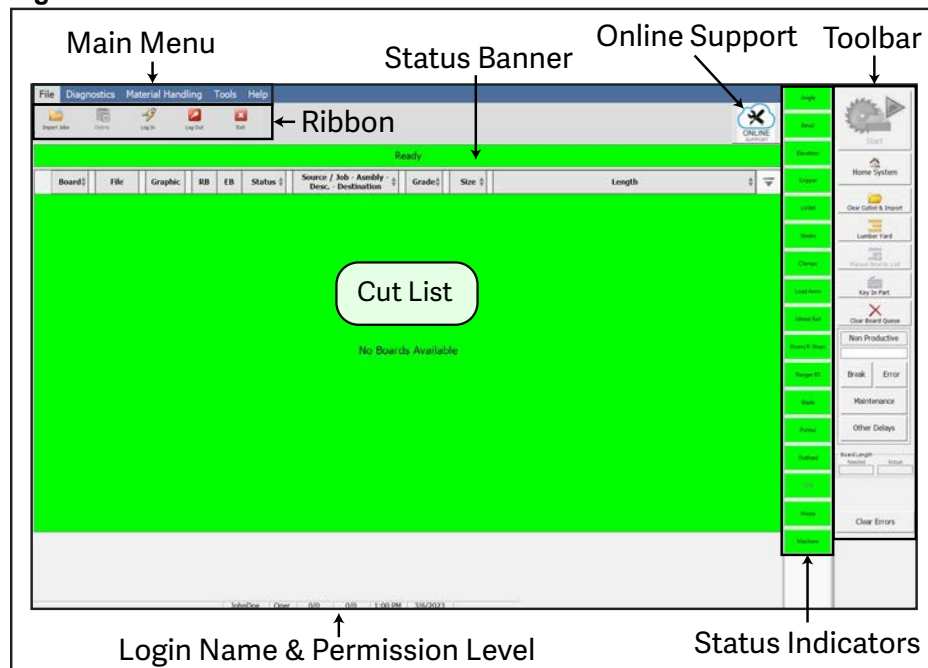
Long-press:

- 1 long press on the screen
- 1 right mouse click

Overview of Home Screen

The home screen shows data for each part to be cut and provides access to all of the functionality required during normal production use. [Figure 6-12](#) shows each section of the home screen.

Figure 6-12: Home Screen Sections



BLADE SAW: OPERATION

Main Menu and Ribbon

The main menu refers to the selections at the top of the home screen. As shown in [Figure 6-12](#), the functions within each main menu appear in the ribbon. See [Main Menus in Detail on page 80](#) for a detailed description of each main menu and ribbon.

Online Support

This link will take you direct to the machine support page. Visit this site for links to the online version of this manual, video guides, and troubleshooting and trainer resources.

Status Indicators

The status indicators are shown in [Figure 6-12](#). Table 6-3 gives a brief overview of each status indicator's purpose. If any status indicator is red, that component is not ready. To determine why a status indicator is lit or a component is not ready, select the indicator to display a second menu or additional data.

Table 6-3: Status Indicators on Home Screen

Name	Description
Status Banner	Status bar directly above the cut list window that displays one of the following, depending on the overall saw status: Not Ready, Ready, Clearing Saw, Active, Press Reset
Angle	Servo axis; turns the blade for angle cuts
Bevel	Servo axis; turns the blade for bevel cuts
Elevation	Servo axis; raises and lowers the blade assembly
Gripper	Servo axis; moves the gripper on the infeed rail
LASM	Servo axis; moves the LASM assembly that carries the boards through the saw chamber
Stroke	Servo axis; moves the blade forward/backward (in/out)
Clamps	Side clamp and top clamp on infeed side of saw
Load Arms	Load arms, located on Infeed Rail
Infeed Rail	Infeed Rail, including gripper
Doors/E-Stops	Indicates if saw chamber door and stroke/elevation door are closed and locked and all E-stops released
Auto Deck or Ranger RS	The lumber feed system
Blade	Saw blade rotation
Printer	The printer(s), located on infeed end of saw
Outfeed	Outfeed clamp and lumber exit chain
CDS (if present)	Provides diagnostic information about the Component Delivery System (CDS) if present
Waste	The integrated waste conveyor

BLADE SAW: OPERATION

Name	Description
Machine	Shows errors found in the Machine tab under Diagnostics > Detailed Diagnostics , including E-stops, and Auto/Manual Mode switch. Additional troubleshooting must be done using Diagnostics which requires administrative permissions.

Toolbar

The Toolbar stays active at all times on the Home Screen. Some buttons may change function or become unavailable (greyed out) due to the status of the saw.

Table 6-4: Toolbar Buttons

Name	Description
Start (Auto Mode)	START begins feeding lumber into the saw chamber and cutting. Saw motor must be turned on manually first. The button turns to STOP while saw is actively cutting. STOP (appears when cutting) stops the auto cutting sequence AND turns off the saw blade motor after the last cut on the active board is complete.
Home System (Manual Mode)	Places all axes in their home positions.
Clear Cutlist & Import	Imports a new job file and clears previous jobs out of the job queue. To import jobs without deleting previous jobs, go to File > Import Jobs .
Lumber Yard	See Lumber Yard on page 74 for more details.
Manual Boards List	Displays the boards required for this job.
Key In Part	Allows parts to be added to the Cut List or remainders list. See Key In Part on page 75 .
Clear Board Queue	Erases the record of what the infeed system already has in queue (usually the next 1-4 boards to be cut).
Non-Productive	Allows the operator to indicate what the saw is doing when it's not running. See Recording Non-Productive Time on page 89 .
Board Length	Indicates the length of the board needed to make the planned cuts, and the actual length of the active board. The actual board must be equal to or longer than the board needed.
CLS Status	Indicates the lumber crookedness measured by the CLS.
Clear Errors	Clears all software errors and allows the saw to continue running (if safe).



For additional details on how to use the Lumber Yard, refer to the *Board Stretcher Training Manual*.

Lumber Yard

The Lumber Yard is where the operator can see the lumber required for the active job, and assign specific lumber to specific stations in the lumber feed system. See below for important terminology for understanding the functioning of this aspect of the machine software:

- **lumber:** a group of boards or a non-specific board

BLADE SAW: OPERATION

- **board**: a specific piece of lumber required by the saw to cut out specific parts; lumber becomes a board when the software decides exactly how to use it
- **infeed component**: any component that feeds lumber to the Infeed Rail; usually the Auto Deck staging conveyor or the *Ranger*
- **station**: a physical location on a lumber retrieval system

Figure 6-13: Lumber Yard Screen

The screenshot shows a software window titled "Lumber Yard". It contains two main tables. The top table, "Required Lumber", has columns: Id, In Stock, Grade, Size, Length, Materials ID, and Count. It contains one row with Id 0, In Stock checked, Grade 2x10 SPF No.2, Size 2x10, Length 08-00-00, Materials ID 08d9d2a3-76ef-4565-85a1-b98199d279f6, and Count 53. The bottom table, "Lumber Inventory", has columns: Station #, Device, Enabled, Grade, Size, Length, Materials ID, Need, Available, Cost Each, Cost Penalty, and Length Pen. It contains one row with Station # 1, Device Manual, Enabled checked, Grade 2x10 SPF No.2, Size 2x10, Length 08-00-00, Materials ID 08d9d2a3-76ef-4565-85a1-b98199d279f6, Need 1, Available 0, Cost Each 0, Cost Penalty 0, and Length Pen 00-00-00. At the bottom of the window are buttons: Clear All, Refresh, Import, Export, Cancel, Optimize, and OK.

The bottom half of the screen is the **Lumber Inventory**. It is a list of the previously used lumber used to be delivered by the lumber feed system for the active job.

The top half of the screen is the **Required Lumber**. It shows lumber required for the job by the lumber feed system.

1. To assign a Required Lumber to a specific spot in the Lumber Inventory, just drag it down and drop it on the desired station.
 - For a manually loaded lumber feed system, such as the Auto Deck, the software views all lumber as manual and it doesn't matter what device ID each lumber type has. There is no need to make specific assignments.
 - For automated feed systems, the virtual lumber must be assigned to the station where the actual lumber is located.
2. To change a lumber assignment, select the CLEAR button in the row of the assigned lumber inventory.
3. To choose the number of Lumber Inventory rows displayed, go to **Tools > Options > Material Handling**.



To add remainders from parts in the Cut List, right-click on the part.

Key In Part

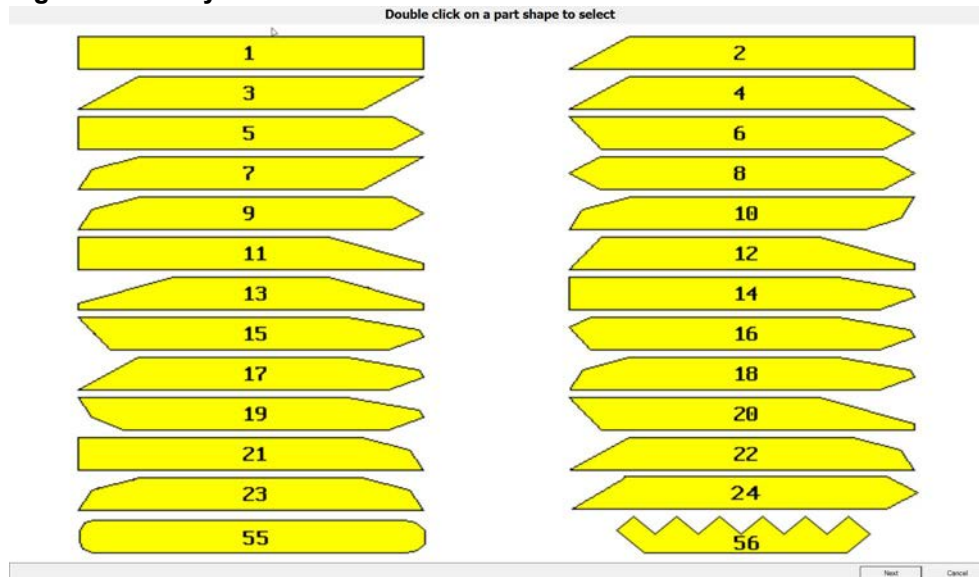
Selecting The Key In Parts buttons displays the part Key In dialog and allows parts to be added to the Cut List or remainders list.

BLADE SAW: OPERATION

The Key In Select screen shown in [Figure 6-14](#) contains specific part types to choose from. Double-click the part type that looks most like the part that needs to be cut.

- The next window displays a list of possible places to get the lumber from. If using an Auto Deck, there will not be a choice of how to load the board.

Figure 6-14: Key In Part Select Screen



The Key-In screen, which opens after selecting a part, allows the operator to enter the details of the part (see [Figure 6-15](#)).

- If using a lumber feed system that allows stations to be chosen, the Grade, Stock Size, and Stock Length will be populated for boards being loaded from a station.
- If a manual board is selected, the operator populates the following fields: Lumber Grade, Stock Size, Overall Length, Stock Length, Chord, and Crown.

BLADE SAW: OPERATION

Figure 6-15: Key In Part Screen

The screenshot shows the 'Key In Part' screen with the following fields and values:

- Job:** [Empty]
- Truss:** [Empty]
- Quantity:** 1
- Grade:** None
- OK Length:** 06-00-00
- Stock:** 06-00-00
- Type:** TopChord
- Crown:** Up
- Station:** None
- Rip Bevel:** 45.0
- Width of Top Flat:** 00-00-00
- Face Heights:** Short Face Height: 00-02-00, Long Face Height: 00-03-08
- Leading Cuts:** 1

#	Calc	Angle	Direction	Height	Width	Length	Bevels
1		90.0	/	00-03-08	00-00-00	00-03-08	0
- Trailing Cuts:** 2

#	Calc	Angle	Direction	Height	Width	Length	Bevels
1		45.0	/	00-01-12	00-01-12	00-02-08	0
2		45.0	/	00-01-12	00-01-12	00-02-08	0

At the bottom, there is a visual representation of the part with yellow highlights indicating the cuts. Buttons at the bottom include 'Show Keyboard', 'Hide Keyboard', 'Validate and Draw Part', 'Add', and 'Cancel'.

Most fields in the Key-In screen are populated according to the part you chose on the Key-In Select screen, but many of the fields can be modified, including adding a bevel.

If entering dimensions, one of the cuts must be calculated to ensure correct cutting of the part.

Other functions include:

- **Validate and Draw Part** updates the part based on the information entered.
- **Add** to add the part to the Remainder or Cut List.
- Rip Bevel allows the operator to set the short side to a specific dimension in order to create specifically-sized blocks or boards that are not in a Job file.

Cut List Screen

Cut List Column Headings

Table 6-5 gives a brief description of each column's purpose. More detail is given in subsequent pages.

Figure 6-16: Cut List Column Headings

Board	File	Graphic	RB	EB	Status	Source / Job - Assembly - Desc. - Destination	Grade	Size	Length
-------	------	---------	----	----	--------	---	-------	------	--------

Table 6-5: Cut List Column Heading Descriptions

Name	Description
Board	The index of the board (the identity or order of the board in that job).

BLADE SAW: OPERATION

Name	Description
File	For boards, it is the name of the file that the boards were imported from. For parts, it is the order that the part will be cut in.
Graphic	Displays an image of the cut part.
RB/EB	Signifies that there is a rip bevel (RB) or end bevel (EB) on the board.
Status	<ul style="list-style-type: none">• Complete: The board or part has been cut.• In Process: The part is being cut.• Queue: The part is loaded onto the load arms located on the Infeed Rail.• Rejected: The part will not be cut.• Infeed: A board in the job that has not been processed.
Source/ Job-Truss-Desc.	For boards, it is where the board will be loaded from. For parts, it shows the job name, truss description, and part description
Grade	Grade of board
Size	Board dimensions. For example: 2x4 (for Imperial units), or width of the board in millimeters (for metric)
Length	Length of board and overall length of the parts.
Select Board Arrow	Select the arrow to choose Current Board, Top of List, or Bottom of List.

Long-Press Menu From Cut List

When a board is first selected and then long-pressed in the Cut List, most of the choices in Table 6-6 are available. When a part is long-pressed, fewer choices are available.

Table 6-6: Cut List Long-Press Menu Descriptions

Name	Description
Start Cutting Here	Skips previous boards in the Cut List and begins cutting with the selected board.
Cut (Auto Mode)	Use to cut a single board. Procedure is on Cutting 1 Board on page 86 .
Redo	Cuts the selected board or part again. The stock length is chosen in the Redo window but must be adequate length.
Reject	Rejects the current board so it will not be cut. A rejected line is highlighted in red and moved toward the top of the Cut List.
Reject Series	Rejects a series of boards listed consecutively in the Cut List as chosen by the operator. See Rejecting or Resetting Jobs and Boards for selecting a series.

BLADE SAW: OPERATION

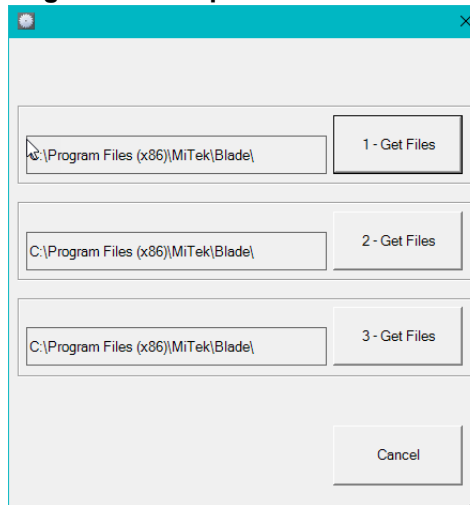
Name	Description
Reset	Resets the current board so it can be re-cut.
Reset Series	Resets a series of boards listed consecutively in the Cut List as chosen by the operator. See Rejecting or Resetting Jobs and Boards for selecting a series.
Add To Queue	Adds the current board to the material handling queue.
Remove From Queue	Removes the current board from the material handling queue.
Add to Remainders	Only available when a part is selected (not a board). Add the selected part to the Remainders list. See Adding Remainders to view the Remainders list.

Main Menus in Detail

File Menu

- **Import Jobs:** Allows files to be imported to Cut List. The different network options are customizable default folders for common job file directories (see [Figure 6-17](#)). Use Get Files to browse to a specific location if needed.

Figure 6-17: Import Jobs Screen



The address to the default folders can be changed in **Tools > Options > File Import** with Administrator or Technician permission levels.

- **Jobs Stats/Delete:** Allows parts to be deleted from Cut List.
- **Log In:** Only required if site management sets it up in **Tools > Options** or if needing technical or administrative permissions.
- **Log Out:** Can alternate between operator, technical, or administrator level permissions by logging out the current user. Log back in using the Log In button.
- **Exit:** Exits the program.

Diagnostics

- Abort Cutting Sequence:** Cancels current cutting sequence. After cancellation, the software asks how to handle the board that was just active. Use if the saw becomes unresponsive due to PLC miscommunication.

BLADE SAW: OPERATION

Visualize:	Displays an image of the saw components and active board at any point in time. The image changes as the position of the components move.
Logs:	Allows detailed information of each part or board to be displayed, including print information.
Detailed Diagnostics:	<p>Brings up a set of tabbed menus for specific components.</p> <p>The data here can be viewed by anyone, but administrator or technician permissions is needed to change some fields.</p>
Air Cut:	<p>For troubleshooting purposes; tells the system to function even though the sensors are not detecting boards to cut. Automated feed systems are not included in the operation during Air Cut.</p> <p>Click on the checkbox to turn on or off. Places a yellow Air Cut band across the START button when the feature is on.</p>

BLADE SAW: OPERATION

Material Handling

View Remainders:	Shows the remainder list and allows the operator to manage the list and the options for each part. To add a new remainder part, see Managing Remainders .
Reset Unprocessed Boards:	<p>Reset all boards in the active job so the job can be started over or skipped.</p> <p>An operator may reset specific boards (using long-press menu) after resetting or rejecting all boards</p>
Reject Unprocessed Boards	<p>Rejects all boards in the active job so the job can be started over or skipped.</p> <p>An operator may reject specific boards (using long-press menu) after resetting or rejecting all boards.</p>
Pick List	<p>Displays a list of boards necessary to process the current job. It is grouped by grade and size.</p> <p>To view the boards in the order they will be cut, use the Manual Boards List button on the Toolbar.</p>

Tools

Pre-Calibration Boards:	Use specific boards and cuts to aid in calibration.
Calibrate:	Allows the servos, printer, and CLS to be auto-calibrated.
Options:	Contains option sub-menus for various aspects of the machine.
Configuration:	Advanced function to change configuration items. Should not be used under normal circumstances
Plant:	Allows the company information to be entered which auto-fills some fields when contacting technical support through the Help Menu
Current Shift Reports:	Provides production data, board usage, and non-productive time data per shift.

Help

View Help:	Opens the help procedure tool. Start a procedure and follow the on-screen instructions.
------------	---

Remote Support:	Links to a web site where MiTek can remotely troubleshoot. MiTek must provide login information before using this site.
Contact Us:	Opens the send error tool.
Email Troubleshooting Data:	Opens the Email Troubleshooting Data tool. Fill in all fields to ensure useful troubleshooting reports.
About:	Displays the <i>BLADE</i> software version number and backup and renew functionality.

Quick Software Troubleshooting

Additional information can be found in [Troubleshooting on page 185](#) and on the MiTek website, but the most common operator interface problems can be solved by following the instructions here. Specifically, if a button or field is grayed out or not available, try these steps first.

1. Read the software status banner for information about the status of the saw. If the solution is not clear from the status banner text, continue this procedure. The most common status clues that will quickly solve the problem are:
 - Emergency Stop: Locate and disengage the active E-stop.
 - Press E-Stop Reset: Press the blue RESET button on the operator interface.
2. Check that saw is in the correct mode using the selector switch on the operator interface.
3. Press **CLEAR ERRORS** on the Toolbar.
4. Press **HOME SYSTEM** on the Toolbar.
5. Determine if Admin or Tech permissions are required and log in as such.
6. Check for active E-stops and release them. Then press **RESET**.
7. Check that AIR CUT is not active (yellow banner across START CUTTING button).

Board Stretcher Software

For instructions on using our optimization software, see the *Board Stretcher* manual on the [MiTek website](#).

Operating Procedure

This section instructs operators how to effectively use the *BLADE* saw. This machine offers two operating modes (AUTO and MANUAL) but it is designed be used in AUTO mode for standard production. MANUAL mode may be required for troubleshooting, performing maintenance, or changing software settings.

Operating Procedure Overview (Auto Mode)



Table 6-7: Operating Procedure Summary

Step #	Summary Steps	See Section
1	Power on all system components (saw, infeed, and outfeed systems).	Daily Startup on page 70
2	Press the blue RESET button on the operator interface.	Operator Interface on page 68
3	Setup the lumber feed system with the correct lumber.	Preparing the Auto Deck on page 85
4	Select Home System on toolbar to home system.	Toolbar on page 74
5	Import the correct job files.	Importing Job Files on page 86
6	Verify the saw is in Auto Mode and press Start to start the saw blade motor.	Operator Interface on page 68
7	Select Start on the toolbar to begin cutting a job.	Toolbar on page 74
9	Depending on the scenario, use one of the following methods to stop the saw: <ul style="list-style-type: none">• Select Stop in the software toolbar to stop after the current board is finished (same button used to start cutting).• Select Diagnostics > Abort Cutting Sequence in the software main menu• Press the hardware Pause button on the saw's operator interface panel to pause the saw after the current cut is complete.• In Manual Mode, press the hardware Stop button on the saw's operator interface panel.• For emergency situations, activate any E-stop that is integrated with the system.	Stopping Methods on page 59

Specialized Operating Procedures

Preparing the Auto Deck

1. Ensure all E-stops have been released and the RESET button on the saw's operator interface panel was pressed.

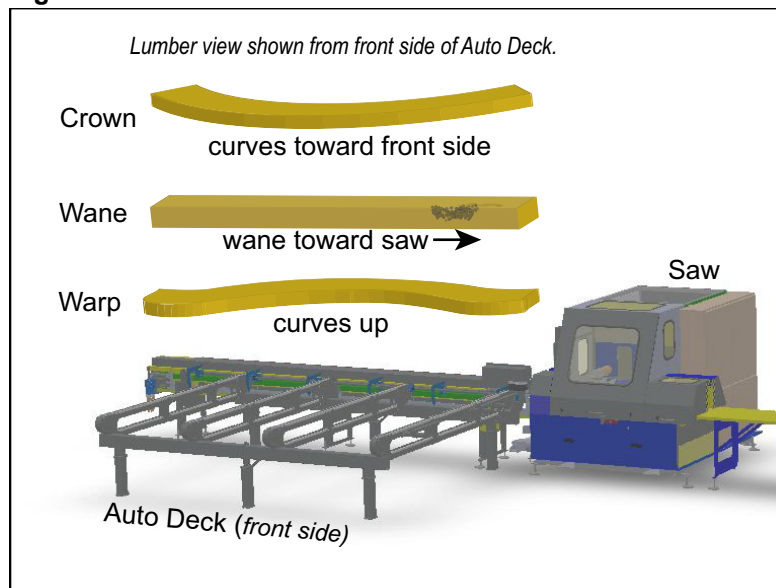
	 CAUTION
	CRUSH HAZARD. When an E-stop is released, the load arms on the Infeed Rail may automatically raise with high force.



Board Stretcher optimization software is used to manage the order of the cuts.

2. Raise either the load arms or the lumber stops:
 - If the Auto Deck conveyor is empty of lumber and no job is currently running, place the load arms in the Up position by selecting **Load Arms** on the toolbar.
 - If there is still lumber on the Auto Deck conveyor to be used in the previous job, raise the pneumatic lumber stops to keep the two jobs separate from each other. Do so by turning the selector switch on the Auto Deck controls to RAISE.
3. Place the lumber on the Auto Deck in a single layer with the end of each board against the Auto Deck fence (on the infeed side).
4. Boards must be placed on their face (4x dimension of a 2x4) in the order they will be cut. See [Figure 6-18](#) for a diagram of board configuration and proper alignment.
5. The lumber will automatically be forwarded and loaded onto the saw's Infeed Rail after selecting **Start** on the touch screen.

Figure 6-18: How to Place Boards on the Auto Deck



BLADE SAW: OPERATION

Dealing with Imperfections

- **Crown:** a curve of the edge of a board (1-1/2" edge on a 2x4); the crown points up on floor studs or out for wall studs in constructed homes; place board so crown points up as it enters saw
- **Wane:** a defect in a board where a portion of the wood is missing from the board edge or face; place toward saw-end of conveyor
- **Warp/Twist:** a curve where the face of a board (3-1/2" side on a 2x4) is higher or lower in one spot than on the rest of the board; place board so warp points up when sitting on Auto Deck
- **Replace Poor Quality Boards:** if a board displays excessive defects in the above areas, it should be discarded and replaced with a different board

Importing Job Files

After jobs are processed through *Board Stretcher*, the optimization software, they are stored in the input location (see [Board Stretcher Software](#)) until the saw operator is ready for them.

1. Import the job using one of these methods:
 - a) To import a job and clear the previous Cut Lists, select the Clear Cutlist & Import button on the toolbar.
 - b) To import a job without clearing the Cut List, select File (in tabbed menus at top of Home Screen) and select the Import Jobs button.
2. Review the lumber assignments and make sure boards are assigned to the correct locations:
 - a) Select the Lumber Yard button shown in the toolbar (you may also have the opportunity to go to the Lumber Yard directly from the Import Jobs screen).

The lumber the saw needs is listed in the top section. The lumber existing in inventory (in the machine software) is listed in the bottom section.

- b) Select on the lumber in the top section and drag it to the appropriate inventory in the bottom section.
- c) Select OK.

Cutting 1 Board

1. Place the Mode selector switch in Auto Mode.
2. Start the blade motor.
3. Select the board in the Cut List.
4. Long-press and select Cut.
 - A message appears asking the user to drop the selected board into the Infeed Rail.

BLADE SAW: OPERATION

5. Select the **Continue** button and the board feeds into the saw chamber for cutting.

Operating the Printer

The Printer(s) print identification on each board as it enters the saw chamber. Each saw has at least 1 printer.

- To turn the Printer off, or back on, go to **Tools > Options > Printer** and check or uncheck **Available for use** in the *BLADE* software.
- To choose or change the fields to print, use the *Board Stretcher* software.
- To adjust the location of the image on the board, among other settings, calibrate the printer using **Tools > Calibrate** from the machine software.
- Operators should not modify any values in the Values field (ex: Dot Size and Time of Flight) unless instructed by Automation Support.
- For required printer maintenance, see [Maintaining the Printer on page 121](#).

Figure 6-19: Tools > Options > Printers Menu

The screenshot shows the 'Options' window with the 'Printers' tab selected. The window is divided into several sections:

- Printer #1 - Fence/Window Side:** Includes a checked 'Available for use' checkbox, a 'Distance To Blade' input field set to 23.500, and a 'Valves' dropdown menu with options 16 and 32.
- Printer #2 - Non-Fence Side:** Includes an unchecked 'Available For Use' checkbox, a 'Distance To Blade' input field set to 0, and a 'Valves' dropdown menu with options 7 and 32.
- Printer #3 - Edge:** Includes an unchecked 'Available For Use' checkbox, a 'Distance To Blade' input field set to 0, and a checkbox for 'Duplicate Face Print for Non-Downloaded Parts'.
- Values:** A section containing an 'Encoder Factor' input field set to 15615, and a table for 'Dot Size' and 'Time of Flight' for each printer.
- Printer Type:** A dropdown menu currently set to 'v84i' with 'MPERIA' as another option.
- Buttons:** 'Accept' and 'Cancel' buttons at the bottom right.

	Prt #1	Prt #2	Prt #3
Dot Size	27	0	0
Time of Flight	15	0	0

BLADE SAW: OPERATION

Other Printing Options (*Board Stretcher*)

The printing features controlled by the *BLADE* saw software are minimal. Most printing control is located in the *Board Stretcher* software. The following topics are discussed further in the *Board Stretcher* manual. The manual can be accessed on the [MiTek website](#).

- Print the PartHighSide arrow to show which end points toward the top of the truss.
- Where printing occurs
- What fields print
- How to use the Multi-saw feature
- Much, much more!

Managing Remainders

The saw program can maintain a list of default components or remainders, selected by the user, which may be processed from any waste remaining after the cutting list has been run through the normal optimizing routine. The remainder components are entered and assigned a priority by the saw operator, based on the required demand and existing supply of such items.



Note that adding remainders may impact overall production due to the added cutting time!

Adding Remainders

Pre-programmed remainders can be added to the remainders list or to the Cut List using the Key In Part button on the toolbar (see [Key In Part](#)).

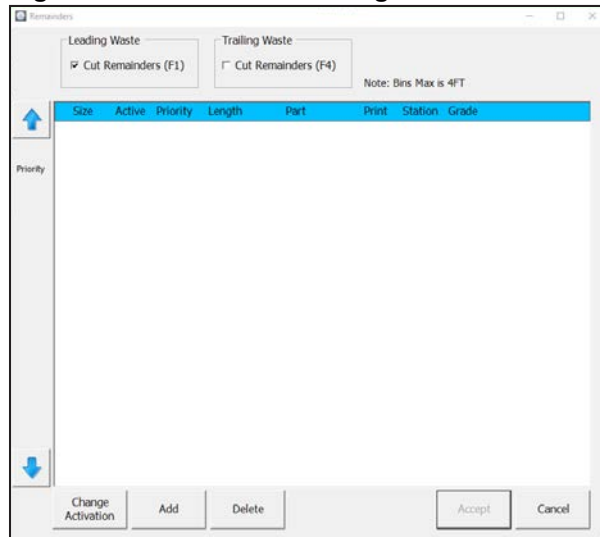
Parts from the Cut List can be added to the remainders list by long-pressing the part in the Cut List and selecting Add To Remainders.

Viewing Remainders

After a part is added to the remainders list, it can be viewed and managed using the following tasks on the View Remainders screen on the Material Handling menu:

- Make each part active or inactive.
- Change the priority of each part in relationship to each other.
- Delete parts from the list (this does not affect the job they came from).
- Indicate if remainders should be cut from leading or trailing end of board.

Figure 6-20: Material Handling > View Remainders Screen



Rejecting or Resetting Jobs and Boards

Individual parts can not be rejected.

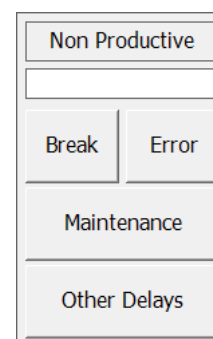
- To reject/reset one board, right-click on the board in the Cut List and select Reject or Reset.
- To reject/reset a series of boards in the Cut List, select one row, then immediately select a lower row. Long-press on the lower row and select Reject Series or Reset Series. Everything between and including the two rows selected is now either:
 - Highlighted and moved to the top of the list if Reject Series was chosen.
 - Not highlighted and moved back to their numerical place in the list if Reset Series was chosen.
- To reject/reset all the boards in a job, use the buttons in the Material Handling ribbon.

Recording Non-Productive Time

The Non-Productive Time section allows the operator to indicate what the saw is doing when it's not running.

- **Break:** Indicates operator break
- **Error:** If an error is received on-screen that requires attention, activate this button while finding the solution. The error automatically populates the window.
- **Maintenance:** Indicate time spent on any maintenance using this button. Select the most accurate category from the drop-down menu.
- **Other Delays:** For any non-productive time that doesn't fit one of the categories above, select this button and type a description of the delay.

**Figure 6-21:
Non-Productive Widget
on Home Screen**



Determining Board Recovery Solutions

Understanding Board Recovery

The screen shown in Figure 6-22 will appear when a board has a status of *In Process* and the START CUTTING button is selected. It is the result of the saw having been stopped in the middle of a job. The partially cut board will be cleared out of the saw chamber automatically when the START button is pressed. This screen gives the operator a chance to tell the saw the status of that board. Select one of the options shown in Figure 6-22 and select OK. Each option is defined later in this section.

Figure 6-22: Board Recovery Options

Figure 6-23: Cut List Sample, Shown While Cutting Board 18, Part 1

Board #	File	Graphic	RB	FB	Status	Source / Job-Truss-Desc.	Grade	Size	Length
	1				Complete	R4770-A - G7 - W1	1650F 1.5E SPF	2x4	
	2				Complete	R4770-A - G6 - B2	1650F 1.5E SPF	2x4	
17	B233199				Complete	Manual	1650F 1.5E SPF	2x4	
	1				Complete	R4770-A - G7 - T2	1650F 1.5E SPF	2x4	
18	B233199				Inprocess	Manual	1650F 1.5E SPF	2x4	
	1				Cutting	R4770-A - G6 - W1	1650F 1.5E SPF	2x4	
	2				Inprocess	R4770-A - G6 - B2	1650F 1.5E SPF	2x4	

In Figure 6-23, note the following things while reading the description of each board recovery option discussed on subsequent pages.

- Board 2 is in process (already in the saw cutting chamber). When the cutting was stopped, Board 2 was not complete, and therefore, will have to be cleared out of the saw chamber before the saw can continue cutting.
- Board 3 is Queue #1 (already processed by software and sitting on load arms to be placed onto the Infeed Rail).

BLADE SAW: OPERATION

Infeed

Place the new board on the Auto Deck, just behind the load arms, so it is the next board to be placed on the Infeed Rail after Queue #1 board (Board 3 in [Figure 6-23](#)).

Queue 1

Place the new board on the Auto Deck, above the load arms, so it is the next board to be placed on the Infeed Rail.

Complete

No more parts are needed from the interrupted board (in the software), so don't manually load anything. The software marks it as complete and moves on.

Reject

The board does not need to be cut further, so don't manually load anything. The software marks it as rejected.

Reject and Add as Redo

The board is being marked as rejected, but also added back into the job. With this option, all parts on the board are recut. Where the board falls in the job depends on the default chosen in **Tools > Options > Cut List > Redo Parts**.

If Cut First is selected, a new board must be placed on the Auto Deck just behind the load arms, so it is the next board to be placed on the Infeed Rail after Queue #1 (Board 3 in [Figure 6-23](#)). If Cut Last is selected, it will be the last board cut in this job.

Reject and Redo Selected Parts

The board is being marked as rejected, but certain parts can be added back into the job. With this option, only the parts selected in the lower portion of the screen shown in [Figure 6-22](#) are recut. Where the parts fall in the job depends on the default chosen in **Tools > Options > Cut List > Redo Parts**.

If Cut First is selected, a new board must be placed on the Auto Deck just behind the load arms, so it is the next board to be placed on the Infeed Rail after Queue #1 (Board 3 in [Figure 6-23](#)). If Cut Last is selected, it will be the last board cut in this job.

Resetting a Stalled Saw

See Abort Sequence under [Diagnostics](#).

Calibration





See the [Calibration section](#) on the MiTek website.

MAINTENANCE

Introduction to Maintaining Your Machine

This manual contains information for common repair maintenance and all preventive maintenance. The recommended intervals for the maintenance items addressed in this section are listed in the [Maintenance Checklist](#) chapter. Additional maintenance instruction and videos can be found on our web site or video site.

Read the safety section starting on page 12. The safety test procedures in the safety section **MUST** be performed by qualified personnel after ANY maintenance, adjustment, or modification. Note these safety reminders:

	<div data-bbox="529 835 1276 877" style="background-color: orange; text-align: center;">  WARNING </div> <p>ELECTROCUTION, HIGH PRESSURE, CRUSH, CUT, AND CHEMICAL HAZARDS</p> <p>Read this section AND the safety section in the preliminary pages before operating or maintaining this equipment.</p> <p>Do not operate this machine until you have a thorough understanding of all controls, safety devices, E-stops, and operating procedures outlined in this manual.</p> <p>Read and observe all hazard instructions. Failure to do so may result in economic loss, property damage, and/or personal injury.</p> <p>This manual must always be available to personnel operating and maintaining this equipment.</p>
	<div data-bbox="529 1377 1276 1419" style="background-color: yellow; text-align: center;">  CAUTION </div> <p>This icon is an important safety note.</p> <p>It indicates that you must lockout/tagout at the appropriate disconnect switch using approved methods described in OSHA CFR 1910.147 before continuing with the procedure.</p>

Certain parts should be kept in stock at your facility. These parts are listed in the [Ordering Parts](#) appendix.

Overview Graphics

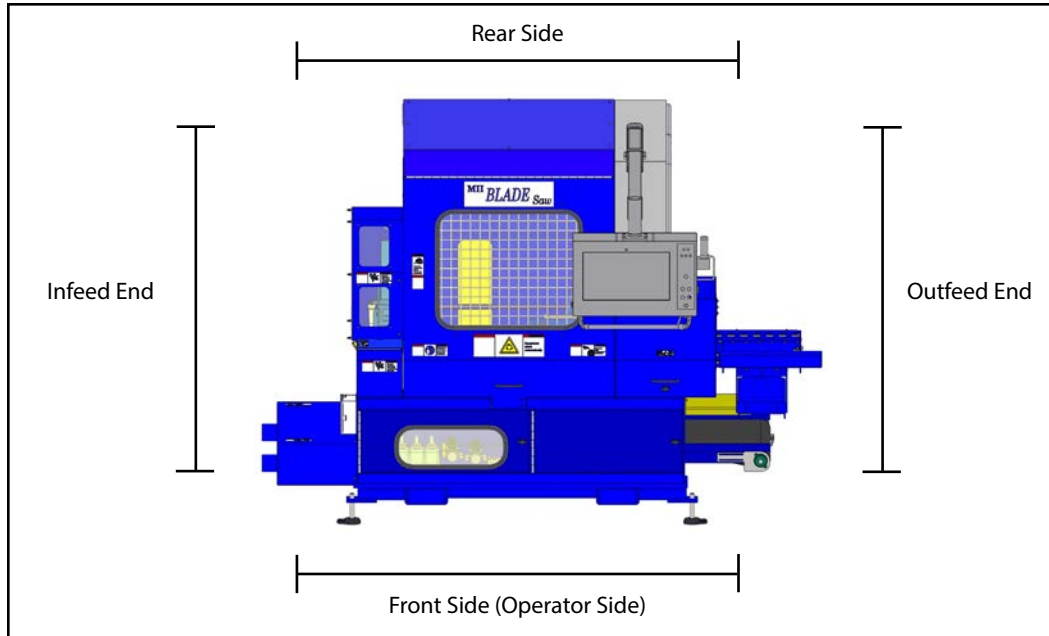
See [General Information on page 47](#) for an overview on the main and optional components of the *BLADE* saw.

BLADE SAW: MAINTENANCE

Maintenance Terminology

The orientation terminology in [Figure 7-1](#) will be utilized throughout the maintenance section when referring to different sides of the *BLADE* saw.

Figure 7-1: Orientation Terminology for Saw Component

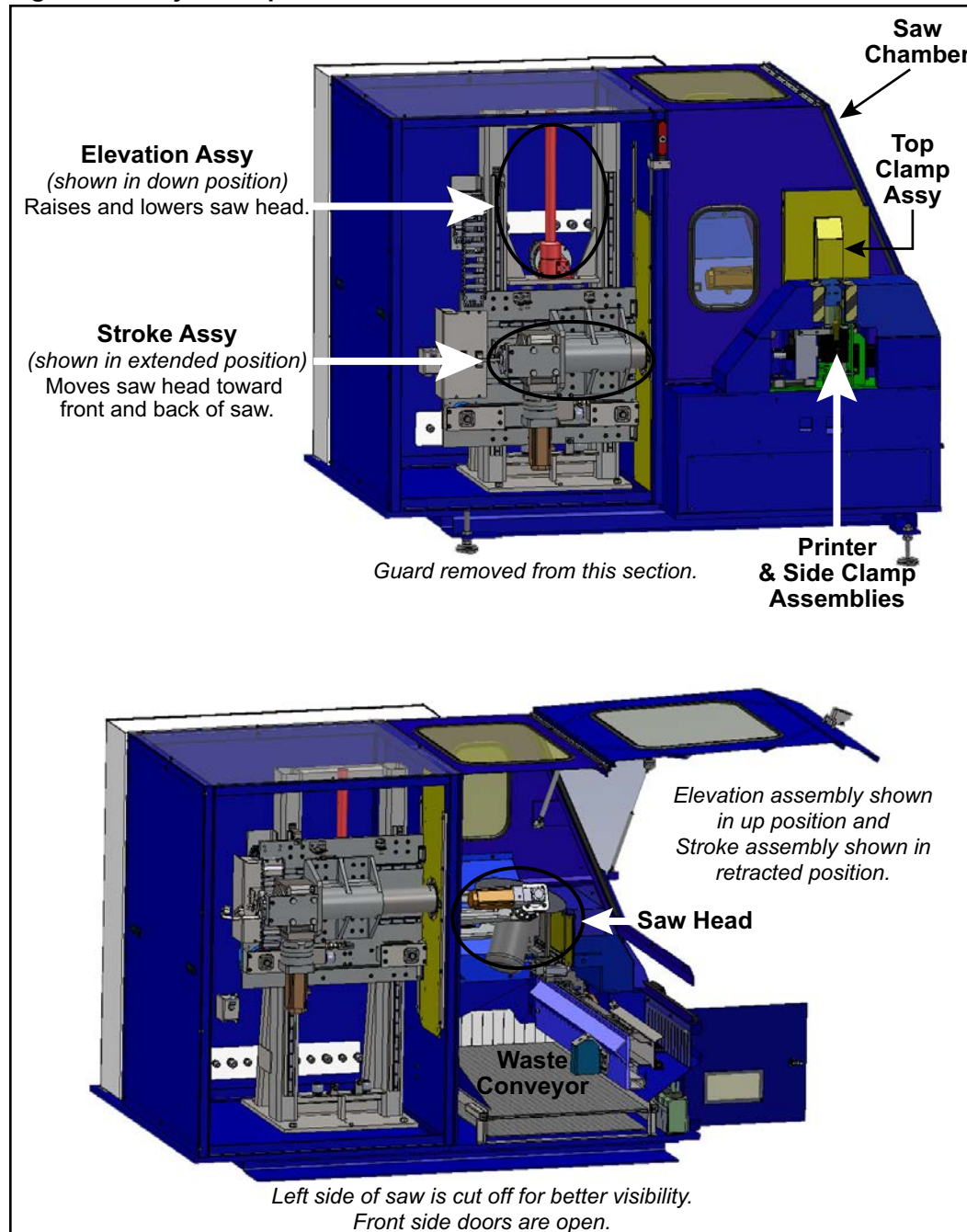


BLADE SAW: MAINTENANCE

Major Components

The following graphics call out major components that will be referenced throughout the maintenance chapter.

Figure 7-2: Major Components Visible from Infeed End of Saw



BLADE SAW: MAINTENANCE

Figure 7-3: Major Components Visible from the Front Side of Saw

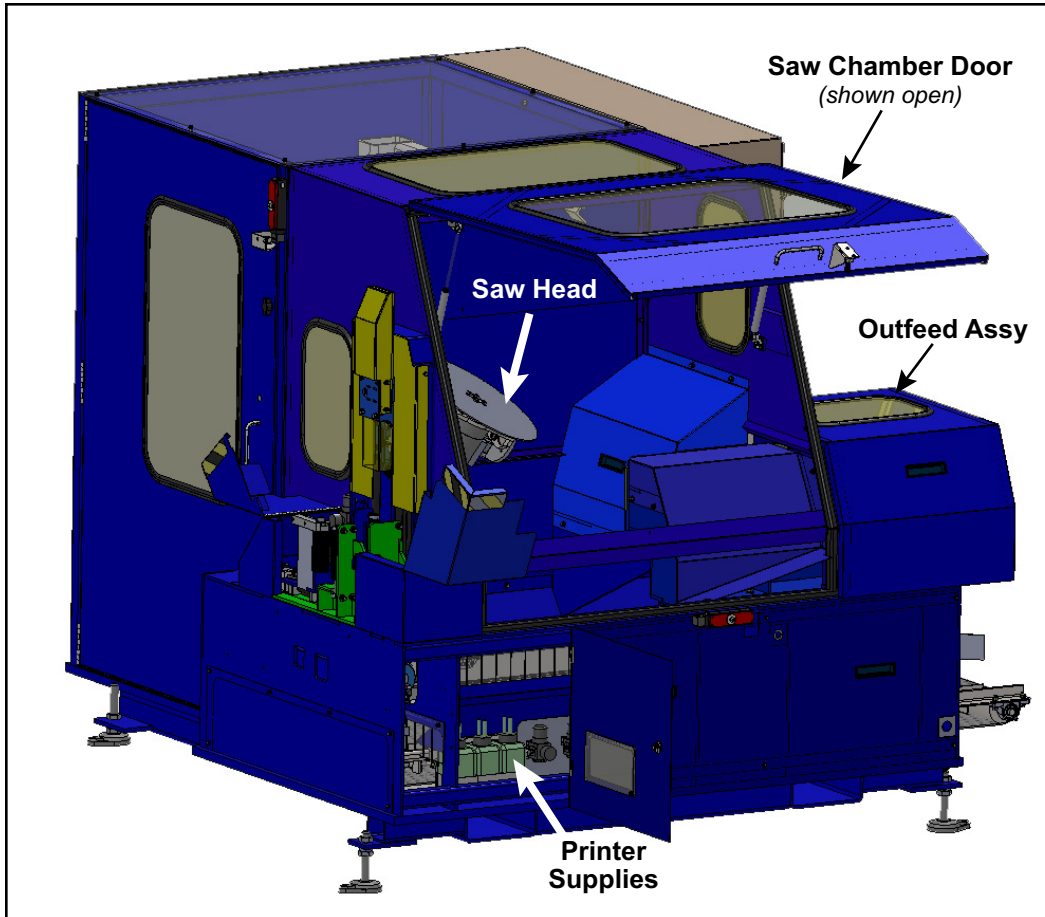
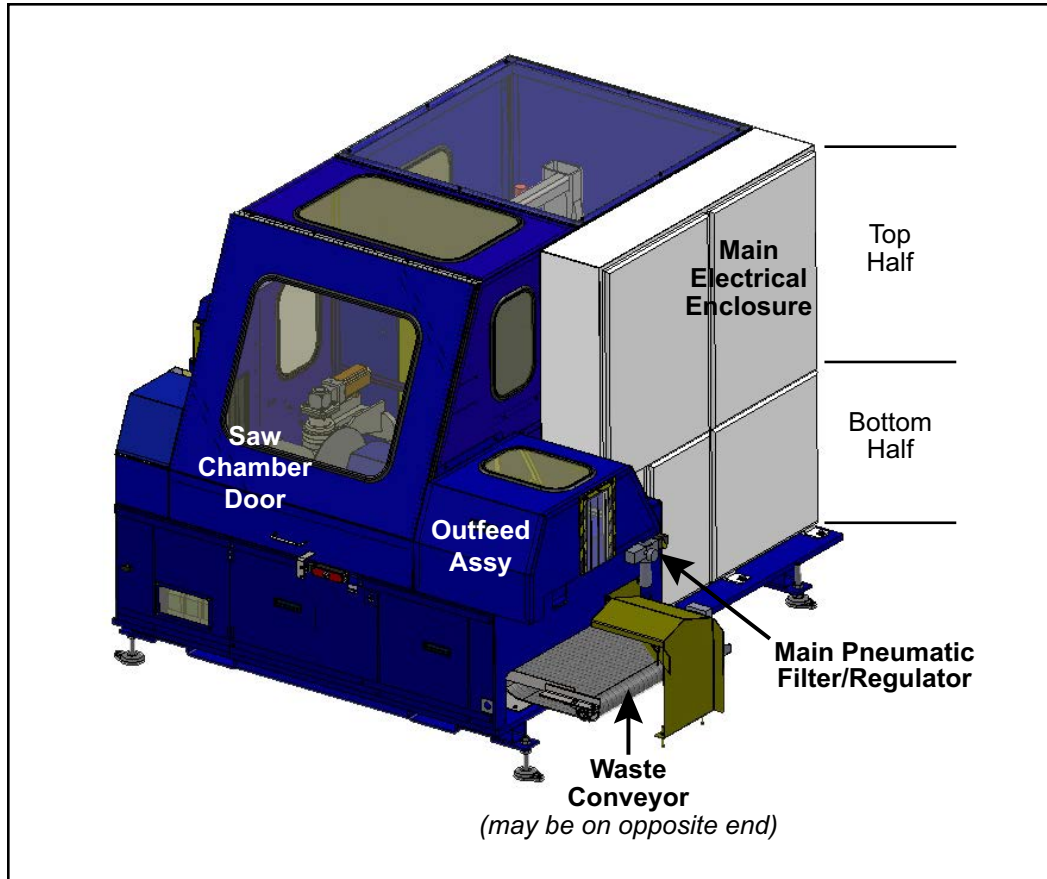


Figure 7-4: Major Components Visible from the Outfeed End of Saw



Axes and Home Positions

There are 6 major axes referred to on this equipment. Their definitions and home positions are shown in the following graphics. The axis number shown in [Table 7-1](#) may be needed when troubleshooting.

Table 7-1: Axes List and Description

Axis #	Axis Name	Description
1	Gripper	Holds and pushes board along Infeed Rail.
2	LASM	Lumber Advance Short Move; holds and moves board while inside saw chamber.
3	Elevation	Raises and lowers saw blade.
4	Stroke	Moves saw blade in and out.
5	Angle	Turns saw blade for angle cuts.
6	Bevel	Turns the saw blade for bevel cuts.

BLADE SAW: MAINTENANCE

Figure 7-5: Gripper Axis

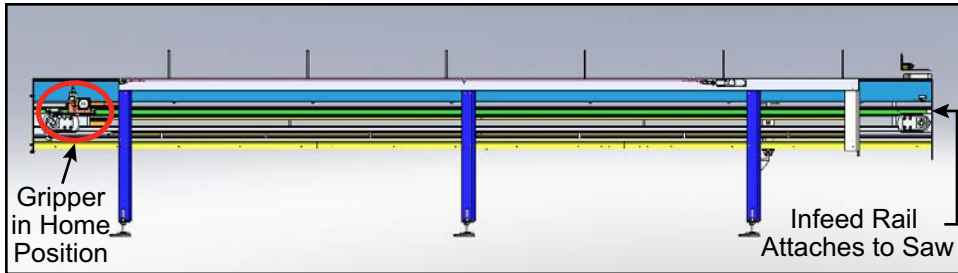
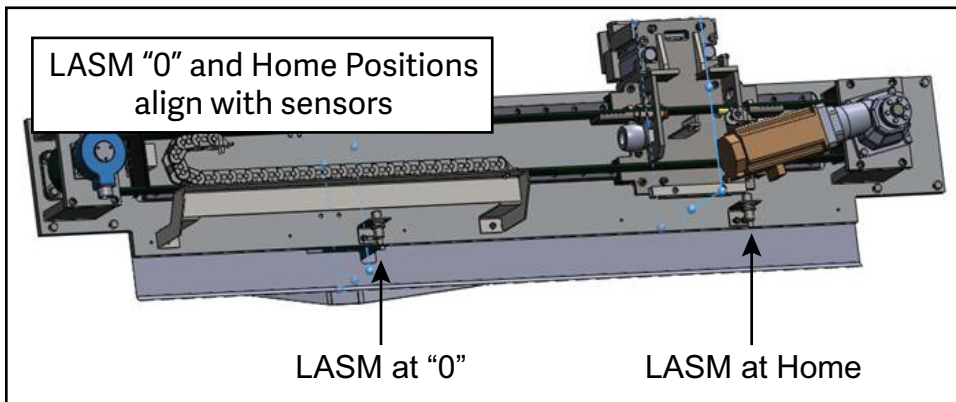
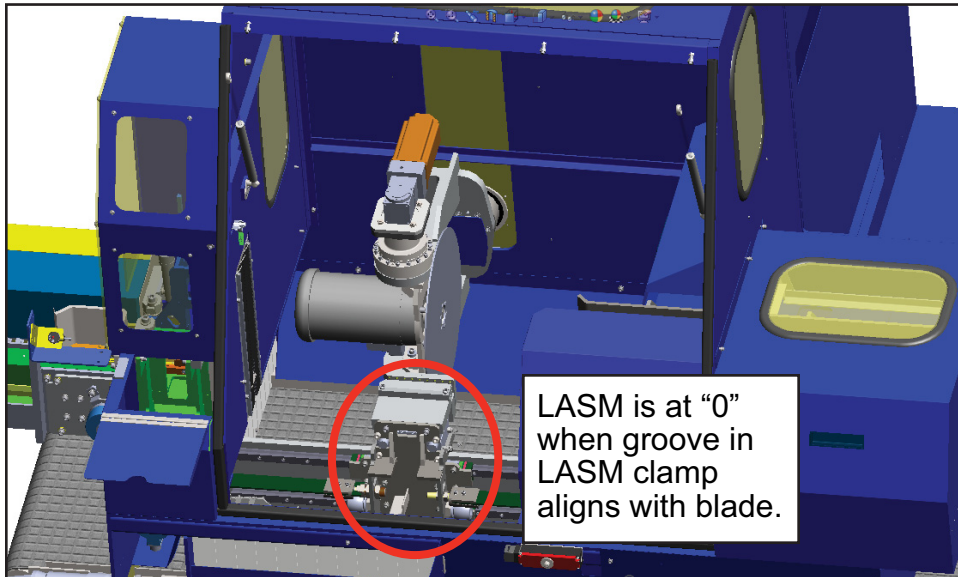


Figure 7-6: LASM Axis



BLADE SAW: MAINTENANCE

Figure 7-7: Elevation and Stroke Axes (Infeed End View)

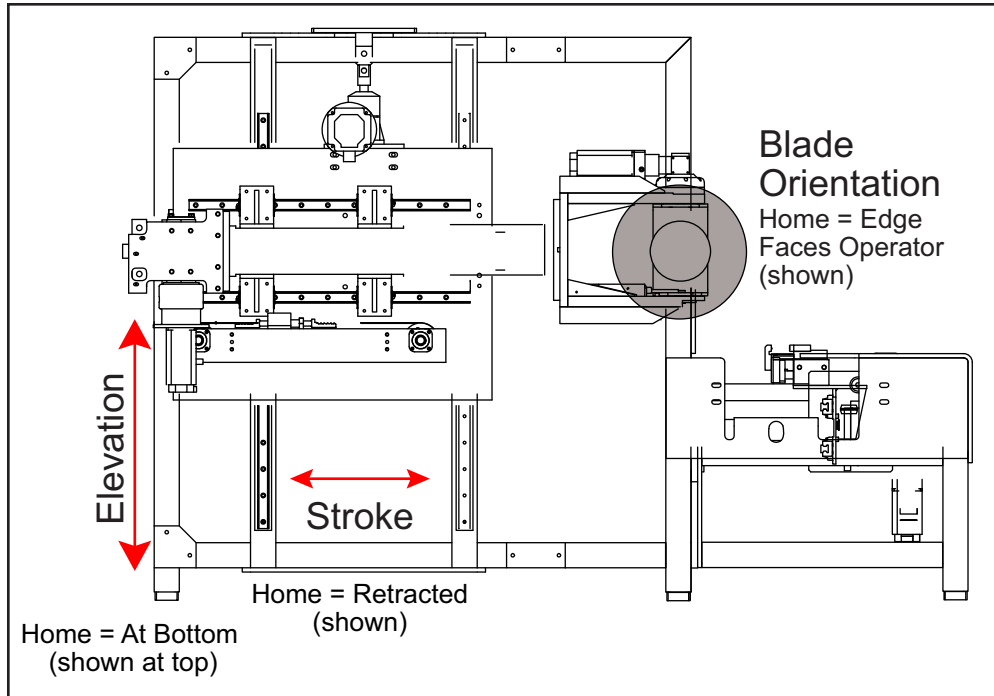
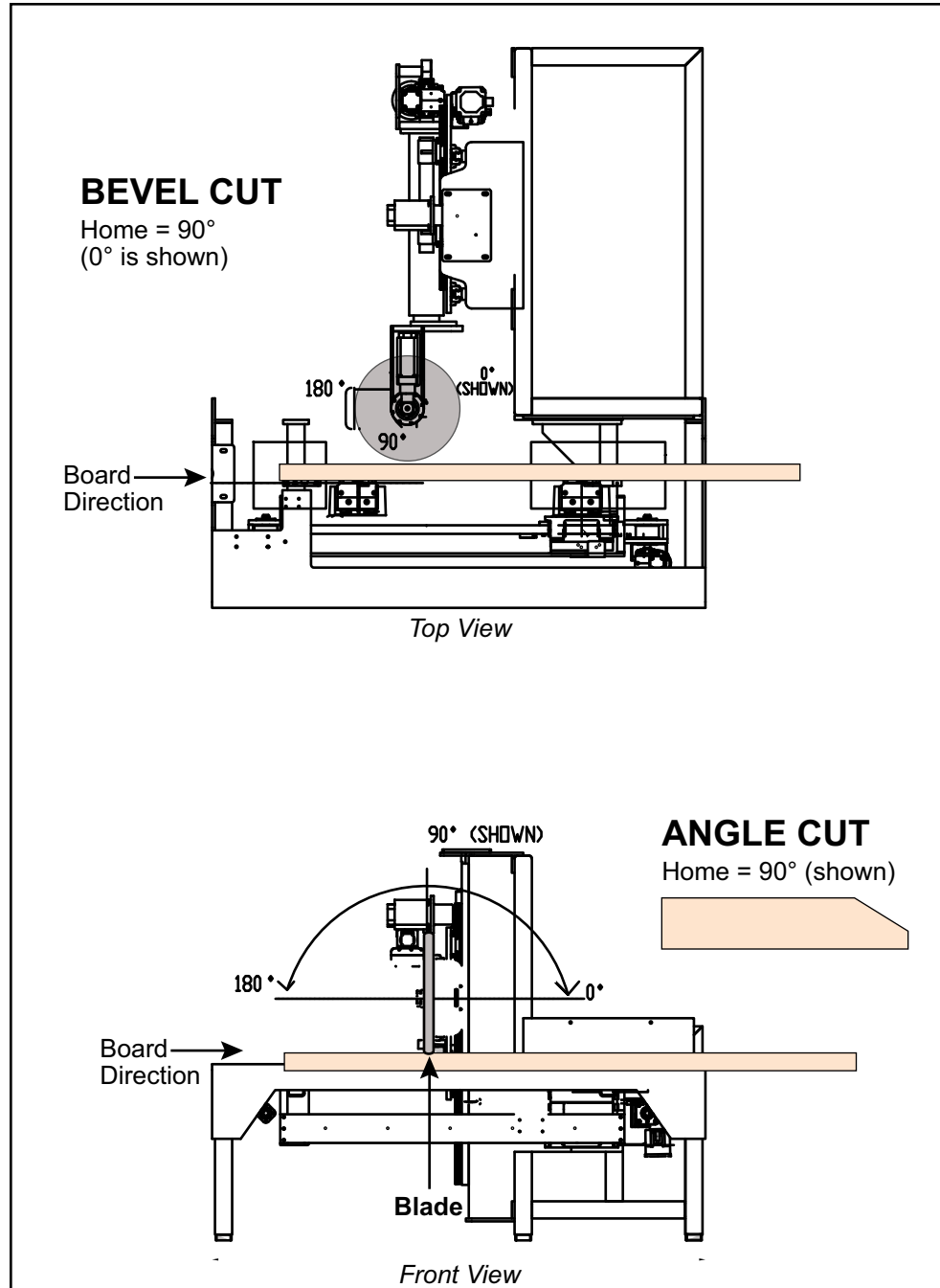


Figure 7-8: Bevel and Angle Axis





Cleaning



Cleaning Saw Dust and Debris

It is important to blow off and vacuum the equipment daily. Saw dust acts as an insulator and will prevent electrical components from working properly, and debris causes mechanical jams.

	NOTICE
	<p>Never use compressed air inside of electrical enclosures. It may force contaminants into electrical connections.</p> <p>Use a vacuum to remove dust from electrical enclosures. Canned air is acceptable after vacuuming.</p>
	CAUTION
	<p>CRUSH AND CUT HAZARD</p> <p>Always replace guards after completing maintenance and before removing the lockout/tagout device.</p> <p>Operating a machine with guards removed may result in serious injury or death.</p>

BLOW OFF...

- Top and sides of saw frame
- Auto Deck chains
- Infeed rail where board travels
- Gripper assembly, behind gripper assembly, and board slip sensor
- Sensors on Infeed Rail near saw end
- Inside top/side clamp assembly
- Outfeed clamp, lumber channel, behind outfeed clamp at cylinder
- Inside stroke/elev chamber; all axes
- Remove lumber scraps and anything that doesn't belong on equipment surfaces & belts, and blow off surfaces

VACUUM...

- Inside electrical enclosures:
NEVER USE COMPRESSED AIR!
- Floor of stroke/elev chamber
- Floor of saw chamber
- Saw chamber, especially around blade and LASM (cover the Crooked Lumber Sensor under LASM to protect from saw dust)
- Inside the printer and side clamp assembly (infeed side)
- Floor under and around system

Cleaning Surfaces

If it should become necessary to clean the surfaces of this machine, disconnect it from its power source first. Do not use liquid cleaners, aerosols, abrasive pads, scouring powders or solvents, such as benzene or alcohol. Use a soft cloth lightly moistened with a mild detergent solution. Make sure the surface cleaned is fully dry before reconnecting power.

Calibrating

Refer to [Calibration on page 92](#) in the Operation chapter.

Lubricating

Lubrication of various items is required to keep the machine operating properly and to prevent costly replacements. See the respective mechanical sections for further instructions on lubrication.

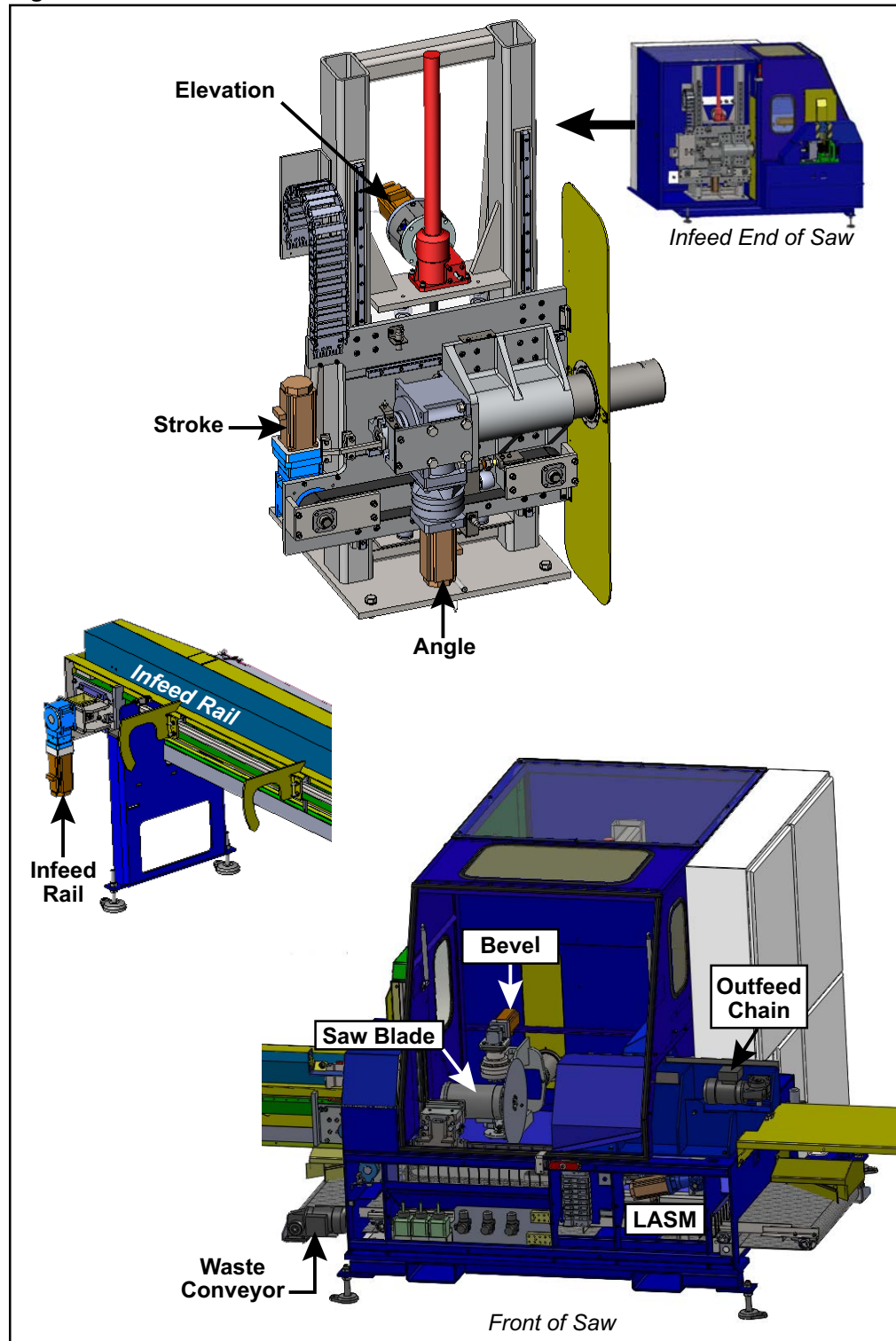
Using a Manual Grease Gun

This manual frequently makes reference to various items (such as bearings) that require the use of a manual grease gun for proper lubrication. The amount of lubrication that should be applied is typically measured in cm^3 . The amount of lubricant output by a manual grease gun per stroke can vary among models. We highly recommend customers familiarize themselves with the amount of grease output per stroke with any grease gun in order to avoid applying too much lubricant and potentially causing damage to the machine.

Motors and Gearboxes

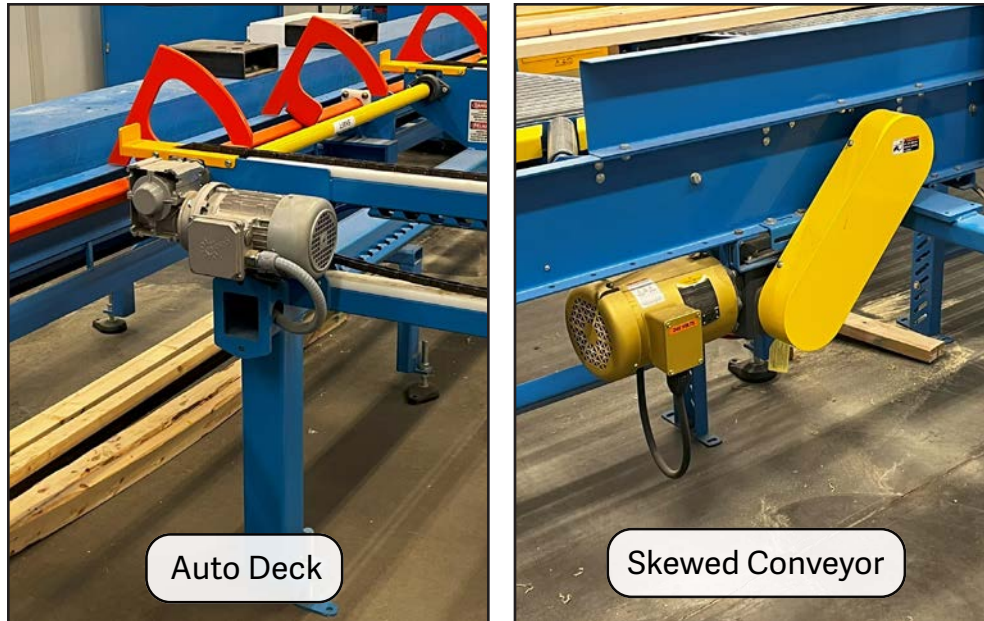
Motor Locations

Figure 7-9: Front and Rear View of Saw



BLADE SAW: MAINTENANCE

Figure 7-10: Auto Deck and Skewed Conveyor



Motor Maintenance

Table 7-2 lists all motors in the system. Some hardware has changed over time and is designated as **latest model** or **earlier models** in the Motor column when applicable.

Table 7-2: Overview of Motor Maintenance

Motor	Gearbox and Model (if present)	Requires Grease	Requires Oil
Angle	N/A	No	No
Elevation (with brake)	N/A	No	No
Stroke	N/A	No	No
Bevel (latest model)	Yes (GAM)	No	No
Bevel (earlier models)	Yes (Nabtesco)	Yes	No
Saw Blade	N/A	Yes	No
LASM	N/A	No	No
Infeed Rail	N/A	No	No
Outfeed Chain	Yes	No	Yes
Skewed Conveyor	Yes	No	Yes
Waste Conveyor	Yes	No	Yes
Auto Deck	Yes	No	Yes

Checking and Changing Gearbox Oil

Check the oil in the all gearboxes once every 12 months (one shift) or every 6 months (two shifts). When additional oil is needed, use the oil recommended for

BLADE SAW: MAINTENANCE

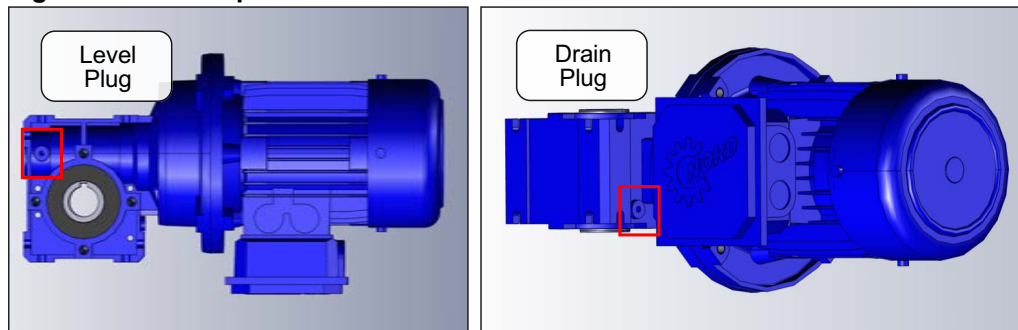
each motor type listed in Table 7-3 or a comparable type that meets all specifications.

Table 7-3: Recommended Oil Specifications for Motor Gearboxes

Motor	ISO Viscosity Grade	Oil Type	Oil Supplied by Manufacturer
Outfeed Chain	680	Synthetic Polyglycol Oil	Klübersynth UH1 6-680
Waste Conveyor	680	Synthetic Polyglycol Oil	Klübersynth UH1 6-680
Auto Deck	680	Synthetic Polyglycol Oil	Klübersynth UH1 6-680
Skewed Conveyor	460	Synthetic Polyglycol Oil	Klübersynth UH1 6-460

Drain and refill the oil every 20,000 hours or 4 years. Each gear motor includes a level plug and drain plug (see [Figure 7-11](#) for example). Note that the exact location of each plug will vary between motors.

Figure 7-11: Example of Oil Level Bolt and Oil Drain Bolt Location



The approximate amount of oil is listed in Table 7-4. Earlier machine models may include a different motor and gearbox that require a different amount of oil. For all gearboxes, the amount of oil should be enough to reach the oil level bolt.

Table 7-4: Approximate Oil Fill Level

Motor	Quarts	Liters
Outfeed Chain	.106	.1
Skewed Conveyor	.4	.378
Waste Conveyor	.106	.1
Auto Deck	.1	.094



Grease

Hex socket set

Grease nipples
and grease
gun

Torque wrench

Seal tape

Rags

Checking and Changing The Bevel Gearbox Grease (Nabtesco Only)

Lubrication for *Nabtesco* Gearbox

Recommended grease: VIGOGREASE RE0™

- Operating temperature range (ambient): 14°F to 104°F (-10 to 40°C)

BLADE SAW: MAINTENANCE



- Reservoir volume: Approximately 219 grams
- This is a synthetic EP lithium grease sold by *Nabtesco*. If substituting a different grease, work with your supplier to ensure it is equivalent.
- Replace every 20,000 working hours

Lubrication Procedure

Bevel motors that incorporate a *Nabtesco* gearbox require lubrication. Follow these instructions for lubricating the *Nabtesco* gearbox.

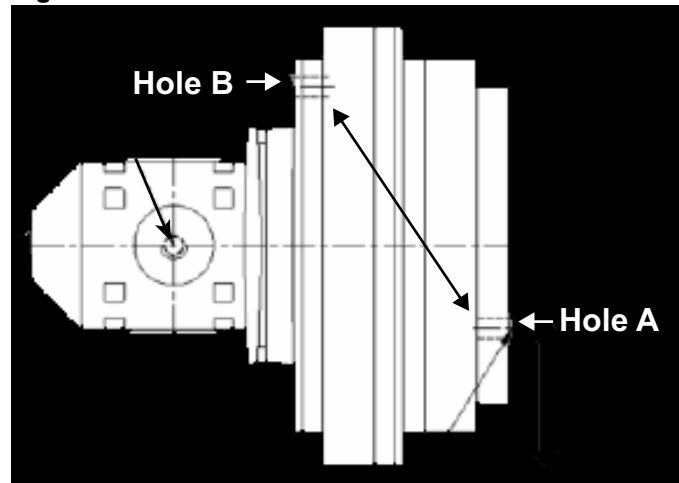
1. Rotate and position the output shaft of the reduction gear so that the tapped holes for injecting/draining grease are located diagonally as shown in [Figure 7-12](#).
2. Lockout/tagout all power.



	 CAUTION
	LET COOL BEFORE UNPLUGGING HOLE! If a tapped hole for injecting/draining grease is unplugged while the reduction gear is still hot, hot lubricant sprays out, which could cause burns.

3. Drain and add grease following these steps:

Figure 7-12: Nabtesco Gearhead Hole Identification



- a) Unscrew the hexagon socket head cap plugs and other parts from holes A and B shown in [Figure 7-12](#).
 - b) The exact location of the 2 holes will vary depending on where the shaft stopped rotating. Drain the lubricant from the lower hole.
 - c) Attach a grease nipple to the lower hole, leaving the upper hole open as a vent to protect the seals.
 - d) Add grease until it is visible at the edge of the top hole. The capacity of the reservoir is 219 grams.
4. Use the torque settings listed in [Table 7-5](#) to install the plugs and other parts:

BLADE SAW: MAINTENANCE

Table 7-5: Torque Settings for Hole Plugs (for 020E Model)

Hole	Parts to Install	Torque (Nm)
A	M6 cap screw & washer	12.1 +/-0.61
B	Plug GM-1/8	12.3 +/-2.45
Hole	Parts to Install	Torque (Nm)

- Install new seal tape onto the plugs.
- Re-install the plugs and other parts that were removed from the holes.
- Wipe off the gearbox and surrounding area.



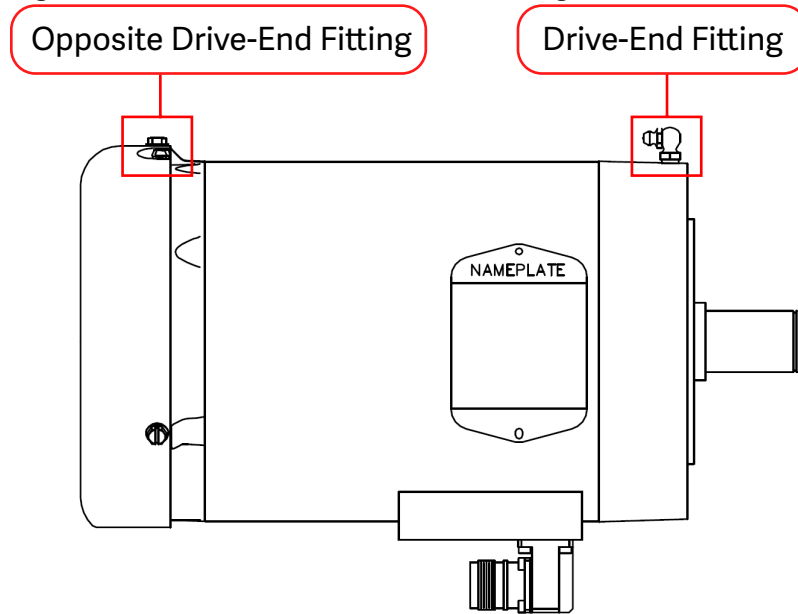
Manual grease gun

No.2 lithium-based grease

Lubricating Saw Blade Motor Bearings

There are two grease fittings on the saw blade motor for the drive end (DE) and opposite drive end (ODE) bearings. Each bearing should be lubricated every 12 months (one shift) or every 6 months (two shifts).

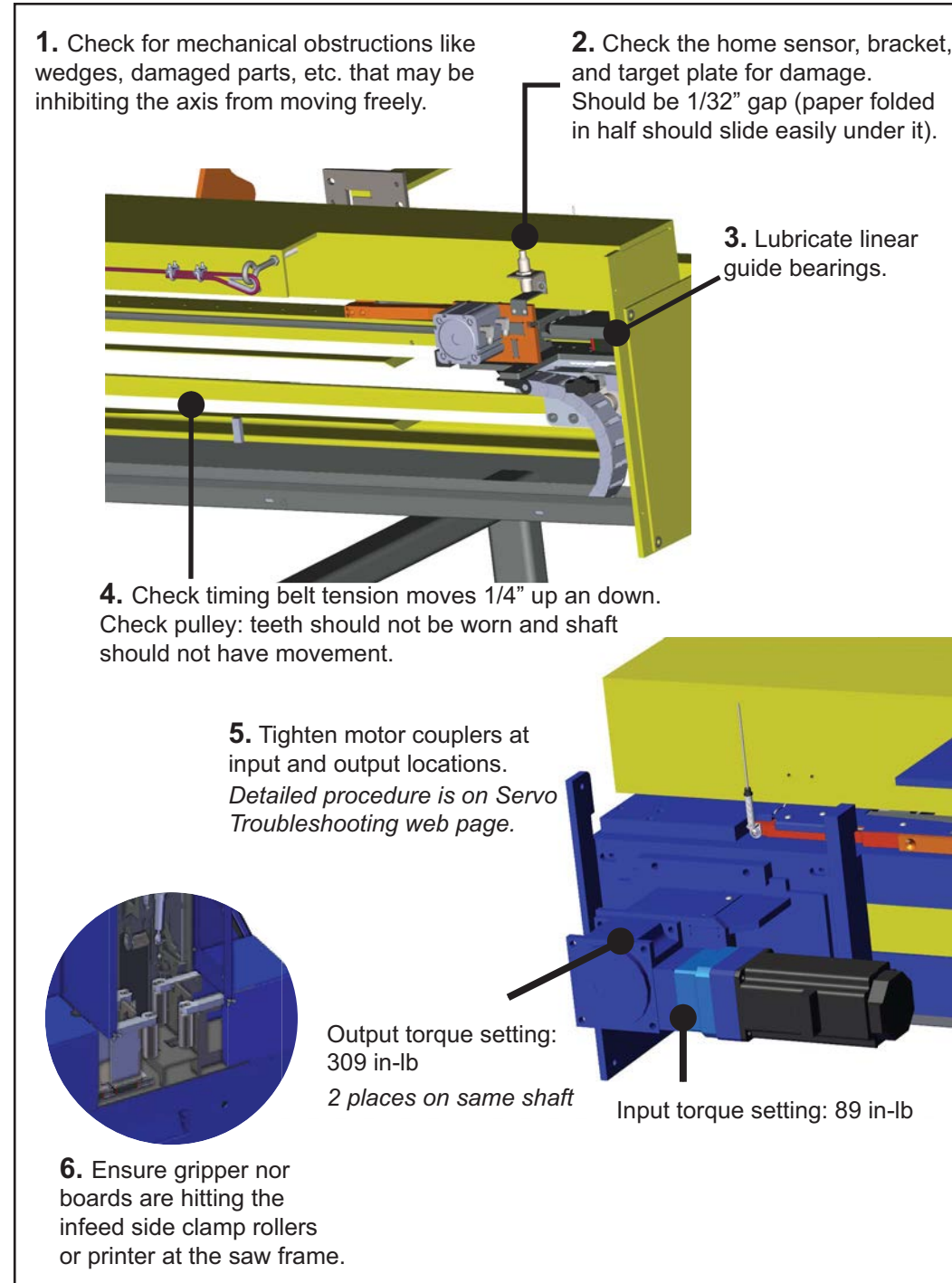
Figure 7-13: Saw Blade Motor Grease Fitting Locations



Slippage Errors and Tightening Motor Couplings

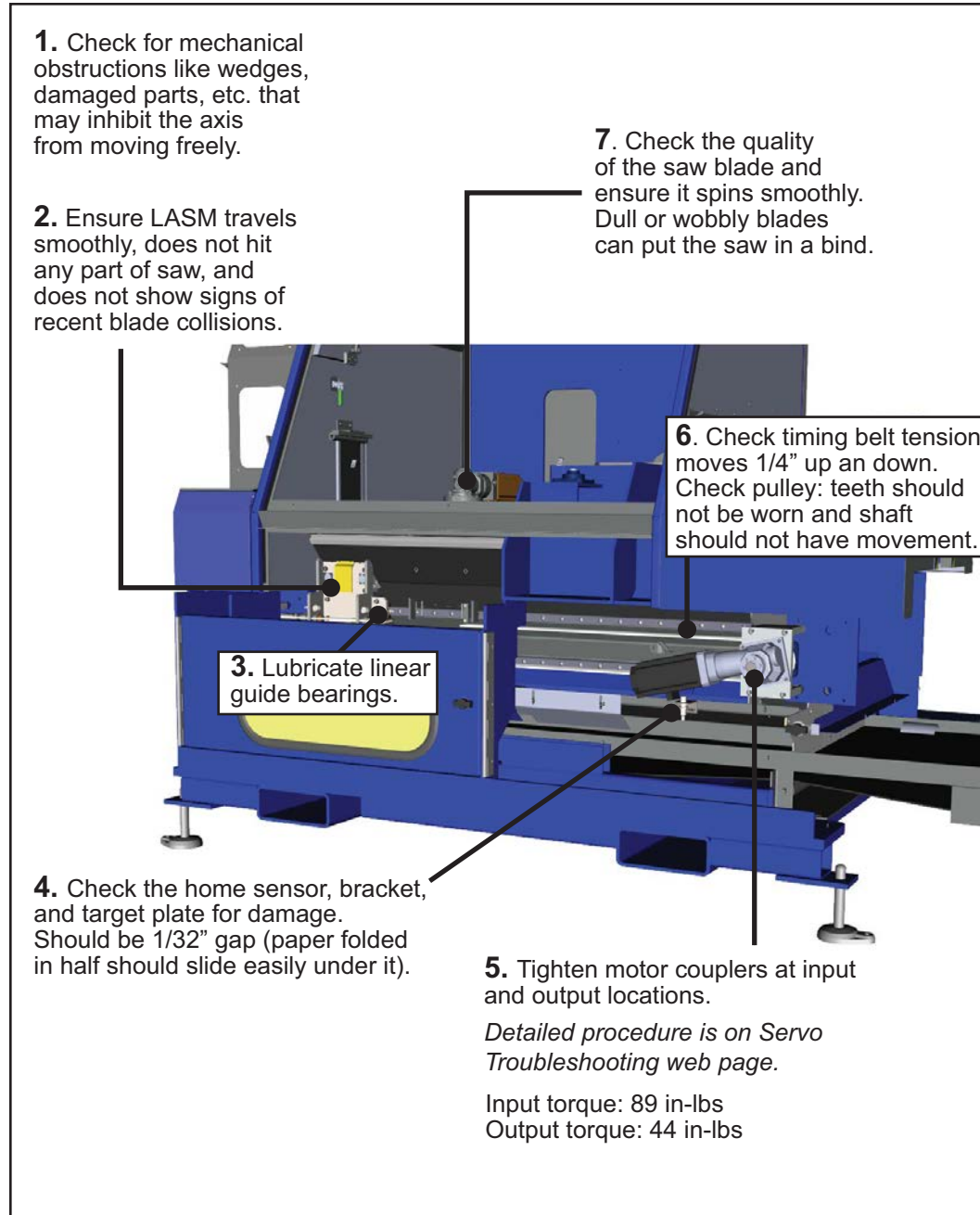
Slippage Errors

Figure 7-14: Potential Causes of Gripper Slippage Error



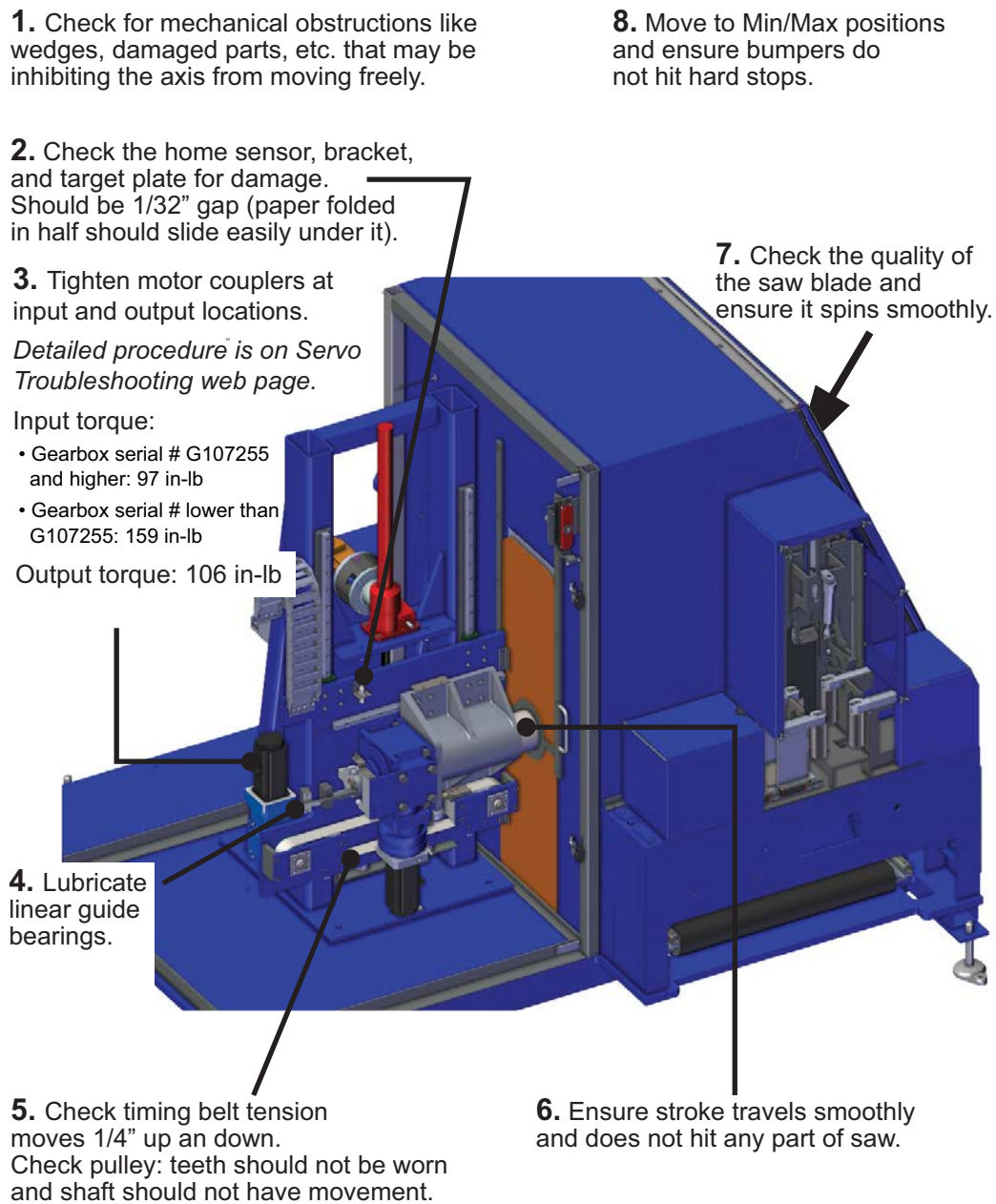
BLADE SAW: MAINTENANCE

Figure 7-15: Potential Cause of LASM Slippage Error



BLADE SAW: MAINTENANCE

Figure 7-16: Potential Causes of Stroke Slippage



BLADE SAW: MAINTENANCE

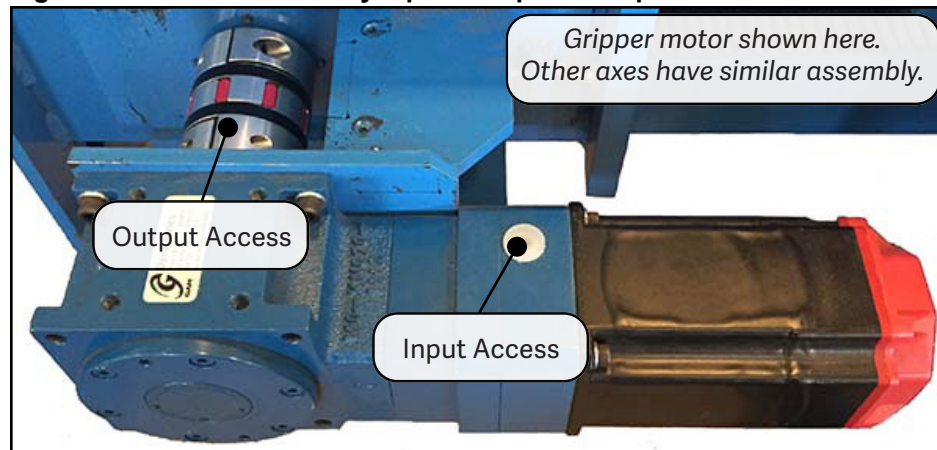
Tightening Motor Coupler on Servo Motors

This section contains instructions for setting the correct torque values for various motor couplers.

Table 7-6: Torque Values for Input and Output Couplers

Motor	Torque (in-lbs)	Hex Size
INPUT		
LASM	89	4 mm
Stroke (Gearbox serial # G107255 and higher)	97	5 mm
Stroke (Gearbox serial # lower than G107255)	159	5 mm
Bevel	50	3 mm
Angle	177	6 mm
Infeed Drive (Gripper)	89	4 mm
OUTPUT		
LASM	44	4 mm
Stroke	106	10 mm (socket)
Bevel	138	7 mm
Angle	106	10 mm (socket)
Infeed Drive (Gripper)	309	4 mm

Figure 7-17: Motor Assembly Input / Output Example



Instructions for LASM, Stroke, Gripper, and Angle Servo Motors (Input)

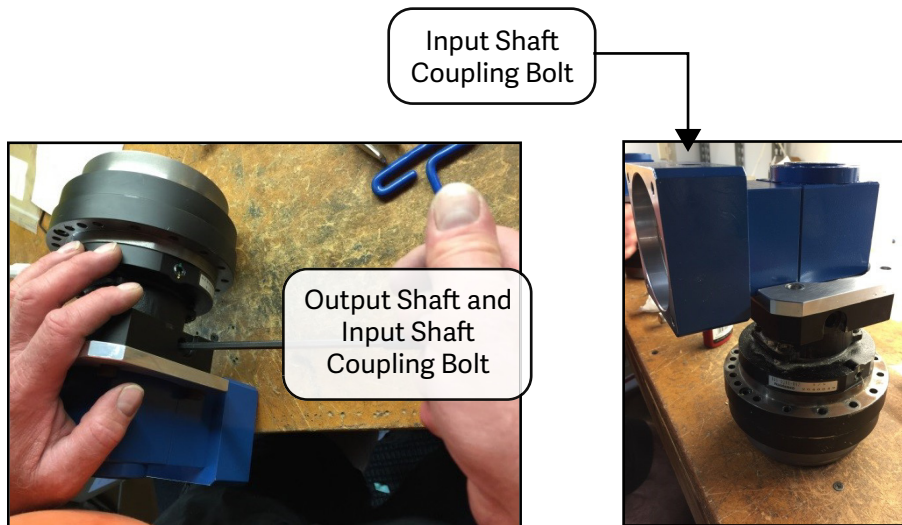
1. Remove the plug labeled output in [Figure 7-17](#) to access the hole.
2. Align the screw with the hole using one of the following methods:
 - a) **For LASM, Stroke, and Gripper couplers only:** with E-stop activated move axis by hand.

- b) **For other couplers:** With power on, enter small position changes in **Diagnostics > Detailed Diagnostics > Move To Position** fields to move motor coupler in small increments.
3. Torque bolt to the appropriate setting (see [Table 7-6](#)) using a torque wrench and hex key.

For Bevel Servo Motors (Input and Output)

Use the same steps in [Instructions for LASM, Stroke, Gripper, and Angle Servo Motors \(Input\)](#) on page 111, but refer to [Figure 7-18](#) below.

Figure 7-18: Bevel Coupling Bolt Locations





Elevation Jack Screw

The elevation jack screw raises and lowers the saw head.

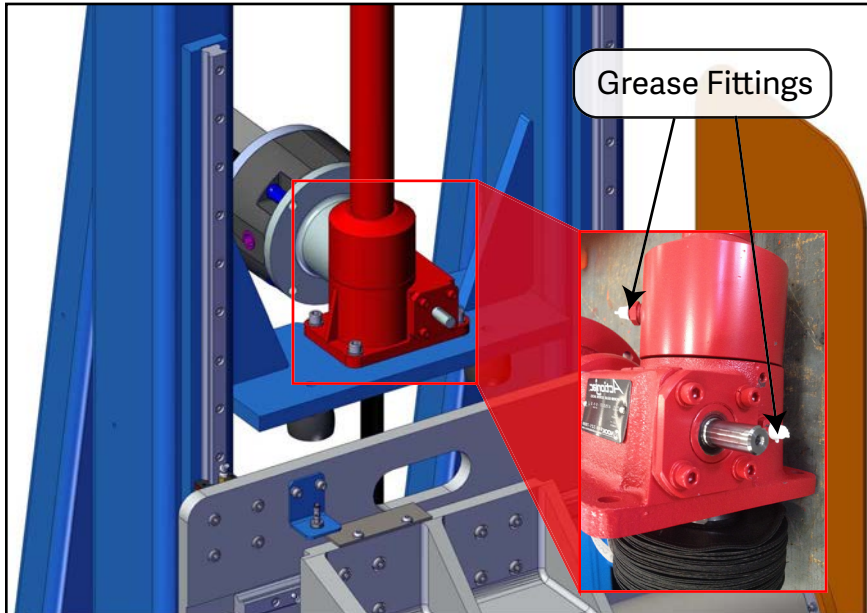
Apply grease to the 2 fittings on the jack screw housing every 3 months.



Manual grease gun

No.2 lithium-based grease

Figure 7-19: Elevation Jack Screw Grease Fittings Location



Saw Blade

When to Replace the Saw Blade





The saw blade replacement instructions in this manual revision are only applicable to the 5-bolt pattern saw blades. If your machine uses a 6-bolt pattern saw blade, contact Automation Support for SB202.

Every shift the operator should perform the following tasks to check the saw blade for signs of wear and replace or repair accordingly:

- Check blade diameter. If it's less than 16-5/8" (425 mm), the saw blade must be removed and discarded.
- Check for cracks, warping, missing or dull teeth, etc.
- Observe the blade during operation for wobble or vibration

BLADE SAW: MAINTENANCE

- Check that the bolts holding the blade to the hub are secure.

	 WARNING
	Keep saw blades sharp and in good condition. Have the saw blade re-tipped if carbide tips become chipped or come off. Dull blades cause high kickback forces which can cause injury.

The frequency of blade changes and repairs depend on the species and grade of lumber, as well as the number of hours the saw is being run. Your plant may need to change the blade often for optimal saw operation.

Specs for New or Used Saw Blade



Saw blades can be sharpened to significantly extend their life. They must be sharpened by a reputable blade sharpener that is familiar with carbide tips. It is important to meet the specifications etched into each saw blade. If any specification is not met, it can cause the saw blade to cut inefficiently, inaccurately, and/or rotate out of balance. The specifications are further defined in [Table 7-7](#).

Table 7-7: Saw Blade Specifications

Spec Description	Dimension
Tip-to-tip diameter	425 mm min. (16-5/8" min.) 432 mm max. (17" max.)
Kerf (blade thickness)	4.8 mm (.189")
Z= qty of teeth	40
Ø = diameter of center hole	75 mm
SK = keyways	0
Hook	10°
Face angle	0°
Top angle	15°
Angle left-to-right (or right-to-left) of ATB*	10°
RPM max	4500 rpm
Model # of saw blade	as shown on saw blade
ATB	indicates an alternating top bevel
Serial # of saw blade	as shown on saw blade

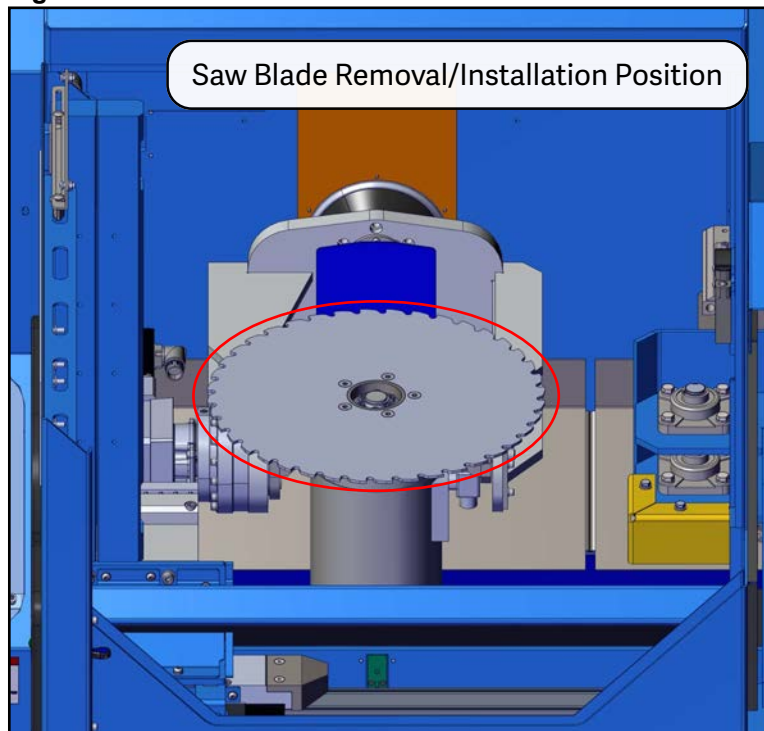
* ATB = Alternating Top Bevel

Replacing a Saw Blade

	 WARNING
	MOVING PARTS CAN CRUSH AND CUT. Always verify that power to the machine has been turned off and follow approved lockout/tagout procedures.

1. Gather the following supplies:
 - Socket Wrench
 - Torque wrench with capacity up to 220 in-lbs
 - T40 Torx™ bit compatible with wrench
2. Use the machine software to position the saw head to prepare for saw blade removal:
 - a) Rotate the angle of the saw blade so it is in a horizontal position (flat surface on top).
 - b) Adjust the elevation and stroke to a comfortable position for removing the blade.

Figure 7-20: Saw Head Position for Saw Blade Removal






3. Activate an E-stop on the machine.
4. Press the **Request to Unlock** button next to the saw chamber door and open the door.

BLADE SAW: MAINTENANCE

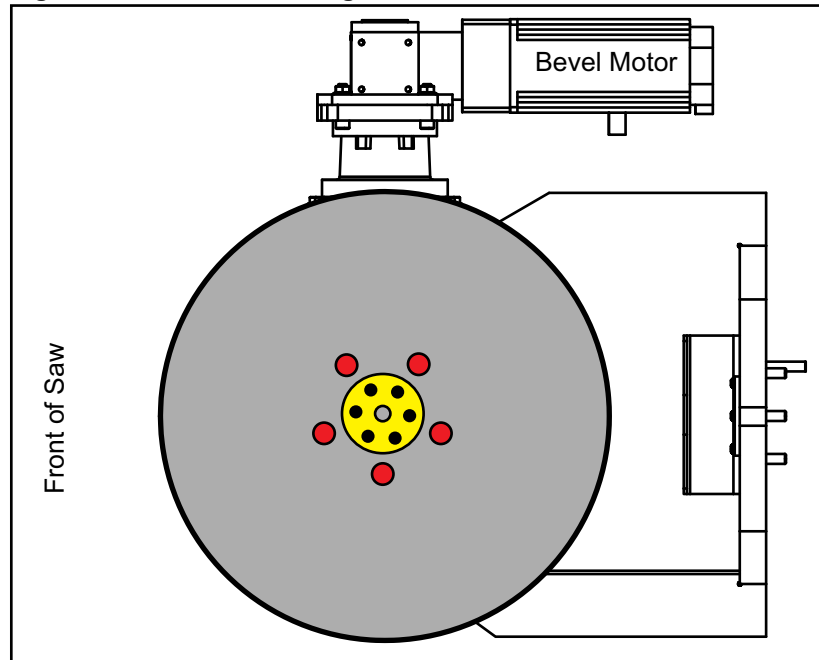


5. Turn the disconnect switch handle on the main electrical enclosure to the OFF position and lockout/tagout the machine. See [Lockout/Tagout on page 6](#).

 CAUTION	
 	CUT HAZARD. Saw blades are sharp. Wear gloves and eye protection when handling blade.

6. Use a socket wrench and T40 bit to loosen and remove the 5 bolts securing the saw blade (shown in red in [Figure 7-21](#)). Discard the bolts.

Figure 7-21: Bolts Securing Saw Blade



7. Remove the saw blade and follow the below instructions to determine whether it should be discard or kept for sharpening:
 - a) Measure the diameter of the blade from outside edge of tooth to outside edge of tooth. If the diameter is less than 16-5/8", discard it.
 - b) If the diameter is greater than 16-5/8", place the saw blade in a safe location for sharpening.





Hub Bushing Bolts Reminder



It is not necessary to re-torque the hub bushing bolts unless the hub itself feels loose. If you feel it's necessary to check the torque on the hub bolts, only set the torque wrench to 156 in-lbs. If the bolts turn at 156 in-lbs, refer to SB252 to properly re-torque the hub bushing bolts. If the bolts do not turn at 156 in-lbs, no further action is needed.

BLADE SAW: MAINTENANCE

8. Prepare the surfaces:

	 WARNING
	<p>Mounting surfaces and hardware must be clean and dry when installing saw blade.</p> <p>Dust, dirt, and lubrication may cause the blade to come loose, causing injury or death.</p>

- Blow off dust from the hub and the bolt threads. Remove all pitch and debris from threads.
 - Wipe down the mounting surface on the new saw blade and the hub. Use a 320-grit emery cloth, if necessary, to remove pitch.
 - Ensure all parts are clean, dry, and free of lubricants.
 - If using a used saw blade, measure its diameter from outside edge of tooth to outside edge of tooth. If the diameter is less than 16-5/8", discard it.
9. Place the supplied new or sharpened saw blade so the holes align with the holes in the hub and the teeth hook points downward when cutting a straight cut. See [Figure 7-23](#) for the correct orientation.

	 WARNING
	<p>Use ONLY the bolts included in the SBKIT.</p> <p>Use NEW bolts every time the blade is replaced.</p> <p>Do NOT use thread adhesive.</p> <p>TORQUE to specifications given in Figure 7-23!</p> <p>Ensure the bolts are fully embedded and flush against the saw blade surface.</p>

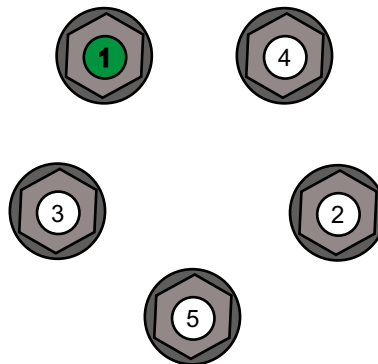


A torque wrench should be calibrated on a yearly basis to ensure accuracy.

10. Using new bolts supplied in this kit, install all 5 bolts.

- Use the torque wrench and T40 bit and bolts referenced in Step 1.
- Do **NOT** use thread adhesive.
- Hand tighten all 5 bolts in the order shown in [Figure 7-22](#).
- Using a torque wrench, tighten the bolts in the order shown in [Figure 7-22](#) until they all reach the recommended torque shown in [Figure 7-23](#).
- Once properly torqued, all bolts should sit flush with the surface of the blade. If the bolts are protruding or skewed, repeat step 10 with new bolts.

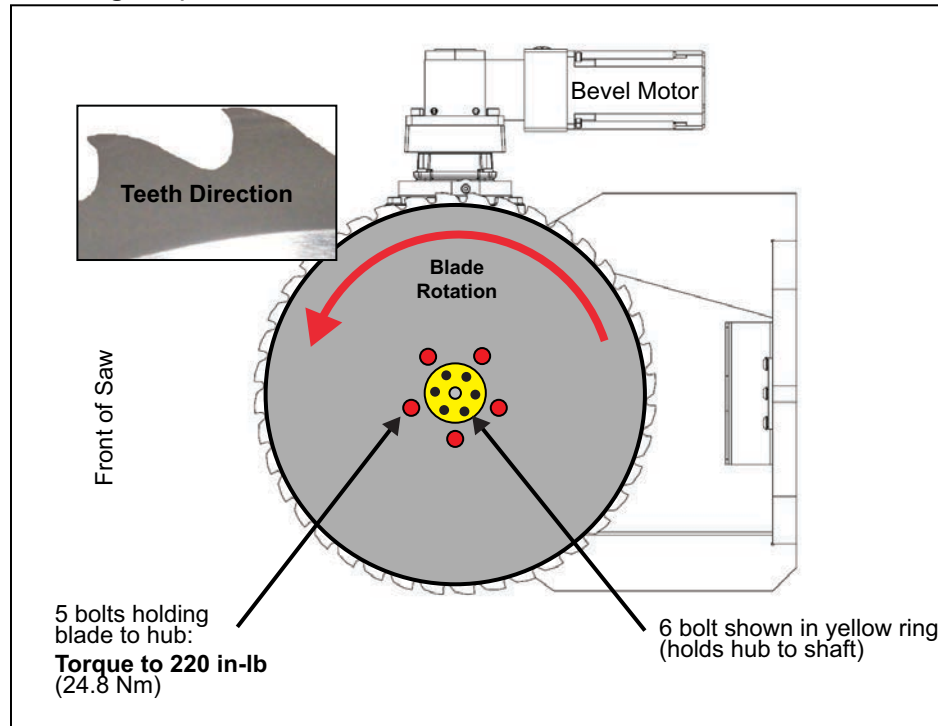
Figure 7-22: Tighten Saw Blade Bolts in This



BLADE SAW: MAINTENANCE

11. By hand, carefully rotate the blade to observe its motion. It should not have any significant wobble or vibration when rotating.

Figure 7-23: Torque Specs for Saw Blade (view from side of saw, with blade at 90 degrees)



12. Close the saw chamber door.
13. Power on machine:
 - a) Remove lockout/tagout and switch the disconnect switch to the ON position.
 - b) Release E-stop and press Reset switch on the HMI.
14. Use the machine software to start the saw blade rotation and observe its motion. It should not have any wobble or vibration when rotating.
15. Calibrate the stroke and LASM axes per [Calibration on page 92](#)

Printer

Ordering Printer Supplies

To order supplies for the *BLADE* printer, contact Matthews directly. MiTek does not sell the ink or cleaning solution.

Once the account is set up, future orders can be placed by providing a PO any of the three ways listed here. To place your very first order with *Matthews Marking Systems™*, see [Placing Your First Supplies Order Through Matthews on page 119](#).

- E-mail to mms-insidesales@matw.com
- Fax **412-665-2594**
- Call **800-775-7775**

Table 7-8: Printer Supplies

Description	Unit	Quantity per Case	Matthews Part #	MiTek Part #
Cleaner: SCP-900C	Case	6 bottles (1 liter ea.)	71002860	N/A
Black Ink: SCP-901A	Case	6 bottles (1 liter ea.)	71002863	N/A
Cap w/ Filter	1 Unit	N/A	41206373	005-00135
Print Head Brush	1 Brush	N/A	41001415	N/A



Only use the specified ink in this printer!

Ink specified for other MiTek inkers and printers will damage this unit.

The ink must be stored between 32°F and 90°F and has a 2-month shelf life.

How Much Ink Will I Use?

The amount of ink you will use depends greatly on which Printer(s) you have, type of parts you cut, and quantity of parts each day. Basic guidelines are listed below to help you determine how much ink to purchase at one time. These guidelines are based on a **5-day work week, 1 shift/day**. Adjust these numbers to reflect your work week.

- For Truss Use, with an AGS option:
On average, the Printer uses approximately 1 liter of ink every 1-2 weeks.
- For Wall Panel use, with an AGS option:
On average, the Printer uses approximately 2-3 liters per week.

Placing Your First Supplies Order Through *Matthews*

Consumable supplies (ink and cleaner) must be purchased from either Matthews or a local distributor. MiTek does not sell the ink and cleaner solutions. The most efficient way to place your first order is as follows.*

BLADE SAW: MAINTENANCE

1. Print and fill out the Matthews credit form that is included in the Inker/Printer Agreement.
2. Send an e-mail to Matthews at mms-insidesales@matw.com with the following information:
 - a) Notation that you are a MiTek customer
 - b) Ship To address
 - c) Bill To address
 - d) Attach the following files:
 - Matthews Credit Form
 - PO stating this purchase items, Matthews part numbers, and quantities (listed in Inker/Printer Agreement)
3. A customer service representative will assign the account internally, and your Matthews account is created.
4. Call to place your first order and verify that all credit information has been received. Orders should be placed at least 3 weeks prior to the saw installation date to ensure the supplies will be there during installation.

** Failure to supply a purchase order will delay the shipment of supplies. If you do not have the credit form, contact Matthews to obtain a credit application. These supplies may also be purchased from an approved local distributor. Contact Matthews to obtain your local distributor's contact information.*

Printer Components Overview

Print Controller and V-Links

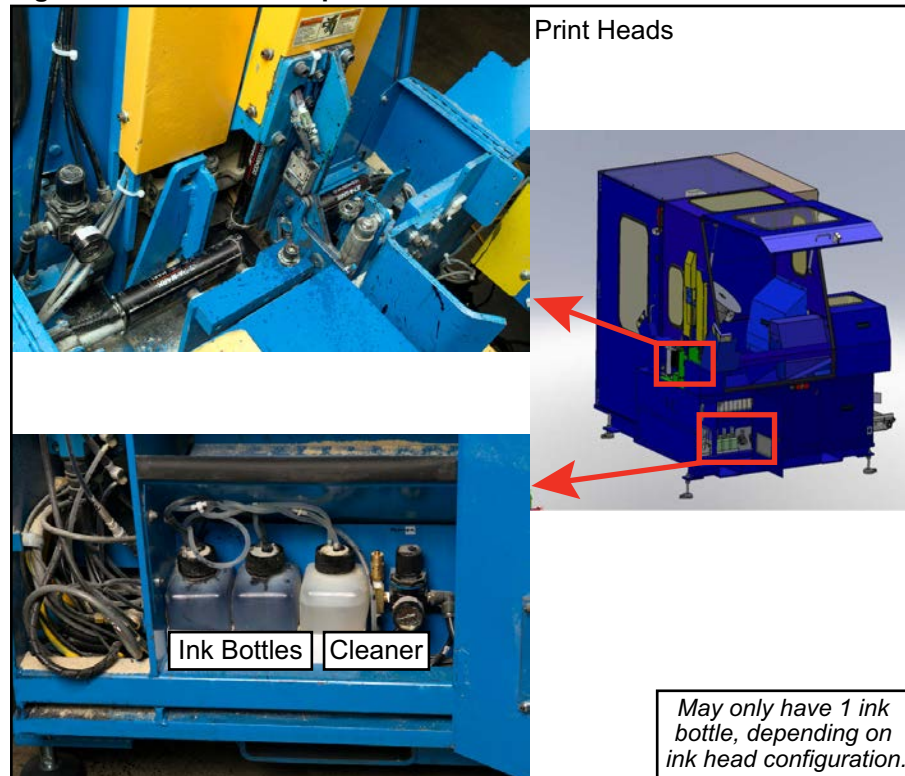
The machine software communicates with the print controller to determine what to print and when. The print controller sends messages to a V-Link that is connected to a specific print head. Depending on the configuration of your machine, it may contain 1 to 3 V-Links.

Print Head(s)

The print heads use ink from the ink bottles to mark a print target according to the signals received from the control unit. Depending on the configuration of your machine, it may contain 1-3 print heads.

Ink and Cleaner Bottles

Figure 7-24: Printer Components



Maintaining the Printer

General Maintenance Reminders

- Always wear safety glasses and rubber gloves when handling ink.
- If ink or cleaner makes contact with a person's skin, hair, eyes, or clothes, refer to [Treatment for Hazardous Substances on page 11](#).
- Check regularly for kinks or other stoppages in the lines.
- Never clean the print heads with pressurized air.
- Do not allow the ink or cleaner level to fall below the bottom of the pick-up tube. The air will negatively effect print quality and cause damage to the print head.
- Always store extra bottles of ink and cleaner in a temperature-controlled area. The temperature must stay above 32 degrees Fahrenheit to prevent ice crystals from forming and clogging the printer.
- Never pressurize a bottle while it is positioned outside the bottle holder.
- Never exceed the recommended pressure setting of 15 psi.

BLADE SAW: MAINTENANCE






Small brush

Cleaner fluid

Washing station

Cleaning the Print Heads

Clean the printer head face (nozzles) at least twice a day using this procedure. See [Using the Brush to Clean](#) and [Practices That May Damage the Print Heads](#) following these instructions for important information related to this procedure.

	 CAUTION
 	Wear goggles and gloves when handling ink/cleaner.

1. Lockout/tagout the pneumatic system's main regulator.
 - Note that the top clamp (infeed side) will lower when air pressure is removed.
2. To ease access to the print heads, follow the instructions in [Raising the Top Clamp on page 159](#) to secure the top clamp in place.
3. Pour some of the cleaning solution from a Matthews bottle (for flushing print heads) into a small cup or bottle.
4. Place a rag underneath the print heads to catch drips and protect the paint and fluid lines from damage.
5. Dip the provided brush into the cleaning solution.
6. Lightly move the brush back and forth across each nozzle, ensuring that all visible traces of ink are gone each time.
7. Immediately rinse the brush in the cleaning solution to remove any ink before it dries.
8. Place the brush in a sealable plastic bottle or container.

Using the Brush to Clean

- Only use the cleaning solution supplied by Matthews. Do not use water or any other chemical for cleaning. Failure to do so will damage the unit and void the warranty.
- Never dip the brush into a cleaner bottle that will be used with the saw.
- After cleaning, place the brush in a sealable plastic bottle or container (a wide mouth bottle works well). Dirt must be kept out.
- Do not use a plastic bag because the cleaner may eat through it.
- It is acceptable to leave cleaner in the brush bottle to keep the brush flexible.
- Do not rinse the brush with water. Replace the brush when it is damaged or too dirty to clean properly.

BLADE SAW: MAINTENANCE

Practices That May Damage the Print Heads

- Do not use a spray bottle to apply the cleaner directly to the nozzles. The spray may push debris into the nozzles and damage the hoses or other components it contacts.
- Do not use rags or paper towels on a print head. Using anything other than the brush to clean a print head can push debris into the print head nozzles and create a clog or damage the nozzle.

Flushing the Printer

The printer should be flushed to clean ink out of all print heads every month **OR** if the printer will go unused for more than 48 hours.

Identifying Your Printer



The flushing instructions refer to 7, 16, and 32 valve printers. Use [Table 7-9](#) to determine which printer setup your system uses. Note that the printer hardware in earlier machine models may need to be upgraded to support all options listed.

Table 7-9: *BLADE* saw Print Head Configurations

# of Valves		16 or 32	7 or 32	7
System ID and Printing Location		Ink Bottle 1	Ink Bottle 2	
		Front	Rear	Edge
Option	A	16	N/A	N/A
Option	B	16	7	N/A
Option	C	16	N/A	7
Option	D	16	7	7
AGS+ option	E	32	32	N/A
AGS+ option	F	32	32	7

The Flushing Procedure

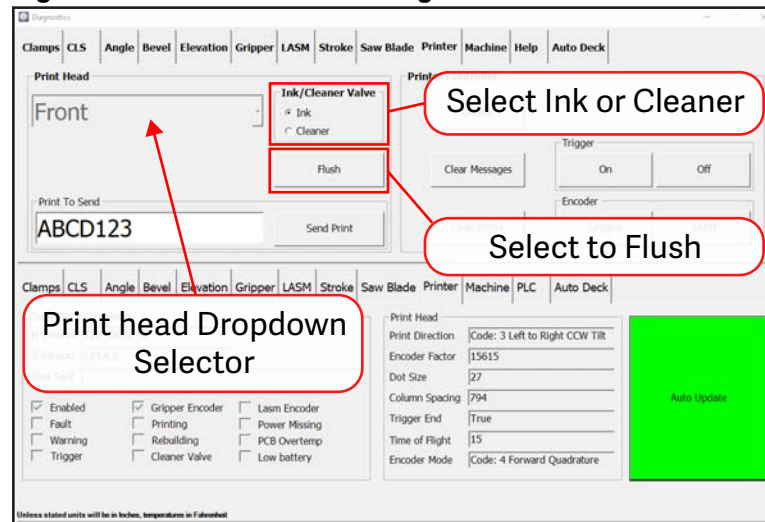
To flush the print system with cleaner fluid, follow these steps for each print head:

	 CAUTION
	FLUID WILL EXIT NOZZLES DURING FLUSH! When a Flush cycle is initiated, be sure to have something in front of the print head nozzle plate(s) to capture the discharged fluid!

1. Lockout/tagout the pneumatic system's main regulator.
 - Note that the top clamp (infeed side) will lower when air pressure is removed.

2. To ease access to print heads, follow the instructions in [Raising the Top Clamp on page 159](#) to secure the top clamp in place.
3. Remove the lockout/tagout of the pneumatic system's main regulator.
4. In the machine software, go to **Diagnostics > Detailed Diagnostics > Printer** and select the desired print head from the dropdown, then select **Cleaner**.

Figure 7-25: Printer Flush Settings in Software



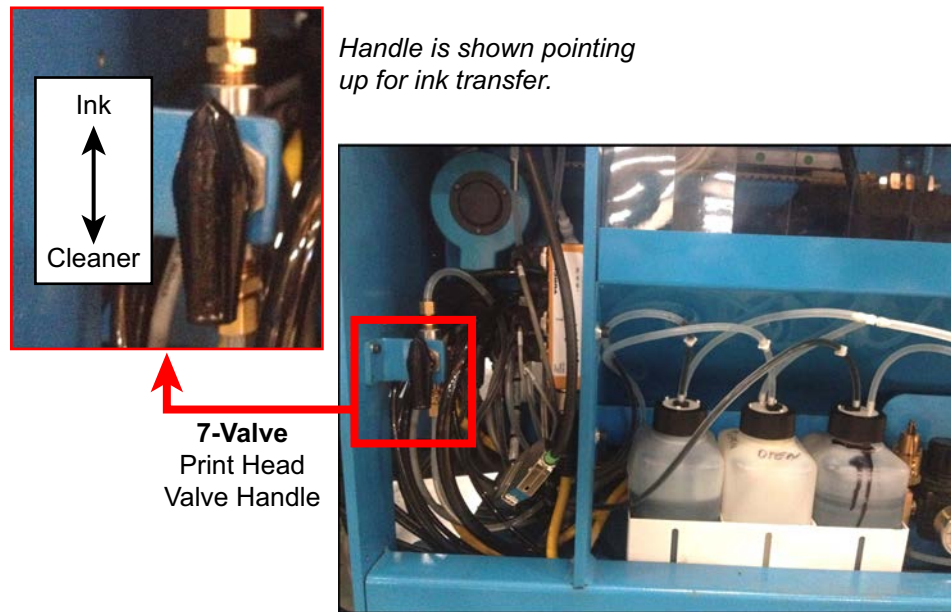
5. Locate the manual purge valve for the print head you are flushing and point it toward a waste container. An example valve is shown in [Figure 7-26](#) and the valves themselves can be accessed via one of the maintenance doors near printer assembly.
 - If you are flushing a 7-valve print head (rear and/or edge print heads in certain configurations), turn the manual hand valve to switch the fluid from the ink to the cleaner bottle. See [Figure 7-27](#).

Figure 7-26: Example of Manual Purge Valve




6. Pull back on the valve until no ink is coming out, only clear cleaner.

Figure 7-27: Manual Valve for 7-Valve Print Heads



7. Place a rag under the print heads to capture the cleaner liquid.
8. On the printer screen, select the **Flush** button a few times until you see clear cleaner come through the nozzles on the selected print head.
9. Repeat this process for all other print heads. See [Identifying Your Printer on page 123](#) for the number of print heads in your configuration.
10. The print system has now been flushed with cleaner. **MiTek recommends flushing the print system if the printer will go 48 hours or longer without use.**
11. To return the printer to use, see [Preparing the Print for Use After Flushing on page 125](#).

Preparing the Print for Use After Flushing

	CAUTION
	FLUID WILL EXIT NOZZLES DURING FLUSH! When a Flush cycle is initiated be sure to have something in front of the print head nozzle plate(s) to capture the discharged fluid!

To return the printer to operation, follow these steps for each print head:

1. In the machine software, go to **Diagnostics > Detailed Diagnostics > Printer**, select the print head from the dropdown, then select **Ink** (see [Figure 7-25](#)).

2. Locate the manual purge valve for the print head you are flushing, and point it toward a waste container. Pull back on the valve until only ink is coming out.
 - If you are flushing the 7-valve print head (edge), turn the manual hand valve to switch the fluid from the cleaner to the ink bottle.
3. Place a rag under the print heads to capture the cleaner liquid.
4. On the printer screen, select the **Flush** button a few times until you see ink come through the nozzles on the selected print head.

Replacing an Ink or Cleaner Fluid Bottle

1. Open the Stroke / Elevation (Outfeed) door.
2. Switch the power switch on the printer pump to the OFF position (see [Figure 7-29 on page 128](#)).
3. Pull the ring on the pressure release valve to release all air pressure in the print system (see [Figure 7-29 on page 128](#)). **There must not be any air pressure in the system when replacing fluid bottles.**
4. Shake the new ink bottle vigorously.
 - Refer to [Ordering Printer Supplies on page 119](#) for help with ordering ink or cleaner fluid.
5. Remove the cap from the new bottle, but not the foil seal.
6. Remove filter assembly from the empty bottle.
 - See [Replacing the Bottle Filter and Lid Assembly on page 126](#) to determine if the filter assembly may need to be replaced.
7. Cut a X shape in the foil seal on the new bottle.
8. Insert the existing filter assembly into the new bottle and screw the cap back on to secure.
9. Place the new bottle back in the ink bottle holder. See [Figure 7-24](#) for the location of the ink bottle holder.
10. Switch the power switch on the printer pump to the ON position and close the door.
11. Ensure the manual valve for 7-valve print heads is in the ink position for printing.
12. Purge the line so all air is pushed out. See [Preparing the Print for Use After Flushing on page 125](#).

Replacing the Bottle Filter and Lid Assembly

The filter and lid assembly on each fluid bottle should be replaced when print quality begins to show that ink or cleaner is not getting through the lines.

1. Unscrew the filter and lid assembly (a single part) and remove it from the bottle.

Figure 7-28: Bottle Filter and Lid Assembly



2. Screw the new filter and lid assembly into place.

Extending Filter Life

To lengthen the time between replacements for the filter and lid assembly, follow these instructions:

1. Follow the steps for releasing the pressure from the ink and cleaner bottles (see [Replacing an Ink or Cleaner Fluid Bottle on page 126](#)).
2. Place the ink filter and lid assembly onto a cleaner bottle and flush the system. This allows cleaner to run through the filter and remove some of the old ink.

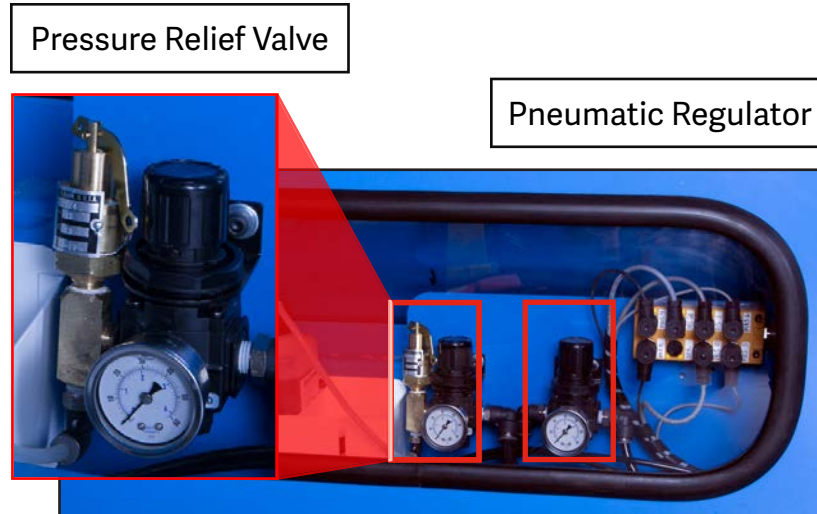
Setting the Printer Air Pressure

The regulator that affects the printer system's pressure can be access via the front of the saw via a maintenance door (see [Figure 7-29](#)). Adjust the pressure by turning the knob. **It must be set to no higher than 15 psi. Exceeding this recommended setting will damage the print heads.**

The printer's pneumatic system has a non-adjustable relief valve set at 15 psi next to the regulator.

BLADE SAW: MAINTENANCE

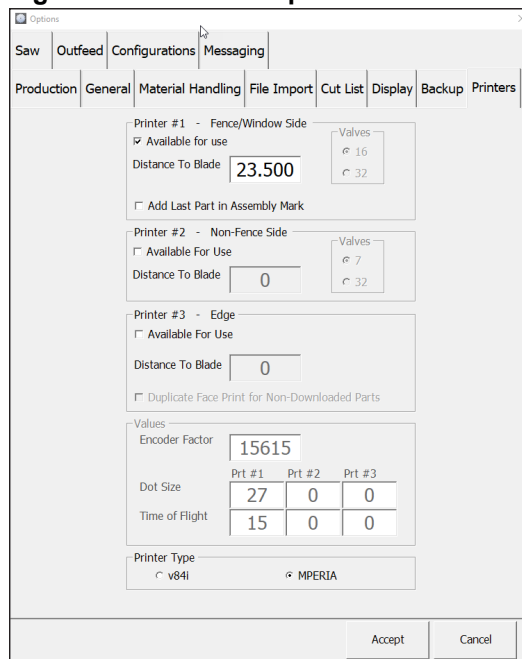
Figure 7-29: Printer Relief Valve and Pneumatic Regulator



Printer Tab in Software Option Menu

- The *Dot Size* must stay between 15-27, but the recommended setting is 27.
- *Time of Flight* is the time it takes for an ink dot to get from the print head to the board. It is calculated during the calibration of the printer. Must stay between 0-200.
- If marks are not in the correct location (most important when marking component location on wall panels), increase the time of flight to print on the board earlier. Decrease the time of flight to print on the board later.

Figure 7-30: Tools > Options > Printers Menu



Printer Sensors States

To see the printer sensor states, go to **Diagnostics > Detailed Diagnostics > Printer**.

Bearings (Lubrication)



Prior to 2015, oil cartridges were used on the bearings instead of grease fittings. The bearings described here are a direct replacement for those models.

Lubricating the Linear Bearings

Check the quality of the lubrication on the guide rails every week to determine when more grease is needed. The frequency of greasing depends on many factors including amount of use and dust. After enough time has passed to determine a pattern, document how often the bearings should be greased, but continue to inspect the rails every week.

NOTICE

Overgreasing will cause premature failure of bearing seals and excessive saw dust and dirt to stick to the guide rails, negating the benefits of the grease. Undergreasing may cause damage to components and affect the accuracy of the saw. A thin film of grease should be visible on the guide rails at all times



Because the linear bearings require frequent lubrication and can be damaged by overgreasing, MiTek recommends the following grease and grease gun be used.

Grease Recommended

Mobilux™ EP 2

This is a general purpose, lithium-based Grade 2 grease that provides excellent protection against rust and corrosion and resists water wash-out, corrosion protection, low temperature pumpability, and high temperature service life.

Grease Gun Recommended

It is recommended to use the following grease gun to ensure the proper amount of grease is applied. If you do not have this grease gun available, it is recommended that you purchase one for future use. Understanding the number of pumps to use (the output of grease) will extend the life of the bearings and the accuracy of the saw.

Hiwin GN-80M

Output: 0.5-0.6 cm³ per stroke

If you choose to use a different grease gun, document which gun is to be used for this procedure and ensure employees know the output per stroke. The output per stroke should be equal to or less than 0.5 cm³ per stroke.

BLADE SAW: MAINTENANCE

Lubrication Amount

Use a grease gun to apply the volume of grease listed in [Table 7-10](#) to the matching bearing size.

Table 7-10: Grease Volume Per Bearing Size

Linear Bearing Size	Amount
Stroke, & Elevation (size 25)	0.8 cm ³
Gripper, Infeed Top Clamp, Infeed Side Clamp, and Outfeed Clamp (size 20)	0.5 cm ³



Manual grease gun

No.2 lithium-based grease

Location and Number

Table 7-11: Assemblies Lubricated by Linear Guide Bearings

Lubricated Assembly	Qty.	Graphic
Infeed Rail Gripper	2	Figure 7-31
Top Clamp	4	Figure 7-32
Infeed Side Clamp	4	Figure 7-32
Stroke	4	Figure 7-33
Elevation	4	Figure 7-33
Outfeed Clamp	4	Figure 7-34

Figure 7-31: Infeed Rail Gripper Bearing Location

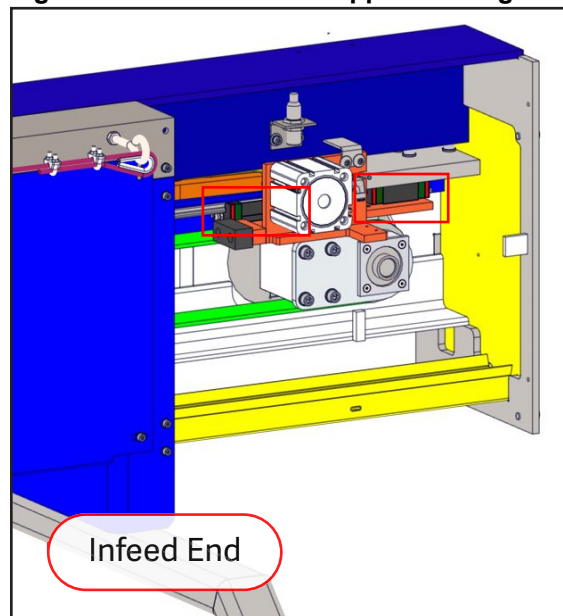


Figure 7-32: Infeed Side and Top Clamp Bearing Location

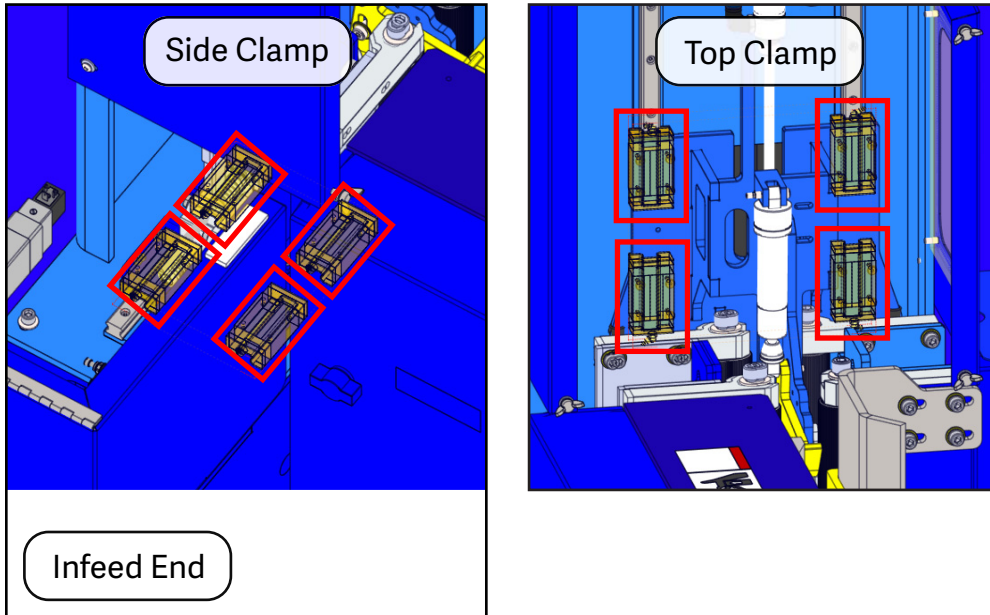


Figure 7-33: Stroke and Elevation Bearing Locations

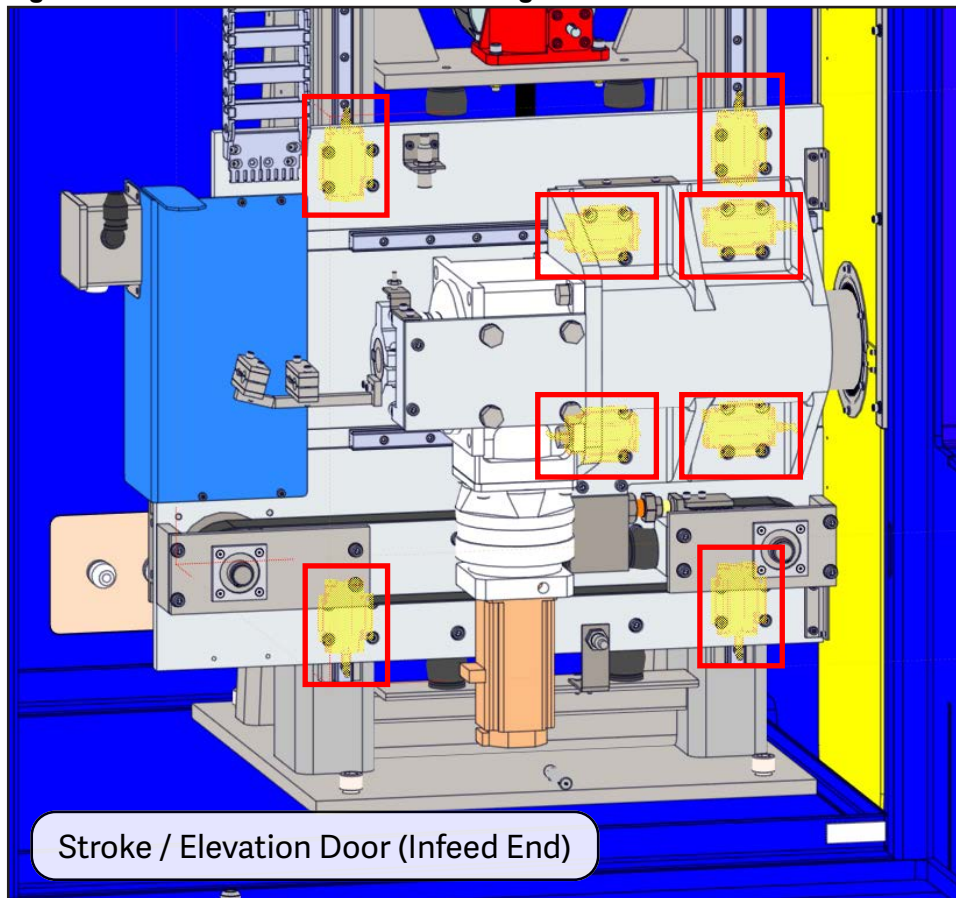
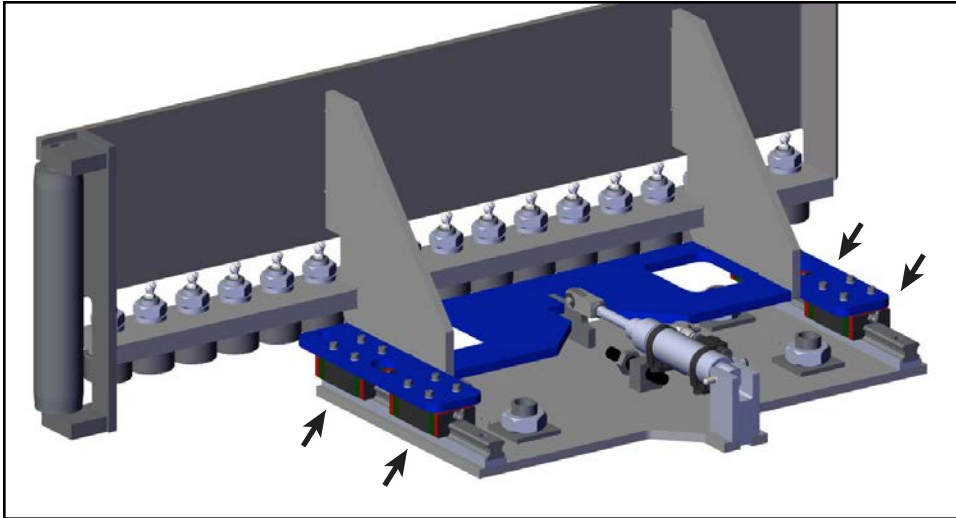


Figure 7-34: Outfeed Clamp Bearing Locations



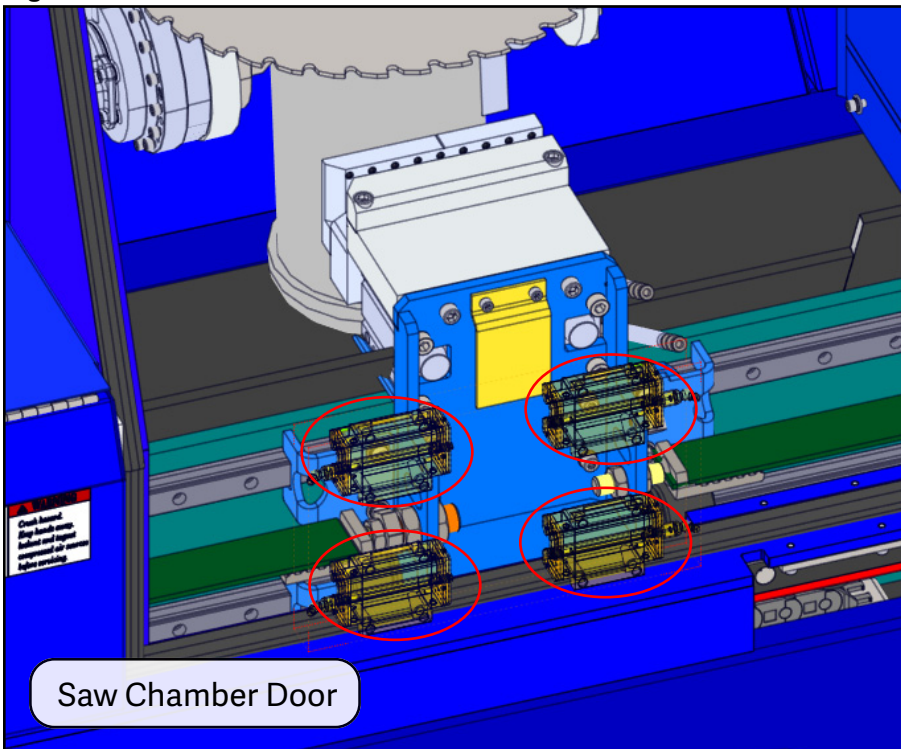
Manual grease
gun

No.2 lithium-
based grease

LASM Linear Module

The LASM linear module should be lubricated every 24 months (one shift) or every 12 months (two shifts). Use a grease gun to apply 2.8 cm³ of grease to the fitting shown in [Figure 7-35](#).

Figure 7-35: LASM Linear Module Location





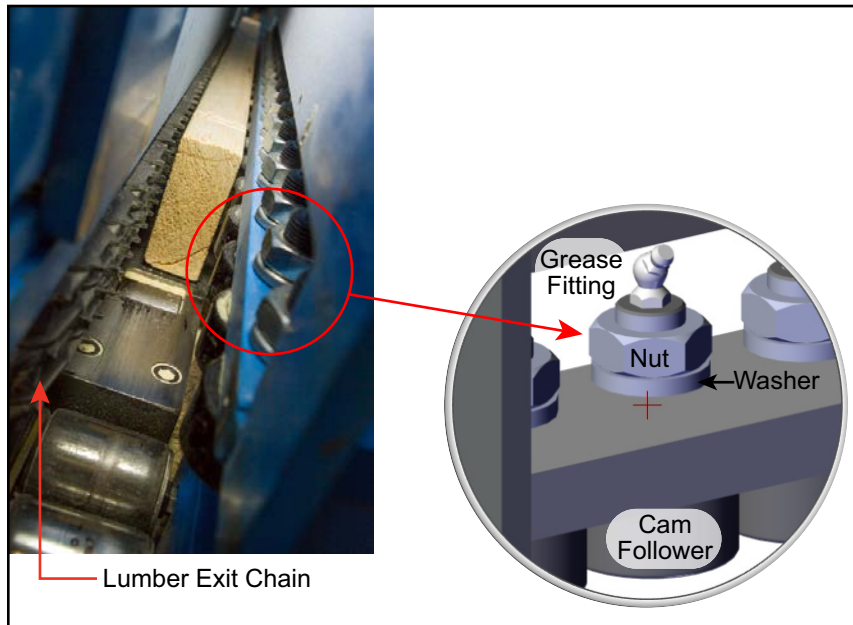
Manual grease
gun

No.2 lithium-
based grease

Cam Followers (Outfeed Assembly)

As a board exits the saw chamber, a set of cam followers make contact with the board's back surface to guide it and ease its travel to the outfeed. Apply a #2 lithium-based grease to each of these cam followers once every year. Remove the top guard to access the cam followers.

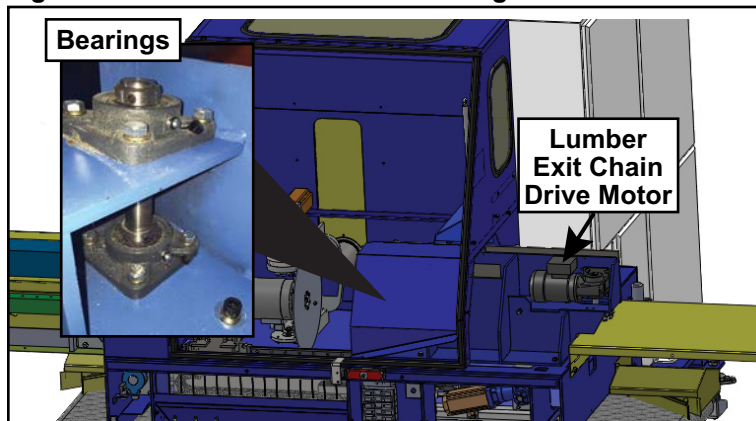
Figure 7-36: Outfeed Cam Followers Location



Lumber Exit Chain Bearings

Apply a #2 lithium-based grease to the idle-end bearings once every 12 months (1 shift) or every 6 months (2 shifts).

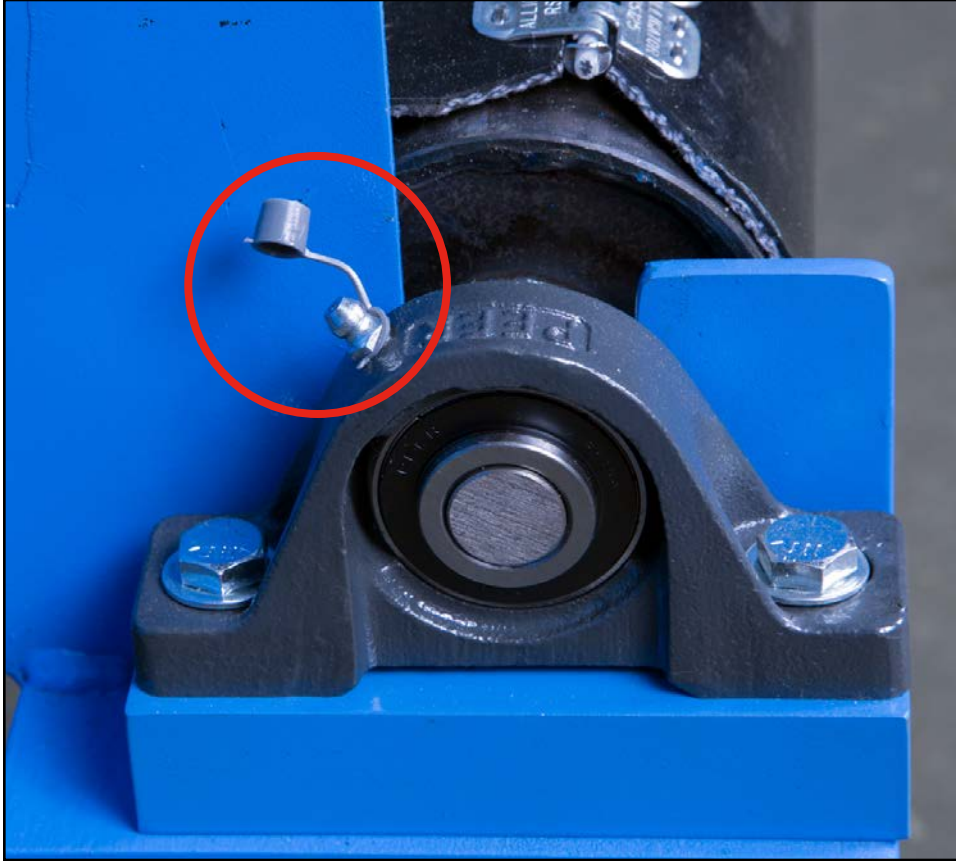
Figure 7-37: Lumber Exit Chain Bearings Location



Waste Conveyor Drive Shaft

Lubricate the waste conveyor bearings with #2 Lithium-based grease once a year. There is 1 grease fitting on each end of the drive shaft.

Figure 7-38: Waste Conveyor Drive Shaft Grease Fitting Location



Auto Deck Drive Shaft (Infeed Component)



Apply #2 lithium-based grease to the grease fittings on the Auto Deck shaft bearings every 12 months (1 shift) or 6 months (2 shifts). There is 1 fitting for each Auto Deck strand and there are 5-6 strands total depending on Auto Deck length.

Figure 7-39: Auto Deck Drive Shaft Grease Fitting Location



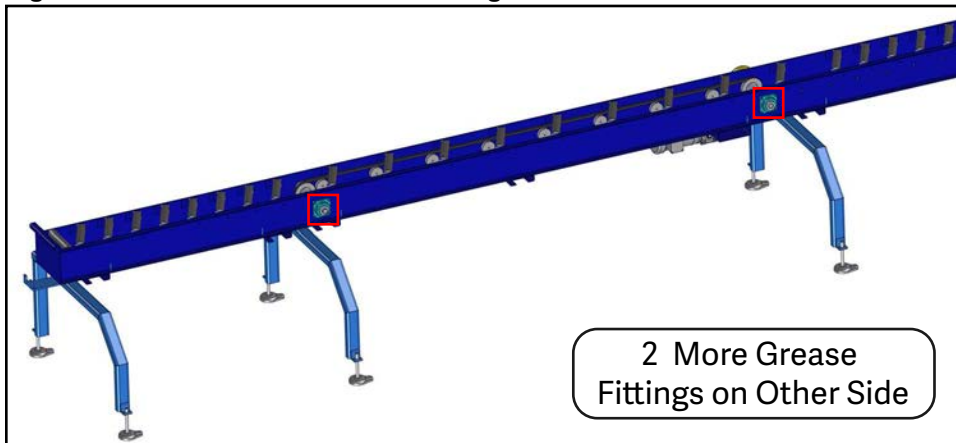
Wheels

Lubricating Wheels

Skewed Conveyor Wheels

There are 2 drive wheels that drive the belts. Each of the drive wheels have 2 bearings with grease fittings on the front and rear side of the conveyor. Use a #2 lithium-based grease every 6 months (1 shift) or every 3 months (2 shifts). The non-powered wheels that guide the belt require no lubrication. The conveyor rollers and skatewheels on the Skewed Conveyor require no lubrication.

Figure 7-40: Drive Wheel Grease Fitting Locations



Chains

The chains utilized in this machine may require cleaning, lubrication, or tensioning. This section details which types of maintenance are necessary for specific chains.

Lubricating Chains

These chains should be lubricated with a high-grade, non-detergent, petroleum-base oil. Anti-foam, anti-rust, and film-strength improving additives are often beneficial. SAE 30 grade is recommended.

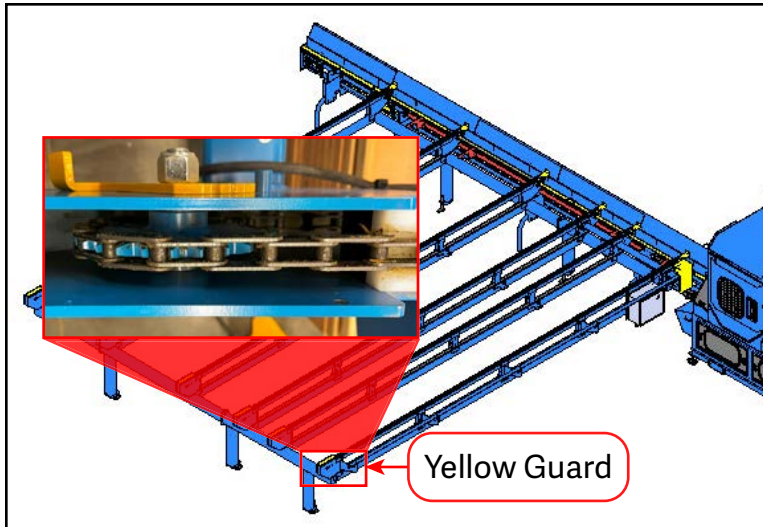
Apply oil to the edges of the link plates of the chain near where the chain makes contact with a sprocket and to the inside of the chain generally.

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Auto Deck Chain

Remove yellow guard to access chain and sprocket. Lightly lubricate each chain every 12 months.

Figure 7-41: Auto Deck Chain Lubrication Point



Skewed Conveyor Chain

Remove yellow guard to access chain and sprocket. Lightly lubricate the chain every 2 months.

Figure 7-42: Skewed Conveyor Chain Lubrication Point



Adjusting Chain Tension / Positioning

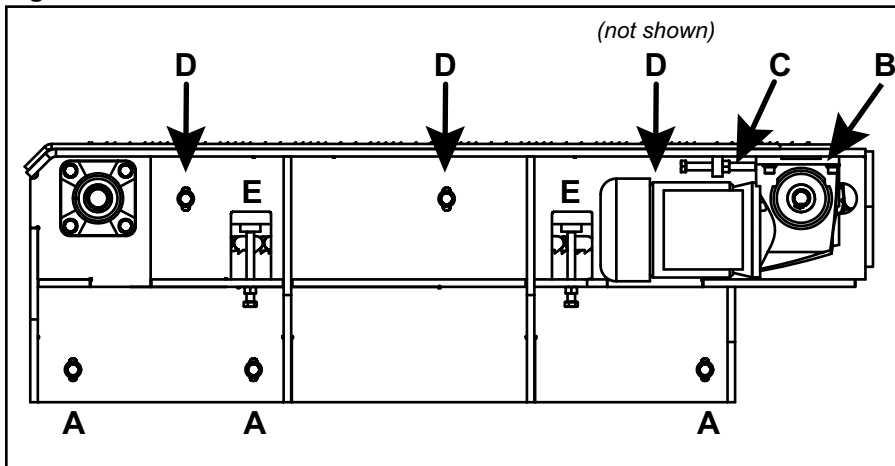
For most applications, a chain should be installed with a sag depth between 2%-4% of the distance between sprockets holding the chain. Follow this formula unless measurements are provided for a specific chain.

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Lumber Exit Chain Tension

1. Loosen 4 bolts labeled **B** in [Figure 7-43](#), on the back side of the motor plate.
2. Loosen the jam nut and adjust tension bolt labeled **C** to slightly move the motor.
3. Tighten the jam nut and bolts **B**.

Figure 7-43: Lumber Exit Chain Tensioner Mechanism



Lumber Exit Chain Positioning

The lumber exit chain must be perfectly parallel with the LASM fixed jaw. All other alignments are measured off of the lumber exit chain (see [Table 7-12](#)), so it must be straight and in a location as described here.

Table 7-12: Outfeed Components Alignment Guide

This...	Must Be	This...
Lumber exit chain	parallel to	LASM fixed jaw
Lumber exit chain	in straight line with	sprockets
Outfeed clamp cam followers	parallel to	lumber exit chain

Follow these instructions to adjust the location of the entire lumber exit chain assembly:

1. Ensure the lumber exit chain is parallel with the travel rail for the LASM and the chain teeth protrude 1/16" in front of the fixed jaw.
2. Check this measurement with LASM at left end of the lumber exit chain, and again with the LASM all the way to the right. Both ends must be identical indicating the lumber exit chain and LASM rail are parallel.
3. Ensure the channel for the lumber is approximately 2-1/2" wide from tip of chain teeth to surface of cam followers when fully unclamped.
4. If it is necessary to adjust the lumber exit chain, follow these steps:

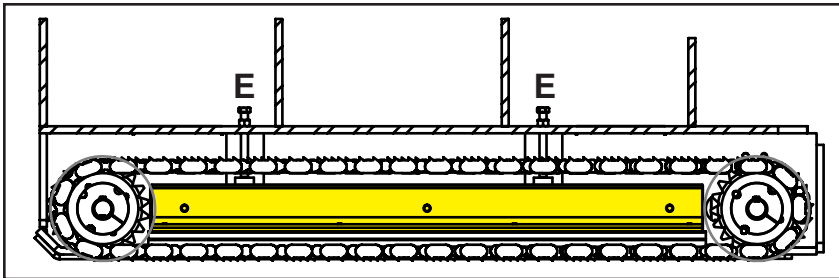
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- a) Loosen the 3 bolts labeled **A** in [Figure 7-43](#).
- b) Push or pull on the lumber exit chain assembly to align as described previously.
- c) Tighten the 3 bolts labeled **A** in [Figure 7-43](#).

Lumber Exit Chain Guide Bracket

The chain guide bracket shown in yellow in [Figure 7-44](#) holds the lumber exit chain so that it does not sag and stays in line with the sprockets. To adjust the location of the chain guide bracket, follow these instructions.

Figure 7-44: Bottom View of Chain, Lumber Exit Chain Guide Highlighted



1. Loosen the 3 bolts labeled **D** in [Figure 7-43](#) (previous page).
2. Using the 2 jack screws labeled **E** in [Figure 7-44](#) and [Figure 7-43](#), loosen the jam nuts and adjust the jack screws to slightly move each end of the chain in or out. The chain must be in this position:
 - Lumber exit chain must be tangent with the sprockets.
 - If the lumber exit chain is a straight line between the sprockets, it will also be parallel to the LASM fixed jaw as described on [page 138](#).
 - There must not be any sag or wave in the lumber exit chain.
3. Tighten the jam nuts on bolts **E** and tighten bolts **D**.

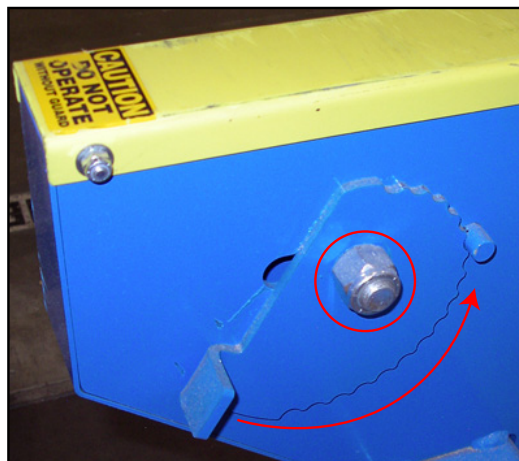
Auto Deck Chain Tension



To tension the chain, loosen the locknut shown in the middle of the take-up in [Figure](#) . Manually pry the take-up, one notch at a time, until the chain is the desired tension, then re-tighten the locknut.

Do not over-tension the Auto Deck chain. An excessive load will cause the VFD to show a fault.

Figure 7-45: Auto Deck Tension Take-Up



Belts

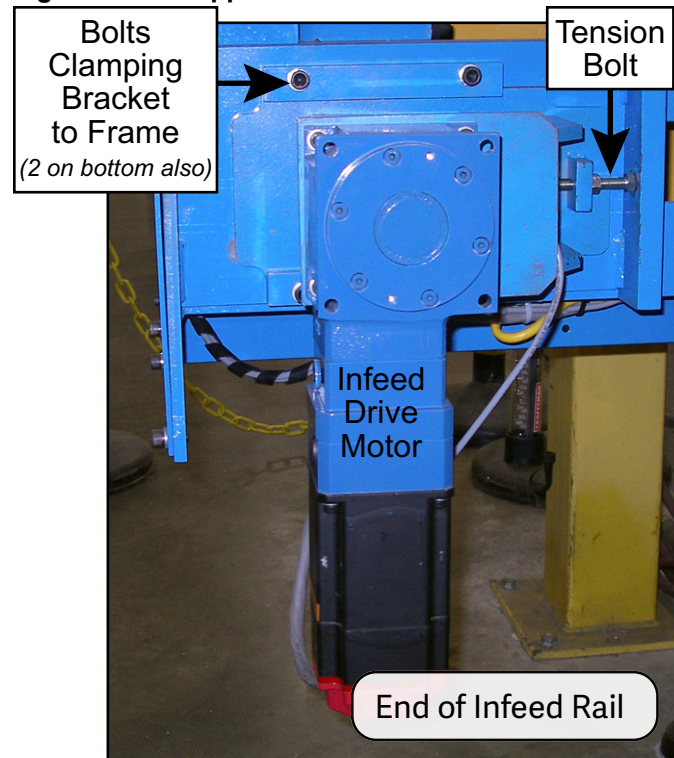
Gripper

Adjusting Gripper Belt Tension



1. Loosen the 4 bolts clamping the belt tensioner bracket to the frame.

Figure 7-46: Gripper Belt Tensioner Bracket



Motor may be oriented differently in other models

2. Back off the jam nut and turn the tension bolt to wedge bracket out until the belt is tight.
3. On rear side of the machine, test the tension of the belt at the mid point of the infeed rail. The top section of the belt should lift approximately 3/16 in. with little effort.
4. Re-tighten the bolts clamping the bracket to the frame.
5. Move the gripper assembly back and forth (from the touch screen) to test the belt tracking. Adjust if necessary.

Adjusting the Gripper Belt Tracking

If the gripper belt is not tracking on the shaft evenly, follow this procedure:

1. Loosen the tension (see [Gripper Belt Tensioner Bracket](#)) and manually move the belt over to the center of the shaft.

2. Tighten the tension, ensuring that the motor assembly is straight and square.
3. Manually move the gripper to the opposite end of the Infeed Rail to test the tracking.
4. Repeat this process until the belt stays where it was placed on the shaft.

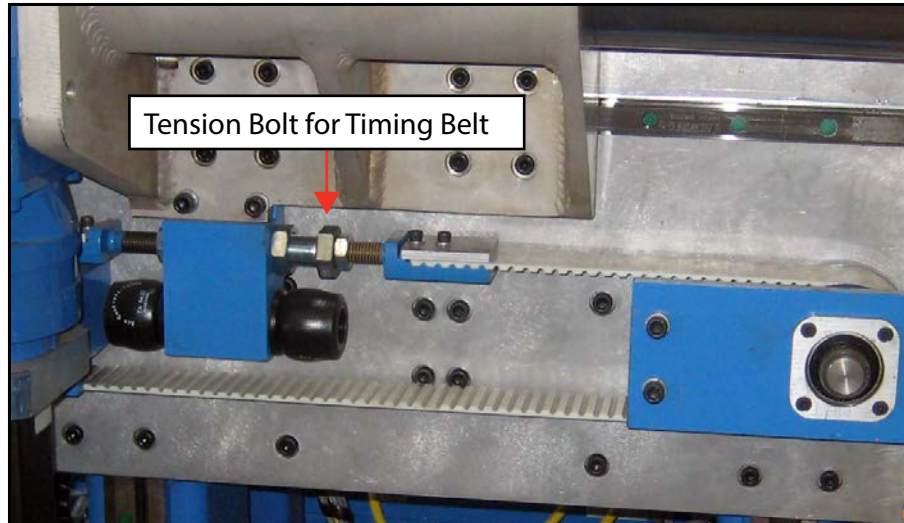
Stroke Axis

Adjusting Stroke Belt Tension

The stroke assembly is attached to a cogged belt called a timing belt. To adjust the tension of stroke timing belt, follow this procedure:

1. Locate the threaded rod used as a tension bolt that puts tension on the timing belt attached to the assembly (see [Figure 7-47](#)).

Figure 7-47: Stroke Timing Belt Tension Bolt



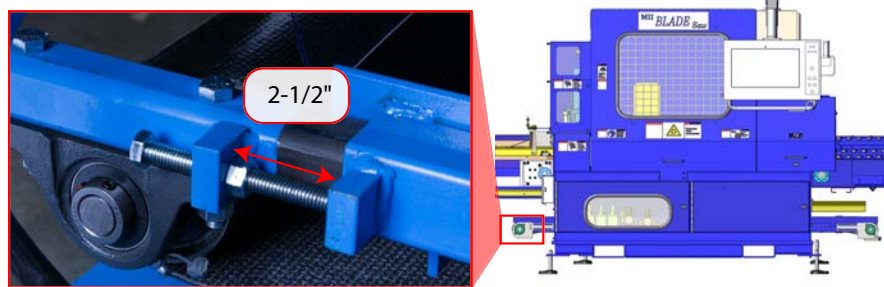
2. Back off the jam nuts and adjust the bolts to tighten or loosen the tension on the cogged, white belt.
3. Tighten the jam nuts.
4. From the machine software Home Screen, select Stroke and choose one of the Jog options to move the assembly back and forth to test the belt tracking.
5. Adjust if necessary.

Waste Conveyor

Adjusting Waste Conveyor Belt Tension

1. Remove the dust extraction cover to access then tension bolt shown in [Figure 7-48](#).



Figure 7-48: Waste Conveyor Belt Tension Bolt



2. Start with the tension bolt at approximately 2-1/2\".
3. Adjust as needed so the belt runs smoothly.

Adjusting Waste Conveyor Belt Tracking

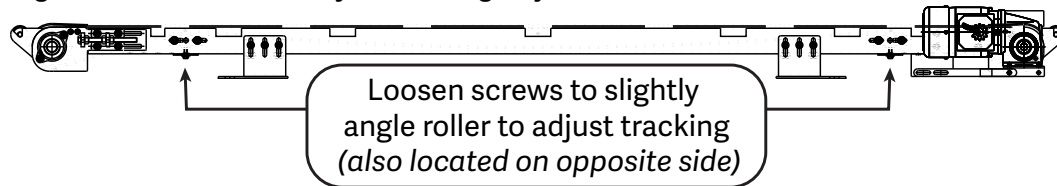
With extended use or belt replacement, the belt tracking may need adjustment. The key to perfect tracking is to make each adjustment very small and to remain patient as it may require more than one roller to be adjusted. Expect several adjustment cycles before the belt tracks perfectly.

	 CAUTION
	Use your company's approved lockout/tagout guidelines while adjusting the belt. Ensure that no one can power on the conveyor without notifying all personnel in the restricted zone.

1. After tensioning the belt, test the tracking:
 - a) Remove lockout/tagout devices and power up the saw.
 - b) Run the conveyor and watch how the belt tracks.
2. If the belt walks toward one side, adjust it as described here.
 - a) Determine which way the belt needs to move toward, and address that end of the belt.
 - b) Adjust the angle of the roller (see [Figure 7-49](#) for location of tracking adjustment bolts)

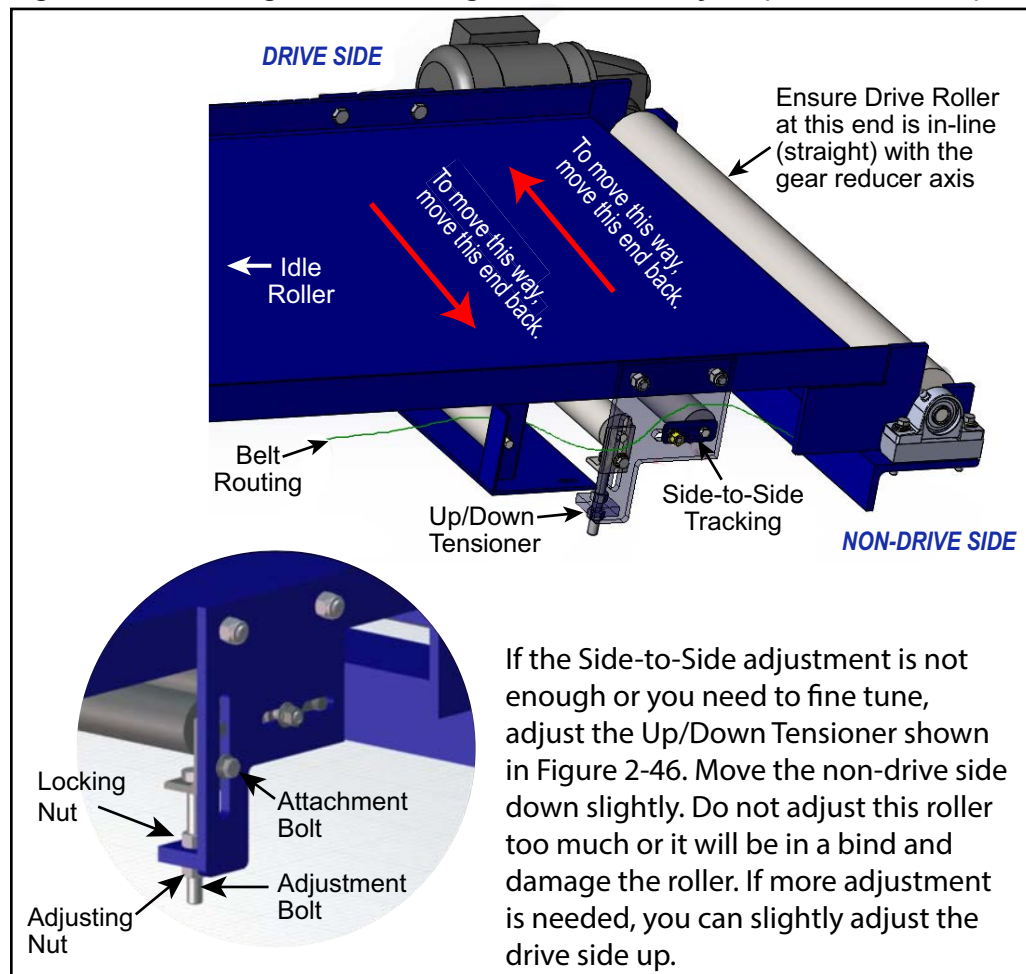
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Figure 7-49: Waste Conveyor Tracking Adjustment Bolts



3. Test the belt by returning power the saw. The belt should stay approximately centered on the conveyor bed. Some minor back and forth motion is normal, but it should never rub the side of the conveyor frame

Figure 7-50: Tracking and Tensioning for Waste Conveyors (2015 and Earlier)



Skewed Conveyor

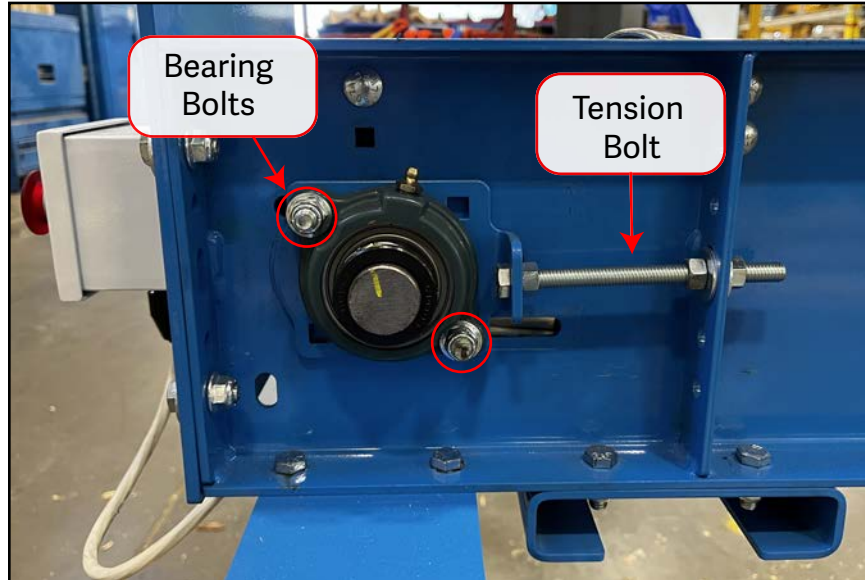
Adjusting Skewed Conveyor Belt Tension

The Skewed Conveyor belt is driven by 2 drive wheels, both powered by the same motor. The belt should be tensioned so it moves easily and smoothly without much slack. To adjust the tension, follow this procedure:

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1. Loosen the 2 bolts securing a bearing on each side of the conveyor (4 bolts total). See [Figure 7-51](#).
2. Adjust the drive wheel in or out using the lag nuts on the tensioning bolt on each side of the conveyor.
3. Re-tighten the 4 bolts.

Figure 7-51: Skewed Conveyor Tensioner Bracket (*mirrored on other side*)



Adjusting Skewed Conveyor Belt Sheaves

If the belt tension seems correct, but the belt is not making consistent and smooth contact with the rollers, adjust the sheaves that support the belt (located under the rollers) using this procedure.

1. Determine which sheaves need to be raised or lowered.
2. Loosen the bolt in the middle of each sheave needing adjustment.
3. Adjust the location of each sheave in its slotted hole, then tighten each bolt.
4. Inspect the belt. It should make just enough contact to drive the rollers, but not be too tight.

Wear Items

Bumpers

Bumpers are used on the following axes to reduce stress on mechanical parts when stopping at the end of their range:

- Stroke / Elevation
- Gripper

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- LASM

Bumpers should be replaced if they appear cracked or significantly worn.



Not all bumpers are the same size. Refer to the [Ordering Parts](#) appendix for instructions on ordering parts.

To replace a bumper, remove the screw(s) securing the existing bumper and install the replacement. Discard the damaged bumper.

Figure 7-52: Stroke / Elevation Bumpers

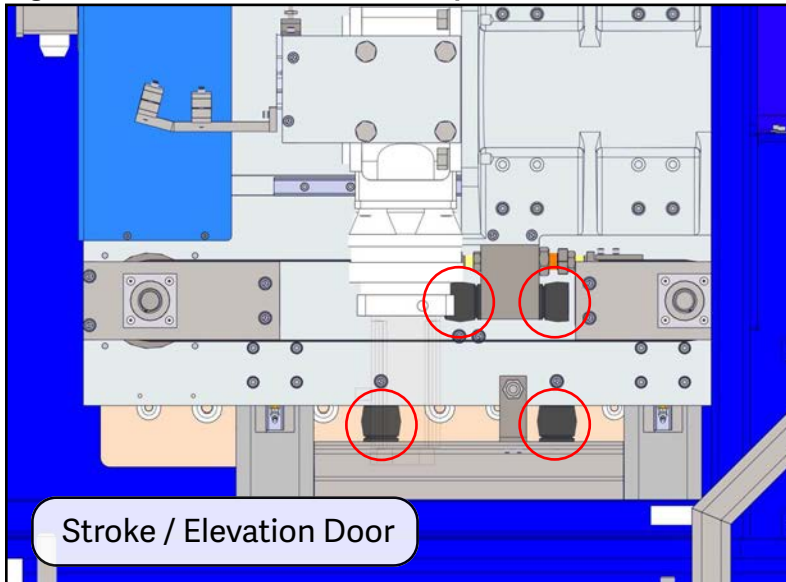
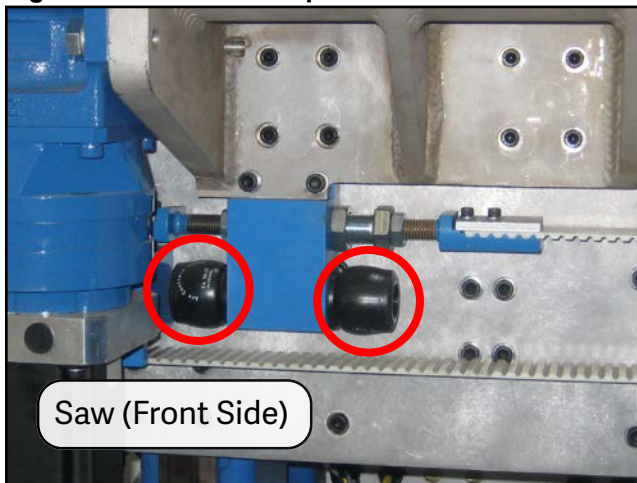


Figure 7-53: LASM Bumpers



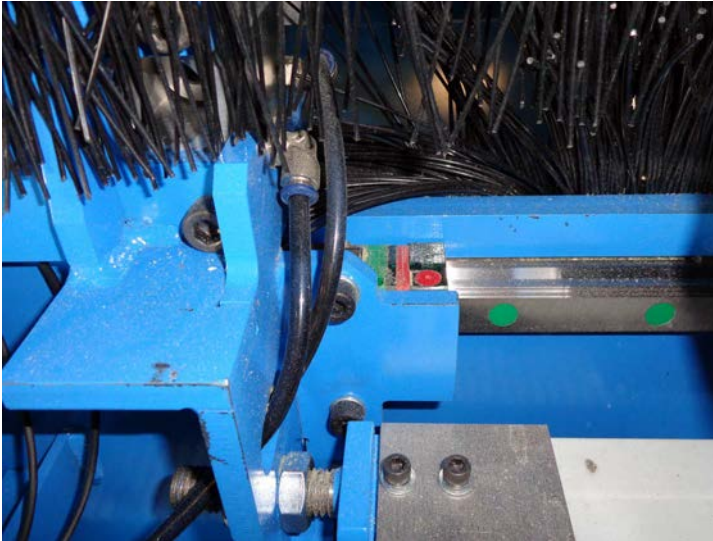
Brushes

Brushes exist at some openings and rails to keep scrap and other debris from accidentally entering the saw chamber or sitting on a rail causing an axis

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obstruction. The brushes should be inspected periodically and replaced when necessary.

Figure 7-54: Brush Examples (Saw Chamber)



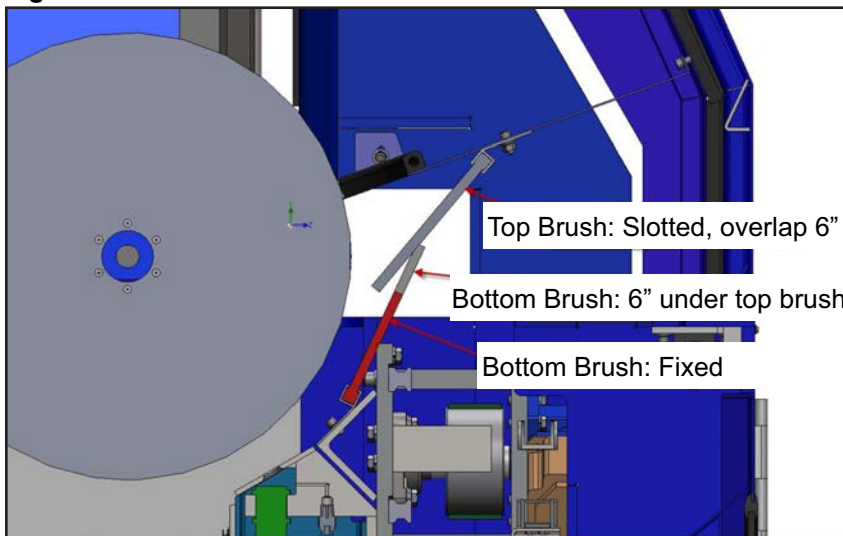
Replacing Brushes

1. Remove bolts securing existing brush. Retain for re-installation.
2. Remove and discard existing brush.
3. Use bolts removed in step 1 to install the new brush.

LASM Brush Orientation

As of June 2015, the LASM brushes are designed to be installed as shown in [Figure 7-55](#). For previous designs, this design is a direct replacement for the previous version.

Figure 7-55: LASM Brush Orientation

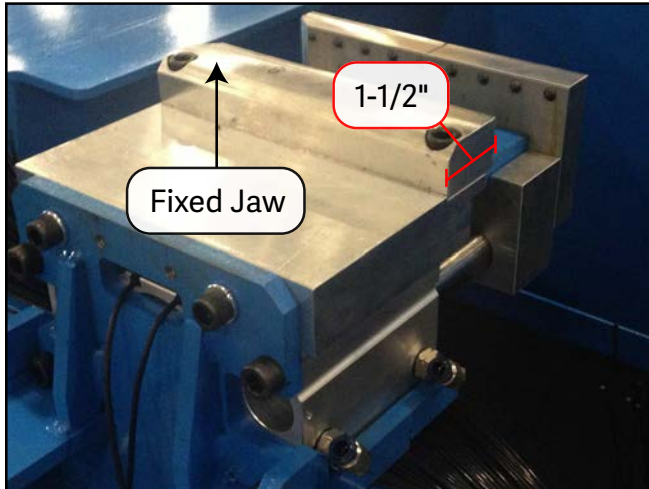


LASM

Fixed Jaw

Measure the fixed jaw of the LASM periodically to ensure it is not worn. It must be at least 1 1/2" thick. If worn to less than that, replace it as soon as possible.

Figure 7-56: LASM Fixed Jaw Minimum Thickness

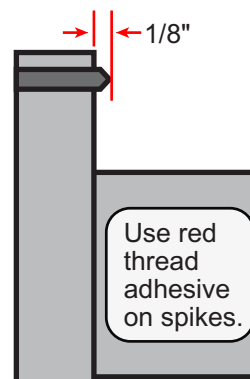


LASM Spikes

Spikes (socket-head cap screws) are assembled into the carriage side of the LASM jaw to hold the board in place.

When spikes become dull or damaged, unscrew each spike and replace each with a new spike, ensuring the spike extends 1/8" past the LASM jaw surface. Use red thread adhesive.

Figure 7-57: LASM Spike Depth



Felt Strips

Felt strips provide friction resistance for the yellow plate that slides up and down with the elevation axis located inside the stroke/elevation chamber. The felt strips are attached to the blue wall behind the yellow plate. When the plate is showing signs of metal rubbing metal or an uneven plate, replace the felt strips immediately to preserve the accuracy of the cuts and prolong the life of the saw.

Trimming the Felt

If no metal wear is shown, but the felt has expanded outside of the yellow plate, just trim the excess felt and periodically inspect the plate and frame for wear.

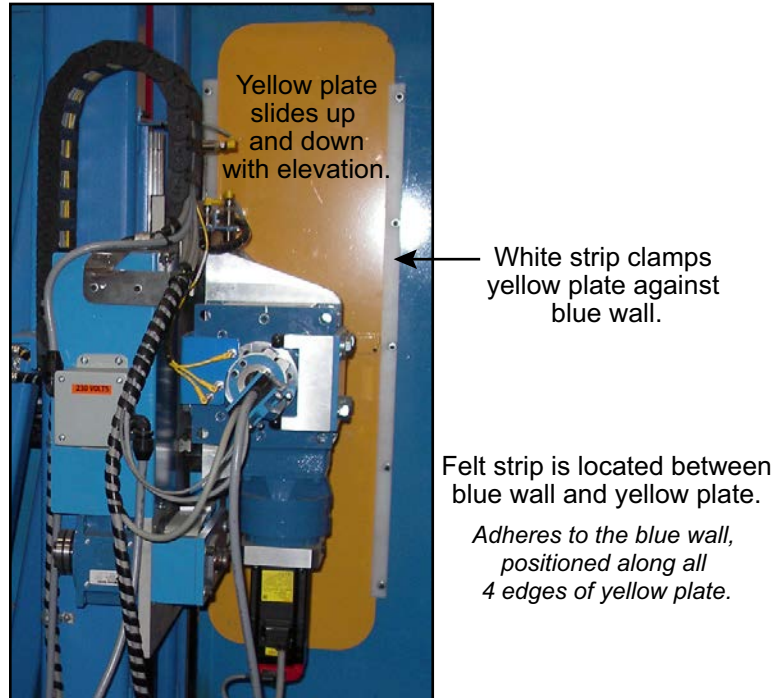
Replacing the Felt Strips

It is recommended to replace all 4 felt strips at the same time to keep the plate even.



1. Loosen or remove the white strips securing the yellow plate.
2. Pull the yellow plate away from the wall and scrape off the old glue.
3. Remove the adhesive backing from the new felt strip and apply it in the same locations.

Figure 7-58: Location of the Felt Strips



Shock Absorbers

The following shock absorbers keep the clamps from slamming at the end of their cycle.

- Top clamp: located on extend and retract positions.
- Infeed side clamp: located on retract position only.
- Outfeed side clamp: located on retract position only and controls clamp opening.

Replacing a Shock Absorber

1. Preparing the Saw:
 - a) Move the component requiring the shock absorber to make accessible:
 - For the infeed side clamp, move the gripper to Home position.

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- No positioning is required when replacing the infeed side clamp or outfeed clamp shock absorber.
- b) Lockout/tagout the machine.
 2. Unscrew the locknut and damaged shock absorber and discard all pieces.
 3. Install the new shock absorber into the bracket:
 - a) Remove the lock nut from the new shock absorber.
 - b) Place the collapsible end through the bracket pointing the correct direction, and screw it in as indicated in [Table 7-13](#).
 - c) Slide the lock nut over the collapsible end and tighten against the bracket.
 4. Check that the sensors on the cylinder that control **fully-open** and **fully-closed** status are set correctly. Their location may need to be slightly adjusted.

Table 7-13: Shock Absorber Overview

Location	Qty	Graphic	Distance	Piston points...
Top Clamp: Top (retract)	2	Figure 7-59	1/2" from bottom surface of bracket to end of shock absorber body.	Down
Top Clamp: Bottom (extend)	2	Figure 7-59	1/2" from top surface of bracket to end of shock absorber body.	Up
Infeed Side Clamp	1	Figure 7-60	See Figure 7-60 .	Toward saw front
Outfeed Clamp	1	Figure 7-61	Adjust to 2-1/2" between lumber exit chain teeth and camfollower. See	Toward saw front

Adjusting a Shock Absorber

Figure 7-59: Shock Absorbers for Top Clamp Retract Stroke

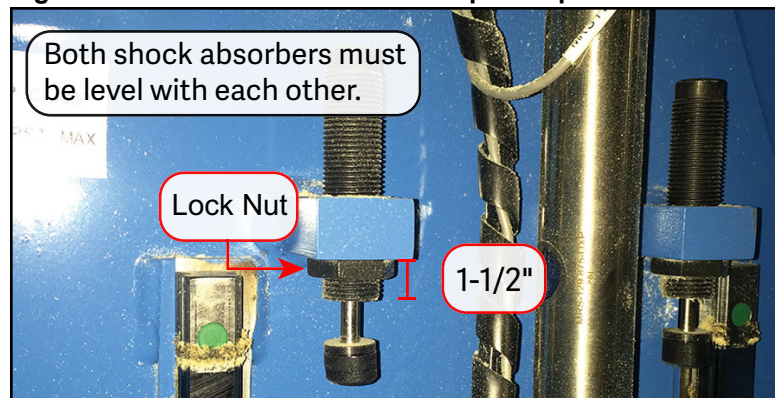


Figure 7-60: Top View of Infeed Side Clamp Rollers

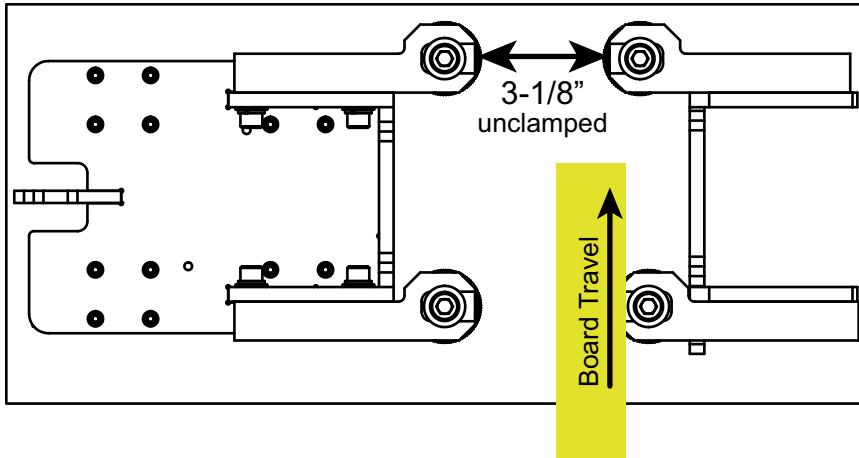
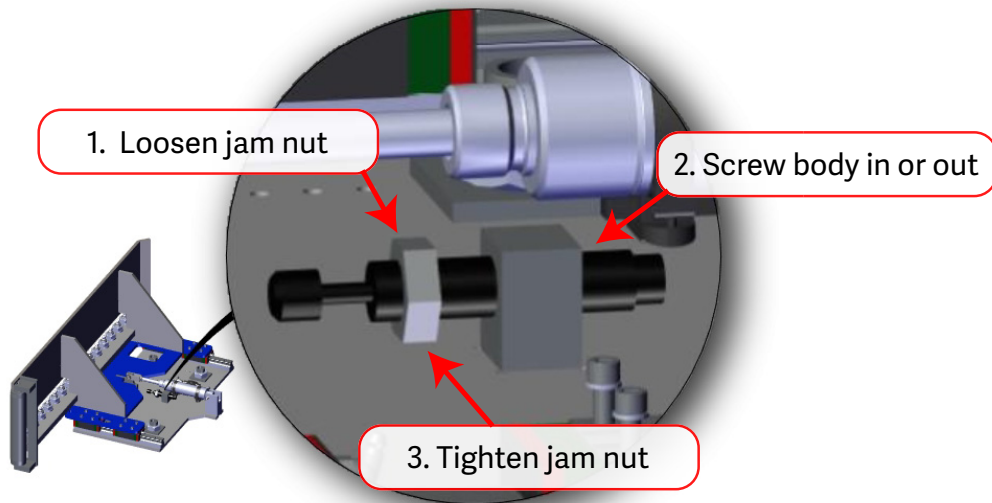




Figure 7-61: Adjusting Outfeed Clamp Shock Absorber



Pneumatic System

	 CAUTION
	HIGH PRESSURE HAZARD. Bleed all pressure from pneumatic lines before performing maintenance on pneumatic components. Pressurized components may move suddenly or vent air to atmosphere, causing injury.

The pneumatic system controls all of the components listed in [Table 7-14](#).

There are multiple pneumatic regulators on this system. The main filter/regulator manages incoming air from the air source, keeping it at the pressure needed for the most demanding pneumatic components in the system. It is the only regulator than needs to be connected to an air source. Some components have their own regulator to further reduce the pressure. See [Table 7-14](#) for the optimum pressure settings for each.

Table 7-14: Overview of Pneumatic Components

Component	Description	PSI
Auto Deck Pusher	Pushes each board onto three load arms to be loaded onto the Infeed Rail.	110
Auto Deck Lumber Stops	Provides separation between two jobs on Auto Deck conveyor.	
Load Arms	Loads the lumber from the lumber feed system onto the Infeed Rail.	
Gripper Clamp	Holds the end of the board as it is traveling along the Infeed Rail.	
LASM Clamp	Holds each board inside the saw chamber and delivers each cut piece to the outfeed clamp.	
Infeed/Outfeed Air Knives	Provides a curtain of air at the infeed and outfeed areas to contain dust.	
Touch Screen Enclosure Cooler	Keeps the touch screen enclosure at a consistent temperature.	
Side Clamp	Holds the lumber from the sides while entering the saw chamber.	30 (clamp)
Top Clamp	Holds the lumber from the top while entering the saw chamber	110 (unclamp)
Outfeed Clamp	Holds the lumber while exiting the saw chamber.	60 (clamp) 110 (unclamp)

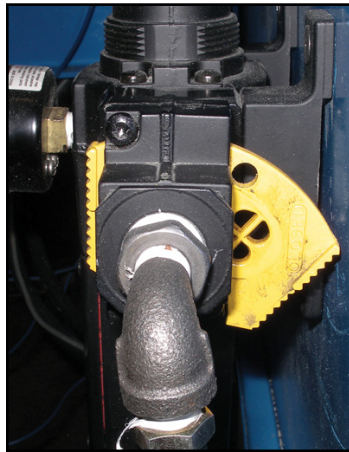
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Component	Description	PSI
Printer	Prints identification on board for each cut piece using air powered print heads. SETTING THIS PRESSURE HIGHER THAN RECOMMENDED WILL DAMAGE THE PRINT HEADS!	15

Removing Pressure from the Pneumatic System

Most procedures involving the pneumatic system require the removal of pressure. Use the following procedure to remove pressure from the system.

Figure 7-62: Pneumatic Airflow On and Off Positions



Main Pneumatic Filter/Regulator

- Located on the outfeed end of saw.
- Yellow plate is shown in lockout position. Place lock and tag through holes in yellow plate.
- Pneumatic lines will bleed naturally when yellow plate is in lockout position.
- Ensure gauge reads 0 before performing replacing a supply bottle for the printer or performing any maintenance!

Maintaining the Filter / Regulators

Purchasing a Main Filter / Regulator

The filter/regulator can be purchased directly from MiTek. Refer to the [Ordering Parts on page 216](#) for instructions on ordering parts.

Adjusting the Pressure on the Main Filter / Regulator

The pressure adjustment knob on the filter / regulator controls the operating pressure for the entire pneumatic system. The operating pressure for the pneumatic system should be set at 110 psi. Use the following procedure to adjust operating pressure.

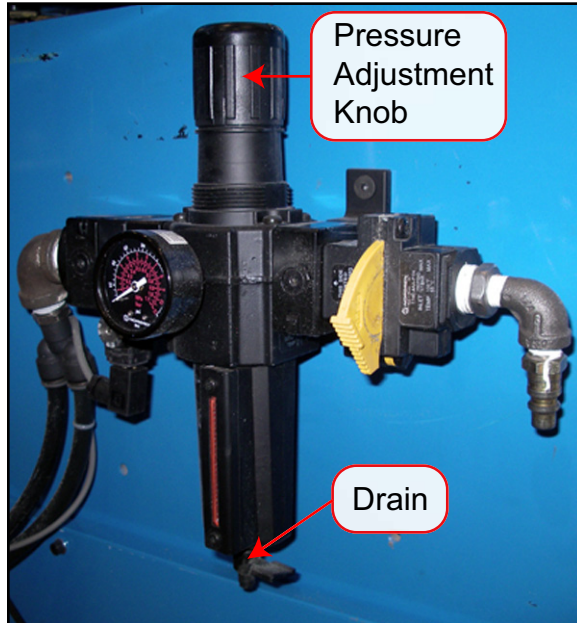


The system pressure should be set to 110 psi. If the system pressure drops below 75 psi, the machine software will display an error and the machine will cease operation.

1. Unlock the pressure adjustment knob on the Regulator by pulling it straight up.

2. Turn the knob clockwise to increase pressure or counterclockwise to decrease pressure.
3. Once the gauge reads the desired pressure, push the knob downward to lock it in place

Figure 7-63: Pressure Adjustment Knob



Draining Condensation & Sludge from the Main Filter/Regulator

At the bottom of the main regulator's filter is a condensation reservoir. In healthy pneumatic lines, only a few drips a day should expel from the lines. If excess water is gathering, investigate the reason for high condensation in the lines.

Open the valve shown in [Figure 7-63](#) at the bottom of the reservoir every day to release condensation. It requires a 1/4 turn to completely open. After moisture has drained, close the drain and continue saw operation.



Some machine models may include a filter / regulator that drains automatically.

Replacing Filter Element on the Main Filter / Regulator

The main regulator uses a filter that must be replaced every 6 months. This filter can be purchased through MiTek. Refer to the [Ordering Parts on page 216](#) for instructions on ordering parts. Use the following procedure to replace a filter element.

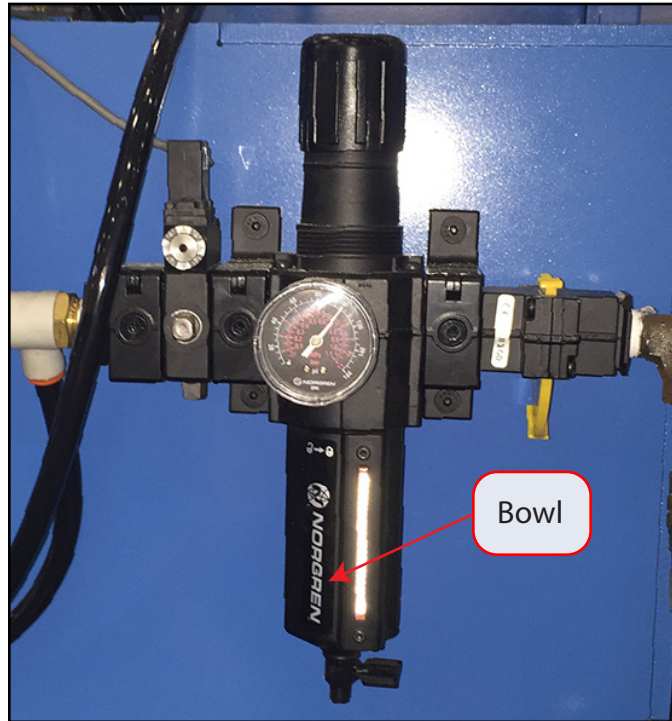
1. Remove pressure from the lines by using the procedure in [Removing Pressure from the Pneumatic System on page 152](#).



BLADE SAW: MAINTENANCE

2. Remove the bowl from the regulator body by twisting counterclockwise while pushing up on the filter bowl. Then pull down to remove the filter bowl from the body.

Figure 7-64: Main Filter / Filter Regulator Bowl





3. Unscrew the filter element and remove it from the regulator. Be sure to keep the spring and any other parts resting in the filter element.
4. Place the spring (and any other parts removed) into the new filter element.
5. Screw the new filter element in its place.
6. Clean the bowl with mild soap and warm water.
7. Place the bowl back onto the regulator body by pushing up and turning clockwise. Make sure it is securely attached before returning pressure to the lines
8. Replace the filter element. Screw the black plastic baffle back into place.
9. Place the bowl back onto the regulator body by pushing up and turning. Make sure bowl is secure and the blue tab is in the locked position before returning pressure to the lines.

Replacing Filter Element for Touch Screen Cooler

The touch screen enclosure cooler system uses the main regulator for system air pressure but it has a secondary filter. This filter can be purchased through MiTek.

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Refer to the [Ordering Parts on page 216](#) for instructions on ordering parts. Use the following procedure to replace a filter element.

	<div data-bbox="781 289 1073 331"> CAUTION</div> <p data-bbox="550 331 1219 426">FILTER ELEMENT BOWL MAY BE HOT! Wear gloves or wait at least 10 minutes after locking out power and air before unscrewing the filter element bowl.</p>
---	---



1. Lockout/tagout all saw systems (pneumatic and electrical).
2. Unscrew the filter element bowl.
3. Unscrew the filter element from the head.
4. Clean filter bowl with soapy water.
5. Clean or replace filter element:
6. Clean filter element with naphtha and let dry before re-installing, OR
7. Install new element.
8. Screw the filter bowl back into to place carefully to avoid stripping threads.

Figure 7-65:
Cooler Filter



Adjusting the Main Pressure Sensor

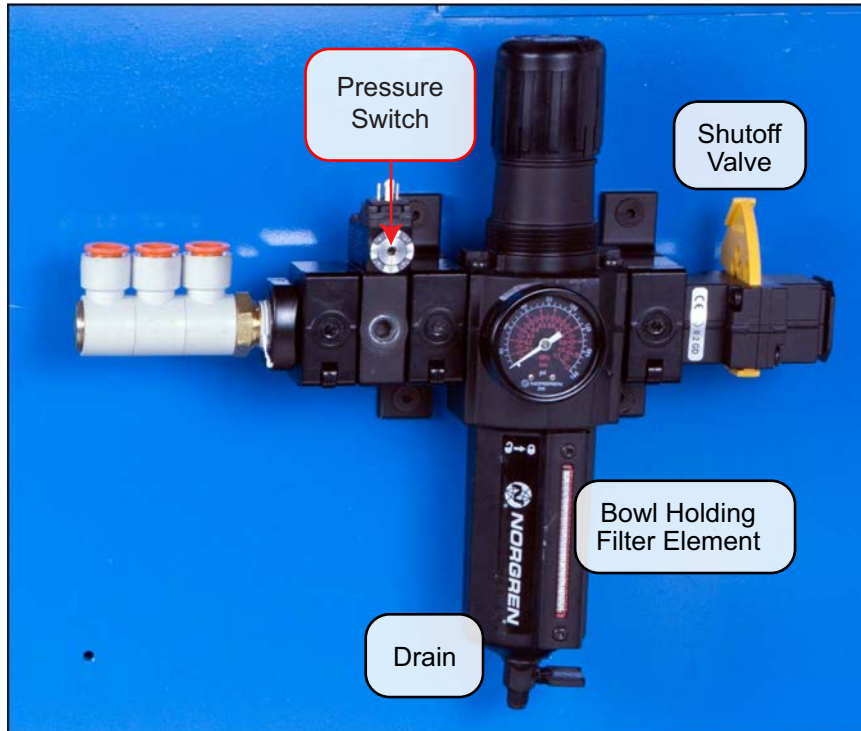
The pressure sensor prevents the system from operating with inadequate air pressure. It sets the pressure at which the saw will no longer operate because it will not have enough pressure to perform its tasks. If the pressure drops below the minimum requirement, determine and fix the issue before attempting to cut boards.

The pressure sensor should not need to be adjusted under normal circumstances. However, knowing how to adjust this setting may assist in troubleshooting. Minor

BLADE SAW: MAINTENANCE

adjustments can be made using an Allen wrench in the hole pointed out in Figure 7-66.

Figure 7-66: Pressure Sensor Adjustment on Main Filter/Regulator Assembly



Air Knives

This machine utilizes multiple air-knives to manage sawdust. For optimal performance, the air-knife must supply only dry air. If droplets of water are being ejected from the air-knife, the external pneumatic system that supplies air pressure to the machine may require adjustment or maintenance.

Figure 7-67: Air Knife Inside Saw Chamber



Adjusting The Cabinet Cooler

The touch screen enclosure cooler maintains an appropriate temperature for all the machine PC. The cooler activates when a thermostat located inside the enclosure indicates that the interior of the enclosure is above a set point. The set point can be adjusted using the dial on the thermostat.

The touch screen enclosure thermostat should be set to 85-90 degrees Fahrenheit

Figure 7-68: Example of Cabinet Cooler and Paired Thermostat (left to right)



Clamps



Adjusting Clamp Speed

Side and Outfeed Clamps

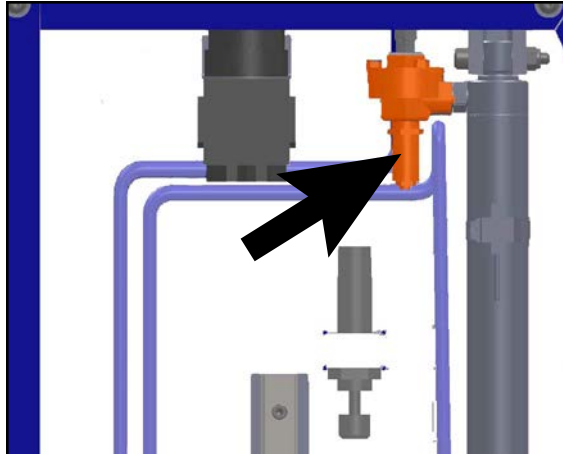
The infeed side clamp and the outfeed clamp have a flow control valve on the cylinder to adjust the speed of the retract stroke.

Top Clamp

The top clamp, located on the infeed side of the saw, has a speed muffler to dump the air pressure. The screw at the bottom of the muffler can be adjusted to control how quickly the air is dumped. Move the screw out to increase the speed of the retract stroke or move it in to decrease the speed.

The clamp's extend stroke uses all of the pressure passing through the clamp's air regulator. There is no additional adjustment.

Figure 7-69: Speed Muffler for Top Clamp



Aligning Outfeed Clamp



The outfeed clamp camfollowers must be parallel to the lumber exit chain at all times.

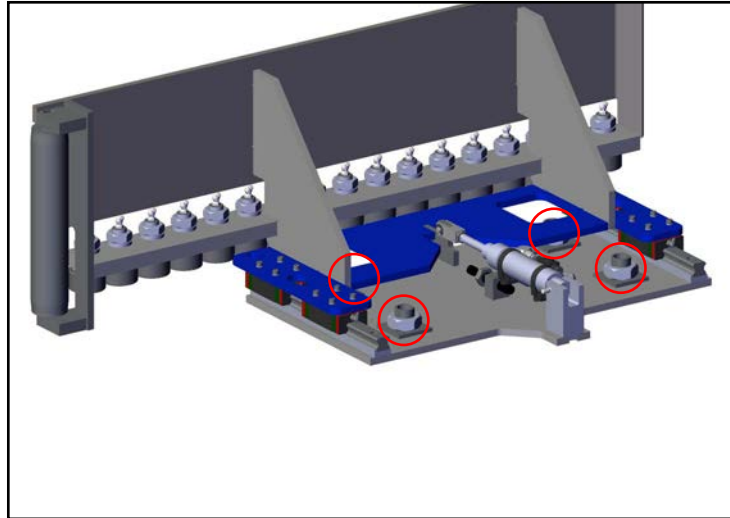
1. Mechanically adjust the clamp location using these steps. Steps for adjusting in smaller increments occur in the next step.
 - Set the lumber exit chain location EXACTLY as described in [Lumber Exit Chain Positioning](#).



The lumber exit chain MUST be parallel and 1/16" forward of the LASM fixed jaw.

2. Use these steps to align the outfeed clamp assembly and sensors to accomplish these bullet points:
 - Outfeed clamp assembly is parallel to the lumber exit chain.
 - More than 2-1/2" gap between tip of chain teeth and edge of cam followers (with clamp fully retracted). This measurement will be refined with sensor location and shock absorber later.
 - 1-3/8" or less gap when fully extended without board in it.
 - Should have slight offset between front edge of outfeed clamp cam followers and front edge of powered skewed conveyor cam followers. This can be adjusted on the powered skewed conveyor.
3. To make adjustments, loosen the bolts circled in [Figure 7-70](#) and adjust the entire clamp assembly so it is parallel with the lumber exit chain. Tighten the bolts securely when done.

Figure 7-70: Bolts Holding Outfeed Clamp Assembly



4. Adjust the outfeed clamp sensors so the clamp opens and clamps to the proper dimensions given previously.

Figure 7-71: Outfeed Clamp Adjustment

Outfeed Clamped Sensor → ← Outfeed Unclamped Sensor



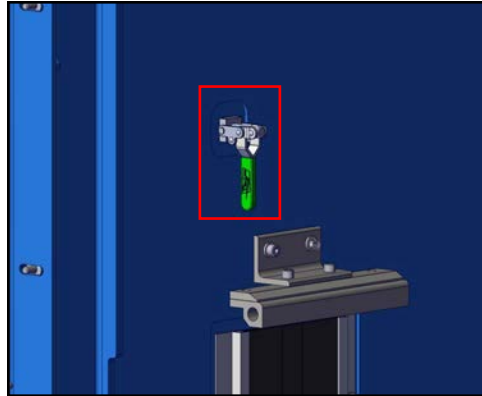
5. To adjust the outfeed clamp in small increments to reach the correct lumber channel, adjust the shock absorber as described in [Figure 7-61](#).

Raising the Top Clamp

For ease of maintenance, the containing top clamp (infeed side) can be raised and locked into place when the saw is not operating. To raise and lock the assembly:

1. Open the saw chamber door.
 - Note that opening the door will cause the air pressure to release and the top clamp to fall if it is unclamped position.
2. Ask another person to lift the top clamp to the unclamped (topmost) position.
3. With the other person holding the clamp in place, engage the lever inside the saw chamber on the infeed side (see [Figure 7-72](#)).

Figure 7-72: Top Clamp



Cylinders

The *BLADE* saw utilizes pneumatic cylinders for Infeed Rail load arms and various clamps throughout the machine. Observe the operation of pneumatic systems every 3 months and adjust as needed.

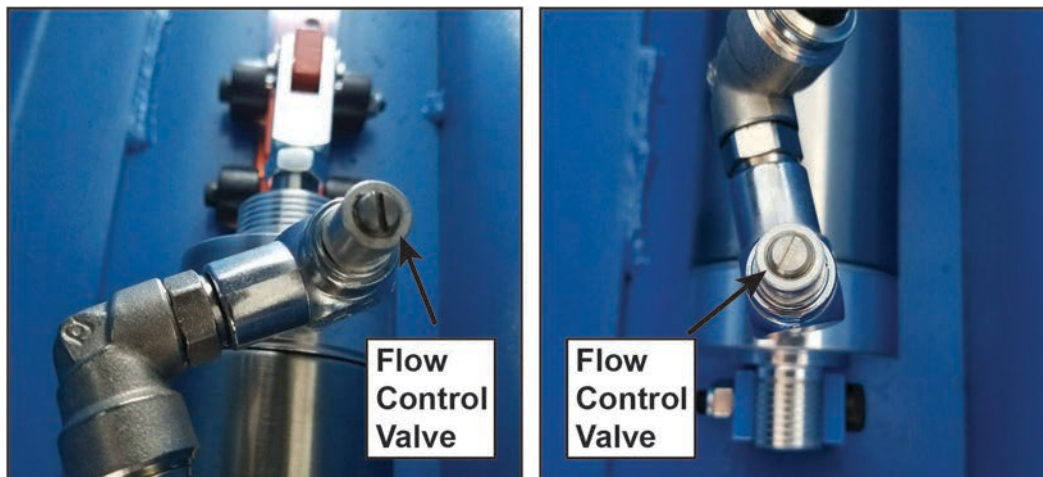
Adjusting Flow Control Valves

Both ends of some cylinders have flow control valves to adjust how fast the cylinders extend and retract. If cylinders with flow control valves move too slowly or quickly, adjust the flow control valves. The location of the flow control valve that needs adjustment depends on whether the cylinder is moving too quickly on the extending or retracting stroke.

Table 7-15: Adjusting the Flow Control Valves

Stroke	Valve Location	Increase Speed	Decrease Speed
Extend	Rod end of cylinder	Turn the adjusting screw counterclockwise	Turn the adjusting screw clockwise
Retract	Cap end of cylinder	Turn the adjusting screw counterclockwise	Turn the adjusting screw clockwise

Figure 7-73: Rod-End (Left) and Cap-End (Right) Flow Control Valves



Electrical System

Sensors Overview

A complete list of sensors is found in [Table 7-16](#). They are arranged in approximate order from the infeed to outfeed side of the machine (facing the machine). Photos are shown on subsequent pages.

Table 7-16: List of Infeed Rail Sensors

Sensor Name	Description	See...
Load Arm Up	Indicates when the load arms are up so lumber feed system will not advance.	Figure 7-74
Load Arm Down	Indicates when the load arms are down so lumber feed system will advance.	Figure 7-74
Board Sensor (Load Arms)	Indicates that lumber is located at a position where the load arms will raise it on the next up movement.	Figure 7-74
Gripper Home	Determines the position of the gripper during the homing process.	Figure 7-74
Gripper Unclamped	Indicates the gripper is not clamped.	Figure 7-74
Board Slip	Indicates if the board is tight against the gripper face.	Figure 7-74
Leading Edge Receiver	Works with the emitter sensor to determine the location of the leading edge of the board which is used in the board length measurement process.	Figure 7-74
Leading Edge Emitter	See Leading Edge Receiver description.	Figure 7-74
Top Clamp Ski Sensor	Indicates the top clamp is clamped on a board.	Figure 7-75
Top Clamp Clamped (EP/TC Bottom)	Indicates when the top clamp is fully clamped meaning there is no board present.	Figure 7-75
Top Clamp Unclamped (EP/TC Top)	Indicates when the top clamp on the infeed side of saw is up.	Figure 7-75
Side Clamp Unclamped	Indicates when the side clamp on the infeed side of saw is open.	Figure 7-75
Elevation home	Determines the position of the elevation during the homing process.	Figure 7-75
Stroke home	Determines the position of the stroke during the homing process and that the saw is in a retracted position.	Figure 7-75

BLADE SAW: MAINTENANCE

Sensor Name	Description	See...
Angle home	Determines the position of the angle during the homing process.	Figure 7-75
LASM Lockout	Prevents saw blade from moving when LASM is within sensor's vision. Located on the stationary portion of the LASM assembly at the centerline of the saw blade. When LASM block is within the sensor's vision, the saw blade will not move because of a collision risk, unless overridden by software.	Figure 7-76
LASM Home	Determines the position of the LASM during the homing process.	Figure 7-76
Crooked Lumber Sensor (CLS)	Uses ultrasonic wavelengths to determine the location of the bottom of the board.	Figure 7-76
Bevel home	Determines the position of the bevel during the homing process and that the bevel is close to square.	Figure 7-76
Outfeed Clamped	Indicates when the outfeed clamp is clamped meaning there is no board present.	Figure 7-76
Outfeed Unclamped	Indicates the outfeed clamp is open.	Figure 7-76
LASM Clamped	Indicates that the LASM clamp is clamped, meaning there is no board present.	Figure 7-77
LASM Unclamped	Indicates when the LASM clamp is open.	Figure 7-77
Auto Deck Lumber Sensor (Optional Component)	Indicates there is a board present just behind the load arms by sensing the leading edge of the board. When the Auto Deck Lumber Sensor indicates a board is present, the system knows to index the board when the load arms clear of wood and are in the down position.	Figure 7-78
Auto Deck Pusher Extend/Retract (Optional Component)	Indicates the state of the lumber pusher on the Auto Deck (2 sensors). Retracted=Home, Extended=Pushed	Figure 7-78
Air Pressure	Indicates if the system air pressure has dropped below the minimum requirement.	Adjusting the Main Pressure Sensor on page 155

Figure 7-74: Infeed Rail Sensors

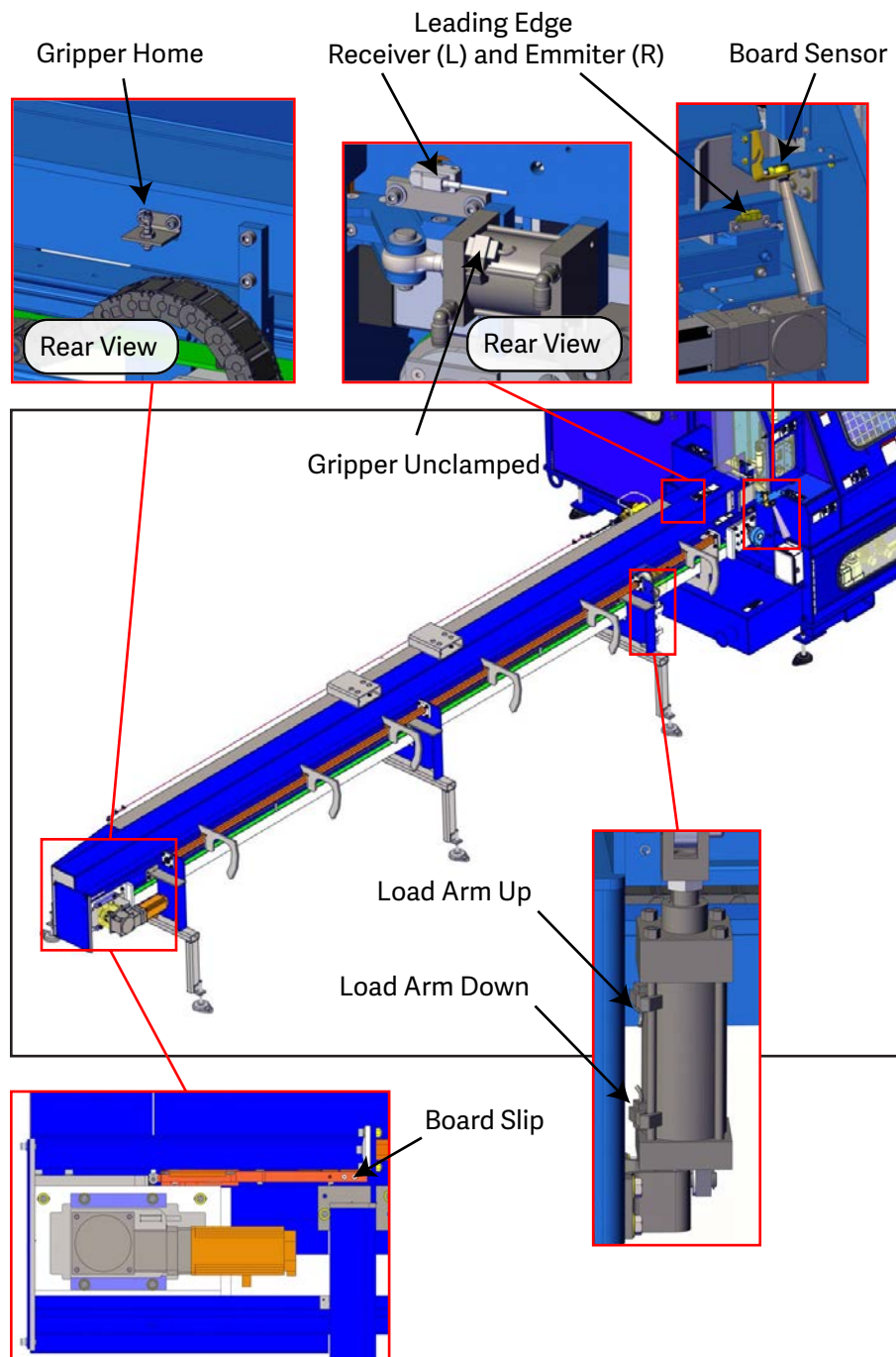


Figure 7-75: Stroke/Elevation Chamber and Infeed Clamp Sensors

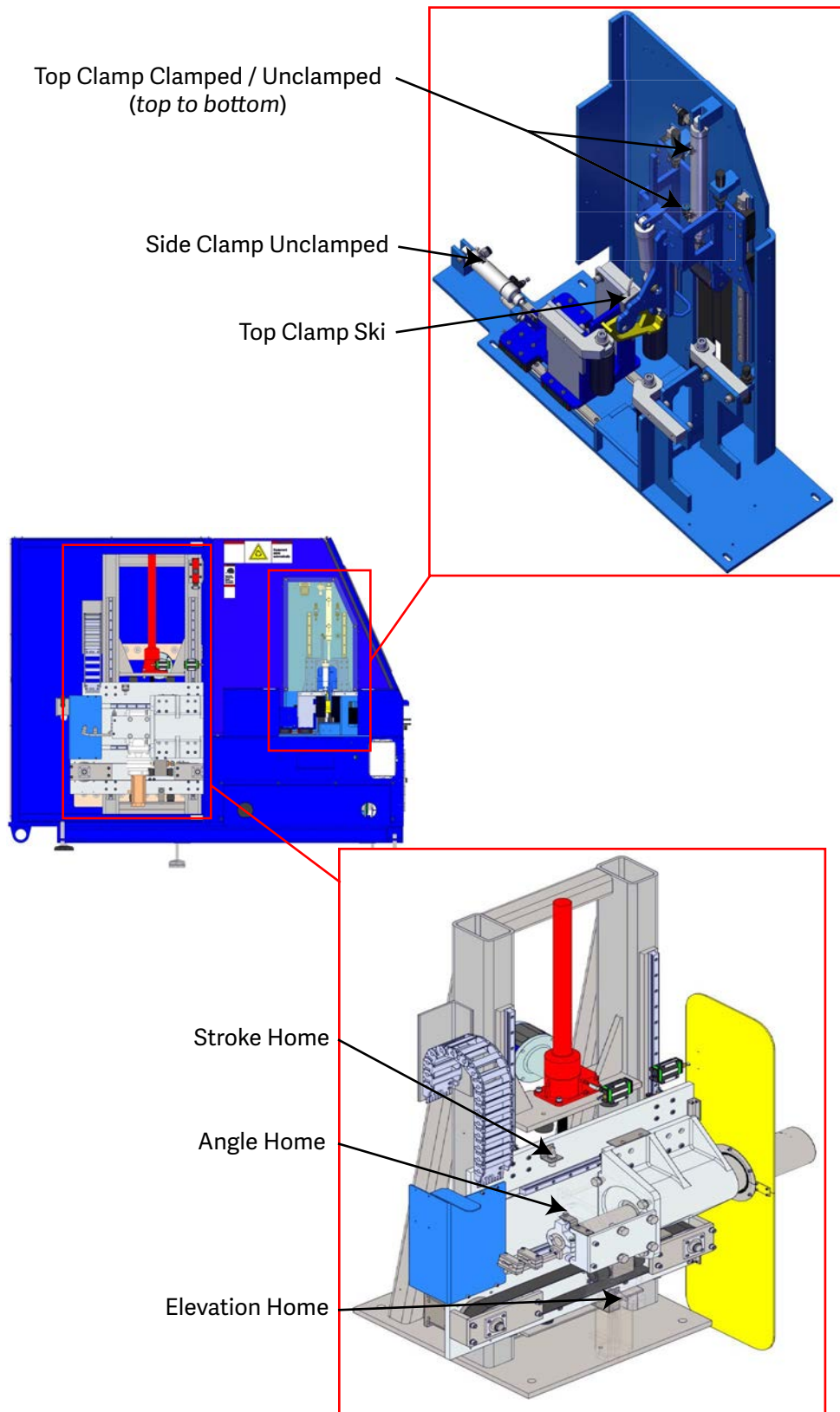


Figure 7-76: Saw Chamber and Outfeed Sensors

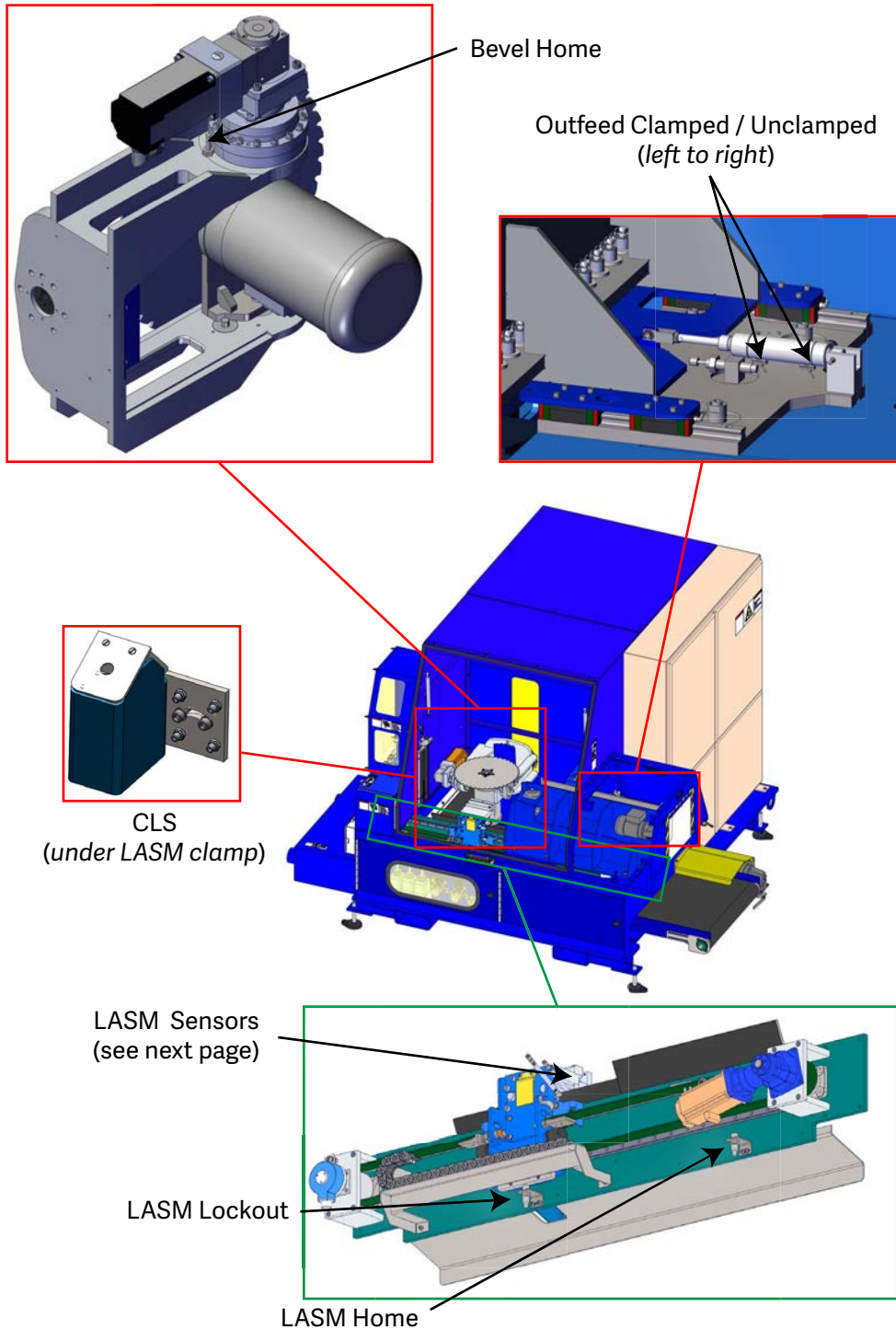


Figure 7-77: LASM Clamp Sensors

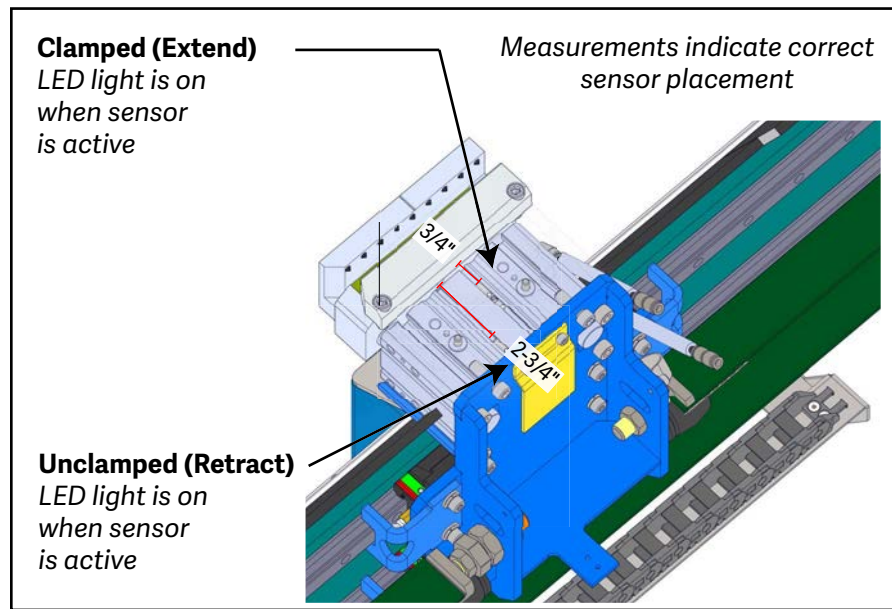
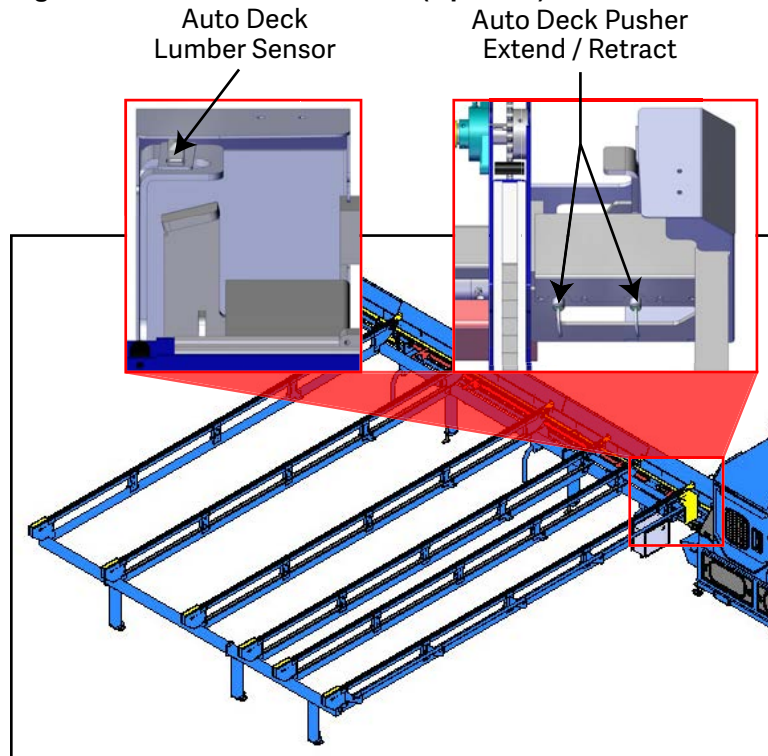


Figure 7-78: Auto Deck Sensors (Optional)



Sensor Maintenance

Sensor Gaps for Prox Switches (Home Sensors)

The home sensors are all inductive proximity switches, also called prox switches. All prox switches should have an air gap between the sensor and the target of

approximately 1/32".

Troubleshooting Home Sensors

See following procedures for instructions on troubleshooting home sensors.



Checking Inspection Points

1. Check for obstructions interfering with the sensor.
2. Ensure all prox switches have 1/32" air gap.
3. Ensure dust and debris is not in the way of the sensor or target.

Checking Communication Between the PLC and Sensor




Check the PLC input module to determine if the sensor is communicating with the PLC. The indicator light on the PLC should illuminate while the PLC is receiving data from the sensor.

Resetting the System

Ensure home position is correct by homing the axis or part in question. If the home position is not correct, the axis will hit a hard stop.




Does the Home Sensor Have Power and Functionality?

1. For inductive proximity switches (Home sensors):
 - a) From the touch screen on the operator interface, select **Diagnostics > Detailed Diagnostics > any servo tab.**

	 CAUTION
 	<p>CRUSH OR CUT HAZARD!</p> <p>Use extreme caution and effective communication when a second person is in the restricted zone.</p>

- b) With one person watching the screen, have a second person place a screwdriver or anything with a steel or iron surface in front of the sensor.
 - 1) If the sensor has an LED light, it should illuminate when the metal object is detected. If the light does not illuminate, there is either no power to the sensor or the sensor is broken. Check the wiring and points of power farther up the line to determine where power transmission ends.

- 2) On the **Detailed Diagnostics** screen, the indicator next to the Home Sensor field should turn blue while the metal object is detected. If it does not, there is a communication issue.
2. For other sensors (not inductive proximity switches):
 - a) From the touch screen on the operator interface, select **Diagnostics > Detailed Diagnostics > any servo tab..**

	 CAUTION
 	<p>CRUSH OR CUT HAZARD!</p> <p>Use extreme caution and effective communication when a second person is in the restricted zone.</p>

- b) With one person watching the screen, have a second person watch the sensor while the operator manipulates the saw so the sensor engages.

If the sensor has an LED light, it should illuminate when the sensor engages. If the light does not illuminate, there is either no power to the sensor or the sensor is broken. Check the wiring and points of power farther up the line to determine where the power transmission ends.
3. Find the source of the problem and resolve:
 - a) Try substituting the cable that plugs into the junction box.
 - b) Try substituting the sensor with a sensor from spare parts, or a different sensor on the saw, but only if they are identical sensors.

Adjusting & Troubleshooting the Crooked Lumber Sensor

The following instructions should be followed when:

- Parts are not accurate and the cause may be the elevation of the blade, OR
- The message **Out of Range** consistently displays in the CLS status menu (on the Home Screen Toolbar).



Straight 2x4x8
or longer

Plumb bob

Round bubble
level



A working CLS makes a constant clicking sound.

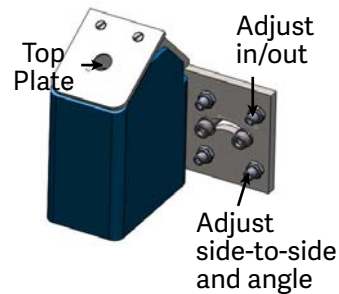
CLS Positioning

1. Move the LASM away from the CLS using the indicator menu on the Home Screen.
2. Remove top plate from CLS by removing the two bolts on top of the CLS housing.



3. Calibrate the CLS.
 - a) Go to **Tools > Calibrate** from the operator interface.
 - b) Follow the on-screen instructions and select **Make Alignment Cut**.
4. Lockout/tagout.
5. Drop a plumb bob over the board and down just above the bubble level. Make sure the string from the plumb bob is in the newly cut slot in the board.
6. The sensor must be positioned so that it is centered on the blade, bubble level, and the board. Use the bubble level and plumb bob as devices to achieve positioning of the CLS. [Figure 7-79](#) shows the adjustment bolts on the CLS.

Figure 7-79: CLS Adjustment Bolts



Straight 2x4x8
or longer

Determine if CLS is Working

1. Move the LASM away from the CLS so it doesn't interfere with the test.
2. Place a straight 2x4x8 or longer on the Infeed Rail and slide it into the saw chamber.
3. Unclamp and clamp the infeed and outfeed clamp (using indicator menus on Home Screen) so the board is firmly clamped in both.
4. Go to **Diagnostics > Detailed Diagnostics > CLS** tab.
5. Note the exact reading in the **Current Reading** field called out in [Figure 7-80](#).
6. Press the **Calibrate** button. If the CLS is operating and adjusted correctly, the following should be true:
 - a) The field labeled **Current Reading** in [Figure 7-80](#) should change by .02 or less.
 - b) The field labeled **Current Reading** in [Figure 7-80](#) should be near 0.

Figure 7-80: Diagnostics > Detailed Diagnostics > CLS Screen

Current Reading (counts/units)	Zero Offset (counts/units)
-47196	1350440
-0.06	1.717
-47196	-0.06
Calibration temperature	59
Ambient Temperature	69.8

Testing the Elevation and CLS Communication



Straight 2x4x8
or longer

1. Place a 2x4x6 or longer on the Infeed Rail and slide it into the saw chamber while still holding onto the end sticking out of the saw chamber. Ensure it is covering the CLS.
2. From the saw's operator interface, go to **Diagnostics > Detailed Diagnostics > CLS** and click the **Enable** button under Elevation Following.
3. Test the following steps and results:
 - a) Lift the infeed end of the lumber. It should result in the blade elevation rising.
 - b) Set the lumber down in its original position. It should result in the blade elevation lowering.
 - c) The elevation status menu (on the Home Screen indicators) should display **Enabled Homed**.
4. If the blade elevation moved as expected:
 - a) Wait for the blade elevation to settle (should not take more that 15 seconds). Once settled, monitor the blade elevation for 10 minutes.
 - b) During this period there should be no movement of the blade elevation. If there is movement, then remove the wire connection (unscrew the metal ring on the end of the cable at the sensor) from the bottom of the sensor. Using high-quality, dry compressed air, blow out the connector on the wire and on the sensor. Replace the wire on the sensor and repeat the test. If the test continues to fail contact Automation Support.

BLADE SAW: MAINTENANCE

Auto Deck Lumber Sensor Adjustment

See the [Auto Deck Lumber Sensor manual](#) for information on how to adjust this sensor.

Main Electrical Enclosure

The major electrical components located in the top and bottom halves of the main electrical enclosure are shown in [Figure 7-81](#) and [Figure 7-82](#). For other components not named here, see the Main Electrical Enclosure drawing listed in [Drawing Set on page 217](#).

Figure 7-81: Electrical Enclosure (Top Half)

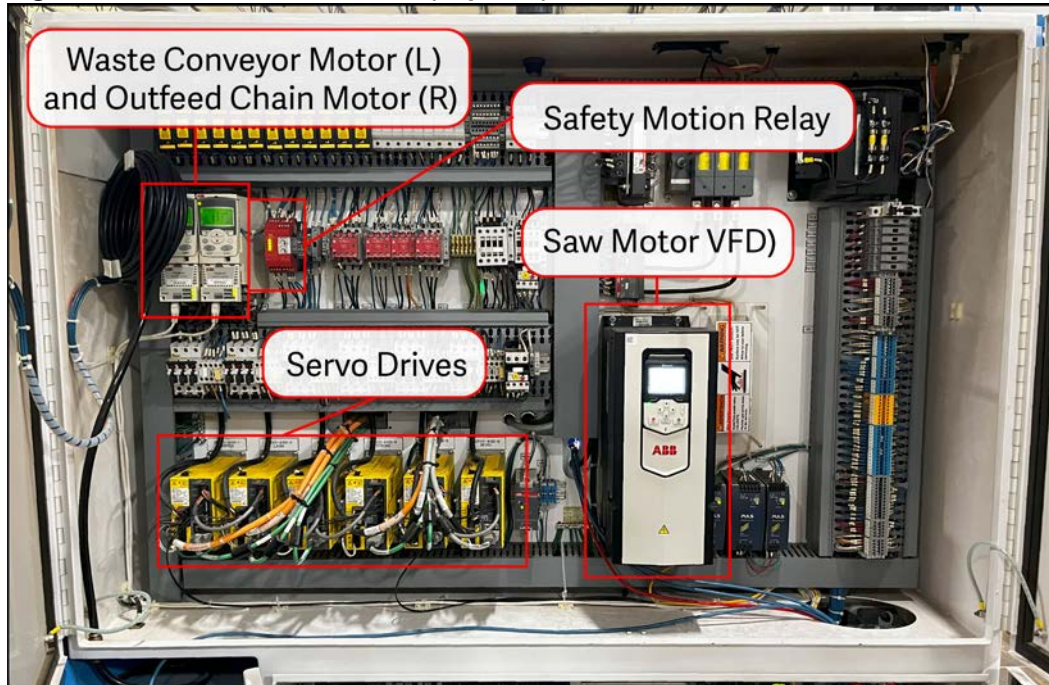
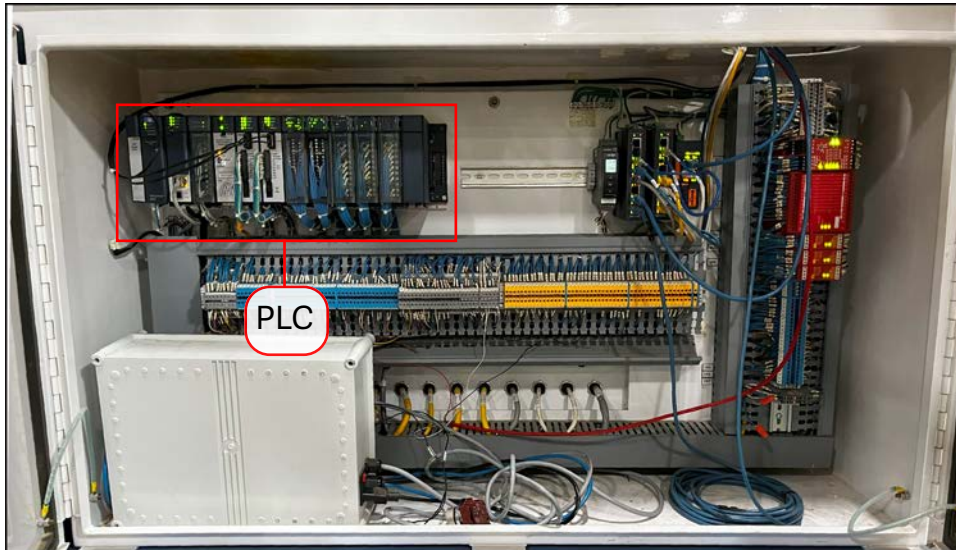


Figure 7-82: Electrical Enclosure (Bottom Half)



VFD (Variable Frequency Drive)

NOTICE

Do not modify any parameters on any VFDs unless instructed by Automation Support

A VFD is an important part of several electrical circuits in the *BLADE* saw. Verifying the voltage in and out of the VFD is always a good first step in the electrical troubleshooting process. See [Figure](#) for the location of each VFD located inside the main electrical enclosure.



Automation Support is available at 800-523-3380

If the VFD experiences a fault, the error code will display on the VFD display ([Figure 7-83](#)). For help troubleshooting VFD faults, call MiTek Automation Support.

Safety Controller

The safety controller is located inside of the control enclosure. Please contact Automation Support for assistance with safety controller issues.

PLC (Programmable Logic Controller)

The PLC is located inside of the bottom half of the main electrical enclosure. Please contact Automation Support for assistance with clearing unknown faults.

Figure 7-83: VFD Fault



Select Component Overview and Maintenance

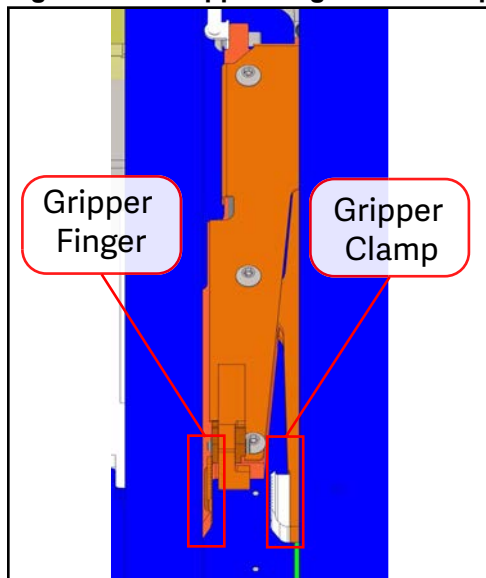
Gripper

The gripper is the assembly that moves the lumber along the Infeed Rail.

Cleaning the Gripper

Use a pick or wire brush to clean the grooves on the gripper finger and gripper clamp every month (1 shift) or every 2 weeks (2 shifts).

Figure 7-84: Gripper Finger and Clamp Grooves



Manually Turning the Gripper Belt to Find Obstructions

If you need to manually move the gripper to remove an obstruction or troubleshoot, the gripper belt can be jogged from the saw's operator interface.

From the Home Screen, select the **Gripper** indicator and choose one of the Jog options. Move the gripper assembly back and forth to test the belt tracking. Adjust if necessary.

If the gripper becomes difficult to move, refer to [Troubleshooting](#) appendix on page [174](#).

Removing Top Gripper Assembly

Occasionally, during maintenance of the gripper and belts, you may need to remove the top gripper assembly.

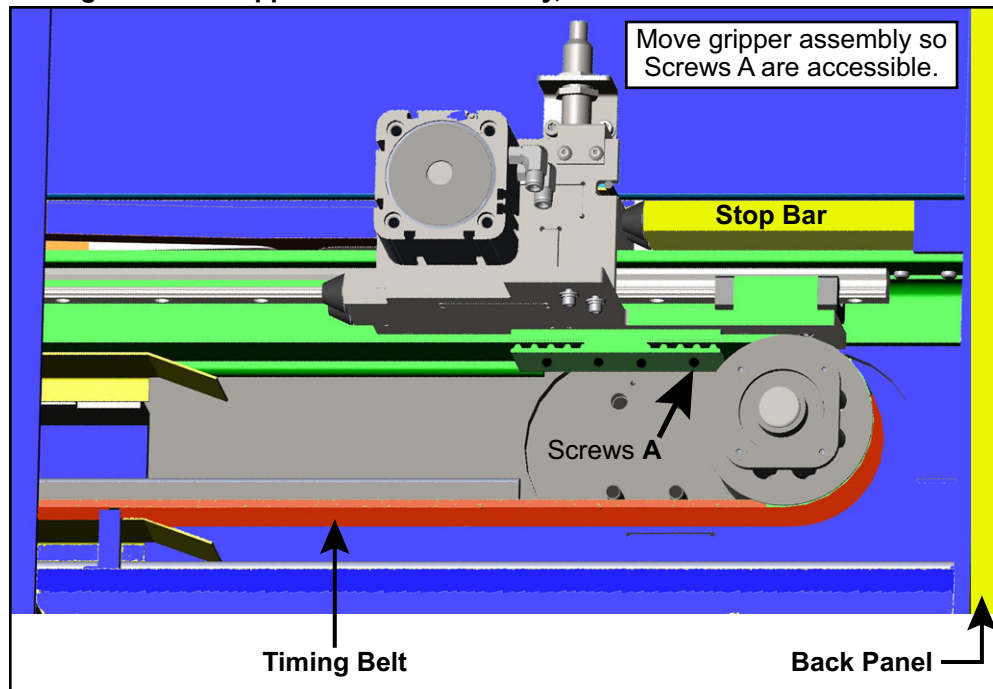


1. Position the gripper assembly so the screws labeled A in [Figure 7-85](#) are accessible.
2. Lockout/tagout.

BLADE SAW: MAINTENANCE

3. Remove the back panel.
4. Remove the stop bar by removing the 3 socket head screws on top.
5. Remove the 4 flat head screws labeled A.
6. Slide the gripper assembly, following the instructions on [Linear Guide Bearings on page 177](#) to prevent the bearing balls from falling out of the linear guide bearing block.

Figure 7-85: Gripper and Belt Assembly, View from Back Side



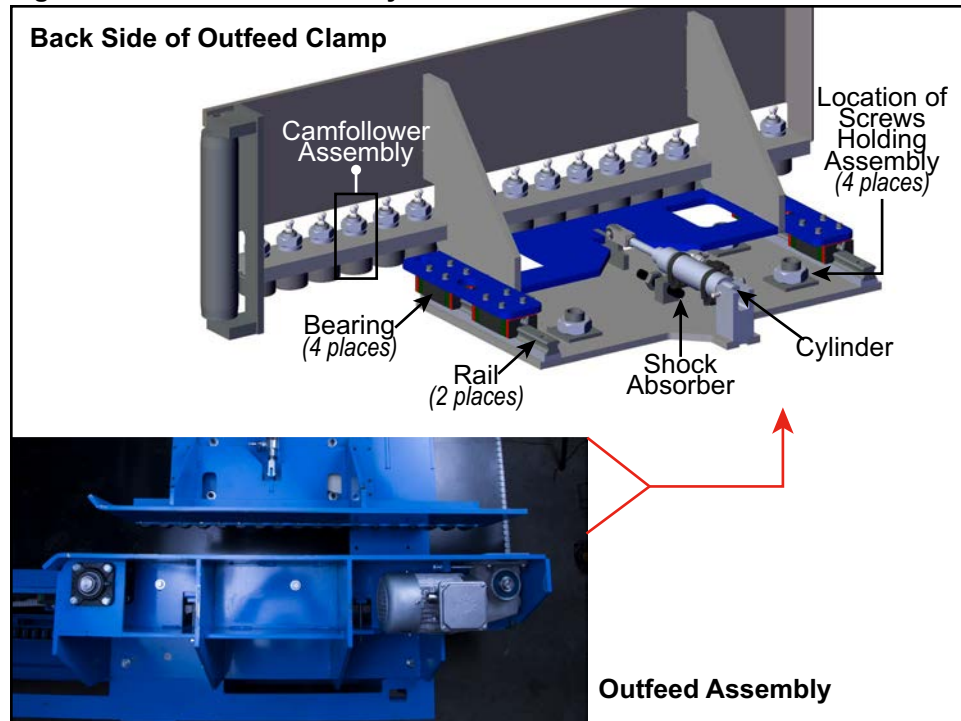
Outfeed Assembly

The outfeed assembly consists of the following:

- A pneumatically powered outfeed clamp with camfollowers at the bottom edge
- A lumber exit chain

If the board is long enough, the outfeed clamp holds the end of the board during the cut. It then opens while the LASM moves the finished part farther into the outfeed chamber. The outfeed clamp then closes again to push it against the lumber exit chain, and the lumber exit chain pulls the finished part out of the saw chamber and pushes it onto the outfeed table or conveyor.

Figure 7-86: Outfeed Assembly Overview



Pull-Cord E-Stop

A properly tensioned pull-cord will trip the E-stop switch when someone pulls it to approximately 1 in. from its rest position.

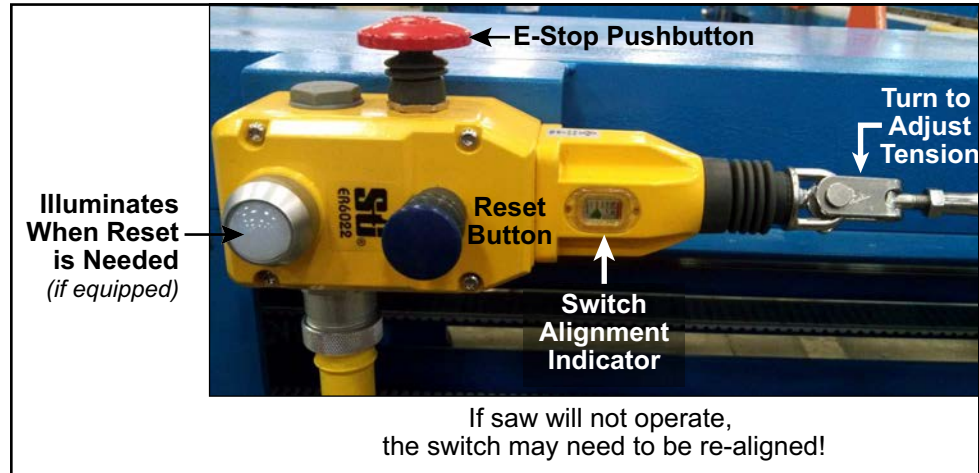
Resetting the Pull-Cord Switch

Once a cable is pulled, the red light on the pull-cord switch that was activated illuminates. Reset the E-stop circuit by pressing the pull-cord Reset button. The pull-cord Reset button is labeled in [Figure 7-87](#). The reset action must occur at the same switch that was activated.

Adjusting the Pull-Cord Tension

To align the perimeter safety cable tension, turn the adjusting nut until the switch is centered in the switch alignment indicator.

Figure 7-87: Pull-Cord Switch Overview



After resetting the pull-cord switch, the **RESET** button on the operator interface panel must also be pressed before the saw will operate.

Skewed Conveyor

The Skewed Conveyor is one of the outfeed components that can be paired with the *BLADE* saw. It is a powered conveyor that drives the lumber away from the outfeed side of the machine to be offloaded or directed onto other conveyors.

Aligning the Skewed Conveyor

The side skatewheel fence and lumber guide assembly must be parallel with each other. The gap should allow the exiting lumber to travel freely without rubbing hard on either side.

1. A properly aligned skewed conveyor should meet the following criteria:
 - It should measure 2-1/2" skatewheel to skatewheel.
 - The skatewheels on the front side of the Skewed Conveyor (closest to the operator) should be even with and in-line with the tips of the outfeed chain.
 - The skatewheels on the back side of the Skewed Conveyor (the side farthest away from operator) must be slightly farther back than the outfeed clamp rollers when retracted.
 - Skewed conveyor rollers should be slightly lower than exit ramp roller on the saw.
2. If needed, adjust the Skewed Conveyor side guide location:
 - The short side of the Powered Skewed Conveyor fence is adjustable. The long side is fixed.
 - Depending on which option you have, adjust the short side to the right depth and/or move the entire Powered Skewed Conveyor using the slots in the feet.

Component Replacement



Hex key set

Linear Guide Bearings

To replace a linear guide bearing, order the appropriate kit listed in [Table 7-17](#)

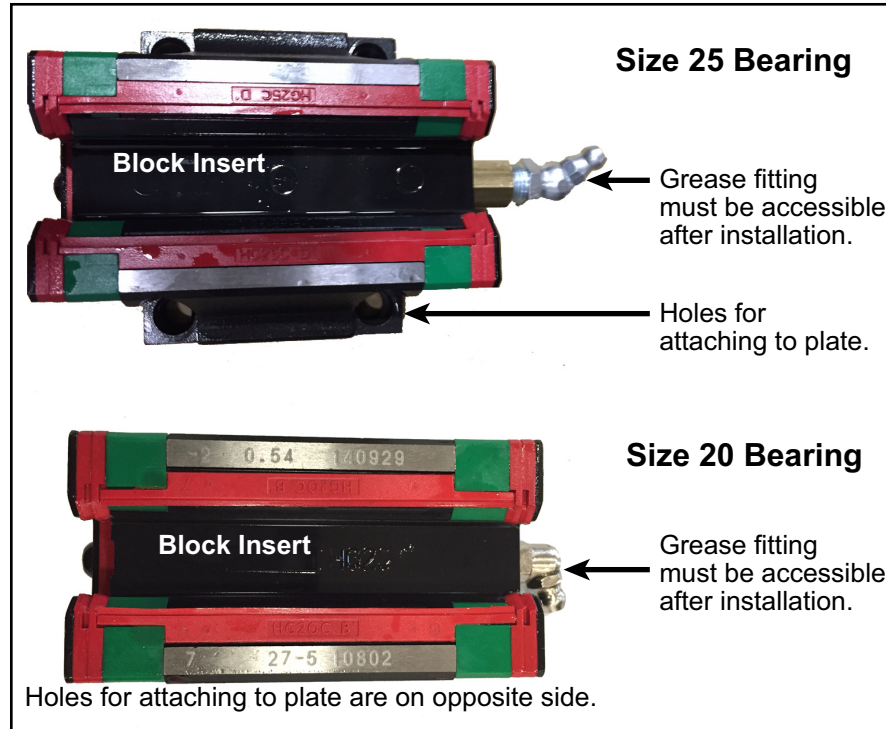
Table 7-17: Parts in SB209 Kits.

Applicable Kit	Grease (<i>not supplied</i>)
SB209KIT-A (size 25) for LASM, Stroke, & Elevation	0.8 cm ³
SB209KIT-B (size 20) for Gripper, Infeed Top Clamp, Infeed Side Clamp, and Outfeed Clamp	0.5 cm ³



1. After locking/tagout out, remove the previously used bearing block:
 - a) Unscrew the 4 screws from the plate. Keep the screws to use later.
 - b) Slide the bearing off of the rail. Be sure to keep the bearing level to prevent the ball bearings from falling out.
2. Discard the previously used bearing, but NOT the screws.
3. Examine the new bearing block. The grease fitting must be securely attached to the bearing block. If it is loose in the box, connect it using these steps:
 - a) Clean dust, metal shavings, and oil off the hole threads. Use a standard brake cleaner or anything that removes lubrication.
 - b) Screw the fitting into the bearing block as shown in [Figure 7-88](#). Ensure the fitting is facing a direction that allows it to be easily accessed later. The direction the fitting should face depends on its location on the saw, so visualize its location carefully before installing the fitting.


Figure 7-88: Important Parts of Each Bearing Block



4. Clean oil and debris off of the parts listed below. A standard brake cleaner or anything that removes lubrication will work.
 - a) On the new bearing, with the block insert in place to protect the ball bearings, carefully clean the threaded screw holes. Do not get cleaner in the ball bearing area.
 - b) Clean the screws that were removed from the old bearing block.
5. Install the new bearing block with the fitting facing out, so it will be accessible to grease in the future.
 - a) Slide the bearing block onto its rail, allowing the rail to push the block insert completely out of the bearing block.
 - b) Slide the bearing block down until it is behind the linear guide plate and the holes are aligned.
 - c) Using the screws removed from the previously used bearing block, apply blue *Loctite*™ thread adhesive to each screw, and then screw the plate and bearing block together.
 - d) Wait 10 minutes for the *Loctite* thread adhesive to dry before moving the assembly.



Make sure the grease fitting is pointing out, so it is easily accessible.

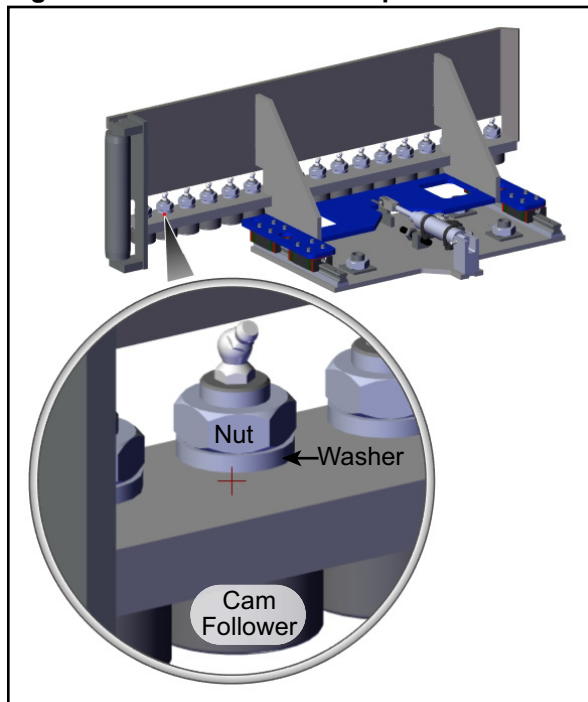
NOTICE	
	Use <i>Loctite</i> thread adhesive to prevent the bearings from coming loose, causing costly machine damage. The bearings are shipped with NO grease in them. They MUST be greased before operating the saw!

6. After the *Loctite* thread adhesive is dry, apply the correct amount of grease to the fitting. See [Lubricating the Linear Bearings on page 129](#) for detailed instructions.
7. Remove the lockout/tagout mechanisms.
8. Run the saw for several minutes, then lockout/tagout again and look at the rail. Check to see if a lubricant film can be seen on the rail. If not, add more grease.

Outfeed Clamp Cam Follower

1. Remove all of the cam follower assemblies from the old outfeed clamp assembly so they can be reused:
 - a) Loosen and remove the nut shown in [Figure 7-89](#).

Figure 7-89: Cam Follower Replacement



- b) Catch the cam follower (with grease fitting attached) as it falls out when the nut is removed. Repeat for all cam followers.
2. Install cam followers into the new outfeed clamp assembly:
 - a) Using the same hardware, place a washer over a cam follower shaft.
 - b) Place the cam follower shaft through a hole in the new outfeed clamp assembly, place a lock washer over the top of the shaft and screw on the nut. Tighten the nut with a hex socket. The shaft has a flat surface to prevent it from spinning while tightening the nut. Repeat for all cam followers.

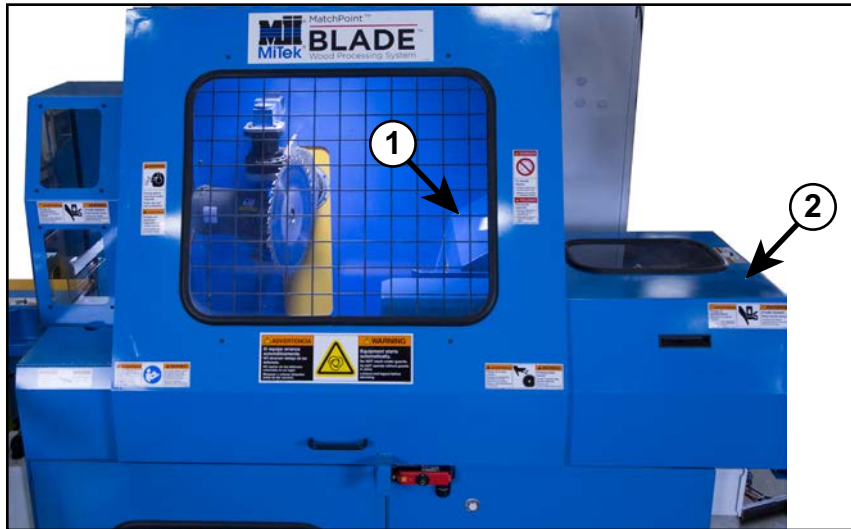
Outfeed Clamp Assembly

Removing the Outfeed Clamp Assembly

If there is ever a need to remove or replace the entire outfeed clamp assembly, familiarize yourself with [Figure 7-86 on page 175](#) to assist in following these steps.

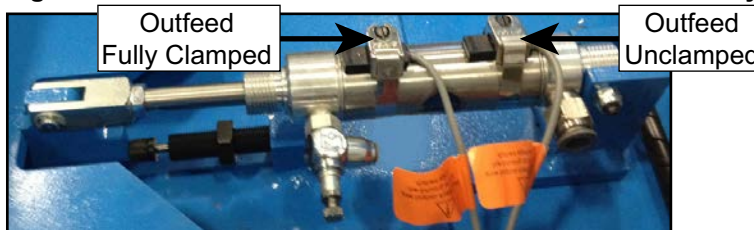
1. Verify the LASM is all the way toward the infeed side of the saw chamber and the electrical power is locked and tagged out.
2. Remove the guards shown in [Figure 7-90](#) with a hex key.

Figure 7-90: Remove These Guards



3. Remove the 2 sensors shown in [Figure 7-91](#) from the outfeed clamp cylinder as described:
 - a) Mark each sensor to identify it as **outfeed fully clamped** and **outfeed unclamped**.
 - b) Document how the wires are attached to the sensor so it can be re-attached in the same way.
 - c) Inspect the wires and connection to the sensors.



Figure 7-91: Label and Remove These Sensors From the Cylinder



4. Blow off the entire area to facilitate the rest of this procedure.

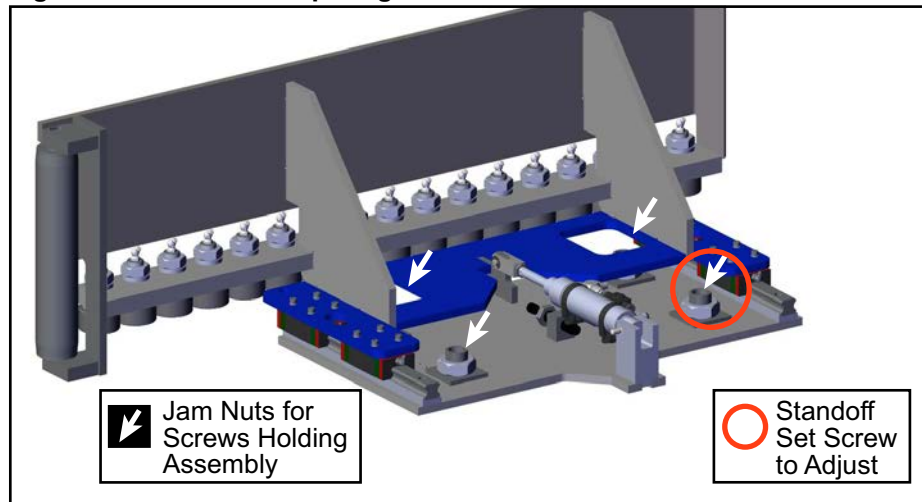
BLADE SAW: MAINTENANCE

- Remove the 4 socket-head cap screws shown in [Figure 7-92](#) with a hex key and remove the lock washers. These can be discarded.

	<div data-bbox="548 279 1253 325"> CAUTION</div> <p>2-man lift required to safely lift the outfeed assembly! It may weight as much as 120 lb.</p>
---	---

- Lift off the entire outfeed clamp assembly.

Figure 7-92: Screws Requiring Attention



If the frame does not have alignment holes, SB220KIT that was sent to all existing saws in 2016 has not been installed correctly. Locate and install SB220KIT. SB220 instructions can be found on the MiTek web site.

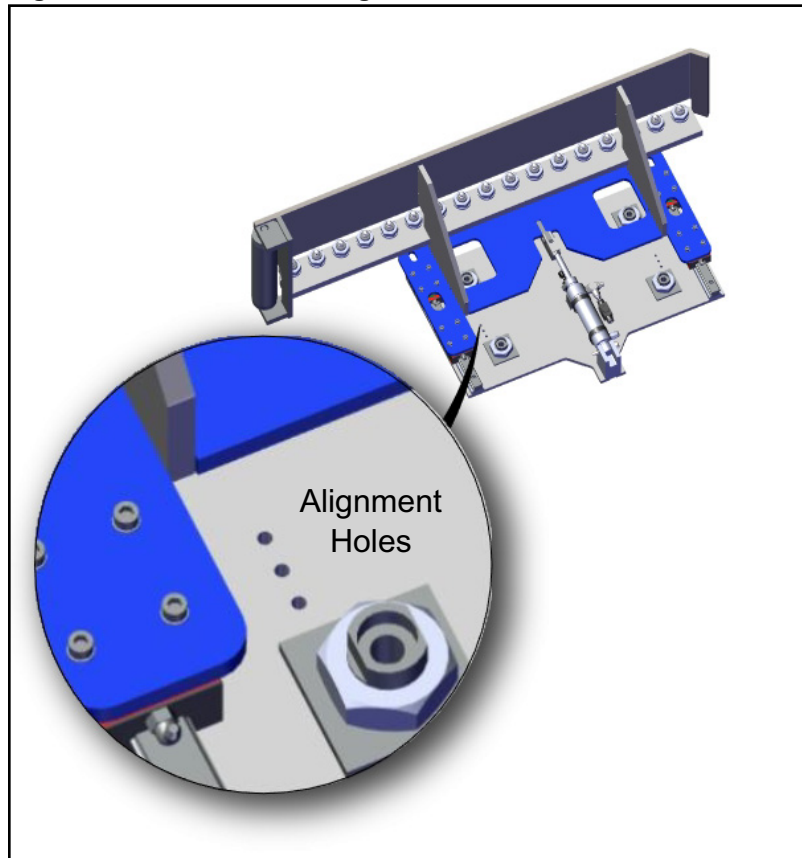
Installing the Existing Outfeed Clamp Assembly (2016)

- Measure the fixed jaw of LASM to ensure it is at least 1-1/2" thick. If worn to less than that, replace it before making final adjustments to the Outfeed Clamp.
- Align the lumber exit chain EXACTLY as described on [Lumber Exit Chain Positioning on page 138](#).
- Attach the new outfeed clamp assembly to the saw by following these steps:
 - Set the outfeed clamp assembly in place, making sure not to damage the wires, sensors, or air lines.
 - Place the four (4) 3/8-16x1-3/4" screws and lock washers provided at the locations show with arrows in [Figure 7-92](#).
 - 3 of the 4 Stand-Off Set Screws are preset. Adjust the 1 Stand-Off Set Screw indicated in [Figure 7-92](#) until it bottoms out on the base face and stop. Do **not** adjust the other 3 Stand-Off Set Screws.
 - Lock the jam nut in for the Stand-Off Set Screw circled in [Figure 7-92](#).
- Align the outfeed clamp assembly EXACTLY as described on [Aligning Outfeed Clamp on page 158](#).

BLADE SAW: MAINTENANCE

5. Make adjustments in small increments by adjusting the shock absorber as shown on [Adjusting a Shock Absorber on page 149](#).
6. Place a board in the LASM and outfeed clamp, then manually clamp both. Ensure the board is securely clamped, verify all rollers and cam followers engage, and everything is aligned.
7. Once everything is aligned, pin the assembly to keep it from slipping.
 - a) Pick any of the three existing outfeed clamp alignment holes shown in [Figure 7-93](#) and drill a through-hole through the frame directly behind the existing alignment hole. Use a 3/16" drill bit.
 - b) Repeat at the alignment holes on the other end of the outfeed clamp.
 - c) Place a pin in the newly drilled hole on each end to keep the outfeed clamp assembly from slipping on the saw frame.

Figure 7-93: Place Pin in Alignment Hole



8. If your system includes a Skewed Conveyor, it is important that it aligns perfectly with the outfeed assembly on the saw EXACTLY as described on [Aligning the Skewed Conveyor on page 176](#).
9. Install the sensors. They are shown in [Figure 7-91](#). Refer to the electrical drawing located in your Equipment Manual if necessary.

Saw Blade Motor Power Cable Replacement

Contact MiTek Automation Support to Order SB204KIT. See the [service bulletin section of the MiTek website](#) for further instructions.

Waste Conveyor Belt

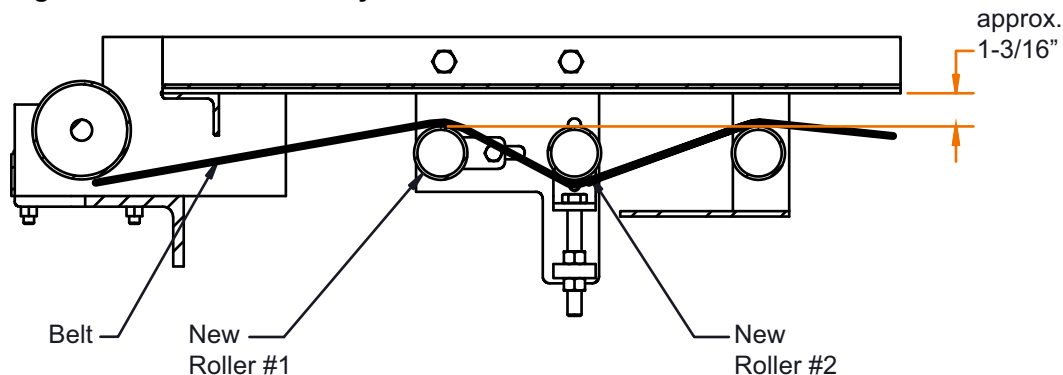
The waste conveyor belt should be replaced about every 3 years, depending on use and maintenance. Use the following steps as a guide for replacing the main or optional belt.

1. Run the waste conveyor until the lacing connection is near the head roller at the drive end.
 - a) In the *BLADE* software, go to **Diagnostics > Detailed Diagnostics > Machine** tab
 - b) Turn the waste conveyor on and off with the button by **Waste Conveyor**.
2. Turn off all power to the saw, following approved lockout/tagout procedures.
3. Remove the old belt by following these steps:
 - a) Relieve the tension on the belt using the tensioning bolts. See [Adjusting Waste Conveyor Belt Tension on page 142](#).
 - b) Remove the end washers (if present), then remove the wire that is threaded through the lacing. Save the wire for reassembly.
 - c) Remove the old belt.
4. Clean the sawdust and chips from the entire length of the metal conveyor bed.
5. Install a new belt by following these steps:
 - a) Thread the belt as shown in [Figure 7-94](#), keeping the lacing connection near the head roller.



To pull the new belt through the machine more easily, thread the new belt to the old one and pull it through the machine. This will help thread the belt into the rollers on the bottom.

Figure 7-94: Path for Conveyor Belt



- b) Bring the belt together so the lacing intermeshes, and slide the rod or wire through the lacing as shown in [Figure 7-95](#).

Figure 7-95: Connecting Wire on Belt

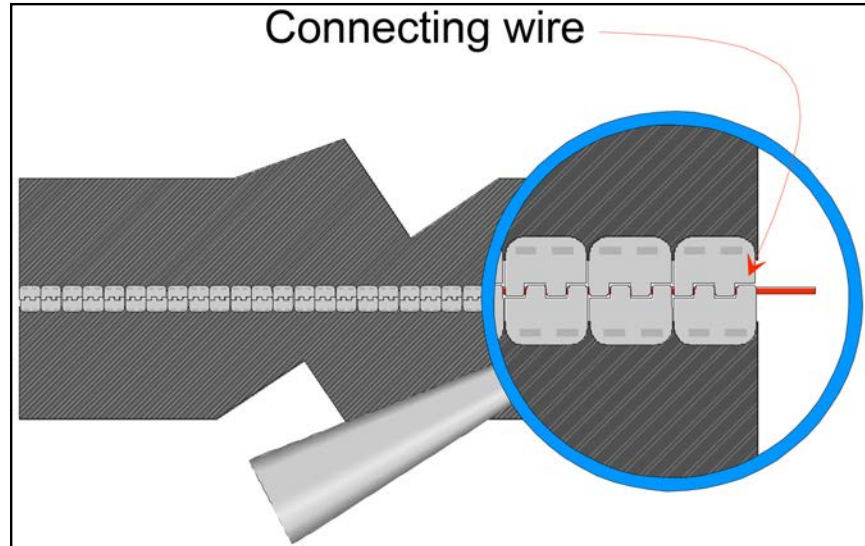
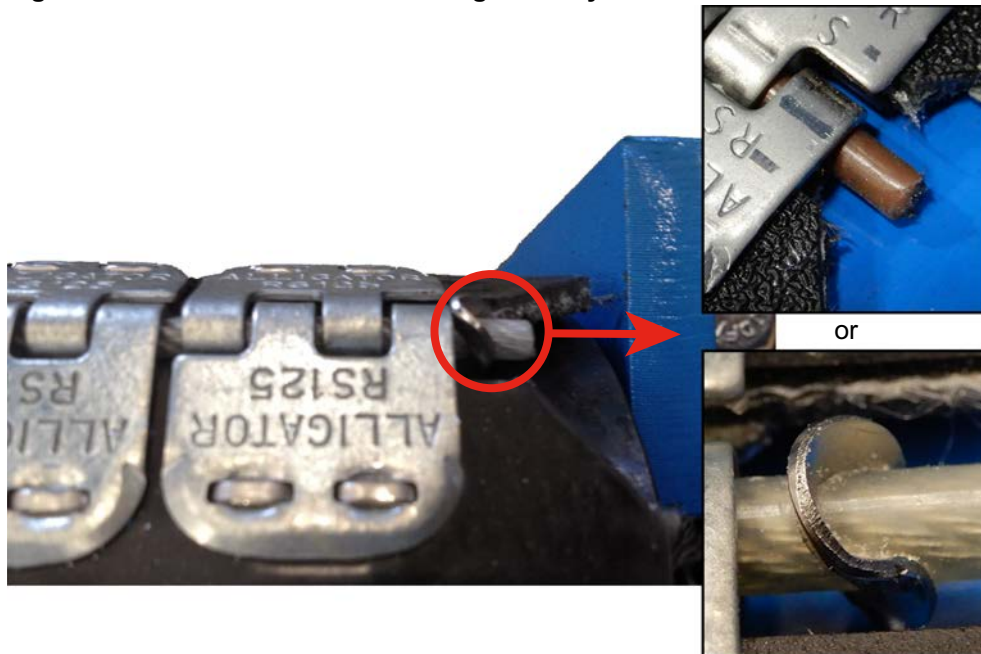


Figure 7-96: Two Different Connecting Wire Styles



6. Adjust the belt tension evenly at the head roller adjusting bolts. See [Adjusting Waste Conveyor Belt Tension on page 142](#).
7. Run the conveyor for at least 5 minutes and check the belt tracking. If the belt does not track correctly, follow the instructions on [Adjusting Waste Conveyor Belt Tracking on page 142](#).

TROUBLESHOOTING

Navigating the Troubleshooting Appendix

The troubleshooting appendix is divided into tables according to system of the *BLADE* saw that is experiencing problems. See Table 8-1 for a list of systems.

Table 8-1: Troubleshooting by System





System	Page
Mechanical	189
Pneumatic	194
Electrical and Software	196

If you have reviewed the information in the [Maintenance](#) chapter and this chapter but have not solved your problem, please call MiTek Automation Support for assistance.

Getting Started with Troubleshooting

Safety Notes for Troubleshooting

Read the safety section starting on page 1. The safety test procedures in the safety section **MUST** be performed by qualified personnel after ANY maintenance, adjustment, or modification. Note these safety reminders:

	 WARNING
	<p>ELECTROCUTION, HIGH PRESSURE, CRUSH, CUT, AND CHEMICAL HAZARDS</p> <p>Read this section AND the safety section in the preliminary pages before operating or maintaining this equipment.</p> <p>Do not operate this machine until you have a thorough understanding of all controls, safety devices, E-stops, and operating procedures outlined in this manual.</p> <p>Read and observe all hazard instructions. Failure to do so may result in economic loss, property damage, and/or personal injury.</p> <p>This manual must always be available to personnel operating and maintaining this equipment.</p>
	 CAUTION
	<p>Always lockout/tagout unless it is absolutely necessary to have an energized machine for troubleshooting.</p> <p>This icon indicates that you must lockout/tagout at the appropriate disconnect switch using approved methods described in OSHA CFR 1910.147 before continuing with the procedure. In the absence of this icon, it is still your responsibility to lockout/tagout when possible.</p> <p>If it is absolutely necessary to troubleshoot an energized machine, follow NFPA 70E for proper procedures and personal protective equipment.</p>

Tools Required

When the toolbox shown in the margin appears, you should gather the tools listed below it before beginning the procedure next to which it appears.

Before beginning the troubleshooting process or calling MiTek Machinery Division Customer Service, gather the following tools:

- Insulated slotted screwdriver
- Insulated Phillips screwdriver
- Equipment manual and drawings, including any electrical schematics
- Pen and notepad
- Multimeter

A multimeter is an electronic measuring instrument. The analog versions were referred to as a volt-ohm-meter (VOM). Digital models are referred to as digital multimeters (DMM). Your multimeter should have the following features:

- Voltage (volts) measurement
 - Resistance (ohms) measurement
 - Current (amps) measurement
 - Ability to measure both AC and DC power
 - Autoranging feature
- PPE as required by NFPA 70e

First Steps

Mechanical Troubleshooting

Always clean and lubricate the equipment as a first step in most troubleshooting processes. Most mechanical malfunctions are caused by inadequate preventive maintenance.


Electrical Troubleshooting



1. Lockout/tagout at the disconnect switch located on the equipment.

	NOTICE
	<p>Never use compressed air inside an electrical enclosure. It may force contaminants into electrical connections.</p> <p>Use a vacuum to remove dust from electrical enclosures. Canned air is acceptable after vacuuming.</p>

2. Vacuum and dust the electrical enclosure.
3. Remove the lockout/tagout equipment and attempt to run the *BLADE* saw again. If that did not solve the problem, proceed with the next step.
4. Adhere to all regulations and guidelines given in NFPA 70e and in your company's energy control program.

	 WARNING
	<p>ELECTRICUTION HAZARD.</p> <p>All electrical work must be performed by a licensed electrician.</p> <p>If it is absolutely necessary to troubleshoot an energized machine, follow appropriate guidelines.</p>

5. Determine where the electrical problem begins. To do this, you need a multimeter.
 - Determine if you are working with AC (alternating current) or DC (direct current) before checking voltage.
 - Measure incoming and outgoing voltage to and from components. Proceed in a logical order determined by your machine's specific problem, and write down the order that you check each component and the amount of voltage that the multimeter registers.

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Mechanical Problems and Solutions

Problem	Possible cause	Possible solution	Page
Angle: Straight cuts come out the correct length, but my angled parts are off.	Calibration needed	Run auto calibration on the angle and elevation.	92
Auto Deck: Auto Deck not advancing the board correctly onto the load arms	Sensor issue	Adjust the location of the Auto Deck Board sensor.	166
Auto Deck: Auto Deck load arms are not moving down far enough to accept lumber.	Alignment issue	Adjust the entire square tube that holds the load arms by loosening the hex nut.	
Auto Deck: Lumber catching on load arms and not feeding onto Infeed Rail correctly	Auto Deck chain is loose	Tighten the Auto Deck chain tension.	139
Auto Deck: More than 1 board is being loaded onto the Infeed Rail at a time.	Too many boards, not using lumber stops	The Auto Deck may be overcrowded. Remove excess boards. Use the lumber stops to limit the number of boards being indexed.	85
	Sensor issues	Adjust the Auto Deck Board sensor position.	166
Axis: An axis is not moving	Accumulation of dust and debris, machine not cleaned regularly	Clean equipment at intervals recommended in maintenance checklist	211
	Obstruction	Look for wedges, fallen tools, or other parts impeding movement of the machine	
	Cable / connector issue	Check for secure connection of all related cables	
	Lubrication needed, machine not lubricated regularly	Lubricate equipment at intervals recommended in maintenance checklist	211
Axis: Stroke axis error state	Calibration needed	Calibrate stroke axis	92
	Stroke travel bottoming out	Set minimum position to 1.25 in Detailed Diagnostics screen.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Board: No board was detected during the measuring process.	Gripper issue	Check that the board is properly clamped in the gripper	
	Calibration needed	Calibrate gripper, and let saw measure again, checking that board is in gripper properly	92
	Correct length wasn't entered in software	Enter correct length	
	Leading edge sensor did not activate	Try adjusting the Leading Edge Sensor (emitter or receiver) in Tools > Options > Saw > Edge Detector Beam Sensor	
Board: My straight cuts come out the correct length, but my angled parts are off. The actual angle is not what the screen is telling me I should have.	Incorrect elevation value	Cut a type 2 part with a 45 degree angle from the Key In Parts screen. Increase the elevation value by amount that you are short or vice versa.	80
	Calibration needed	Check the angle calibration and recalibrate if necessary.	92
Board: The last part of my board is always short but the blade was making a trailing cut.	The main regulator is not set to the correct pressure	Set the main regulator to 110 psi and verify the saw is consistently receiving 110 psi	152
	LASM teeth wear	Replace the LASM teeth if showing wear.	147
	LASM inches per count issue	Check the LASM inches per count through auto-calibration.	92
Board: The length for the last part on my board is wrong.	Insufficient pressure	Check the last part on the board. There should be a mark from where the gripper clamped onto the board if the end of the board was cut square. If there is any indication of the board slipping (ex: a long scrape mark), the gripper clamp pressure may need to be increased.	151
	Calibration needed	The gripper home position is incorrect. Auto-calibrate the gripper.	92

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Board: I am getting random lengths off by 1/8" up to 1"	Calibration needed	Verify the gripper and LASM home positions and inches per count by running auto-calibration.	92
	Insufficient pressure	The gripper or LASM may be slipping. Check that the regulators are set correctly.	151
	LASM teeth wear	Replace the LASM teeth if showing wear.	147
Collision: Receiving frequent messages that saw blade will contact LASM in Auto Mode.	Incorrect LASM Max Position value	Check that the LASM Max Position is set to 12 inches (305 mm) or higher.	
	LASM misalignment	Check that LASM is aligned properly: Notch in center of LASM should align with saw blade when LASM is at 0 position.	100
E-stop: Pull cord activates itself or will not reset	Accumulation of dust and debris	Blow dust out of sensor with canned air and check cable connections.	
	Pull-cord misalignment	Check alignment (centering) of pull-cord switch.	175
Gripper: My parts are off roughly 3/8 of an inch consistently.	The belt has jumped a cog on the pulley.	Calibrate the gripper.	92
	The white gripper timing belt may be set too loose.	Re-tension the belt.	140
Gripper: The gripper is hitting an obstruction when none can be seen.	The gripper is hitting the infeed side clamp rollers.	Adjust the position of the infeed side clamp rollers	150
	Tight spots in the gripper belt.	Manually move the gripper to find tight spots in the belt.	173
Gripper: When the gripper goes back to accept the maximum length board the gripper jams. (Or the wood lands on top of the gripper assembly.)	Calibration needed	Check the gripper home position, counts per inch, and maximum position by running auto-calibration.	92

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Gripper: Gripper won't move.	Obstruction	Clear obstructions	
	Accumulation of dust and debris on Infeed Rail	Clean Infeed Rail	211
	Linear guide bearing lubrication needed	Linear guide bearings may not be properly working. Check lubrication and physical condition of bearing block and rails. Replace bearing block if uncertain of age.	129
	Error state	Check the status banner for error states and address	72
Gripper: Receiving home Z pulse errors.	Calibration needed	Calibrate the gripper.	92
	Gripper motor coupling is loose	Check torque values for gripper motor	111
	Gripper belt tension	Check the tension of the white gripper timing belt	140
	Miscellaneous	If needed: <ol style="list-style-type: none"> 1. Remove the white gripper timing belt. 2. Check linear bearings to ensure the entire assembly is not sagging. 3. Remove the screws holding the gripper to the bearings. 4. Add thread adhesive (<i>Loctite</i>) and install the screws back in place. 5. Adjust gripper home sensor air gap to 1/32". 6. Calibrate gripper again. 	
LASM: Saw blade cut through the LASM jaw.	Miscellaneous	Contact Automation Support immediately	46
Lumber Feeding: Lumber clips the saw entrance ramp	Infeed Rail lumber surface is below the entrance ramp.	Level the Infeed Rail to the saw.	
Lumber Feeding: Lumber not entering saw chamber straight	Gripper and LASM misalignment	Ensure Gripper finger is in the same plane (straight with) the LASM fixed jaw for the Infeed Rail's entire length.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Outfeed: Outfeed chain binding	Obstruction	Look for broken bolts or plastic obstructing the chain.	
	Lumber exit chain tension	Check lumber exit chain tension.	138
Skewed Conveyor: Skewed conveyor rollers slow to reach full speed.	Skewed conveyor belt is loose	Tighten skewed conveyor belt	137

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Pneumatic Problems and Solutions

Problem	Possible cause	Possible solution	Page
Air: My saw keeps shutting off saying that I don't have enough air pressure.	The main regulator is not set to the correct pressure	Set the main regulator to 110 psi and verify the saw is consistently receiving 110 psi	152
	The pressure sensor is not set the correct minimum pressure	Set the pressure sensor to 75 psi	155
	Part failure	Replace pressure switch, regulator, or seals in filter/regulator assembly	
	Customer air supply not sufficient or functioning properly	Work with Automation Support and vendor to troubleshoot issue	
Clamp: Infeed side or top clamp is not working.	Obstruction	Check for obstructions.	
	Insufficient pressure	Check system pressure (main regulator) and secondary regulator for clamp to ensure correct air pressure.	151
	Shock absorber issue	Check the shock absorber and tighten or replace as needed.	148
	Coil issue	Determine if coils are working by checking LEDs on coils as you clamp and unclamp.	
	Incorrect sensor placement	Fully Clamped Sensor may be activated too early if not positioned correctly. Reposition the sensor.	
	Linear guide bearing lubrication needed	Linear guide bearings may not be properly working. Check lubrication and physical condition of bearing block and rails. Replace bearing block if uncertain of age.	129
Clamp: LASM unclamp times out and displays error	Incorrect sensor positioning	Check position of the extend and retract sensor on actuator. Tighten all bolts.	166
Printer: No printout and no clicking sound heard from head during printout.	Power issue	Ensure the print controller is receiving power and that it is enabled in the software.	
	Cable / connector issue	Ensure print head cable is connected.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Printer: No printout or poor printout quality but clicking sound is heard from head during printout.	Tubing issue	Ensure hose from ink bottle is connected and ink bottle is full. Check hose for blockage.	
	Software issue	Dot size must be within acceptable range.	122
	Printer hardware	Clean or replace ink filter.	
	Air pressure setting	Verify printer regulator is set to 12 psi	151
Printer: Print head won't print	Miscellaneous	Check ink supply, clean nozzle, purge and flush, and check clogs in line.	121
	Cable / connector issue	Check gripper encoder and cable.	
Printer: My printing has a blank line through the middle of it. It's not printing properly	Standard maintenance needed	Flush and clean the printers.	121

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Electrical and Software Problems and Solutions

Problem	Possible cause	Possible solution	Page
Auto Deck: Auto Deck is not running	VFD Issue	Check the Auto Deck's variable frequency drive (VFD) to see if its in remote mode or displaying other errors. The VFD is located in the control panel on the Auto Deck. Check the wires from the motor to the VFD.	
Auto Deck: Auto Deck VFD Error	Chain tension may be too tight	Loose auto deck chain tension	139
Outfeed: Outfeed timeout failure state	Obstruction	Short Wedges may be stuck between the two outfeed rollers. Remove and retry.	
	Miscellaneous	<p>Adjust the outfeed clamping roller sensor.</p> <p>Align and/or tighten the lumber exit chain.</p> <p>If the problem persists, the following tips will help further troubleshooting:</p> <ol style="list-style-type: none">1. When a board is clamped, the lights on both sensors (extend and retract) should be off.2. When the clamping rollers are at full extend (without wood), the light on the extend sensor should be on. <p>When the clamping rollers are fully retracted only the retract sensor light should be on.</p>	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Sensor: Sensor faults	Faulty wiring, loose connections	Check for faulty wiring and make certain all connections are secure	
	Sensor not properly aligned	Properly adjust sensor	
	Sensor covered by dust, machine not cleaned regularly	Clean equipment at intervals recommended in maintenance checklist	211
	Inadequate dust collection system	Install adequate dust collector	
Sensor: CLS not working	Miscellaneous	<p>Check that the housing and bracket are in good condition to protect the CLS and keep it in place.</p> <p>Check that the CLS cable is securely connected.</p> <p>Check the CLS positioning.</p> <p>Check that CLS is receiving power and sensor is working (check positioning first).</p> <p>Check that the CLS and elevation are communicating.</p>	168
Sensor: Loss of encoder error state	Encoder and coupler contact	Adjust the in/out adjustment bolts to prevent the encoder from making contact with the coupler.	
Sensor: Sensor is not working or component controlled by a sensor is not responding properly	Miscellaneous	Refer to the systematic troubleshooting procedure.	166
Sensor: Component timing out.	Sensor issue	Check location of extend and retract sensors.	161
Software: Software button or field is grayed out	Incorrect mode selected	Check that the Auto/Manual switch is in the correct position.	
	Miscellaneous	Carry out quick software troubleshooting	83

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software: Some status indicators are red	Software issue	Click on red indicator and check if bottom menu item says Enabled Not Homed or Enabled Homed. After homing the system, it should say Enabled Homed. If not, investigate obstructions, lubrication, and other mechanical reasons.	
	Software issue	Select CLEAR ERRORS on Toolbar.	
	Software issue	Select HOME SYSTEM on Toolbar.	
Software: Visualize screen is not working.	Software issue	Open Diagnostics > Visualize screen prior to pressing the START CUTTING button.	
Software: Lumber is not feeding after pressing START CUTTING.	Software issue	Check to see if START CUTTING button has yellow banner reading AIR CUT across it. If so, go to Diagnostics menu and remove the check mark next to Air Cut .	
	Sensor issue	Check for Auto Deck errors, specifically if Autodeck Lumber sensor is detecting board.	166
Software: Saw is in Waiting for Printer Trigger state.	Software issue	Select Abort Cutting Sequence on the Diagnostics ribbon. Do NOT adjust trigger status in Detailed Diagnostics —it will cause the printing sequence to be out of order.	
Software: Cutting sequence is out of order.	Software issue	May happen if the printer trigger state is changed in Detailed Diagnostics . For now, abort cutting sequence and start the job over at the right place. To prevent in future: When you receive the saw status Waiting for Printer Trigger , use the Abort Cutting Sequence button on Diagnostics ribbon.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software: Software indicates that the stock lumber is too short, but I measured the lumber and it is the correct length	Gripper home position issue	<ol style="list-style-type: none"> 1. Before the next board is run during a job, measure and record the length of the next board to be cut. 2. Calibrate the Gripper home position and re-cut the board using a new piece of lumber. If the problem is not resolved, continue to step 3. 3. Make sure that the Actual Length field corresponds with measured length. If the numbers don't correspond, change the Edge Detector Photo Eye value in Tools > Options > Saw by the amount the board measures off. 4. If the board measures short, decrease the measurement for the sensor position. 	92
Software Error: AutoDeck Error002	Board not on sensor	Adjust the Auto Deck board sensor (for load arms) and check connections	
Software Error: AutoDeck Error003	Air cylinder out of position	<p>Indicates the Auto Deck pusher is not working. It may be caused by:</p> <ul style="list-style-type: none"> • Damaged Auto Deck Pusher Extend/Retract sensor is damaged or location needs to be adjusted • Mechanical obstruction • Inspect for other reasons the pusher is not retracted when it should be 	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: AutoDeck Error004 or Error005	Pusher home position (or pushed position) sensor not seen	Indicates the Auto Deck Pusher Retract (for 004) or Extend (for 005) sensor is not working. It may be caused by: <ul style="list-style-type: none"> • Sensor is damaged or location needs to be adjusted • Mechanical obstruction • Inspect for other reasons the sensor may not be working 	
Software Error: AutoDeck Error006 or Error007	Pusher failed to move from home position (or from pushed position)	Pusher is not getting off the Auto Deck Pusher Retract (for 006) or Extend (for 007) sensor soon enough. It may be caused by: <ul style="list-style-type: none"> • Low air supply pressure • Air valve coil is damaged • Mechanical obstruction 	
Software Error: AutoDeck Error008	Invalid air cylinder sensor condition	Pusher is not on either the Auto Deck Pusher Retract nor the Extend sensor. It may be caused by: <ul style="list-style-type: none"> • Sensor is damaged or location needs to be adjusted • Mechanical obstruction • Inspect for other reasons the sensor may not be working 	
Software Error: AutoDeck Error010	No board after initialize	Auto Deck Lumber sensor did not trip after chains ran during initialization. Replace sensor.	
Software Error: AutoDeck Error011	No board after stage	Check operation of Auto Deck Lumber sensor.	
Software Error: AutoDeck Error013	Time out during load	Check operation of Auto Deck Lumber sensor.	
Software Error: AutoDeck Error014	Command other than initialize received	Clear errors and restart the cutting process.	
Software Error: AutoDeck Error015	Command other than stage received	Clear errors and restart the cutting process.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: CalError General001	No Air Pressure	Check air supply to saw, air regulator setting, and pressure switch setting. Clean pneumatic filter.	
Software Error: CalError General002	Saw Not Retracted	Stroke Home sensor is not sensing that the stroke completely retracted. Inspect the Stroke Home sensor for: <ul style="list-style-type: none"> • Damage or location needs to be adjusted • Mechanical obstruction • The need to reset home offset and calibrate the stroke 	
Software Error: CrookedLumberSensor Error002	Unsteady output	Check connection to CLS sensor. Check CLS alignment and bracket location.	
Software Error: CrookedLumberSensor Error003	Out of range	Calibrate CLS, and check temperature probe.	
Software Error: DGN0001	Moving this servo axis while the saw stroke is extended may result in damage to the saw. Do you want to continue?	Retract the stroke.	
Software Error: DGN0002	The saw blade may contact the LASM! Damage to the saw may result. Do you wish to continue?	Verify clearance of LASM and move LASM to safe position.	
Software Error: DGN0003	The saw motor may contact the LASM because the LASM jaw is open! Damage to the saw may result. Do you wish to continue?	Verify clearance of LASM and move LASM to safe position.	
Software Error: ENG0029	Maximum number of retries occurred while sending {0} on Com {1} to the printer controller.	Check connections at print controller/Moxa converter.	
Software Error: GripperClampError002	Time out clamping	When clamping on the board, the Gripper Unclamped sensor is not uncovered after 2 seconds. Check board feeding and gripper mechanics.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: GripperClampError003	Time out unclamping	When unclamping, the Gripper Unclamped sensor is not covered after 2 seconds. Check board feeding and gripper mechanics.	
Software Error: GripperClampError004	The board is not against the gripper face. Before selecting <i>Retry</i> , the board must be against the gripper face. Perform the following steps before executing <i>Retry</i> : 1. Switch to Manual mode 1. On the status bar select Clamps - Unclamp All 1. Push the board back against the gripper 1. Switch to Auto mode 1. Select <i>Retry</i>	Follow instructions in message. If problem happens frequently, observe the load process to determine where the issue is.	
Software Error: InfeedRail Error002	The board in the machine is too short. Select <i>Continue</i> to continue cutting or <i>Stop</i> to end the cutting process.	Check the board is the required length. If so, calibrate the gripper.	
Software Error: InfeedRail Error003	No board was detected during the measuring process.	Verify that the correct length board was loaded. If so, observe the loading process to determine the loading issue.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: InfeedRail Error004	The end of the board uncovered the board beam sensor at a different location than the stored position. This most likely means the gripper servo axis is out of calibration. Click Ignore to ignore this message or Stop Cutting to end the cutting process at the end of the current board. Stopping the cutting process will reset the stored position to the new position. It is recommended that the cutting in process be stopped and the gripper Home Position calibration be checked by using: Tools > Calibration > Gripper .	To reset the EngSawConstants.GripperStoredCalibrationCheckCount to an initialized value of -1, <u>one</u> of the following operations needs to happen: <ul style="list-style-type: none"> • Click the STOP button on the error message. • Calibrate Gripper Home Offset • Calibrate Gripper Home Offset and Counts Per Inch calibration • Calibrate All Home Position Once the stored value is set to -1, the next time the end of the board uncovers the thru-beam sensor while cutting, the saw computer will set this position as the new stored value.	
Software Error: LasmClamp Error002	Timed out clamping	Check air supply to saw, air regulator setting, and pressure switch setting. Clean pneumatic filter. LASM Unclamped sensor is damaged or location needs to be adjusted. Check for mechanical obstruction.	
Software Error: LasmClamp Error003	Timed out unclamping	When clamping on the board, the Gripper Unclamped sensor is not uncovered after 2 seconds. Check board feeding and gripper mechanics.	
Software Error: LasmClamp Error004	Unexpected full clamp	The LASM clamped all the way closed when it was expected to clamp onto lumber. Determine why board is not feeding into saw chamber properly.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: LoadArmError002	Timeout moving up while on down sensor	The load arms have been told to move up, but they never came off the Load Arm Down sensor. Check signal to air cylinders and couplings to load arms.	
Software Error: LoadArmError003	Timeout moving up	The load arms never saw the up sensor while being told to lift, but did come off the Load Arm Down sensor. Check that the up sensor is working and no jam has occurred.	
Software Error: LoadArmError004	Timeout moving down while on up sensor	The load arms have been told to move down, but they never came off the Load Arm Up sensor. Check signal to air cylinders and couplings to load arms.	
Software Error: LoadArmError005	Timeout moving down	The load arms never saw the down sensor while being told to drop but did come off the Load Arm Up sensor. Check up sensor is working and no jam has occurred.	
Software Error: LoadArm Error006	Board removed from load arms unexpectedly	Board sensor (load arms) sensor is damaged or location needs to be adjusted	
Software Error: Machine Error001	No air pressure	Check air supply to saw, air regulator setting, and pressure switch setting. Clean pneumatic filter.	
Software Error: MachineError002	Saw stroke is not retracted (not on the home sensor)	Follow on-screen instructions. The stroke is not retracted when the machine requires it to be.	
Software Error: MachineError008	The infeed board through beam sensor is blocked after clearing the saw	The board beam sensor located by the print heads is blocked when it should not be, indicating there is either an obstruction or an issue with the sensor, cabling, or PLC.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: MachineError010	The bevel is not square before the saw stroke	The bevel is required to be square before the saw strokes unless the PC allows it not to be. The home sensor is used to know if the bevel is generally square.	
Software Error: MachineError011	The saw blade not running at velocity	The saw blade is either not running or running at a velocity lower than it should be.	
Software Error: MachineError014	The stroke is not on the home sensor after a Home System was performed. If the stroke does not currently have an error, it is most likely that the stroke home offset is incorrect.	To reset the stroke home offset go to Diagnostics > Detailed Diagnostics > Stroke and click the Home Offset RESET button. Follow the on-screen instructions.	
Software Error: MachineError015	The bevel is not on the home sensor after a Home System was performed. If the bevel does not currently have an error, it is most likely that the bevel home offset is incorrect.	To reset the bevel home offset go to Diagnostics > Detailed Diagnostics > Bevel and click the Home Offset - Reset button. Follow the on-screen instructions. The bevel is required to be square after homing. The home sensor is used to know if the bevel is generally square. This is a basic calibration check.	
Software Error: MachineError016	The LASM lockout sensor was unexpectedly covered during a saw extend	There is a sensor that is centered on the saw blade that the LASM will trip if the LASM position is plus or minus about 4 inches. If this sensor is tripped and the software has not allowed it to be tripped, this error will show.	
Software Error: Outfeed Error002	Time out clamping	Check air supply to saw, air regulator setting, and pressure switch setting. Clean pneumatic filter. Outfeed Unclamped sensor is damaged or location needs to be adjusted	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: OutfeedError 003	Timed out unclamping	When unclamping, the Outfeed Unclamped sensor is not covered after 2 second. Check that cylinder is not jammed and is receiving signal to relay.	
Software Error: OutfeedError 004	Unexpected full clamp	The outfeed clamp clamped all the way closed when it was expected to clamp onto lumber. Determine why board is not exiting saw chamber properly.	
Software Error: Outfeed Error005	Timed out running until empty	Outfeed Unclamped sensor is damaged or location needs to be adjusted Inspect outfeed chain for wear	
Software Error: PMG0005	The machine is not in an appropriate state for cutting.	If the servos are not ready or the machine is not in the ready homed state when trying to start cutting.	
Software Error: PMG0006	The saw stroke will not be executed because the blade will intersect with the LASM.	The software generates this error when calculating the data before sending the data to the PLC.	
Software Error: PMG0010	The rip bevel angle specified is out of range. Rip Angle = {0} Valid range = 0 - 56.	The software generates this error when calculating the data before sending the data to the PLC.	
Software Error: SawBlade Error2310	Output current exceeds trip limit.	The saw motor is using more current than it should. The saw blade is binding or the power cable is shorting.	
Software Error: SawBlade Error4110	Control board temperature is above 88°C.	The VFD control board temperature is too high.	
Software Error: SawBlade Error4210	Drive IGBT temperature is excessive	The VFD motor drive circuitry temperature is too high. The saw motor may be experiencing high loads such as a dull saw blade.	
Software Error: SawBlade Error4290	Converter module temperature is excessive.	The VFD motor drive circuitry temperature is too high.	
Software Error: SawBlade Error7112	Brake resistor overload	The saw blade braking resistor is being overloaded. The deceleration parameters may be set incorrectly.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: ServoError 05B	Drive disabled, axis motion not possible. The servo may be encountering an obstruction. If this servo is contacting the stop at either end of travel, calibrate the Home Offset for this specific servo only using <i>Tools>Calibrate>[this servo]>Home Position</i> .	Check for obstructions. Calibrate axis	
Software Error: ServoError 0D1	Over current condition	Check for obstructions. Calibrate axis	
Software Error: ServoError 264	Position was no longer valid (Position Valid axis status bit is off). The servo may be encountering an obstruction. If this servo is contacting the stop at either end of travel, calibrate the Home Offset for this specific servo only using <i>Tools>Calibrate>[this servo]>Home Position</i> .	Check for obstructions. Calibrate axis	
Software Error: ServoError 300	Timeout while waiting for power feedback from the amplifier	Check safety modules.	
Software Error: SideClamp Error002	Timed out clamping	When clamping on the board the Side Clamp Unclamped sensor is not uncovered after 2 second. Check cylinder is not jammed and is receiving signal to relay.	
Software Error: SideClamp Error003	Timed out unclamping	When unclamping the Side Clamp Unclamped sensor is not covered after 2 seconds. Check that cylinder is not jammed and is receiving signal to relay.	
Software Error: SideClamp Error004	Unexpected full clamp	Side Clamp Fully Clamped sensor is damaged or location needs to be adjusted.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: SRV0004	The {0} servo was requested to move to {1} {2} which is out of range. The limits are {3} to {4} {2}. If the machine is processing parts, the saw cannot process this part. Reject the board with this part and re-start the machine.	Calibrate axis. Verify minimum and maximum positions.	
Software Error: SRV0006	The saw has detected a possible out of calibration situation on the {0} axis. It is recommended to calibrate the {0} home offset using <i>Tools>Calibrate</i> .	Calibrate axis.	
Software Error: SRV0007	{0} servo has timed out during a move or cycle.	Home sensor for indicated axis is damaged or location needs to be adjusted. Check for mechanical obstruction.	
Software Error: SRV0011	{0} servo has encountered an obstruction. If this servo is contacting the stop at either end of travel, calibrate the Home Offset for this specific servo only using <i>Tools>Calibrate>[this servo]>Home Position</i>	Check for mechanical obstruction. Calibrate axis.	
Software Error: TopClamp Error002	Time out moving down	When moving the clamp down onto the board, the operation didn't complete after 4 seconds. Check cylinder is not jammed and is receiving signal to relay.	
Software Error: TopClamp Error003	Time out moving up	The top clamp took longer than it should have when moving up.	
Software Error: TopClamp Error004	Lumber sensor blocked when sent to ready	The board beam sensor located by the print heads is blocked when the ready command is sent. The ready command moves the top clamp down when the board beam sensor is broken.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: TopClamp Error007	Unexpected full clamp	The top clamp attempted to clamp a board but no board was present.	
Software Error: OutfeedVFD Error0001	Output current exceeds trip limit.	Most likely a physical jam. Clear the obstruction.	
Software Error: OutfeedVFD Error0004	Short-circuit in motor cable(s) or motor.	Replace cable and/or motor.	
Software Error: OutfeedVFD Error0012	Motor is operating in stall region due to e.g. excessive load or insufficient motor power.	Most likely a physical jam. Clear the obstruction.	
Software Error: OutfeedVFD Error0034	One of motor phases is lost due to fault in motor, motor cable, thermal relay (if used) or internal fault.	Repair/replace parts listed as necessary.	
Software Error: OutfeedVFD Error0044	STO (Safe torque off) requested and it functions correctly.	An E-stop has been requested and the dual circuit channels opened properly.	
Software Error: OutfeedVFD Error0045	STO (Safe torque off) input channel 1 has not de-energized, but channel 2 has. Opening contacts on channel 1 might have been damaged or there is a short-circuit.	When an E-stop was initiated, only 1 of the 2 channels opened properly, the circuit that did not open may be shorted or a contact welded.	
Software Error: OutfeedVFD Error0046	STO (Safe torque off) input channel 2 has not de-energized, but channel 1 has. Opening contacts on channel 2 might have been damaged or there is a short-circuit.	When an E-stop was initiated, only 1 of the 2 channels opened properly, the circuit that did not open may be shorted or a contact welded.	
Software Error: WasteConv VFDError 0001	Output current exceeds trip limit.	Most likely a physical jam. Clear the obstruction.	
Software Error: WasteConv VFDError 0004	Short-circuit in motor cable(s) or motor.	Replace cable and/or motor.	
Software Error: WasteConv VFDError 0012	Motor is operating in stall region due to e.g. excessive load or insufficient motor power.	Most likely a physical jam. Clear the obstruction.	
Software Error: WasteConv VFDError 0034	One of motor phases is lost due to fault in motor, motor cable, thermal relay (if used) or internal fault.	Repair/replace parts listed as necessary.	

BLADE SAW: TROUBLESHOOTING



Should you lockout/tagout to perform this action safely?

Problem	Possible cause	Possible solution	Page
Software Error: WasteConv VFDError 0044	STO (Safe torque off) requested and it functions correctly.	An E-stop has been requested and the dual circuit channels opened properly.	
Software Error: WasteConv VFDError 0045	STO (Safe torque off) input channel 1 has not de-energized, but channel 2 has. Opening contacts on channel 1 might have been damaged or there is a short-circuit.	When an E-stop was initiated, only 1 of the 2 channels opened properly, the circuit that did not open may be shorted or a contact welded.	
Software Error: WasteConv VFDError 0046	STO (Safe torque off) input channel 2 has not de-energized, but channel 1 has. Opening contacts on channel 2 might have been damaged or there is a short-circuit.	When an E-stop was initiated, only 1 of the 2 channels opened properly, the circuit that did not open may be shorted or a contact welded.	



MAINTENANCE CHECKLIST




Using the Maintenance Checklists

Copy these checklists and place the copies with the *BLADE* saw. Leave the original checklists in this manual for future use.

Checklist
Daily Checklist on page 212
Weekly Checklist on page 213
Monthly / Annual Checklist on page 214

Safety Notes for the Maintenance Checklists

	 WARNING
	<p>CUT AND CRASH HAZARD.</p> <p>Perform the safety tests described starting on page 12 before operating the machine after performing maintenance or repairs.</p>

	 WARNING
 	<p>ELECTROCUTION AND HIGH PRESSURE HAZARDS.</p> <p>Always turn the power off by activating an E-stop when the machine is not operating.</p> <p>Always verify that all power to the machine is off and followed approved lockout/tagout procedures (OSHA 29 CFR 1910.147) before performing any maintenance.</p> <p>Turn off the air switch or shutoff valve if appropriate. Bleed pneumatic lines if appropriate.</p>

BLADE SAW: MAINTENANCE CHECKLIST





Should you lockout/tagout to perform this action safely?

Daily Checklist

Month and year _____

Week of _____

	 WARNING
	<p>Lockout/tagout before performing maintenance.</p> <p>If power is required, make sure all personnel are clear of the restricted zone.</p>

Action	Shift	Page	Initials / Date					
Perform Safety Tests	1	12						
	2							
	3							
Blow off system, including Infeed component, Infeed Rail, lumber exit chain, motor vents, an Outfeed component	1	101						
	2							
	3							
Vacuum stroke/elev. chamber	1	101						
	2							
	3							
Clean printer nozzles (every shift)	1	122						
	2							
	3							
	1							
	2							
	3							
	1							
	2							
	3							
	1							
	2							
	3							



BLADE SAW: MAINTENANCE CHECKLIST



Should you lockout/tagout to perform this action safely?

Weekly Checklist

Year _____

	 WARNING
	Lockout/tagout before performing maintenance. If power is required, make sure all personnel are clear of the restricted zone.

Action	Page	Initials / Date					
Replace saw blade	113						
Inspect linear guide bearing rails for grease	129						
Blow out all motor vents							
Vacuum the electrical enclosure							



BLADE SAW: MAINTENANCE CHECKLIST



Should you lockout/tagout to perform this action safely?

Monthly / Annual Checklist

Year _____

	 WARNING
	<p>Lockout/tagout before performing maintenance.</p> <p>If power is required, make sure all personnel are clear of the restricted zone.</p>

Action	Months (one shift)	Months (two shifts)	Page	Initials / Date			
Check lumber exit chain tension and alignment	1	.5	137				
Check Auto Deck chain tension	12	12	139				
Lubricate Auto Deck chain	12	12	137				
Lubricate Skewed Conveyor chain	2	2	137				
Check all belts for proper tension and tracking	12	12	140				
Lubricate elevation jack screw (2 grease fittings)	3	1.5	113				
Check oil level in all gearboxes	12	6	104				
Drain and change gearbox oil (every 20,000 hours minimum)	48	24	104				
Lubricate skewed conveyor drive wheel bearings	6	3	136				
Replace cooler and main regulator's filter element	24	12	153				
Lubricate saw blade motor bearings (2 grease fittings)	12	6	107				
Lubricate outfeed clamp camfollowers	12	6	133				
Lubricate waste conveyor drive shaft bearings	12	6	134				
Lubricate Auto Deck drive shaft (1 grease 1 fitting per strand)	12	6	135				

BLADE SAW: MAINTENANCE CHECKLIST



Should you lockout/tagout to perform this action safely?

Action	Months (one shift)	Months (two shifts)	Page	Initials / Date			
Check for leaks in all bearings, gearboxes, and motors	12	12					
Inspect all sprockets, replacing any that do not rotate easily.	12	12					
Measure the LASM fixed jaw. It must be at least 1 1/2" thick.	12	6	147				
Check the entire system for loose hardware	12	12					
Clean all metal surfaces with a soft cloth and mild detergent	12	6	102				
Flush the printer lines	1	1	123				

Date	Notes

ORDERING PARTS


Ordering Parts




Use the MiTek web site to locate parts and part numbers, then order them using one of these methods:

By E-Mail
Send an e-mail to mitekparts@mii.com with all relevant information, including the part number.

By Phone
Call 1-800-523-3380.

Safety Notes for Replacing Parts

	NOTICE
	Use only replacement parts purchased from MiTek. Parts from other sources may cause damage to your machine.

	 WARNING
	ELECTROCUTION AND HIGH PRESSURE HAZARDS. Always turn the power off by activating an E-stop when the machine is not operating. Follow approved lockout/tagout procedures (OSHA 29 CFR 1910.147).
	All electrical work must be performed by a licensed electrician. Always verify that all power to the machine is off and followed approved lockout/tagout procedures (OSHA 29 CFR 1910.147) before performing any maintenance. Turn off the air switch or shutoff valve if appropriate. Bleed pneumatic lines if appropriate.

DRAWING SET

Drawings are inserted in the back of the manual or included in a separate binder, depending on the machine.

Description	Drawing Number
Mechanical	
Top Level Assembly	89060-501
Saw Assembly	89061-501
Guards and Covers Assembly	89100-501
LASM Assembly	89160-501
CLS Assembly	89155-501
Waste Conveyor Assembly	89195-901
Infeed Rail Assembly	89200-501
Gripper Assembly	89280-501
Saw Head Assembly	89430-501
Stroke and Elevation Assembly	89435-501
Stroke Angulation Assembly	89435-501
Lumber Exit Assembly	89465-501
Outfeed table	89490-501
Auto Deck 20 (optional)	no drawing
Electrical	
Saw Schematic	90615
Saw Electrical Assembly	90615-501
Saw Electrical Enclosure	90615-502
Operator Interface (PC) Enclosure	90615-507
Auto Deck Schematic (optional)	90626
Pneumatic	
Top and Side Clamp Assembly	89300-501
Assembly	89346-501
Top Clamping Assembly	89360-501
Printer (multiple options)	89460-xxx
Printer schematic (multiple options)	89448-xxx
Outfeed Clamp Assembly	89640-501

GLOSSARY

affected employee	an employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed
angle	the axis that rotates the saw blade
amperage	the strength of an electric current, expressed in amperes
authorized employee	a person who locks out or tags out a machine or equipment in order to perform servicing or maintenance on that machine or equipment; an affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section
Auto Deck	a staging conveyor that feeds lumber to the Infeed Rail
Auto Mode	a staging conveyor that feeds lumber to the Infeed Rail
axis	a main line of direction, motion, growth, or extension; includes angle, bevel, elevation, and stroke; plural is axes
bevel	the axis that cuts on the 4" dimension of a 2x4
board	a specific piece of lumber with specific dimensions required by the saw to cut out specific parts
bow	a curve of the face of a board (3-1/2" surface on a 2x4); the bow points to the side on floor and wall studs
bumper	a small, black rubber shock resistor used throughout the interior of the saw
beacon	a light that displays one of several colors to represent the state of the machine
CLS	Crooked Lumber Sensor; senses when a piece of lumber is crooked and adjust the cut to compensate
connector plate	the nail-plate that is embedded into production material to hold it together
crown	a curve of the edge of a board (1-1/2" edge on a 2x4); the crown points up for floor studs or out for wall studs
disconnect	noun, the handle, often on a machine's main electrical enclosure, that shuts off incoming power at that spot in the electrical system
elevation	the axis that moves the saw blade up and down

BLADE SAW: GLOSSARY

energized	connected to an energy source or containing residual or stored energy
energy isolating device	a mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and in addition, no circuit can be operated independently; a line valve; a block; and any similar device used to block or isolate energy—push buttons, selector switches, and other control circuit type devices are not energy isolating devices
energy source	any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy
gripper	the component on the Infeed Rail that holds the end of the board and pushes it into the saw chamber
infeed component	any component that feeds lumber to the Infeed Rail; usually the Auto Deck staging conveyor or <i>Ranger</i> system
Infeed Rail	the rail that lumber rests on before entering the saw chamber
inventory	in the saw software, inventory is the lumber entered into the software that is available to assign parts to in a job
Job	A group of parts requiring specific boards to be cut
LASM	Lumber Advance Short Move; grabs the board as it enters the saw chamber, and moves it to the outfeed side of the saw chamber, if necessary
layout	a scaled diagram of the location of components and the space that they occupy
leveling screws	used to refer to any structural leg that can be adjusted up or down by a screwing motion
limit switch	an electro-mechanical device that consists of an actuator mechanically linked to a set of contacts; when an object comes into contact with the actuator, the device operates the contacts to make or break an electrical connection
load arms	arms that load lumber from the lumber feed system (Auto Deck or) to the Infeed Rail
lockout device	a device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment, including blank flanges and bolted slip blinds; should be standardized within the facility in at least one of the following criteria: color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized

BLADE SAW: GLOSSARY

lockout/tagout	a means of isolating a piece of equipment from its energy source so maintenance can safely occur; guidelines provided in OSHA 29 CFR 1910.147
lumber	A group of boards or a non-specific board; no consideration given to the final size or shape
lumber exit chain	outfeed chain, part of the outfeed assembly
lumber pusher	on Auto Deck, pushed the lumber onto the Infeed Rail
Lumber Yard	The virtual lumber yard in the saw software that lists lumber available to use and allows the operator to assign each board in a job to a specific lumber in the virtual inventory.
Manual Mode	the mode the saw is in when operating it from the Diagnostics screen
operator interface	the method in which the operator controls the machine; it may be a touch screen, a control panel, etc.
part	A piece of a board, cut to the exact size and shape required for the job
plate	see <i>connector plate</i>
PLC	(programmable logic controller) a solid-state control device that can be programmed to control process or machine operations. It consists of five basic components: processor, memory, input/output module, the power supply, and the programming device.
port	a connection point for a peripheral device
potentiometer	a control knob that is a dial; allows a range of values to be set by turning the dial, commonly found on the PLC
proximity switch	a switch that uses an electromagnetic field to detect when an object is near, there is no physical contact between the object and the switch; inductive proximity switches detect only metal objects, capacitive proximity switches can sense both metallic and non-metallic objects
qualified person	a person or persons who, by possession of a recognized degree or certificate of professional training, or who, by extensive knowledge, training, or experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work—ANSI B30.2-1983; one who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved—NEC2002 Handbook
Ranger	an automated lumber retrieval system that picks the correct lumber (without an operator) and delivers it, in order, to the Infeed Rail
regulator	a component of the pneumatic system that connects to the main air source and regulates the air pressure allowed into the system

BLADE SAW: GLOSSARY

side clamp	roller clamp on infeed side of saw that contacts the face of the lumber
Skewed Conveyor	powered skewed conveyor that integrates with the system to transport and sort the lumber
solenoid	an assembly used as a switch consisting of a coil and a metal core free to slide along the coil axis under the influence of the magnetic field
station	a physical location on a <i>Ranger</i> system
stroke	the axis that moves the saw blade in and out (toward or away from operator)
tagout device	a prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed; should be standardized within the facility in at least one of the following criteria: color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized
tape liner	tape liner provides friction resistance for the seal plate assembly that slides up and down with the elevation axis located inside the stroke/elevation chamber
top clamp	roller clamp on infeed side of saw that contacts the top edge of the lumber; has been called a hold-down
torque	a turning or twisting force
transmitter bar	the light bar that transmits the signal to the receiver bar; every light bar set consists of a receiver bar and a transmitter bar
VFD	(variable frequency drive) controls the speed of a paired motor
voltage	equal to the difference of electric potential between two point on a conducting wire carrying a constant current of one ampere when the power between the points is one watt
wane	a defect in a board where a portion of the wood is missing from the board edge or face
warp	a curve where the face of a board (3-1/2" side on a 2x4); is higher or lower in one spot than on the rest of the board
waste conveyor	a conveyor under the saw blade that transports waste lumber to a waste receptacle supplied by customer

INDEX

A

adjusting system pressure *see* FRL

B

bearings

linear guide 178

bevel

sensors 162

C

calibrating

crooked lumber sensor 168

chains

adjusting tension 137

lumber exit 174

checklists

daily checklist 212

maintenance 211

monthly checklist 214

weekly checklist 213

clamps

outfeed 174

sensors 162

cleaner

replacing 126

cleaning

filter element for cooler 154

CLS 168

communicating with elevation 170

component overviews 173

cooler

filter element 154

corrections *iv*

customer service 46

cylinders

flow control valves 160

D

- door switches 64, 65
- dust extraction 51

E

- elevation
 - communicating with CLS 170
 - felt strips 147
 - sensors
 - safety sensors 162
- e-mail support *see* customer service
- emergency stop *see* E-stop
- errors iv
 - air pressure 155
- E-stop 59
 - perimeter safety cable 175
 - pull-cord 61, 175

F

- felt strips 147
- filter
 - cooler 154
- flow control valves *see* pneumatic system
- FRL
 - adjusting pressure 152
 - replacing filter element 153

I

- import
 - job to saw 86
- important parts *see* component overviews
- indicators on machine 66
- ink 119
 - replacing 126

L

- legal iii
- legal notice iii
- lockout/tagout
 - electrical procedure 7, 8
 - hydraulic procedure 10
 - pneumatic procedure 10

- pneumatic system 152
- procedure 31
- lubrication
 - linear guide bearings 178
- lumber exit chain
 - alignment 174

M

- Machinery Division Customer Service 46
- maintenance
 - checklists 211
- Manual
 - navigation 44
- manual
 - introduction 43
 - understanding 44
- marking restricted zone 57
- monitor
 - second monitor 50
 - specs 51

O

- operation
 - import to saw 86
 - remainders 88
 - stopping 59
- operator interface
 - troubleshooting the basics 83
- outfeed
 - overview 174

P

- part overviews *see* component overviews
- parts list 216
- patents iii
- perimeter safety cable 61, 175
- phone support *see* customer service
- PLC
 - overview 172
- pneumatic filter *see* FRL
- pneumatic system
 - cylinders
 - flow control valves 160
 - removing pressure 152
- pneumatics

- minimum air pressure 155
- pressure switch 155
- printer
 - replacing ink or cleaner 126
 - supplies 119
- programmable logic controller *see* PLC
- pull-cord 61, 175

R

- reducing waste
 - remainders 88
- remainders 88
- replacement parts *see* parts list
- restricted zone 17, 57
- return goods iv

S

- safety
 - during troubleshooting 186
 - general rules 2
 - indicators 1
 - interlocked door switches 64, 65
 - lockout/tagout 6
 - marking restricted zone 17
 - restricted zone 17
 - safety test 36
 - signal words 1
 - symbols 18
 - troubleshooting with energy 10
- safety controller
 - overview 172
- safety regulations 24
- safety signs *see* safety symbols
- safety conformity 24
- saw chamber
 - door switch 64, 65
- second monitor
 - option 50
- sensors
 - CLS 168
 - overview 162
 - sensor gap for prox switches 166
 - troubleshooting the basics 167
- software
 - reject 89
 - reset 89
- spare parts *see* parts list

stop motion *see* E-stop
stroke
 sensors 162
stroke/elevation chamber door switch 64, 65
support *see* customer service

T

troubleshooting
 CLS 168

V

variable frequency drive *see* VFD
VFD
 overview 172
 powered skewed conveyor 176