

# Ironwood BR23

## User Manual



**general information.** features.

technical specifications. safety considerations.

**delivery and installation.** inspection.

pre-operation cleaning. **assembly.**

ream extension fence and stops. drill bits.

**operation and adjustments.**

controls. operation. applications.

**maintenance.** cleaning.


troubleshooting. **safety.** connect to power.

**IRONWOOD**

**stiles**

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 **PLEASE REVIEW AND OBSERVE ALL SAFETY INFORMATION / DIRECTIVES BEFORE INSTALLING, OPERATING, OR PERFORMING MAINTENANCE ON THIS MACHINERY.**

# 1.0 General Information

## 1.1 Thank You!

Thank you for your purchase of the Ironwood BR23 construction boring machine. At Stiles Machinery, our goal is to ensure that you are fully satisfied with your purchase. This manual is provided so that you may properly assemble, operate, and maintain your BR23. Should you need help, our team of dedicated service personnel are available to answer your questions and provide any resource recommendations you may need.

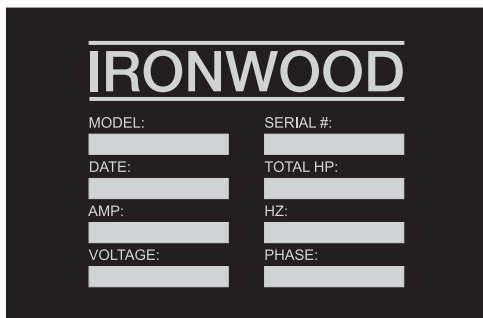
## Warranty and Support

All Ironwood machines are designed to meet the exacting standards demanded by craftsmen like you. Ironwood machines include a one (1) year parts warranty and two (2) years of free 24/7 technical support beginning at date of shipment. Standard technical support remains in effect for free for the lifetime of the machine thereafter. Warranty service work is not covered by manufacturer's warranty. Stiles' service team is available for an additional charge.

## 1.2 Before Contacting Stiles

Please have your machine model and serial number available when contacting Stiles Machinery with questions. The machine's model and serial number are listed on the metallic plate located on the machine's frame.

Information regarding the electrical system and pneumatic supply are also listed on the metallic plate.



Machine information plate

Stiles Technical Support  
616.698.6615

Stiles Parts  
800.PARTS.80 (800.727.8780)

Website  
[www.stilesmachinery.com/ironwood/br-23](http://www.stilesmachinery.com/ironwood/br-23)

Machine Model \_\_\_\_\_

Machine Serial Number \_\_\_\_\_

## 1.3 Features

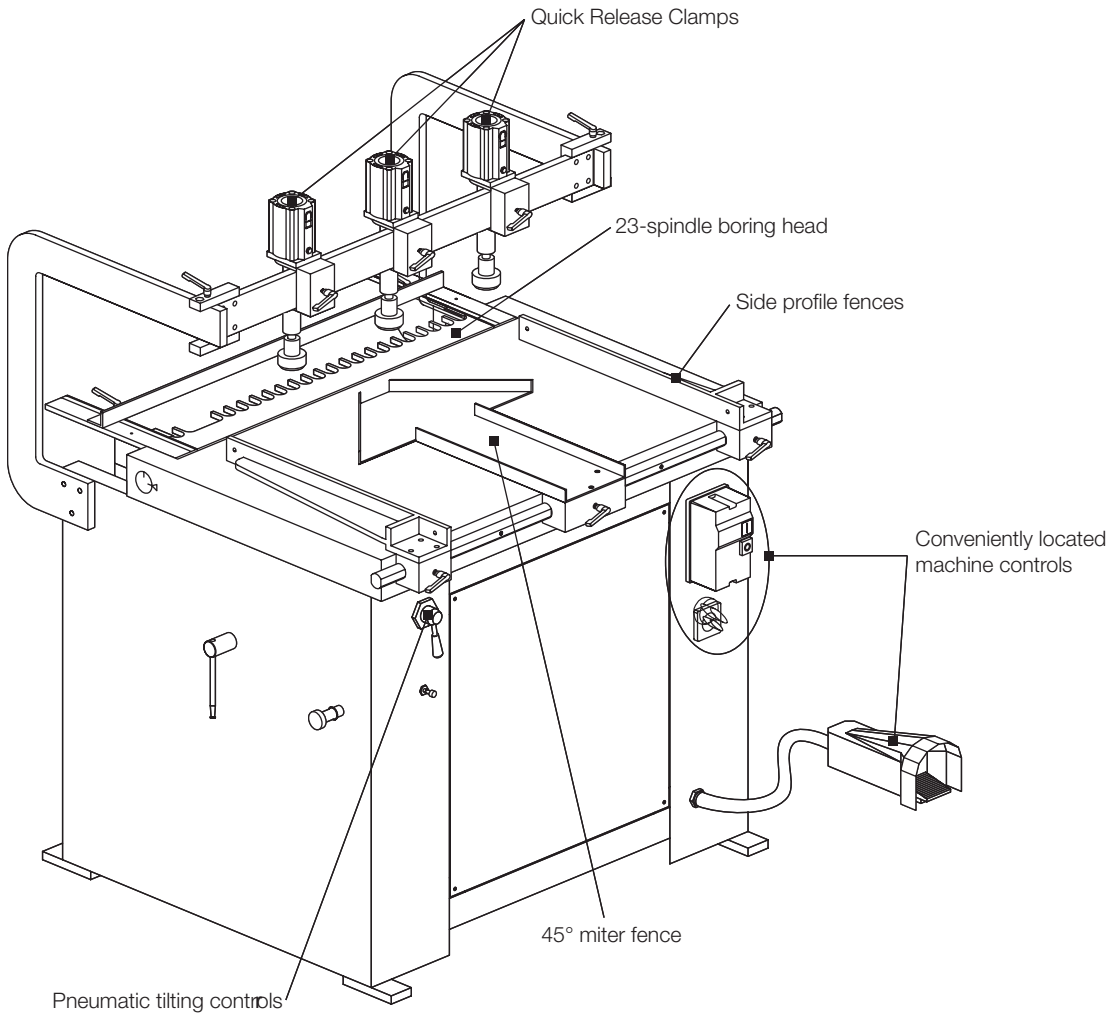
- Three Quick Release pneumatic clamps firmly secure workpieces while boring and prevent operator injury
- Clamp heads have a rubber coating to prevent workpiece damage
- Machine controls are conveniently positioned
- Digital readouts enable precise and consistent boring-unit positioning
- Pneumatic tilting controls and tilt-lock allow quick and accurate boring-unit settings from 0-90°
- 23-spindle single-head boring unit
- Easily removable side-profile fences allow quick changeover from doweling for casegoods to System 32 line boring
- 3-meter extension fence enables boring of large workpieces.
- Boring feed speed adjustment allows clean boring operations and superior boring quality

## 1.4 Intended Use

The Ironwood BR23 is designed for closet, casegood, and cabinet making. The machine is ergonomically designed for applications that require boring a long, straight row of up to 23 holes in a single stroke. Drill bits rise from beneath the workpiece for fast, clean, safe, boring.

The BR23 allows System 32 line boring, with hole spacing of 32mm to facilitate the easy installation of dowels, brackets, hinges, cam fittings, shelf support, connecting screws, etc. The boring head carriage can be adjusted to a 90°, 45°, or 0-degree position. Holes can be bored in the faces or edges of the workpiece.

This robust boring machine allows quick set-up times, digital read-outs for improved accuracy, and a conveniently large working surface for applications.



## 1.5 Technical Specifications

Description	Ironwood BR23
Spindles on boring head	23
Center distance between spindles	32mm
Number of pneumatic clamps	3
Working space requirement w/o extension fence	41" x 59½" x 53" (1040mm x 1510mm x 1350mm)
Dimensions of working table	21⅞" x 37½" (550mm x 950mm)
Working width	27¾" (704mm)
Max. boring depth	4" (100mm)
Adjustable boring stroke	2"-4" (50mm-100mm)
Quick chuck	23 pcs
Motor power	3 hp
Spindle speed	3450 rpm
Air Requirement	90-100 PSI
Air Consumption	1 cfm / cycle
Gross weight	836 lbs (380 kg)
Electrical	230v, single phase
Amps	22 amps

## 1.6 Safety Considerations

For your safety, read these instructions thoroughly before you install and operate this machine. Always have these instructions available at the machine for reference.

Observe all codes and regulations that apply to the installation and operation of this machine.

Keep visitors at a safe distance from the work space.

Keep children away from this and all machines. Childproof your work area!

Familiarize yourself with the safety notices used in this manual.

### CAUTION

If cautions are ignored, personal injury and/or machine damage may result.

### WARNING

If warnings are ignored, serious injury or death may result.

### Warning Labels

This machine has warning labels attached to ensure safe operation. These warning labels are very important and should be kept clean and never be removed. If warning labels become damaged or lost, contact Stiles Machinery immediately for replacements.

Label 1 Safety rules

Label 2 Air pressure warning

Label 3 Risk of electrical shock

 <p><b>SAFETY RULES</b></p> <p>DON'T EXPOSE TO RAIN OR USE IN RAIN CAREFULLY READ INSTRUCTION MANUAL BEFORE OPERATING MACHINE.</p> <p>DO NOT OPERATE WITHOUT ALL GUARDS AND COVERS IN POSITION. BE SURE MACHINE IS ELECTRICALLY GROUNDED.</p> <p>REMOVE OR FASTEN LOOSE ARTICLES OF CLOTHING SUCH AS NECKTIES, ETC. CONFINE HAIR.</p> <p>REMOVE JEWELRY SUCH AS FINGER RINGS, WATCHES, BRACELETS, ETC.</p> <p>USE SAFETY FACE SHIELD, GOGGLES, OR GLASSES TO PROTECT EYES AND OTHER PERSONAL SAFETY EQUIPMENT AS REQUIRED.</p> <p>STOP MACHINE BEFORE MAKING ADJUSTMENTS OR CLEANING CHIPS FROM WORK AREA.</p> <p>KEEP THE FLOOR AROUND THE MACHINE CLEAN AND FREE FROM SCRAPS, SAWDUST, OIL OR GREASE TO MINIMIZE THE DANGER OF SLIPPING.</p>	<p>LABEL NO. 1</p>
 <p><b>WARNING: When air pressure is first applied to the machine, it may cause the carriage to move to horizontal or 45° position. KEEP THE USER AWAY FROM THE BACK OF THE MACHINE!</b></p>	 <p>LABEL NO. 3</p>

### WARNING

Never use the BR23 for purposes other than its intended use. Do not modify or remove any guards or other safety features. Improper use or modifications may affect your warranty or result in serious injury or death.

### Training

This machine is intended for use by authorized, well-trained operators only.

Do not operate this machine until you have a complete working knowledge of the machine and have been properly trained for its safe operation, correct adjustment, and use. All operators should thoroughly read and understand this manual and the workings of this machine prior to operation.

It is essential that all operators be aware of the following:

- The dangers associated with the operation of this machine
- The use of personal protective equipment for ear and eye protection
- The proper positioning the operator and operator's hands relative to the drill bits and pneumatic clamps
- The principles of machine operation, and proper use and adjustment of the fence and safety features
- The correct selection of tooling for each operation
- The safe handling of the workpiece when boring
- The safe stacking of the workpiece before and after boring

# 2.0 Facility Preparation

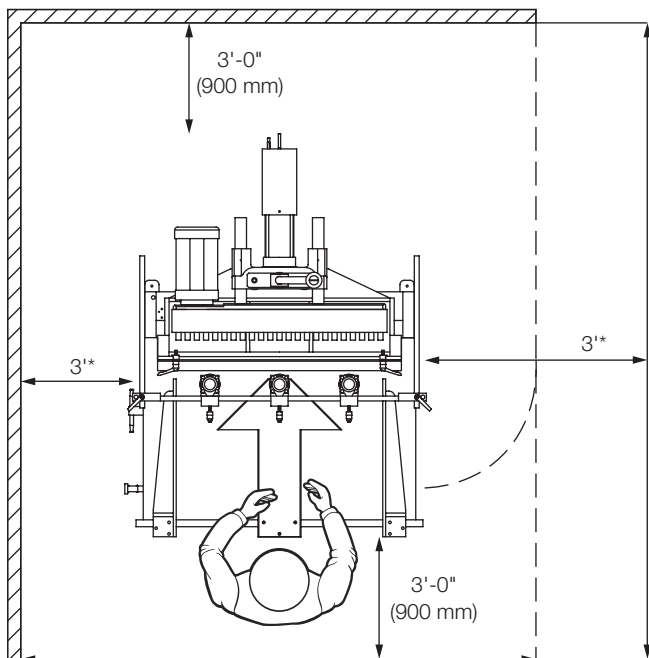
Prior to uncrating your machine confirm that your location can accommodate the Ironwood BR23. Follow these guidelines:

## 2.1 Floor

- The floor must be flat and level.
- Although no special foundations are required, a concrete floor is recommended.
- All floors must have a load-bearing strength suitable for the machine weight of approximately 830 lbs (380 kg).
- The machine need not be anchored to the floor. However, if you decide to do so, purchase high quality anchor bolts appropriate to the floor construction and material.

## 2.2 Work Space

- Provide adequate workspace surrounding the machine.
- Provide proper non-glare, overhead lighting.
- Avoid exposing to any environment where vibration is present.
- Avoid exposing to direct sunlight or heat.



Machine clearance requirements\*

\*Actual clearance requirements on the sides depend upon the length of the workpiece to the machine.

## 2.3 Power

### **⚠ WARNING**

A licensed electrician must connect the BR23 to the building power source.

- Do not use extension cords.
- Be sure that the electrical current of the power source is of the same characteristics as the 230-volt electrical system supplied with your machine. If other machine voltage capabilities are required, contact Stiles Machinery.
- Provide access to a suitable power source.

	BR23
Motor	3 hp
Motor Power	230v (single phase)
Amperage	22 amps

- Ensure the machine is protected with an external over-current protective device per your local electrical codes.
- Electrical equipment operating conditions:  
Air temperatures between +41°F (+5°C) and +113°F (+45°C).  
Relative humidity not to exceed 50% at a maximum temperature of +113°F (+45°C).
- Electrical equipment is designed and protected to withstand the effects of transportation and storage temperatures within a range of -13°F (-25°C) to +131°F (+55°C), and for short periods of time not exceeding 24 hours at up to +158°F (+70°C).
- Ensure connection to factory ground system is wired correctly (IAW local electrical codes and NEC) and not connected to any electromagnetic interference source such as welders.

## 2.4 Compressed Air

This machine requires compressed air between 90-100 psi to operate.

# 3.0 Delivery and Installation

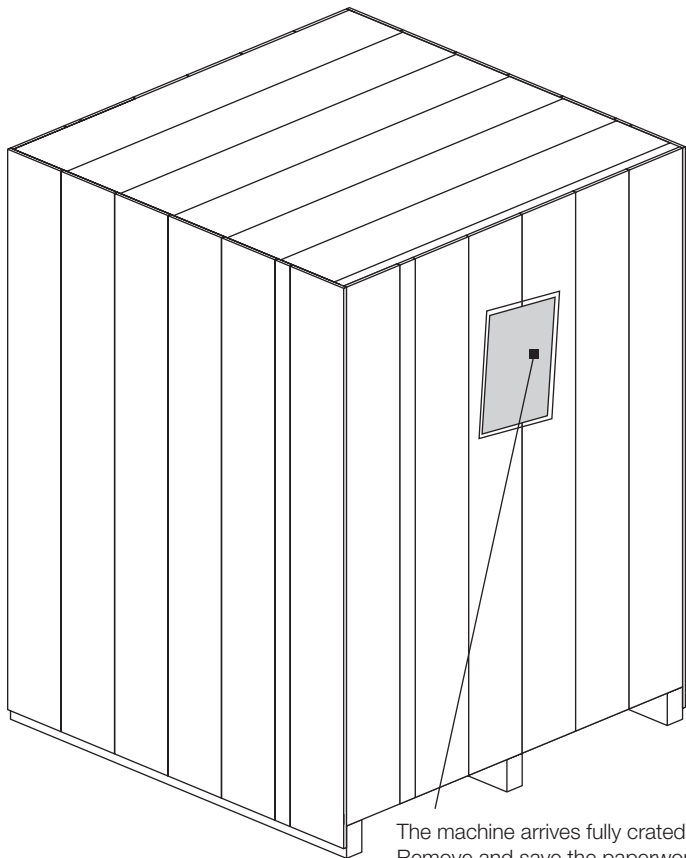
## 3.1 Receiving Your Machine

You will be contacted to arrange delivery. Your machine will be delivered by truck to your location. If there is no loading dock, be sure that you have informed the carrier in advance so that they deliver using a truck with a lift gate to lower the machine to ground level.

Before accepting the machine and signing the bill of lading from the carrier, please inspect crating and machine condition, note potential damage on the bill of lading, take pictures of potential damage, and contact Stiles Machinery immediately at 616.698.7500 and ask to speak with the traffic department.

The machine will arrive fully crated and secured to a pallet. Use a hand truck or fork lift to move the machine on its pallet as close to its final position as possible.

If you do not intend to install the machine immediately after delivery, store it in a protected, cool, and dry location.



The machine arrives fully crated. Remove and save the paperwork attached to the outside.

## 3.2 Unpack the Machine

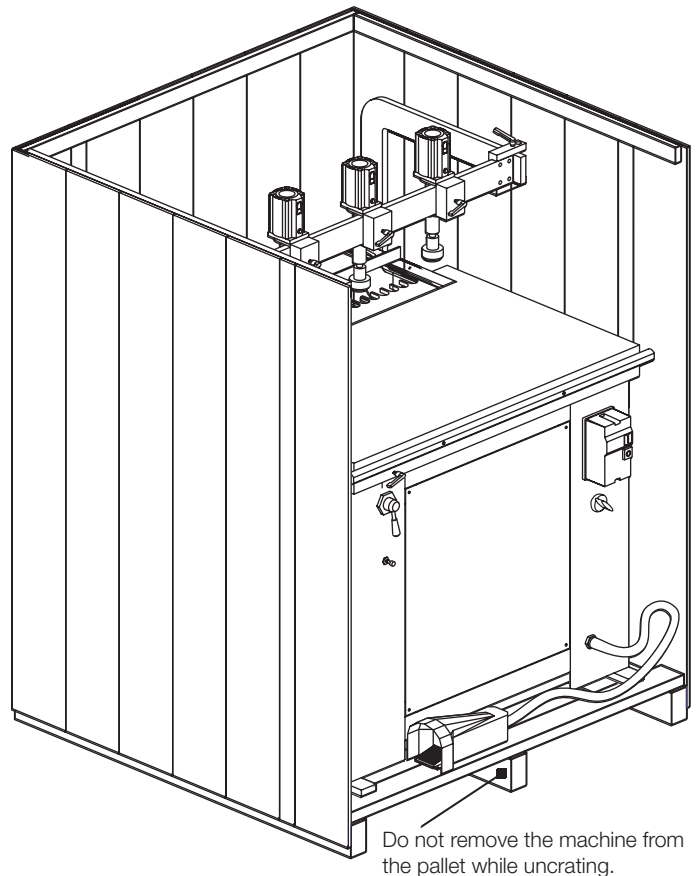
TOOLS REQUIRED:

- Hammer
- Crowbar

Unpack as follows:

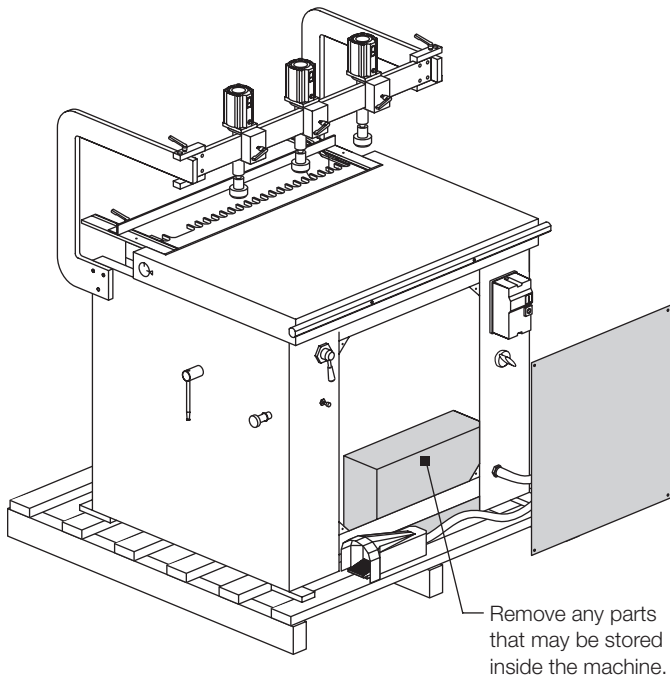
Do not remove the machine from the pallet.

1. Remove and save all paperwork attached to the outside of the crate.
2. Remove the crating, starting with the top, then remove the four sides. Use caution to avoid personal injury and prevent damage to the machine's finish.
3. Remove the protective plastic from the machine, starting at the bottom.



Do not remove the machine from the pallet while uncrating.

4. Remove the front access cover by removing the four Allen head screws
5. Remove hardware, accessories, or tool kit that may be shipped inside the machine. If additional accessories are ordered, they may be delivered separately.
6. Close and bolt the front access cover.



### 3.3 Inspection

Save all containers and packing materials until you are satisfied that your machine has arrived in good condition. If you discover the machine is damaged after you've signed for delivery, immediately call Stiles Customer Service at 616.698.7500.

When you are completely satisfied with the condition of your equipment, you should inventory its parts.

Open and check the contents of all containers to ensure all tools, hardware, and accessories are included. The tool kit should contain the following items:

1. Allen wrench set
2. Open-end wrench set (6-pieces: 8x10/10x12/12x14/14x17/17x19/22x24)
3. Grease gun
4. 3m ruler with hex screw
5. Cranking handle
6. Paint (3-color set)
7. User manual

### 3.4 Move Machine to Final Position

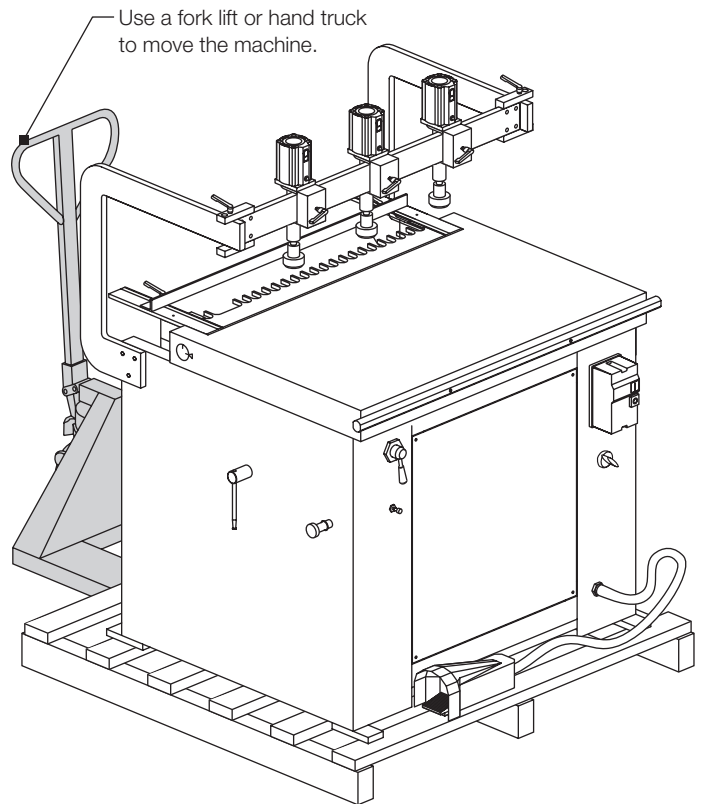
Be sure the site is properly prepared. Refer to section 2.0 for details.

Be sure the front access cover is closed and bolted before transporting.

TOOLS REQUIRED:

- Hand truck or fork lift

Use a hand truck or fork lift to move the machine on its pallet to its final location. If using a fork lift, insert the forks as close as possible to the supports. Make sure fork travel is clear of any obstacles or wiring.





### 3.5 Remove Machine from Pallet

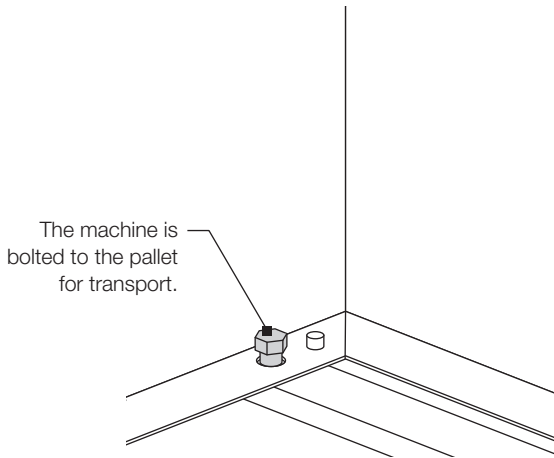
#### CAUTION

The BR23 weighs approximately 830 pounds. For this procedure, we recommend using four people or a forklift.

#### TOOLS REQUIRED:

- Adjustable wrench

When the machine has been placed at its final location, carefully remove the machine from the pallet.



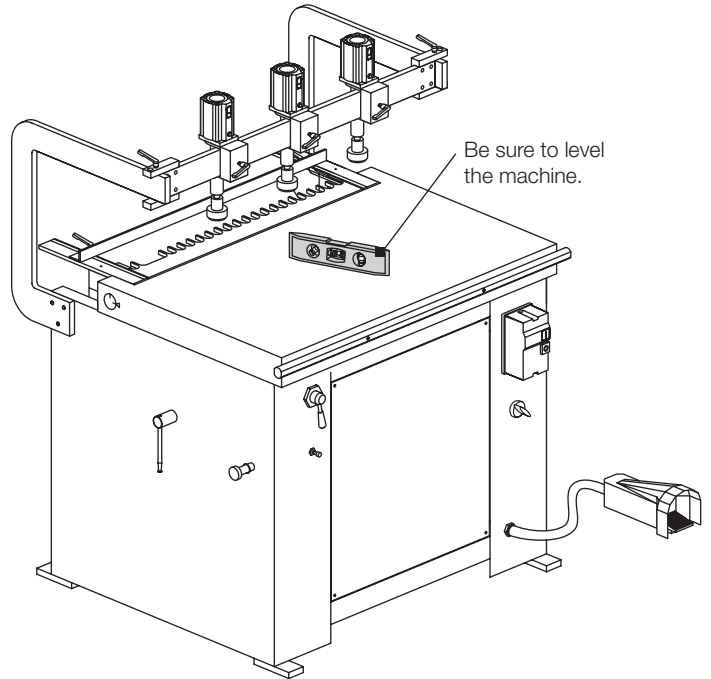
1. From inside the cabinet, remove the bolts that secure the machine to the pallet at the interior corners.
2. Lift the machine from the pallet by one of 2 methods:
  - a. Team lift
  - b. Slide machine onto forks of fork lift
3. Carefully slide the machine into final position.

### 3.6 Level

#### TOOLS REQUIRED:

- Bubble Level
- Adjustable wrench

Use a bubble level along the length and width of the tabletop surface to check for level. Use an adjustable wrench to adjust leveling bolts to level the machine.



### 3.7 Pre-Operation Cleaning

#### WARNING

Use proper cleaning agents and methods described below. Do not use gasoline or other petroleum-based solvents. There is a risk of explosion and burning if these products are used. Serious personal injury may occur.

#### Machine Surfaces

After the machine is unpacked, remove the rust preventative oil that coats the machine. Use a soft cloth and nonflammable degreasing agent, such as Simple Green or other orange/citrus-based cleaner. Do not use abrasive pads.

#### Boring Block Quick Chucks

Special care should be taken when cleaning boring block quick chucks. Completely remove all the grease and dust using a degreasing agent as mentioned above.

# 4.0 Assembly

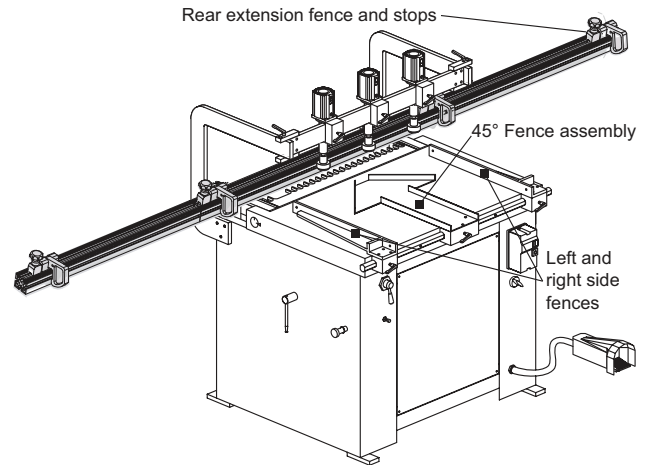
To be assembled:

- Rear extension fence and stops
- Left and Right side fences
- 45° fence
- Drill bits

## 4.1 Rear Extension Fence and Stops

PARTS REQUIRED:

- 3 fence sections
- 2 connection rods
- 4 connection bars
- 4 flip stops
- 1 measurement tape



The rear aluminum fence is assembled using three sections: one 49 ¼" (1250mm) section between two 34 ½" (875mm) fence extensions attached to the left and right of the center section. The aluminum fence has one beveled corner. The beveled corner is the mounting slot for the ruler and should be positioned forward for easy viewing.

To assemble:

1. Insert a connection rod halfway into the center hole at each end of the center back fence.
2. Insert a connection bar into the T-slot at each end of the center back fence; leave approximately half the connection bar exposed.
3. Tighten two set screws through the center back fence onto each connection bar.
4. Attach the two side fences to the connection rod at each end of the center back fence.
5. Tighten the connection bar set screws.
6. Loosen the locking handle on the flip stops.
7. Insert flip stops into the t-slot on the aluminum profile of the back fence.
8. Slide the flip stops to the desired positions on the fence.
9. Tighten the locking handles.

NOTE: A 3-meter measurement tape is included in the tool kit. The measurement tape can be mounted on the assembled back fence to provide accurate flip stop measurements over the entire length of the back fence.

## 4.2 Left- and Right-Side Fences

### PARTS REQUIRED:

- 2 side fence sections
- 2 side fence housings (1 left, 1 right)

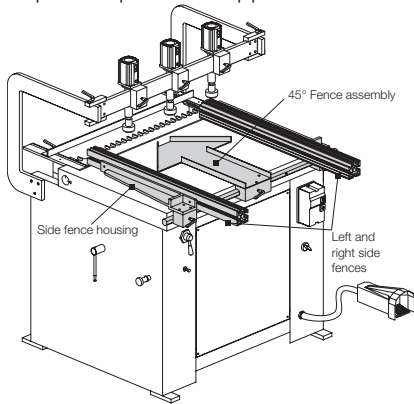


Right- and left-side fences are easily added or removed to accommodate various applications.

To assemble:

1. Slide the side fence housing onto steel guide rail mounted on the front of the machine table.
2. Slide the side fence onto alignment blocks on the side fence housing.
3. Lock the side fence to secure it to the fence housing.
4. Move the side fence to desired position.
5. Lock in place.

Repeat steps for the opposite side fence.



## 4.3 45° fence

### PARTS REQUIRED:

- 1 45° fence assembly

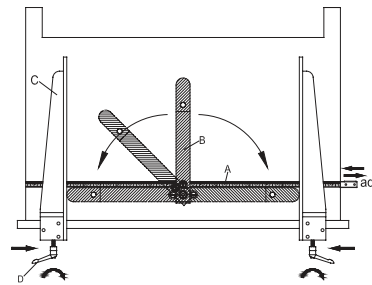
The 45° fence assembly is easily added or removed to accommodate 45° parts.

To assemble:

1. Remove the side fences.
2. Slide the 45° fence into position.
3. Lock the 45° fence in place.

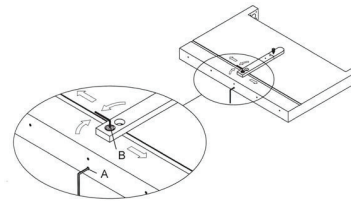
## 4.4 The Mirror-Image Device

1. Calibrate the zero point of rule (A) to the middle of the mirror-image device (B).
2. Turn the device (B) left/right side to adjust the length user needs. (Either left or right side first is ok.)
3. Move the Fene LH (C) to touch the top of device (B) to get the correct distance.
4. Lock the lever (D) to fix the correct distance.
5. Repeat steps 3-4 to adjust the length of another side.



Zero-point adjustment - The zero-point has been set by factory before shipment. Please do not adjust the zero-point (screw A), if not necessary.

Loosen the screw (A) with 1-2 turns. Loosen the screw (B) with 1-2 turns and adjust mirror-imaging advice to zero-point. Tighten screws (A) and (B) when the desired zero-point is obtained.



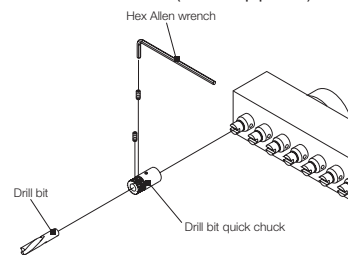
## 4.5 Drill Bits

### PARTS REQUIRED:

- Drill bit quick chucks (supplied)
- Drill bits (not supplied)

### TOOLS REQUIRED:

- Hex Allen wrench



1. Determine which drill bit locations will be used to accommodate the application.

NOTE: Each spindle is colored red or black based on rotation direction (left or right). Please observe the rotation direction when selecting tooling for each spindle.

2. Carefully insert a drill bit quick chuck into the spindle in the desired positions. Make sure the pin inside the quick chuck is engaged with the notch on the spindle.
3. Install drill bits into the other quick chucks in the same manner.
4. Tighten the two set screws with an Allen wrench.
5. Make sure the bits are aligned and all at the same height. Remove and reinstall any out-of-alignment drill bits so that all are aligned.

## Remove Drill Bits

To remove a drill bit quick chuck (with drill bit) from the spindle, slightly turn the quick chuck to the left and pull up.

# 5.0 Connect to Power and Air

## 5.1 Power Connection

- Voltage – Steady state voltage +/- 10% of nominal voltage.
- Machine needs steady voltage at all times.

### **⚠ WARNING**

Before connecting power to the machine, make sure all screws and fasteners are tightened and all mechanical functions work freely.

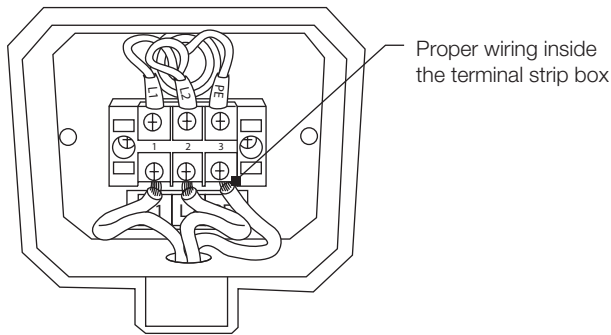
### **⚠ WARNING**

A licensed electrician must complete all connections to electrical power.

Before connecting to a power source, confirm that the electrical current of the power source is the same as the electrical system supplied with your machine. Ensure the machine is protected with an external over current protective device per your local regulating authorities.

Machine must be properly grounded to prevent electric shock. Never connect the yellow/green wire to a live terminal.

Once connected to power source, terminals are electrified even while the power switch is off.



To connect source power to the machine:

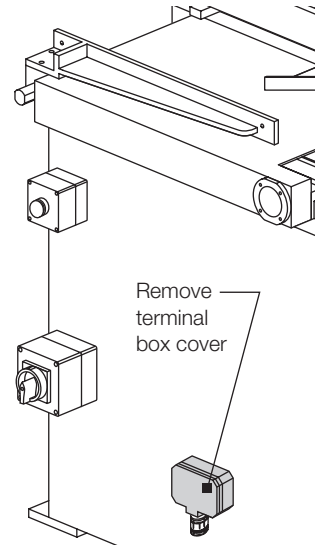
1. Remove two screws and remove terminal box cover.
2. Remove clear plastic insulator that covers the terminals.
3. Insert source power cables through opening of terminal box.
4. Connect the two power cables to terminals L1 and L2, and the yellow/green ground wire to ground terminal.
5. Replace the clear plastic insulator and the power box cover.

### **⚠ WARNING**

Always shut off power at source before removing terminal box cover. Failure to comply with this action may result in electric shock.

### **⚠ CAUTION**

We have covered some basic electrical requirements for the safe installation of your machine. These requirements may not cover all installation requirements. You must confirm that your particular electrical configuration complies with all local codes. Ensure compliance by checking with your local municipality and a licensed electrician.

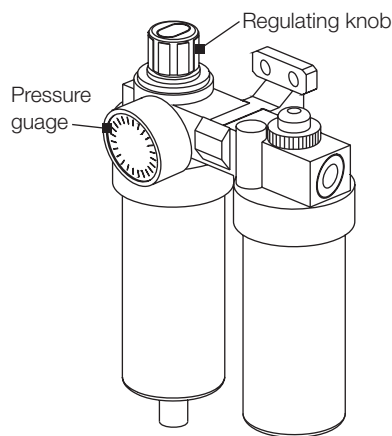


## 5.2 Air Supply Connection

Boring carriage adjustment and Quick-Release clamp operation are pneumatically controlled using the foot pedal.

A 1/4" N.P.T. inlet is supplied with the machine's air fitter/regulator to connect the machine to the air supply.

The air pressure regulator should be set to 90-100 psi.



To adjust the pressure:

1. Pull up on the outer ring of the regulating knob.
2. Turn the regulating knob counterclockwise to let air exhaust to a pressure level below the desired setting.
3. Turn the knob clockwise to slowly increase the pressure to the desired setting.

# 6.0 Safety

## **WARNING**

Like all power equipment, there is danger associated with the Ironwood BR23. Use caution and follow all safety instructions. Take every precaution to protect yourself, others around you, and the machine itself from improper use. Safety is a combination of common sense, training, and being alert at all times while operating your machine. If instructions, warnings, and cautions are not followed, serious personal injury or death may occur.

**EYE PROTECTION:** Always wear approved safety glasses or a face shield when operating this machine. Only use eye protection that meets or exceeds the standards of the American National Standards Institute (ANSI).

**EAR PROTECTION:** Always wear ear protection during machine operation.

**DRESS CODE:** Do not wear loose clothing, neckties, jewelry, or gloves that can get caught in moving parts. Confine long hair and keep sleeves above the elbow.

**ELECTRICAL GROUNDING:** Your machine must be electrically grounded. If a cord and plug are used, make certain the machine is properly grounded. Follow the grounding procedure indicated by the National Electric Code and local regulating authorities.

**GUARDS:** Make certain that machine guards are in place and in good working order. The machine should never be operated without the safety guards in place.

**TOOLING AND ACCESSORIES:** Use only recommended tooling and accessories. Improper tooling and accessories may cause personal injury or damage to your machine. Regularly maintain your tools and accessories. Follow instructions for lubricating and changing tooling and accessories.

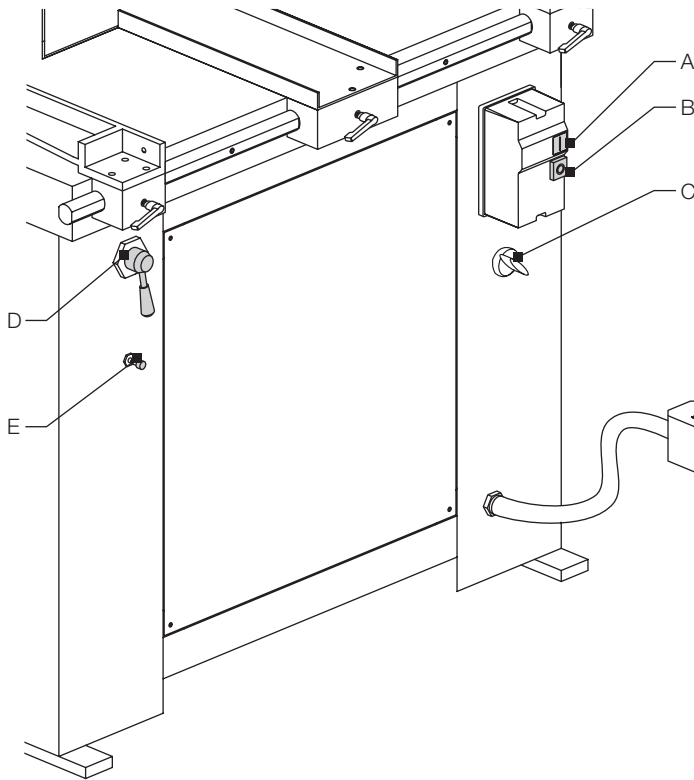
**POWER:** Make sure the starter is in the OFF position before connecting power to the machine.

Make certain the machine is either unplugged or electrically disconnected and locked out when performing all maintenance, cleaning, or machine adjustments. Never leave the machine running unattended. Always turn the power off and stay by the machine until the drill spindles completely stop rotating.

**HOUSEKEEPING:** Before turning the machine on, remove all extra items on or around the machine. Keep the work area clean and free of scrap material, sawdust, and other debris to minimize the danger of slipping. Use compressed air or a brush to remove chips or debris. NEVER use your hands.

# 7.0 Operation and Adjustments

## 7.1 Controls

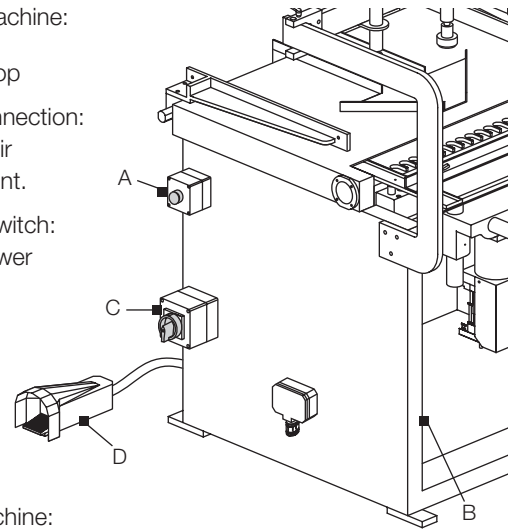


The controls on the front of the machine provide the following functions:

- A. Start: Push to start drill rotation.
- B. Stop: Push to stop drill rotation.
- C. Mode Selector Switch
  - Position 1 (hand symbol): Manual mode. The boring head carriage will move pneumatically into the desired position without spindle rotation. This position can be used to raise and lower boring head to easily change tooling.
  - Position 2 (circular arrows): Automatic mode. The foot pedal activates the pneumatic movement of both the boring head carriage and the work hold-down clamp; the drill spindles will run automatically when the boring head carriage moves up/forward and stop when it is in a lowered/back position.
- D. Handle Lever Valve: Adjusts the angle of the boring head carriage between 90 and 0 degrees.
- E. Feed Rate Control Knob: Sets speed at which boring head drills into workpiece

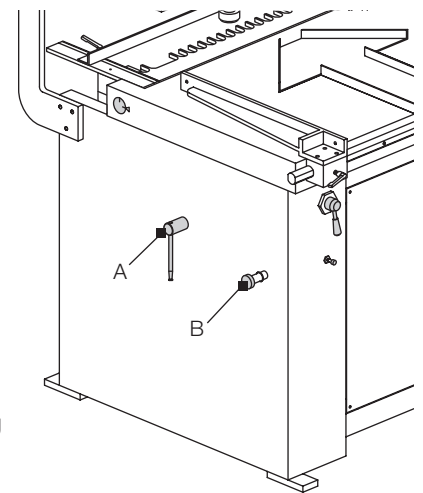
Right side of the machine:

- A. Emergency Stop
- B. Air Supply Connection: Compressed air connection point.
- C. Main On/Off Switch: Turns main power on and off.
- D. Foot Pedal Control: Starts the drilling cycle when depressed.



Left side of the machine:

- A. Lock mechanism: Locks the tilt carriage in place so it cannot be moved when operating.
- B. 45° stop: Enables quick tilt setup at 45°.



## Foot Pedal

The foot pedal activates the pneumatic movement of both the workpiece hold-down clamps and the boring head carriage.

## 7.2 Operation

### **⚠ WARNING**

Always keep the boring head carriage in the LOCK position, except when making an adjustment.

**Step 1:** Activate air supply to machine

### **⚠ WARNING**

When air pressure is first applied to the machine, the boring head carriage may move. Do not stand behind the machine.

NOTE: The air supply must be on to make certain adjustments and enable movement of the workpiece hold-down clamps and boring carriage.

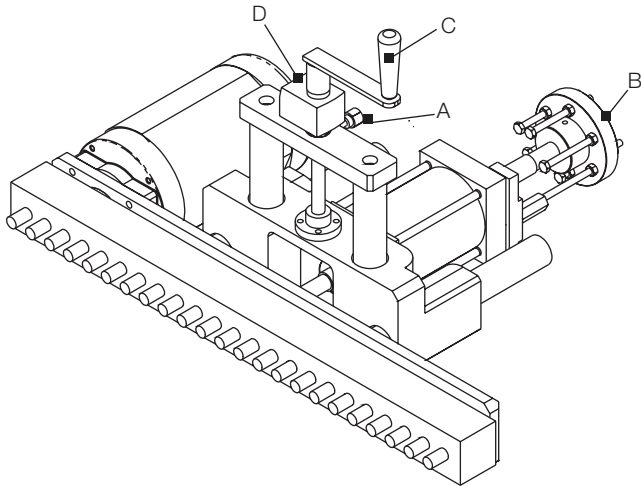
**Step 2:** Turn on power to machine

**Step 3:** Ensure air pressure is correct

**Step 4:** Set boring depth using the revolving turret with stops

Boring depth can be adjusted using the revolving drum (B). It has six turret stops for quick adjustment to your most commonly used boring depths.

1. Before adjusting the revolving turret, make sure that the boring head is completely lowered.
2. Rotate the turret to the necessary stop for the desired depth.



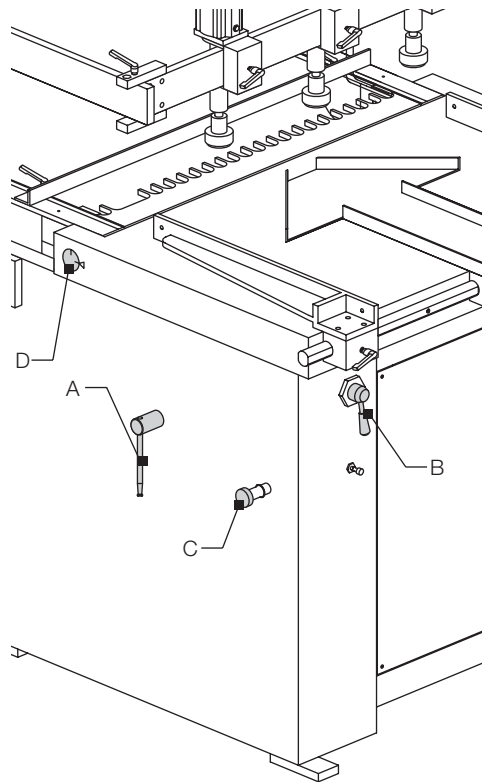
**Step 5:** Set boring position

Use the digital readout to position the drilling head to the desired drilling distance from the edge of the workpiece. Turn the crank handle to adjust position. The position is displayed in millimeters (mm) on the digital readout in the handle assembly.

To adjust:

1. Loosen the lock knob (A).
2. Turn the crank lever (C) to change position of the boring head, observing the position on digital readout (D).
3. Once positioned as desired, tighten the lock lever (A).

**Step 6:** Set angle of boring head



The scale (D) on the left side of the machine indicates the working angle (0-90°) of the drilling head.

To change tilt position:

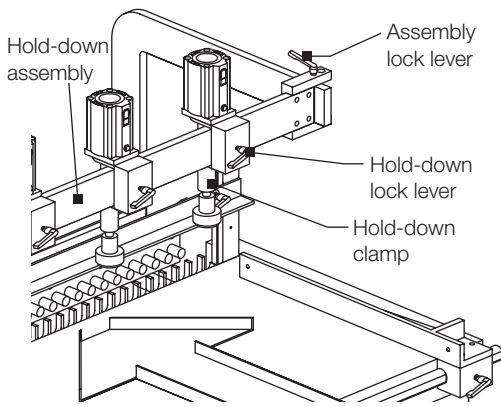
1. Loosen the lock lever (A) located on the left side of the machine.
2. Turn lever (B) on the front of machine to tilt the drilling head.
  - a. To position the carriage for horizontal boring, turn the lever to the left.
  - b. To position the carriage for vertical boring, turn the lever to the right.
3. Tighten the lock lever (A).

45° position

1. Adjust the boring head carriage to the horizontal position (0 degrees).
2. Push in the knob (C) located to the right of the lock lever.
3. Turn the lever to the right. The boring head carriage will lower to the 45° position.



### Step 7: Position the workpiece hold-down clamps



Position the hold-down clamps according to the dimensions of your workpiece to securely hold it in place while boring.

To accommodate workpiece thickness:

1. Place the workpiece on the table under the hold-down clamps.
2. Lower the hold-down clamps to within an inch of the surface of the workpiece.
3. Lock the hold-down clamps in place.

To accommodate workpiece width:

1. Loosen the lock lever for each hold-down to be adjusted.
2. Move the hold-down(s) right or left to the optimal position to secure your workpiece.
3. Tighten the lock levers.

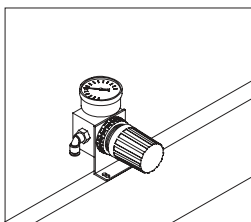
NOTE: A minimum of two workpiece hold-down clamps should always be used when possible.

To reposition the hold-down assembly:

1. Loosen the lock levers at each end of the assembly.
2. Move the assembly forward or back as needed.
3. Tighten the lock levers.

Adj Valve for Hold-Down: Normal pressure 3.5-4 kgs/cm<sup>2</sup> is to reduce exhaust through the pressure plate and avoid O-ring cracked and licking the pressure. But if user takes hard drilling\*, then the work piece would be removed easily. In this situation, please adjust the pressure to 5-6 kgs/cm<sup>2</sup> to make machine have enough pressure to clamp the work piece.

\*Hard drilling: Hard material work piece, thick work piece, drilling many holes at a time, etc.



### Step 8: Position flip stops

Position the four flip stops on the fence according to the dimensions of your workpiece and the desired boring points. The stops can be moved to any point along the fence. The fence has an integral measuring guide with magnifying lens for precision set-up.

1. Loosen the flip stop locking levers.
2. Slide the flip stops to the desired positions on the fence.
3. Tighten the locking levers.

### Step 9: Position side profile fences

Right- and left-side profile fences are easily added or removed to accommodate various applications where referencing from the side is necessary.

### Step 10: Position rear fence

Position the rear fence in proper relation to the drill block for your application.

1. Loosen the locking handles on the rear fence.
2. Move the fence forward or back as needed according to the integrated scale.
3. Tighten the locking handles when rear fence is in position.

### Step 11: Set feed rate

Feed rate is determined by the type of wood and drilling operation. In general, hard woods require a lower feed rate; soft woods require a faster rate.

Turn the knob clockwise to reduce the feed rate for the boring head carriage. Turn counterclockwise to increase the feed rate.

NOTE: If there is burning on a drill hole or chip out on a through-hole, feed rate is too fast or too slow. Adjust as needed based on the material being machined.

### Step 12: Select operation mode

Position 1 (hand symbol): Used when setting up the machine for drilling depth and position. The foot pedal activates the pneumatic movement of the boring head carriage into the desired position without spindle rotation.

Position 2 (circular arrows): Used for normal machine operation. The foot pedal activates the pneumatic movement of both the workpiece hold-down clamp and the boring head carriage; the drill spindles will run automatically when the boring head carriage moves up/forward and stops when it is in a lowered/back position.



### Step 13: Boring the Workpiece

#### **WARNING**

Do not attempt to operate machine if you are not completely familiar with its operation. Obtain immediate advice from a supervisor, instructor, or other qualified personnel.

Use of this machine requires that you give your work your undivided attention, and careless acts or not paying close attention to work being performed may result in serious injury to yourself and/or others. Never operate this or any machine under the influence of drugs, alcohol, or any medication that may impair judgment.

Do not bore warped workpieces. The workpiece must sit flat on the table without rocking.

Dust created by manufacturing activities may be harmful to your health. Your risks from exposure may vary. Always work in a well-ventilated area and wear safety approved, protective dust masks specifically designed to filter out microscopic particles.

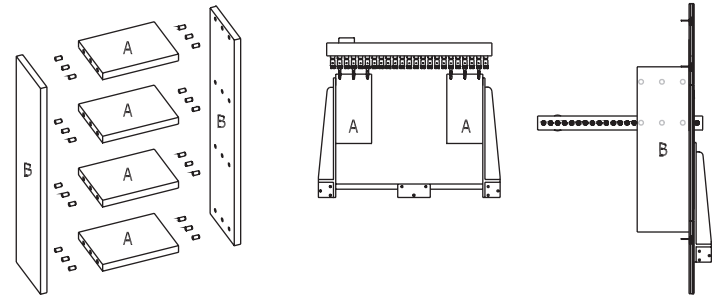
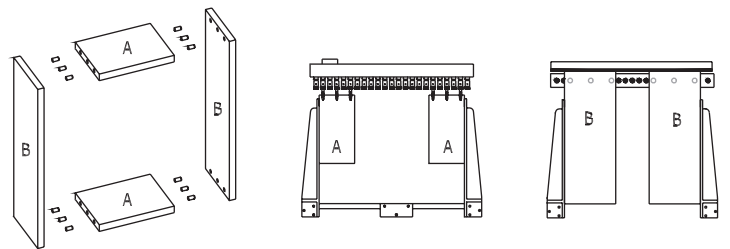
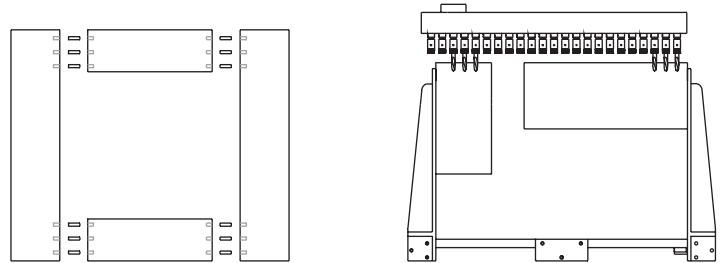
1. Turn on air supply and power supply to machine.
2. Place the workpiece in the desired reference position against the fences and/or flip stops.
3. Bore your workpiece:
  - a. If in manual mode, press the Start button to begin drill rotation, then depress the foot pedal to process boring work; the drill spindles will run continuously, even in the lowered/back position. Press the Stop button to stop drill rotation.
  - b. If in automatic mode, press the foot pedal; the drill spindles will run automatically when the boring head carriage moves up/forward and stop when it returns to the lowered/back position.
4. Remove the workpiece.

#### **WARNING**

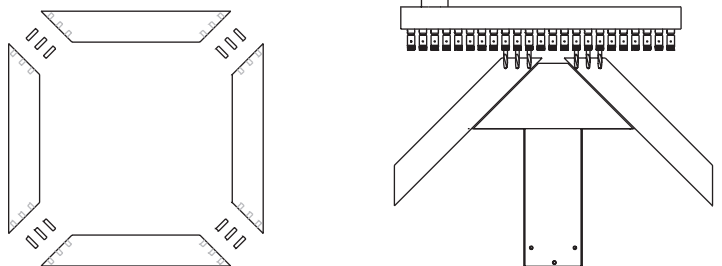
Never remove the bored piece until the boring cycle is complete.

### 7.3 Applications

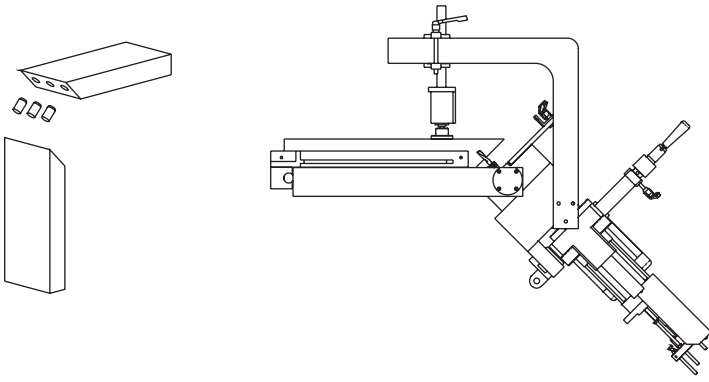
#### Joining at 90°



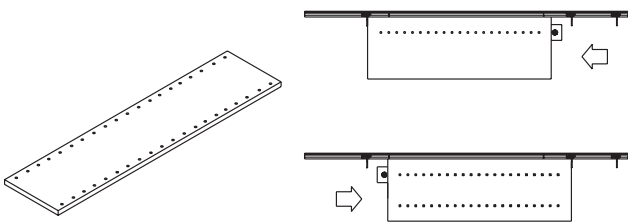
#### Joining at 45° Using 45° Fence



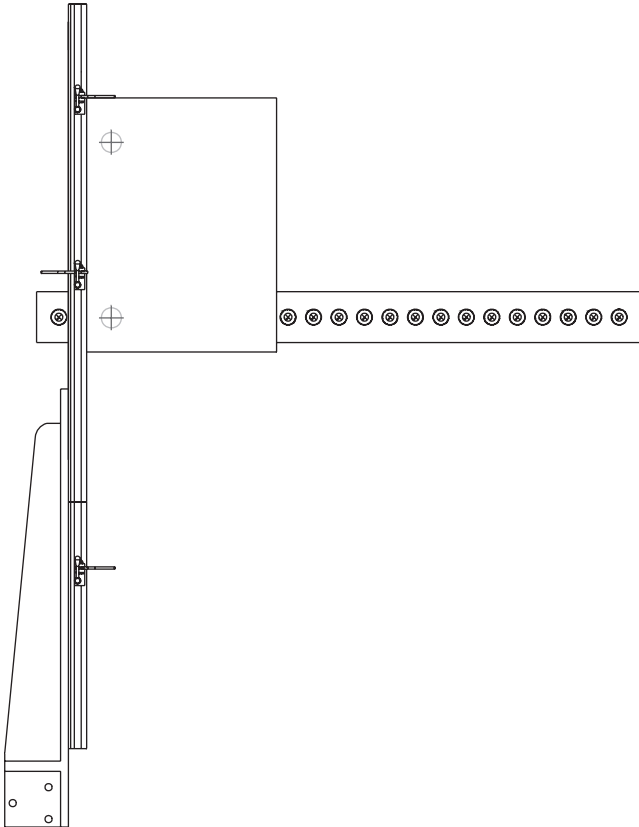
Joining at 0-90° (Compound Machining)



Line Boring on Long Panel Using Extension Bar



Boring for Hinge Installation



# 8.0 Maintenance

## **⚠ WARNING**

Before performing any type of maintenance or adjustments, make certain that the machine is disconnected from its power and air source and completely shut off.

## **⚠ WARNING**

Never operate the machine until it has been properly lubricated and all necessary maintenance work has been completed.

**NOTE:** After changing a setting, making an adjustment, performing repair/maintenance work, or troubleshooting, please check that all applicable safety functions are working properly before performing another operation.

Clean all machinery parts and surrounding areas every day.

Keep a maintenance record and perform recommended maintenance checks.

## 8.1 Lubrication

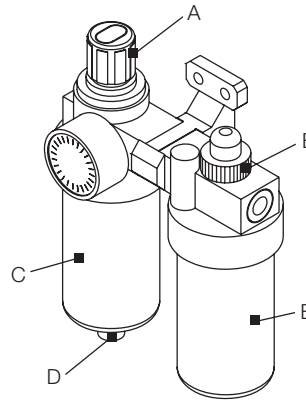
Weekly, clean and lightly oil the drill head guide bars and the positioning screw of the boring head carriage using an ISO VG32 oil.

Every 1,000 hours of machine operation, lubricate the boring head using a grease gun and a non-melting moly grease. Apply no more than 6 grease-gun strokes.

Spindle bearings are permanently lubricated and require no further lubrication.

Spindle bearings may purge grease during the first 20 hours of operation. Wipe away any excess grease before starting the machine.

## Pneumatic System



Periodically fill the oil reservoir (B) with pneumatic oil. Use high-quality pneumatic oil such as VG32 or other approved lubricant.

Drain and refill oil if there is condensation inside the reservoir (C). To drain, press the drain knob (D).

**NOTE:** Reduced air flow can cause lack of lubrication. Be sure air flow is properly adjusted to avoid mechanical damage from lack of lubrication.

## 8.2 Cleaning

Blow dust from the machine frequently to avoid buildup of waste material, dust and other debris.

## 8.3 Inspection

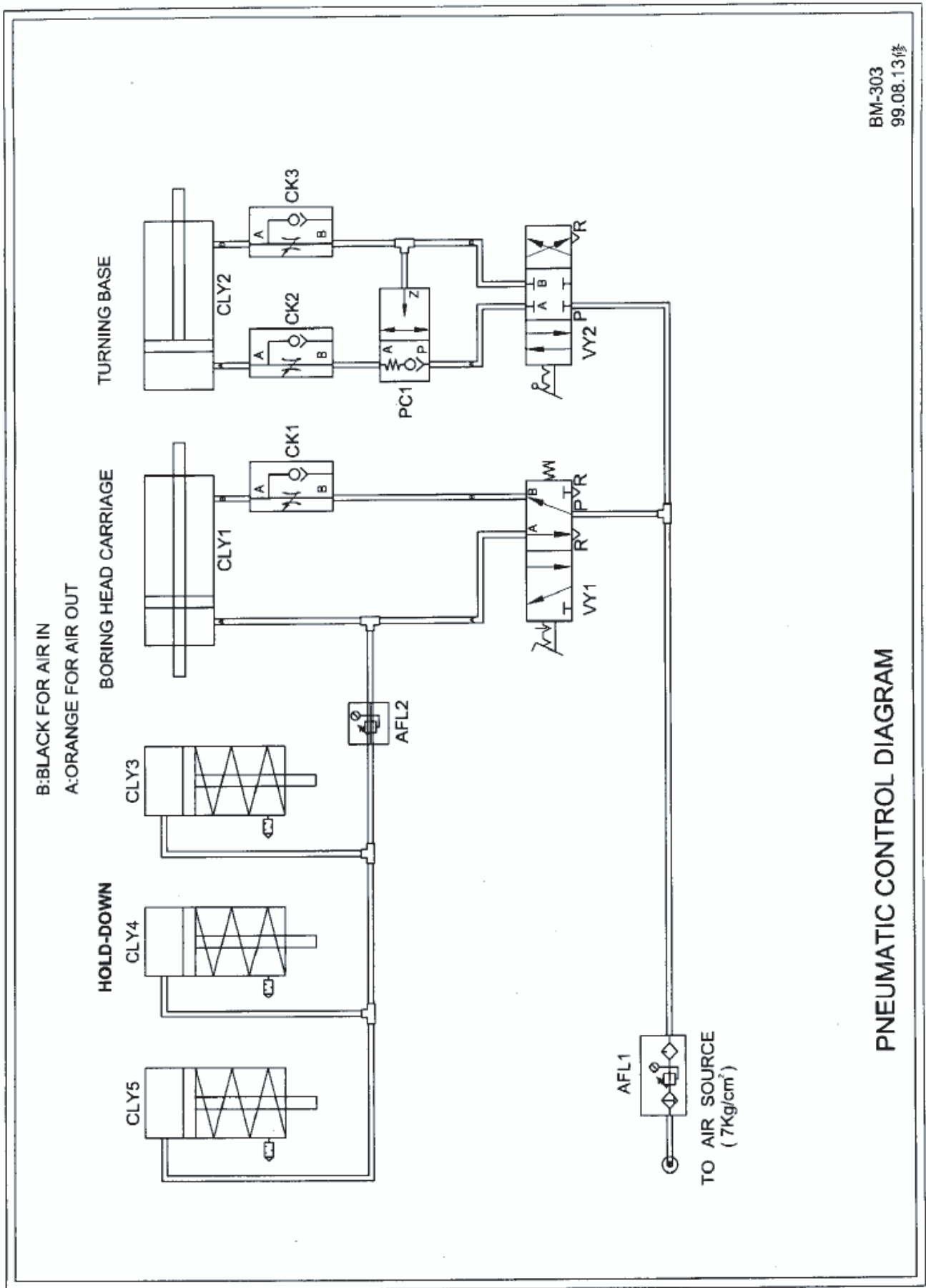
Feature	Interval/Situation
Boring head and bits	Every use
Emergency stop	Everyday – by functional test
Pneumatic system	Everyday
Electrical cabinet/system	Monthly: wiring terminals loose, insulation deterioration, vacuum dust

# 9.0 Troubleshooting

Trouble	Possible Cause	Solution
Motor won't start	Overload is tripped Improper voltage Failed motor	Reset overload Check voltage to motor Rotate motor by hand and Ohm out motor
Boring carriage will not tilt	Locking lever is locked Air switch has failed Air cylinder has failed No air to machine	Unlock locking lever Check and replace switch Check and replace cylinder Ensure air is 90-100 psi or there's no air leaking among pipes.
Drills are burning wood	Drill feed speed too fast Drill feed speed too low Dull tooling Improper tooling	Slow down feed speed Speed up feed speed Sharpen or replace tooling Ensure correct tooling for application (including rotation direction of tools and spindle)
Motor not starting when foot pedal is pressed	Machine in manual mode Bad electrical switch	Switch to automatic mode Call Stiles Technical Support
Drill block making abnormal noise	Bad bearings or broken gears Not enough lubrication	Call Stiles Technical Support Add proper grease

If you cannot resolve your issue, contact Stiles Technical Support at 616.698.6615.

9.1 Air Circuit Diagram



BM-303  
99.08.13修

PNEUMATIC CONTROL DIAGRAM

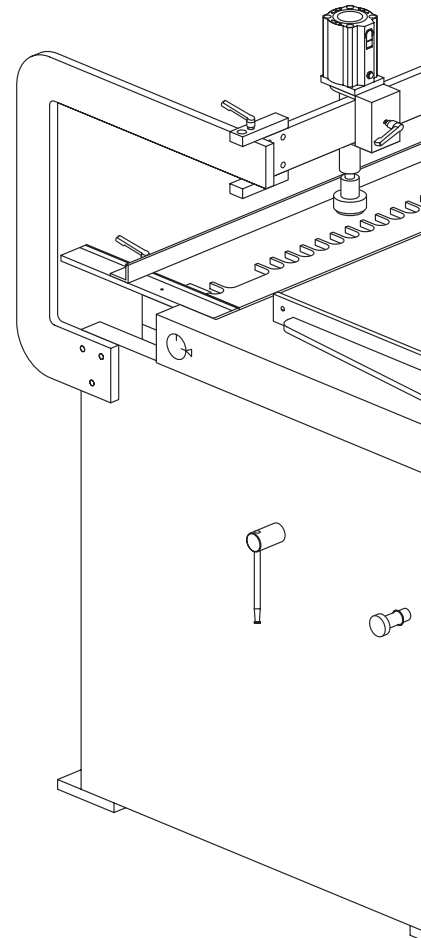




# IRONWOOD

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