Wood-Mizer

from forest to final form

user manual

Instrukcja obsługi | Руководство пользователя
Manuel de l'Utilisateur | Betriebsanweisung
Bruksanvisning | Manual del Usuario
Betjeningsvejledning | Gebruikershandleiding
Käyttöohjeet | Manual de utilizare | Bruksanvisning
Manuale d'uso | Příručka uživatele | Navodila za uporabo

Retain for future use
Zachować do przyszłego użytku
Сохраните для последующего использования
A conserver pour une utilisation future
Für zukünftige Benutzung aufbewahren
Behold for senere bruk
Säilytä nämä käyttöohjeet tulevaa tarvetta marten
Opbevar manualen til fremtidig brug
Bewaren voor gebruik in de toekomst
Conservare il presente manuale a l'uso futuro
Păstrați acest manual pentru utilizare viitoare
Conservar para futuras consultas
Behall för framtida användning
Uchovejte pro další použití
Hranite za prihodnjo uporabo

www.wood-mizer.eu

Wood-Mizer®

Safety, Setup, Operation
& Maintenance Manual

WB2000SEH30SHS1-3	**rev.A1.00**
WB2000SEH40SHS1-3	**rev.A1.00**
WB2000MEH30SHS1-3	**rev.A1.00**
WB2000MEH40SHS1-3	**rev.A1.00**

Safety is our #1 concern! Read and understand all safety information and instructions before operating, setting up or maintaining this machine.

May 2014

Form #660

This is the original language for the manual

Table of Contents Section-Page

SECTION 1 INTRODUCTION

Thank you for choosing Wood-Mizer wood processing equipment!

Wood-Mizer is committed to providing you with the latest technology, best quality and strongest customer service available on the market today. We continually evaluate our customers' needs to ensure we're meeting current wood-processing demands. Your comments and suggestions are welcome.

The present documentation contains information that should be used when preparing the machine for operation, working with it and when servicing or repairing it, as well.

1.1 Machine Description

The WB2000 sawmill is intended for sawing wood only. The sawmill must not be used for any other purposes such as cutting ice, metal or any other materials.

Using the machine correctly, you will obtain a material of the highest quality and high degree of accuracy.

The WB2000 sawmill should be operated only by an adult (over 18 year old) who has read and understood the entire operator's manual. The sawmill is not intended for use by or around children.

The machine is built to be durable and easy to operate and maintain.

1.2 Machine and Site Preparation

The sawmill is delivered and installed at customer's premises by the Wood-Mizer Customer Service.

The major components of the WB2000 sawmill are shown in the figure below.

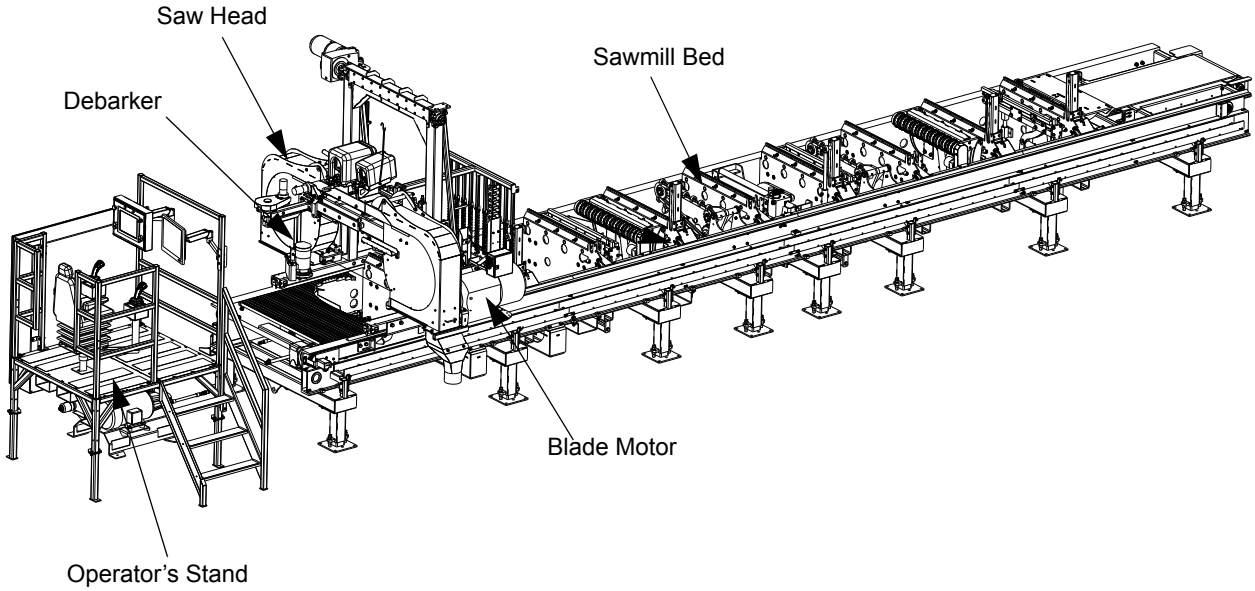


FIG. 1-0

1.3 If You Need To Order Parts

From Europe call your local distributor or our European Headquarters and Manufacturing Facility in Kolo, Nagórna 114 St, Poland at +48-63-2626000. From the continental U.S., call our toll-free Parts hotline at ***1-800-525-8100.*** Please have the machine identification number and your customer number ready when you call. Wood-Mizer will accept these methods of payment:

- Visa, Mastercard, or Discover
- COD
- Prepayment
- Net 15 (with approved credit)

Be aware that shipping and handling charges may apply. Handling charges are based on size and quantity of order. In most cases, items will ship on the day they are ordered. Second Day and Next Day

shipping are available at additional cost.

From the continental U.S., call our toll-free Parts hotline at ***1-800-525-8100.***

1.4 If You Need Service

From Europe call your local distributor or our European Headquarters and Manufacturing Facility in Kolo, Nagórna 114 St, Poland at +48-63-2626000. From the continental U.S., call us toll-free at ***1-800-525-8100.*** Ask to speak with a Customer Service Representative. Please have your machine identification number and your customer number ready when you call. The Service Representative can help you with questions about the operation and maintenance of your sawmill. He also can schedule you for a service call.

Office Hours:

Country	Monday - Friday	Saturday	Sunday
Poland	7 a.m.- 4 p.m.	Closed	Closed
US	8 a.m.- 5 p.m.	8 a.m.- 5 p.m	Closed

SECTION 2 SAFETY

This symbol calls your attention to instructions concerning your personal safety. Be sure to observe and follow these instructions. This symbol accompanies a signal word. The word **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. **WARNING!** suggests a potentially hazardous situation which, if not avoided, could result in death or serious injury. **CAUTION** refers to potentially hazardous situations which, if not avoided, may result in minor or moderate injury to persons or equipment. Read all safety instructions before operating this machine and observe all safety warnings!

Warning stripes are placed on areas where a single decal would be insufficient. To avoid serious injury, keep out of the path of any equipment marked with warning stripes.

Read all safety instructions before operating this sawmill and observe them during operation of the machine! Also read any additional manufacturer's manuals and observe any applicable safety instructions including dangers, warnings, and cautions.

Always be sure that all safety decals placed on the machine are clean and readable. Replace immediately all damaged safety decals to prevent personal injury or damage to the equipment. Contact your local Wood-Mizer dealer, or call Wood-Mizer Customer Service Department to order more decals.

IMPORTANT! It is always the owner's responsibility to comply with all applicable federal, state and local laws, rules and regulations regarding the ownership, operation and towing of your Wood-Mizer sawmill. All Wood-Mizer mill owners are encouraged to become thoroughly familiar with these applicable laws and comply with them fully while using or towing the mill.

Always properly dispose of all sawing by-products, including sawdust and other debris, coolant, oil, fuel, oil filters and fuel filters.

Safety instructions are listed in this section by the following operations:

- Blade Handling,
- Sawmill Setup,
- Sawmill Operation,
- Sawmill Maintenance.

2.1 Blade Handling

DANGER! Always disengage the blade and shut off the sawmill motor before changing the blade. Failure to do so may result in serious injury.

WARNING! Always wear gloves and eye protection when handling bandsaw blades. Changing blades is safest when done by one person! Keep all other persons away from area when coiling, carrying or changing a blade. Failure to do so may result in serious injury.

2.2 Sawmill Setup

WARNING! Securely fasten rails of a sawmill to the floor before operating the sawmill. Failure to do so may result in serious injury or death.

WARNING! The sawmill should be set up on firm, level ground and must be fastened to the ground.

CAUTION! Changes in temperature could cause blade tension changes. Release the blade tension when the sawmill is not in use.

2.3 Sawmill Operation

IMPORTANT! The sawmill is intended for sawing wood only. See Section *5.3 Cutting Capacity* for log size capacities of the machine.

IMPORTANT! The sawmill's operator should get training in operation and adjustment of the machine.

DANGER! Make sure all guards and covers are in place and secured before operating. Failure to do so may result in serious injury.

Be sure the blade housing and pulley covers are in place and secured, and the safety switches located on them are engaged. Use the rubber latches to fasten the blade housing covers shut.

DANGER! Always keep hands away from moving bandsaw blade. Failure to do so may result in serious injury.

DANGER! Keep all persons out of the path of moving equipment and logs when operating the sawmill or loading and turning logs. Failure to do so may result in serious injury.

DANGER! Maintain a clean and clear path for all necessary movement around the mill and lumber stacking areas. Failure to do so may result in serious injury.

DANGER! Always be sure all persons are out of the path of the blade before starting the motor. Failure to do so may result in serious injury.

WARNING! When operating or servicing the machine, always wear eye, ear and foot protection as well as safety clothing. Failure to do so may result in serious injury.

WARNING! Secure all loose clothing and jewelry before operating the sawmill. Failure to do so may result in serious injury or death.

WARNING! Always make sure a log is clamped securely before sawing. Failure to do so may result in serious injury or death.

WARNING! Use ONLY oil specified in Section *5.9 Lube System Specifications* with the blade lube system. Never use flammable fuels or liquids! If these types of liquids are necessary to clean the blade, remove it and clean with a rag. Failure to do so may result in serious injury or death. When cutting in freezing temperatures, use an anti-freeze, non-flammable additive.

CAUTION! Make sure the log handling accessories are below bed level before loading a log onto the bed. Failure to do so may result in machine

damage or cause misalignment.

CAUTION! Before loading a log, make sure the saw head is moved far enough so the log does not hit it. Failure to do so may result in sawmill damage.

CAUTION! Do not try to force the saw head beyond its upper and lower travel limits. Damage to the up/down system may result.

CAUTION! Never clean the blade or the blade wheels with a brush or a scraper during sawmill operation.

CAUTION! Before installation of the blade, inspect it for damage and cracks. Use only properly sharpened blades. Always handle the blade with extreme caution. Use suitable carrier equipment for transporting blades.

CAUTION! When not in use, coil the blade as described in Blade Handbook (WM Form #600). Wipe blade dry and store in a worm, dry place.

CAUTION! If the blade breaks during sawmill operation, the blade motor will be stopped automatically. Wait until both wheels have come to a complete stop before you open the blade housing covers.

CAUTION! Be sure to stop the blade when returning the saw head. This will not only prevent the blade from being pulled off and ruined by a wood sliver, but also will increase the life of the blade.

CAUTION! The sawmill's work-stand should be equipped with a 4 kg or bigger dry powder extinguisher.

CAUTION! If at any time you need to immediately stop the blade motor, press the emergency stop button located on the control box.

CAUTION! Always wear gloves when handling the blade. Never grab the blade with bare hands!

CAUTION! The sawmill should be operated with a sawdust extraction system only.

WARNING! Always wear eye, ear, respiration, and foot protection when operating or servicing the resaw.

WARNING! Always secure the saw head with a chain or a brace before adjusting the up/down chain. The saw head may fall, causing severe injury or death.

WARNING! Always secure the saw head with a chain or a brace before adjusting the saw head guide rollers. The cutting head may fall, causing severe injury or death.

CAUTION! Do not use chain lube. It causes sawdust buildup in chain links.

CAUTION! Due to variations in the vertical mast, the guide roller spacing may vary throughout the travel of the saw head. Check the guide roller spacing at the top and bottom ends of the mast only. Rollers adjusted too tight will cause premature up/down motor failure.

DANGER! Always disconnect and lock out power supply before performing any maintenance work, cleaning or servicing the sawmill!

IMPORTANT! No exchange with a different type of laser is permitted, that no additional optical equipment shall be used.

DANGER! Visible and/or invisible laser radiation. Avoid eye or skin exposure to direct or scattered radiation.

See Table 2-1 Pictographic safety decals placed on the WB2000 sawmill are shown in the table below.

TABLE 2-1

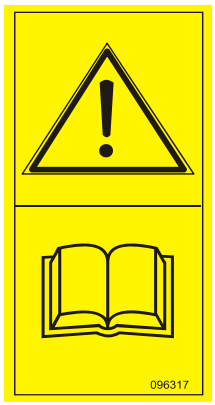
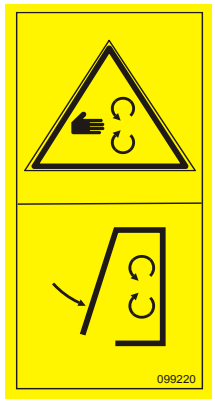
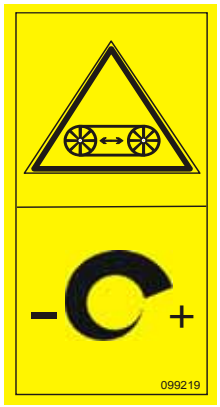
Decal View	Decal No.	Description
	096317	CAUTION! Read thoroughly the manual before operating the machine. Observe all safety instructions and rules when operating the sawmill.
	099220	CAUTION! Close all guards and covers before starting the sawmill.
	099219	Blade tension. Turning the bolt clockwise will increase the blade tension, and turning the bolt counterclockwise will decrease the tension.

TABLE 2-1

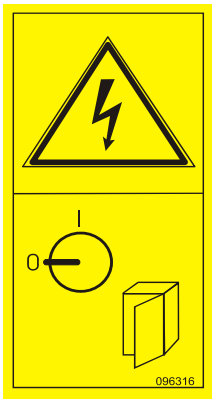
	099221	CAUTION! Keep all other persons at a safe distance from work area when operating the machine.
	098176	CAUTION! Keep a safe distance from the debarker blade!
	096316	CAUTION! Do not open or close the electric box when the switch is not in the ”0” position.

TABLE 2-1

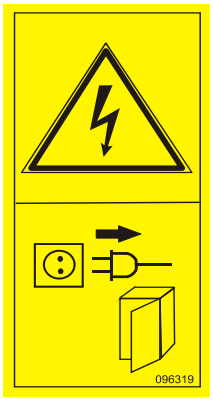
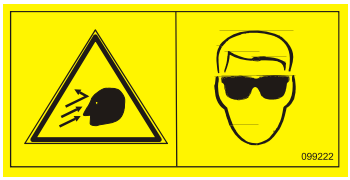
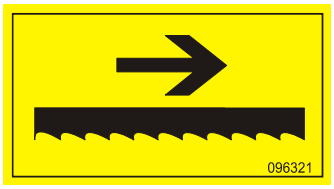
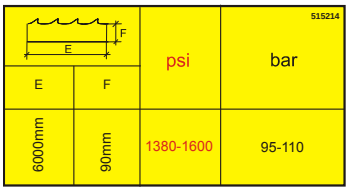
	096319	CAUTION! Disconnect power supply before opening the box.
	099222	CAUTION! Sawdust chute. Protect eyes!
	096321	Blade movement direction
	515214	Blade tension
	S12004G	CAUTION! Always wear safety goggles when operating the sawmill!

TABLE 2-1

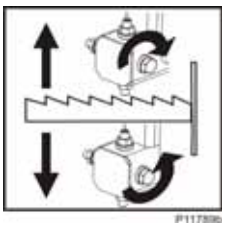
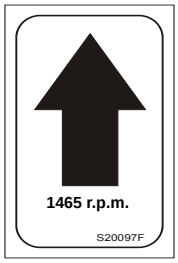
	S12005G	CAUTION! Always wear protective ear muffs when operating the sawmill!
	501465	CAUTION! Always wear safety boots when operating the sawmill!
	501467	Lubrication point
	P11789	Aligning the blade on the wheels
	P85070	CE sign
	099401	Russian safety certification

TABLE 2-1

	S20097F	Motor rotation direction - 1465 r.p.m.

SECTION 3 SETUP & OPERATION

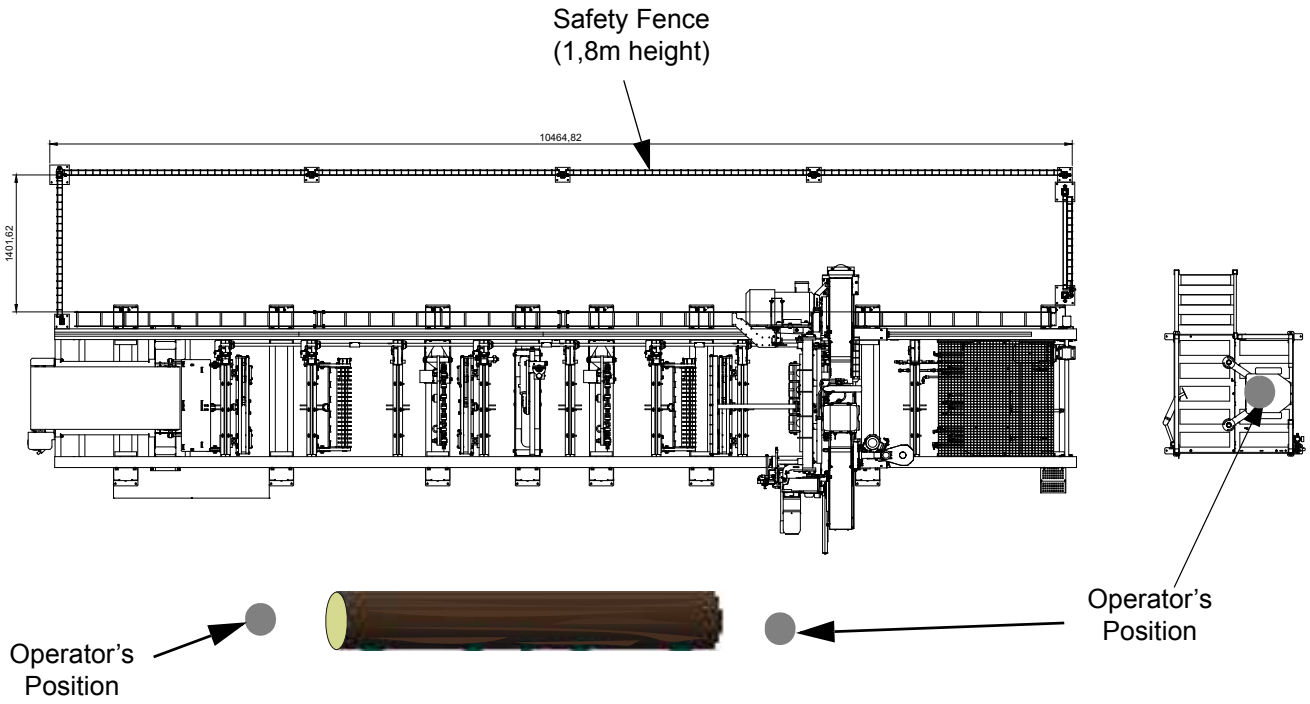
3.1 Sawmill Setup

IMPORTANT! Before starting to use the sawmill you have to meet the following conditions:

- The sawmill should be operated with a sawdust extraction system only.
- The sawmill should be operated under roof only.
- The sawmill should be operated in temperature range from -15^{o}C do 40^{o} (5^{o}F to 104^{o}F) only.
- The illumination at the operator's position should be at least 300lx[1].
- The sawmill operator’s position is shown below.
- A protective fence must be mounted according to the drawing below. Fence height - 1,8m.

IMPORTANT! In spite of necessity to mount the fence it is not possible to protect both sides of the sawmill from bystanders because of the cutting material loading and receiving. Keep all bystander persons at a safe distance from work area when operating the machine!

1.. The light source can not cause stroboscopic effect.



- Have a qualified electrician install the power supply (according to EN 60204 Standard). The power supply must meet the specifications given in the table below.

3-Phase Volts	Fuse Disconnect	Suggested Wire Size
EH30, EC30 22 KW 400 VAC 460 VAC	50 A	16 mm^2 to 15m in length 5 AWG to 49 ft in length
EH40, EC40 30 KW 400 VAC 460 VAC	105 A	16 mm^2 to 15m in length 5 AWG to 49 ft in length

TABLE 3-1

IMPORTANT! When starting the machine for the first time, check that main motor rotation direction is as indicated by the arrow located on the motor body. If the rotation direction is incorrect, invert the phases in the phase inverter located in the power socket. Setting the phases in the phase inverter correctly will ensure correct rotation directions of all sawmill motors.

DANGER! A 30mA Ground Fault Interrupter (GFI) must be used.

Set up the sawmill on firm and level footing. Fasten the machine to the floor to prevent any movement. It is highly recommended that cement pads with 21mm (0.827”) diameter anchor bolts be made under the track rails and the bed (if equipped). The cement pad should be rated to support 40 T/m^2 (8192 pound/foot).

WARNING! Set up the resaw on firm and level ground. The machine must be fastened to the floor. Failure to do so may cause the sawhead to tip, resulting in serious injury or death.

The machine can be lifted with a forklift or a winch only. The forklift must be rated for at least 4 T (8818 lb.). The sawmill head is equipped with lifting brackets. Attach the winch hook to the brackets shown in the figure below.

3.2 Control Overview

See Figure 3-1. The control box includes controls to start and stop the machine. The operator interface also contains the touch screen used to set up the machine and diagnose problems.

FIG. 3-1 CONTROL PANEL

Control Panel

1. Emergency Stop

Push the emergency stop button to stop the machine. Turn the emergency stop clockwise to release the stop. The machine will not restart until the emergency stop is released.

2. HEAD/BED mode indicator lamps.

Indicates operation mode of the control panel.

3. Motor/Brake Key Switch

The key switch has three positions:

- “0” position - all electrical circuits are off,

- position - all electrical circuits are on,
- position - releases the main motor disk brake, it is possible to spin the blade wheels to track the blade.

4. Contol Panel Power Switch

Turns on and off power to the control panel.

5. Control Touch Panel

he touch screen is used to setup how the mill functions and controls the setworks. Upon initial power-up, the screen will display the Home Screen..

6. Main motor START/STOP buttons

Turns on and off the main motor.

To start the blade motor, turn the key switch to the position. Then press the START button. To stop the blade motor, press the STOP switch.

3.3 Joystick Control Overview

See Figure 3-1. The joysticks located at the operator seat control all of the sawmill functions. Each joystick can be moved forward, backward, left and right to perform various functions. Each joystick also has a thumbstick, three front buttons and a rear switch to perform additional functions.

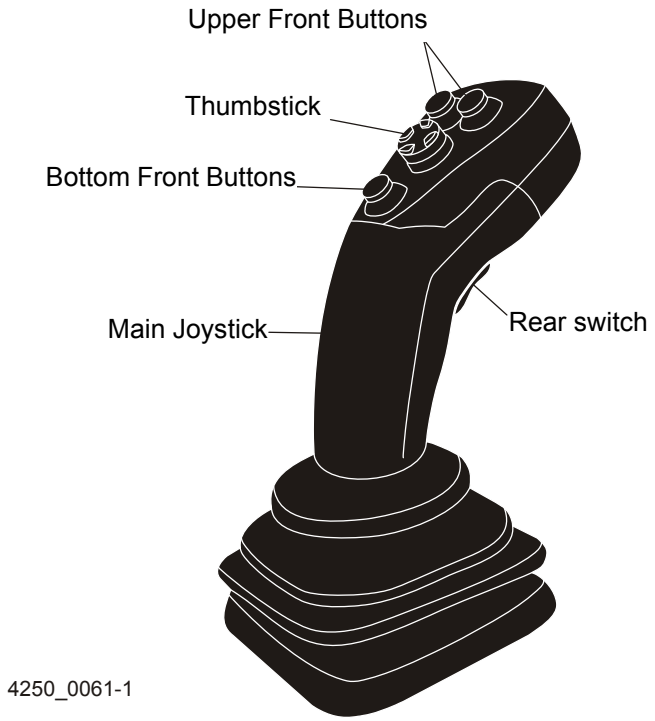


FIG. 3-1

The machine comes with three configurations of the joystick controls: Default, User 1, and User 2. If the operator prefers to have some functions in different locations, he can move them around in one of the user modes and save the layout. All of the reference in this section will be related to the default layout.

To toggle between head and bed functions, press the rear switch of the left joystick. The MODE light on the head distribution box will indicate if the controls are in bed mode or head mode. There is also indication of the mode the controls are in on the touch screen, if the touch screen displays one of the setworks screens.

See Figure 3-2. In HEAD mode, push the left joystick forward to lower the saw head. The further the joystick is pushed, the faster the head moves down. Pull the joystick back to raise the saw head. The fur-

ther the joystick is pulled, the faster the head moves up.

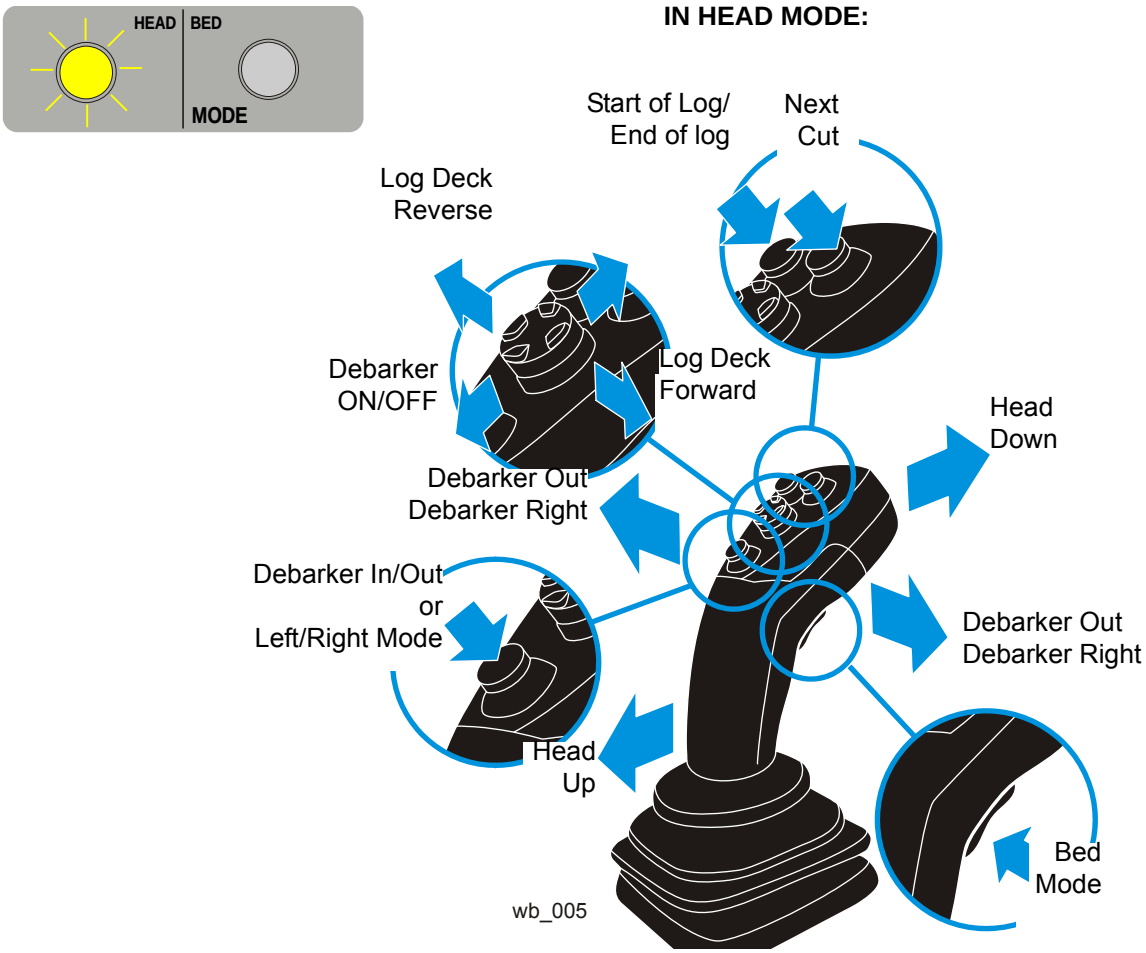


FIG. 3-2

Press the top left head button to set either the Start of Log position or the End of Log position. Press the top right head button to toggle on/off Next Cut. Press the bottom head button to start the debarker operation. Press the rear switch to change to Bed Mode. Press the thumbstick left to reverse the log deck, right to move the log deck forward. Press the thumbstick up to increase the Cant Count in Pattern Mode, down to decrease the count.

See Figure 3-3. In HEAD mode, push the right joystick forward to make the head travel backwards. The further the joystick is pushed, the faster the head moves backward. Pull the joystick back to make the

head travel forward. The further the joystick is pulled, the faster the head travels forward.

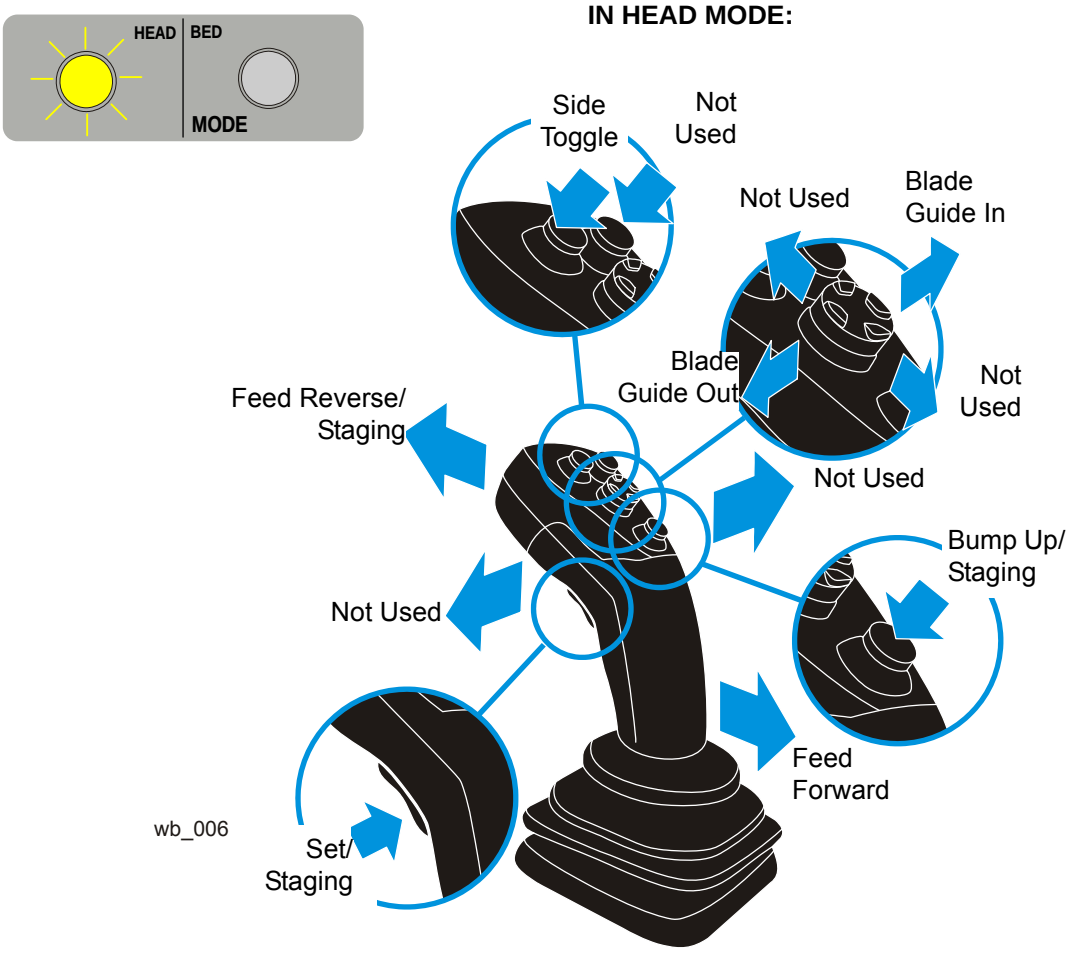


FIG. 3-3

Press the top left head button to toggle between sides in Setworks. Press the bottom head button to initiate a bump up function. Press the rear switch to initiate a set function. Press the thumbstick left to move the blade guide out, and press it right to move the blade guide in. While moving the head backward pressing both the set and bump up functions together initiates a move to the staging position.

See Figure 3-4. In BED mode, push the left joystick forward to lower the clamp. The further the joystick is pushed, the faster the clamp moves down. Pull the joystick backward to raise the clamp. The further the joystick is pulled, the faster the clamp moves up. Push the joystick left to move the clamp out. The further the joystick is pushed, the faster the clamp moves out. Push the joystick right to move the clamp in.

The further the joystick is pushed, the faster the clamp moves in.

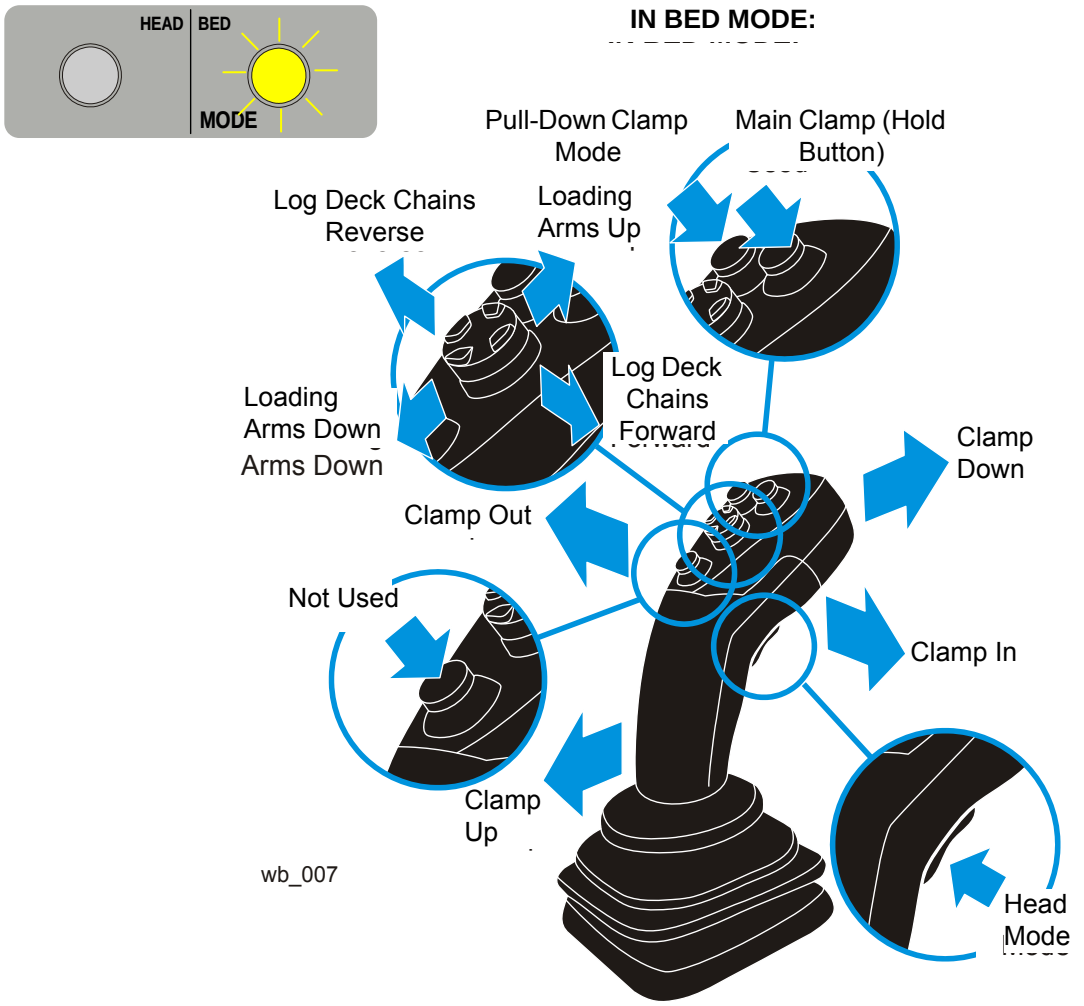


FIG. 3-4

Press the thumbstick forward to raise the loading arms, press it down to lower the loading arms. Press the thumbstick left to make the log deck chains move backward. Press the thumbstick right to make the log deck chains move forward. Press the rear switch to switch to HEAD mode.

See Figure 3-5. In BED mode, push the right joystick forward lower the side supports. The further the joystick is pushed, the faster the side support move down. Pull the joystick backward to raise the side supports. The further the joystick is pulled, the faster the side supports move up. Pull the joystick left to lower the chain turners. The further the joystick is pulled, the faster the chain turners move down. Push the joystick right to raise the chain turners. The further the joystick is pushed, the faster the chain turners

move up.

IN BED MODE:

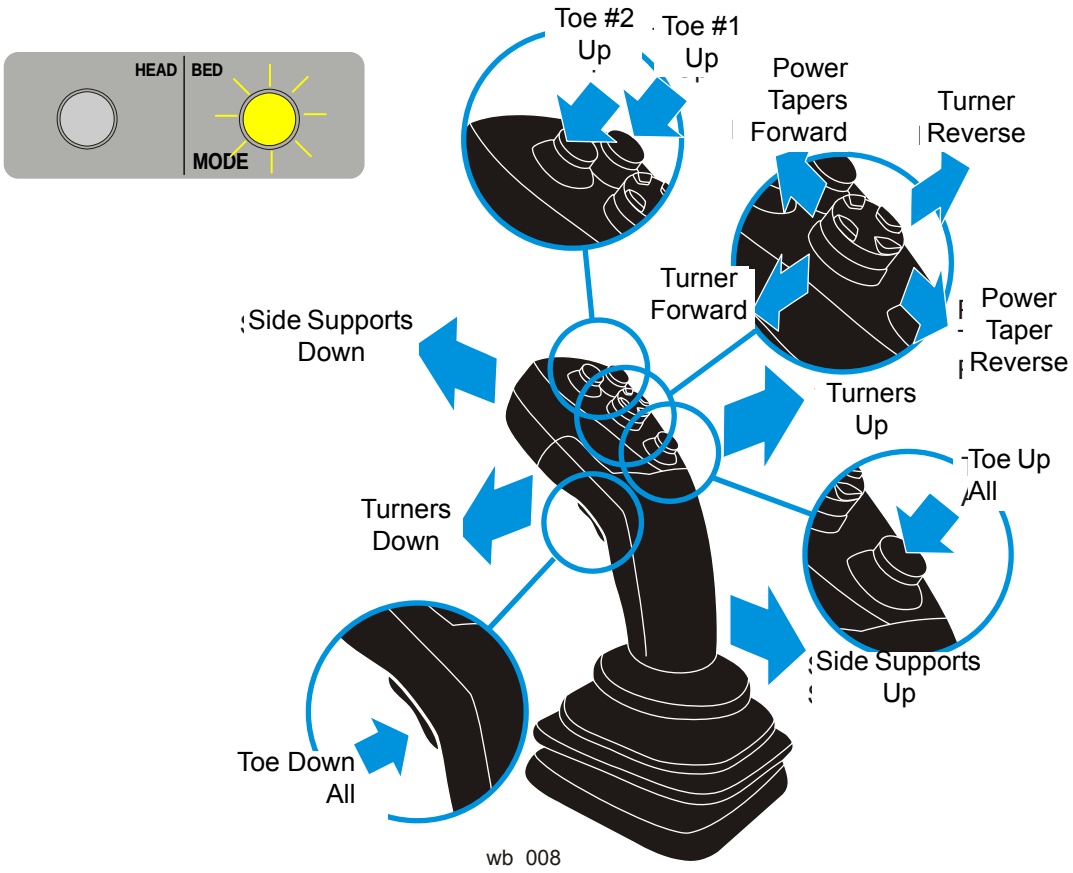


FIG. 3-5

Press the top left head button to raise Toe #2. Press the top right head button to raise Toe #1. Press the bottom head button to raise all the Toe Boards. Press the rear switch to lower all the Toe Boards. Press the thumbstick forward to turn the power taper rollers forward and press it down to move the power taper rollers backward. Press the thumbstick left to rotate the change turners forward and press it right to rotate the change turners backward.

3.4 Programming the Control

3.4.1 System Setup

From the Main Screen, push the Setup button.

See Figure 3-6.

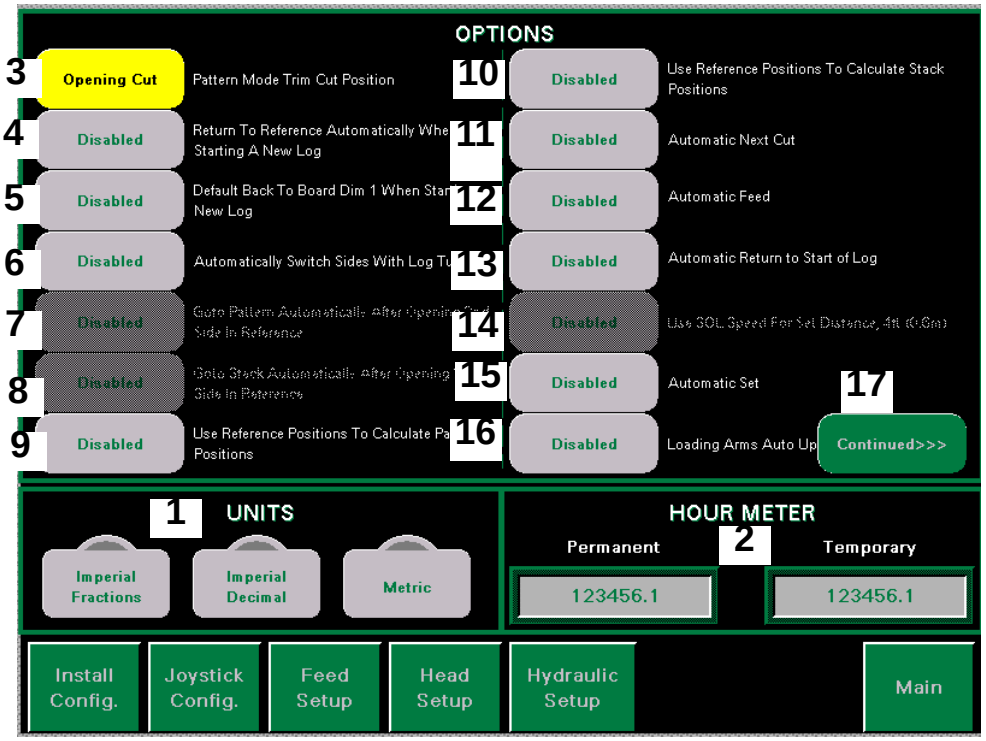


FIG. 3-6

3.4.2 Units

There are three selections for units (1): Imperial Fractions, Imperial Decimals, and Metric. The active unit has a green indicator. To change units, press the desired button and the indicator for that unit will turn on.

3.4.3 Hour Meter

There is a permanent hour meter (2) that is not resettable, and a temporary hour meter that can be reset by pressing the numeric display. **NOTE:** If the PLC is ever replaced, the permanent hour meter will start back over at 0.

3.4.4 Options

There are several optional functions built into the mill to help automate some of the steps for sawing a log. These steps were developed around the most common cutting method.

Typically the method followed is to open two sides in reference mode. Switch to pattern mode and cut down to the desired number of cants with the dimensions selected.

(3) Pattern Mode Trim Cut Position - in pattern mode you can select where to take the trim but, either on the opening cut or before the first cant/last board.

(4) Return To Reference Automatically When Starting A New Log - When enabled the touch screen will automatically switch back to Reference mode each time a new log is started. There are two ways to signal the start of a new log; performing a Staging function, or lowering the loading arms all the way.

(5) Default Back To Board Dim 1 When Starting A New Log - When enabled the board size in the first board size button, from left to right, will be selected each time a new log is started. There are two ways to signal the start of a new log; performing a Staging function, or lowering the loading arms all the way.

(6) Automatically Switch Sides With Log Turns - When enabled the machine will switch sides, i.e. Reference 1 to Reference 2, when the log is unclamped and the any of the four chain turner functions are activated; Up/Down or Forward/Reverse. The machine will not keep changing sides each time one of these functions is activated. There must be a cut taken on the side switched to before the machine will switch again.

(7) Go to Pattern Automatically After Opening 2nd Side In Reference - When enabled the touch screen will automatically switch to Pattern mode after a cut has been taken in Reference 2 and a log turn is sensed. This option is not available unless the option to Automatically Switch Sides With Log Turns is enabled.

(8) Go to Stack Automatically After Opening 2nd Side In Reference - When enabled the touch screen will automatically switch to Stack mode after a cut has been taken in Reference 2 and a log turn is sensed. This option is not available unless the option to Automatically Switch Sides With Log Turns is enabled.

(9) Use Reference Position To Calculate Pattern Positions - When enabled, and the trim cut position is set to opening cut, the last cut taken in Reference 1 will be used as the position to reference for the position of the head in pattern mode for calculating the pattern based off the cant size selected, number of cants, and board size selected. This prevents having to search for best position for possible opening cut. When enabled, and the trim cut position is set to first cant/last board, the last cut taken in Reference 1 will be used as the last but taken in Pattern 1 and just set to the next board size. Reference 2 last cut position will be used for Pattern 2.

(10) Use Reference Position To Calculate Stack Positions - When enabled the last cut taken in Reference 1 will be used as the position to reference for the position of the head in stack mode for calculating the starting position in the stack. Reference 2 last cut position will be used for Stack 2.

(11) Automatic Next Cut - When enabled Next Cut will automatically turn on when taking the opening cut on all four sides when the machine senses a cut is active based on the blade motor power engage threshold setting.

(12) Automatic Feed - When enabled the machine will automatically control the feed speed based on the two settings, maximum speed and maximum power, set on the “Dashboard”. If the maximum speed is reached before the maximum power the feed will not increase anymore, otherwise it will continue to increase until it reaches the maximum power setting. The operator still has control over the speed, the automatic feed will just prevent them from feeding too fast, per the maximum power setting. If the operator backs off on the joystick the machine will choose which ever speed is lower and use that, either the Automatic Feed or the Joystick.

(13) Automatic Return to Start of Log - When enabled after the head has exited the cut, performed a bump up, and started to move backwards this function will take control of the feed and automatically return to the position set for Start of Log. The operator does not need to worry about letting off the joystick in time to stop the head before it travels too far past the log, the machine will stop it automatically, just keep the joystick pressed all the way forward until the head comes to a complete stop.

(14) Use SOL Speed For Set Distance, 2ft (0.6m) - When enabled the start of log speed set on the “Dashboard” will only be used for a distance of 2ft (0.6m) from the point where it was set. Once the head has moved past this point, the speed is completely controller by the position of the joystick.

(15) Automatic Set - When enabled the head will automatically set to the next cut when the head has returned to the Start of Log position.

(16) Use this button to go the second page of options.

See Figure 3-7. The second page of options is shown below.

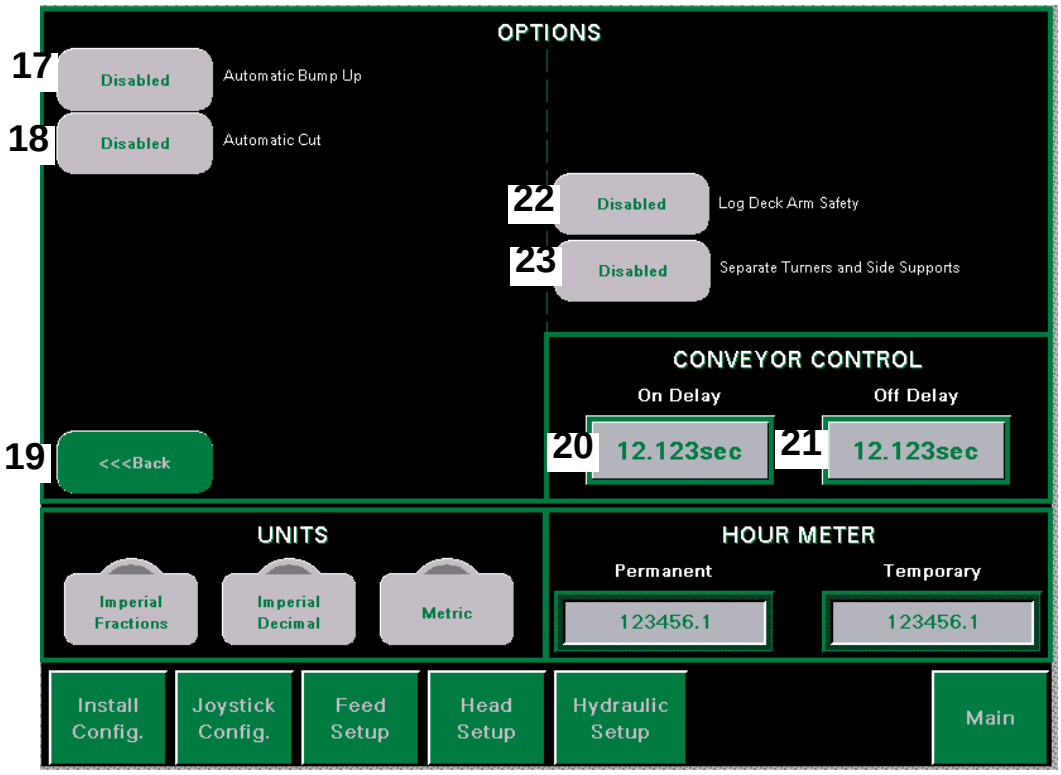


FIG. 3-7

(17) Automatic Bump Up - When enabled the saw head will automatically bump up after the saw head has exited to cut and passed the End of Log position.

(18) Automatic Cut - When enabled the machine can run the cutting process automatically when the operator holds down the foot pedal. To initiate this the operator must have the Start of Log and End of Log positions set, Next Cut on, then hold down the foot pedal when either at the Start of Log or End of Log positions. The head will automatically cut using the Automatic Feed, Bump Up, Return, and Set, all on its own, and continue this process until the foot pedal is released.

(19) Use this button to go back to the first page of options.

(20) This timer sets how long the feed must be in reverse before the conveyor will start.

(21) This timer sets how long the conveyor will keep running after the feed has stopped moving in reverse.

(22) Log Deck Arm Safety. Protects the loading arms from being cut.

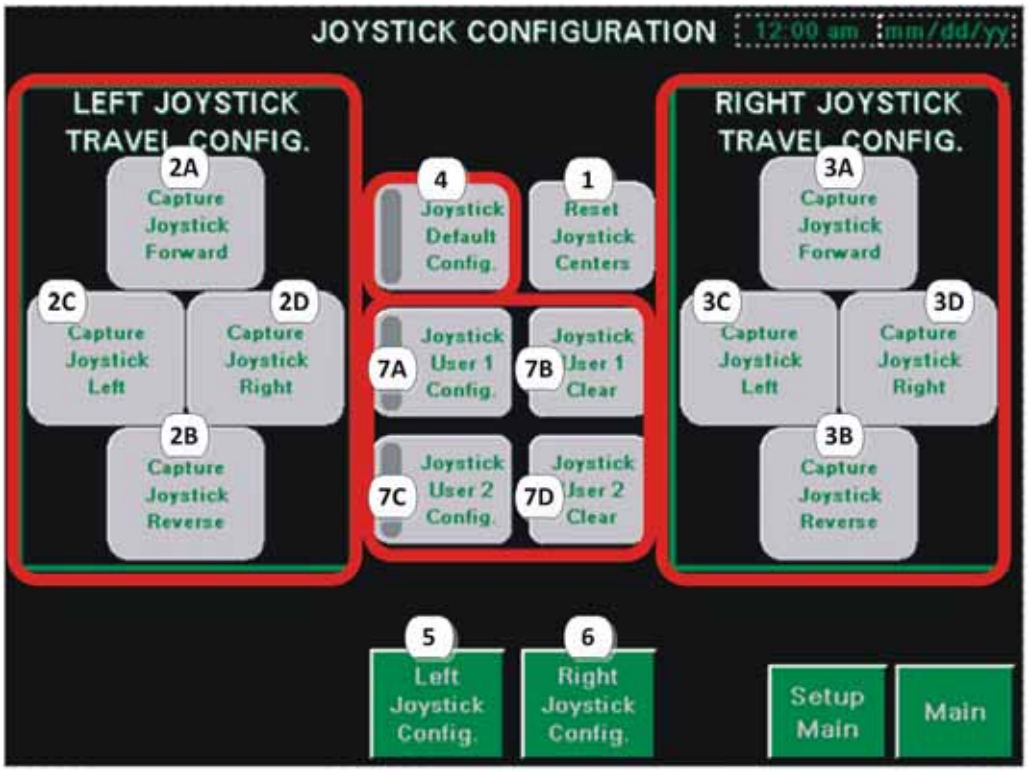
(22) Use this button to separate operation of the side support and the turners. When disabled, the side supports and turners work together - when raising the turners, first the side supports are moving up. When enabled, it is possible to control the turner independently of the side supports. It is recommended that this option be set to: *Disabled*.

3.4.5 Joystick Configuration

See Figure 3-8. The machine is equipped with a programmable joystick configuration. There is a default Joystick Configuration and two User Defined Configurations. During the installation of the machine it may be necessary to configure some of the parameters of the joysticks.

From the System Setup Screen, push the Joystick Config. button to go to the Joystick Configuration

screen.



300_0227-3

FIG. 3-8

(1) Reset Joystick Centers - During the very first power up of a mill, replacement of a joystick, or replacement of the PLC, the centers of the joysticks will have to be set. If the machine knows the centers need set it will be flashing and there will be an active “Joystick Configuration” error. Every joystick varies a little to its exact center point so it is critical to the operation of the machine that the centers be adjusted to the joysticks. Before pressing the button make sure the joysticks are in their relaxed position with nothing pushing them in any direction. When the centers are captured the PLC also configures a dead band area around the centers that has to be exceeded to make the joystick control any motion.

(2) Left Joystick Travel Configuration - Under any of the three conditions explained for the joystick centers the travel configuration will also have to be set. These buttons also flash when the machine knows they need set.

- **(2A) Capture Joystick Forward** - To capture the joystick forward value, press the joystick all the way forward. While maintaining the joystick all the way forward, press this button.

- **(2B) Capture Joystick Reverse** - To capture the joystick reverse value, pull the joystick all the way backward. While maintaining the joystick all the way backward, press this button.

- **(2C) Capture Joystick Left** - To capture the joystick left value press the joystick all the way left. While maintaining the joystick all the way left, press this button.

- **(2D) Capture Joystick Right** - To capture the joystick right value pull the joystick all the way right.

While maintaining the joystick all the way right, press this button.

(3) Right Joystick Travel Configuration - Under any of the three conditions explained for the joystick centers. The travel configuration will also have to be set. These buttons also flash when the machine knows they need set.

- **(3A) Capture Joystick Forward** - To capture the joystick forward value, press the joystick all the way forward. While maintaining the joystick all the way forward, press this button.
- **(3B) Capture Joystick Reverse** - To capture the joystick reverse value, pull the joystick all the way backward. While maintaining the joystick all the way backward, press this button.
- **(3C) Capture Joystick Left** - To capture the joystick left value, pull the joystick all the way left. While maintaining the joystick all the way left, press this button.
- **(3D) Capture Joystick Right** - To capture the joystick right value press the joystick all the way right. While maintaining the joystick all the way right, press this button.

(4) Joystick Default Config. - This button selects the default layout of all the joystick functions. When the default configuration is active, the indicator on the button will be green.

(5) Left Joystick Config. - This button takes you to a page where you can view the joystick configuration.

(6) Right Joystick Config. - This button takes you to a page where you can view the joystick configuration.

(7) User Defined Joystick Configurations - These buttons control the user defined joystick configurations.

- **(7A) Joystick User 1 Config.** - This button selects the user 1 configuration. When the user 1 configuration is active the indicator on the button will be green.
- **(7B) Joystick User 1 Clear** - This button clears the user 1 configuration from memory.
- **(7C) Joystick User 2 Config.** - This button selects the user 2 configuration. When the user 2 configuration is active the indicator on the button will be green.
- **(7D) Joystick User 2 Clear** - This button clears the user 2 configuration from memory.

User Defined Joystick Configurations

This section will explain how to define a user configuration for the joysticks and save it. In this section the User 1 configuration will be referenced. Setting for the User 2 configuration is the same - just substitute the User 2 buttons for the User 1 in the instructions below.

1. Press the “Joystick User 1 Config.” button **(7A)**. The green indicator on the button should come on.

2. Press the “Left Joystick Config.” button (5) to begin setting the functions.

See Figure 3-9.

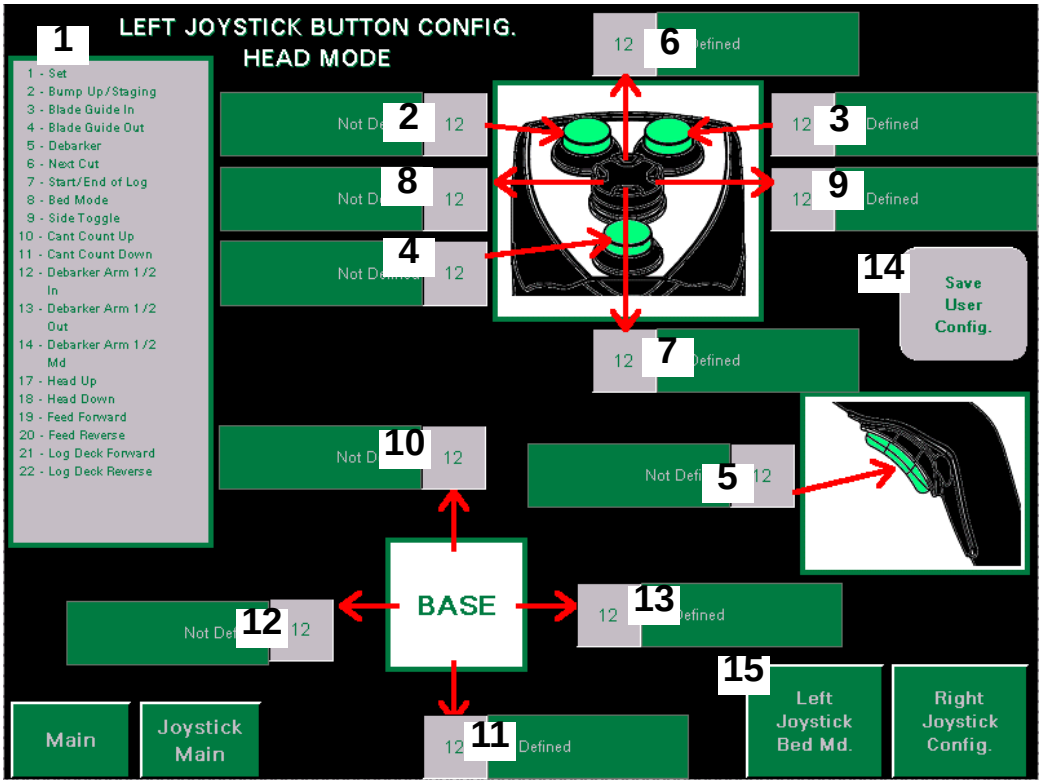


FIG. 3-9

3. **(1)** This is the legend that lists all the available head mode functions and their number that is used to set that function to a specific joystick function.

4. **(2-13)** To assign a function to any joystick function, press the gray button (numeric entry), with a red arrow pointing to the function you want to program.

- Enter the value of the function you want to assign and press enter.
- Now that number will be displayed in the gray box and the function will be displayed in the message display next to the gray box.
- Do this for all functions. There doesn't have to be a function assigned to each joystick function.
- Functions **(10-13)** have to be assigned to the base of the joysticks. Between the two joysticks you have 8 locations for these functions. When you assign function 10, Head Up, to a base location, function 11, Head Down, will automatically be assigned to the opposite joystick function on the same joystick. These functions have to be put together on the same joystick. The same goes for functions 12 and 13, for the feed. These four functions are not allowed to be used on the discrete buttons of the joysticks and the touch screen will not allow you to enter them into those spots.

5. **(14)** When you are finished setting up the joystick for head mode, you can save the configuration by pressing the “Save User Config.” button.

6. **(15)** Now you are ready to set up bed mode for this joystick. Press the “Left Joystick Bed Md.” button.

   See Figure 3-10. The BED MODE screen for the Left Joystick Button Configuration is shown below.

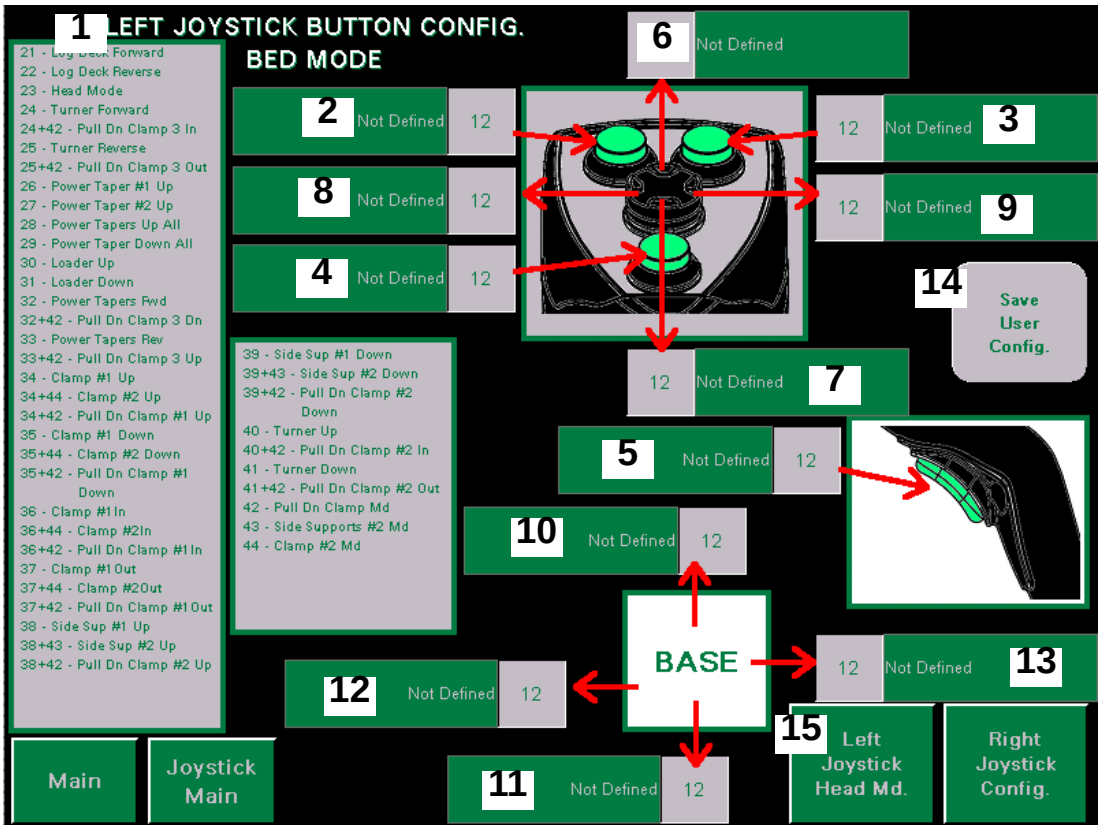


FIG. 3-10

7. **(1)** This is the legend that lists all the available head mode functions and their number that is used to set that function to a specific joystick function.

8. **(2-13)** All the functions are set just as in head mode referenced in step 4.

9. **(14)** When you are finished setting up the joystick for head mode, you can save the configuration by pressing the “Save User Config.” button.

10. The left joystick configuration is finished. Follow the same procedure for the right joystick. Press the “Right Joystick Config.” button on the “Joystick Configuration” to enter the right joystick configuration instead.

3.4.6 Feed Setup

The Feed Setup screen is where the Return To Start Of Log function can be tuned and the position of

feed calibrated. You can also reference feed speed from this screen.

See Figure 3-11.

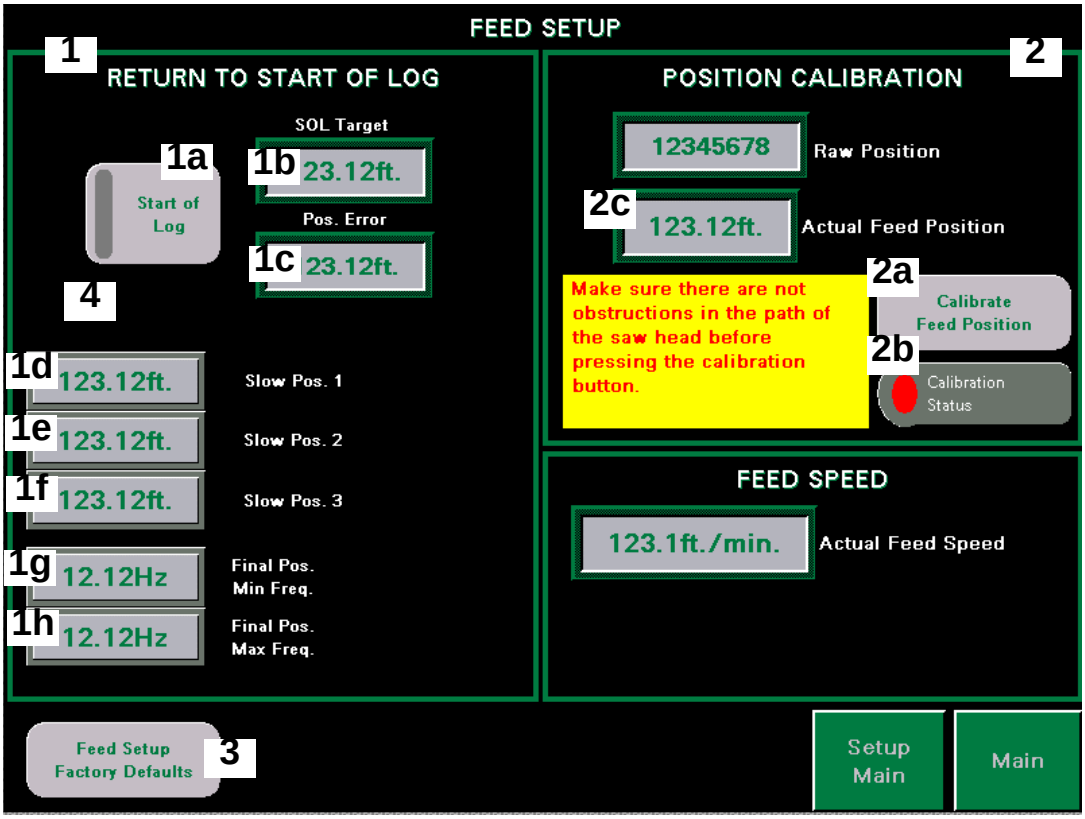


FIG. 3-11

Return To Start Of Log

This section of the Feed Setup is used to tune the Return To Start of Log function. When tuning it you are trying to get the “Pos. Error” to be as small as possible, meaning that you are as close as possible to the target you are trying to reach.

There are three positions captured for the Start of Log Position; Actual Start of Log Position, Offset, and Target. The actual position is the one captured by pressing the button either on the touch screen or joy-stick. This position is used to signal the machine that the head has moved into a safe position behind the log and it is okay to perform a set. The offset position is the position the feed will stop at when feeding forward until it is in position for the next cut. The target is the position the feed system is shooting for during the return. During the return, after the head has passed the Start of Log Position a set will initiate. The feed will continue returning to the Target and then stop. Now you can feed forward, the head may stop at the Offset position, if the head is not in position for the next cut. If the head is in position, there will not be a stop, it will continue to feed forward and start the cut.

Tuning Return To Start Of Log

1. Move the head to where you want to set “Start of Log” and press the “Start of Log button (1A). The indicator will turn green to show that the position has been set, and the position will display under “SOL Target”.

2. Now run the feed about 12 ft. from that position.

3. Push the Right joystick forward and maintain it until the head comes to a complete stop.

4. Check the “Pos. Error”. If it is within a couple inches from the target leave it alone, the tuning is fine. The control for returning to start of log is not designed to be extremely accurate, because it is not necessary, so a couple inch tolerance is fine. Process is complete. If the “Pos. Error” is too large then continue to step 5.

5. You can modify the Slow Positions and Final Pos. frequencies, until you achieve the accuracy wanted.

   - **Slow Pos. 1 (1D)** - Default = 2.75. This is the position, distance from Start of Log Target, at which the feed drive will slow to 60Hz. Prior to reaching this point the feed will travel in reverse at maximum speed.

   - **Slow Pos. 2 (1E)** - Default = 1.5. This is the position, distance from Start of Log Target, at which the feed drive will slow to the “Final Pos. Max Freq.” **(1H)**.

   - **Slow Pos. 3 (1F)** - Default = 0.75. This is the position, distance from Start of Log Target, at which the feed drive will ramp from the “Final Pos. Max Freq.” **(1H)**, to the “Final Pos. Min Freq.” **(1G**). The deceleration of the drive is proportional to the distance from “Slow Pos. 3” **(1F)** to “SOL Target” **(1B)**. The drive will begin at the frequency in “Final Pos. Max Freq.” **(1H)** at “Slow Pos. 3” **(1F)** and doe a linear slope to the frequency in “Final Pos. Min Freq.” **(1G)** at “SOL Target” **(1B)**.

   - **Final Pos. Min Freq.** - Default = 1.

   - **Final Pos. Max Freq.** - Default = 35.

Position Calibration

This mill uses an encoder to track feed position for different locations (e.g. Start of Log Position and End of Log Position). With the ability to have these values more functions can be automated during the sawing cycle.

Position Calibration Procedure

If the machine needs to be calibrated, the HMI will automatically switch to the “Feed Setup” screen after control power is turned on. The only time this is not the first screen gone to after a power cycle is when there is a Joystick Configuration fault and the Centers of each joystick need to be reset and the furthest travel positions need to be captured. Usually this will only happen during the initial install of the machine, and never again unless the PLC gets replaced. If the “Feed Setup” screen is already active then proceed to step 3.

1. From the “Main” screen press the “Setup” button.

2. On the “Setup” screen press the “Feed Setup” button.

3. At the top right of the “Feed Setup” screen is the “Position Calibration” section **(2)**. If the calibration is required then the “Calibration Status” **(2B)** will be RED, if you are just re-calibrating then it is probably GREEN.

4. Make sure there are no obstructions in the path of the saw head. The head will travel all the way to the reverse hard stop.

5. Press the “Calibrate Feed Position” **(2A)** button.

6. The head will start slowly traveling to the reverse hard stop. To calibrate the feed position the head presses against the hard stop until there is a spike in motor current on the feed motor. At that point that position is called 1' 0”, and the “Actual Feed Position” **(2C)** should have a value around 1.0ft., the value sometimes floats above this because when the feed drive release pressure the rubber stop pushes the head back away from it. The “Calibration Status” **(2B)** will turn green when the process is complete.

7. Press the “Feed Setup Factory Defaults” **(3)** to restore factory settings for the feed setup.

3.4.7 Head Setup

The Head Setup screen is where the Head Position can be tuned and the position of head calibrated.

See Figure 3-12. The Head Setup screen is shown below.

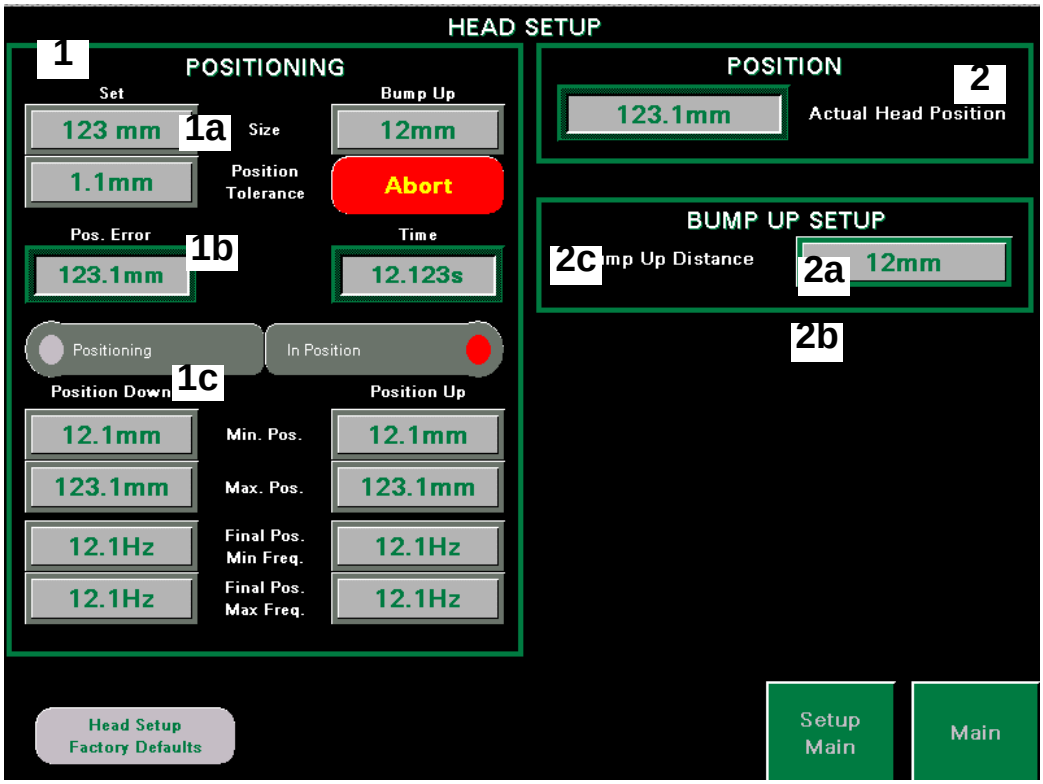


FIG. 3-12

Servo Setup

These settings control the speed the servo does Sets and Bump Ups.

- Velocity for sets.
- Velocity for bump ups.
- Bump up distance.

Position Calibration

The servo has an internal encoder for tracking head position.

Position Calibration Procedure

If the machine needs calibrated, the HMI will automatically switch to the “Head Setup” screen after control power is turned on. If the “Head Setup” screen is already active then proceed to Step 3.

1. From the “Main” screen press the “Setup” button.

2. On the “Setup” screen press the “Head Setup” button.

3. At the top right of the “Head Setup” screen is the “Position Calibration” section. If the calibration is required then the “Calibration Status” will be RED, if you are just re-calibrating then it is probably GREEN.

4. Position the head over a bed rail and measure from a down set tooth to the bed rail.

    - Enter this value in the “Calibration Position” numeric entry box.

5. Press the “Calibrate Head Position” button.

6. Calibration complete.

Hydraulic Setup

The hydraulic power unit on this machine is equipped with a proportional valve on the supply line to all the valve packs. Since only 8 functions can be assigned to the joystick bases for full proportional control, a setup screen for all functions has been added so that a set-point for flow to each function can be set from 5-100%. If multiple functions are selected with set-points then that proportional valve will open fully to give sufficient flow. If a proportional function is used with a discrete function the proportional valve will use the proportional signal. If multiple proportional functions are activated then the proportional valve will open fully to give sufficient flow.

See Figure 3-13. The Hydraulic Functions Speeds screen is shown below.

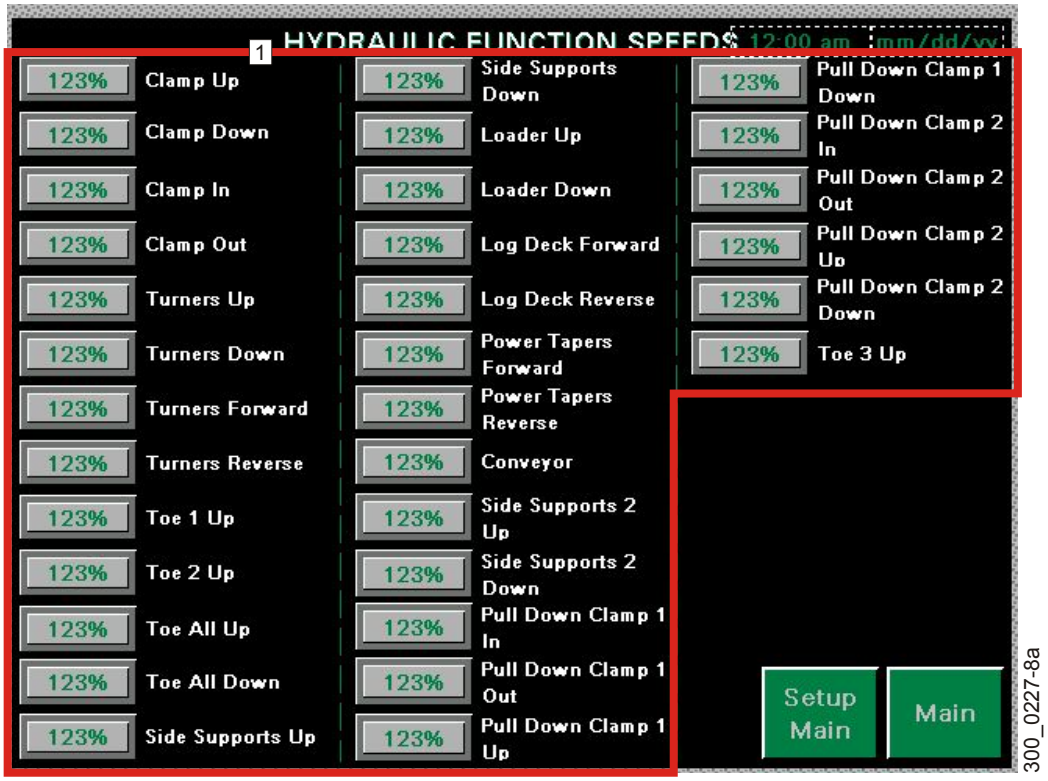


FIG. 3-13

Changing Hydraulic Set-Points

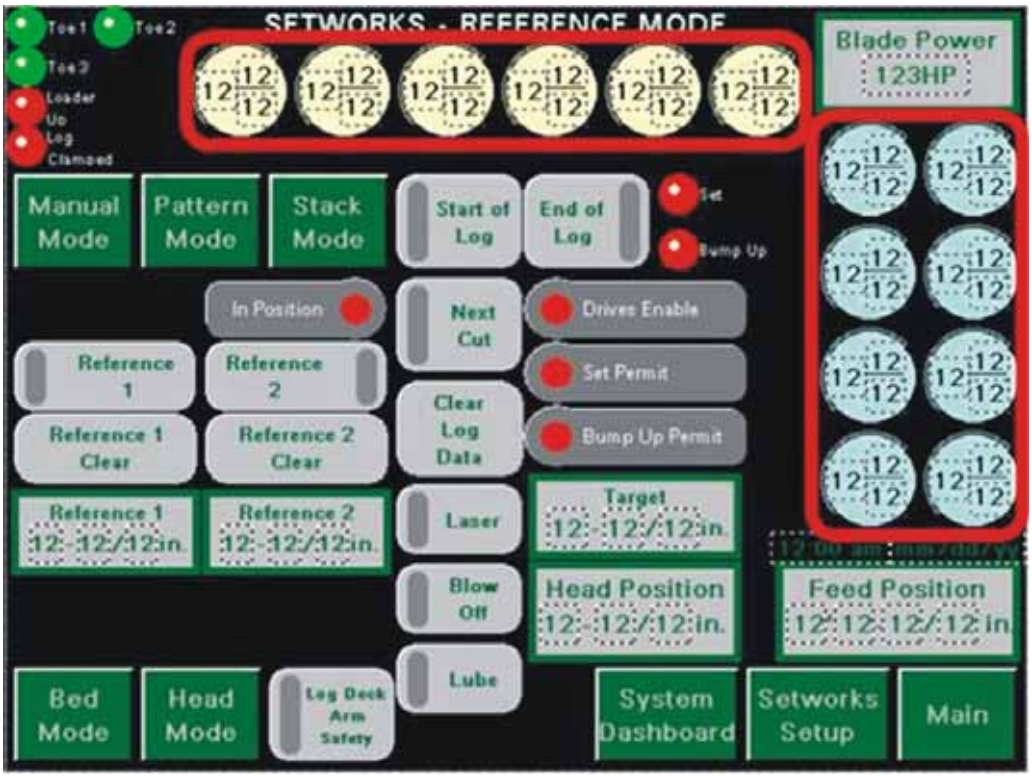
(1) To modify one of the hydraulic set-points, just press the number display for the function you want to change, then enter the new value and press Enter.

3.4.8 Setworks Setup

From the Home screen, touch the Setworks Setup button.

See Figure 3-14. There are six Board Size buttons used in Reference and Pattern modes. There are also eight Cant Size buttons used in Reference and Pattern modes. Their values are always displayed

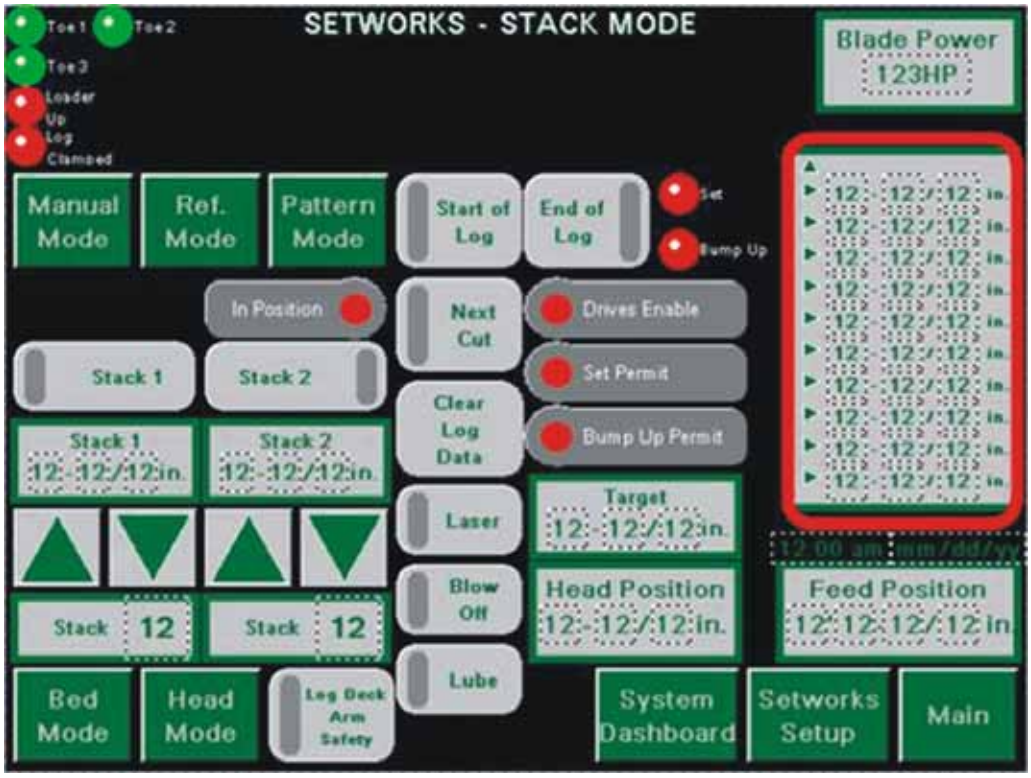
on the touch screen when in these modes.



300_0227-9

FIG. 3-14

See Figure 3-15. There are also four Stacks in Stack mode. Each stack has ten sizes.



300_0227-10

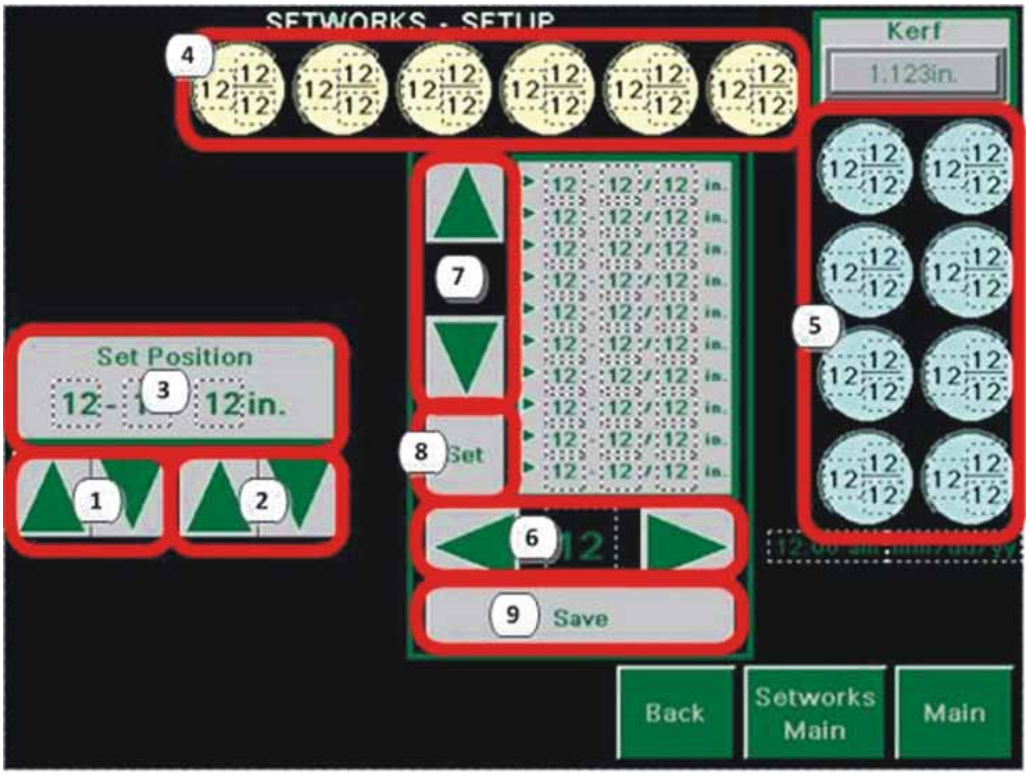
FIG. 3-15

To program the Board Sizes, Cant Sizes, and Stack Sizes you have to go to the “Setworks Setup” screen. From the Main screen just press the “Setworks Setup” screen. From Reference or Pattern mode also press the “Setworks Setup” screen. If you want to change board or cant sizes while cutting a log, you must use the buttons located in the mode you are in so that you do not leave setworks and delete all your log date, i.e. Start of Log Position, End of Log Position, or Reference positions.

The Kerf Size is also setup on this screen.

Fractional Size Setup

See Figure 3-16. The Setworks Setup screen is shown below.



300_0227-11

FIG. 3-16

(1) Use these arrows to increase or decrease the size by whole inches.

(2) Use these arrows to increase or decrease the size by a thirty-second of an inch.

(3) This display shows the size selected.

(4) Press one of the board size buttons to set it to the size selected.

(5) Press one of the cant size buttons to set it to the size selected.

(6) Choose the Stack to you want to set with thee buttons.

(7) Choose the position of the stack to edit.

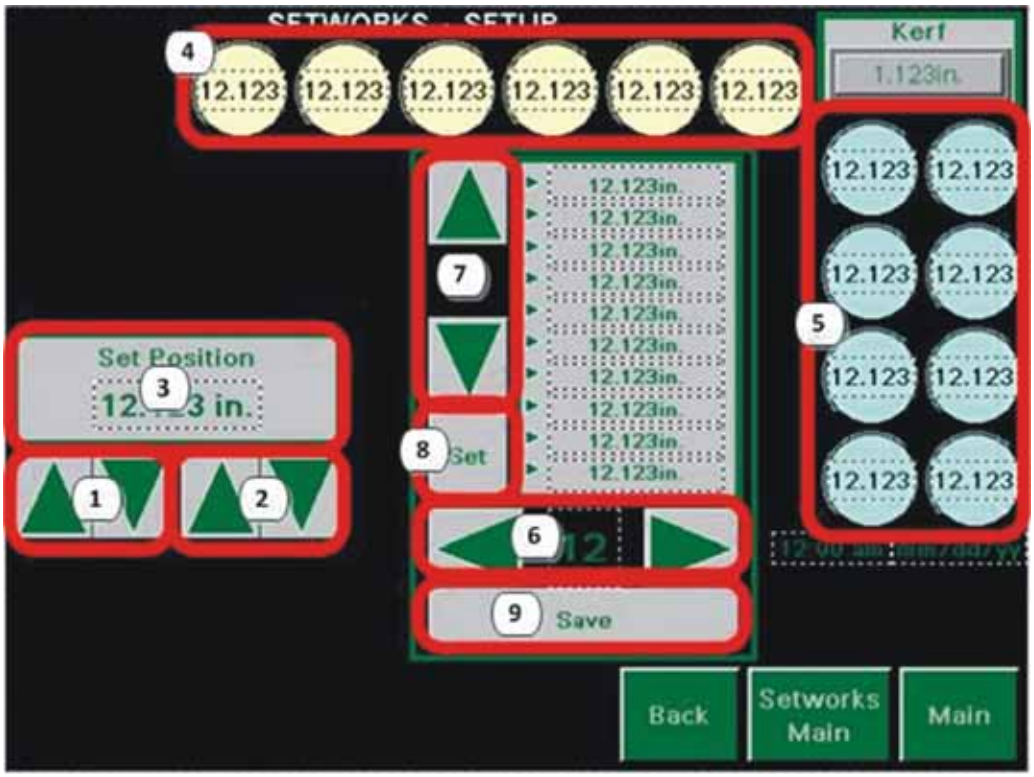
- Each size above the one set will be filled with the value entered.

(8) Press the “Set” button to set the position of the stack to the size selected.

(9) When the Stack is full, press the “Save” button to keep it in memory.

Decimal Size Setup

See Figure 3-17. The Setworks Setup screen is shown below.



300_0227-12

FIG. 3-17

(1) Use these arrows to increase or decrease the size by whole inches.

(2) Use these arrows to increase or decrease the size by a thirty-second of an inch.

(3) This display shows the size selected.

(4) Press one of the board size buttons to set it to the size selected.

(5) Press one of the cant size buttons to set it to the size selected.

(6) Choose the Stack to set with these buttons.

(7) Choose the position of the stack to edit.

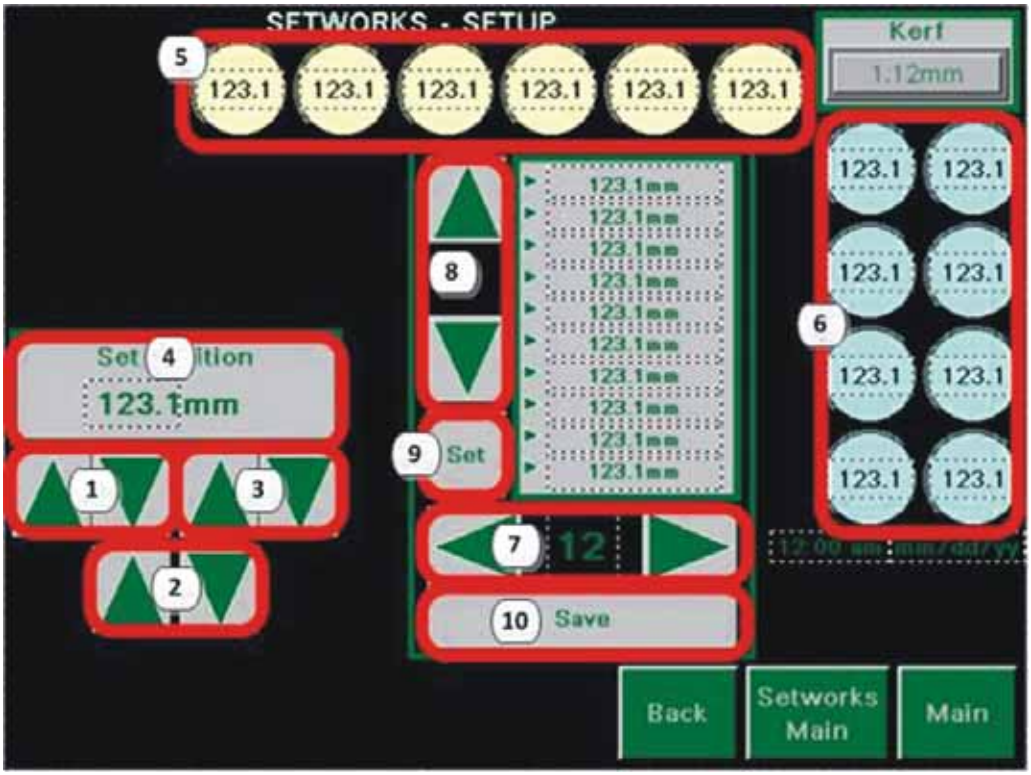
- Each size above the one set will be filled with the value entered.

(8) Press the “Set” button to set the position of the stack to the size selected.

(9) When the Stack is full, press the “Save” button to keep it in memory.

Metric Size Setup

See Figure 3-18. The Setworks Setup screen is shown below.



300_0227-13

FIG. 3-18

(1) Use these arrows to increase or decrease the size by 10mm.

(2) Use these arrows to increase or decrease the size by 1mm.

(3) Use these arrows to increase or decrease the size by 0.1mm.

(4) This display shows the size selected.

(5) Press one of the board size buttons to set it to the size selected.

(6) Press one of the cant size buttons to set it to the size selected.

(7) Choose the Stack to you want to set with thee buttons.

(8) Choose the position of the stack to edit.

- Each size above the one set will be filled with the value entered.

(9) Press the “Set” button to set the position of the stack to the size selected.

(10) When the Stack is full, press the “Save” button to keep it in memory.

3.5 Replacing the Blade

DANGER! Always shut off the sawmill motor before changing the blade. Failure to do so may result in serious injury.

WARNING! Always wear gloves and eye protection whenever handling a bandsaw blade. Changing blades is safest when done by one person! Keep all other persons away from work area when changing blades. Failure to do so may result in serious injury.

WARNING! In case of the blade or drive belt brake, wait until all rotating parts are completely stop. Failure to do so may result in serious injury.

Move the blade guide arm out.

Open the blade housing covers. Release the blade tension (*See Section 3.6*) until the wheel is pulled in and the blade is lying loose in the blade housing. Carefully remove the blade from the blade housing.

Install the blade so it is lying around the wheels. When installing the blade, make sure the teeth are pointing the correct direction. The teeth should be pointing toward the operator side of the sawmill when you are looking at the blade below the blade guides, as shown on the label located on the blade housing.

Position 3.5" (90mm) wide blades on the wheels so the gullet is 8 mm (0.314“) out from the front edge of the wheel

Close the blade housing. Next, use the blade tension handle to tension the blade correctly.

CAUTION! When adjusting the blade position, be extremely careful, because your fingers can get pinched.

3.6 Tensioning the Blade

See Figure 3-1.

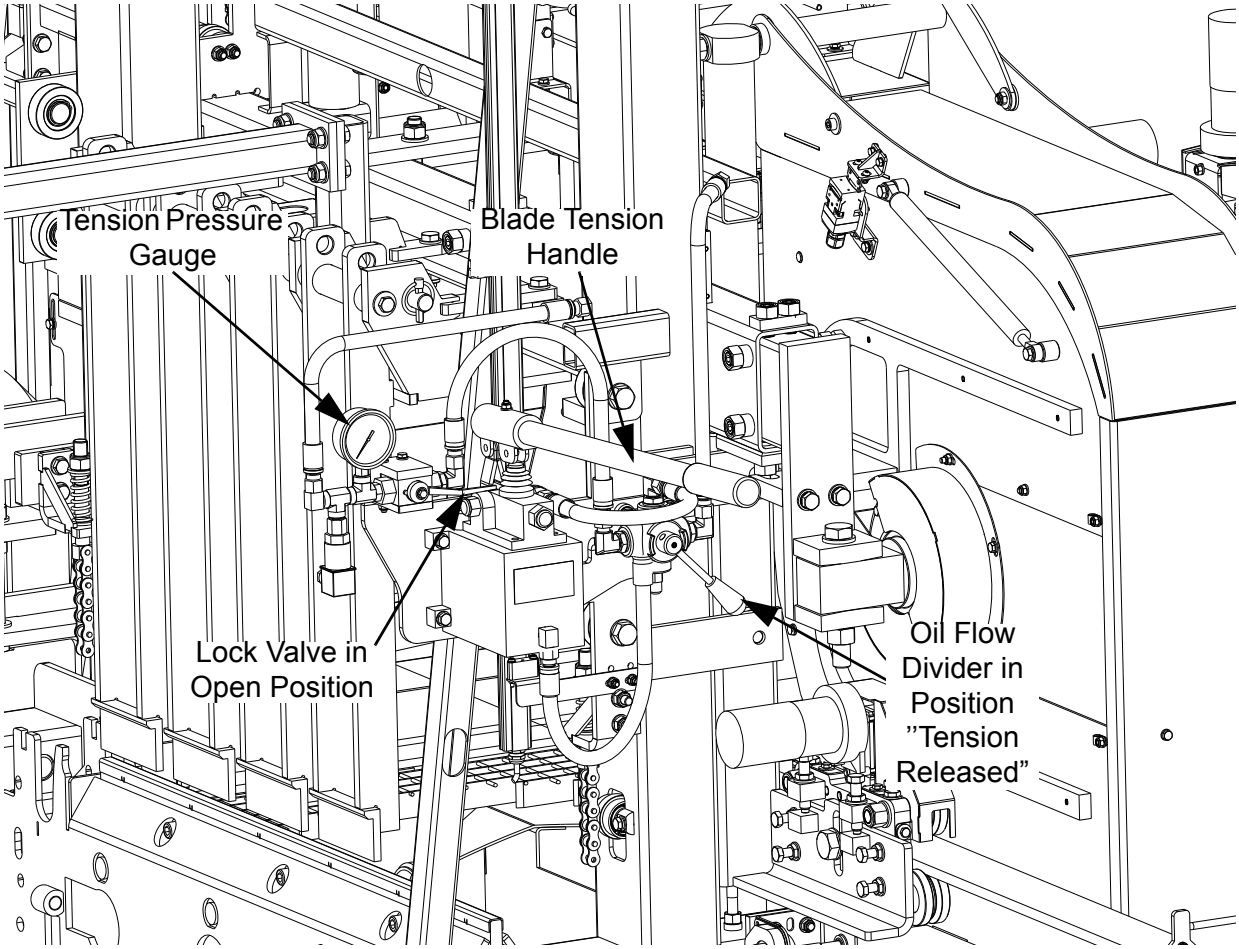


FIG. 3-1

The blade tension is adjusted with the blade tension handle and by setting properly the oil flow control valves shown in the figure above.

To release the tension, turn the lock valve right. Then turn the oil flow divider to the down position. Move the tension handle up and down to release the blade tension. Turn the lock valve left to the position “closed” and remove or install the blade.

To tension the blade, turn the lock valve left and set the oil flow divider in the up position. Moving the tension handle up and down, tension the blade until the tension pressure gauge indicates **95-110 bar (1380-1600 PSI)**. Turn the lock valve left to the position “closed” and read again the tension pressure on the gauge.

Check the blade tension occasionally when adjusting the cant control or while cutting. Also, ambient temperature changes can cause tension to change.

CAUTION! Release the blade tension when the resaw is not in use (for example at the end of a shift). Tension the blade again before starting the motor.

WARNING! In case of a blade or drive belt brake, wait until all rotating parts are completely stop. Failure to do so may result in serious injury.

The WB2000 sawmill is equipped with a safety switch that disengage the motor until the blade is properly tensioned (the motor is stopped also when the blade breaks).

3.7 Tracking the Blade

1. Open the blade housing.
2. Turn the key switch to the ”H” position (If machine is equipped with motor brake).

3. Carefully spin by hand one of the blade wheels until the blade positions itself on them.
4. Check if the blade is properly positioned on the blade wheels.

   See Figure 3-2. Position 3.5" (90mm) wide blades on the wheels so the gullet is 8 mm (0.314“) out from the front edge of the wheel.

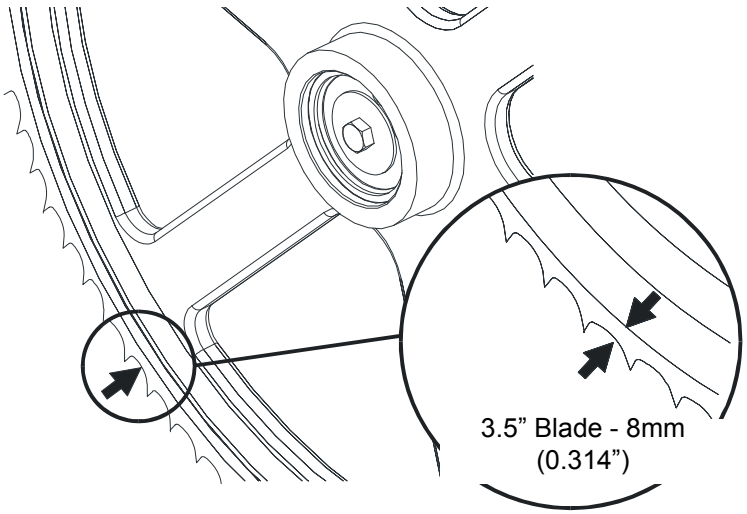


FIG. 3-2

5. Use the cant adjustment bolt, shown in **Figure 3-1,** to adjust when the blade travels on the blade wheels.

To move the blade out on the blade wheel, turn the cant adjustment bolt clockwise. To move the blade in on the blade wheel, turn the bolt counterclockwise.

6. After making the cant adjustment, tension the blade properly and then re-check the cant adjustment.

7. Close the blade housing.

DANGER! Make sure all guards and covers are in place and secured before operating or towing the sawmill. Failure to do so may result in serious injury. Be sure the blade housing covers are in place and secured.

DANGER! After adjusting the blade wheels, always recheck the blade tracking.

3.8 Starting the Motor

See the appropriate manual supplied with your specific motor configuration for detailed starting and operating instructions.

IMPORTANT! For safe operation of the sawmill, one person is sufficient, however in case of manual collection of sawn material, at least two persons should be assigned to these activities in order not to exceed the manual lifting standard.

CAUTION! Before starting the sawmill, the operator must warn all persons who are nearby of the intention of starting the machine.

IMPORTANT! The sawmill should be operated only by a qualified person of age, being in good state of health confirmed by a medical certificate.

IMPORTANT! When starting the machine for the first time, check that the main motor rotation direction is as indicated by the arrow located on the motor body (fan guard). If the rotation direction is incorrect, invert the phases in the phase inverter in the power socket (electric box). Setting the phases in the phase inverter correctly will ensure correct rotation directions of all sawmill motors.

CAUTION! Make sure all guards and covers are in place and secured before operating. Failure to do so may result in serious injury. Be sure the blade housing covers are in place and secured.

CAUTION! Always wear eye, ear, respiration and foot protection when operating the machine. Secure all loose clothing and jewelry before operating the sawmill.

CAUTION! Before starting the sawmill, connect a sawdust extraction system to the sawdust chute and start the extraction system. *See Section 1.13* for the sawdust extractor specifications.

CAUTION! If at any time you need to immediately stop the blade motor, press the emergency stop button located on the control box.

Before starting the sawmill at a new location, at least once a year or after every repair have a qualified electrician (having appropriate measurement qualifications) check the insulation resistance and the electric shock protection of the electrical system.

The electric box should be protected against dust and moisture. Regularly disconnect the power supply and clean the inside of the electric box of dust, sawdust, etc. Do not operate or leave the sawmill with the electric box door open.

CAUTION! Hazardous voltage inside the electric box (even if disconnected with the main disconnect switch) and at the motor can cause shock, burns, or death. Always disconnect the power supply before servicing!

3.9 Lube System Operation

See Figure 3-9. The Lube System keeps the blade and the wheels clean and cools them. The coolant (ACP-1 oil) flows from a 5-liter tank through hoses to both sides of the blade and surfaces of the wheels. Drip feed lubricators located on the saw head control the amount of oil flow.

Use just as much coolant as it is necessary to keep the blade clean. Usually, it is sufficient to set the drip feed lubricators so that one drop flows every 3 seconds.

WARNING! Never use flammable fuels or liquids! If these types of liquids are necessary to clean the blade, remove it and clean with a rag. Failure to do so may result in serious injury or death.

Before removing the blade, start the motor with the START button. Let the blade spin with oil running on it for about 15 seconds. This will clean the blade of sap buildup. Wipe the blade dry with a rag before storing or sharpening.

If you are sawing in temperatures below -20^{o}C (-4^{o}F), remove the oil tank from the sawmill when done sawing and store it in a warm place. Blow any remaining oil from the lube hose.

SECTION 4 MAINTENANCE

This section lists the maintenance procedures that need to be performed.

The Short Interval Maintenance Schedule lists procedures that need to be performed every 4, 8 or 25 hours.The Maintenance Log lists procedures that need to be performed every 50, 100, 200, or 1000 hours. Keep track of machine maintenance by filling in the machine hours and the date you perform each procedure.

WARNING! Disconnect and lock out power supply before servicing, cleaning and doing maintenance to the saw! Failure to do so may result in serious injury.

0 **This symbol** identifies the interval (hours of operation) at which each maintenance procedure should be performed.

4.1 Wear Life

See Table. 4-1. This chart lists estimated life expectancy of common replacement parts if proper maintenance and operation procedures are followed. Due to the many variables which exist during sawmill operation, actual part life may vary significantly. This information is provided so that you may plan ahead in ordering replacement parts.

Part Description	Estimated Life
Up/Down Motor	2000 hours
Drive Belt	1250 hours
Power Feed Motor	1500 hours

TABLE. 4-1

4.2 Cleaning and Maintenance

Only guards and covers listed below can be dismounted by the operator for maintenance and cleaning purposes.

- Blade wheel covers

See Figure 4-1.

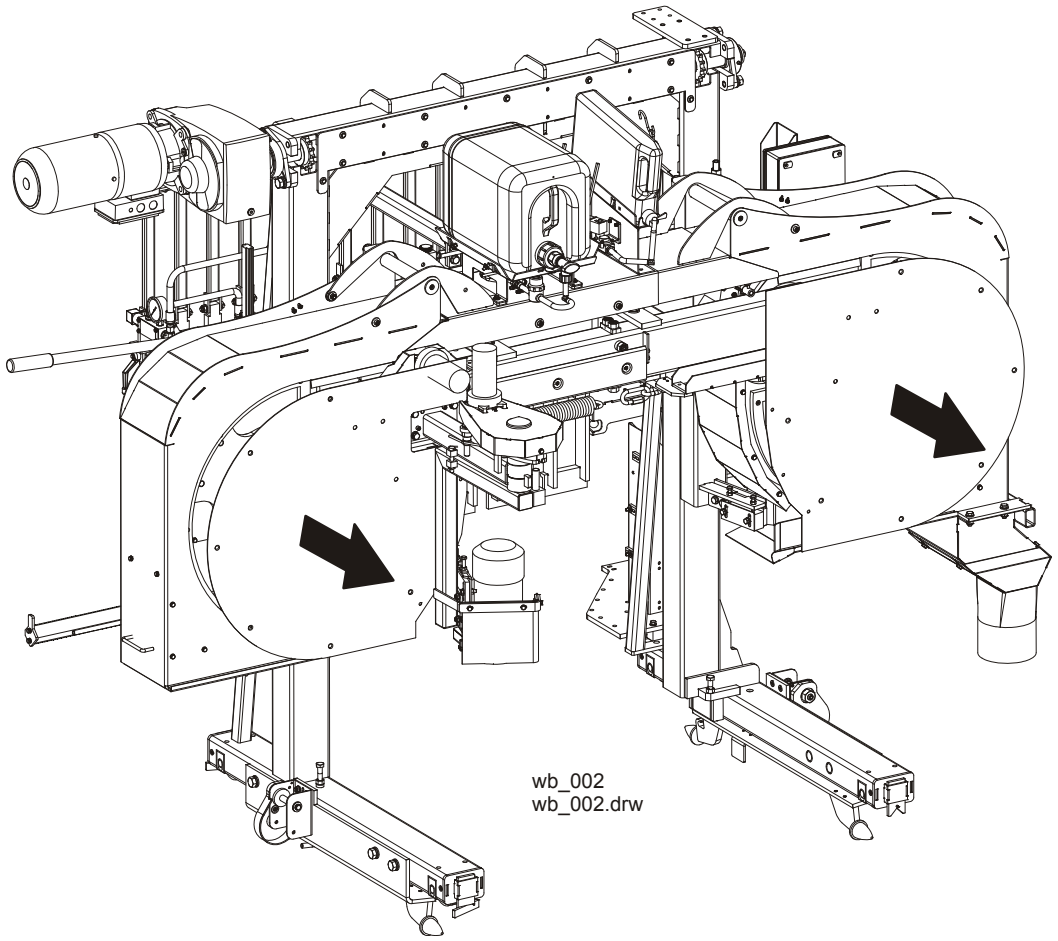


FIG. 4-1

- Debarker in/out drive belt cover

See Figure 4-2.

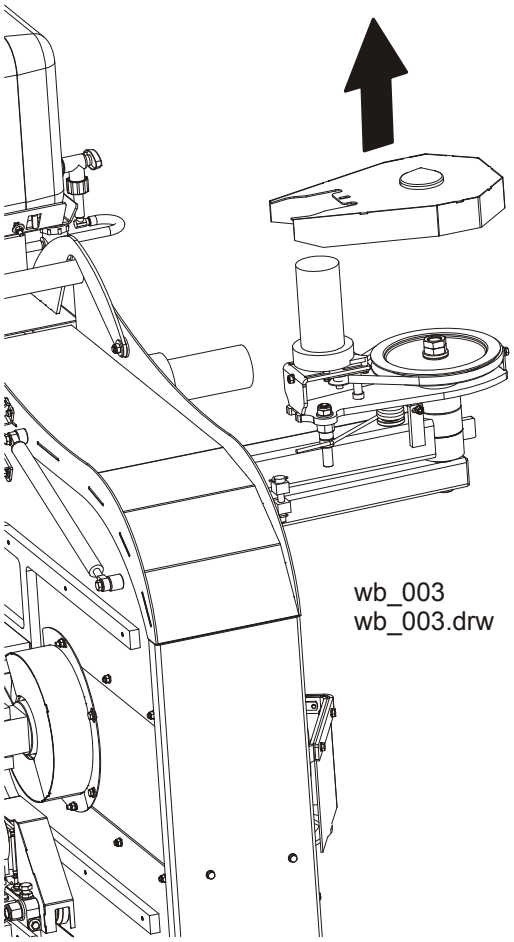


FIG. 4-2

- Blade drive belt cover

See Figure 4-3.

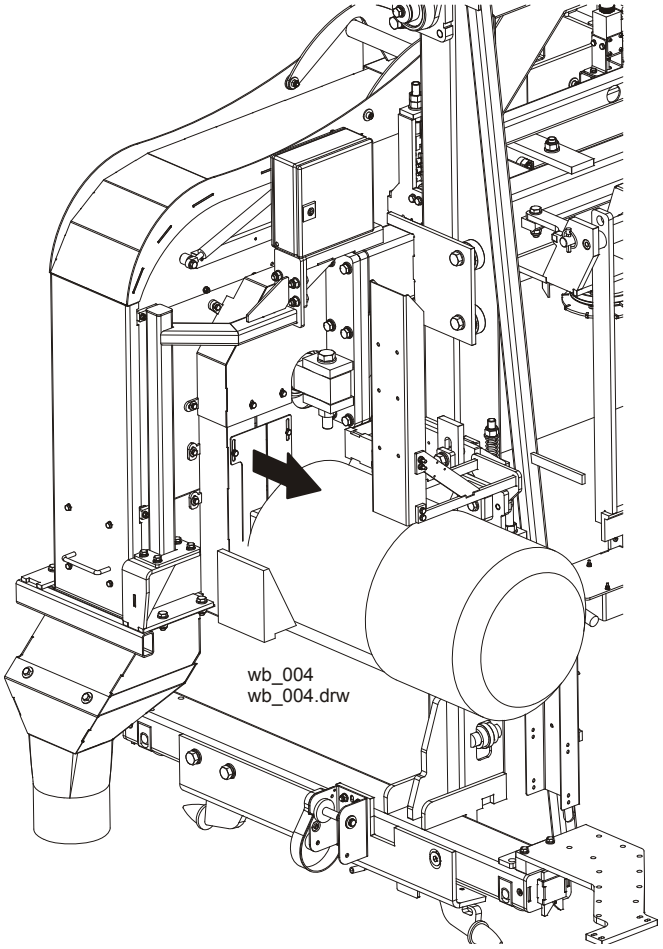


FIG. 4-3

4.3 Safety Devices Inspection

WB2000 – Safety Devices Inspection

Safety devices on the WB2000 machine which must be checked before every shift:

- E-STOP button and its circuit
- Control circuits with the E-STOP button pressed
- Blade cover safety switch #1 and its circuit
- Blade cover safety switch #2 and its circuit
- Motor brake and its circuit

1. E-STOP button and its circuit inspection

- Turn on the blade motor;
- Press the E-STOP button located on the left side of the control box. The blade motor should be stopped. Pressing the START button should not start the motor until the E-STOP button is released.

2. Inspection of the control circuits with the E-STOP button pressed

- Turn on the blade motor;
- Press the E-STOP button located on the left side of the control box. The blade motor should be stopped.
- With the E-STOP button pressed, try to move the saw head up and down using the switch and the Setworks buttons, and forward/backward using the power feed switch. Both systems should not start.
- With the E-STOP button pressed, try to start the debarker blade motor and move the debarker arm in and out. The debarker should not work.
- With the E-STOP button pressed, try to move the blade guide arm in and out. The blade guide arm should not work.
- With the E-STOP button pressed, try to start the board return system. The board return system should not work.

3. Blade cover safety switch #1 and its circuit inspection

- Turn on the blade motor;
- Open the blade housing cover #1;
- The blade motor should be stopped;
- Try to start the motor. The blade motor should remain stopped;
- Close the blade housing cover #1;
- The blade motor should remain stopped until it is restarted with the START button.

4. Blade cover safety switch #2 and its circuit inspection

- Turn on the blade motor;
- Open the blade housing cover #2;
- The blade motor should be stopped;
- Try to start the motor. The blade motor should remain stopped;
- Close the blade housing cover #2;
- The blade motor should remain stopped until it is restarted with the START button.

5. Motor brake and its circuit inspection

- Turn on the blade motor. Stop the motor using the STOP button. Measure the braking time.

- Turn on the blade motor. Stop the motor by switching the key to the “0” position. Measure the braking time.
- Turn on the blade motor. Stop the motor by switching the key to the “2” position. Measure the braking time.
- The braking time should always be shorter than 10 seconds. If the braking time is longer, it is necessary to adjust or replace the motor disk brake. See your motor option manual.

6. Mode selection inspection.

- Install and tension the blade.
- Open the blade cover.
- Set the key switch to “H” position (see below).
- It should be possible to spin the blade wheels by hand.

SECTION 5 SAWMILL SPECIFICATIONS

5.1 Belt Sizes

See Table 5-1. Belt sizes for the WB2000 sawmill are shown below.

Description	Belt Size	Wood-Mizer Part #
Motor Drive Belt	A59 Li=1495	--

TABLE 5-1.

5.2 Blade

See Table 5-2. Blade specifications for the WB2000 sawmill are shown below.

Parameter	Value
Blade Width	90mm 3,5”
Blade Lenght	6000mm 236”
Blade linear speed	22-30m/s
Blade Tension System	Hydraulic
Blade Lubrication	Oil only

TABLE 5-2.

See **The Blade Handbook** for blade hook angle, tooth height, and tooth set specifications.

5.3 Cutting Capacity

See Table 5-3. The log size capacities of the WB2000 sawmill are listed below.

Parameter	Value
Min. Log Diameter	200mm ,8”
Max. Log Diameter	1000mm 39”
Min. Log Length	1000mm 39”
Max. Log Length	depends on rails length: S-Bed: 5,2m (4,5m with board removal system) M-Bed: 8,2m (7,5m with board removal system)

TABLE 5-3.

5.4 Motor Specifications

See Table 5-4. The power options available for the WB2000 sawmill are listed below.

Motor Type	Manufacturer	Power	Other Specifications
Electric E30	Siemens	22 kW	50 A, 1465 r.p.m.
Electric E40	Siemens	30 kW	66 A, 1465 r.p.m.

TABLE 5-4.

See Table 5-5. The other motors used in sawmills are listed below.

Motor Type	Power
Up/Down	1,5 kW
Power Feed	2,2 kW
Hydraulic Pump Motor	7,5 kW

TABLE 5-5.

5.5 Noise Level

See Table 5-6. The average noise level is given in the table below[1][2][3].

Sawmill	Noise Level
WB2000	L_{EX8} = 83 dB (A)

TABLE 5-6.

1. The noise level measurement was taken in accordance with PN-EN ISO 3746 Standard. The noise exposure level given above concerns an 8-hour work day. Value for associated uncertainty K=4dB.
2.The measured values refer to emission levels, not necessarily to noise levels in the workplace. Although there is a relation between emission levels and exposure levels, it is not possible to determine with certainty if preventives are needed or are not needed. The factors affecting a current level of noise exposure during work are inter alia room characteristics and characteristics of other noise sources, e.g. number of machines and machining operations nearby. Also, the permissible exposure level value may vary depending on country. This information enables the machine's user to better identify hazards and a risk.
3. **IMPORTANT!** The total value of hand-arm vibration the operator may be exposed to does not exceed 2.5 m/s^2. The highest root mean square value of weighted acceleration to which the whole operator's body is subjected does not exceed 0.5 m/s^2.

5.6 Overall Dimensions

See Table 5-7. The overall dimensions of the WB2000 sawmill are listed below.

Sawmill Model	Length	Length with Operator's Station	Width	Height	Weight
WB2000M	10734mm (422.6")	13064mm (514")	3600mm (141.7")	3300mm (129.9")	8000kg 17363 lb
WB2000S	7774mm (306")	10374mm (408.4")	3600mm (141.7")	3300mm (129.9")	6800kg 14991 lb

TABLE 5-7.

5.7 Chains

See Table 5-8. The load capacity of the chains is listed below.

	Load Capacity According to ISO Nr 08A-1
Up/Down Chains	2950 KG 12786 lb

TABLE 5-8.

5.8 Sawdust Extractor Specifications

CAUTION! Always turn on the dust extraction system before starting the machine.

CAUTION! The sawdust extraction system must be grounded or made with materials not accumulating electrostatic charge.

See Table 5-9. See the table below for specifications of the dust extractor [1].

Maximum Capacity	1200 m^3/h (1569 yd^3/h)

TABLE 5-9.

1. External chip and dust extraction equipment with fixed installations are dealt with in EN 12779:2004+A1:2009

Collector Inlet Diameters (in front of fan)	150 mm (5.9 “)
Motor Power	1.5 kW
Number of Sacks for Waste	1 pcs
Total Capacity of Sacks	0,25 m^3 (8.8 $ft)^3$
Weight	110 kg (242.5 lb)
Pressure drop	1,5 kPa (0.22 psi) [1]
Conveying Speed When 10 m Long Hose Is Used	20 m/s (65.6 ft/s)

TABLE 5-9.

[1] The pressure drop between the inlet of the capture device and the connection to the CADES should be maximum 1,5 kPa (for the nominal air flow rate). If the pressure drop exceeds 1,5 kPa the machine might not be compatible with conventional CADES.

5.9 Lube System Specifications

The blade lubricating oil specifications are listed below.

Oil Type	Manufacturer	Freezing Temperature	Ignition Temperature	Autoignition Temperature
ACP-1E [1]	Orlen	-20° C (-4° F°)	Above 140° C (284° F)	250° C (482° F)

TABLE 5-10.

[1] Waste oil must be disposed of in compliance with applicable national and local regulations.

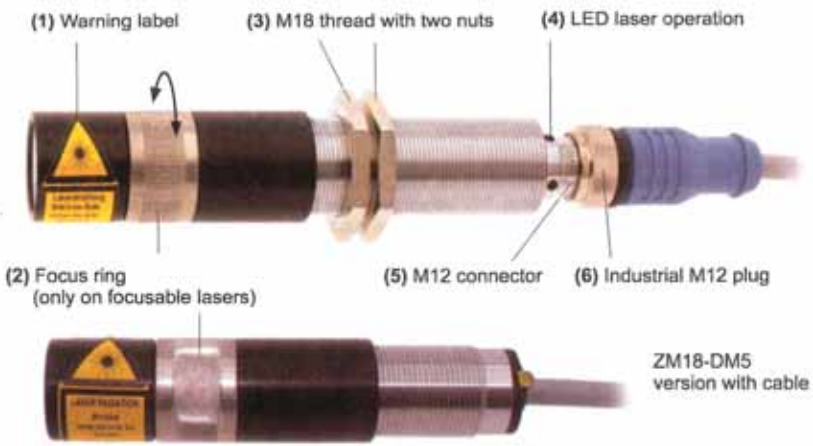
SECTION 8 LASER INFORMATION

Thank you for purchasing a *Z-LASER* product!

Z-LASER

www.Z-LASER.com

Welcome to the ZM18 laser series!



CE

Product emits laser radiation in laser classes: 1, 1M, 2, 2M, 3R, 3B

(EN 60825-1: 2007)

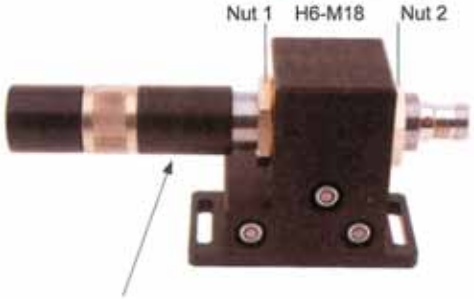
Avoid direct eye exposure to laser beam!

EN: Brief description of ZM18

1. Warning label is enclosed and should be well visible. **Please pay attention to the laser classes!** (EN 60825-1: 2007) Laser class 3R, 3B and 4 are intended for integration into complex systems and are not approved for stand-alone operation. They require a laser protection officer who will decide on the necessary legal measures of training, hazard control and use.
2. By rotating the focus ring, the laser projection can be focused (from 100mm up to ∞).
3. M18 thread with two nuts for a simple installation in a mounting or a mounting angle.
4. • LED light = Laser on
   • No LED light = Laser off
   • LED blinking orange/green (only ZM18-S/H) = internal temperature of 65°C is reached. At 85°C, the laser turns off, but the LED still blinks. – Watch out!
5. M12 connector to provide fixed and secure connection to power supply, cable or customized solution (also see configuration scheme with ZM18-S/H). Version with flying leads connection is also available (ZM12DM5).
6. Fit industrial plug to laser, screw softly by hand (without tool). About 2mm of the screw thread must be visible, do not fix it any further!

Installation into a mount
– On the side example with a H6-M18 (alternative angle mounting)

1. Spin nut 1 on to the M18 laser thread.
2. Screw the laser into the mount until you reach nut 1 (alternative: put into mounting angle).
3. Spin nut 2 from behind and fix softly both nuts with a M18 device.



Installation into a mount with Ø 20mm, as example H2-20
Please do not fix the mount on to the front of the laser body as pressure can cause damage to the optics. Please fix the mount behind the focusing adjustment.

Troubleshooting:
- No laser light. Is the plug and/or power supply connected, supply voltage available?
- No laser light. Is the cable damaged / broken or is the power supply/power socket defective?
- No laser light. Are the pins connected correctly?
- Diffuse projection: (if focusable) readjust focus ring.
- Diffuse projection: If the optic appears "dirty" - carefully, clean with a cotton bud and spirit.

If the above troubleshoots do not solve your problems, it is possible that there is a fault with the electronics or laser diode. If the laser diode is faulty, as per split or weak beam, please return the laser to our headquarters.

ZM18 series is available with different features *
Die Serie ZM18 ist mit unterschiedlichen Merkmalen verfügbar *
La Série M18 est disponible avec des caractéristiques différentes *
La serie ZM18 è disponibile con varie caratteristiche *
La serie ZM18 está disponible con distintas características *
ＺＭ１８シリーズは異なった特徴と利用できる *

Configuration scheme and modulation			cable (KB4)
	**ZM18B (Basic) + ZM18DM(5)***		
		Pin 1: Voltage supply +	brown
		Pin 3: Voltage supply -	blue
		Pin 2: TTL modulation / [ZM18-DM(5): up to 100kHz]	white
		Pin 4: Analog modulation /; Continuous wave	black

Configuration scheme and modulation			cable (KB4)
	**ZM18B (Basic) + ZM18DM(5)***		Pin 1: Voltage supply + brown Pin 3: Voltage supply - blue Pin 2: TTL modulation / [ZM18-DM(5): up to 100kHz] white Pin 4: Analog modulation /; Continuous wave black

	ZM18S (Standard)	ZM18H (High-End)
Pin 2: TTL 	Voltage levels below ~2V are interpreted as logic 0 or "light off"; voltage levels above ~2V are interpreted as logic 1 or "light on". Please note that the switching threshold can vary slightly.	
Pin 4: Analog	Applying a DC voltage between 0-1V at pin 4, the laser intensity is controlled. 0V means the laser power is < 10% of the nominal power. 1V and above means the laser will achieve 100% of the nominal laser power.	
Modulation	Analog intensity control (up to 32 steps) and digital TTL Trigger up to 1 kHz	APC: TTL up to 1 MHz; sinusoidal waves up to 5 MHz; ACC: up to 20 MHz (diode depending)
General rule	Note that there is a linear characteristic between the two voltages! Both control inputs are tolerant to DC voltages up to 25V, therefore, by applying 24V to the laser, it can easily be switched on to 100% by bridging pins 1, 2 and 4. There is no need for an extra supply of 1V. You cannot destroy the laser in a 24 Volt system by wrong connections of input pins. * Attention: Laser type ZM18DM5 with 3-wired cable must be supplied only with 4-6VDC!	

CE-Conformity according to the directives 2004/108/EC and 73/23/ECC excluding connection type.

	ZM18B (Basic) + ZM18DM(5)	ZM18S (Standard)	ZM18H (High-End)
Mechanical specifications *			
Max. Dimensions ZM18DM5 with cable	76mm x Ø 20mm (fixed focus version) 91mm x Ø 20mm (focusable version)	-	-
Max. Dimensions ZM18B-green	136mm x Ø 20mm (focusable and fixed focus version)	-	-
Max. Dimensions	91mm x Ø 20mm (fixed focus version) 108mm x Ø 20mm (focusable version)	112mm x Ø 20mm (fixed focus version) 128mm x Ø 20mm (focusable version)	123mm x Ø 20mm (fixed focus version) 138mm x Ø 20mm (focusable version)
Protection category	IP 67, dust-proof and water-proof		
Connection	M12 plug, 4-pin / ZM18DM5: integrated cable	M12 plug, 4-pin	
M18 industry housing	Chromed brass, with optic head: anodised aluminium		Gold plated brass, with optic head: anodised aluminium
Electrical specifications *			
Supply voltage	5-30VDC +/- 5% ZM18DM5: 4-6VDC	5-30VDC +/- 5%	5-30VDC +/- 5%
Mode of operation	APC with current limiting (or CC)	APC with current limiting	APC with current limiting or CC
Modulation	ZM18B: Continuous wave ZM18DM(5): TTL modulation up to 100kHz	Analogue intensity control (up to 32 steps) and digital TTL Trigger up to 1 kHz	APC: TTL up to 1 MHz; sinusoidal waves up to 5 MHz ACC: Up to 20 MHz (diode depending)
Protection	Reverse polarity and transient / ESD	Reverse polarity and transient / ESD, over temperature protection	Reverse polarity and transient / ESD, over temperature protection
Optic specifications *			
Output power	1-200mW (depending on wavelength)		
Wavelength	635nm - 980nm; 532nm	635nm - 980nm	405nm - 980nm
Environmental conditions *			
Case temperature	-10°C up to +50°C (depending on wavelength; heat dissipation e.g. with mounting H8-M18)		
Storage temperature	-10°C up to +80°C		
Humidity	Max. 90%, non condensing		
MTTF at 25°C	> 30.000h on red wavelengths (635 - 785nm) > 5.000h on green and blue wavelengths		

SECTION 9 MOTOR BRAKE

9.1 Maintenance/repair

Wear of spring − applied brakes

INTORQ spring − applied brakes are wear−resistant and designed for long maintenance intervals. The friction lining and the mechanical brake components are subject to function−related wear. For safe and trouble−free operation, the brake must be checked and readjusted at regular intervals, and, if necessary, be replaced. The following table describes different causes of wear and their effects on the components of the spring−applied brake. For calculating the service life of rotor and brake and determining the maintenance intervals to be observed, the relevant factors of influence must be quantified. The most important factors are the friction work, initial speed of braking and the operating frequency. If several of the causes of wear indicated for the friction lining occur in an application at the same time, the influencing factors must be added for calculating the wear.

Inspections

To ensure safe and trouble−free operation, spring−applied brakes must be checked and maintained at regular intervals. Servicing can be made easier if good accessability of the brakes is provided in the plant. This must be considered when installing the drives in the plant. Primarily, the necessary maintenance intervals for industrial brakes result from the load during operation. When calculating the maintenance interval, all causes for wear must be taken into account.If the brakes are not maintained, failures, production outages or plant damages may be the result. Thus, a maintenance concept adapted to the operating conditions and loads of the brake must be developed for every application. The maintenance intervals and maintenance work listed in the following table must be scheduled for the spring−applied INTORQ brake.

Maintenance intervals

Service brakes	■ according to service life calculation ■ otherwise every six months ■ after 4000 operating hours at the latest

TABLE 9-0.

9.2 Maintenance

IMPORTANT! Brakes with defective armature plates, cheese head screws, springs or flanges must be replaced completely.

Please observe the following for inspections and maintenance operations:

- Remove impurities through oil and grease using brake cleaning agents, if necessary, replace brake after finding out the cause of the contamination. Dirt deposits in the air gap between stator and armature plate impair the function of the brake and must be removed.
- After replacing the rotor, the original braking torque will not be reached until the run−in operation of the friction surfaces has been completed. After replacing the rotor, run−in armature plates and flanges have an increased initial rate of wear.

Checking the rotor thickness

DANGER! The motor must not be running when checking the rotor thickness.

- Remove the motor cover and seal ring (if mounted).
- Measure the rotor thickness with a caliper gauge. On brakes with friction plates, observe edging on outer diameter of friction plate.
- Compare measured rotor thickness with minimally permissible rotor thickness *See Table 8-1*
- Replace the complete rotor if necessary.

Check air gap

- Measure the air gap "$s_{Lü}$" between armature plate and rotor using a feeler gauge (see chapter 3.3).
- Compare the measured air gap to the maximum permissible air gap "$s_{Lümax.}$" (see table below).

- If necessary, adjust air gap to "$s_{Lürated}$".

Brake Type	sLürated +0.1mm -0.05mm	sLümax Service Brake	Max. adjustment permissible wear	Rotor thickness		Excess of the adjuster nut $h_{Emax.}$ [mm]
				min. [1] [mm]	max. [mm]	
INTORQ BFK458-25	0,4 mm (1/64”)	1,0 mm (3/64”)	4,0 mm (5/32”)	12 mm (15/32”)	16 mm (5/8”)	17 mm (43/64”)

TABLE 8-1

EC declaration of conformity

according to EC Machinery Directive 2006/42/EC Annex II, 1.A

We herewith declare,

Wood-Mizer Industries sp. z o.o.
114 Nagorna street, 62-600 Kolo; Poland.

That the following described machine in our delivered version complies with the appropriate basic safety and health requirements of the EC Machinery Directive 2006/42/EC based on its design and type, as brought into circulation by us. In case of alteration of the machine, not agreed by us, this declaration is no longer valid.

Designation of the machine:	**Horizontal Resaw**
Type:	WB2000EH25S; WB2000EH30S
No. of manufacturer:	……..
Applicable EC Directives:	EC Machinery Directive 2006/42/EC EC Electromagnetic Compatibility Directive 2004/108/EC
Applicable Harmonized Standards:	PN-EN ISO 12100:2012 PN-EN 1807-2:2013 PN-EN 13849-1:2008 PN-EN 60204-1:2010 PN-EN 13857:2010
Notified Body according to annex IV MD 2006/42/EC:	TUV SUD Product Service GmbH Gottlieb-Daimler Strasse 7 70794 Filderstadt
Notification No	0123
Responsible for:	EC type examination
EC type-examination certificate no.	M8A 14 12 55286 029
Responsible for Technical Documentation:	Adam Kubiak / R&D Manager Wood-Mizer Industries Sp. z o.o. 62-600 Koło, ul. Nagórna 114, Poland Tel. +48 63 26 26 000
Place/Date/Authorized Signature:	Koło, 08.12.2014 Adam Kubiak
Title :	R&D Manager