

PALMGREN[®]

5" × 6" BAND SAW WITH STAND



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

GETTING STARTED

STRUCTURAL REQUIREMENTS

Make sure all supporting structures and load attaching devices are strong enough to hold your intended loads. If in doubt, consult a qualified structural engineer.

ELECTRICAL REQUIREMENTS

The power supply to the unit needs to be 115V / 8.0A or 230V / 4.0A, single phase, 60 Hz. The standard allowable voltage variation is plus or minus 10%.

TOOLS NEEDED

Standard mechanic's hand tool set.

UNPACKING

WARNING: Be careful not to touch overhead power lines, piping, lighting, etc. if lifting equipment is used. The unit weighs approximately 106 lb., proper tools, equipment and qualified personnel should be employed in all phases of unpacking and installation.

Carton should be handled with care to avoid damage from dropping, bumping, etc. Store and unpack carton with correct side up. After unpacking the unit, inspect carefully for any damage that may have occurred during transit. Check for loose, missing or damaged parts. If any damage or loss has occurred, claim must be filed with carrier immediately. Check for completeness. Immediately report missing parts to dealer.

Band Saw is shipped partially assembled. End user will need to assemble loose parts to machine.

IMPORTANT: The bed has been coated with a protective coating. In order to ensure proper fit and operation, the coating must be removed. Remove coating with mild solvents such as mineral spirits and a soft cloth. Nonflammable solvents are recommended. After cleaning, cover all exposed metal surfaces with a light coating of oil.

CAUTION: Never use highly volatile solvents. Avoid getting cleaning solution on paint as it may tend to deteriorate these finishes. Use soap and water on painted components.

CONTENTS

- Band saw (1)
- Pulley cover assembly (1)
- Vertical table (1)
- Vertical table reinforcing bracket (1)
- Workstop assembly (1)
- Crank handle assembly (1)
- Hardware bag (1) includes: #10-24×1/2" pan head screw, #10-24 hex nut, two 1/4-20×1/2" hex head bolts, two 1/4" flat washers, 1/4"-20×1/2" flat head screw and 1/4"-20 hex nut.
- Legs (4)
- Long brace (2)
- Short brace (2)
- Flange (2)
- Parts bag (1) includes: sixteen 5/16"-18×1/2" carriage bolts; four feet; six 5/16"-18×1" hex head bolts; twenty-eight 5/16" flat washers; twenty-two 5/16"-18 hex nuts
- Operating Instructions and Parts Manual (1)

INSPECT

- After unpacking the unit, carefully inspect for any damage that may have occurred during transit. Check for loose, missing or damaged parts. Shipping damage claims must be filed with the carrier.
- All tools should be visually inspected before use, in addition to regular periodic maintenance inspections.
- Be sure that the voltage labeled on the unit matches your power supply.

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CAUTION: Never use highly volatile solvents. Avoid getting cleaning solution on paint as it may tend to deteriorate these finishes. Use soap and water on painted components.

UNPACK

Do not discard packing materials until after machine has been inspected for damage and completeness. Locate loose parts and set aside.

INSPECT

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- All tools should be visually inspected before use, in addition to regular periodic maintenance inspections.
- Be sure that the voltage labeled on the unit matches your power supply.

SPECIFICATIONS

Model 9683302, 5"×6" Band Saw with Stand	
Capacity	5" Rounds 5"×6½" Rectangle at 90° 6¼"×1/2" Rectangle at 90° 5½" Square at 90° 3"×9" Rectangle at 45° 3" Square at 45°
Motor	1720 RPM, 115 / 230 Volts 8.0 / 4.0 Amps Single Phase / 60 Hz
Blade speeds	80, 120 and 200 FPM
Blade size	1/2"×.025"×64½"
Blade wheels	7⅜"
Overall dimensions:	
Head in horizontal position	36"×14"×17"
Head in vertical position	42"×15½"×56"
Weight	106 lbs.

SAFETY RULES

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.

Your risk from these exposures varies, 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.

WARNING: Always follow proper operating procedures as defined in this manual even if you are familiar with the 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. Three-prong plug should be plugged 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, master switches or remove switch keys to prevent any unintentional use of power tools.

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 the 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 17). 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.

WARNING: The operation of any power tool can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety goggles complying with United States ANSI Z87.1 (shown on package) before commencing power tool operation.

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

ASSEMBLY

Refer to Figures 1, 14 and 15.

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

ASSEMBLE STAND

Refer to Figure 1.

NOTE: Finger tighten bolts and nuts until assembly is complete. Then tighten all fasteners securely.

1. Attach two legs (A) to flanges (D) using carriage bolts, washers and nuts (E, H and I).
2. Attach two short braces (C) and two long braces (B) to preassembled legs and flange brackets using carriage bolts, washers and nuts (E, H and I).
3. Do not fully tighten bolts and nuts until bands saw is mounted on the stand.
4. Install leveling feet (F) on all four corners of the stand.

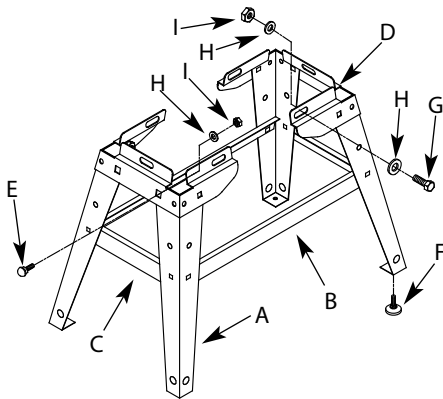


Figure 1 - Unpacking and assembling stand.

MOUNT BAND SAW

Refer to Figure 14, page 14.

1. Lay band saw on its side on cardboard or other suitable material to prevent scratches.
2. Attach assembled stand to band saw's base using hex head bolts, washers and nuts (Ref. Nos. 7, 8 and 9).
3. Finger tighten bolts and nuts.
4. Carefully set the band saw and stand assembly upright on the floor.
5. Fully tighten all bolts and nuts.
6. Adjust the leveling feet as necessary.
7. Saw is shipped with a shipping strap to prevent movement and damage to the head. The strap is located at the left end of the head, near the switch. Remove and discard.

INSTALL CRANK HANDLE

Refer to Figure 14, page 14.

1. Line up set screw on crank handle with flat on the lead screw shaft (Ref. Nos. 14, 15 and 17).
2. Slide crank handle on the shaft and tighten set screw.

INSTALL PULLEY COVER

Refer to Figure 15, page 16.

1. Remove V-belt (Ref. No. 41).
2. Slide left side slot in the cover plate (Ref. No. 35) over transmission shaft (Ref. No. 23).
3. Lift up the motor (Ref. No. 40) and align its shaft with second slot

in the cover plate.

4. Slide second slot in the pulley cover plate over motor shaft.
5. Install V-belt in proper pulley combination for desired blade speed. See Blade Speed Chart on page 7.
6. Tension V-belt by adjusting motor position and locking it in position with knob (Ref. No. 42). Properly tensioned V-belt should deflect about 1/2" when applying pressure with your thumb.
7. Align mounting holes in the pulley cover plate with corresponding holes on the head (Ref. No. 47) and secure it with hex head bolts (Ref. No. 32) and washers (Ref. No. 31).

ATTACH WORKSTOP ASSEMBLY

Refer to Figure 14, page 14.

1. Insert end of workstop rod (Ref. No. 40) into bed (Ref. No. 36). Secure position of rod with set screw (Ref. No. 34).
2. Slide workstop (Ref. No. 41) onto workstop rod and secure with set screw (Ref. No. 15).
3. Adjust the workstop as described in Operation, page 6

INSTALLATION

Refer to Figures 2, 3 and 4, page 4.

WARNING: All electrical connections must be performed by a qualified electrician.

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 106 lb.

- 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.

ELECTRICAL CONNECTIONS

WARNING: Make sure unit is off and disconnected from power source any time wiring is inspected.

POWER SOURCE

Band saw is prewired for 115 volt, 60 Hz power source. See Figure 4 for wiring schematic

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. Power supply to the motor is controlled by a single pole toggle switch.

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 3-conductor cord rated at 300V and a 3-prong grounding type plug (See Figure 2) for your protection against shock hazards.

INSTALLATION (CONTINUED)

Grounding plug should be plugged directly into a properly installed and grounded 3-prong grounding-type receptacle, as shown in Figure 2.

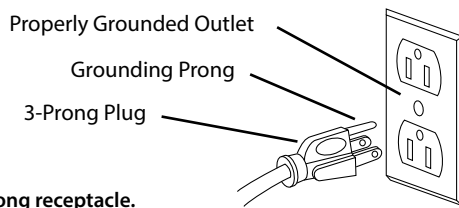


Figure 2 – 3-Prong receptacle.

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.

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 3) is available for connecting plugs to a two pole outlet if it is properly grounded.

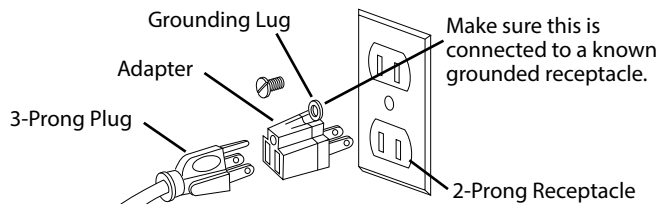


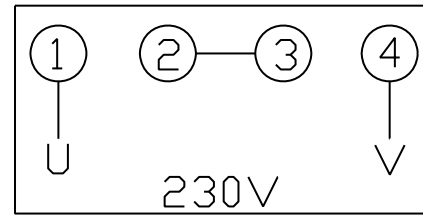
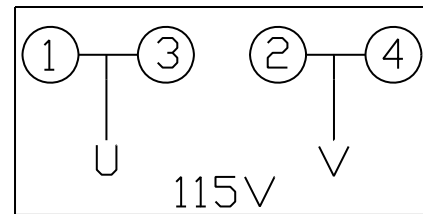
Figure 3 – 2-Prong receptacle with adapter.

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.

230 VOLT OPERATION

1. To use the band saw with a 230V, single-phase power supply, have a qualified electrician attach a 230 volt, 20/30A 3-prong plug onto band saw line cord and install the proper connectors and receptacles to power supply.
2. See wiring diagram (Figure 4) for motor wiring instructions.
3. Install 250 volt, 20A, 3-prong plug onto band saw line cord.



1, 2, 3, 4 - Motor leads
U, V - Power supply

Figure 4 - Motor wiring diagram.

EXTENSION CORDS

Use proper extension cord. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Table shows the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

Extension Cord Table						
		Volts	Total Length of Cord in Feet			
Ampere Rating		120	25	50	100	150
More Than	Not More Than	240	50	100	150	300
		Minimum Gage for Cord				
0	6		18	16	16	14
6	10		18	16	14	12
10	12		16	16	14	12
12	16		14	12	Not Recommended	

NOTE: Using extension cords over 300 ft. long is not recommended.

OPERATION

Refer to Figures 5-15.

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.
- Maintain proper adjustment of blade tension, blade guides and thrust bearing.
- Use the appropriate blade for the workpiece that is being cut.
- Use a sharp blade. Replace dull blades or blades which are missing teeth.
- Adjust upper guide to just clear workpiece
- 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.
- Hold workpiece firmly against table.
- Check that all guards are attached.
- After turning the switch on, let the blade come to full speed. Then lower the blade onto the workpiece slowly.

OPERATION (CONTINUED)

- Keep hands away from the blade and all moving parts.
- Always wear eye protection or face shield.

HORIZONTAL STOP

Refer to Figure 14, page 14.

Horizontal stop (Ref. No. 33) controls the position of the head at the end of the cut. Head should contact the horizontal stop when teeth are 1/8" below the surface of the workbed.

HORIZONTAL STOP ADJUSTMENT

Refer to Figure 14, page 14.

1. Place head in the horizontal position.
2. Loosen the nut (Ref. No. 35) on the horizontal stop bolt. Adjust the horizontal stop so that the teeth are 1/8" below the surface of the workbed.
3. Tighten nut to lock the position.

AUTOMATIC SHUTOFF

Refer to Figure 14, page 14.

The switch (Ref. No. 46) is shut off when the blade passes through the plane of the workbed. The switch should be shut off as soon as the cut is finished.

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

WISE ANGLE ADJUSTMENT

Refer to Figure 14, page 14.

1. Loosen hex head bolts (Ref. Nos. 9 and 30).
2. Align vise jaw (Ref. No. 32) to the desired angle on scale (Ref. No. 48) and secure in position.
3. Loosen hex head bolt on movable jaw (Ref. Nos. 51 and 49). Set jaw to angle of workpiece and tighten bolt.

POSITIONING

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 5.
- 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.

WORKSTOP ADJUSTMENT

Refer to Figure 14, page 14.

1. Loosen the set screw (Ref. No. 15) holding the workstop (Ref. No. 41) to the workstop rod (Ref. No. 40).
 2. Adjust the workstop casting to the desired length position.
 3. Rotate the workstop to contact the workpiece as close to the bottom as possible.
 4. Tighten the set screw.
- 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 5).

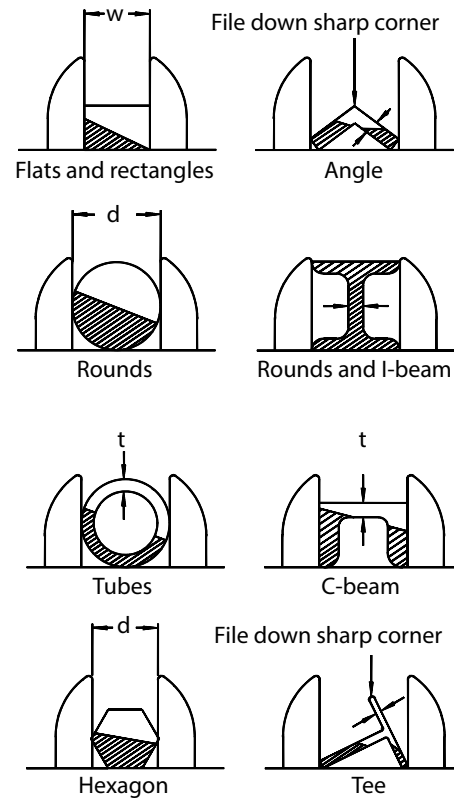


Figure 5 – Clamping configurations and thickness average calculation.

- 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 below for more information on 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.

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.

OPERATION (CONTINUED)

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 (**w**, **d** or **t**) is the average width of material which blade will contact during each cut. Figure 5 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.

BLADE SPEED

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. Three speeds are available.

CHANGING SPEEDS

When using your band saw always change the blade speed to best suit the material being cut. The chart on this page gives suggested settings for several materials.

Material	Speed	Belt groove used	
		Motor	Driven
Tool, stainless or alloy steel bearing bronzes	80 FPM	Small	Large
Mild steel, hard brass or bronze	120 FPM	Medium	Medium
Soft brass, aluminum, other light materials	200 FPM	Large	Small

ADJUSTMENTS

The blade tracking, tension and blade guides have been properly adjusted at the factory. However, the adjustments may change while the saw is in transit. It is recommended to verify these adjustments before operating saw.

TRACKING

Proper tracking is achieved when the drive wheel and idler 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

Refer to Figures 6 and 15, page 16.

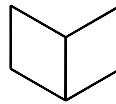
- Raise head to vertical position. Loosen and remove three screws (Ref. No. 2) to open blade cover.
- Insert a piece of paper between the blade and the left side of the idler wheel.
- Lift the belt cover (Ref. No. 35) and rotate the blade by turning the motor pulley (Ref. No. 37).
- Let the blade grab the paper. Rotate the pulley so the paper goes around the wheel.
- Refer to Figure 6 to determine if an adjustment is needed.

TRACKING ADJUSTMENT

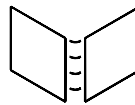
Refer to Figures 6 and 15, page 16.

The tracking is adjusted by tilting the tracking wheel. The tilting is done with the set screw (Ref. No. 21) only if the upper hex head bolts (Ref. Nos. 9 and 19) are loose.

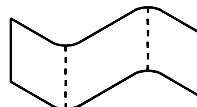
- Loosen the two hex head bolts.
- Adjust the tilt with set screw. For correct tracking, refer to Figure 6. Turn 1/4 revolution at a time.
- Check the blade tension and adjust if necessary.
- Recheck the tracking.
- Once the proper position has been found, tighten the bolts securely.



A sharp fold indicates proper tracking.



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



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

Figure 6 – Tracking adjustments.

BLADE TENSION

Refer to Figure 15, page 16.

Proper blade tension is required for straight cuts and long blade life.

To tension the blade:

- Turn the tension knob (Ref. No. 12) clockwise to increase tension.
- A properly tensioned blade will ring slightly when back of blade is plucked (like a string on an instrument).

NOTE: Recheck tension of new blade after several minutes of operation. Blade may require additional tension.

BLADE GUIDES

Refer to Figure 15, page 16.

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.

OPERATION (CONTINUED)

Blade guides should be set as close as possible to workpiece. Loosen knob (Ref. No. 22), slide blade guide assembly (Ref. No. 8) to the workpiece, then tighten knob.

Inner guide bearings on the upper and lower 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 Figures 14 and 15, pages 14 and 16.

- Check that the blade teeth are perpendicular to the machined surface of the base.
- Spread the blade guides (Fig. 15, Ref. Nos. 8 and 48) 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 the stationary vise jaw (Fig. 14, Ref. No. 32) and check that jaw is 90° to the side of blade.
- Check that the blade is in line with tracking and drive wheels (Fig. 15, Ref. Nos. 11 and 50).
- 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 that blade guide bearings touch the blades and can still be rotated by hand.

ADJUSTING GUIDE BEARINGS

Refer to Figure 7.

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 shafts and can be adjusted.

1. Loosen hex nuts with a wrench. Rotate the eccentric shaft to locate bearings in desired positions.
2. Maintain eccentric shaft position and tighten hex nuts.

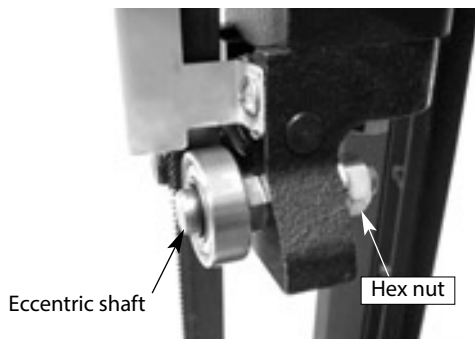


Figure 7 - Adjusting guide bearings.

CHECKING THRUST BEARINGS

The thrust bearings 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 8.

If the thrust bearings are not positioned properly or the blade is not square, one or both blade guide brackets must be adjusted.

1. Loosen the hex head bolt.
2. Adjust the bracket to the correct position.
3. Tighten the hex head bolt.
4. Check the guide bearings. Repositioning the blade guide bracket can alter the previous adjustments. Readjust if necessary.

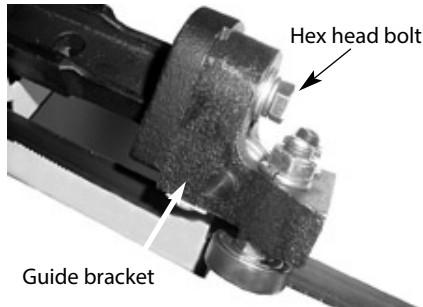


Figure 8 - Adjusting guide brackets.

REMOVING THE BLADE

Refer to Figure 15, page 16.

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.

1. Raise head to vertical position. Loosen and remove three screws (Ref. No. 2) to open blade cover.
2. Loosen the outer guide bearings on the upper and lower guide assemblies. No other guide bearings should be moved.
3. 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.
4. Release the tension by slowly turning knob (Ref. No. 12) counterclockwise.
5. Remove the blade.

REPLACING THE BLADE

1. Make sure the outer guide bearings are loose.
2. Make sure the teeth are pointing in the right direction (See Figure 9).
3. Place the blade around the wheels and between the guide bearings.
4. Hold the blade in position and apply tension.
5. Push the blade against the wheel flanges.
6. 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).
7. Adjust the outer guide bearings.
8. Check for proper tracking (See Tracking Adjustment, page 7).



Figure 9 - Blade direction.

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 Figure 14, page 14.

The rate of feed is pre-set at the factory to its lowest level.

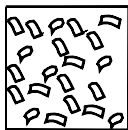
- To increase the feed, turn the feed adjustment handle (at left of base) counterclockwise (Ref. No. 19).
- To decrease, turn clockwise.
- Do not adjust more than one turn at a time.

Proper feed is important; excessive pressure can break the blade or stall the saw. Insufficient pressure dulls the blade rapidly.

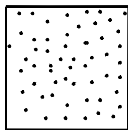
To determine if the feed is incorrect, examine the chips produced. When the blade is operating at the ideal feed for the speed, the chips will be curled and continuous. If the chips are thick and not continuous, the feed pressure should be reduced. If the chips are powdery, the feed pressure needs to be increased (Refer to Figure 10).



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 10 – Determine feed pressure.

HELPFUL CUTTING HINTS

- Never use a new blade to complete a previous started cut.
- When possible, do not start a cut on sharp corners.
- After installing new blade, check tension after a few cuts.
- For correct blade tension, snap your finger against the blade. A slight "ring" will sound if blade tension is correct.
- The harder the material the slower the cutting speed.
- Most blade manufacturers have developed charts and specifications to determine the best blade for cutting various kinds and shapes of materials. Use these as a general rule. The thinner the stock, the finer the tooth pitch. Use the coarsest pitch possible consistent with the above.

NOTE: A minimum of three teeth must contact material at all times.

- Use of cutting oil is recommended at higher blade speeds.

CUTTING FLUIDS

Using a cutting fluid can improve the cutting conditions and keep them more consistent throughout the cut by lubricating the blade, which reduces the friction between it and the workpiece.

CONVERTING FOR VERTICAL USE

Refer to Figures 11, 12 and 13, page 10.

Notching, slitting, contour work may be done with the saw in the vertical position in the following manner.

1. Rotate the head to the vertical position.
2. Remove two 1/4"-20 x 1/2" flat head screws.
3. Remove deflector plate.
4. Place vertical table over guide bracket and secure with two 1/4"-20 x 1/2" flat head screws.
5. Attach one end of support bracket to vertical table with flat head screw and hex nut.
6. Attach the other end of support bracket to head casting using guide lock hex head bolt and washer (see Figure 13).
7. To adjust vertical table height loosen guide lock hex bolt, set table to required height and retighten guide lock hex bolt. Check squareness of blade to table with square.
8. Adjust blade guides as close as possible to workpiece.

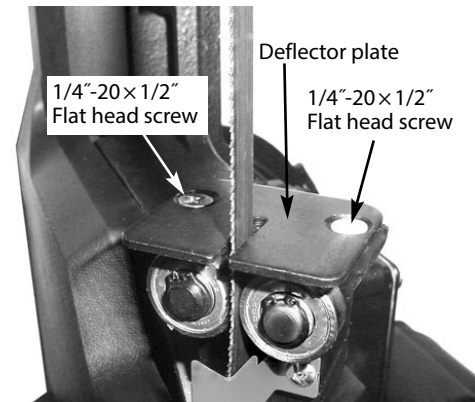


Figure 11 – Removing deflector plate and guide guard.

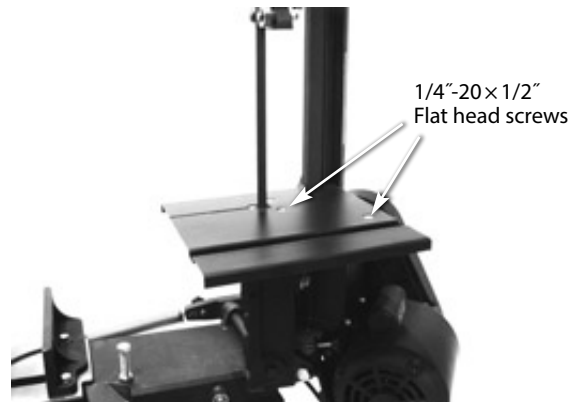


Figure 12 – Installing vertical table.

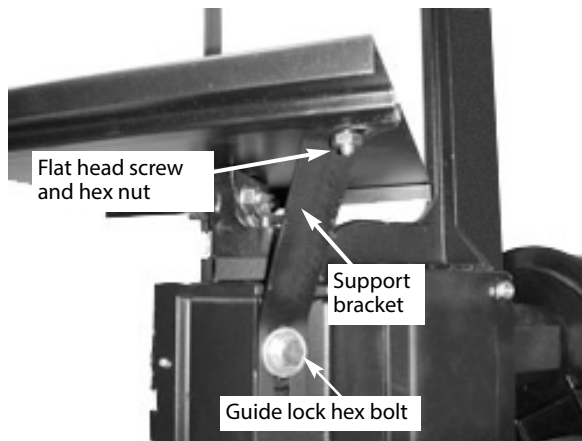
OPERATION (CONTINUED)

Figure 13 – Installing vertical table reinforcing bracket.

MAINTENANCE

Refer to Figure 14 and 15, pages 14 and 16.

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.

WARNING: Any attempt to repair the motor may create a hazard unless repair is done by a qualified service technician.

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.
- Replace dull blades and blades from which teeth have been stripped. A clean saw with a sharp blade will yield the best cut.
- To secure the head to bed for transport, push knob into bed (Figure 14, Ref. No. 26).

LUBRICATION

Refer to Figures 14 and 15, pages 14 and 16.

- 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 and reapply new grease before assembly.
- The drive gears run in an oil bath and will not require a lubricant change more often than once a year, unless the lubricant is accidentally contaminated or a leak occurs because of improper replacement of the gear box cover. During the first few days of operation, the worm gear drive will run hot. Unless the temperature exceeds 200° F, there is no cause for alarm.
- Under normal operation, gearbox oil should be replaced once a year.
- The gearbox is designed to take 6 ounces of Mobil 630 gear oil.
- To replace gearbox oil:
 1. Remove gearbox cover (Figure 15, Ref. No. 30) and drain old oil (there is no oil plug)
 2. Pour 6 ounces of fresh Mobil 630 gear oil in the gearbox.
 3. Install new gasket (Figure 15, Ref. No 29).
 4. Install gearbox cover and fully tighten all bolts.
- The seal between the gearbox and the cover plate is a gasket. If cover plate is removed, the surface should be cleaned and a new gasket should be applied.
- Grease the vise lead screw (Figure 14, Ref. No. 17) if vise action becomes difficult.
- Lubricate the unpainted surfaces with a light application of medium consistency machine oil to prevent corrosion after cleaning.

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Blade cuts (crooked)	1. Work not square 2. Feed pressure too great 3. Guide bearings not adjusted properly 4. Inadequate blade tension 5. Blade guides spaced out too much 6. Dull blade 7. Speed incorrect 8. Blade guide assembly loose 9. Blade guide bearing assembly loose 10. Blade tracks too far away from wheel flanges 11. Guide bearing worn	1. Adjust vise to be square with blade 2. Reduce pressure by increasing spring tension 3. Adjust guide bearings, page 8 4. Increase blade tension a little at a time 5. Move guides as close to work as possible 6. Replace blade 7. Check page 7 for recommended speeds 8. Tighten 9. Tighten 10. Track blade properly according to instructions under Operation, Tracking adjustment, page 7 11. Replace
Bad cuts (rough)	1. Too much speed or feed 2. Blade has too few teeth per inch	1. Reduce speed or feed 2. Replace with finer tooth blade
Blade is twisting Unusual wear on side or back of blade	1. Cut is binding blade 2. Blade guides worn 3. Blade guide bearings not adjusted properly 4. Feed pressure too great	1. Decrease feed pressure 2. Replace 3. Adjust guide bearings (see page 8) 4. Reduce feed pressure
Motor will not start	1. No electrical power to motor 2. Low voltage 3. Defective On/Off switch; defective line cord 4. Open circuit in motor or loose connections 5. Motor protector open (only if your motor is equipped with an overload protector) 6. Burned out motor	1. Check electrical wiring to motor for continuity 2. Check power line for proper voltage 3. Replace defective parts before using band saw again 4. Inspect lead terminals on motor for loose or open connections 5. Reset protector after motor has cooled 6. Any attempt to repair this motor may create a hazard unless repair is done by an authorized qualified technician. Replacement motors are available
Motor will not start; fuses or circuit breakers blow	1. Short circuit in line cord or plug 2. Short circuit in motor or loose connection 3. Incorrect fuses or circuit breakers in power line 4. Motor overloaded	1. Inspect line cord or plug for damaged insulation and shorted wires 2. Inspect all lead terminals on motor for loose or worn insulation on wires 3. Install correct fuses or circuit breakers 4. Reduce load on motor
Motor fails to develop full power (power output of motor decreases rapidly) with decreased voltage at motor terminals	1. Power line overloaded 2. Undersized wires or cords too long 3. General overloading of power company's facilities	1. Reduce the load on the power line 2. Increase wire sizes or reduce length of cords 3. Request a voltage check from the power company
Motor overheats	1. Motor overloaded 2. Air circulation around motor restricted	1. Reduce load on motor 2. Clean motor to provide normal air circulation around motor

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Motor stalls (resulting in blown fuses or tripped circuit breakers)	1. Short circuit in motor; connections loose; or shorted terminals or worn insulation on lead wires 2. Low voltage 3. Incorrect fuses or circuit breakers 4. Motor overloaded	1. Inspect terminals in motor for damaged insulation and shorted wires 2. Correct the low line voltage conditions 3. Install correct fuses or circuit breakers 4. Reduce load on motor
Frequent opening of fuses or circuit breakers	1. Motor overloaded 2. Incorrect fuses or circuit breakers	1. Reduce load on motor 2. Install correct fuses or circuit breakers
Motor problems in general	Various causes	To troubleshoot and service motor consult qualified technician
Teeth ripping from blade	1. Teeth too coarse for work 2. Too heavy feed 3. Too slow speed 4. Vibrating workpiece 5. Gullets loaded	1. Use finer tooth blade 2. Decrease feed pressure 3. Increase speed 4. Clamp work securely 5. Use coarse tooth blade or use brush to remove chips
Motor running too hot	1. Blade tension too high 2. Blade too coarse for work (pipes especially) 3. Blade too fine for work (heavier, soft material) 4. Gears need lubrication	1. Reduce tension on blade 2. Use finer tooth blade 3. Use coarser tooth blade 4. Check oil bath
Excessive blade breakage	1. Material loose in vise 2. Incorrect speed or feed 3. Teeth too coarse for material 4. Incorrect blade tension 5. Teeth in contact with work before saw is started 6. Blade rubs on wheel flange 7. Misaligned guides 8. Blade too thick for wheel diameter	1. Clamp work securely 2. Check Machinist Handbook 3. Check Machinist Handbook for recommended blade type 4. Adjust to where blade does not slip on wheel 5. Place blade in contact with work after motor is started 6. Adjust tracking 7. Adjust guide bearings 8. Use thinner blade
Premature blade dulling	1. Teeth too coarse 2. Too much speed 3. Inadequate feed pressure 4. Hard spots or scale in/on material 5. Work hardening of material (especially stainless steel) 6. Blade installed backwards 7. Insufficient blade tension	1. Use finer tooth blade 2. Try next lower speed 3. Decrease spring pressure 4. Reduce speed, increase feed of saw 5. Increase feed pressure by reducing spring tension 6. Remove blade, twist inside out and reinstall blade 7. Increase tension to proper level

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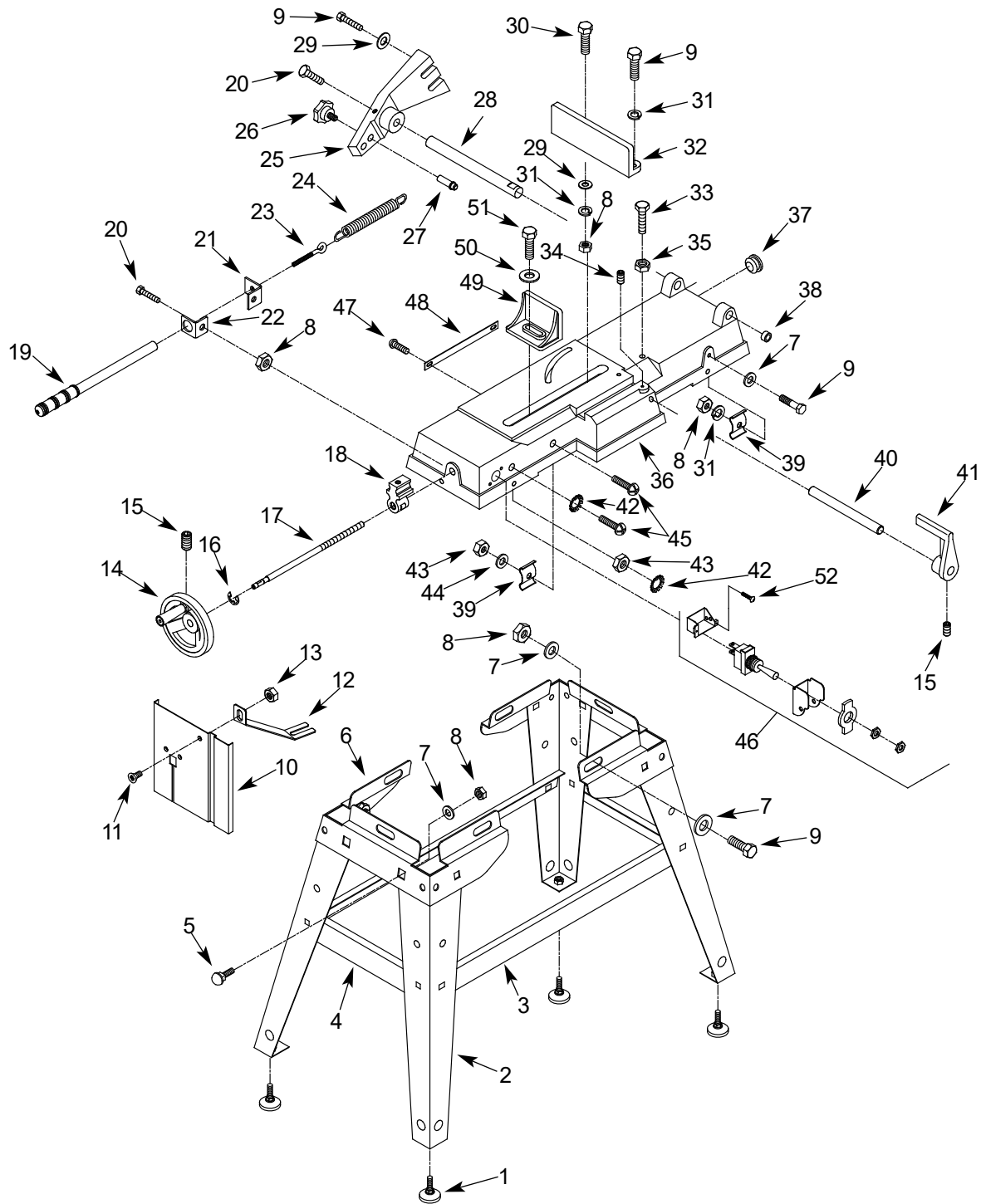


Figure 14 – Repair parts illustration for base and stand

REPLACEMENT PARTS LIST FOR BASE AND STAND

Ref. No.	Description	Part Number	Qty.
1	Foot	962596000	4
2	Leg	962596100	4
3	Long brace	962596200	2
4	Short brace	962596300	2
5	5/16"-18×1/2" Carriage bolt	*	16
6	Flange	962596400	2
7	5/16" Flat washer	*	30
8	5/16"-18 Hex nut	*	25
9	5/16"-18×1" Hex head bolt	*	10
10	Vertical table	962596500	1
11	1/4"-20×1/2" Flat head screw	*	1
12	Support bracket	962596600	1
13	1/4"-20 Hex nut	*	1
14	Handle wheel	962596700	1
15	5/16"-18×5/16" Set screw	*	2
16	3CMI-10 Retaining ring	960143400	1
17	Lead screw	962596800	1
18	Lead nut	962596900	1
19	Feed control handle	962597000	1
20	5/16"-18×3/4" Hex head bolt	*	3
21	Bracket	962597100	1
22	Bracket	962597200	1
23	Eyebolt	962597300	1
24	Spring	962597400	1
25	Pivot bracket	962597500	1
26	Knob	960105700	1
27	Head lock pin	962597600	1
28	Pivot shaft	962597700	1
29	5/16" Flat washer (w)	*	3
30	5/16"-18×1 1/2" Hex head bolt	*	1
31	5/16" Lock washer	*	3
32	Stationary vise jaw	962597900	1
33	7/16"-14×2" Hex head bolt	*	1
34	5/16"-18×1/2" Set screw	*	1
35	7/16"-14 Hex nut	*	1
36	Bed	962598000	1
37	Grommet	962598100	1
38	Spacer	962598200	1
39	Cord clamp	962598300	2
40	workstop rod	962598400	1
41	workstop	962598500	1
42	#10 Serrated washer	*	2
43	#10-24 Hex nut	*	2
44	#10 Flat washer	*	1
45	#10-24×3/4" Pan head screw	*	2
46	Toggle switch assembly	962598900	1
47	#10-24×3/8" Pan head screw	*	2
48	Scale	962599000	1
49	Movable vise jaw	962599100	1
50	3/8" Flat washer	*	1
51	3/8"-16×1 1/4" Hex head bolt	*	1

(Δ) Not shown. (N/A) Not available as repair part. (*) Standard hardware item, available locally.

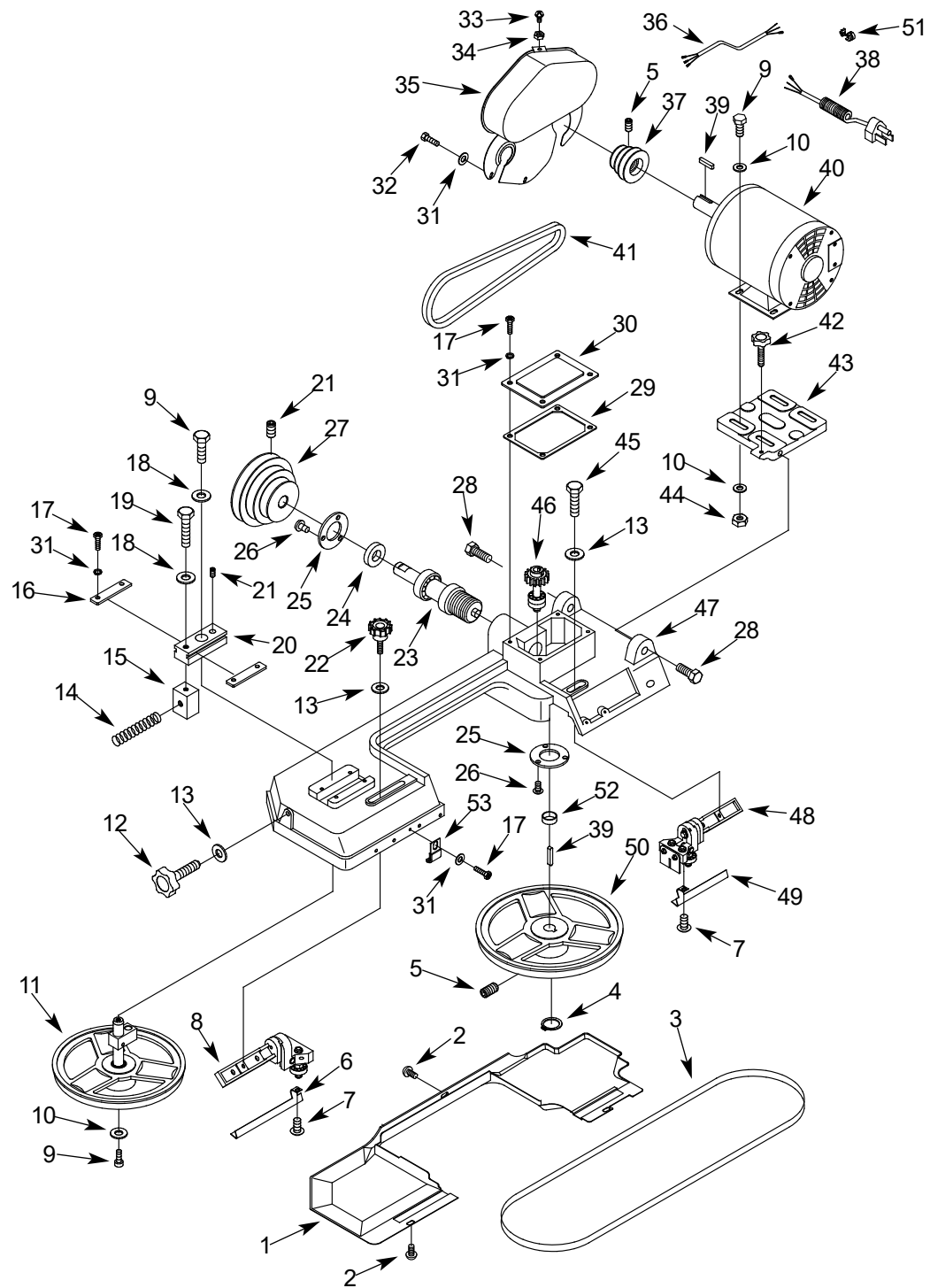


Figure 15 – Repair parts illustration for head

REPLACEMENT PARTS LIST FOR HEAD

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	Blade cover	962592500	1	28	1/2"-12 × 1 1/2" Hex Head Bolt	*	2
2	1/4"-20 × 3/8" Round head screw	*	3	29	Gasket	962594200	1
3	Blade 64 1/2" × 1 1/2" × 14TPI	962592700	1	30	Gear box cover	962594300	1
4	3AMI-15 Retaining ring	960053300	1	31	1/4" Flat washer	*	11
5	5/16"-18 × 3/8" Set screw	*	2	32	1/4"-20 × 3/8" Hex head bolt	*	2
6	Blade guard, left	962592800	1	33	#10-24 × 1/2" Pan head screw	*	1
7	#10-24 × 1/4" Round head screw	*	2	34	#10-24 Hex nut	*	1
8	Blade guide assembly (left)	962592900	1	35	Motor pulley cover assembly	962594400	1
9	5/16"-18 × 3/4" Hex head bolt	*	8	36	Motor cord	962594500	1
10	5/16" Flat washer	*	10	37	Motor pulley	962594600	1
11	Idler wheel assembly	962593000	1	38	Line cord	960006700	1
12	Tension adjustment knob	962593100	1	39	5 × 5 × 25mm Key	960097500	2
13	3/8" Flat washer	*	3	40	Motor	962594800	1
14	Spring	962593200	1	41	V-Belt, A-22	962608400	1
15	Nut	962593300	1	42	Knob	962594900	1
16	Guide plate	962593400	2	43	Motor mount plate	962595000	1
17	1/4"-20 × 5/8" Hex head bolt	*	9	44	5/16"-18 Hex nut	*	4
18	Spacer	962593600	2	45	3/8"-16 × 1 1/4" Hex head bolt	*	1
19	5/16"-18 × 1 1/4" Hex head bolt	*	1	46	Transmission gear assembly	962595100	1
20	Tension block	962593700	1	47	Head	962595200	1
21	5/16"-18 × 3/4" Set screw	*	2	48	Blade guide assembly (right)	962595300	1
22	Knob	960398900	1	49	Blade guard, right	962595400	1
23	Worm gear shaft assembly	962593800	1	50	Drive wheel	962595500	1
24	15 × 35 × 7mm Oil seal	962593900	1	51	Strain relief	962074700	2
25	Bearing cover	962594000	2	52	Spacer	962595600	1
26	#8-32 × 3/8" Flat head screw	*	6	53	Shut off bracket	962595700	1
27	Gear box pulley	962594100	1	Δ	Motor capacitor	962156400	1

(Δ) Not shown. (N/A) Not available as repair part. (*) Standard hardware item, available locally.

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PALMGREN WARRANTY

C.H. Hanson / 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 part (i.e. v-belts, screws, abrasives, jaws), 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 the terms noted below beginning from the date of delivery to the original user.

The Palmgren branded items carry the following warranties on parts:

All arbor presses, vises, clamps, positioning tables, tombstones, jack screws and vise accessories - LIFETIME.

All bench grinders, drill presses, tapping machines, band saws, lathes, milling machines, abrasive finishing machines and work stands - 3 YEARS.

The obligation of C.H. Hanson / 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 inoperable. 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 C.H. Hanson for any inoperable parts in its product. Under no circumstances is C.H. Hanson liable for any direct, indirect, incidental, special or consequential damages including loss of 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.

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Palmgren - a C.H. Hanson Company
2000 N. Aurora Rd., Naperville, IL 60563 U.S.A.
or call 1-800-827-3398