Operating Instructions and Parts Manual

Dual Miter Semi-Automatic Band Saw

Model BS-20SA-DM

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1.0 Table of Contents

2.0 Safety Instructions

⚠WARNING **Failure to follow these rules may result in serious personal injury**

1. FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING THE MACHINE. Learn the machine's application and limitations as well as the specific hazards.
2. Only trained and qualified personnel can operate this machine.
3. Make sure guards are in place and in proper working order before operating machinery.
4. Remove any adjusting tools. Before operating the machine, make sure any adjusting tools have been removed.
5. Keep work area clean. Cluttered areas invite injuries.
6. Overloading machine. By overloading the machine you may cause injury from flying parts. DO NOT exceed the specified machine capacities.
7. Dressing material edges. Always chamfer and deburr all sharp edges.
8. Do not force tool. Your machine will do a better and safer job if used as intended. DO NOT use inappropriate attachments in an attempt to exceed the machines rated capacity.
9. Use the right tool for the job. DO NOT attempt to force a small tool or attachment to do the work of a large industrial tool. DO NOT use a tool for a purpose for which it was not intended.
10. Dress appropriate. DO NOT wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.
11. Use eye protection. Always wear ISO approved protective eye wear when operating machinery. Wear a full-face shield if you are producing metal filings. Eye wear shall be impact resistant, protective safety glasses with side shields which comply with ANSI Z87.1 specification. Use of eye wear which does not comply with ANSI Z87.1 specification could result in severe injury from breakage of eye protection.
12. Do not overreach. Maintain proper footing and balance at all times. DO NOT reach over or across a running machine.
13. Stay alert. Watch what you are doing and use common sense. DO NOT operate any tool or machine when you are tired.
14. Check for damaged parts. Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.
15. Observe work area conditions. DO NOT use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted. DO NOT use electrically powered tools in the presence of flammable gases or liquids.
16. Blade adjustments and maintenance. Always keep blades sharp and properly adjusted for optimum performance.
17. Keep children away. Children must never be allowed in the work area. DO NOT let them handle machines, tools, or extension cords.
18. Store idle equipment. When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of reach of children.
19. DO NOT operate machine if under the influence of alcohol or drugs. Read warning labels on prescriptions. If there is any doubt, DO NOT operate the machine.
20. DO NOT touch live electrical components or parts.
21. Turn off power before checking, cleaning, or replacing any parts.
22. Be sure all equipment is properly installed and grounded according to national, state, and local codes.
23. Keep all cords dry, free from grease and oil, and protected from sparks and hot metal.
24. Inspect power and control cables periodically. Replace if damaged or bare wires are exposed. Bare wiring can kill!
25. DO NOT bypass or defeat any safety interlock systems.
26. Keep visitors a safe distance from the work area.

2.1 General Notes

- Take necessary precautions while loading / unloading or moving the machine to avoid any injuries. Refer to the related chapter of this Manual for the best way of handling the machine.
- Always disconnect the machine from the power source before a blade change, carrying out any maintenance job, or any abnormal machine operation.
- Always check that the work piece is securely clamped and that long pieces are properly supported.
- If the blade gets stuck in the cut, press the emergency stop button immediately. Reset the E-stop button. In manual mode you can now raise the saw bow, open the vise, and remove the piece part. Check the blade for any broken teeth and replace blade if necessary.
- The operator should stand in front of the machine while the saw is cutting.
- Your machine is designed and manufactured to work smoothly and efficiently. Following proper maintenance instructions will help ensure this. Try and use original spare parts, whenever possible, and most importantly; DO NOT overload the machine or make any unauthorized modifications.

Familiarize yourself with the following safety notices used in this manual:

⚠CAUTION This means that if precautions are not heeded, it may result in minor injury and/or machine damage.

⚠WARNING This means that if precautions are not heeded, it may result in serious injury or death.

⚠DANGER This means that if precautions are not heeded, it will result in serious or fatal, injury.

Save the Instructions

3.0 About This Manual

This manual is provided by Baileigh Industrial, covering the safe operation and maintenance procedures for a Baileigh Model BS-20SA-DM Dual Miter Semi-Automatic Band Saw. This manual contains instructions on installation, safety precautions, general operating procedures, maintenance instructions and parts breakdown. Your machine has been designed and constructed to provide consistent, long-term operation if used in accordance with the instructions as set forth in this document.

Technical Support handles questions on setup, operation, schematics, warranty issues, and individual parts needed. Our Technical Support department can be reached at 920-684-4990.

If there are questions or comments, please contact your local supplier or Baileigh Industrial. We can also be reached at our web site: www.baileigh.com.

Retain this manual for future reference. If the machine transfers ownership, the manual should accompany it.

⚠WARNING **Read and understand the entire contents of this manual before attempting assembly or operation! Failure to comply may cause serious injury!**

Register your product online -

https://baileigh.com/product-registration

4.0 Product Identification

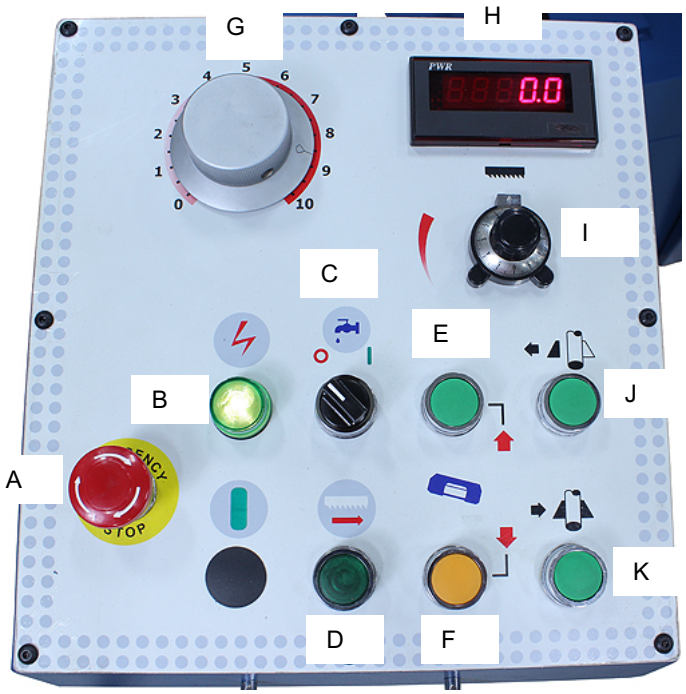


Figure 4-1

Table 4-1

Item	Description	Function
A	Emergency Stop Button	Press to stop all machine functions, Turn the lock collar clockwise to release the switch and reset the main power.
B	Main power indicator light	Illuminates to indicate that main power is active.
C	Coolant start switch	Turn to start and stop coolant flow.
D	Cycle cutting start button	Starts the clamping, saw blade and descent cycle.
E	Bow up switch	Press to raise the saw bow. This will also stop the current cut cycle. Stops when released or when the up limit switch is engaged.
F	Bow down switch	Press to lower the saw bow. Stops when released or when the down limit switch is engaged. This will engage the up cycle and cause the bow to raise to the up limit switch.
G	Cutting rate adjusting knob	Adjusts the speed saw bow drop.
H	Blade speed readout	Indicates the speed of blade. This works in conjunction with speed control knob to give you precise control of blade speed.
I	Variable blade speed control knob	Adjust the blade running speed when cutting different material.
J	Vise open	Open vise to move the material.
K	Vise clamp	Close vise to fix the material.

4.1 Saw Bow

Machine parts are consisting of drive members (gear motor, variable speed motor, and flywheels), Tightening and guide (blade tightening slide, blade guide blocks) of tool.

Figure 4-2

4.2 Base

The base is the structure supporting the saw bow (the bow pivot point and respective blocking system), the vises, and containing chip tray and coolant system.

4.3 Drip Tray

Located above the coolant pump, the drip tray is a catch basin for the saw chips and coolant. It is funneled to allow the chips to be captured in the chip drawer while routing the coolant back to tank.

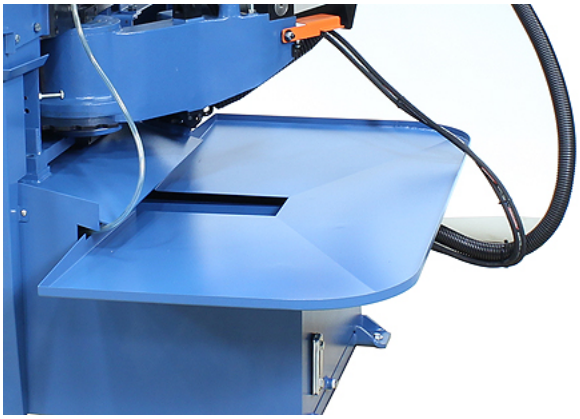


Figure 4-3

4.4 Chip Drawer

The chip drawer is located under the drip tray and is intended to capture the majority of the saw chips. This assists in chip cleaning and disposal as well as helping to prolong the usable life of the coolant.

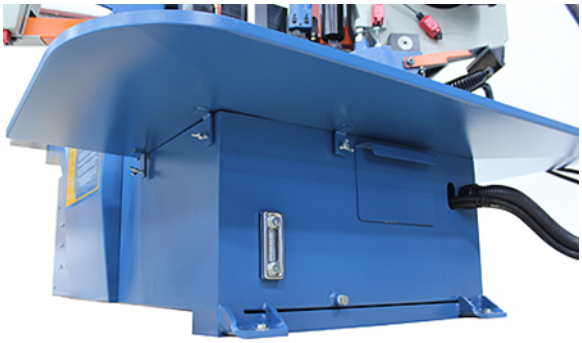


Figure 4-4

4.5 Blade Brush

The blade brush is designed to clean chips and debris off of the blade and blade teeth. This is intended to help prolonging the life of the blade.

The blade brush is friction driven off of the edge of the blade idler wheel. The blade brush traction wheel needs clean firm contact to function properly.

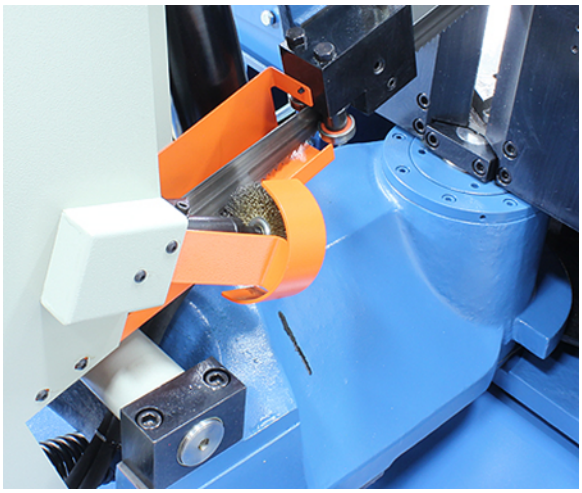


Figure 4-5

4.6 Guide Post

The guide posts are the two posts that suspend down from a rail, and straddle the blade with carbide and roller bearings to support and guide the blade through the cut.

The back side (right as shown) guide post is stationary and does not move.

The front side (left as shown) is repositioned to allow for varying material sizes. It is to be set as close to the material as possible without interfering with the blade, vise or material.

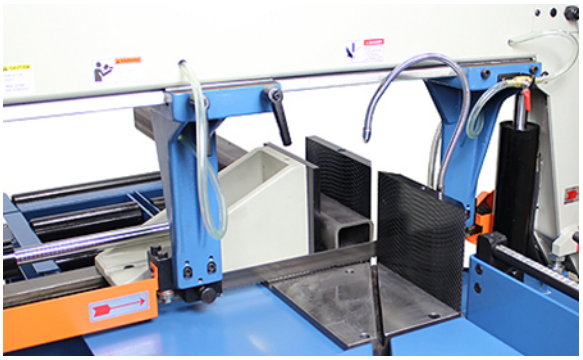


Figure 4-6

4.7 Filler Cover

The filler cover is located at the front of the saw table.

The filler cover should be removed whenever the saw is cutting at an angle and when the vise is to be moved to the front side of the blade.

Remove the filler cover by pulling on the handle and lifting up and off when the tabs have unlocked from the main table.

Figure 4-7

4.8 Miter Angle Lock Lever

The pivot platform is the structure that holds the saw bow and rotates horizontally for miter cutting up to 60° to the right and 45° to the left. Pull the lever to the right to release and turn bow to the desired angle. Once the bow is at the desire angle, push the level to the left to lock the position.

IMPORTANT: When the bow is in the 90° or angled from 1° to 60° to the right, the vise must be positioned to the left side of the saw bow.

The vise must be positioned to the right of the saw bow when cutting angles from 1° to 45° to the left. Failure to follow this guideline will damage the vise and possibly other saw components.

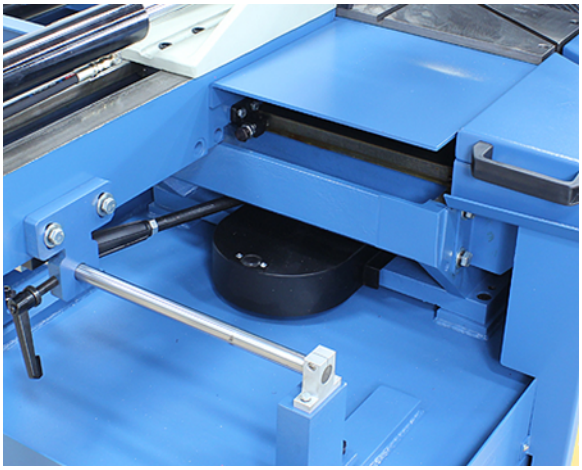


Figure 4-8

4.9 Vise System

The vise is a hydraulic system that allows it to be clamp manually and automatically. The operator can open the vise quickly and easily after the cut to remove and / or advance the material.

The vise may be shifted from the left (normal) side of the bow to the right side of the bow when cutting left angles.

IMPORTANT: When the bow is in the 90° or angled from 1° to 60° to the right, the vise must be positioned to the left side of the saw bow.

The vise must be positioned to the right of the saw bow when cutting angles from 1° to 45° to the left. Failure to follow this guideline will damage the vise and possibly other saw components.

Figure 4-9

4.10 Saw Bow Upper /Lower Limit Switches

The saw bow travel is controlled by the up and down limit switches.

The up limit switch stops the bow at the position in which it contacts the orange contact paddle. The paddle is adjustable to for easy adjustment to stop the bow up position as soon as the blade is clear of the material. This shortens the cut cycle.

4.11 Bow Height Adjusting Plate

The adjusting plate (A) can be adjusted up or down by hand as needed to increase or decrease the

height that the bow raises between cutting cycles. **Note:** Tighten the pivot nut if the plate will not hold position.

Set the height so that the teeth of the blade are at least 0.5” - 0.75” (13 - 20mm) above the work material at the top of the stroke.

This will provide clearance for the material to advance while also reducing operation cycle time.

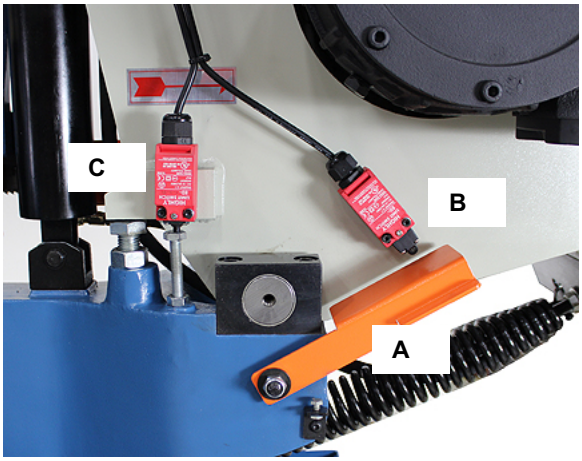


Figure 4-10

4.12 Bow Down Limit Switch

The bow down limit switch (C) stops the descent of the saw bow at the bottom of the cut.

The down limit switch contact a bolt head and is set at the factory to provide a stop point at the bottom of the cut once the blade has cut through the material.

Once the down limit switch is activated, the blade will stop and the bow will raise until it is stopped by the up limit switch.

The material may be advanced and the next cut will begin.

4.13 Overall Dimension

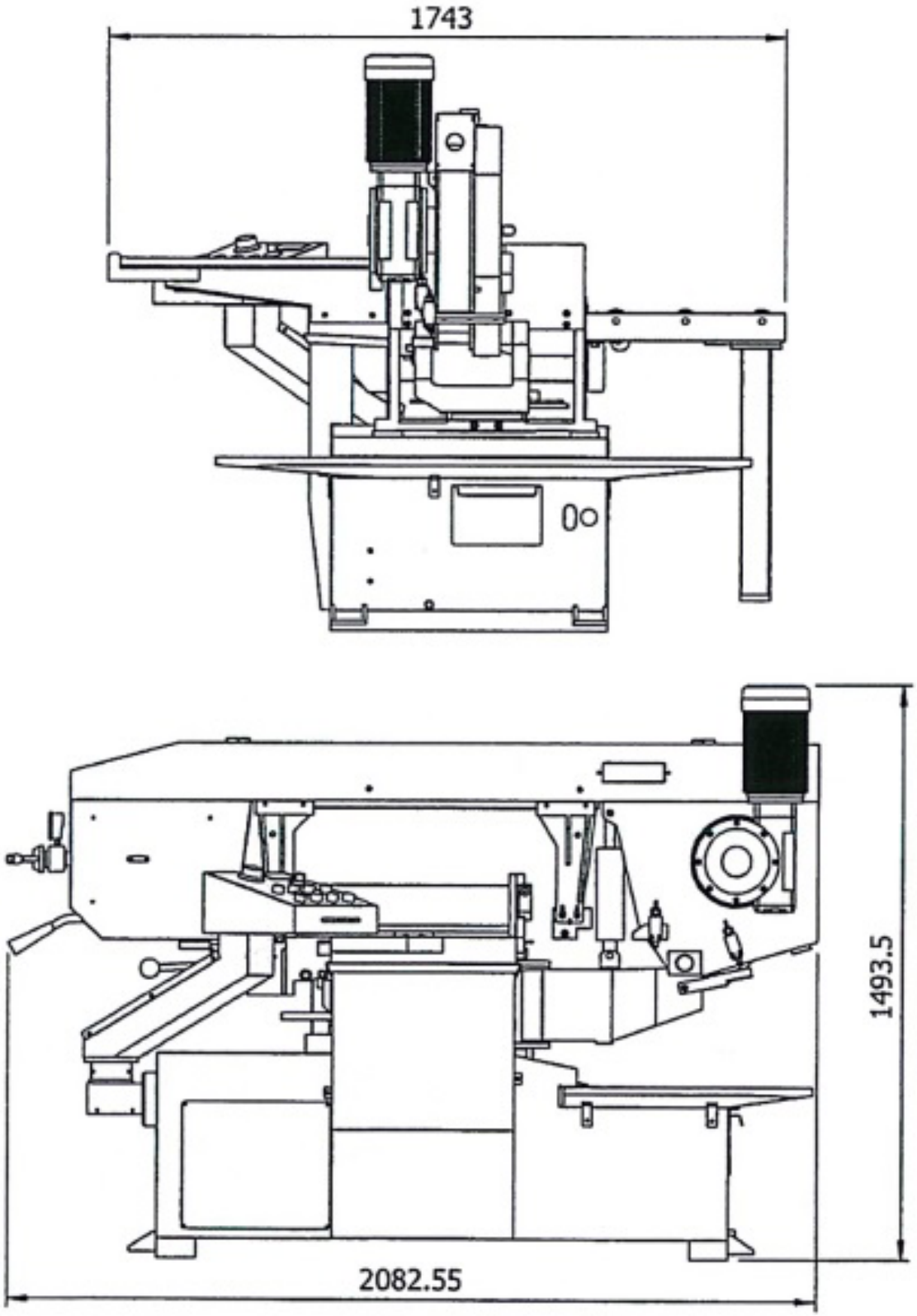


Figure 4-11

5.0 Specifications

Table 5-1

Model number	BS-20SA-DM
Stock Number	BA9-1001298
Motor and Power	
Power	220V, 3ph, 60Hz
Motor	3HP (2.2kW) 220V, 3ph, 60Hz, 4P, 9A
General Specifications	
Capacity Rectangular	
90°	13” x 18.1” (330 x 460mm)
45°L	13” x 10.6” (330 x 270mm)
45°R	13” x 10.6” (330 x 270mm)
60°R	12.4” x 7.7” (315 x 195mm)
Capacity Round	
90°	13” (330mm)
45°L	12” (305mm)
45°R	12” (305mm)
60°R	8.5” (215mm)
Return	Hydraulic
Miter Adjustment	Swivel Head
Miter Angle	0 - 45°L, 0 - 60°R
Blade Size (H x T x L)	1.33” x .043” x 162.6” (34 x 1.1 x 4130mm)
Blade Speed	82 – 285fpm (25 – 87mpm) Variable
Drive	Gear
Coolant Pump (prewired 220V)	1/6hp (.12kw) 220/440V, 3ph, 60/50hz, 2P, .5A
Hydraulic Oil Capacity	5.3gal. (20L)
Coolant Tank Capacity	15gal. (56L)
Weights and Dimensions	
Shipping Weight	2403lbs. (1090kg)
Shipping Dimensions	89.4" x 35.5" x 65.8" (2270 x 900 x 1670mm)

⚠WARNING

Read and understand the entire contents of this manual before attempting assembly or operation. Failure to comply may cause serious injury.

6.0 Setup and Assembly

6.1 Unpacking and Checking Contents

Your Baileigh machine is shipped complete. Separate all parts from the packing material and check each item carefully. Make certain all items are accounted for before discarding any packing material.

⚠WARNING

SUFFOCATION HAZARD! Immediately discard any plastic bags and packing materials to eliminate choking and suffocation hazards to children and animals.

⚠WARNING

If any parts are missing, DO NOT place the machine into service until the missing parts are obtained and installed correctly.

6.2 Cleaning

⚠WARNING

DO NOT USE gasoline or other petroleum products to clean the machine. They have low flash points and can explode or cause fire.

⚠CAUTION

When using cleaning solvents work in a well-ventilated area. Many cleaning solvents are toxic if inhaled.

Your machine may be shipped with a rustproof waxy coating and/or grease on the exposed unpainted metal surfaces. Fully and completely remove this protective coating using a degreaser or solvent cleaner. Moving items will need to be moved along their travel path to allow for cleaning the entire surface. For a more thorough cleaning, some parts will occasionally have to be removed. DO NOT USE acetone or brake cleaner as they may damage painted surfaces.

Follow manufacturer's label instructions when using any type of cleaning product. After cleaning, wipe unpainted metal surfaces with a light coating of quality oil or grease for protection.

IMPORTANT: This waxy coating is NOT a lubricant and will cause the machine to stick and lose performance as the coating continues to dry.

6.3 Transporting and Lifting

NOTICE

Lifting and carrying operations should be carried out by skilled workers, such as a truck operator, crane operator, etc. If a crane is used to lift the machine, attach the lifting chain carefully, making sure the machine is well balanced.

Follow these guidelines when lifting:

- Use proper lifting techniques when moving the saw from location to location.
- Make sure the machine is balanced, level, and securely tied or strapped to the transport vehicle or device so that all the supporting feet are taking the weight of the machine and no rocking is taking place.
- While transporting, avoid rough or jerky motion, and maintain a safe clearance zone around the transport area.

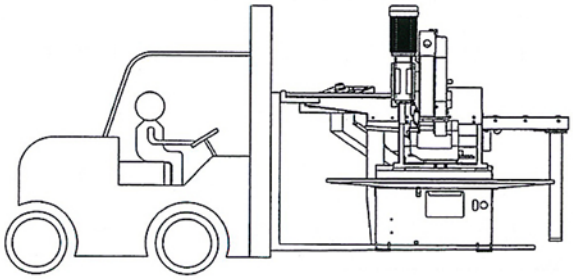


Figure 6-1

6.4 Installation

IMPORTANT:

Consider the following when looking for a suitable location to place the machine:

- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, work tables, or other machinery.
- Clearance from walls and other obstacles. Maintain an adequate working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Keep the floor free of oil and make sure it is not slippery.
- Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.

- **LEVELING:** The machine should be sited on a level surface. The accuracy of any machine depends on the precise placement of it to the mounting surface. If the unit wobbles or rocks once in place, be sure to eliminate by using shims.
- **POWER SUPPLY PLACEMENT:** The power supply should be located close enough to the machine so that the power cord is not in an area where it would cause a tripping hazard. Be sure to observe all electrical codes if installing new circuits and/or outlets.

6.5 Anchoring the Machine

- Once positioned, anchor the machine to the floor, as shown in the diagram, using bolts and expansion plugs or sunken tie rods that connect through holes in the base of the stand.

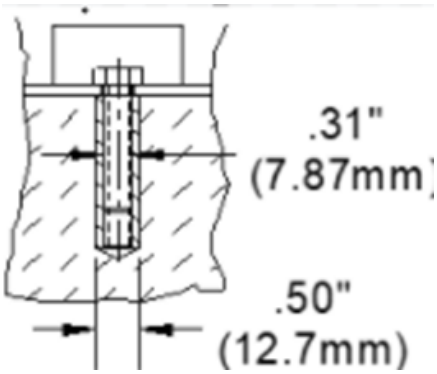


Figure 6-2

6.6 Tank Filling

The hydraulic oil is the primary medium for transmitting pressure and also must lubricate the running parts of the pump.

After installation of the machine and before machine startup, bring the oil level up to 90% of capacity. Verify that any cylinder rams are is in the retracted position to prevent overfilling of the tank. Recheck the oil level after the first few hours of operation and again after the first full week of operation.

A shortage of hydraulic oil can cause hydraulic system breakdown and damage to major mechanical parts due to overheating.

6.7 Assembly

⚠WARNING

For your own safety, DO NOT connect the machine to the power source until the machine is completely assembled and you read and understand the entire instruction manual.

The mounting hardware (bolts and washers) used to assembly the accessories to the saw are installed into the mounting location holes for shipping. Remove and retain the fasteners from the mounting locations and then secure the accessory item to the saw with these fasteners.

6.8 Coolant Drip Tray

1. Verify that all packing materials and or accessories have been removed from the coolant tank.

Note: While installing the tray, be watchful of the hoses and cables to avoid pinching.

2. Loosen the thumb bolts (B) (5, 3 shown) on the underside of the drip tray to allow the brackets to fit over the outside of the coolant tank.

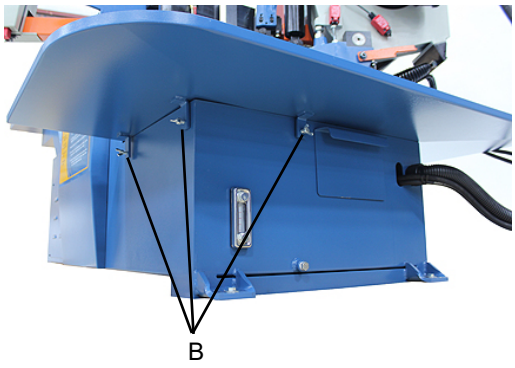


Figure 6-3

3. Position the drip tray onto the coolant tank with the bracket to the outside of the tank.
4. Check the routing of the coolant hose (C), hydraulic hoses, and power cable (D) to be clear of the drip tray and avoid pinching or chaffing.

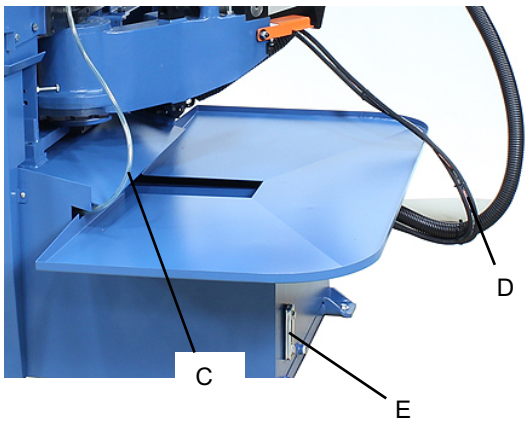


Figure 6-4

5. Evenly tighten the thumb bolts onto the side of the tank to hold the tray in position. Do not over tighten the bolts to the point that they bend the brackets.
6. Ensure that the debris tray and drain plug are properly installed and fill the coolant tank with coolant fit for your application, to the full mark on the sight gauge (E).

6.9 Material Feed

Note: These items ae heavy and somewhat awkward for one person to hold in position. Use an assistant.

1. Remove the fasteners (F) on the mounting bracket.

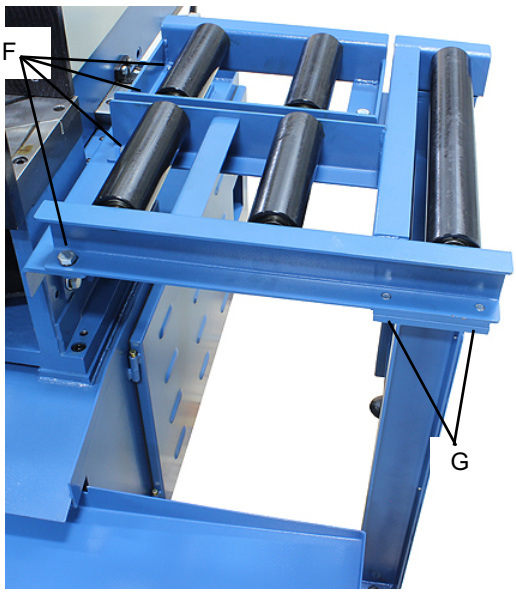


Figure 6-5

2. Position the roller bed onto the support bracket aligning the four mounting holes.
3. Install and snug the four mounting bolts (F).
4. Support the outboard end of the feed rollers and remove the fasteners (G) from the underside of the feed roller bed.
5. Position the leg weldment under the roller table and secure using the four bolts (G) removed previous.
6. Place a straight edge across the vise table and rollers to set the roller table to be level with the vise table.
7. Loosen the four mounting bolts (H) securing the roller mounting bracket to the saw base.
8. Adjust the leveling feet (I) and the mounting bracket up or down as needed to level the roller table to the vise table.
9. When the two tables are aligned and level to each other, fully tighten all 12 mounting bolts (F, G, and H).
10. Tighten the jam nuts on the leveling feet to lock in position.

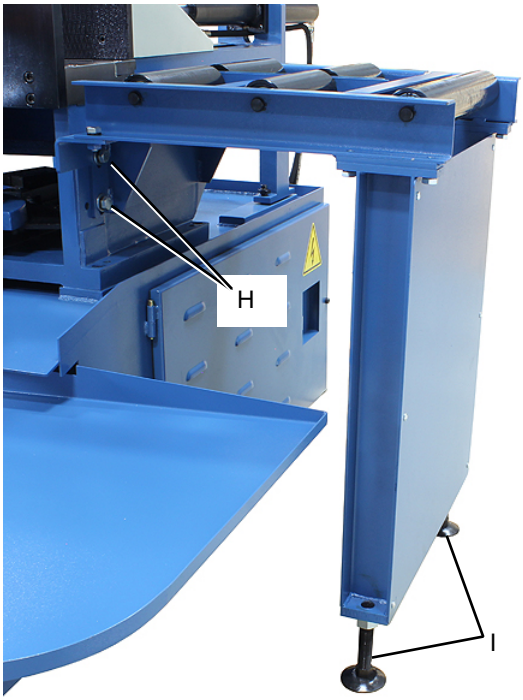


Figure 6-6

6.10 Material Stop

1. Remove the fasteners on the end of the vise bed.
2. Unwrap the material stop and position against the vise bed and install the fasteners removed earlier.
3. Once secure, move the vise stop rod to the desired position.

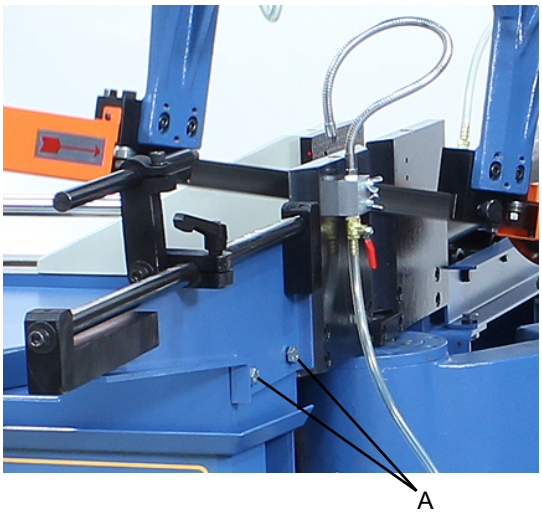


Figure 6-7

7.0 Electrical Connection

⚠WARNING

Baileigh Industrial is not responsible for any damage caused by wiring up to an alternative 3-phase power source other than direct 3-phase. If you are using an alternate power source, consult a certified electrician or contact Baileigh Industrial prior to energizing the machine.

⚠CAUTION

HAVE ELECTRICAL UTILITIES CONNECTED TO MACHINE BY A CERTIFIED ELECTRICIAN!

Check if the available power supply is the same as listed on the machine nameplate.

⚠WARNING

Make sure the grounding wire (green) is properly connected to avoid electric shock.

DO NOT switch the position of the green grounding wire if any electrical plug wires are switched during hookup.

7.1 Power Specifications

Your machine is wired for 220 volts, 60hz alternating current. Before connecting the machine to the power source, make sure the power source is OFF.

Before switching on the power, you must check the voltage and frequency of the power to see if they meet with the requirement, the allowed range for the voltage is ±5%, and for the frequency is ±1%.

7.2 Considerations

- Observe local electrical codes when connecting the machine.
- The circuit should be protected with a time delay fuse or circuit breaker with an amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your machines. Before connecting the motor to the power line, make sure the switch is in the “OFF” position and be sure that the electric current is of the same characteristics as indicated on the machine.
- All line connections should make good contact. Running on low voltage will damage the motor.
- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This machine is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

⚠WARNING

In all cases, make certain the receptacle in question is properly grounded. If you are not sure, have a qualified electrician check the receptacle.

- Improper connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.
- Check with qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the machine is properly grounded.
- Repair or replace damaged or worn cord immediately.

7.3 Power Cord Connection

1. Turn the main disconnect switch on the control panel to the OFF position.
2. Unwrap the power cord and route the cord away from the machine toward the power supply.
   a. Route the power cord so that it will NOT become entangled in the machine in any way.
   b. Route the cord to the power supply in a way that does NOT create a trip hazard.
3. Connect the power cord to the power supply and check that the power cord has not been damaged during installation.
4. When the machine is clear of any obstruction. The main power switch may be turn ON to test the operation. Turn the switch OFF when the machine is not in operation.

7.4 Rotation Check

1. Once hooked up, turn on the power supply and start and then stop the coolant pump watching that the shaft rotates as indicated.
2. If not, cut the power to the machine. Swap the position of any two of the three power wires; but DO NOT change the position of the green grounding wire!

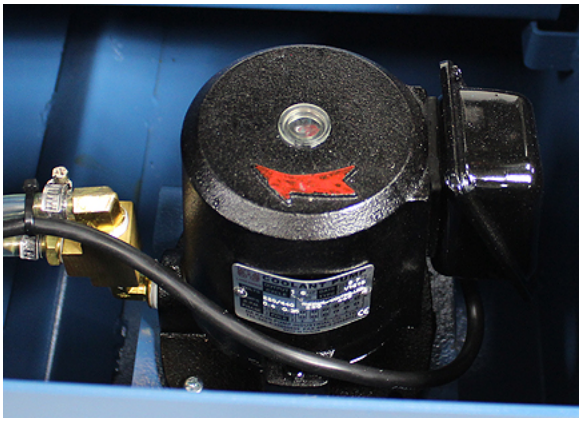


Figure 7-1

8.0 Before Each Use

- For dusty operations, wear a face shield along with safety goggles.
- It is important to choose the right blade for the material and the type of cutting you plan to do. This saw is equipped with a bi-metallic blade which can be used to cut stainless steel, steel, iron, brass, aluminum, wood, plastic.
- Make sure the direction of rotation arrow on the blade matches the direction arrow on the saw. The blade teeth should always point downward at the front of the saw.
- Make sure the blade is sharp, undamaged and properly aligned. With the saw unplugged, push the power-head all the way down. Rotate the blade by hand checking for clearance. If the blade hits anything, make the adjustments shown in the Maintaining Maximum Cutting Capacity section.
- Never cut freehand.
- Make sure the cut-off piece can move sideways after it is cut off. Otherwise, it could get wedged against the blade and thrown violently.
- Never turn the saw "ON" before clearing everything except the work piece beneath the blade.
- Never put lubricants on the blade while it is spinning.

8.1 Whenever Saw is Running

- Never confine the piece being cut out.
- Never hold it, clamp it, touch it, or use length stops against it. It must be free to move sideways. If confined, it could get wedged against the blade and thrown violently.
- Avoid awkward hand positions where a sudden slip could cause a hand to move into the blade.
- Let the blade reach full speed before cutting.
- Feed the saw into the work piece only fast enough to let the blade cut without bogging down or binding.
- Before freeing jammed material, turn the switch off and unplug the saw. Wait for all moving parts to stop.
- After finishing a cut, keep holding the saw bow down, release the switch, and wait for all moving parts to stop before moving your hands.

8.2 Breaking in a Band Saw Blade

Sharp cutting edges with extremely small edge radii are required for high cutting capacity. To achieve the optimal tool life we recommend breaking-in the blade accordingly. The correct cutting speed is determined by the material being cut and its dimensions. It is very important that the new blade is first used with only 50% of the determined feed rate. This will avoid micro-breakages of the blade because of too large chip thicknesses. New band saw blades may tend toward vibrations and vibration sounds. In this case a slight reduction of the cutting speed is helpful. With small workpiece dimensions approximately 300cm² of the material should be cut for breaking-in. If large work piece dimensions are to be cut we recommend a breaking-in period of about 15 minutes. After breaking-in you may slowly increase the feed rate up to the determined value.

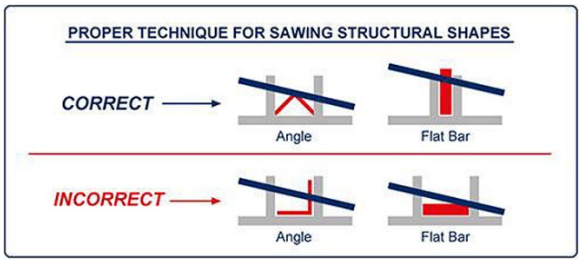


Figure 8-1

8.3 Metal Chip Indicators

Chips are the best indicator of correct material feed force. Monitor chip information and adjust feed accordingly.

- Thin or Powdered Chips – increase feed rate or reduce saw speed
- Burned Chips – reduce feed rate and / or saw speed
- Curly Silvery and Warm Chips – optimum feed rate and saw speed

Baileigh Industrial offers a wide selection of tooth styles for various cutting applications. Please phone Baileigh Industrial at (920.684.4990) or fax to (920.684.3944) to have one of our technicians assist you in selecting the proper band saw blade for your cutting applications.

8.4 Blade Terminology

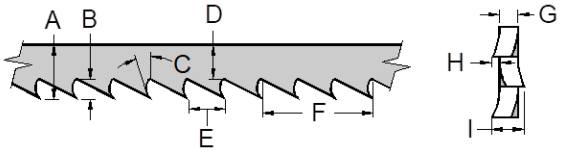


Figure 8-2

Table 8-1

Item	Description	Function
A	BLADE WIDTH	The widest part of the blade measured from the back edge of the blade to the tip of the tooth.
B	GULLET DEPTH	The distance from the tooth tip to the bottom of the curved area.
C	TOOTH RAKE	The angle of the tooth face from a line perpendicular to the length of the blade.
D	BLADE BACK	The distance between the back edge of the blade and the bottom of the gullet.
E	TOOTH PITCH	The distance between tooth tips.
F	TPI	The number of teeth per inch when measured from gullet to gullet.
G	GAUGE	The thickness of the blade.
H	TOOTH SET	The distance a tooth is bent from the blade.
I	KERF	The width of material that is removed by the blade when cutting.

8.5 Width of Blade

The blade width determines the largest and the smallest curve that can be cut. Usually the wider a blade is, the more accurate and straighter it will cut.

8.6 Length of Blade

The length of the band saw blade can be measured with a tape measure at it's circumference or by the formula below:

Blade Length = (2 x A) + (3.14 x B)

A = the distance in inches between the band saw pulley centers (when the upper pulley is midway in its adjustment range).

B = the band saw pulley diameter.

8.7 Blade Structure

Bi-metal blades are the most commonly used. They consist of a silicon-steel blade backing by a laser welded high speed steel (HHS) cutting edge. The type of stocks are classified in M2, M42, M51 and differ from each other because of their major hardness due to the increasing percentage of Cobalt (Cc) and molybdenum (Mo) contained in the metal alloy.

8.8 Blade Type

They differ essentially in their constructive characteristics, such as:

- Shape and cutting angle of tooth
- Pitch
- Set

Shape and angle of tooth

REGULAR TOOTH: O° rake and constant pitch.

Figure 8-3

Most common form for transversal or inclined cutting of solid small and average cross-sections or pipes, in laminated mild steel and gray iron or general metal.

POSITIVE RAKE TOOTH: 9° - 10° positive rake and constant pitch.

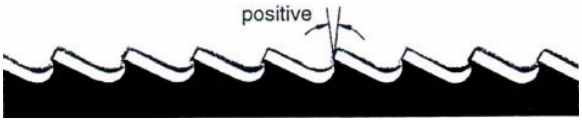


Figure 8-4

Particular use for crosswise or inclined cuts in solid sections or large pipes, but above all harder materials (highly alloyed and stainless steels, special bronze and forge pig iron).

COMBO TOOTH: pitch varies between teeth and consequently varying teeth size and varying gullet depths. Pitch varies between teeth, which ensures a smoother, quieter cut and longer blade life owing to the lack of vibration.

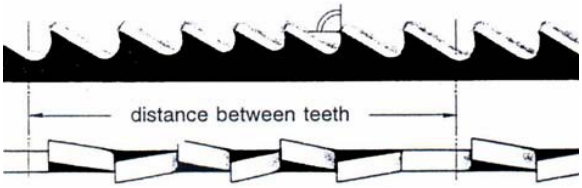


Figure 8-5

Another advantage offered in the use of this type of blade in the fact that with an only blade it is possible to cut a wide range of different materials in size and type.

COMBO TOOTH: 9° - 10° positive rake.

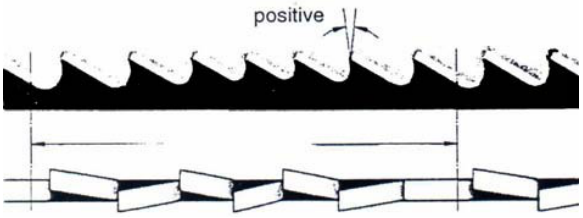


Figure 8-6

This type of blade is the most suitable for the cutting of section bars and large and thick pipes as well as for the cutting of solid bars at maximum machine capacity. Available pitches: 3-4/4-6.

8.9 Sets

Saw teeth bent out of the plane of the saw body, resulting in a wide cut in the workpiece.

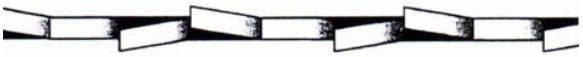


Figure 8-7

REGULAR OR RAKER SET: Cutting teeth right and left, alternated by a straight tooth.

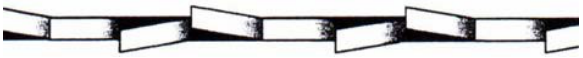


Figure 8-8

Of general use for materials with dimensions superior to 5 mm. Used for the cutting of steel, castings and hard nonferrous materials.

WAVY SET: Set in smooth waves.

Figure 8-9

This set is associated with very fine teeth and it is mainly used for the cutting of pipes and thin section bars (from 1 to 3 mm).

ALTERNATE SET (IN GROUPS): Groups of cutting teeth right and left, alternated by a straight tooth.

Figure 8-10

This set is associated with very fine teeth and it is used for extremely thin materials (less than 1mm).

ALTERNATE SET (INDIVIDUAL TEETH): Cutting teeth right and left.

Figure 8-11

This set is used for the cutting of nonferrous soft materials, plastics and wood.

9.0 Blade Care

The bandsaw blade is subjected to a tremendous amount of strain. Make sure to always use the appropriate feed rate for the type material you are cutting.

Be sure to select a blade of the proper width, style, and pitch that will produce the best cut in your material. Choosing the wrong blade can produce excess heat that can adversely affect the life of the blade.

A clean blade performs much better than one that is dirty. Blades that are gummed up and dirty offer more resistance when cutting through the material. This in turn creates unnecessary heat in the blade.

9.1 Choosing a Saw Blade

A general purpose blade is furnished with this band saw.

To achieve a quality, economical, and efficient saw cut, the following points must be taken into consideration:

- Type of material being cut (ferrous or non ferrous)
- Material hardness and physical dimensions
- Blade descent rate
- Longitudinal speed of blade
- Blade tooth profile

Choose a tooth pitch that is suitable for the workpiece. Thin walled profiles, including tubes and pipes require close toothing. At least 3-6 teeth should be in contact with the material while cutting. Large solid or transverse sections require widely spaced toothing to allow for greater volume of chips and better tooth penetration. Soft materials such as plastics, light alloys, mild bronze, Teflon, etc. require widely spaced toothing to avoid clogging.

9.2 Blade Selection Reference Table

Table 9-1

Cutting Material	Round Tube	Angle and H or I Beam	Solid Round or Square	Solid Round or Rectangle	Solid Round or Rectangle	Solid Round or Rectangle
	<3mm	>5mm	>50mm	>100mm	>150mm	>300mm
Sawblade	<0.12”	>0.2”	>2”	>4”	<6”	<8”
(HSS)14T	▲					
(HSS)6/10T		▲				
(HSS)5/8T			▲			
(HSS)4/6T			▲	▲		
(HSS)3/4T				▲		
(HSS)2/3T					▲	▲
(HSS)1/2T						▲
(HCS)10T	▲					
(HCS)8T		▲				
(HCS)6T			▲			
(HCS)4T				▲		
(HCS)2T					▲	▲

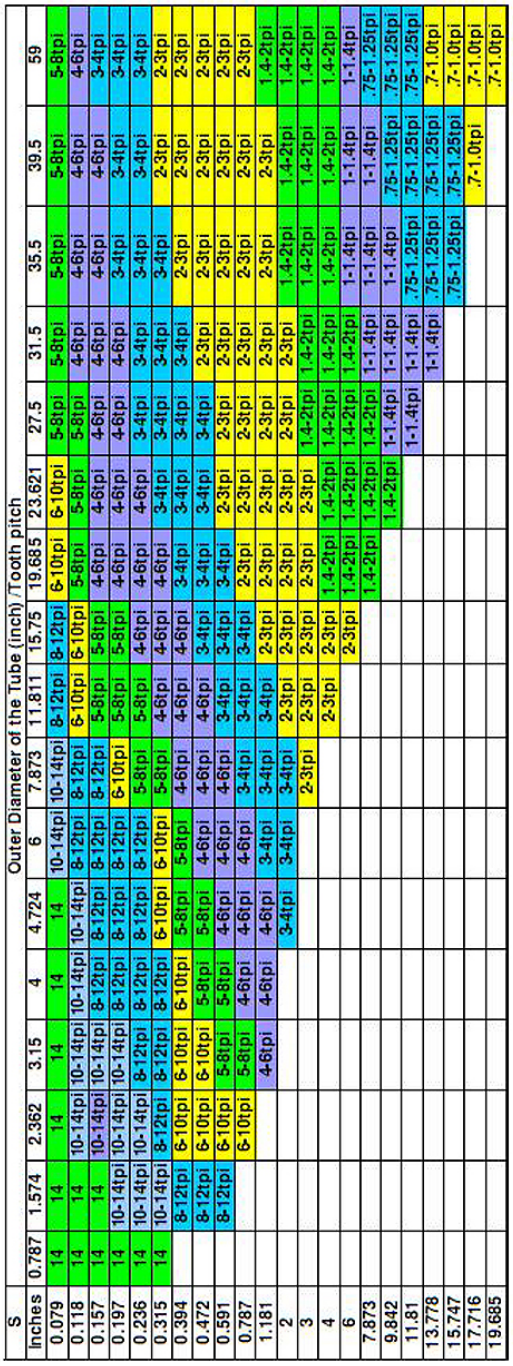
HSS - HIGH SPEED STEEL

HCS = HIGH CARBON STEEL

- Never use a blade finer then required to obtain a satisfactory surface finish or satisfactory flatness. (Too many teeth engaged in the work piece will prevent attainment of a satisfactory sawing rate; frequently cause premature blade wear; frequently produce "dished" cuts or the cuts are neither square nor parallel.)
- The table is not expected to be correct for all cases. It is intended as a general guide to good sawing practices. Your blade supplier or qualified engineers should be you most reliable source for correct information on operational details of saw blades and their use.

Note:

- When cutting a thin walled pipe, angle steel, and I-beam steel, use a blade with 10T/in.
- When cutting pipe with a wall 1/2" or more in thickness, use a blade with 8-12T/in or 6-10T/in.
- When cutting angle steel, I-beam, or solid bar; cut the thinnest cross section of the material first. There must be at least three teeth cutting the material at all times.



S		Outer Diameter of the Tube (inch) /Tooth pitch																						
Inches	0.787	1.574	2.362	3.15	4	4.724	6	7.873	11.811	15.75	19.685	23.621	27.5	31.5	35.5	39.5	59
0.079	14	14	14	14	14	14	10-14tpi	10-14tpi	8-12tpi	8-12tpi	6-10tpi	6-10tpi	5-8tpi	5-8tpi	5-8tpi	5-8tpi	5-8tpi
0.118	14	14	10-14tpi	10-14tpi	10-14tpi	10-14tpi	8-12tpi	8-12tpi	6-10tpi	6-10tpi	5-8tpi	5-8tpi	5-8tpi	4-6tpi	4-6tpi	4-6tpi	4-6tpi
0.157	14	14	10-14tpi	10-14tpi	8-12tpi	8-12tpi	8-12tpi	8-12tpi	5-8tpi	5-8tpi	4-6tpi	4-6tpi	4-6tpi	4-6tpi	4-6tpi	4-6tpi	3-4tpi
0.197	14	10-14tpi	10-14tpi	10-14tpi	8-12tpi	8-12tpi	8-12tpi	6-10tpi	5-8tpi	5-8tpi	4-6tpi	4-6tpi	4-6tpi	4-6tpi	3-4tpi	3-4tpi	3-4tpi
0.236	14	10-14tpi	10-14tpi	8-12tpi	8-12tpi	8-12tpi	8-12tpi	5-8tpi	5-8tpi	4-6tpi	4-6tpi	4-6tpi	3-4tpi	3-4tpi	3-4tpi	3-4tpi	3-4tpi
0.315	14	10-14tpi	8-12tpi	8-12tpi	8-12tpi	6-10tpi	6-10tpi	5-8tpi	4-6tpi	4-6tpi	4-6tpi	3-4tpi	3-4tpi	3-4tpi	3-4tpi	2-3tpi	2-3tpi
0.394		8-12tpi	6-10tpi	6-10tpi	6-10tpi	5-8tpi	5-8tpi	4-6tpi	4-6tpi	4-6tpi	3-4tpi	3-4tpi	3-4tpi	3-4tpi	2-3tpi	2-3tpi	2-3tpi
0.472		8-12tpi	6-10tpi	6-10tpi	5-8tpi	5-8tpi	4-6tpi	4-6tpi	4-6tpi	3-4tpi	3-4tpi	3-4tpi	3-4tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi
0.591		8-12tpi	6-10tpi	5-8tpi	5-8tpi	4-6tpi	4-6tpi	4-6tpi	3-4tpi	3-4tpi	3-4tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi
0.787			6-10tpi	5-8tpi	4-6tpi	4-6tpi	4-6tpi	3-4tpi	3-4tpi	3-4tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi
1.181				4-6tpi	4-6tpi	4-6tpi	3-4tpi	3-4tpi	3-4tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	1-1.4tpi	1.4-2tpi
2						3-4tpi	3-4tpi	3-4tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	1.4-2tpi	1.4-2tpi	1.4-2tpi
3								2-3tpi	2-3tpi	2-3tpi	2-3tpi	2-3tpi	1.4-2tpi	1.4-2tpi	1.4-2tpi	1.4-2tpi	1.4-2tpi
4									2-3tpi	2-3tpi	1.4-2tpi	1.4-2tpi	1.4-2tpi	1.4-2tpi	1.4-2tpi	1-1.4tpi	1-1.4tpi
6										2-3tpi	1.4-2tpi	1.4-2tpi	1.4-2tpi	1-1.4tpi	1-1.4tpi	1-1.4tpi	.75-1.25tpi
7.873											1.4-2tpi	1.4-2tpi	1-1.4tpi	1-1.4tpi	1-1.4tpi	.75-1.25tpi	.75-1.25tpi
9.842												1.4-2tpi	1-1.4tpi	1-1.4tpi	.75-1.25tpi	.75-1.25tpi	.75-1.25tpi
11.81													1-1.4tpi	1-1.4tpi	.75-1.25tpi	.75-1.25tpi	.75-1.25tpi
13.778														1-1.4tpi	.75-1.25tpi	.75-1.25tpi	.7-1.0tpi
15.747															.75-1.25tpi	.75-1.25tpi	.7-1.0tpi
17.716																.7-1.0tpi	.7-1.0tpi
19.685																	.7-1.0tpi

S= Wall Thickness
If you have to cut two or more tubes lying side by side please use this table in consideration of the double wall thinckness (s).

Figure 9-1

10.0 Blade Breakage

In some cases blade breakage is unavoidable due to the stresses that are imparted on the blade. Avoidable breakage is often the result of poor care, or poor operator judgment when it comes to adjusting or mounting the blade or blade guides.

Listed below are some of the more common reasons for blade breakage.

- Top blade guide assembly is set too high above the piece part.
- The blade is tensioned incorrectly.
- Piece part is fed into the blade too quickly.
- Blade teeth are dull or broken.
- Blade is not properly aligned with the guides.
- Forcing a large width blade to cut a small radius.
- Using a blade with an improperly finished weld joint.
- Allowing the blade to run when not in use. (NEVER leave an unattended blade running.)

11.0 Material Selection

⚠CAUTION

It must be determined by the customer that materials being processed through the machine are NOT potentially hazardous to operator or personnel working nearby.

When selecting materials keep these instructions in mind:

- Material must be clean and dry. (without oil)
- Material should have a smooth surface so it processes easily.
- Dimensional properties of material must be consistent and not exceed the machine capacity values.
- Chemical structure of material must be consistent.
- Buy certificated steel from the same vendor when possible.

12.0 Adjustments

⚠WARNING

Unless specifically needed to complete the procedure, make sure the electrical disconnect is OFF before working on the machine.

12.1 Thrust Roller Adjustment

1. Disconnect machine from the power source.
2. Loosen two hex socket cap screws (A).
3. Move guide seat (D) up or down until a clearance of .003" to .005" between back of blade and thrust roller is obtained.
4. Tighten two hex socket cap screws (A).
5. Repeat for other blade guide assembly.
6. Connect machine to the power source.

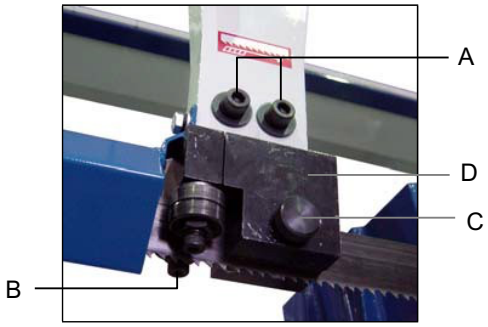


Figure 12-1

12.2 Guide Roller Adjustment

Note: Only bearing (A) is adjustable. Bearing (B) is fixed.

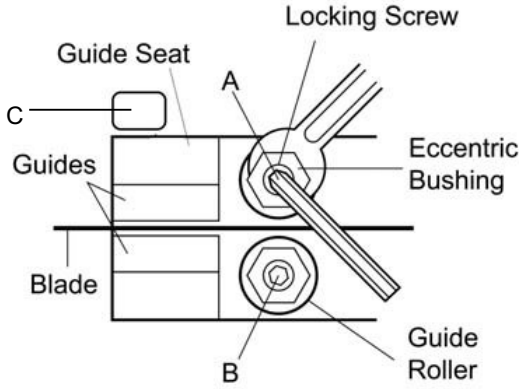


Figure 12-2

1. Disconnect machine from the power source.
2. Loosen blade guides by loosening guide adjustment screw (C).
3. Loosen locking screws (A) by using a hex wrench.
4. Adjust the eccentric bushings with a combination wrench until the ball bearings are snug to the blade (A).Do not pinch the blade.

Note: The blade should travel freely up and down between the ball bearings.

5. Tighten locking screws (A).
6. Connect machine to the power source.

12.3 Tungsten Carbide Guides Adjustment

The blade is guided by the upper ball bearings, side ball bearings, and tungsten carbide guides.

When ready to cut the work piece, the carbide guide must be adjusted by adjusting the screws to properly compressed blade. The tungsten carbide blades should touch, but not pinch the blade.

1. For moving the blade guide posts or changing blade, the tungsten carbide guides should be released by using the guide adjusting screw.
2. In case the blade needs to be replaced, make sure to always install the correct thickness blade.
3. To adjust the carbide guides, turn the guide adjustment clockwise until it is tight, then loosen it 1/16-1/8 of a turn. This should allow the blade to be pressed down ward approximate 1/8" (3mm). This movement should be snug, but smooth.

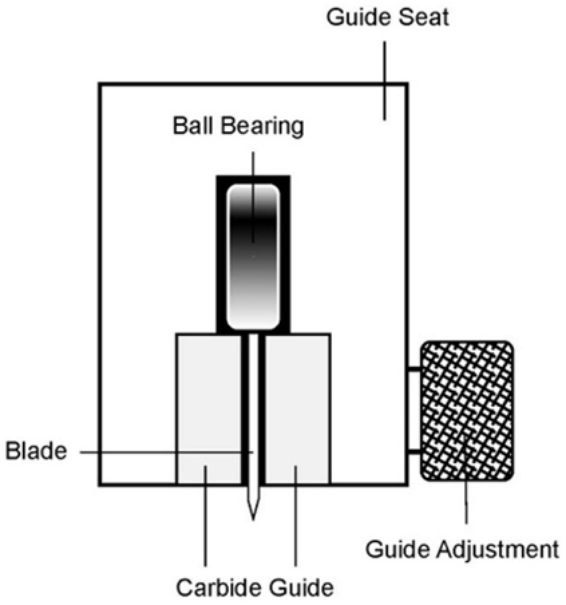


Figure 12-3

12.4 Cutting Precision Adjustment

The cutting precision has been set at the factory.

This adjustment should only be accomplished by qualified personnel that are familiar with this type of adjustment.

1. Disconnect the machine from power supply.
2. Loosen the adjusting bolts (A) slightly.
3. On the back side of the guide, adjust the three setscrews (B) to adjust the alignment of the guide blocks so that the blade tracks perfectly straight between the guides.
4. After adjusting, tighten the adjusting bolts (A).

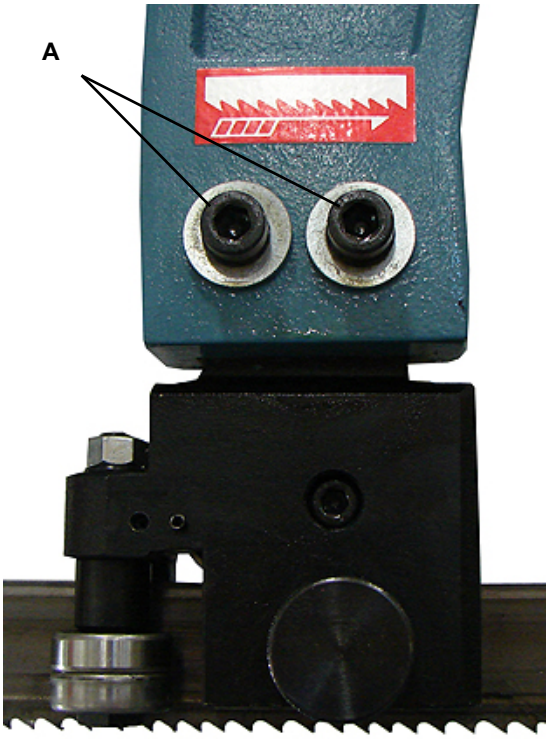


Figure 12-4

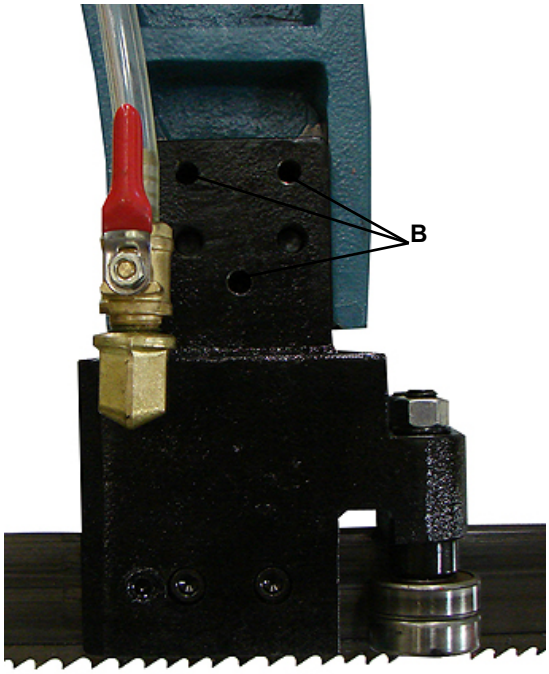


Figure 12-5

12.5 Blade Brush Adjustment

The brush will need to be adjusted as the brush wears away and also as the friction wheel wears.

The blade brush is spring loaded to apply force to the friction wheel against the blade idler wheel (A).

As the brush wears, the brush and holder assembly is slid inward on the mounting shaft to allow the brush to be held against the blade gullets (B) with only enough force to clean the chips.

Loosen the set screws (C) and slide the brush assembly inward or outward as needed to provide the wheel and blade contact.

Check that the assembly pivots freely from its own spring pressure.

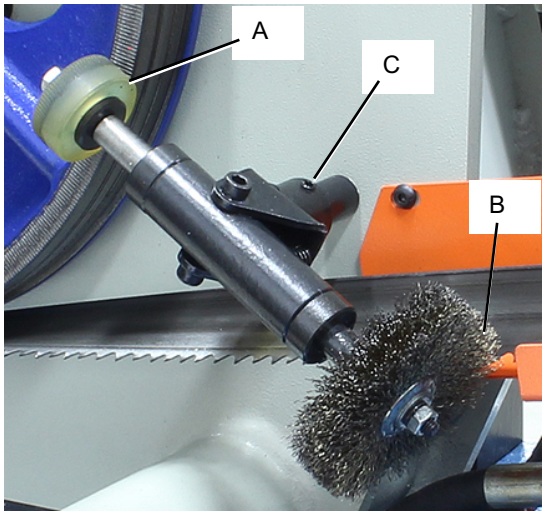


Figure 12-6

12.6 Selecting the Proper Blade Speed

Use the following chart for reference

Table 12-1

Cutting Speeds For Various Materials		
Materials	Blade Speed (Fpm)	Coolant Requried
Free Cutting Steel 1100 & 1200 Series Low & Medium Carbon 1008- 1045	256	YES
1046 – 1095 Alloy Steels Tool Steels Pipe & Structures Nickel Base Alloys Cooper Base Alloys	137, 198 137,198 92, 137 137, 198 92, 137 92, 137	YES
Stainless Steels 430F, 416, 420F, 303	137, 198 137, 198	YES
Cast Iron	137, 198	NO OIL BLADE

- Blade speeds higher than recommended will quickly dull the blade. Blue chips are evidence of excessive blade speed.

- Lower than recommended speeds will not prolong blade life, and will require a reduced feed rate
- Reduced speeds may be helpful in reducing vibration, and will increase blade life in that case.

13.0 Operation

⚠CAUTION

Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges.

⚠CAUTION

When handling large heavy materials make sure they are properly supported.

⚠CAUTION

NEVER operate saw without blade guards in place.

13.1 Starting the Saw

When ready to perform a cutting operation, set up the saw to match the material to be cut.

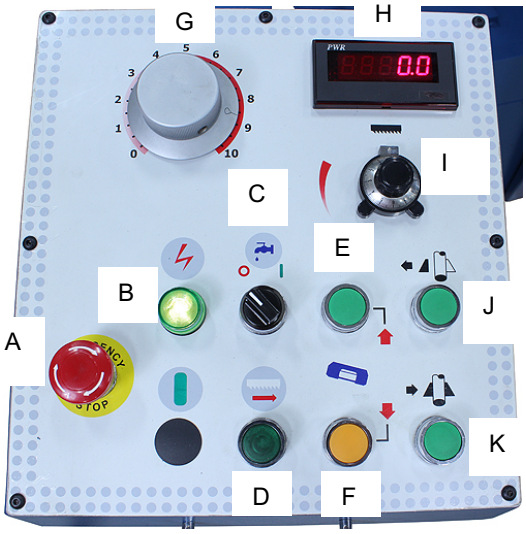


Figure 13-1

1. Set the descent control knob (G) to the ZERO position to prevent the bow from lowering into the material until completely ready.
2. Reset the emergency stop button (A) to supply power to the controls. The power lamp (B) will be illuminated.
3. Raise the saw bow (E) as needed to provide the clearance to set the saw angle and load the material.
4. Set the saw to the desired left or right angle. Remove the filler cover if an angle is to be cut.
5. Set the vise to a positon which will clamp the material and not interfere with the saw blade and bow travel.
6. Set the guide post as close to the material as possible without interfering with the cut or the vise.
7. Set the upper limit stop plate to allow the bow to raise high enough to clear the material.
8. If desired, set the material stop to set a desired cut length.
9. Load and clamp (K) the material at the desired length.
10. Verify that blade is clear of any obstructions and start (D) the saw blade.
11. Set the blade speed (I) as is needed for the material to be cut.
12. Start the coolant flow (C).
13. Adjust the descent control knob (G) to the rated needed for the material being cut.
14. Allow the saw to complete the cut, stop the blade and return to the up position.

13.2 Stopping the Saw

1. If needed, press the emergency stop button (A) or the bow up button (E) to stop the saw and the cut.
2. Make and corrections of repairs before starting to cut again.

14.0 Maintenance

⚠WARNING

Make sure the electrical disconnect is OFF before working on the machine.

⚠WARNING

Maintenance should be performed on a regular basis by qualified personnel.

⚠WARNING

Always follow proper safety precautions when working on or around any machinery.

The maintenance jobs are listed below, divided into daily, weekly, and monthly intervals. If the following operations are neglected, the result will be premature wear of the machine and poor performance.

14.1 Daily

- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.

- Give general cleaning to the machine to remove accumulated shavings.
- Clean the lubricating coolant drain hole to avoid excess fluid. Top off the level of lubricating coolant.
- Check blade for wear.
- Check functionality of the shields and emergency stops.

14.2 Weekly

- Thoroughly clean the machine to remove shavings, especially from the coolant tank.
- Removal of pump from its housing, cleaning of the suction filter and suction zone.
- Clean the filter of the pump suction head and the suction area.
- Use compressed air to clean the blade guides (guide bearings and drain hole of the lubricating and cooling tank).
- Clean flywheel housings and the race of the flywheels.
- Lubricate threaded components and sliding devices. Apply rust inhibitive lubricant to all non-painted surfaces.

14.3 Monthly

- Check the tightness of the drive wheel screws.
- Check that the blade guide bearings on the heads are in perfect running condition.
- Check the tightness of the screws for the motor, pump, and accident protection guards.

14.4 Blade Removal and Installation

⚠WARNING

Disconnect the machine from the power source before making any adjustments or repairs! Failure to comply may result in serious injury!

Blade changes are periodically required when they become worn or to match the properties of varying materials.

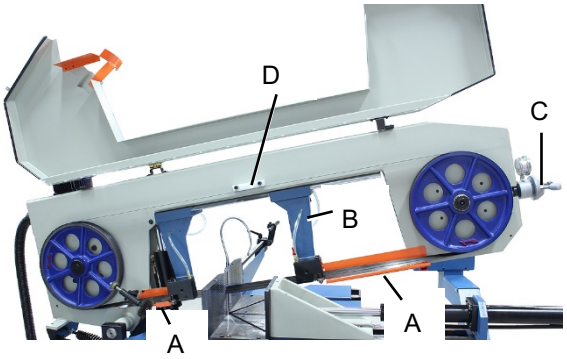


Figure 14-1

1. Raise the saw bow approximately 6" in height.
2. Disconnect the machine from the power source.
3. Remove the hand bolts from each end of the saw blade cover and lift and latch the cover in the open position.
4. Remove the orange blade guards (A) from the base of the guide post and saw bow.
5. Release the tension on the carbide guides by turning the knob counter clockwise 1/4-1/2 turn.
6. Loosen moveable blade guide (B) post lock handles and slides it to the right side (toward the stationary post) as far as possible.
7. Release the blade tension. Turn the blade tension handle (C) to "Loosen" position to free the blade.

⚠CAUTION

Even dull blades are sharp to the skin! Use extra caution handling band saw blades! Wear gloves for protection from the sharp blade!

8. Remove the old blade from both wheels and out of each blade guide.
9. Using compressed air, blow out metal chips and grit from between the bearings, blade guides, and inside of the blade guards and covers.
10. Place the new blade in the carbide guides, and then slide the blade over the wheels and under the blade guide block (D). The teeth should be pointing towards the drive side as they pass through the carbide guides. The blade teeth should protrude from 4.5mm to 5mm from the face of the blade wheels.

Figure 14-2

11. With the blade in place, turn the tension handle (C) to the "Tighten" (center of the green range) to tension the blade.
12. Set the carbide guides. Tighten the two carbide adjustment knobs until then are tight on the blade and then loosen 1/16 – 1/8 turn.
13. Turn the blade wheels by hand a few rotations to check that the blade is tracking correctly on the blade wheels.
14. Close all covers and fasten all guards.
15. Connect machine to power and run the blade freely for one minutes.
16. Turn the power OFF.

Figure 14-3

17. Recheck the blade tension and chip brush contact and tracking.
18. If further adjustment is necessary disconnect the saw from the power source, make adjustments, re- connect the power, and then test again.

14.5 Saw Blade Break-In

When a new blade is used, be sure to first break in the blade before using it for extended operation. Failure to break in the blade will shorten the service life of the blade, and result in less than optimum efficiency.

1. Reduce the blade speed setting to one half of its normal setting.
2. Lengthen the feed rate time required for cutting to 2-3 times that of normal.
3. The break-in operation can be considered sufficient if all unusual noises or metallic sounds have been eliminated. For instance, to completely break in the blade, a minimum of five complete cuts of 8” (200mm) diameter work-piece will be required.
4. After the break-in operation has been completed, return the blade speed and feed rate to their normal setting.

14.6 Blade Tracking Adjustment

When the blade is installed and tracking correctly, the tips of the blade teeth will be evenly positioned .17”-.19” (4.5-5mm) beyond the edge of the wheels with only light contact on the wheel flange.

The blade tracking is factory set and should not require any adjustment. If a tracking problem occurs, adjust the machine as follows:

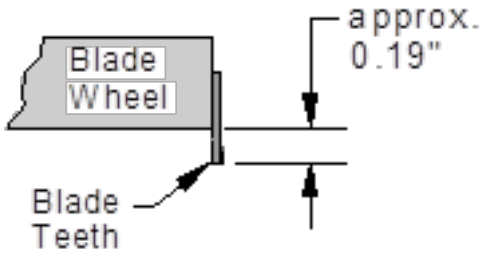


Figure 14-4

1. Raise saw arm 4” - 6” (102 - 127mm) above the horizontal position to a usable height.
2. Disconnect the machine from the power source.
3. Remove the front side idler wheel cover.
4. Locate tracking adjustment bolt (A) on the blade tension slide block.
5. Tracking adjustment is accomplished by either raising or lowering adjusting screw A.
6. Tracking is set properly when the tips of the blade teeth will be evenly positioned .17”-.19” (4.5-5mm) beyond the edge of the wheels with only light contact on the wheel flange.

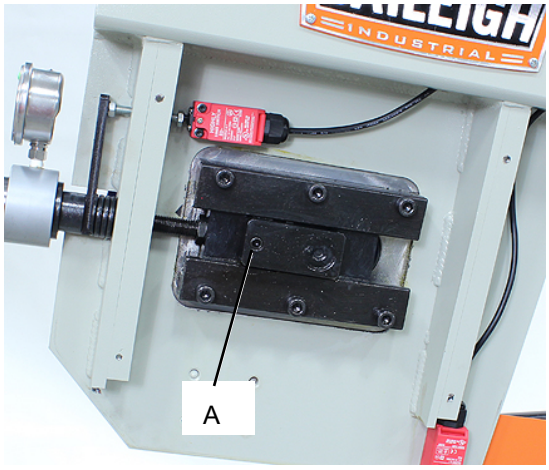


Figure 14-5

Note: Over tracking (allowing blade back to rub hard against wheel flange) will damage the blade wheels and blade.

7. Install and secure the front side idler wheel cover.
8. Connect machine to the power source.
9. Run the saw in pulses to observe the blade tracking. Each pulse may be slightly longer until you are confident that the blade is tracking correctly.

14.7 Accessing and Cleaning the Coolant System

1. Raise the bow to the maximum height and stop the machine and lock out power.

2. Clean the chips and debris from the saw and vise table.
3. Remove the drip tray. (See Assembly Section)
4. Remove the chip drawer (A) and empty the chips and clean the screens.
5. Using a suitable container, remove the drain plug and drain the coolant tank.
6. Flush and clean the tank, pump, and pump inlet and replace the drain plug.
7. Install the chip drawer.
8. Re-fill tank with coolant solution to the full level on the sight glass.
9. Install the drip tray. (See Assembly Section)

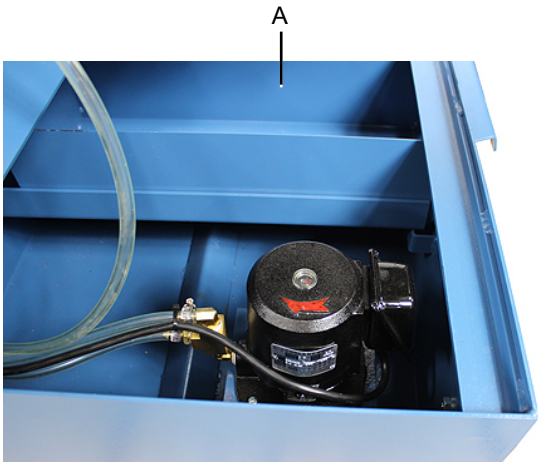


Figure 14-6

14.8 Oils for Lubricating Coolant

Any 10:1 (water to coolant) solution will work, however we recommend Baileigh B-Cool 20:1 (water to coolant) biodegradable metal cutting fluid. It has excellent cooling and heat transfer characteristics, is non-flammable, and extends tool and machine life. Each gallon of concentrate makes 21 gallons of coolant.

14.9 Hydraulic System

The hydraulic oil is the primary medium for transmitting pressure and also must lubricate the running parts of the pump.

Change the hydraulic oil after the first 3 months or operation. Then change the oil annually or after every 3,000 hours of operation, whichever comes first.

- Keep hydraulic oil temperature between 50°F - 140° F.
- Avoid mixing cutting fluid with the hydraulic oil.
- Check hydraulic oil level periodically by monitoring the sight gauge on the tank.
- Tank capacity is approximately 5.3 US gal. (20L).

1. Disconnect power to the saw.
2. Use hydraulic oil #68 SHELL BRAND or an equivalent with similar specifications.
3. Keep hydraulic reservoir filled to 90% of capacity.
4. DO NOT rely totally on the oil gauge as they can sometimes indicate an incorrect level reading. Do a visual inspection with the oil fill cap removed as well.
5. A shortage of hydraulic oil will cause hydraulic system breakdown to major mechanical components due to overheating.
6. Change the hydraulic oil every 12 months along with the oil filter.
7. Remove the cover panel to access the hydraulic tank.
8. Place a suitable container under the drain plug (A) to drain the oil into. Remove plug and drain oil.

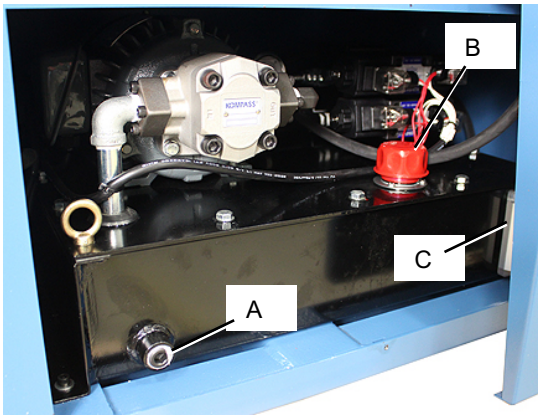


Figure 14-7

9. If cleaning the inside of the tank, remove the bolts securing the cover to the tank and slide the cover over enough to access the inside. Replace the cover when complete.
10. Clean filter basket (B) when filling or changing hydraulic oil.
11. Fill to the full mark on the sight gauge (C).
12. Operate the hydraulics to cycle each cylinder to full extension and retraction several times to purge any air from the system.
13. Install the access cover.

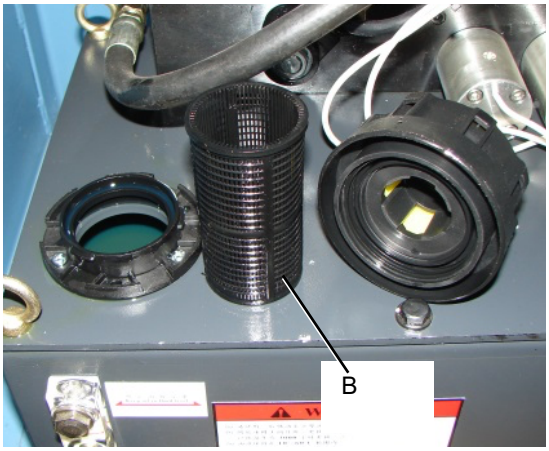


Figure 14-8

14.10 Oil Disposal

The disposal of these products is controlled by strict regulations. Follow all local regulation for proper disposal.

14.11 Changing Gear Oil

The gearbox requires periodic changing of oil.

The oil must be changed by the first 6 months of a new machine and every year thereafter.

To change the gear box oil:

1. Lower the saw bow to as near to horizontal as the limit switch will allow.
2. Disconnect the machine from the power source.
3. Using a suitable container, remove the drain plug (A) and drain the gear oil into the container.
4. When the oil is drained, replace the drain plug (A).
5. Remove the filler/vent cap (B) and fill the gear box with oil up to center of the oil sight gauge (C). For reference use SHELL type gear oil or Mobil gear oil #90.
6. Replace the fill/vent cap (B).

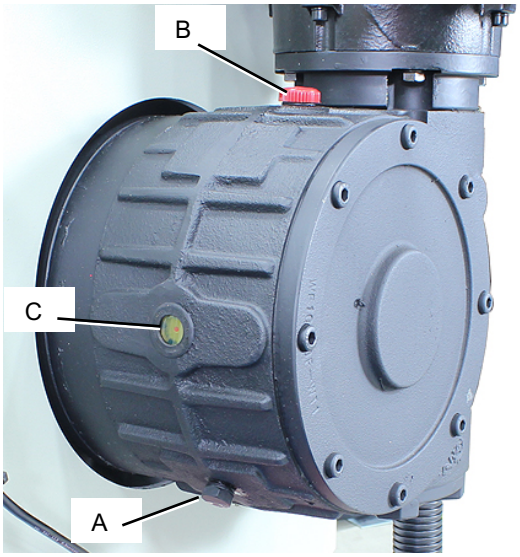


Figure 14-9

14.12 Storing Machine for Extended Period of Time

If this machine is to be inactive for a long period of time, prepare the machine as follows:

- Disconnect the electrical supply from the power panel.
- Empty and clean the coolant reservoir.
- Clean and grease the machine.
- Cover the machine.

15.0 Troubleshooting

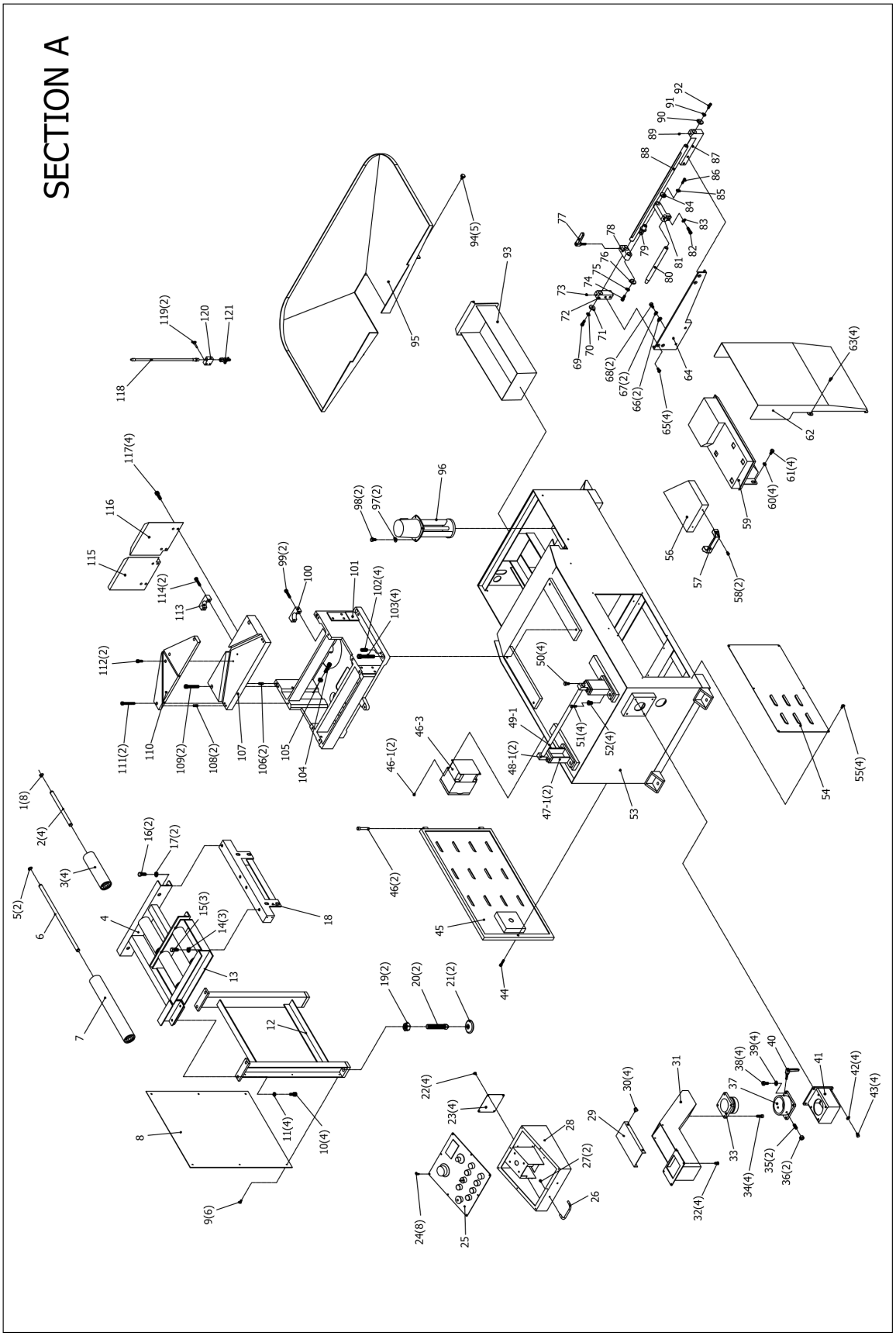
⚠WARNING **Make sure the electrical disconnect is OFF before working on the machine.**

Table 15-1

Problem	Probable Cause	Remedy
Cut is not square vertically.	Carbide guide adjustment incorrect.	Adjust the carbide guide.
	Feed rate excessive.	Reduce the feed rate.
	Blade worn.	Replace blade.
	Guide arms too far apart.	Adjust guide arms.
	Blade pitch incorrect.	Change blade.
Cut is not square horizontally.	Angle is not set correctly.	Adjust angle again.
	Material is not square in vise.	Reset material.
	Angle pointer is out of adjustment.	Readjust it.
	Material is not secure in the vise.	Reset vise.
Head cylinder creeps: A) in hold B) in feed position	Cylinder cup seal defective. 3 position valve defective Hydraulic hose leaking	Replace cup seal Replace Change it Loosen jam nut and read just Pointer with feed rate at zero
Blade tracking incorrect	Improper tension. Tracking needs adjustment.	Adjust it.
	Wheel is worn or in poor condition.	Replace it.
Blade stalls in cut	More tension needed. Excessive feed rate.	Reduce feed rate.
	Blade pitch incorrectly.	Change blade.
Blade vibrating excessively	Blade speed too fast. More blade tension needed.	Slow blade speed.
	Guide arms too far apart.	Adjust it.
	Feed rate too slowly.	Increase feed rate.
	Carbide guides worn or loose.	Adjust or replace it.
Excessive blade breakage.	Excessive blade tension.	Reduce blade tension.
	Excessive feed rate.	Reduce feed rate.
	Top guides damaged.	Replace top guide.
No coolant flow.	No coolant.	Add the coolant.
	Check coolant ports for blockage Line blockage.	Blow out lines with compressed air.
	Coolant pump inoperable.	Replace it.
Blade will not start.	Lift head off limit switch.	Adjust it.
	Control fuse blown. Push reset button.	Replace fuse.
Machine stops before cut is complete.		Adjust saw bow down limit switch bolt or runs on after cut is completed.

16.0 Replacement Parts

16.1.1 Dual Miter Semi-Automatic Band Saw Assembly – Exploded View A



16.1.2 Dual Miter Semi Automatic Band Saw Assembly – Parts List A

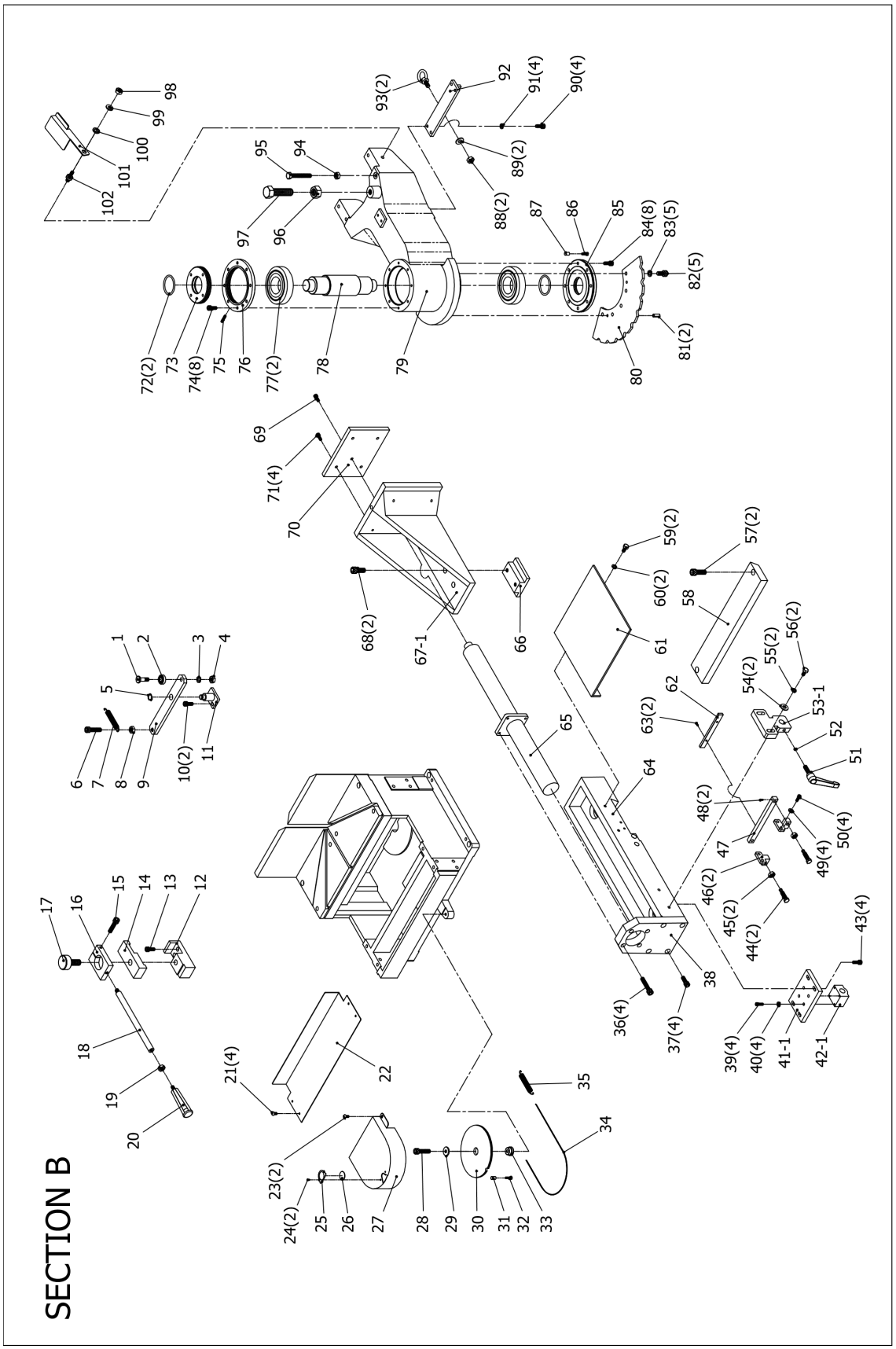
Index No.	Part No.	Description	Size	Qty.
1	JT9-F006045	C Ring	S17	8
2	BA1-6451	Short Roller Shaft	S20A2-04-A	4
3	BA1-6452	Short Roller	S20A2-04	4
4	BA1-6453	Roller Stand	S20A3-17	1
5	JT9-F006045	C Ring	S17	2
6	BA1-6454	Long Roller Shaft	S20A2-04-B	1
7	BA1-6455	Roller	S1380207-1	1
8	BA1-6456	Roller Stand Cover	S20A3-17-D	1
9	JT9-F009884	Button Head Socket Screw	M5x8L	6
10	JT9-TS-1506021	Socket Head Cap Screw	M12x25L	4
11	JT9-TS-2361121	Spring Washer	M12	4
12	BA1-6457	Stand	S20A3-17-C	1
13	BA1-6458	Roller Adjusting Plate	S20A3-17-B	1
14	JT9-TS-2361121	Spring Washer	M12	3
15	JT9-TS-1492011	Head Cap Screw	M12x25L	3
16	JT9-TS-1492011	Head Cap Screw	M12x25L	2
17	JT9-TS-2361121	Spring Washer	M12	2
18	BA1-6459	Position Bracket	S20A3-17-A	1
19	BA1-6460	Nut	M22	1
20	BA1-6461	Bolt	L25A2-31	2
21	**	Cushion		2
22	JT9-F009884	Button Head Socket Screw	M5x8L	4
23	BA1-6462	Control Panel Rear Cover	S20A3-06-A	1
24	JT9-F009884	Button Head Socket Screw	M5x8L	8
25	BA9-1232280	Control Panel	NPB-017	1
26	BA1-6463	Handle	A-42-C	1
27	JT9-TS-2246082	Button Head Socket Screw	M6x8L	2
28	BA1-6464	Control Panel Box	S20A3-06	1
29	BA1-6465	Control Box Bracket	S20A3-07-C	1
30	JT9-TS-2246082	Button Head Socket Screw	M6x8L	4
31	BA1-6466	Bracket Cover	S20A3-07-B	1
32	BA1-6467	Machine Screw	M5x8L	4
33	BA1-6468	Bracket Swiveling Shaft	331D1-18	1
34	CM9-TS-1503041	Socket Head Cap Screw	M6x16L	4
35	JT9-TS-1524051	Set Screw	M8x20L	2
36	JT9-TS-1540061	Nut	M8	2
37	BA1-6469	Shaft Bush	331D1-18-A	1
38	JT9-TS-1490021	Head Cap Screw	M8x16L	4
39	CM9-TS-2361081	Spring Washer	M8	4
40	BA1-6470	Handle	M8x35L	1
41	BA1-6471	Position Bracket	331D3-37	1
42	CM9-TS-2361081	Spring Washer	M8	4
43	JT9-TS-1490021	Head Cap Screw	M8x16L	4
44	JT9-TS-1504051	Socket Head Cap Screw	M8x25L	1
45	BA1-6472	Electrical Cabinet Cover	S20A3-01-D	1
46	**	Dowel Pin		2
46-1	JT9-TS-2244102	Button Head Socket Screw	M4x8L	2
46-3	BA1-6473	Inverter 3HP (220V)	L25A4-66	1
47-1	BA1-6474	Shaft Bracket	S20A3-18-A	2
48-1	BA1-6475	Shaft Position Bracket	SH-25A	2
49-1	BA1-6476	Long Shaft	SCF-25-600L	1
50	JT9-TS-1482041	Head Cap Screw	M6x20L	4
51	JT9-TS-1490081	Head Cap Screw	M8x45L	4
52	BA1-6477	Adjusting Screw	M16	4
53	**	Machine Base	S20A3-01-C	1
54	BA1-6478	Hydraulic Unit Cover	S20A3-01-E	1
55	JT9-F009884	Button Head Socket Screw	M5x8L	4
56	BA1-6479	Outlet Mobile Case	S20A3-04-B	1
57	BA1-6480	Handle	9160502	1

Index No.	Part No.	Description	Size	Qty.
58	BA1-6481	Big Round Head Screw	M6x12L	2
59	BA1-6482	Outlet Case	S20A3-04	1
60	JT9-TS-2361121	Spring Washer	M12	4
61	JT9-F008871	Head Cap Screw	M12x20L	4
62	BA1-6483	Outlet Cover	S20A3-16	1
63	JT9-F009884	Button Head Socket Screw	M5x8L	4
64	BA1-6484	Outlet Side Plate	S20A3-04-A	1
64A	BA9-1232646	Material Stop Rod Kit (#64-92)		
65	BA1-6485	Flat Head Screw	5/16"x3/4"L	4
66	JT9-5051911	Washer	M10	2
67	JT9-TS-2361101	Spring Washer	M10	2
68	CM9-TS-1491031	Head Cap Screw	M10x25L	2
69	JT9-TS-0209051	Socket Head Cap Screw	3/8"x1"L	1
70	JT9-TS-0720091	Spring Washer	3/8"	1
71	BA1-6486	Washer	S1380221-3	1
72	BA1-6487	Position Block (Left)	S1380110	1
73	JT9-TS-0270021	Set Screw	5/16"x5/16"L	1
74	JT9-TS-0209051	Socket Head Cap Screw	3/8"x1"L	1
75	JT9-TS-0720091	Spring Washer	3/8"	1
76	BA1-6488	Washer	S1380221-3	1
77	BA1-6489	Handle	3/8x30L	1
78	BA1-6490	Adjusting Block	S1380110-B	1
79	BA1-6491	Position Bracket Shaft	S1380221-2	1
80	BA1-6492	Stopper Rod	460D2-64	1
81	BA1-6493	Position Bracket	S1380110-C	1
82	JT9-TS-0209051	Socket Head Cap Screw	3/8"x1"L	1
83	JT9-TS-0720091	Spring Washer	3/8"	1
84	BA1-6494	Washer	S1380221-3	1
85	JT9-TS-0720091	Spring Washer	3/8"	1
86	JT9-TS-0209051	Socket Head Cap Screw	3/8"x1"L	1
87	BA1-6495	Position Block (Right)	S1380110-A	1
88	BA1-6496	Length Scale Rod	S1380221	1
89	JT9-TS-0270021	Set Screw	5/16"x5/16"L	1
90	BA1-6497	Washer	S1380221-3	1
91	JT9-TS-0720091	Spring Washer	3/8"	1
92	JT9-TS-0209051	Socket Head Cap Screw	3/8"x1"L	1
93	BA1-6498	Chip Box	S20A3-08	1
94	BA1-6499	Thumb Screw	M8x16L	5
95	BA1-6500	Coolant Plate	S20A3-10	1
96	BA1-6501	Coolant Pump	1/6Hp 150L	1
97	CM9-TS-2361061	Spring Washer	M6	2
98	JT9-TS-1482021	Head Cap Screw	M6x12L	2
99	JT9-TS-1505051	Socket Head Cap Screw	M10x35L	2
100	BA1-6502	Position Block	331D2-04	1
101	BA1-6503	Cutting Table	331D1-01	1
102	JT1-1978	Set Screw	M12x30L	4
103	JT9-TS-1506111	Socket Head Cap Screw	M12x70L	4
104	JT9-TS-1505061	Socket Head Cap Screw	M10x40L	1
105	JT9-TS-1540071	Nut	M10	1
106	BA1-6504	Spring Pin	8x20L	2
107	**	Cutting Plate	331D1-02	1
108	BA1-6505	Spring Pin	8x20L	2
109	JT9-TS-1505101	Socket Head Cap Screw	M10x60L	2
110	BA9-1226995	Angle Cutting Table	S20A1-01	1
111	JT9-TS-1504111	Socket Head Cap Screw	M8x55L	2
112	JT9-TS-1504041	Socket Head Cap Screw	M8x20L	2
113	BA1-6506	Fixing Block	331D2-04	1
114	JT9-TS-1505051	Socket Head Cap Screw	M10x35L	2
115	BA1-6507	Fixed Jaw (L)	331D2-23	1
116	BA1-6508	Fixed Jaw (R)	331D2-24	1
117	JT9-TS-1505041	Socket Head Cap Screw	M10x30L	4

Index No.	Part No.	Description	Size	Qty.
118	BA9-1021835	Hose	L25A4-14	1
119	BA1-6509	Wing Screw	M6x25L	2
120	BA1-6510	Hose Set	H46A2-39	1
121	BA1-6511	Coolant Switch		1

** These parts are shown for reference only and are not available for order individually. Non-proprietary parts, such as fasteners, can usually be found at local hardware stores.

16.1.3 Dual Miter Semi Automatic Band Saw Assembly – Exploded View B



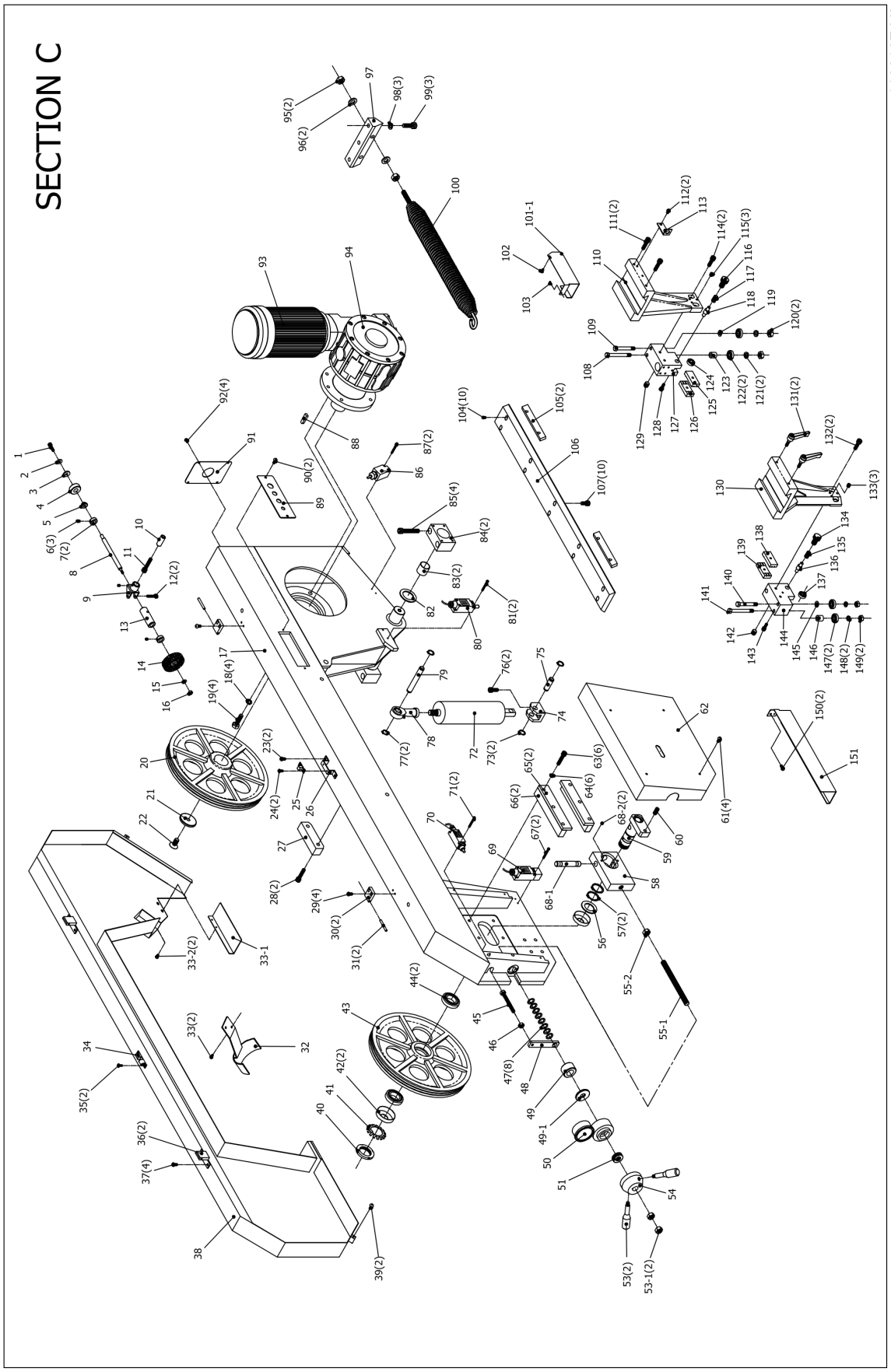
16.1.4 Dual Miter Semi-Automatic Band Saw Assembly – Parts List B

Index No.	Part No.	Description	Size	Qty.
1	**	Cam Shaft	331D2-31	1
2	JT1-1979	Ball Bearing	BB2136	1
3	JT9-TS-2361101	Spring Washer	M10	1
4	JT9-TS-1540071	Nut	M10	1
5	BA1-6513	C Ring	S16	1
6	JT9-TS-1505061	Socket Head Cap Screw	M10x40L	1
7	BA1-6514	Cam Spring	331D4-02	1
8	JT9-TS-1540071	Nut	M10	1
9	BA1-6515	Connecting Plate	331D2-32	1
10	JT9-TS-1505061	Socket Head Cap Screw	M8x25L	2
11	BA1-6516	Cam Bracket	331D2-30	1
12	BA9-1022731	Position Bracket	331D1-11	1
	BA9-1231554	BS20SADM-B12-20-Handle Assy		
13	JT9-TS-1504041	Socket Head Cap Screw	M8x20L	1
14	BA9-BS20SADM-B14	Angle Setting Block	331D2-26	1
15	JT9-TS-1505081	Socket Head Cap Screw	M10x50L	1
16	BA9-1227737	Connecting Block	331D2-28	1
17	BA9-BS20SADM-B17	Set Bolt	331D2-27	1
18	BA9-1227738	Handle Shaft	331D2-29	1
19	JT9-TS-1540081	Nut	M12	1
20	BA1-6517	Handle	9160501	1
21	JT9-F009884	Socket Head Button Screw	M5x8L	4
22	BA1-6518	Cover	331D3-26-A	1
23	JT9-TS-2246082	Socket Head Button Screw	M6x8L	2
24	CM9-TS-1501011	Socket Head Cap Screw	M4x6L	2
25	BA9-BS20SADM-B25	Magnifier Holder	331D3-43	1
26	BA9-1227739	Angle Magnifier	331D4-09	1
27	BA1-6519	Cover	331D3-25	1
28	JT9-TS-1505061	Socket Head Cap Screw	M10x40L	1
29	JT9-5051911	Washer	M10	1
30	BA1-6520	Center Wheel	331D2-33	1
	**	Wire Fastener Assembly (including B31, B33-B35)	331D2-35A	
31	BA1-6521	Wire Fastener	331D2-35	1
32	JT9-TS-1481041	Hex Cap Screw	M5x15L	1
33	BA1-6522	Bush	331D2-34	1
34	BA1-6523	Steel Rope		1
35	BA1-6524	Extend Spring	331D4-03	1
36	JT9-TS-1505061	Socket Head Cap Screw	M10x40L	4
37	JT9-TS-1506021	Socket Head Cap Screw	M12x25L	4
38	BA1-6525	Cylinder Plate	331D2-61	1
39	CM9-TS-1503061	Socket Head Cap Screw	M6x25L	4
40	CM9-TS-2361061	Spring Washer	M6	4
41-1	BA1-6526	Plate	S20A2-08-B	1
42-1	BA1-6527	Linear Bearing	LMA-25UU	1
43	JT9-TS-1504041	Socket Head Cap Screw	M8x20L	4
44	BA1-6528	Adjusting Screw	H46D2-19-B	2
45	JT9-TS-1540081	Nut	M12	2
46	BA1-6529	Position Block	S20A2-10	2
47	BA1-6530	Vise Position Block	S20A2-10-A	1
48	JT9-TS-2235061	Socket Head Cap Screw	M5x6L	2
49	CM9-TS-2361081	Spring Washer	M8	4
50	PM9-TS-2228161	Hex Cap Screw	M8x16L	4
51	BA1-6531	Lock Handle	TRT80 M10x45L	1
52	BA1-6532	Lock Brass	H46D2-25	1
53-1	BA1-6533	Position Block	S20A2-08-C	1
54	JT9-5051911	Washer	M10	2
55	JT9-TS-2361101	Spring Washer	M10	2
56	JT9-TS-149105	Hex Cap Screw	M10x35L	2

Index No.	Part No.	Description	Size	Qty.
57	JT9-TS-1506041	Socket Head Cap Screw	M12x35L	4
58	BA1-6534	Guide Plate	S20A2-09	1
59	JT9-TS-2208201	Hex Cap Screw	M8x20L	2
60	CM9-TS-2361081	Spring Washer	M8	2
61	BA1-6535	Cover	331D3-26	1
62	BA1-6536	Copper Plate	H46D2-19	1
63	JT9-TS-2245081	Socket Head Flat Screw	M5x8L	2
64	BA1-6537	Vise Table	331D1-04-A	1
65	BA9-1019417	Hydraulic Cylinder	B015-C201A	1
66	**	Vise Position Block	331D2-18-A	1
67-1	BA1-6538	Movable Vise	331D1-05-A	1
68	JT9-TS-1506021	Socket Head Cap Screw	M12x25L	2
69	JT9-TS-1504041	Socket Head Cap Screw	M8x20L	1
70	BA1-6539	Attached Plate	331D2-22	1
71	JT9-TS-1504041	Socket Head Cap Screw	M8x20L	4
72	BA1-6540	O Ring	L25A5-47	2
73	BA1-6541	Upper Cover	331D2-06-A	1
74	JT9-TS-1504041	Socket Head Cap Screw	M8x20L	8
75	JT9-TS-1523071	Set Screw	M6x25L	1
76	BA1-6542	Upper Cover	331D2-06	1
77	JT1-1980	Taper Roller Bearing	BB2188	2
78	BA1-6543	Center Shaft	331D2-03	1
79	BA1-6544	Swiveling Base	331D1-06	1
80	BA9-1232147	Angle Plate	331D2-25	1
81	BA1-6545	Spring Pin	8x20L	2
82	JT9-TS-1505031	Socket Head Cap Screw	M10x25L	5
83	JT9-TS-2361101	Spring Washer	M10	5
84	JT9-TS-1504041	Socket Head Cap Screw	M8x20L	8
85	BA1-6546	Lower Cover	331D2-05	1
86	JT9-TS-1481041	Hex Cap Screw	M5x15L	1
87	BA1-6547	Wire Fastener	331D2-35	1
88	BA1-6548	Nut	1/2"	2
89	JT9-TS-0720111	Spring Washer	1/2"	2
90	JT9-TS-1504051	Socket Head Cap Screw	M8x25L	4
91	CM9-TS-2361081	Spring Washer	M8	4
92	BA1-6549	Lower Bracket	331D1-17	1
93	BA1-6550	Ring Screw	1/2"	2
94	JT9-TS-1540071	Nut	M10	1
95	JT9-TS-1491101	Hex Cap Screw	M10x60L	1
96	JT9-TS-2310201	Nut	M20	1
97	BA1-6551	Hex Cap Screw	M20x65L	1
98	BA1-6552	Nylon Nut	M10	1
99	BA1-6553	POM Washer	S138F2-26-B	1
100	BA1-6554	Washer	S138F2-26-A	1
101	BA1-6555	Upper Contact Plate	S20A3-09	1
102	BA1-6556	Position Screw	S20A2-01	1

** These parts are shown for reference only and are not available for order individually. Non-proprietary parts, such as fasteners, can usually be found at local hardware stores.

16.1.5 Dual Miter Semi Automatic Band Saw Assembly – Exploded View C



16.1.6 Dual Miter Semi Automatic Band Saw Assembly – Parts List C

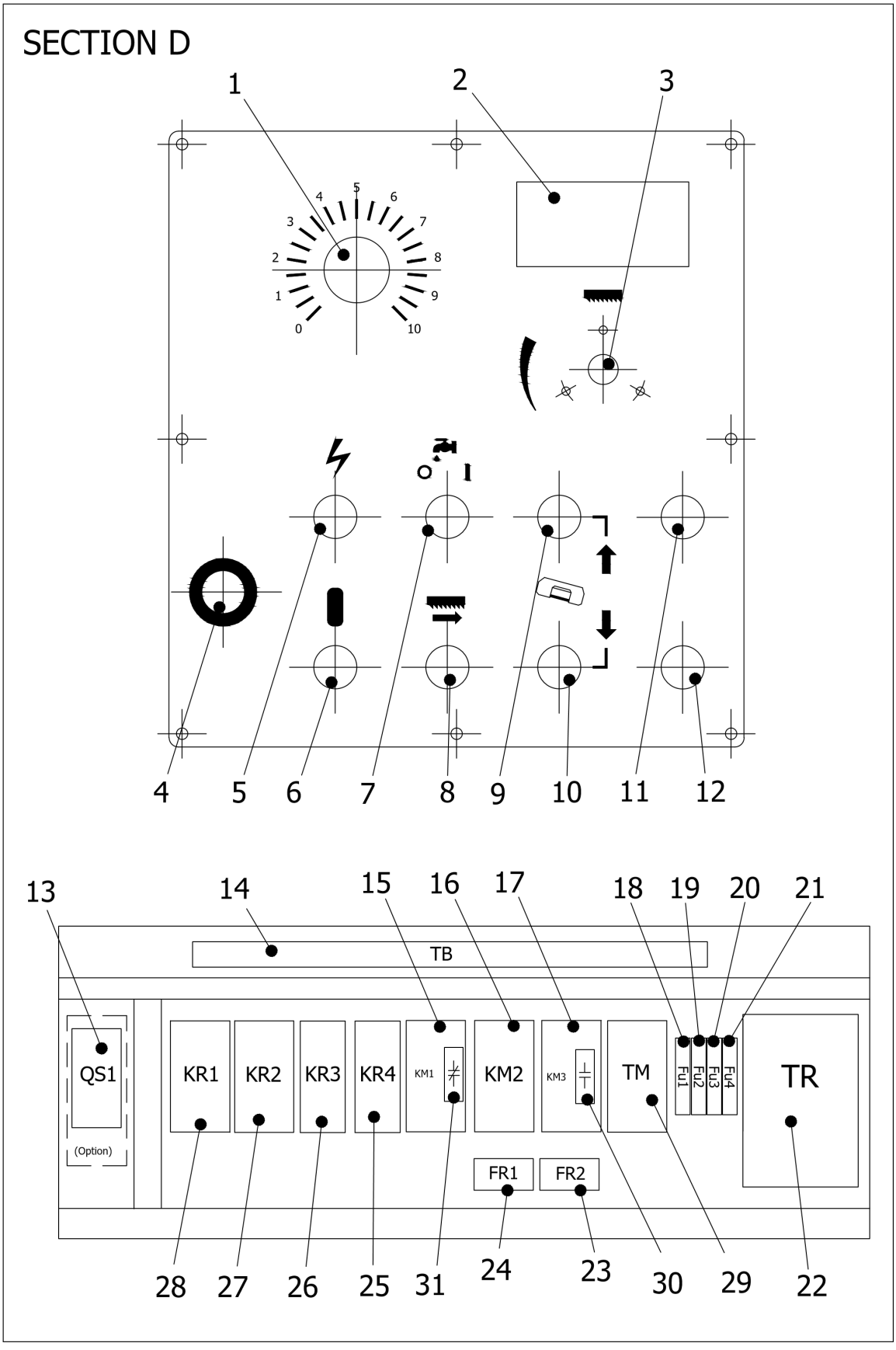
Index No.	Part No.	Description	Size	Qty.
1	CM9-TS-1503041	Socket Head Cap Screw	M6x16L	1
2	BA1-6557	Spring Washer	M6	1
3	BA1-6558	Shaft Bush	331D2-42-A	1
4	BA9-BS20SADM-C4	Brush Wheel	331D2-42	1
5	BA1-6559	Shaft Bush	331D2-42-A	1
6	JT9-TS-1523011	Set Screw	M6x6L	3
7	BA1-6560	Position Bush	331D2-41	2
8	BA9-1226296	Brush Shaft	331D2-40	1
9	BA1-6561	Position Bracket	331D3-17	1
10	BA9-BS20SADM-C10	Shaft	331D2-43	1
11	JT9-TS-1504091	Socket Head Cap Screw	M8x45L	1
12	JT9-TS-1503011	Socket Head Cap Screw	M6x8L	2
13	BA1-6562	Shaft Tube	331D2-39	1
14	BA1-6563	Brush	3"x6.35mm	1
15	BA1-6564	Spring Washer	M6	1
16	CM9-TS-2311061	Nut	M6	1
17	BA1-6565	Saw Bow	S20A3-02	1
18	BA1-6566	Spring Washer	M10	4
19	JT9-TS-1491061	Hex Cap Screw	M10x40L	4
20	BA1-6567	Drive Wheel	331D1-13	1
21	BA1-6568	Washer	331D2-49	1
22	JT1-1981	Socket Head Flat Screw	M12x25L	1
23	JT9-TS-2246122	Socket Head Button Screw	M6x12L	2
24	JT9-TS-1512011	Socket Head Flat Screw	M4x10L	2
25	BA1-6569	Brass Button	330S0419	1
26	BA1-6570	Lock Bracket	331D3-27	1
27	BA1-6571	Blade Guide Block	331D2-55	1
28	JT9-TS-1504081	Socket Head Cap Screw	M8x40L	2
29	JT9-TS-2246202	Socket Head Button Screw	M6x20L	4
30	BA9-1226997	Fixing Block	331D2-44	2
31	BA9-1226998	Pin	14x70L	2
32	BA1-6572	Protective Bracket	331D3-14	1
33	JT9-F009884	Socket Head Button Screw	M5x8L	2
33-1	**	Blade guard (Rear)	331D3-48B	1
33-2	JT9-F009884	Button Head Socket Screw	M5x8L	2
34	BA1-6573	Brass Button	330S0419	1
35	JT9-TS-1512011	Socket Head Flat Screw	M4x10L	2
36	BA1-6574	Cover Lock	331D2-45	2
37	JT9-TS-2246122	Socket Head Button Screw	M6x12L	4
38	BA1-6575	Wheel Cover	S20A3-05	1
39	JT9-F009884	Socket Head Button Screw	M5x8L	2
40	BA9-1231582	Nut	AN07(M35)	1
41	BA9-1013408	Teeth Washer	AW07(M35)	1
42	BA9-1013409	Cover	331D4-47A	2
43	BA9-1010902	Idle Wheel	331D1-12	1
44	BA9-1013410A	Taper Roller Bearing	BB2190	2
45	JT9-TS-1490111	Hex Cap Screw	M8x60L	1
46	JT9-TS-1540061	Nut	M8	1
47	BA1-6576	Disc Washer 361820	331D5-30	8
48	BA1-6577	Contactor Plate	331D2-48	1
49	BA1-6578	Tension Gauge Spacer	331D2-16-A	1
49-1	BA1-6579	Slide Block Screw Rod Washer	331D2-16-B	1
50	BA9-1014060	Tension Gauge	331D5-00B	1
51	BA9-1021697	Thrust Bearing	BB2010	1
53	BA1-6580	Handle	331D2-63	2
53-1	JT9-TS-154010	Nut	M16	2
54	BA1-6581	Handle Wheel	331D2-63-A	1
55-1	BA1-3560	Tooth strip	M16	1
55-2	JT9-TS-154010	Nut	M16	1

Index No.	Part No.	Description	Size	Qty.
56	BA1-3554	Washer	331D2-12-C	1
57	BA1-3555	C Ring	S35	2
58	BA1-3556	Slide	331D2-13	1
59	BA9-1226943	Idle Wheel Shaft Set	331D2-12	1
60	JT9-TS-1526041	Set Screw	M12x25L	1
61	JT9-F009884	Socket Head Button Screw	M5x8L	4
62	BA1-6582	Wheel Cover	S20A3-12	1
63	BA1-6583	Socket Head Cap Screw	M10x55L	6
64	BA1-6584	Spring Washer	M10	6
65	BA1-6585	Slide Plate	331D2-15	2
66	BA1-6586	Slide Guide	331D2-14	2
67	JT9-TS-1501091	Socket Head Cap Screw	M4x35L	2
68-1	BA1-6587	Slide Block Solid Pin	331D2-11	1
68-2	JT9-TS-2276081	Set Screw	M6x8L	2
69	BA1-6588	Limit Switch	EK-1-15-R	1
70	BA1-6589	Limit Switch	AZD-1001T	1
71	JT9-TS-1501091	Socket Head Cap Screw	M4x35L	2
72	BA9-1010516	Hydraulic Cylinder		1
73	BA1-6590	C Ring	S16	2
74	BA1-6591	Lower Bracket	331D2-36	1
75	BA1-6592	Cylinder Support Rod	331D2-37	1
76	JT9-TS-1504041	Socket Head Cap Screw	M8x20L	2
77	BA1-6593	C Ring	S16	2
78	BA9-BS20SADM-C78	Eye Bearing	B015-C206	1
79	BA1-6594	Cylinder Support Rod	331D2-38	1
80	BA9-BS20SADM-C80	Limit Switch	AZD-1001T	1
81	JT9-TS-1501091	Socket Head Cap Screw	M4x35L	2
82	BA1-6595	Washer	331D2-01-A	1
83	BA1-6596	Oilless Bearing 4040	BB2062	2
84	BA1-6597	Bush Seat	331D2-02-A	2
85	BA1-6598	Socket Head Cap Screw	M12x65L	4
86	BA1-6599	Limit Switch	ED1-3-32	1
87	JT9-TS-1501091	Socket Head Cap Screw	M4x35L	2
88	BA1-6600	Key	14x8x50	1
89	BA1-6601	Wire Plate	S20A3-02-C	1
90	JT9-TS-2246082	Socket Head Button Screw	M6x8L	2
91	BA1-6602	Wire Plate	S20A3-02-B	1
92	JT9-F009884	Socket Head Button Screw	M5x8L	2
93	BA9-1224684	Motor	3HP	1
94	BA9-1021837	Reducer	100#1/40	1
95	JT9-JWS25-202	Nut	1/2"	2
96	BA1-6603	Spring Washer	1/2"	2
97	BA1-6604	Spring Holder	S20A1-03	1
98	BA1-6605	Spring Washer	M10	3
99	JT9-TS-1505031	Socket Head Cap Screw	M10x25L	3
100	BA1-1281	Spring	331D4-01-A	1
101-1	BA9-1022301A	Blade Guard (Rear)	331D3-48A	1
102	JT9-F009884	Socket Head Button Screw	M5x8L	1
103	BA1-3578	Spring Pin	4x12L	1
104	JT9-TS-1525031	Set Screw	M10x16L	10
105	BA1-6606	Plate	331D2-07-A	2
106	BA1-6607	Bracket Guide	331D2-07	1
107	JT9-TS-1505021	Socket Head Cap Screw	M10x20L	10
108	BA9-1230824	Bearing Shaft (Long)	331D2-10	1
109	BA9-1230825	Bearing Shaft (Short)	331D2-10-A	1
110	BA1-6608	Guide Post (Rear)	331D1-08	1
111	JT9-TS-1504061	Socket Head Cap Screw	M8x30L	2
112	JT9-TS-2246082	Socket Head Button Screw	M6x8L	2
113	BA1-6609	Fixing Bracket	331D3-22	1
114	JT9-TS-1505061	Socket Head Cap Screw	M8x25L	2

Index No.	Part No.	Description	Size	Qty.
115	JT9-TS-1524041	Set Screw	M8x16L	3
116	BA1-6610	Adjusting Screw	3300209	1
117	BA9-BS20SADM-C117	Adjusting Spring	3300405	1
118	BA9-BS20SADM-C118	Pin	331D2-59	1
119	BA9-1230826	Washer	331D2-10-C	1
120	JT9-TS-1540071	Nut	M10	2
121	BA1-6611	Spring Washer	M10	2
122	**	Bearing 6200	BB2149	2
123	BA9-1230827	Shaft Bush	331D2-10-B	1
124	BA9-1021098	Bearing 6000	BB2136	1
125	BA9-1021099	Adjusting Carbide (No Grooved)	331D2-09-A	1
126	BA9-1021100	Fixed Carbide (No Grooved)	331D2-08-A	1
127	BA1-6612	Bearing Set (Rear)	331D1-10	1
	**	Rear Blade Guide Bracket		
128	CM9-TS-1503041	Socket Head Cap Screw	M6x16L	1
129	BA9-BS20SADM-C129	Set Screw	M12x10L	1
130	BA1-6614	Guide Post (Front)	331D1-07	1
131	BA1-1651	Lock Handle	M8x30L	2
132	JT9-TS-1505061	Socket Head Cap Screw	M8x25L	2
133	JT9-TS-1524041	Set Screw	M8x16L	3
134	BA1-6615	Adjusting Screw	3300209	1
135	BA1-6616	Adjusting Spring	3300405	1
136	BA1-6617	Pin	331D2-59	1
137	JT1-1979	Bearing 6000	BB2136	1
138	BA9-1021101	Adjusting Carbide (Grooved)	331D2-09	1
139	BA9-1021102	Fixed Carbide (Grooved)	331D2-08	1
140	BA1-6618	Bearing Shaft (Short)	331D2-10-A	1
141	BA1-6619	Bearing Shaft (Long)	331D2-10	1
142	BA1-6620	Set Screw	M12x10L	1
143	CM9-TS-1503041	Socket Head Cap Screw	M6x16L	1
144	BA1-6621	Bearing Set (Front)	331D1-09	1
	BA9-1228870	Front Blade Guide Bracket		
145	BA1-6622	Washer	331D2-10-C	1
146	BA1-6623	Shaft Bush	331D2-10-B	1
147	JT1-1979	Bearing 6200	BB2149	2
148	BA1-6624	Spring Washer	M10	2
149	JT9-TS-1540071	Nut	M10	2
150	JT9-F009884	Socket Head Button Screw	M5x8L	2
151	BA9-1022302	Blade Guard (Front)	331D3-12-A	1
	Multiple Tpi/			
	Sku's Offered	Blade (not show)	34x1.1x4130mm	
			HSS 3/4T	1
	BA9-1230471	Oil Filter MF-04 (not show)		

** These parts are shown for reference only and are not available for order individually. Non-proprietary parts, such as fasteners, can usually be found at local hardware stores.

16.1.7 Dual Miter Semi Automatic Band Saw Assembly – Exploded View D

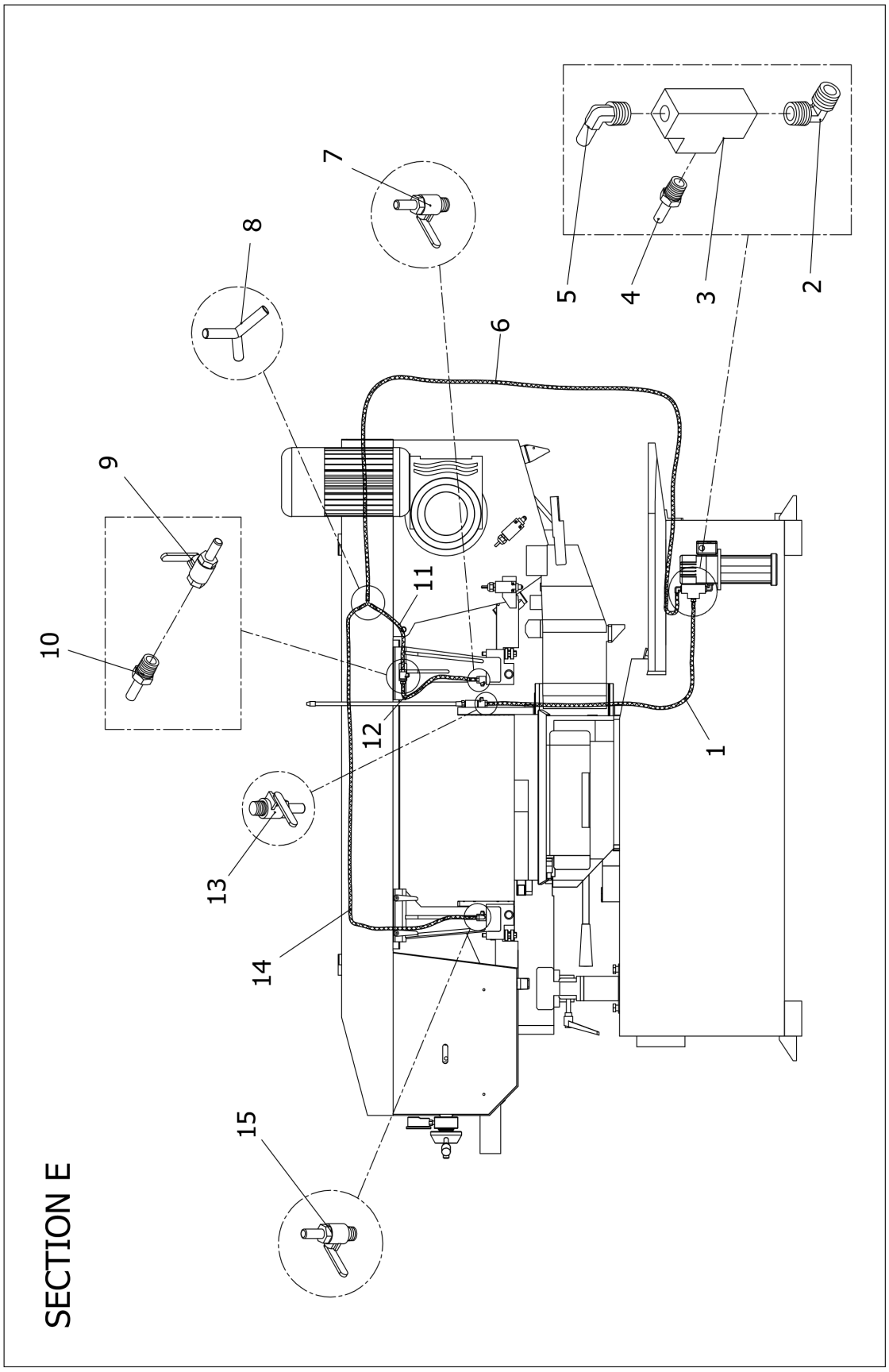


16.1.8 Dual Miter Semi Automatic Band Saw Assembly – Parts List D

Index No.	Part No.	Description	Size	Qty.
1	BA9-1226944	Flow Regulator		1
2	**	Blade Speed Readout		1
3	**	Blade Speed Control Knob VR	Blade Speed Adjust Knob	1
4	**	Emergency Stop Button		1
5	BA1-6625	Power Indicator Light		1
6	BA1-6626	Plug	CSA	1
7	**	Coolant Pump ON/OFF Switch		1
8	**	Blade Start Button		1
9	**	Bow Up Button		1
10	**	Bow Down Button		1
11	**	Vise Open Button		1
12	**	Vise Close Button		1
14	BA1-6627	Terminal Block		1
15	**	Blade Motor Contactor	KM1	1
16	**	Coolant Pump Contactor	KM2	1
17	**	Hydraulic Motor Contactor	KM3	1
18	BA1-6628	Fuse	2A	1
19	BA1-6629	Fuse	2A	1
20	BA1-6630	Fuse	4A	1
21	BA1-6631	Fuse	2A	1
22	BA9-1021765	Transformer	0.25KVA	1
23	BA1-6632	Oil Motor Overload Relay(220V)	NTH4(2.9-4A)	1
	BA1-6633	Oil Motor Overload Relay(440V)	NTH1.9(1.4-1.9A)	1
24	BA1-6634	Coolant Pump Overload Relay(220V)	NTH-0.5(0.35-0.5A)	1
	BA1-6635	Coolant Pump Overload Relay(440V)	NTH-0.5(0.35-0.5A)	1
25	BA1-6636	Relay	KR4	1
26	BA1-6637	Relay	KR3	1
27	BA1-6638	Relay	KR2	1
28	BA1-6639	Relay	KR1	1
29	**	Timer	option	1
30	**	Sub-Connector	only for CE	1
31	**	Sub-Connector	only for CE	1

** These parts are shown for reference only and are not available for order individually. Non-proprietary parts, such as fasteners, can usually be found at local hardware stores.

16.1.9 Dual Miter Semi Automatic Band Saw Assembly – Exploded View E

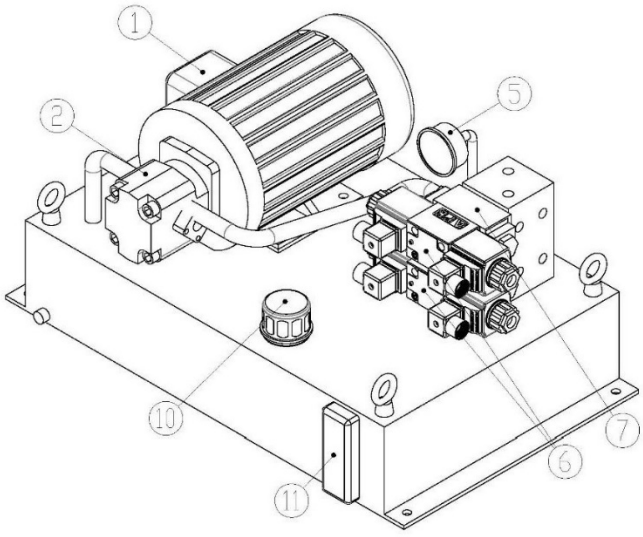


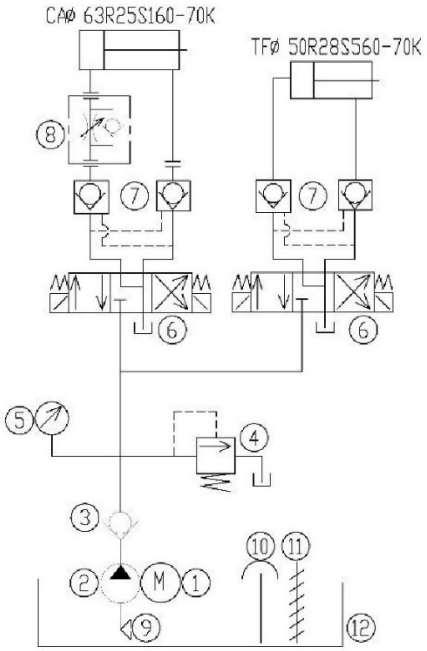
16.1.10 Dual Miter Semi Automatic Band Saw Assembly – Parts List E

Index No.	Part No.	Description	Size	Qty.
1	**	Hose	1/4"x1800mm	1
2	BA1-6640	90º Elbow	1/2*3/8"	1
3	BA1-6641	T- joint	3/8PT	1
4	BA1-6642	Fitting	3/8*1/4"	1
5	BA1-6643	90º Elbow	3/8*1/4"	1
6	**	Hose	1/4"	1
7	BA1-6644	Cock	1/4PT*1/4"	1
8	BA1-6645	Y- joint	1/4	1
9	BA1-6646	Cock	1/4PT*1/4"	1
10	BA1-6647	Fitting	1/4PT*1/4"	1
11	**	Hose	1/4"x900mm	1
12	**	Hose	1/4"x500mm	1
13	BA1-6648	Cock	1/4PT*1/4"	1
14	**	Hose	1/4"x2000mm	1
15	BA1-6649	Cock	1/4PT*1/4"	1

** These parts are shown for reference only and are not available for order individually. Non-proprietary parts, such as fasteners, can usually be found at local hardware stores.

16.1.11 Dual Miter Semi Automatic Band Saw Assembly – Exploded View F





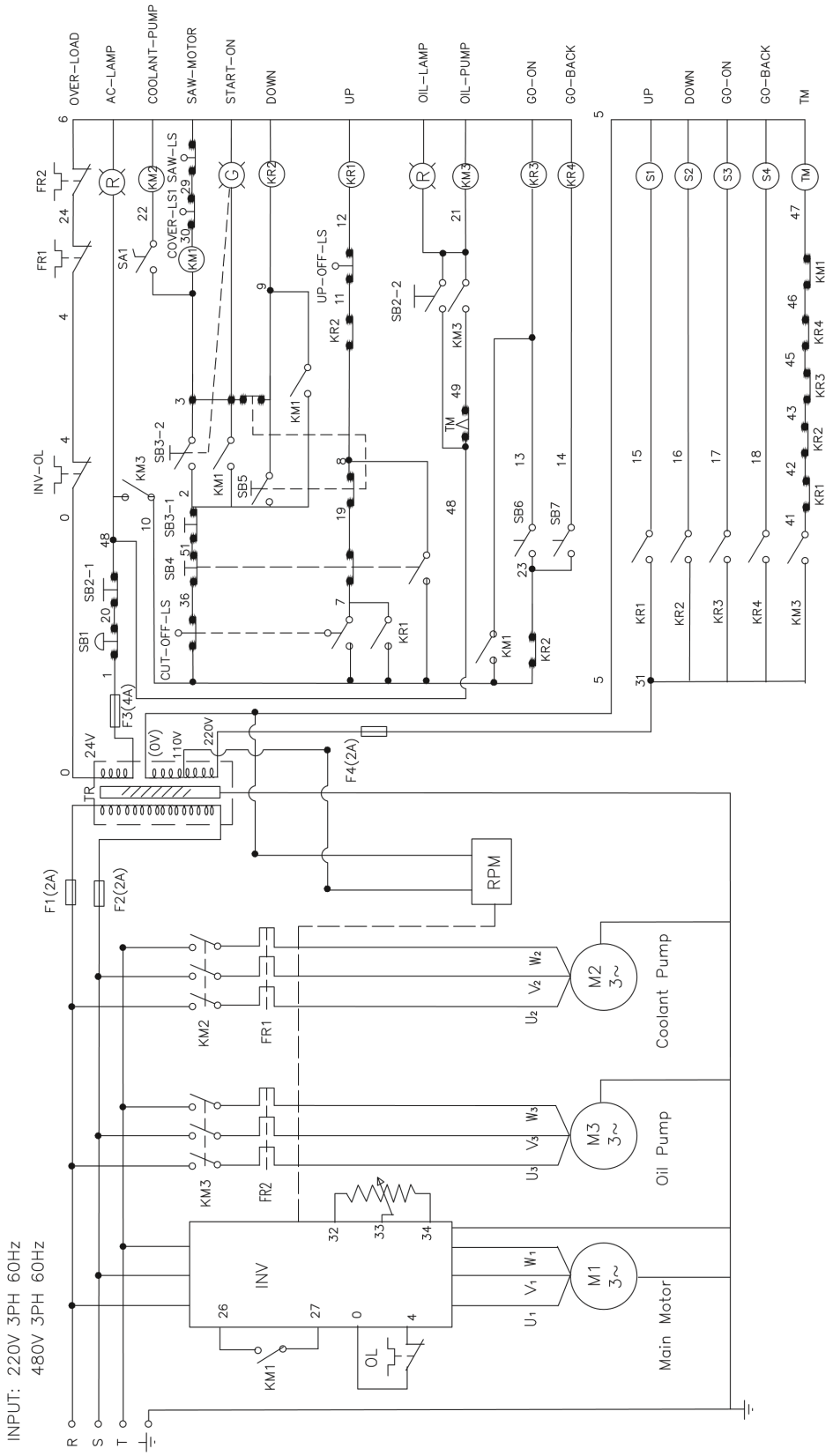
16.1.12 Dual Miter Semi Automatic Band Saw Assembly – Parts List F

Index No.	Part No.	Description	Size	Qty.
1	**	Motor	1HP 230/ 440V 3Ph 4P	1
2	BA1-6651	Coolant Pump	1/6HP 220/ 440V 2P	1
3	BA1-6652	Check Valve		1
4	BA1-6653	Pressure Regulator		1
5	BA1-6654	Pressure Gauge		1
6	BA1-6655	Solenoid Valve		2
7	BA1-6656	Pilot Check Valve		2
8	BA1-6657	Flow control Valve		1
9	BA1-6658	Oil Filter	MF-04	1
10	BA1-6659	Oil Input Cover	TOYO-30-SR	1
11	BA1-6660	Oil Level	LS-3"	1

** These parts are shown for reference only and are not available for order individually. Non-proprietary parts, such as fasteners, can usually be found at local hardware stores.

17.0 Wiring Diagram

17.1 Electrical Schematic



18.0 Warranty and Service

Thank you for your purchase of a machine from Baileigh Industrial. We hope that you find it productive and useful to you for a long time to come.

Inspection & Acceptance. Buyer shall inspect all Goods within ten (10) days after receipt thereof. Buyer's payment shall constitute final acceptance of the Goods and shall act as a waiver of the Buyer's rights to inspect or reject the Goods unless otherwise agreed. If Buyer rejects any merchandise, Buyer must first obtain a Returned Goods Authorization ("RGA") number before returning any Goods to Seller. Goods returned without an RGA will be refused. Seller will not be responsible for any freight costs, damages to Goods, or any other costs or liabilities pertaining to Goods returned without an RGA. Seller shall have the right to substitute a conforming tender. Buyer will be responsible for all freight costs to and from Buyer and repackaging costs, if any, if Buyer refuses to accept shipment. If Goods are returned in unsalable condition, Buyer shall be responsible for full value of the Goods. Buyer may not return any special-order Goods. Any Goods returned hereunder shall be subject to a restocking fee equal to 30% of the invoice price.

Specifications. Seller may, at its option, make changes in the designs, **specifications**, or components of the Goods to improve the safety of such Goods, or if in Seller's judgment, such changes will be beneficial to their operation or use. Buyer may not make any changes in the specifications for the Goods unless Seller approves of such changes in writing, in which event Seller may impose additional charges to implement such changes.

Limited Warranty. Seller warrants to the original end-user that the Goods manufactured or provided by Seller under this Agreement shall be free of defects in material or workmanship for a period of twelve (12) months from the date of purchase, provided that the Goods are installed, used, and maintained in accordance with any instruction manual or technical guidelines provided by the Seller or supplied with the Goods, if applicable. The original end-user must give written notice to Seller of any suspected defect in the Goods prior to the expiration of the warranty period. The original end-user must also obtain an RGA from Seller prior to returning any Goods to Seller for warranty service under this paragraph. Seller will not accept any responsibility for Goods returned without an RGA. The original end-user shall be responsible for all costs and expenses associated with returning the Goods to Seller for warranty service. In the event of a defect, Seller, at its sole option, shall repair or replace the defective Goods or refund to the original end-user the purchase price for such defective Goods. Goods are not eligible for replacement or return after a period of 10 days from date of receipt. The foregoing warranty is Seller's sole obligation, and the original end-user's exclusive remedy, with regard to any defective Goods. This limited warranty does not apply to: (a) die sets, tooling, and saw blades; (b) periodic or routine maintenance and setup, (c) repair or replacement of the Goods due to normal wear and tear, (d) defects or damage to the Goods resulting from misuse, abuse, neglect, or accidents, (f) defects or damage to the Goods resulting from improper or unauthorized alterations, modifications, or changes; and (f) any Goods that has not been installed and/or maintained in accordance with the instruction manual or technical guidelines provided by Seller.

EXCLUSION OF OTHER WARRANTIES. THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. ANY AND ALL OTHER EXPRESS, STATUTORY, OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. NO WARRANTY IS MADE WHICH EXTENDS BEYOND THAT WHICH IS EXPRESSLY CONTAINED HEREIN.

Limitation of Liability. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY INCIDENTIAL, CONSEQUENTIAL OR SPECIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR DOWN TIME) ARISING FROM OR IN MANNER CONNECTED WITH THE GOODS, ANY BREACH BY SELLER OR ITS AGENTS OF THIS AGREEMENT, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY. BUYER'S REMEDY WITH RESPECT TO ANY CLAIM ARISING UNDER THIS AGREEMENT IS STRICTLY LIMITED TO NO MORE THAN THE AMOUNT PAID BY THE BUYER FOR THE GOODS.

Force Majeure. Seller shall not be responsible for any delay in the delivery of, or failure to deliver, Goods due to causes beyond Seller's reasonable control including, without limitation, acts of God, acts of war or terrorism, enemy actions, hostilities, strikes, labor difficulties, embargoes, non-delivery or late delivery of materials, parts and equipment or transportation delays not caused by the fault of Seller, delays caused by civil authorities, governmental regulations or orders, fire, lightning, natural disasters or any other cause beyond Seller's reasonable control. In the event of any such delay, performance will be postponed by such length of time as may be reasonably necessary to compensate for the delay.

Installation. If Buyer purchases any Goods that require installation, Buyer shall, at its expense, make all arrangements and connections necessary to install and operate the Goods. Buyer shall install the Goods in accordance with any Seller instructions and shall indemnify Seller against any and all damages, demands, suits, causes of action, claims and expenses (including actual attorneys' fees and costs) arising directly or indirectly out of Buyer's failure to properly install the Goods.

Work By Others; Safety Devices. Unless agreed to in writing by Seller, Seller has no responsibility for labor or work performed by Buyer or others, of any nature, relating to design, manufacture, fabrication, use, installation, or provision of Goods. Buyer is solely responsible for furnishing and requiring its employees and customers to use all safety devices, guards and safe operating procedures required by law and/or as set forth in manuals and instruction sheets furnished by Seller. Buyer is responsible for consulting all operator manuals, ANSI or comparable safety

standards, OSHA regulations and other sources of safety standards and regulations applicable to the use and operation of the Goods.

Remedies. Each of the rights and remedies of Seller under this Agreement is cumulative and in addition to any other or further remedies provided under this Agreement or at law or equity.
Attorney's Fees. In the event legal action is necessary to recover monies due from Buyer or to enforce any provision of this Agreement, Buyer shall be liable to Seller for all costs and expenses associated therewith, including Seller's actual attorney fees and costs.

Governing Law/Venue. This Agreement shall be construed and governed under the laws of the State of Wisconsin, without application of conflict of law principles. Each party agrees that all actions or proceedings arising out of or in connection with this Agreement shall be commenced, tried, and litigated only in the state courts sitting in Manitowoc County, Wisconsin or the U.S. Federal Court for the Eastern District of Wisconsin. Each party waives any right it may have to assert the doctrine of "forum non conveniens" or to object to venue to the extent that any proceeding is brought in accordance with this section. Each party consents to and waives any objection to the exercise of personal jurisdiction over it by courts described in this section. Each party waives to the fullest extent permitted by applicable law the right to a trial by jury.

Summary of Return Policy:
• 10 Day acceptance period from date of delivery. Damage claims and order discrepancies will not be accepted after this time.
• You must obtain a Baileigh Industrial issued RGA number PRIOR to returning any materials.
• Returned materials must be received at Baileigh Industrial in new condition and in original packaging.
• Altered items are not eligible for return.
• Buyer is responsible for all shipping charges.
• A 30% re-stocking fee applies to all returns.
Baileigh Industrial makes every effort to ensure that our posted specifications, images, pricing, and product availability are as correct and timely as possible. We apologize for any discrepancies that may occur. Baileigh Industrial reserves the right to make any and all changes deemed necessary in the course of business including but not limited to pricing, product specifications, quantities, and product availability.

For Customer Service & Technical Support:
Please contact one of our knowledgeable Sales and Service team members at:
(920) 684-4990 or e-mail us at Baileigh-Service@jpwindustries.com

19.0 Notes

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