



## **9 X 16" METAL CUTTING BAND SAW**

*Read carefully and follow all safety rules and operating instructions before first use of this product.*

**DESCRIPTION**

9 x 16" Horizontal Metal Cutting Band Saw provides speed with quality of cut for fabrication shops, machine shops, maintenance departments and contractors. Blade speed ranges from 82 to 235 FPM to cut a variety of material ranging from cast iron, tool steel, bronze, aluminum and plastic.

The feed rate is regulated by a hydraulic cylinder. The dial control for the cylinder is accessible during all stages of proper operation and can be set at any feed rate within its range. The wet cut operation provides a quality cut and extends blade life. Features include automatic shutoff, industrial rated speed reducer, heavy gauge steel construction, cast iron wheels, pulleys and bed.

Additional features include swivel vise jaws for angle cuts, built in chip tray and flange mounting brackets for securing saw to floor. Saw is controlled by push button magnetic switch with safety off button.

**UNPACKING**

Check for shipping damage. If damage has occurred, a claim must be filed with carrier immediately. Check for completeness. Immediately report missing parts to dealer.

The band saw comes completely assembled as one unit. Additional parts which need to be fastened to the saw should be located and accounted for before assembling:

V-Belt Motor assembly, pulley cover, electrical control box and work stop assembly.

**NOTE:** Work stop assembly is located in coolant reservoir under chip tray.

**WARNING:** Be careful not to touch overhead power lines, piping, lighting, etc. if lifting equipment is used. Band saw weighs approximately 625 lbs. Proper tools, equipment and qualified personnel should be employed in all phases of unpacking and installation.

**IMPORTANT:** Bed is coated with a protectant. To ensure proper fit and operation, remove coating. Coating is easily removed with mild solvents, such as mineral spirits, and a soft cloth. Avoid getting cleaning solution on paint or any of the rubber or plastic parts. Solvents may deteriorate these finishes. Use soap and water on paint, plastic or rubber components. After cleaning, cover all exposed surfaces with a light coating of oil. Paste wax is recommended for bed top.

**WARNING:** Never use highly volatile solvents. Non-flammable solvents are recommended to avoid possible fire hazard.

**SPECIFICATIONS**

Capacity	9" Rounds at 90°
	6 1/2" Rounds at 45°
	2 x 16" Rectangle at 90°
	9 x 14" Rectangle at 90°
	9 x 6 1/2" Rectangle at 45°
Motor	1 1/2 HP, 1720 RPM, 120/240 Volts, 16/8 Amps
Blade speeds	82, 132, 170 and 235 FPM
Blade size	1 x .035 x 119 1/2"
Blade wheels	13" Diameter cast iron
Overall dimensions	67 x 23 x 43 1/2"
Weight	625 lbs
Coolant pump	2.25 Gallons per minute
Coolant reservoir capacity	4.4 Gallons

**GENERAL SAFETY INFORMATION**

**WARNING:** For your own safety, read all of the instructions and precautions before operating tool.

**PROPOSITION 65 WARNING:** Some dust created by using power tools contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks and cement and other masonry products.
- Arsenic and chromium from chemically treated lumber.

**WARNING:** Your risk from these exposures vary, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area and work with approved safety equipment. Always wear **OSHA/NIOSH** approved, properly fitting face mask or respirator when using such tools.

**CAUTION:** Always follow proper operating procedures as defined in this manual — even if you are familiar with use of this or similar tools. Remember that being careless for even a fraction of a second can result in severe personal injury.

**BE PREPARED FOR JOB**

- Wear proper apparel. Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewelry which may get caught in moving parts of machine.
- Wear protective hair covering to contain long hair.
- Wear safety shoes with non-slip soles.
- Wear safety glasses complying with United States ANSI Z87.1. Everyday glasses have only impact resistant lenses. They are **NOT** safety glasses.
- Wear face mask or dust mask if operation is dusty.
- Be alert and think clearly. Never operate power tools when tired, intoxicated or when taking medications that cause drowsiness.

**PREPARE WORK AREA FOR JOB**

- Keep work area clean. Cluttered work areas invite accidents.
- Do not use power tools in dangerous environments. Do not use power tools in damp or wet locations. Do not expose power tools to rain.
- Work area should be properly lighted.
- Proper electrical receptacle should be available for tool. Plug 120/240 volt, single-phase plug directly into properly grounded, three-prong receptacle.
- Extension cords should have a grounding prong and the three wires of the extension cord should be of the correct gauge.
- Keep visitors at a safe distance from work area.
- Keep children out of workplace. Make workshop childproof. Use padlocks or master switches to prevent any unintentional use of power tools.

## SAFETY INFORMATION (CONTINUED)

### TOOL SHOULD BE MAINTAINED

- Always unplug tool prior to inspection.
- Consult manual for specific maintaining and adjusting procedures.
- Keep tool lubricated and clean for safest operation.
- Remove adjusting tools. Form habit of checking to see that adjusting tools are removed before switching machine on.
- Keep all parts in working order. Check to determine that the guard or other parts will operate properly and perform their intended function.
- Check for damaged parts. Check for alignment of moving parts, binding, breakage, mounting and any other condition that may affect a tool's operation.
- A guard or other part that is damaged should be properly repaired or replaced. Do not perform makeshift repairs. (Use parts list provided to order repair parts.)

### KNOW HOW TO USE TOOL

- Use right tool for job. Do not force tool or attachment to do a job for which it was not designed.
- Disconnect tool when changing blade.
- Avoid accidental start-up. Make sure that the tool is in the OFF position before plugging in.
- Do not force tool. It will work most efficiently at the rate for which it was designed.
- Keep hands away from moving parts and cutting surfaces.
- Never leave tool running unattended. Turn the power off and do not leave tool until it comes to a complete stop.
- Do not overreach. Keep proper footing and balance.
- Never stand on tool. Serious injury could occur if tool is tipped or if blade is unintentionally contacted.
- Know your tool. Learn the tool's operation, application and specific limitations.
- Use recommended accessories (Refer to page 23). Use of improper accessories may cause risk of injury to persons.
- Handle workpiece correctly. Protect hands from possible injury.
- Turn machine off if it jams. Blade jams when it digs too deeply into workpiece. (Motor force keeps it stuck in the work.) Do not remove jammed or cut off pieces until the saw is turned off, unplugged and the blade has stopped.

**CAUTION:** Think safety! Safety is a combination of operator common sense and alertness at all times when tool is being used.

## ASSEMBLY

### MOUNT CONTROL BOX ASSEMBLY

Refer to Figures 17 and 20.

- Remove hex head bolts, lock washers and flat washers (Figure 20, Ref. Nos. 30, 31, and 32) from column (Figure 17, Ref. No. 1).
- Secure control box (Figure 20, Ref. No. 33) to column using hex head bolts, lock washers and flat washers.

### INSTALL MOTOR ASSEMBLY

Refer to Figure 17.

- Remove socket head bolt, lock washer and flat washer (Ref. Nos. 45, 34 and 33) from side of motor mount plate (Ref. No. 42).
- Remove hex nut and flat washer (Ref. Nos. 47 and 46) from support shaft (Ref. No. 50). Remove support shaft from motor mount bracket (Ref. No. 48).
- Slide support shaft through motor mount bracket and motor tilt plate. (Ref. No. 44) Secure support shaft with hex nut and flat washer.
- Slide socket head bolt with lock washer and flat washer through slot in motor tilt plate (Ref. No. 44) and thread into motor mount plate. Do not tighten socket head bolt until V-belt is installed and adjusted.

### MOUNT PULLEY COVER

Refer to Figure 17.

- Remove knob (Ref. No. 30) from pulley cover (Ref. No. 31).
- Remove socket head bolts, lock washers and flat washers (Ref. Nos. 35, 34 and 33) from drive wheel housing and motor mount bracket (Ref. Nos. 20 and 48).
- Secure pulley cover using socket head bolts, lock washers and flat washers.

### INSTALL V-BELT

Refer to Figures 12 and 17.

- Band saw uses a step-pulley drive system to provide a selection of blade speeds.
- Place V-belt (Ref. No. 36) on drive and motor pulleys (Ref. Nos. 32 and 37) with V-belt in desired location on pulleys. See Figure 12, Blade Speed Chart.
- Do not over tighten V-belt. Excessive tension on V-belt will reduce life of belt. Belt is properly tensioned when light pressure applied between pulleys produces about 1/2" deflection.
- Tension V-belt by pushing motor mount plate and tightening socket head bolt (Ref. Nos. 42 and 45).
- Close pulley cover and secure with knob (Ref. Nos. 31 and 30).

### WIRE MOTOR

- Remove pan head screw and cover from motor junction box.
- Pass motor cord through strain relief and secure cord with screw on strain relief.
- Wire motor line cord to motor with screws provided. Be sure to ground motor with green grounding wire in motor cord.
- Replace junction box cover and secure with pan head screw.

### ATTACH WORK STOP ASSEMBLY

Refer to Figure 15.

- Thread work stop rod (Ref. No. 13) into bed (Ref. No. 18).
- Slide work stop assembly (Ref. Nos. 15, 16 and 17) onto work stop rod and secure with knob (Ref. No. 14).
- Adjust the work stop as described in Operation, page 11.

# INSTALLATION

Refer to Figures 1 – 7.

**CAUTION:** Do not attempt installation if parts are missing. Use this manual to order repair parts.

Before band saw is installed, a suitable location should be chosen. Band saw weighs approximately 625 lbs.

- Band saw needs to be set on a flat, level surface.
- Make sure there is ample room for the workpiece.
- Good lighting and correct power supply are also required for a proper work area.

## POWER SOURCE

Band saw comes prewired for 120 volt, 60 Hz power. To prolong electrical component life, it is recommended to rewire it to 240 volt, single phase operation.

**WARNING:** All electrical connections must be performed by a qualified electrician. Make sure tool is off and disconnected from power source while motor is mounted, connected, reconnected or anytime wiring is inspected.

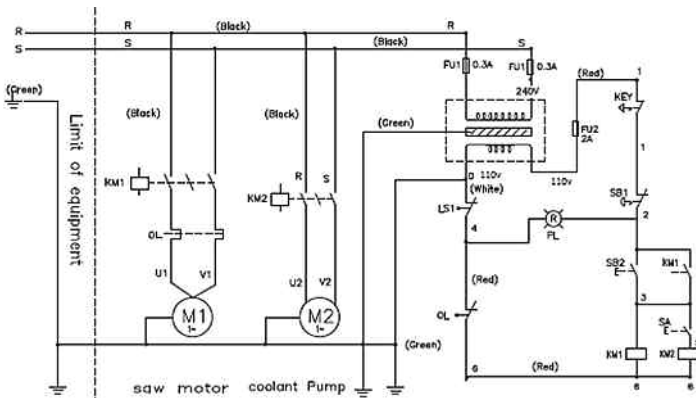


Figure 1 - Electrical Schematic for 1 Phase 240V

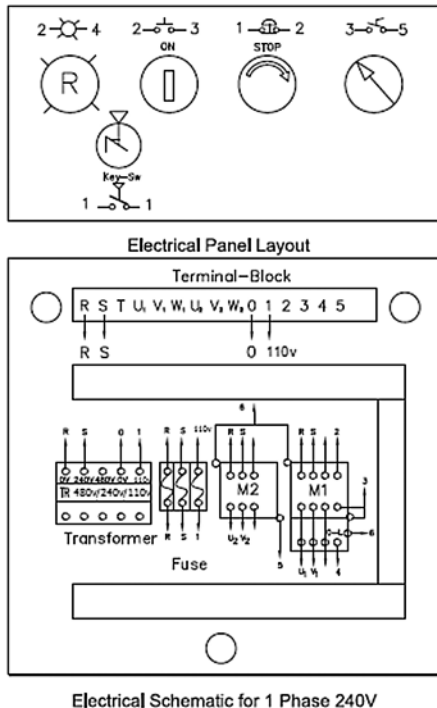


Figure 2 - Electrical Panel Layout

To rewire band saw to 240 volt, single phase operation:

- Rewire main motor to 240V. Refer to Figure 3 and motor nameplate for wiring schematic.
- Rewire coolant pump to 240V. Refer to Figure 4 and wiring schematic found on the inside of motor's junction box cover.
- Change the wire position from the 115V or 230V, to the desired voltage setting, See Figure 4.
- Change thermal overload setting to 14A for 240V operation. For 120V operation, thermal overload should be set to 17A as shown in Figure 5.

**NOTE:** The thermal overload will automatically turn off the magnetic contactor when an overload occurs. Be sure to disconnect band saw from power source when resetting overload protector. The protection is reset by pressing the rest button.

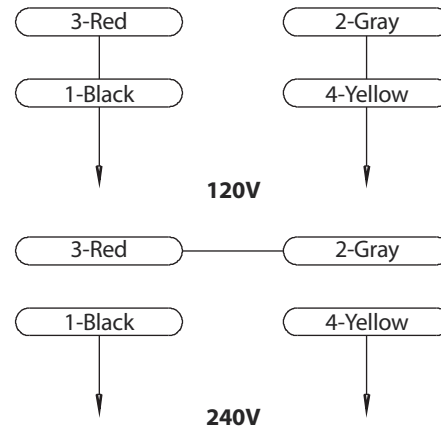


Figure 3 – Main Motor Wiring Diagram

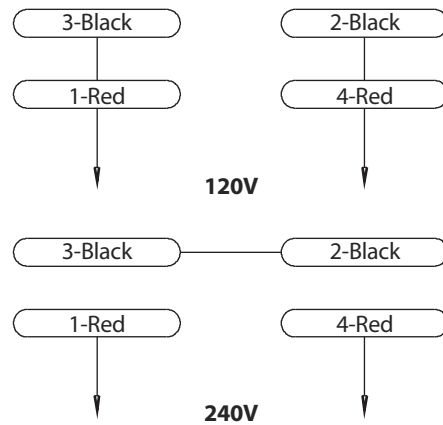


Figure 4 – Coolant Pump Motor Wiring Diagram



Figure 5 – Setting Thermal Overload

## INSTALLATION (CONTINUED)

**WARNING:** Do not connect band saw to the power source until all assembly steps have been completed.

The motor is designed for operation on the voltage and frequency specified. Normal loads will be handled safely on voltages not more than 10% above or below the specified voltage.

Running the unit on voltages which are not within the range may cause overheating and motor burn-out. Heavy loads require that the voltage at motor terminals be no less than the voltage specified.

### GROUNDING INSTRUCTIONS

**WARNING:** Improper connection of equipment grounding conductor can result in the risk of electrical shock. Equipment should be grounded while in use to protect operator from electrical shock.

Check with a qualified electrician if you do not understand grounding instructions or if in doubt as to whether the tool is properly grounded.

This tool is equipped with an approved cord rated at 250V and a 3-prong grounding type plug rated at 125V (See Figure 6) for your protection against shock hazards.

Grounding plug should be plugged directly into a properly installed and grounded 3-prong grounding-type receptacle, as shown in Figure 6.

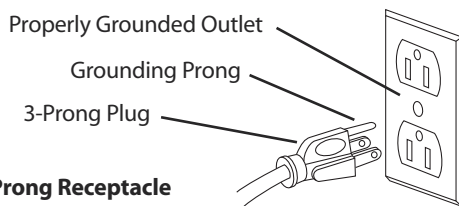
Do not remove or alter grounding prong in any manner. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electrical shock.

**WARNING:** Do not permit fingers to touch the terminals of plug when installing or removing from outlet.

Plug must be plugged into matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify plug provided. If it will not fit in outlet, have proper outlet installed by a qualified electrician.

Inspect tool cords periodically, and if damaged, have repaired by an authorized service facility.

Green (or green and yellow) conductor in cord is the grounding wire. If repair or replacement of the electric cord or plug is necessary, do not connect the green (or green and yellow) wire to a live terminal.



**Figure 6 – 3-Prong Receptacle**

Where a 2-prong wall receptacle is encountered, it must be replaced with a properly grounded 3-prong receptacle installed in accordance with National Electric Code and local codes and ordinances.

**WARNING:** This work should be performed by a qualified electrician.

A temporary 3-prong to 2-prong grounding adapter (See Figure 7) is available for connecting plugs to a two pole outlet if it is properly grounded.

**NOTE:** A temporary 3-prong to 2-prong grounding adapter is available only for 115 volt operation.

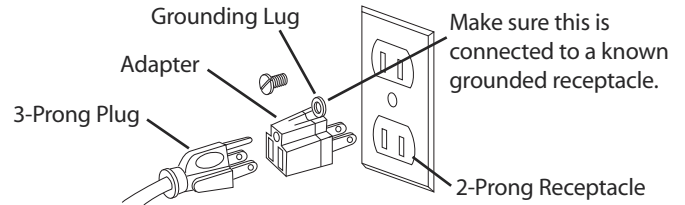
Do not use a 3-prong to 2-prong grounding adapter unless permitted by local and national codes and ordinances.

(A 3-prong to 2-prong grounding adapter is not permitted in Canada.) Where permitted, the rigid green tab or terminal on the

side of the adapter must be securely connected to a permanent electrical ground such as a properly grounded water pipe, a properly grounded outlet box or a properly grounded wire system.

Many cover plate screws, water pipes and outlet boxes are not properly grounded. To ensure proper ground, grounding means must be tested by a qualified electrician.

### EXTENSION CORDS



**Figure 7 – 2-Prong Receptacle with Adapter**

- The use of any extension cord will cause some drop in voltage and loss of power.
- Wires of the extension cord must be of sufficient size to carry the current and maintain adequate voltage.
- Use the table to determine the minimum wire size (A.W.G.) extension cord.
- Use only 3-wire extension cords having 3-prong grounding type plugs and 3-pole receptacles which accept the tool plug.
- If the extension cord is worn, cut, or damaged in any way, replace it immediately.

#### EXTENSION CORD LENGTH

Wire Size	A.W.G.
Up to 25 ft. ....	14

**NOTE:** Using extension cords over 25 ft. long is not recommended.

## OPERATION

Refer to Figures 8-20.

The 9 x 16", 4-speed horizontal band saw blade speeds range from 82 to 235 FPM.

Vise jaws can turn 0-45° for making angle cuts. Movable jaw has rapid approach and withdraw capability.

**WARNING:** Always observe the following safety precautions.

- Whenever adjusting or replacing any parts on the band saw turn switch off and remove plug from power source.
- Make sure the stops are positioned and that the automatic shut-off is operating.
- Check that the gear box has the proper amount of lubricant.
- Make sure the blade guides are positioned correctly.
- Use the appropriate blade for the workpiece that is being cut.
- Use a sharp blade. Replace dull blades or blades which are missing teeth.
- Make sure the blade is tensioned properly and going in the right direction.
- Use the proper blade speed for the work.
- For optimum performance, do not stall the motor or reduce the speed. Use the proper feed pressure.
- Make sure enough coolant is available to keep coolant pump (Figure 12, Ref. No. 10) submerged.
- Secure the workpiece in a stable position.
- Check that all guards are attached.



## OPERATION (CONTINUED)

- After turning the switch on, let the blade come to full speed. Then lower the blade onto the workpiece slowly.
- Keep hands away from the blade and all moving parts.
- Always wear eye protection.

### OPERATING SAW CONTROLS

Refer to Figure 8.

Band saw control panel has seven functional operations:

**POWER** - Green color lamp that is illuminated when saw is plugged in.

**KEY LOCK** - Safety mechanism to prevent unauthorized use. Turn the key to ON position to energize the saw circuitry. Turn the key to OFF position and remove key when tool is not in use.

**NOTE:** The motor will not start if the key is in the OFF position.

**ON** - Green color push button that energizes the magnetic contactor to start the band saw.

**OFF** - Red color push button that deenergizes the magnetic contactor to stop the band saw. To restart the saw, turn the knob to reset and depress the ON button.

**PUMP** switch - Two position ON/OFF switch to operate the coolant pump.

**FEED REGULATOR** - Dial knob to set band saw feed rate. Set the feed rate suitable to application.

**FEED CONTROL** - Two position ON/OFF knob engages and disengages feed.

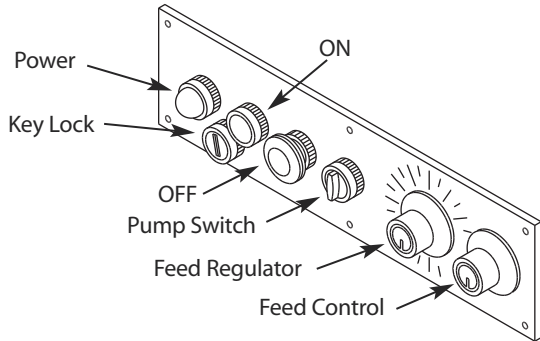


Figure 8 – Band Saw Control Panel

### HORIZONTAL STOP

Refer to Figure 17.

Horizontal stop (Ref. No. 14) controls the position of the head at the end of the cut. Bed should contact the horizontal stop when teeth are 1/8" below the surface of the workbed.

### HORIZONTAL STOP ADJUSTMENT

Refer to Figure 17.

- Place head in the horizontal position.
- Loosen the nut (Ref. No. 9) on the horizontal stop.
- Adjust the horizontal stop so that the teeth are 1/8" below the surface of the workbed.
- Tighten the nut to lock the position.

### AUTOMATIC SHUTOFF

Refer to Figure 15.

The limit switch (Ref. No. 44) is activated when the blade passes through the plane of the workbed. The limit switch should be activated as soon as the cut is finished.

**IMPORTANT:** Make sure the action of the limit switch is not restricted by the horizontal stop.

### LUBRICATION

- All ball bearings are permanently lubricated. They should not require further lubrication.
- If the tracking wheel or head pivot is disassembled for any reason, wipe off the old grease before assembly.

### OIL LEVEL

Refer to Figure 19.

- The gear box relies on an oil bath to lubricate the sliding surfaces and transfer heat. The vent bolt (Ref. No. 8) is vented to release pressure created by the developed heat. Insufficient lubrication will cause the gears to heat up and wear at an accelerated rate. If the gear box is overfilled, hot oil will escape through the vent hole. The gear box is designed to take 51 ounces of 70-95 weight industrial gear oil.
- The oil level should remain constant. If the level changes, a defective gasket or bushing should be looked for and replaced.
- If the gear box is worked on, the oil should be replaced to avoid contamination.
- Always add fresh oil and replace the oil seasonally, to guard against breakdown.
- The seals between the gearbox and the cover plates are gaskets (Ref. Nos. 14 and 24). If a cover plate is removed, the surface should be cleaned and new gasket should be applied.
- After the first fifty hours of use, the gear box should be drained and refilled with industrial gear oil (Model No. 6Y785).

### CHECKING OIL LEVEL

Refer to Figures 9 and 19.

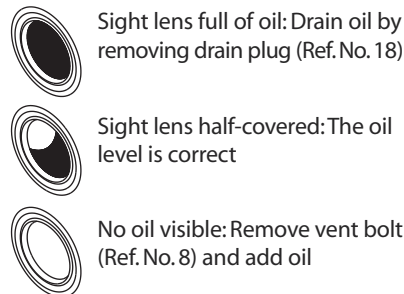


Figure 9 – Checking Oil

- Place the head in the horizontal position.
- Let the oil settle. Allow a few minutes if the head was in motion.
- Check the fluid level. Look at the oil sight lens (Ref. No. 19) and follow the instructions in Figure 9.

## OPERATION (CONTINUED)

### BLADE GUIDES

Band saw blade has to be twisted relative to the plane in which it rotates. Blade must be properly positioned relative to the workbed.

Blade guides hold the cutting portion of the blade in a plane which is perpendicular to both the workbed and the stationary vise and keeps the blade in line with its natural path around the blade wheels.

Inner guide bearings on the left and right guide assemblies keep the blade in line with the blade wheels. Outer guide bearings keep the blade against the inner bearings.

Entire guide assembly is positioned at the factory to produce the proper twist and should not need adjustment, however, the position of blade guides should be checked often.

**NOTE:** Since the blade position is related to both bed and the vise jaws, the relative position of the jaw to the bed is important. When assembled, the stationary jaw must be perpendicular to the surface of the workbed.

### CHECKING BLADE GUIDES

Refer to Figure 18.

- Check that the blade teeth are perpendicular to the base's machined surface.
- Spread the blade guides as far apart as possible.
- Check that vise jaws are parallel and set for 90° cutoff.
- Position the vise jaws to have the maximum separation that will not interfere with the blade guides.
- With the head in horizontal position, use a square against face of rear vise jaw and check that jaw is 90° to the side of blade.
- Check that the blade is in line with drive and tracking wheels (Ref. Nos. 3 and 30).
- Raise the head.
- Look straight on at the cutting edge of the blade.
- Make sure that the blade sides are parallel to the sides of the bearings.
- Make sure the bearings (Ref. No. 9) touch the blades and can still be rotated by hand.

### ADJUSTING GUIDE BEARINGS

Refer to Figure 18.

If the blade is not perpendicular to the bed or not in line with the blade wheels, adjustment is necessary.

**NOTE:** There should be .000-.001" clearance between the blade and the guide bearings.

The guide bearings are adjusted using an eccentric location system. The inner guide bearings are fixed and cannot be adjusted. The outer guide bearings are mounted to eccentric sleeves (Ref. No. 10) and can be adjusted.

- Loosen socket head bolt (Ref. No. 6) with a wrench. Rotate the eccentric shaft to locate bearings in desired positions.
- Maintain eccentric shaft position and tighten socket head bolt.

### CHECKING THRUST BEARINGS

Refer to Figure 18.

The thrust bearings (Ref. No. 20) should be .003-.005" (average thickness of a piece of paper) away from back of blade.

The thrust bearings are adjusted by moving the guide bracket.

### ADJUSTING GUIDE BRACKETS

Refer to Figure 18.

- If the bearings are positioned properly and the blade is not square, one or both blade guide brackets (Ref. Nos. 21 and 56) must be adjusted.
- Loosen the socket head bolts (Ref. No. 23 and 58).
- Adjust the bracket to the correct position.
- Tighten the socket head bolt.
- Check the guide bearings. Repositioning the blade guide bracket can alter the previous adjustments. Readjust if necessary.

### BLADE SELECTION

Using the proper blade is important for setting up the correct cutting conditions. Blades are made differently depending on the specific application intended for the blade. Some simple rules can still be applied to almost all blades.

- Always remember to have at least three teeth in contact with the work during a cut. When three teeth are in contact, the blade cannot straddle the work. This prevents a tooth that enters the cut from encountering more material than it can remove.
- "Shocking" occurs when blade teeth contact too much material. This can strip the teeth from the blade. When cutting harder materials, the suggested minimum number of teeth in contact is six because "shocking" on harder materials has a more detrimental effect on the blade. Optimum number of teeth in contact with workpiece distributes blade forces among more teeth to increase cutting efficiency and reduces blade wear.
- Optimum range is from 6-12 teeth in contact for soft materials, up to 12-24 teeth in contact for harder materials.
- Always have maximum number of teeth in contact with work to prevent gullets of teeth from being clogged.
- When choosing a blade, overall size of the work is not as important as the thickness average. Thickness average is the average width of material which blade will contact during each cut. Figure 10 describes how thickness average should be calculated.
- Thickness average should be used when choosing a blade for the optimum number of teeth in contact, however, the three teeth rule should be applied to the minimum thickness, not thickness average.
- Keeping a selection of sharp blades on hand will yield better cuts. Blades may last longer because they are less likely to be misused when proper blade is available.
- Every band saw should have at least one replacement blade of each type used. Blade breakage is unpredictable. Consult a blade manufacturer for detailed information about available blades for specific uses.

### REMOVING BLADE

Refer to Figure 17.

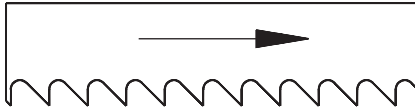
**WARNING:** Disconnect band saw from power source when changing or adjusting blades. Wear leather gloves when handling band saw blades. Never wear gloves when operating saw.

- Prop open the blade wheel covers.
- Loosen the outer guide bearings on the left and right guide assemblies. No other guide bearings should be moved.
- Remove knobs and blade guard (Ref. Nos. 17 and 18).
- With one hand, pinch the blade and the tracking wheel together to protect against the possibility of the blade popping off when tension is released.
- Release the tension by slowly revolving the hand wheel (Ref. No. 69) counterclockwise.
- Remove the blade.

## OPERATION (CONTINUED)

### REPLACING THE BLADE

- Make sure the outer guide bearings are loose.
- Make sure the teeth are pointing in the right direction (See Figure 10).



**Figure 10 – Blade Direction**

- Place the blade around the wheels and between the guide bearings.
- Hold the blade in position and apply tension. Blade tension generally must be set at 25000 psi for hard back blades, and 35000 psi for bi-metal blades. Use tension scale (Figure 17, Ref. No. 56).
- Push the blade against the wheel flange.
- Tighten the blade until it is properly tensioned. A properly tightened blade will ring slightly when the back of the blade is plucked (like a string of an instrument).
- Adjust the outer guide bearings.
- Check for proper tracking (See Tracking Adjustment).

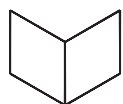
### TRACKING

Proper tracking is achieved when the drive wheel and tracking wheel are aligned. A blade that is not tracking correctly can come off the blade wheels. Although adjustment is rarely required, tracking should be checked frequently.

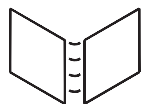
**CAUTION:** Turn motor off and disconnect power to check tracking.

### CHECK TRACKING

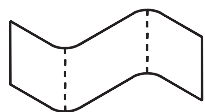
- Prop open the blade wheel covers.
- Insert a piece of paper between the blade and the lower portion of the tracking wheel.
- Open the pulley cover and rotate the blade by turning the motor pulley.
- Let the blade grab the paper. Rotate the pulley so the paper goes around the wheel.
- Refer to Figure 11 to determine if an adjustment is needed.



A sharp fold indicates proper tracking.



Cut or ripped paper indicates that the blade is riding against the flange of the wheel. Adjusting bolt needs to be turned counterclockwise.



No fold indicates the blade will ride off the wheel. Adjusting bolt should be turned clockwise.

**Figure 11 – Tracking Adjustments**

### TRACKING ADJUSTMENT

Refer to Figures 10, 11 and 17.

The tracking is adjusted by positioning the idler wheel shaft (Ref. No. 61). The positioning is done with the hex head bolts (Ref. No. 58) only if the upper socket head bolts (Ref. No. 60) are loose.

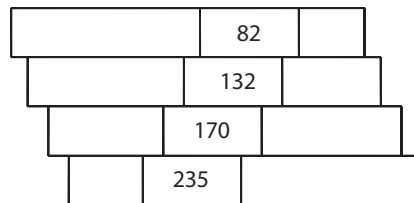
- Loosen the three socket head bolts.
- Adjust the tilt with hex head bolts. For correct tracking, refer to Figure 11. Turn 1/4 revolution at a time.
- Check the blade tension and adjust if necessary.
- Recheck the tracking.
- Once the proper position has been found, tighten the bolts securely.

### BLADE SPEED

Refer to Figures 12 and 17.

Choosing the proper blade speed is important for extending the life of the blade. The speed determines the available cutting force.

- Harder materials require more force and are cut at a slower speed.
- Softer materials are cut with less force at higher speeds to ensure the proper removal of the chips.
- The speed and corresponding force are related to the power supplied to the blade. Four speeds are available.
- If a motor, other than the one supplied is used, the cutting conditions will be changed. Four speeds are available.
- Speed is changed by moving V-Belt (Ref. No. 36) to one of the four pulley positions. Speeds and corresponding pulley configurations are illustrated below.



**Figure 12 – Speed and Pulley Diagram**

### FPM

- 82 ..... Stainless steel, bearing bronze, alloy steels.
- 132 ..... Medium to high carbon steels, hard brass.
- 170 ..... Low to medium carbon steels, soft brass, copper.
- 235 ..... Aluminum, plastic, other light materials.

### CHANGING BELT POSITION

Refer to Figure 17.

- Remove knob (Ref. No. 30) from pulley cover (Ref. No. 31)
- Open pulley cover. Loosen socket head bolt (Ref. No. 45).
- Move the belt to the desired position.
- Tighten the socket head bolt to tension the belt. Belt is tensioned properly when a moderate pressure applied to the belt between the pulleys produces a 1/2" of deflection.
- Secure pulley cover with knob.



## OPERATION (CONTINUED)

### FEED PRESSURE

- Correct feed pressure holds the blade in the cut. Feed pressure is supplied by the weight of the head. Maximum material removal rate corresponds with the proper pressure.
- Optimum feed pressure ensures that maximum power is used for cutting. If the feed pressure is too low, the blade will not dig into the material properly. Too much feed pressure will cause the blade to dig too deeply, bogging down the motor, and possibly burning it out. In addition, blade "shocking" could result.
- Extra energy will be used to produce powdered chips rather than smooth shavings; this will produce more heat and dull the blade.

**CAUTION:** Do not attempt to increase feed pressure by leaning on head.

### REGULATING FEED PRESSURE

Refer to Figures 8 and 13.

- Feed pressure is controlled by the feed regulator. The regulator creates a force which counteracts the feed pressure. The force from the feed regulator can be adjusted to create any feed pressure up to the set maximum.
- Having the correct feed pressure will produce the optimum feed rate and the fastest cut. Incorrect pressure, whether too great or too small, will put less power into the cut and reduce the feed rate.

**NOTE:** Wasted power damages the saw.

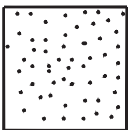
- Determining the proper feed is largely a judgement based on experience. The feed is usually determined during the cutting operation. Before the cutting begins, the blade should be off the work and the head should be held in position by placing the feed control knob (See Figure 8) in the OFF position
- Once the blade is running, the head is slowly lowered onto the work by turning the feed control knob to the on position, and adjusting the feed regulator knob to the desired feed rate.
- After the blade begins the cut, optimum feed rate should be determined.
- To determine if the feed is incorrect, examine the chips produced. When the blade is operating at the ideal feed for the speed, the chips will be curled and continuous. If the chips are thick and not continuous, the feed pressure should be reduced. If the chips are powdery, the feed pressure needs to be increased (Refer to Figure 13).



Curled shavings indicate correct feed pressure.



Thick discontinuous chips indicate too much pressure. Turn knob clockwise.



Powdery chips indicate too little pressure. Turn knob counterclockwise.

**Figure 13 – Determine Feed Pressure**

### CUTTING FLUIDS

- Using a cutting fluid can improve the cutting conditions and keep them more consistent throughout the cut by:
  - a. Lubricating the blade, which reduces the friction between it and the workpiece.
  - b. Taking heat away from the cut and preventing the workpiece and blade from overheating.
  - c. Dissipating the built-up heat because hot metals become tough and more difficult to cut and blades become dull at an accelerated rate.

**NOTE:** Because much of the built-up heat comes from friction between the blade and the workpiece, cutting fluids are often referred to as "coolants".

- The importance of cutting fluids increases with blade speed and toughness of the material.
- There are many available types of cutting fluids. Consult a machinist's handbook for specific information. The most common general purpose coolant is a mixture of water and water soluble oil (Model No. 6Y647). The producer of the water soluble oil should provide the appropriate mixing ratios.

### COOLANT TANK

Refer to Figure 16.

- The coolant reservoir (Ref. No. 14) can hold up to four and a half gallons of coolant. For proper operation, the pump must be completely submerged in fluid.
- Check that the fluid level is sufficient before attempting wet-cut operations. Usually four gallons is sufficient.
- Check that the tank is not filled with debris.

**CAUTION:** Do not allow shavings to flow through the pump. Change the fluid and clean the tank often. Whenever possible, the chips should be cleaned out of the chip tray (Ref. No. 1) before they are washed into coolant reservoir.

### POSITIONING

Refer to Figure 14, page 10.

The vise is designed to keep the workpiece steady while it is being cut. The vise should only have to counteract the cutting forces. Using the proper position will help produce a safe and accurate cut. These general rules about positioning apply to most situations:

- The workpiece should rest flat on the workbed without the need for side support. Some suggested configurations are shown in Figure 14.
- The entire length of the work should be supported. Do not balance the workpiece on the workbed. Use support stands to prevent the work from falling off after the cut.
- Avoid positions which will cause the blade to encounter sharp edges. If sharp corners cannot be avoided, file down the point that the blade will contact.

### WORK STOP ADJUSTMENT

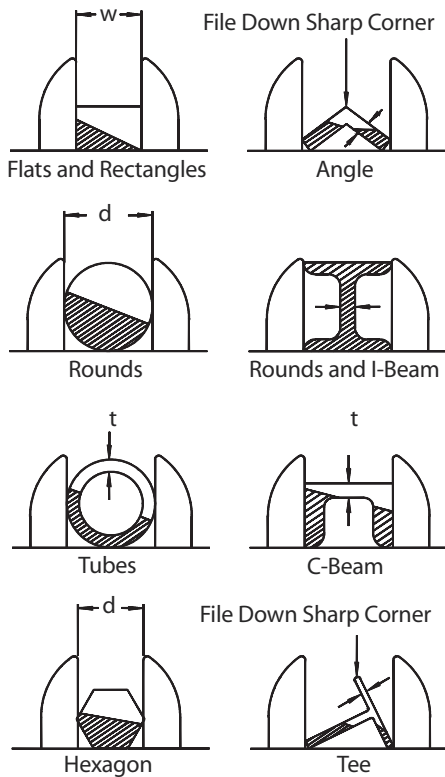
Refer to Figure 14, page 10.

- Loosen the knob holding the work stop casting to the work stop bar.
- Adjust the work stop casting to the desired length position.
- Rotate the work stop to contact the workpiece as close to the bottom as possible.
- Tighten the knob.
- Do not allow the blade to rest on the workpiece while the motor is shut off.
- Flats and rectangles have thickness averages of  $w$  (See Figure 14).

**OPERATION (CONTINUED)**

- Rounds and many sided regular cross-sections have thickness average of  $0.75d$ .
- Tubes and structurals have thickness average of  $2.5t$ .

**NOTE:** See Blade Selection for more information on thickness average calculation.



**Figure 14 – Clamping Configurations and Thickness Average Calculation**

**CHECK THE BLADE PATH**

Before the saw is plugged in, check to see that blade path is clear and that:

- All blade guards are in place.
- There is no debris inside the blade guard or covers.
- There is no debris on the blade or blade wheels.
- All hoses and line cords are out of the blade path.

**WARNING:** Do not operate saw unless all guards are in place and the workpiece is the only object that will encounter the blade teeth.

**MAINTENANCE**

Refer to Figure 15.

Steps required to keep the saw in optimum operating condition have been described under Operation. The Safety Precautions should be performed before operation.

For proper maintenance:

- Keep saw clean and dry. Sweep off spots where chips have collected and wipe off spots where coolant splashed.
- Lubricate the unpainted surfaces with a light application of medium consistency machine oil to prevent corrosion after cleaning.
- Grease the vise lead screw (Ref. No. 11) if vise action becomes difficult.
- Replace dull blades and blades from which teeth have been stripped. A clean saw with a sharp blade will yield the best cut.
- Internal parts of the band saw have been completely lubricated at the factory and do not need to be relubricated.
- After the first fifty hours of use, the gear box should be drained and refilled.

**WARNING:** Make certain unit is disconnected from power source before attempting to service or remove any component. If power cord is worn, cut, or damaged in any way, have it replaced immediately by a qualified electrician.

## TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
Blade cuts (crooked)	<ol style="list-style-type: none"> <li>1. Work not square</li> <li>2. Feed pressure too great</li> <li>3. Guide bearings not adjusted properly</li> <li>4. Inadequate blade tension</li> <li>5. Blade guides spaced out too much</li> <li>6. Dull blade</li> <li>7. Speed incorrect</li> <li>8. Blade guide assembly loose</li> <li>9. Blade guide bearing assembly loose</li> <li>10. Blade tracks too far away from wheel flanges</li> <li>11. Guide bearing worn</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust vise to be square with blade</li> <li>2. Reduce pressure by increasing spring tension</li> <li>3. Adjust guide bearings</li> <li>4. Increase blade tension a little at a time</li> <li>5. Move guides as close to work as possible</li> <li>6. Replace blade</li> <li>7. Check pages 9 and 10 for recommended speeds</li> <li>8. Tighten</li> <li>9. Tighten</li> <li>10. Track blade properly according to instructions under Operation, page 9</li> <li>11. Replace</li> </ol>
Bad cuts (rough)	<ol style="list-style-type: none"> <li>1. Too much speed or feed</li> <li>2. Blade has too few teeth per inch</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce speed or feed</li> <li>2. Replace with finer tooth blade</li> </ol>
Blade is twisting Unusual wear on side or back of blade	<ol style="list-style-type: none"> <li>1. Cut is binding blade</li> <li>2. Blade guides worn</li> <li>3. Blade guide bearings not adjusted properly</li> <li>4. Blade guide bearings not adjusted properly</li> <li>5. Feed pressure too great</li> </ol>	<ol style="list-style-type: none"> <li>1. Decrease feed pressure</li> <li>2. Replace</li> <li>3. Adjust guide bearings (see page 8)</li> <li>4. Tighten bearings</li> <li>5. Reduce feed pressure</li> </ol>
Motor will not start	<ol style="list-style-type: none"> <li>1. No electrical power to motor</li> <li>2. Low voltage</li> <li>3. Defective On/Off switch; defective line cord</li> <li>4. Open circuit in motor or loose connections</li> <li>5. Motor protector open (only if your motor is equipped with an overload protector)</li> <li>6. Burned out motor</li> </ol>	<ol style="list-style-type: none"> <li>1. Check electrical wiring to motor for continuity</li> <li>2. Check power line for proper voltage</li> <li>3. Replace defective parts before using band saw again</li> <li>4. Inspect lead terminals on motor for loose or open connections</li> <li>5. Reset protector after motor has cooled</li> <li>6. Any attempt to repair this motor may create a hazard unless repair is done by an authorized qualified technician. Replacement motors are available</li> </ol>
Motor will not start; fuses or circuit breakers blow	<ol style="list-style-type: none"> <li>1. Short circuit in line cord or plug</li> <li>2. Short circuit in motor or loose connection</li> <li>3. Incorrect fuses or circuit breakers in power line</li> <li>4. Motor overloaded</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect line cord or plug for damaged insulation and shorted wires</li> <li>2. Inspect all lead terminals on motor for loose or worn insulation on wires</li> <li>3. Install correct fuses or circuit breakers</li> <li>4. Reduce load on motor</li> </ol>
Motor fails to develop full power (power output of motor decreases rapidly) with decreased voltage at motor terminals	<ol style="list-style-type: none"> <li>1. Power line overloaded</li> <li>2. Undersized wires or cords too long</li> <li>3. General overloading of power company's facilities</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the load on the power line</li> <li>2. Increase wire sizes or reduce length of cords</li> <li>3. Request a voltage check from the power company</li> </ol>
Motor overheats	<ol style="list-style-type: none"> <li>1. Motor overloaded</li> <li>2. Air circulation around motor restricted</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce load on motor</li> <li>2. Clean motor to provide normal air circulation around motor</li> </ol>

## TROUBLESHOOTING (CONTINUED)

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
Motor stalls (resulting in blown fuses or tripped circuit breakers)	<ol style="list-style-type: none"> <li>1. Short circuit in motor; connections loose; or shorted terminals or worn insulation on lead wires</li> <li>2. Low voltage</li> <li>3. Incorrect fuses or circuit breakers</li> <li>4. Motor overloaded</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect terminals in motor for damaged insulation and shorted wires</li> <li>2. Correct the low line voltage conditions</li> <li>3. Install correct fuses or circuit breakers</li> <li>4. Reduce load on motor</li> </ol>
Frequent opening of fuses or circuit breakers	<ol style="list-style-type: none"> <li>1. Motor overloaded</li> <li>2. Incorrect fuses or circuit breakers</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce load on motor</li> <li>2. Install correct fuses or circuit breakers</li> </ol>
Motor problems in general	Various causes	To troubleshoot and service motor consult qualified technician
Teeth ripping from blade	<ol style="list-style-type: none"> <li>1. Teeth too coarse for work</li> <li>2. Too heavy feed</li> <li>3. Too slow speed</li> <li>4. Vibrating workpiece</li> <li>5. Gullets loaded</li> </ol>	<ol style="list-style-type: none"> <li>1. Use finer tooth blade</li> <li>2. Decrease feed pressure</li> <li>3. Increase speed</li> <li>4. Clamp work securely</li> <li>5. Use coarse tooth blade or use brush to remove chips</li> </ol>
Motor running too hot	<ol style="list-style-type: none"> <li>1. Blade tension too high</li> <li>2. Blade too coarse for work (pipes especially)</li> <li>3. Blade too fine for work (heavier, soft material)</li> <li>4. Gears need lubrication</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce tension on blade</li> <li>2. Use finer tooth blade</li> <li>3. Use coarser blade</li> <li>4. Check oil bath</li> </ol>
Coolant does not flow	<ol style="list-style-type: none"> <li>1. Pump motor burned out</li> <li>2. Dirty screen/filter on pump</li> <li>3. Loose impeller</li> <li>4. Coolant level too low</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace pump</li> <li>2. Clean</li> <li>3. Tighten</li> <li>4. Refill coolant tank</li> </ol>
Excessive blade breakage	<ol style="list-style-type: none"> <li>1. Material loose in vise</li> <li>2. Incorrect speed or feed</li> <li>3. Teeth too coarse for material</li> <li>4. Incorrect blade tension</li> <li>5. Teeth in contact with work before saw is started</li> <li>6. Blade rubs on wheel flange</li> <li>7. Misaligned guides</li> <li>8. Blade too thick for wheel diameter</li> </ol>	<ol style="list-style-type: none"> <li>1. Clamp work securely</li> <li>2. Check Machinist Handbook</li> <li>3. Check Machinist Handbook for recommended blade type</li> <li>4. Adjust to where blade does not slip on wheel</li> <li>5. Place blade in contact with work after motor is started</li> <li>6. Adjust tracking</li> <li>7. Adjust guide bearings</li> <li>8. Use thinner blade</li> </ol>
Premature blade dulling	<ol style="list-style-type: none"> <li>1. Teeth too coarse</li> <li>2. Too much speed</li> <li>3. Inadequate feed pressure</li> <li>4. Hard spots or scale in/on material</li> <li>5. Work hardening of material (especially stainless steel)</li> <li>6. Blade installed backwards</li> <li>7. Insufficient blade tension</li> </ol>	<ol style="list-style-type: none"> <li>1. Use finer tooth blade</li> <li>2. Try next lower speed</li> <li>3. Decrease spring pressure</li> <li>4. Reduce speed, increase feed of saw</li> <li>5. Increase feed pressure by reducing spring tension</li> <li>6. Remove blade, twist inside out and reinstall blade</li> <li>7. Increase tension to proper level</li> </ol>

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## NOTES



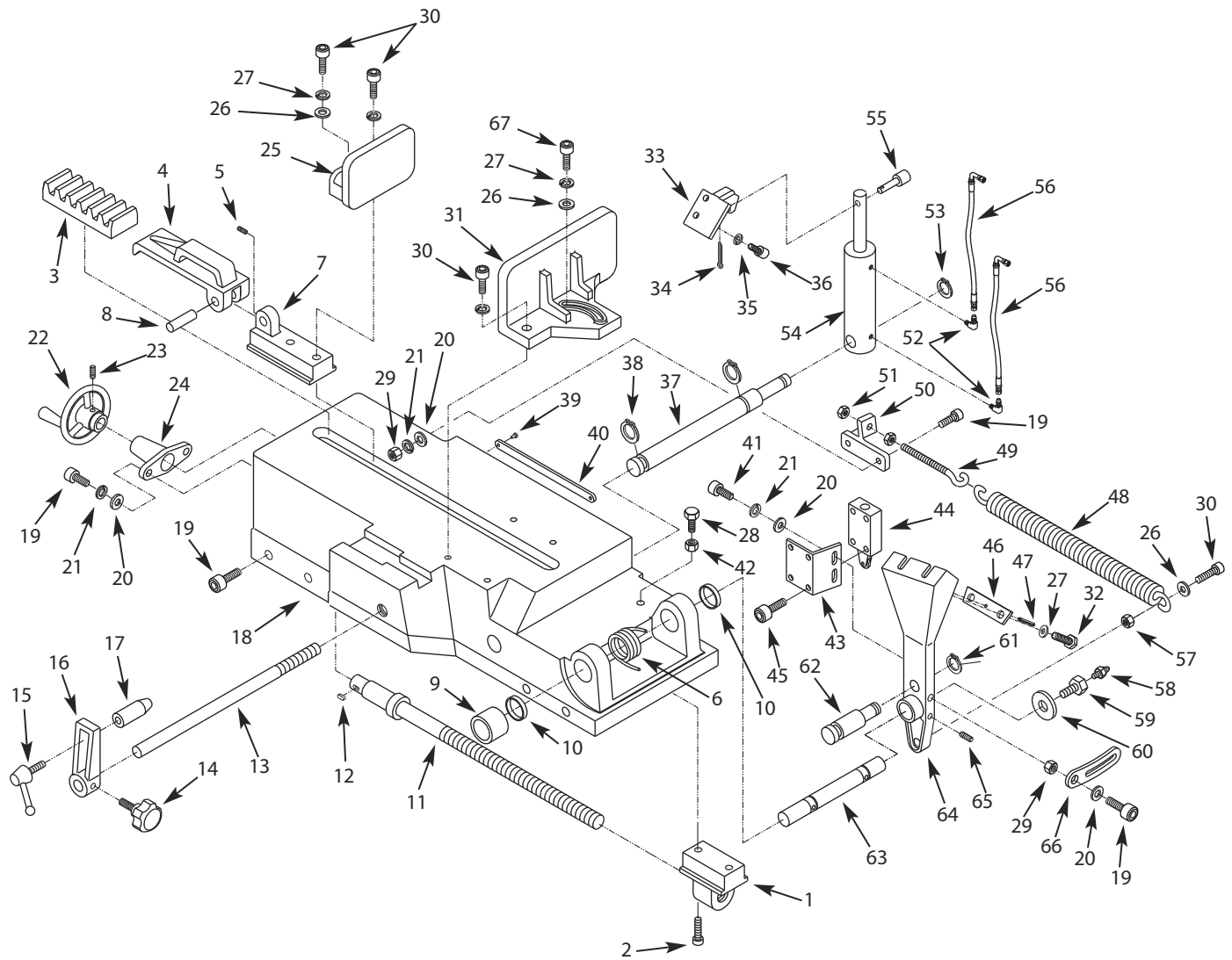


Figure 15 – Repair Parts Illustration for Bed

## REPLACEMENT PARTS LIST FOR BED

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	Lead screw nut	9615579.00	1	35	10mm Lock washer	*	2
2	8-1.25 x 25mm Socket head bolt	*	2	36	10-1.5 x 30mm Socket head bolt	*	2
3	Rack	9616346.00	1	37	Rod	9615597.00	1
4	Rack block	9615114.00	1	38	3AMI-25 Retaining ring	9601900.00	2
5	6-1.0 x 8mm Set screw	*	1	39	Rivet	9601286.00	3
6	Torsion spring	9615581.00	1	40	Angle scale	9615598.00	1
7	Bracket	9615115.00	1	41	8-1.25 x 20mm Socket head bolt	*	2
8	Pin	9616347.00	1	42	10-1.5mm Hex nut	*	1
9	Spacer	9615583.00	1	43	Plate	9615599.00	1
10	Bushing	9615584.00	2	44	Limit switch with strain relief	9615600.00	1
11	Lead screw	9615585.00	1	45	6-1.0 x 12mm Socket head bolt	*	4
12	5 x 5 x 20mm Key	*	1	46	Plate	9615601.00	1
13	Work stop rod	9615586.00	1	47	5 x 45mm Spring pin	*	1
14	Knob	9603989.00	1	48	Spring	9615603.00	1
15	Handle	9615587.00	1	49	Eyebolt	9615604.00	1
16	Work stop bracket	9615588.00	1	50	Spring bracket	9615605.00	1
17	Work stop	9615589.00	1	51	1/2"-12 Hex nut	*	2
18	Bed	†	1	52	90° Elbow hydraulic hose adapter	6W439	2
19	8-1.25 x 30mm Socket head bolt	*	13	53	3AMI-20 Retaining ring	9600256.00	1
20	8mm Flat washer	*	15	54	Hydraulic cylinder assembly (includes Ref. Nos. 52 and 56)	9615606.00	1
21	8mm Lock washer	*	14	55	Clevis pin	9615607.00	1
22	Hand wheel	9615591.00	1	56	Hydraulic hose	9615608.00	2
23	5/16-18 x 3/8" Set screw	*	1	57	12-1.75mm Hex nut	*	1
24	Bracket	9615592.00	1	58	Oil fitting	9615609.00	2
25	Left vise jaw	9615593.00	1	59	12-1.75 x 20mm Bolt	9615610.00	2
26	12mm Flat washer	*	3	60	12 x 35 x 5mm Spacer	9615670.00	2
27	12mm Lock washer	*	6	61	3AMI-22 Retaining ring	9601861.00	1
28	10-1.5 x 30mm Hex head bolt	*	1	62	Shaft	9615612.00	1
29	8-1.25mm Hex nut	*	11	63	Pivot shaft	9615613.00	1
30	12-1.75 x 40mm Socket head bolt	*	4	64	Pivot bracket	9615614.00	1
31	Right vise Jaw	9615595.00	1	65	10-1.5 x 12mm Set screw	*	1
32	12-1.75 x 50mm Hex head bolt	*	2	66	Motor tilt plate	9615615.00	1
33	Bracket	9615596.00	1	67	12-1.75 x 50mm Socket head bolt	*	1
34	2 x 25mm Cotter pin	*	1				

(\*) Standard hardware item, available locally.

(†) Not economical for replacement.

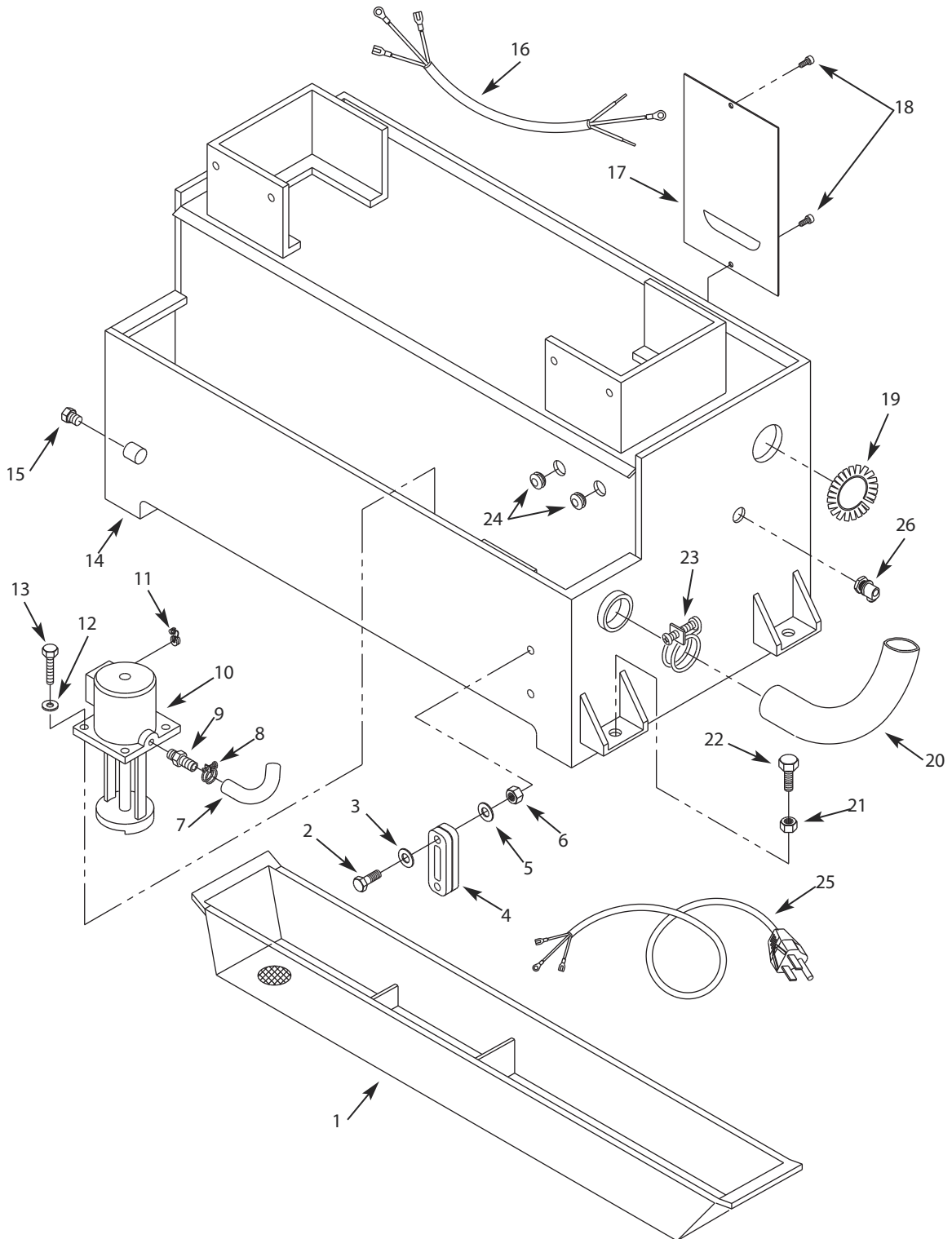


Figure 16 – Repair Parts Illustration for Base

## REPLACEMENT PARTS LIST FOR BASE

Ref. No.	Description	Part Number	Qty.
1	Chip tray	9615616.00	1
2	10-1.5 x 30mm Hex head bolt	*	2
3	10mm Fiber washer	9615617.00	2
4	Coolant gauge assembly	9615618.00	1
5	10mm Flat washer	*	2
6	10-1.5mm Hex nut	*	2
7	5/16 x 51" Hose	9615619.00	1
8	Clamp	9615550.00	1
9	Hose fitting	9615620.00	1
10	Coolant pump	9615621.00	1
11	Strain relief	9601601.00	1
12	6mm flat washer	*	2
13	6-1.0 x 16mm Pan head screw	*	2
14	Base	†	1
15	3/8" NPT Drain plug	*	1
16	Pump cord	9615623.00	1
17	Cover	9615624.00	1
18	6-1.0 x 8mm Socket head bolt	*	2
19	Grommet	9615625.00	1
20	Hose	9615626.00	1
21	12-1.75mm Hex nut	*	4
22	12-1.75 x 65mm Hex head bolt	*	4
23	1 1/4" Hose clamp	9615627.00	1
24	Grommet	9601066.00	2
25	Line cord	9615628.00	1
26	Strain relief	9602434.00	1

(\*) Standard hardware item, available locally.

(†) Not economical for replacement.

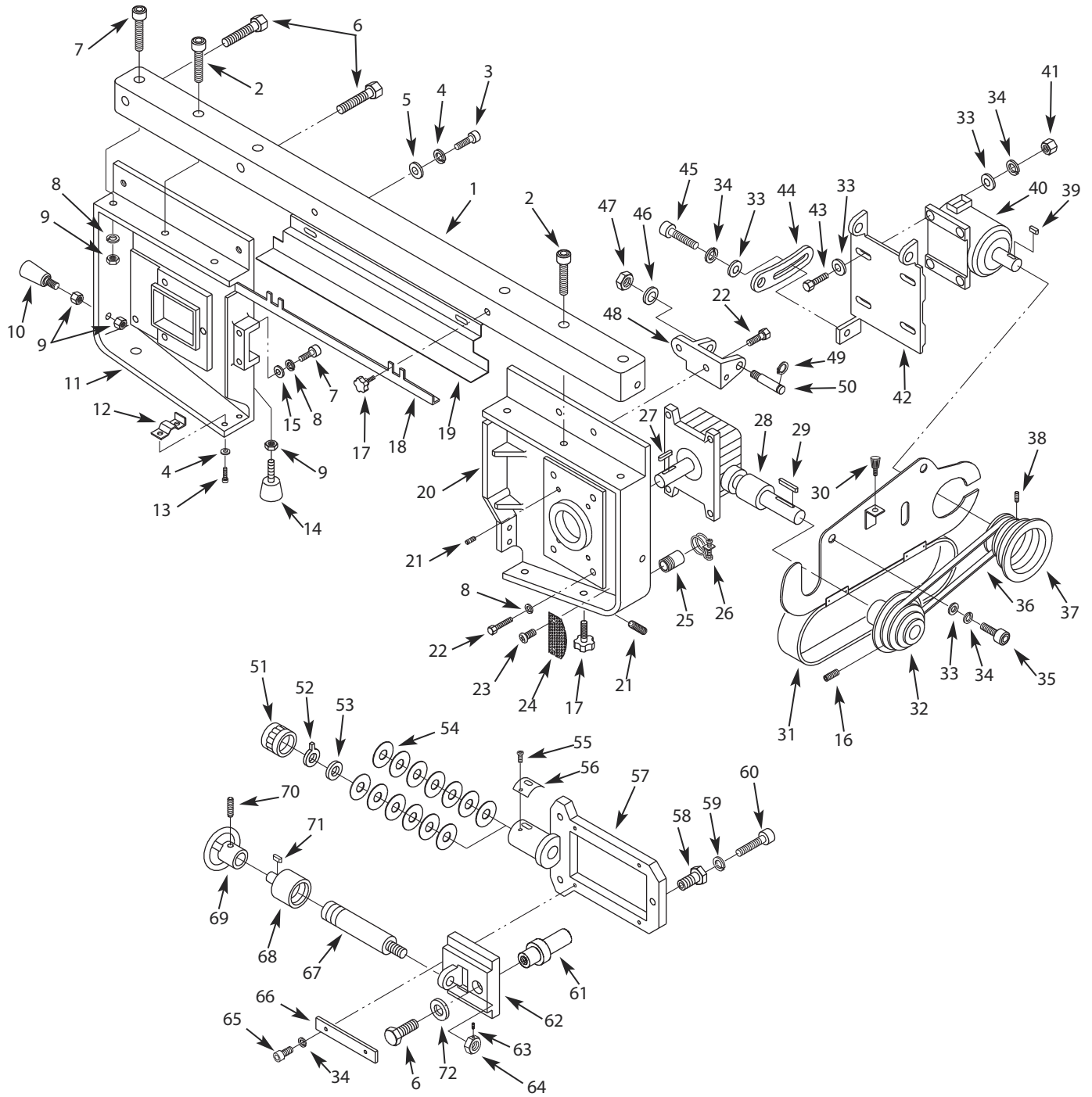


Figure 17 – Repair Parts Illustration for Head



## REPLACEMENT PARTS LIST FOR HEAD

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	Column	†	1	38	8-1.25 x 10mm Set screw	*	1
2	12-1.75 x 20mm Socket head bolt	*	5	39	7 x 7 x 30mm Key	9615648.00	1
3	6-1.0 x 12mm Socket head bolt	*	2	40	Motor	9615649.00	1
4	6mm Lock washer	*	4	41	8-1.25mm Hex nut	*	4
5	6mm Flat washer	*	2	42	Motor mount plate	9615650.00	1
6	12-1.75 x 20mm Hex head bolt	*	3	43	8-1.25 x 45mm Hex head bolt	*	4
7	12-1.75 x 30mm Socket head bolt	*	5	44	Motor tilt plate	9615615.00	1
8	12mm Lock washer	*	9	45	8-1.25 x 25mm Socket head bolt	*	1
9	12-1.75mm Hex nut	*	4	46	1/2" Flat washer	*	1
10	Handle	9615630.00	1	47	1/2"-12 Hex nut	*	1
11	Idler wheel housing	†	1	48	Motor mount bracket	9615651.00	1
12	Plate	9615632.00	1	49	3AMI-19 Retaining ring	9615652.00	1
13	6-1.0 x 16mm Socket head bolt	*	2	50	Support shaft	9615653.00	1
14	Stop	9615633.00	1	51	Thrust bearing	9601020.00	1
15	12mm Flat washer	*	2	52	Indicator	9615654.00	1
16	8-1.25 x 16mm Set screw	*	1	53	25 x 45 x 5mm Spacer	9615655.00	1
17	Knob	9615634.00	6	54	Concave washer	9615656.00	13
18	Blade guard	9615635.00	1	55	5-0.8 x 8mm Pan head screw	*	2
19	Blade guard	9615636.00	1	56	Tension scale	9615657.00	1
20	Drive wheel housing	†	1	57	Slide bracket	9615658.00	1
21	10-1.25 x 12mm Set screw	*	2	58	Bolt	9615666.00	3
22	12-1.75 x 35mm Hex head bolt	*	6	59	10mm Lock washer	*	3
23	5-0.8 x 10mm Pan head screw	*	2	60	10-1.5 x 60mm Socket head bolt	*	3
24	Filter screen	9615638.00	1	61	Idler wheel shaft	9615659.00	1
25	Connector	9615639.00	1	62	Slide	9615660.00	1
26	1 1/4" Hose clamp	9615627.00	1	63	6-1.0 x 8mm Set screw	*	1
27	7 x 7 x 45mm Key	9615641.00	1	64	Nut	9615665.00	1
28	Gear box assembly	9615642.00	1	65	8-1.25 x 20mm Socket head bolt	*	4
29	7 x 7 x 60mm Key	9615643.00	1	66	Plate	9615661.00	2
30	Knob	9615644.00	1	67	Tension shaft	9615662.00	1
31	Pulley cover	9615645.00	1	68	Extension bar	9615663.00	1
32	Drive pulley	9615646.00	1	69	Hand wheel	9615664.00	1
33	8mm Flat washer	*	11	70	5/16-18 x 3/8" Set screw	*	1
34	8mm Lock washer	*	11	71	5 x 5 x 15mm Key	9607215.00	1
35	8-1.25 x 16mm Socket head bolt	*	2	72	12 x 35 x 5mm Spacer	9615670.00	1
36	V-Belt	6A145	1	Δ	Motor Capacitor	9608174.00	1
37	Motor pulley	9615647.00	1				

(\*) Standard hardware item, available locally.

(†) Not economical for replacement.

(Δ) Not shown.

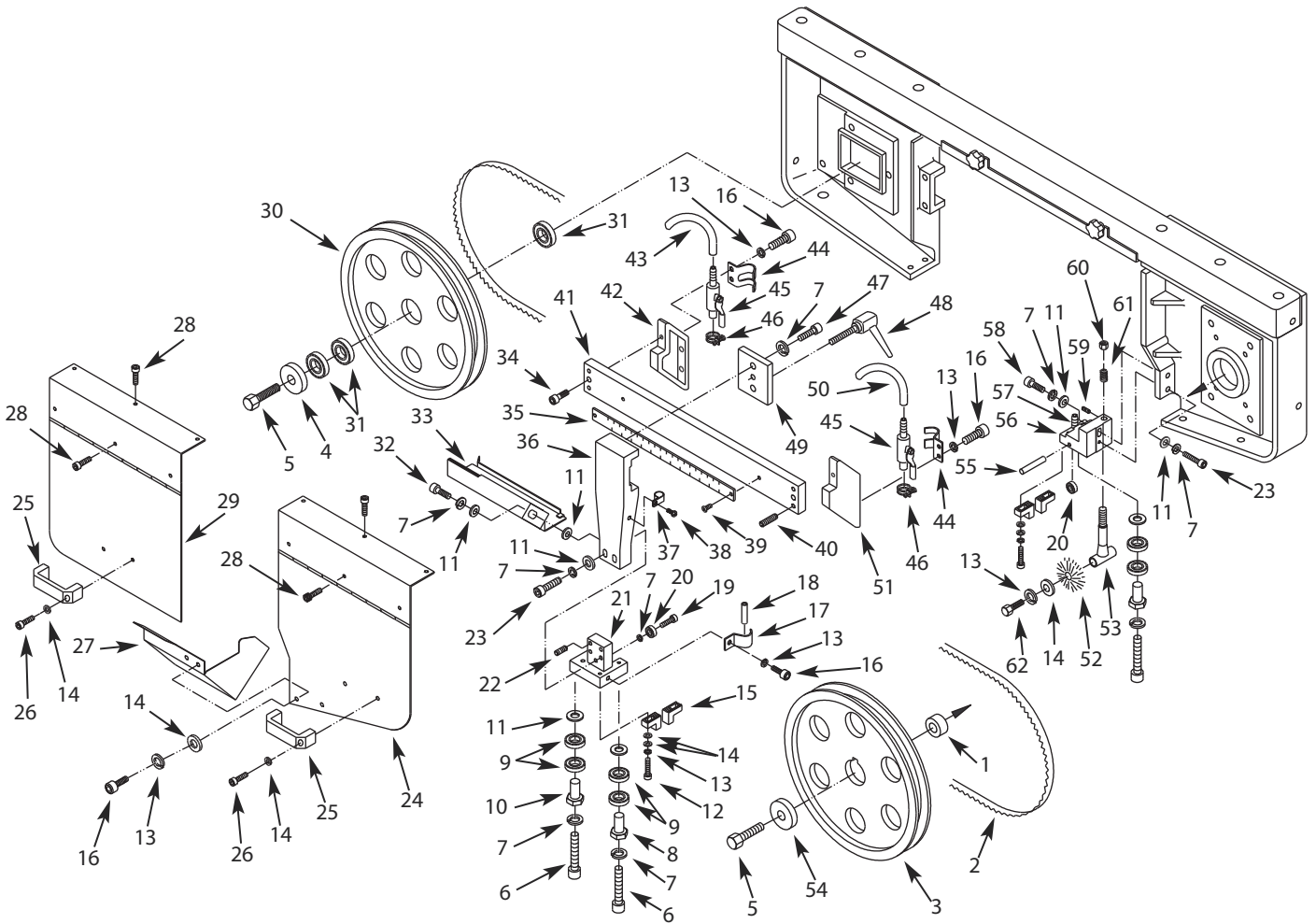


Figure 18 – Repair Parts Illustration for Blade Guide

## REPLACEMENT PARTS LIST FOR BLADE GUIDE

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	Bushing	9615667.00	1	33	Blade guard	9615681.00	1
2	1 x .032 x 119 1/2" Blade	9615668.00	1	34	10-1.50 x 25mm Socket head bolt	*	2
3	Drive wheel	9615669.00	1	35	Scale	9615682.00	1
4	12 x 35 x 5mm Spacer	9615670.00	1	36	Bracket	9615683.00	1
5	12-1.75 x 20mm Hex head bolt	*	2	37	5/16" Hose clamp	9600131.00	1
6	8-1.25 x 45mm Socket head bolt	*	4	38	5-0.8 x 10mm Pan head screw	*	1
7	8mm Lock washer	*	12	39	Rivet	9601286.00	4
8	Sleeve	9615671.00	2	40	8-1.25 x 10mm Set screw	*	4
9	6201ZZ Ball bearing	1L014	8	41	Slide bar	9615684.00	1
10	Eccentric sleeve	9615672.00	2	42	Left bracket	9615685.00	1
11	8mm Flat washer	*	8	43	1/4 x 29" Hose	9615686.00	1
12	6-1.0 x 30mm Socket head bolt	*	4	44	Bracket	9615687.00	2
13	6mm Lock washer	*	12	45	Coolant valve	9615688.00	2
14	6mm Flat washer	*	15	46	Clamp	9615550.00	2
15	Blade guide	9615673.00	4	47	8-1.25 x 25mm Socket head bolt	*	2
16	6-1.0 x 12mm Socket head bolt	*	7	48	Handle	9615640.00	1
17	Nozzle clamp	9615674.00	1	49	Plate	9615689.00	1
18	Nozzle	9615207.00	1	50	1/4 x 13" Hose	9615690.00	1
19	8-1.25 x 20mm Socket head bolt	*	2	51	Right bracket	9615691.00	1
20	608ZZ Ball bearing	1L035	2	52	Brush	9615692.00	1
21	Left guide bracket	9615675.00	1	53	Brush rod	9615693.00	1
22	8-1.25 x 16mm Set screw	*	3	54	12 x 51 x 5mm Spacer	9616364.00	1
23	8-1.25 x 40mm Socket head bolt	*	3	55	8 x 35mm Dowel pin	9615694.00	1
24	Right blade wheel cover	9615676.00	1	56	Right guide bracket	9615695.00	1
25	Handle	9615677.00	2	57	Nozzle	9615696.00	1
26	6-1.0 x 16mm Socket head bolt	*	4	58	8-1.25 x 50mm Socket head bolt	*	1
27	Brush guard	9615678.00	1	59	6-1.0 x 8mm Set screw	*	1
28	6-1.0 x 8mm Socket head bolt	*	12	60	10-1.5mm Hex nut	*	1
29	Left blade wheel cover	9615679.00	1	61	Spring	9615697.00	1
30	Tracking wheel	9615680.00	1	62	6-1.0 x 12mm Hex head bolt	*	1
31	6205Z Ball bearing	1L018	3		<b>Recommended Accessories</b>		
32	8-1.25 x 16mm Socket head bolt	*	1	Δ	Material support stand	9670141.00	

\* Standard hardware item available locally.

Δ Not Shown.

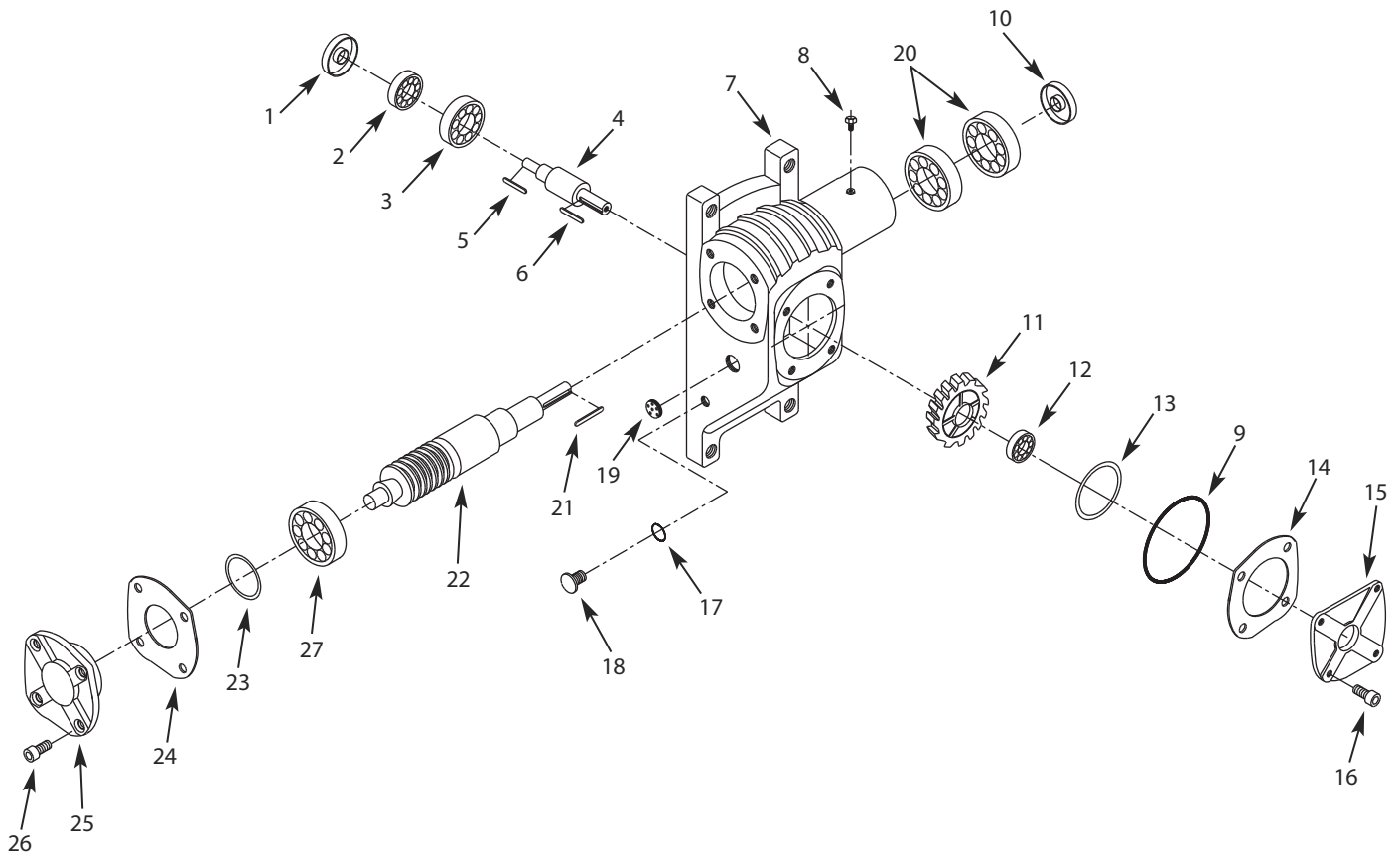


Figure 19 – Repair Parts Illustration for Gear Box

## REPLACEMENT PARTS LIST FOR GEAR BOX

Ref. No.	Description	Part Number	Qty.
1	35 x 55 x 8mm Oil seal	9615190.00	1
2	30207 Tapered roller bearing	9605855.00	1
3	6207 Bearing	1L020	1
4	Output shaft	9615191.00	1
5	7 x 7 x 45mm Key	9615641.00	1
6	8 x 7 x 30mm Key	9615208.00	1
7	Gear box	9615192.00	1
8	Vent bolt	9615193.00	1
9	1.7 x 117mm O-ring	9615594.00	1
10	25 x 52 x 8mm Oil seal	9615194.00	1
11	Gear	9615195.00	1
12	6206Z Bearing	1L019	1
13	Shim	9615196.00	1
14	Gasket	9615197.00	1
15	Output shaft cover	9615198.00	1
16	10-1.5 x 20mm Socket head bolt	*	4
17	2.5 x 12.9mm O-ring	9615206.00	1
18	Drain plug	9615199.00	1
19	Oil sight lens	9615200.00	1
20	6205ZZ Bearing	1L018	2
21	7 x 7 x 60 Key	9615643.00	1
22	Input shaft	9615201.00	1
23	Shim	9615202.00	1
24	Gasket	9615203.00	1
25	Input shaft cover	9615204.00	1
26	8-1.25 x 20mm Socket head bolt	*	4
27	30205 Tapered roller bearing	96615611.00	1

(\*) Standard hardware item, available locally.



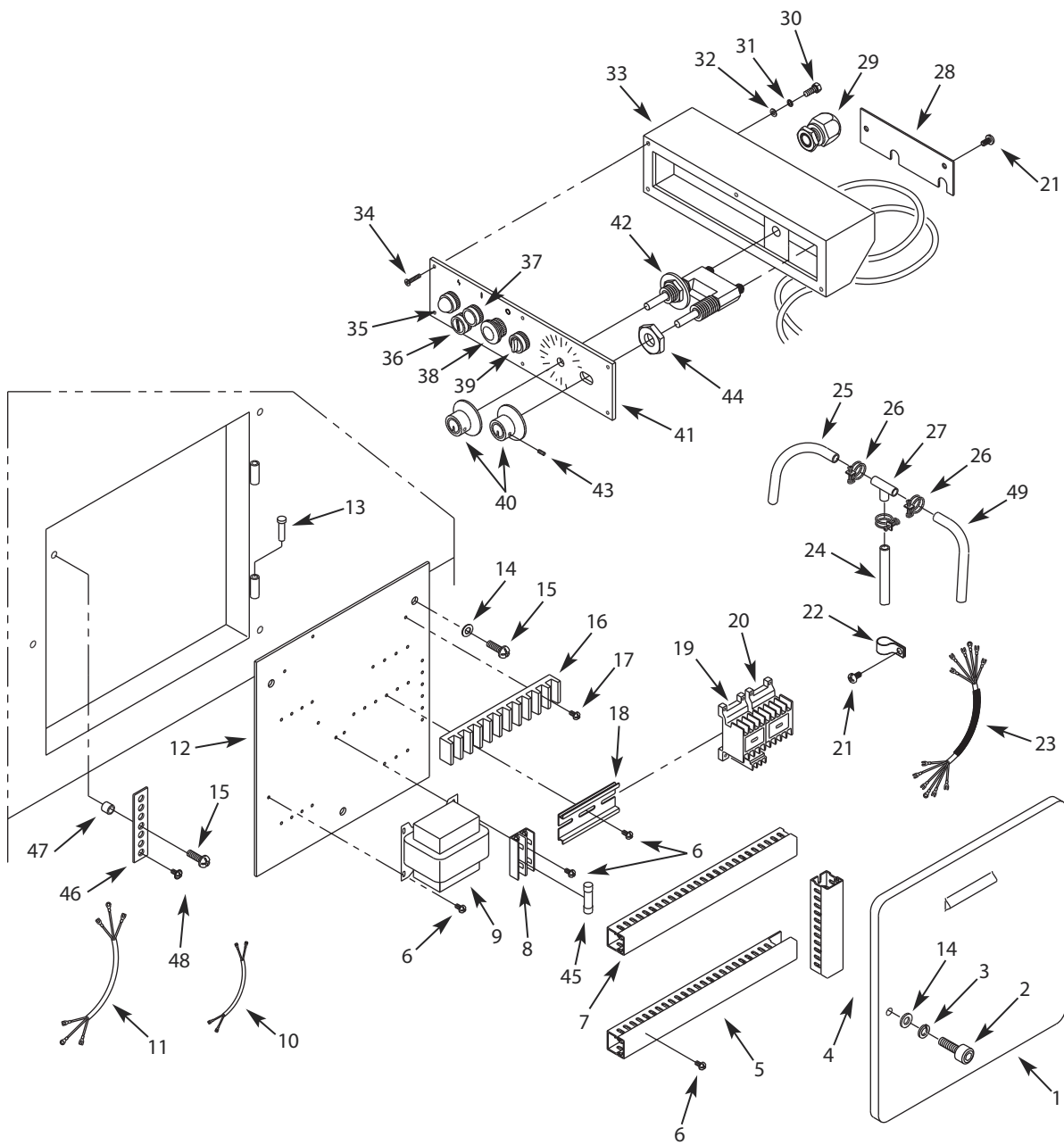


Figure 20 – Repair Parts Illustration for Controls

## REPLACEMENT PARTS LIST FOR CONTROLS

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	Door	9615551.01	1	26	Clamp	9615550.00	3
2	6-1.0 x 30mm Socket head bolt	*	1	27	Tee fitting	9615566.00	1
3	6mm Lock washer	*	1	28	Plate	9615567.00	1
4	Wire channel with cover	9615552.00	1	29	Strain relief	9617505.00	1
5	Wire channel with cover	9615553.00	1	30	6-1.0 x 12mm Hex head bolt	*	2
6	#8-32 x 1/4" Round head screw	*	12	31	6mm Lock washer	*	2
7	Wire channel with cover	9615554.00	1	32	6mm Flat washer	*	2
8	Fuse holder	9615556.00	1	33	Control box	9615568.00	1
9	Transformer	9615558.00	1	34	5-0.8 x 10mm Pan head screw	*	7
10	Cord (2 wire lead)	9615555.00	1	35	Power Indicator light	9615569.00	1
11	Cord (3 wire lead)	9615557.00	1	36	Switch with key	9608414.00	1
12	Insulating plate	9615559.00	1	37	Start switch	9615570.00	1
13	Pin	9615578.00	2	38	Stop switch	9615572.00	1
14	6mm Flat washer	*	4	39	Pump switch	9615571.00	1
15	6-1.0 x 16mm Pan head screw	*	4	40	Feed regulator knob	9615573.00	2
16	Terminal strip	9615560.00	1	41	Control panel	9615575.00	1
17	#8-32 x 1/2" Flat head screw	*	2	42	Adjustment valve	9615576.00	1
18	Bracket	9615561.00	1	43	5-0.8 x 6mm Set screw	*	6
19	Contactora (main motor)	9615562.00	1	44	1/2"-20 Hex jam nut	9616473.00	1
20	Contactora (pump)	9615563.00	1	45	3A Fuse	4XH61	1
21	5-0.8 x 10mm Pan head screw	*	3	46	Ground plate	9616480.00	1
22	Hose clamp	9602702.00	3	47	Spacer	9616481.00	1
23	Cord (6 Wire lead with cover)	9615209.00	1	48	#10-24 x 5/16"-20 Washer head screw	9616360.00	5
24	5/16 x 15 <sup>3</sup> / <sub>4</sub> " Hose	9615564.00	1	49	5/16 x 51" Hose	9615619.00	1
25	5/16 x 37" Hose	9615565.00	1				

\* Standard hardware item available locally.

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## NOTES

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## NOTES

## WARRANTY

Palmgren warrants their products to be free of defects in material or workmanship. This warranty does not cover defects due directly or indirectly to misuse, abuse, normal wear and tear, failure to properly maintain the product, heated, ground or otherwise altered, or used for a purpose other than that for which it was intended. The warranty does not cover expendable and/or wear parts (i.e. v-belts, coated screws, abrasives), damage to tools arising from alteration, abuse or use other than their intended purpose, packing and freight. The duration of this warranty is expressly limited to one year parts and labor, unless otherwise noted below beginning from the date of delivery to the original user. The Palmgren products carry the following warranties on parts with a 1 year warranty on labor:

- USA Machine vises – Lifetime
- IQ Machine vises – Lifetime
- Bench vises – Lifetime
- Positioning tables – Lifetime
- Bench grinders & buffers – 3 years
- Tapping machines – 2 years
- Drilling machines – 2 years
- Finishing machines – 2 years
- Band saws – 2 years
- Work stands – 2 years
- Arbor presses – 2 years
- Metal forming equipment – 2 years
- Accessories – 1 year

The obligation of Palmgren is limited solely to the repair or replacement, at our option, at its factory or authorized repair agent of any part that should prove deficient. Purchaser must lubricate and maintain the product under normal operating conditions at all times. Prior to operation become familiar with product and the included materials, i.e. warnings, cautions and manuals. **Failure to follow these instructions will void the warranty.**

This warranty is the purchaser's exclusive remedy against Palmgren for any deficiency in its products. Under no circumstances is Palmgren liable for any direct, indirect, incidental, special or consequential damages including lost profits in any way related to the use or inability to use our products. This warranty gives you specific legal rights which may vary from state to state.

### SERVICE & REPAIR

1. If a Palmgren product requires a repair or warranty service **DO NOT** return the product to the place of purchase.
2. All warranty related work must be evaluated and approved by Palmgren.
3. Prior to returning any item the user must obtain factory approval and a valid RGA number.
4. For instructions and RGA number call toll free (800) 621-6145.