

**CENTRAL MACHINERY**®

# METAL CUTTING BANDSAW

## 7" X 12"

### Model 97009

## SET UP AND OPERATING INSTRUCTIONS



Diagrams within this manual may not be drawn proportionally.  
Due to continuing improvements, actual product may differ slightly from the product described herein.

**Distributed exclusively by Harbor Freight Tools®.**

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Visit our website at: <http://www.harborfreight.com>



**Read this material before using this product.  
Failure to do so can result in serious injury.  
SAVE THIS MANUAL.**

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**For technical questions or replacement parts, please call 1-800-444-3353.**

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## SAVE THIS MANUAL

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Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

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## IMPORTANT SAFETY INFORMATION

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In this manual, on the labeling, and all other information provided with this product:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### **DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.

### **WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.

### **CAUTION**

**CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

### **NOTICE**

**NOTICE** is used to address practices not related to personal injury.

### **CAUTION**

**CAUTION**, without the safety alert symbol, is used to address practices not related to personal injury.

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## GENERAL SAFETY RULES

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### **WARNING! Read all instructions**

**Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury.** The term “power tool” in all of the warnings listed below refers to your line-operated (corded) power tool.

### **SAVE THESE INSTRUCTIONS**





#### 1. **Work area safety**

- a. Keep work area clean and well lit. *Cluttered or dark areas invite accidents.*
- b. Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. *Power tools create sparks which may ignite the dust or fumes.*
- c. Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

#### 2. **Electrical safety**

- a. Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with grounded power tools. *Unmodified plugs and matching outlets will reduce risk of electric shock.*
- b. Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators. *There is an increased risk of electric shock if your body is grounded.*
- c. Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- d. Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- e. When operating a power tool outdoors, use an extension cord suitable for outdoor use. *Use of a cord suitable for outdoor use reduces the risk of electric shock.*

#### 3. **Personal safety**

- a. Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. *A moment of inattention while operating power tools may result in serious personal injury.*
- b.   Use safety equipment. Always wear eye protection. Safety equipment such as dust mask, heavy duty work gloves, or hearing protection used for appropriate conditions will reduce personal injuries.  
 

- c. Avoid accidental starting. Ensure the switch is in the off-position before plugging in.
- d. Remove any adjusting key or wrench before turning the power tool on. *A wrench or a key left attached to a rotating part of the power tool may result in personal injury.*
- e. Do not overreach. Keep proper footing and balance at all times. *This enables better control of the power tool in unexpected situations.*
- f. Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. *Loose clothes, jewelry or long hair can be caught in moving parts.*

#### 4. **Power tool use and care**

- a. Do not force the power tool. Use the correct power tool for your application. *The correct power tool will do the job better and safer at the rate for which it was designed.*
- b. Do not use the power tool if the switch does not turn it on and off. *Any power tool that cannot be controlled with the switch is dangerous and must be repaired.*
- c. Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- d. Store idle power tools out of the reach of children and do not allow people unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- e. Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. *Many accidents are caused by poorly maintained power tools.*
- f. Keep cutting tools sharp and clean. *Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.*
- g. Use the power tool and accessories in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed. *Use of the power tool for operations different from those intended could result in a hazardous situation.*

#### 5. **Service**

- a. Have your power tool serviced by a qualified repair person using only identical replacement parts. *This will ensure that the safety of the power tool is maintained.*

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## SPECIFIC SAFETY RULES

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1. Maintain labels and nameplates on the tool. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
2. Make sure the Bandsaw is located on a flat, level, sturdy surface capable of supporting the weight of the tool, accessories, and workpieces. Always “chock” the Wheels to prevent the Bandsaw from accidentally moving.
3. Make sure the Table of the Bandsaw and surrounding area are clear with the exception of the workpiece to be cut.
4. Before using the Bandsaw, check to make sure the Saw Blade is properly mounted and in good condition.
5. Never stand on the Bandsaw. Serious injury could result if the Bandsaw is tipped or if the rotating Saw Blade is accidentally contacted.
6. Never attempt to cut more than one workpiece at a time.
7. When cutting a large workpiece, make sure its entire length is properly supported. If necessary, use a roller stand (not included).
8. Do not lean on the Bandsaw when the tool is in its upright position.
9. When moving the Bandsaw, always have its Head lowered to its horizontal position.
10. Allow the Saw Blade to rotate to full speed before feeding the Blade into a workpiece. When turning off the Bandsaw, allow the Saw Blade to spin down and stop on its own. Do not press against the Saw Blade to stop it.
11. To avoid injury, always wear ANSI-approved safety goggles and heavy duty work gloves when changing the Saw Blade.
12. The Saw Blade becomes hot while cutting. Allow the Blade to completely cool before handling.
13. Do not force the Saw Blade into the workpiece when cutting. Apply moderate pressure, allowing the Blade to cut without being forced.
14. Turn off the Bandsaw and allow the Saw Blade to completely stop if the Blade is to be backed out of an incomplete cut.
15. Never attempt to remove material stuck in the moving parts of the Bandsaw while it is plugged in and running.
16. Keep all safety guards in place and in proper working order.
17. Always adjust and position the Blade Guide Arm before starting the cut.

18. When cutting magnesium, use soluble oils or emulsions (oil/water mix) as water only will greatly intensify any accidental magnesium chip fire. See your industrial coolant supplier for specific coolant recommendations when cutting magnesium.
19. Avoid unintentional starting. Prepare to begin work before turning on the tool.
20. Do not leave the tool unattended when it is plugged into an electrical outlet. Turn off the tool, and unplug it from its electrical outlet before leaving.
21. Use the Vise or other practical ways to secure and support the workpiece to the Support Plate. Holding the work by hand or against your body is unstable and may lead to loss of control, and personal injury.
22. This product is not a toy. Keep it out of reach of children.
23. The brass components of this product contain lead, a chemical known to the State of California to cause birth defects (or other reproductive harm). *California Health & Safety Code 25249.5, et seq.*
24. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure. In addition, people with pacemakers should:
  - Avoid operating alone.
  - Do not use with power switch locked on.
  - Properly maintain and inspect to avoid electrical shock.
  - Any power cord must be properly grounded. Ground Fault Circuit Interrupter (GFCI) should also be implemented – it prevents sustained electrical shock.
25. Some dust created by power sanding, sawing, grinding, drilling, and other construction activities, contains 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 or other masonry products
  - Arsenic and chromium from chemically treated lumberYour 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, such as those dust masks that are specially designed to filter out microscopic particles. (*California Health & Safety Code § 25249.5, et seq.*)
26. The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.



**SAVE THESE INSTRUCTIONS.**

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## GROUNDING

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### **⚠️ WARNING**

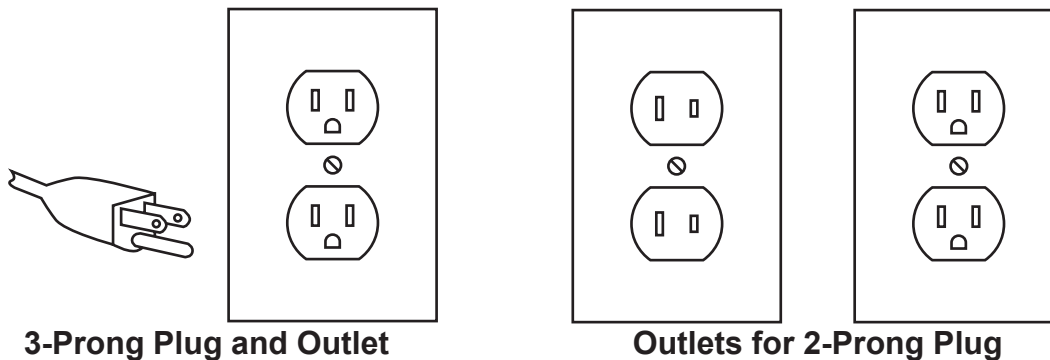
Improperly connecting the grounding wire can result in electric shock.



Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. Do not modify the power cord plug provided with the tool. Never remove the grounding prong from the plug. Do not use the tool if the power cord or plug is damaged. If damaged, have it repaired by a service facility before use. If the plug will not fit the outlet, have a proper outlet installed by a qualified electrician.

### **Grounded Tools: Tools with Three Prong Plugs**

1. Tools marked with “Grounding Required” have a three wire cord and three prong grounding plug. The plug must be connected to a properly grounded outlet. If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user, reducing the risk of electric shock. **(See 3-Prong Plug and Outlet.)**
2. The grounding prong in the plug is connected through the green wire inside the cord to the grounding system in the tool. The green wire in the cord must be the only wire connected to the tool’s grounding system and must never be attached to an electrically “live” terminal. **(See 3-Prong Plug and Outlet.)**
3. The tool must be plugged into an appropriate outlet, properly installed and grounded in accordance with all codes and ordinances. The plug and outlet should look like those in the following illustration. **(See 3-Prong Plug and Outlet.)**





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## **Double Insulated Tools: Tools with Two Prong Plugs**

1. Tools marked “Double Insulated” do not require grounding. They have a special double insulation system which satisfies OSHA requirements and complies with the applicable standards of Underwriters Laboratories, Inc., the Canadian Standard Association, and the National Electrical Code.  
**(See Outlets for 2-Prong Plug.)**
2. Double insulated tools may be used in either of the 120 volt outlets shown in the preceding illustration. **(See Outlets for 2-Prong Plug.)**

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## **EXTENSION CORDS**




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1. **Grounded** tools require a three wire extension cord. **Double Insulated** tools can use either a two or three wire extension cord.
2. As the distance from the supply outlet increases, you must use a heavier gauge extension cord. Using extension cords with inadequately sized wire causes a serious drop in voltage, resulting in loss of power and possible tool damage.  
**(See Table A.)**
3. The smaller the gauge number of the wire, the greater the capacity of the cord. For example, a 14 gauge cord can carry a higher current than a 16 gauge cord.  
**(See Table A.)**
4. When using more than one extension cord to make up the total length, make sure each cord contains at least the minimum wire size required. **(See Table A.)**
5. If you are using one extension cord for more than one tool, add the nameplate amperes and use the sum to determine the required minimum cord size.  
**(See Table A.)**
6. If you are using an extension cord outdoors, make sure it is marked with the suffix “W-A” (“W” in Canada) to indicate it is acceptable for outdoor use.
7. Make sure the extension cord is properly wired and in good electrical condition. Always replace a damaged extension cord or have it repaired by a qualified electrician before using it.
8. Protect the extension cords from sharp objects, excessive heat, and damp or wet areas.

| RECOMMENDED MINIMUM WIRE GAUGE FOR EXTENSION CORDS* (120/240 VOLT) |                       |         |         |          |          |
|--|-----------------------|---------|---------|----------|----------|
| NAMEPLATE<br>AMPERES<br>(at full load)                             | EXTENSION CORD LENGTH |         |         |          |          |
|  | 25 Feet               | 50 Feet | 75 Feet | 100 Feet | 150 Feet |
| 0 – 2.0  | 18                    | 18      | 18      | 18       | 16       |
| 2.1 – 3.4  | 18                    | 18      | 18      | 16       | 14       |
| 3.5 – 5.0  | 18                    | 18      | 16      | 14       | 12       |
| 5.1 – 7.0  | 18                    | 16      | 14      | 12       | 12       |
| 7.1 – 12.0   | 18                    | 14      | 12      | 10       | -        |
| 12.1 – 16.0  | 14                    | 12      | 10      | -        | -        |
| 16.1 – 20.0  | 12                    | 10      | -       | -        | -        |

**TABLE A** \* Based on limiting the line voltage drop to five volts at 150% of the rated amperes.

### SYMBOLOLOGY

|   |                                 |                 |                                      |
|---|---------------------------------|-----------------|--------------------------------------|
|    | Double Insulated                | $V\sim$         | Volts Alternating Current            |
|   | Canadian Standards Association  | <b>A</b>        | Amperes                              |
|  | Underwriters Laboratories, Inc. | $n_0$ xxxx/min. | No Load Revolutions per Minute (RPM) |

### SPECIFICATIONS

|                                   |  |
|-----------------------------------|--|
| Electrical Requirements           | 120 V~ / 60 Hz / 16 Amps<br>1 HP Single Phase Motor / 1720 RPM<br>Power Switch Type: Toggle<br>Circuit Breaker: 18 Amps (Resettable)<br>Power Cord Type: 14 AWG x 3C<br>Plug Type: 120 Volt / 3-Prong / Grounded |
| Stock Capacity at 90°             | 7" (Round) / 7" x 12" (Rectangle)  |
| Blade Speeds<br>(Feet Per Minute) | 90 FPM / 135 FPM / 195 FPM / 255 FPM   |
| Blade Size<br>Teeth Per Inch      | 0.75" x 0.031" x 93" (Carbon Steel Blade)<br>6 TPI   |
| Belt Type                         | 3V-270   |
| Miter Slot Width / Depth          | 11/16" Wide / 9/16" Deep   |
| Hydraulic Ram Travel              | 5-5/8"   |
| Base Mounting Holes               | 3/8" Diameter (Qty. 4)   |
| Wheel Dimensions                  | 5" Diameter x 1" Wide  |

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## UNPACKING

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When unpacking, check to make sure that the item is intact and undamaged. If any parts are missing or broken, please call Harbor Freight Tools at the number shown on the cover of this manual as soon as possible.

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## SET UP INSTRUCTIONS

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Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

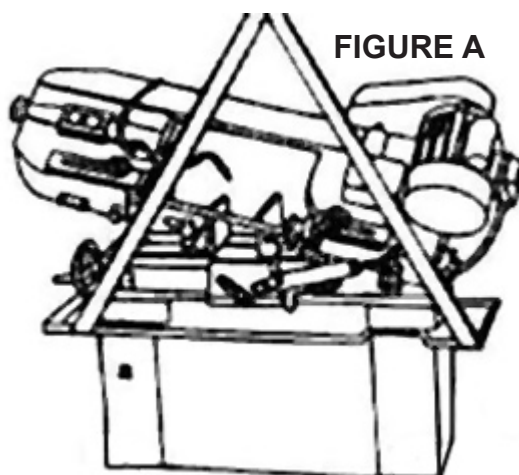
### **WARNING**

Risk of accidental starting; resulting in serious personal injury. Turn the Power Switch of the tool to its "OFF" position and unplug the tool from its electrical outlet before assembling or making any adjustments to the tool.

**Note:** For additional information regarding the parts listed in the following pages, refer to the Assembly Diagrams near the end of this manual.

### Assembly

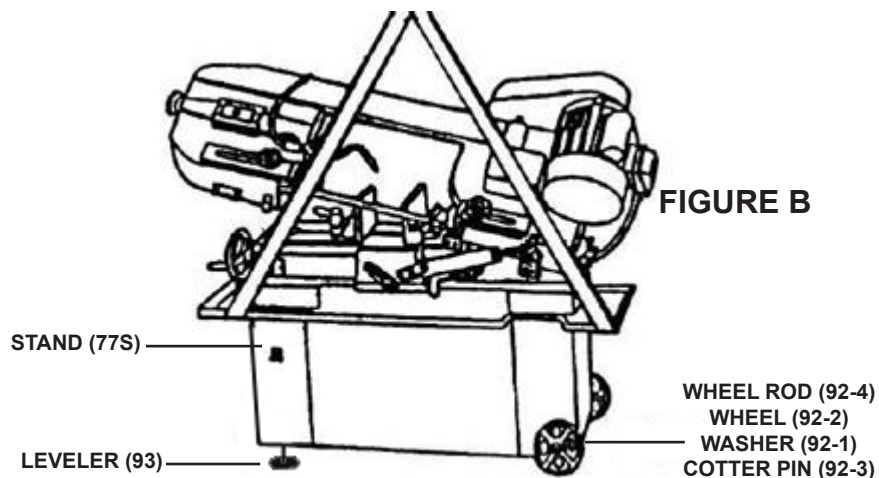
1. **NOTE:** To assemble and locate the Bandsaw will require additional assistance and a proper lifting device.
2. After the Bandsaw and its accessories are unpacked, make sure its Head is lowered to its horizontal position. (See Figure A.)
3. With a proper lifting device, raise the Bandsaw approximately six inches off the floor surface. (See Figure A.)



4. Once the Bandsaw is lifted, insert the Wheel Rod (92-4) through the two holes located at the bottom/right side of the Stand (77S). Slide one Wheel (92-2) on each end of the Wheel Rod. Place one Washer (92-1) on each end of the Wheel

Rod. Insert one Cotter Pin (92-3) through the hole in each end of the Wheel Rod. Make sure to bend the Cotter Pins to secure the Wheels in place. (See Figure B.)

5. Screw in the two Levelers (93) into the two threaded mounting holes located underneath the bottom/left side of the Stand (77S). (See Figure B.)
6. Carefully lower the Bandsaw to the floor surface. Then turn the two Levelers (93) clockwise or counterclockwise to properly level the Stand (77S). (See Figure B.)
7. Attach the Hand Rod (98-1) to the Stand Assembly (77S) using Screw (98-2), washer (98-3) and Hex Nut (98-4). See Diagram on page 39.



8. **NOTE:** The Bandsaw is factory pre-wired to operate on a **grounded, 120 volt** system. However, if rewired, the Bandsaw is also designed to operate on a **grounded, 240 volt** system. For information about how to switch the electrical system from 120 volt to 240 volt, refer to the **“Electrical Schematics”** toward the end of this manual. **WARNING! Only a qualified electrician should attempt to rewire the Bandsaw.**

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## OPERATING INSTRUCTIONS

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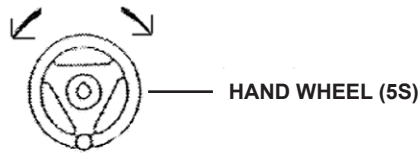
Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

**Caution:** Even though the unit is equipped with wheels and a carrying handle, always seek help when wheeling the unit around the shop.

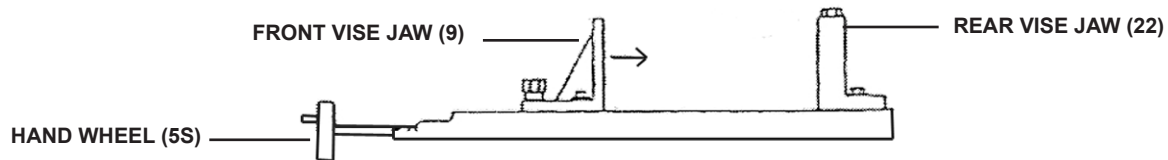
### TO USE THE QUICK VISE

1. Place the workpiece between the Vise Jaws (9, 22) with the amount to be cut off extending out past the Saw Blade (251). (See Figure C, next page.)
2. The Bandsaw is equipped with a quick action Vise Jaw mechanism which allows you to instantly position the moveable Front Vise Jaw (9). (See Figure C.)

- To operate, turn the Hand Wheel (5S) counterclockwise 1/2 turn and move the Front Vise Jaw (9) to the desired position. Then tighten the Front Vise Jaw against the workpiece by turning the Hand Wheel clockwise. (See Figure C.)



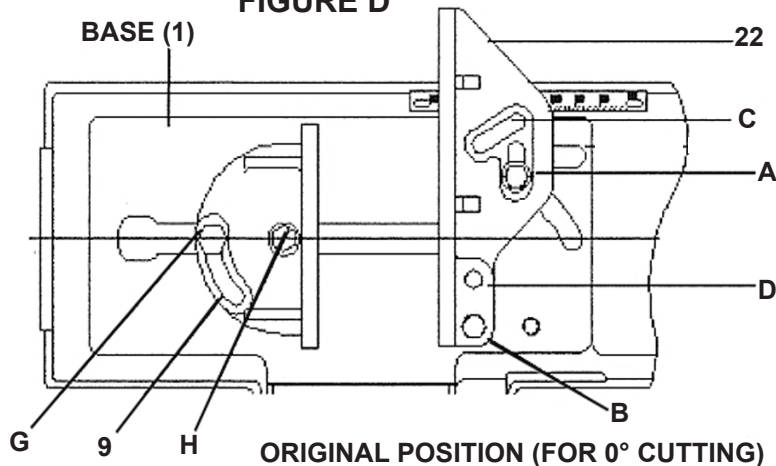
**FIGURE C**



- Setting up the Quick Vise for a straight (0°) cut:**

- Loosen the Screws (H) and (G) of Front Vise Jaw (F).
- Turn the Hand Wheel (5S) counterclockwise by half a turn and slide back the Front Vise Jaw (9).
- Loosen Screw (A and B) and note that Screw (A) should be in the slot which is parallel with the Rear Vise Jaw.
- Rear Vise Jaw at the scale side should be aligned with the zero (0) on the rule. Tighten Screws (A and B). (See Figure D.)

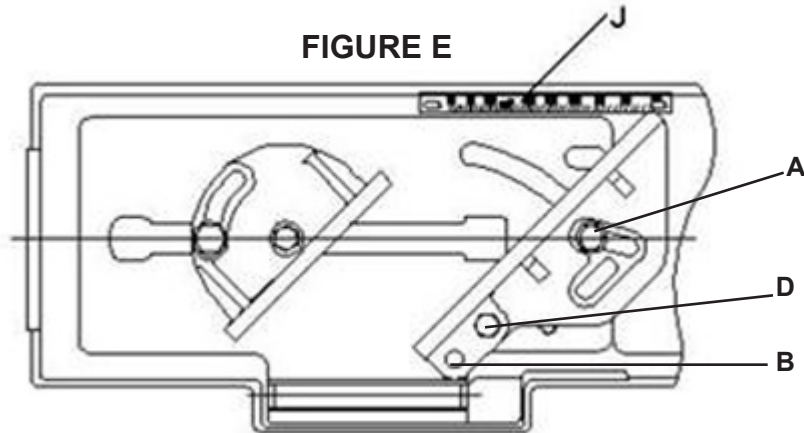
**FIGURE D**



**Note:** Make sure "C" slot is free of casting flush so the vise can be positioned in all angles.

- Setting up the Quick Vise an angle:**

- Remove Screws (A and B) from base of the Rear Vise Jaw (22).
- Position (D) over (B) and attach the Screw and Washer (19 and 22) and attach Screw (B).
- Attach Carriage Screw (17) onto Slot (C) through the curved slot in the Base (1).
- Align edge of the Rear Vise Jaw with the indexing rule and tighten Screws at (B and C). (See Figure E.)



THE POSITION FOR AN ANGLE (90°) CUT.

6. **Setting up the Quick Vise for cutting a 12" workpiece:**

- Remove both fasteners from the Rear Vise Jaw (22).
- Position (B) over the outer threaded hole on the Base (1).
- Position Slot (A) over the small rectangular opening across the Base (1).
- Attach Screws (A and B). Align the lower edge of the Rear Vise Jaw (22) with the "0" index mark adjacent to the 16° degree setting. Tighten the screws. (See Figure F)

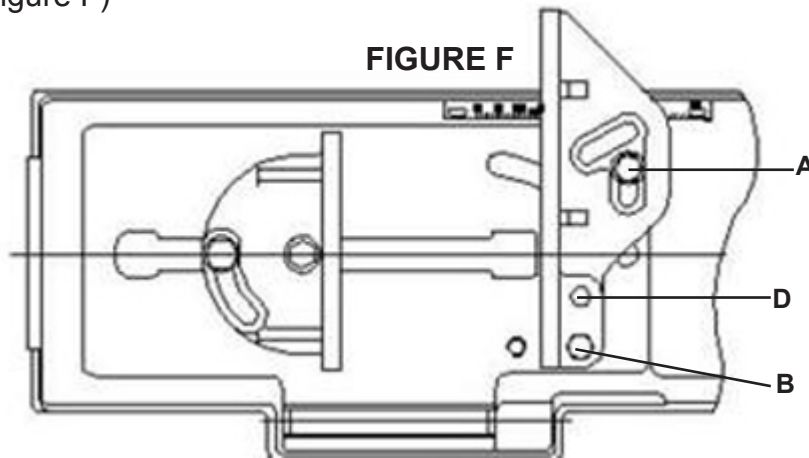
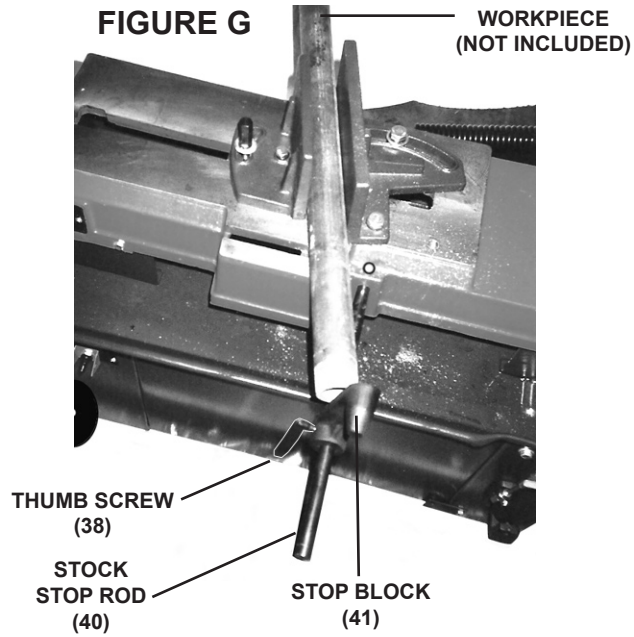


FIGURE F

**TO ADJUST THE STOP BLOCK**

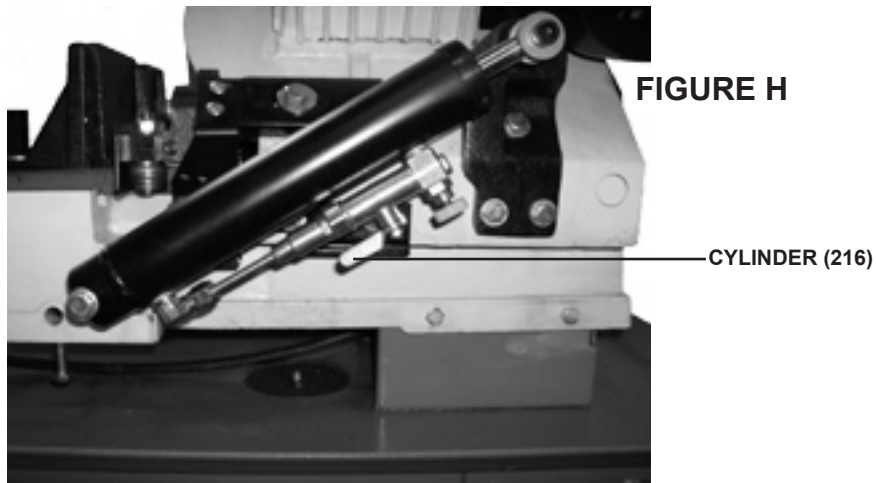
For repeated cuts of pre-set lengths

1. Loosen the Thumb Screw (38) that holds the Stop Block (41) to the Stock Stop Rod (40). **(See Figure G)**
2. Adjust the Stop Block (41) to the desired length position. Then re-tighten the Thumb Screw (38). **(See Figure G)**

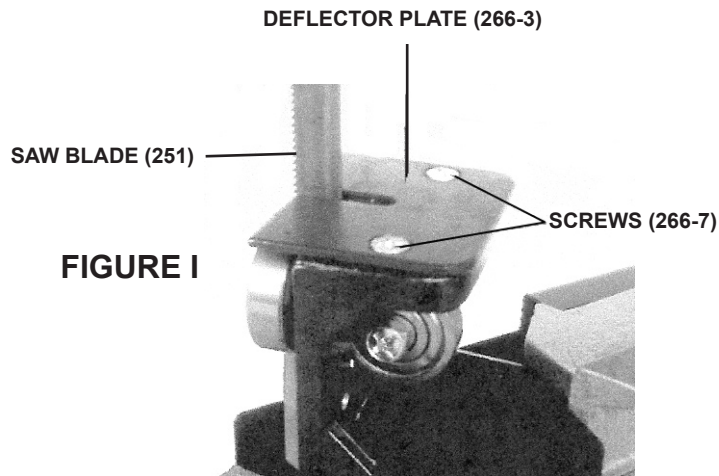


## TO CONVERT THE BANDSAW FOR VERTICAL USE

1. **NOTE:** Notching, slitting, and contour work is best done with the Bandsaw in its vertical position.
2. Raise the Saw Head to its full vertical position, making sure it locks into position by turning the Cylinder's (216) on/off valve to its "OFF" position (the spoke to be positioned cross the cylinder). (**See Figure H.**)

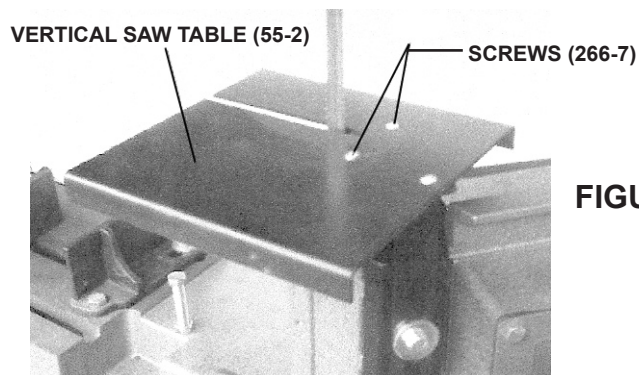


- Remove the two Screws (266-7), and remove the Deflector Plate (266-3).  
(See Figure I.)



**FIGURE I**

- Guide the Saw Blade (251) through the slot in the Vertical Saw Table (55-2), and secure it in position with the two Screws (266-7).  
(See Figure J.)



**FIGURE J**

### TO ADJUST THE BLADE SPEED

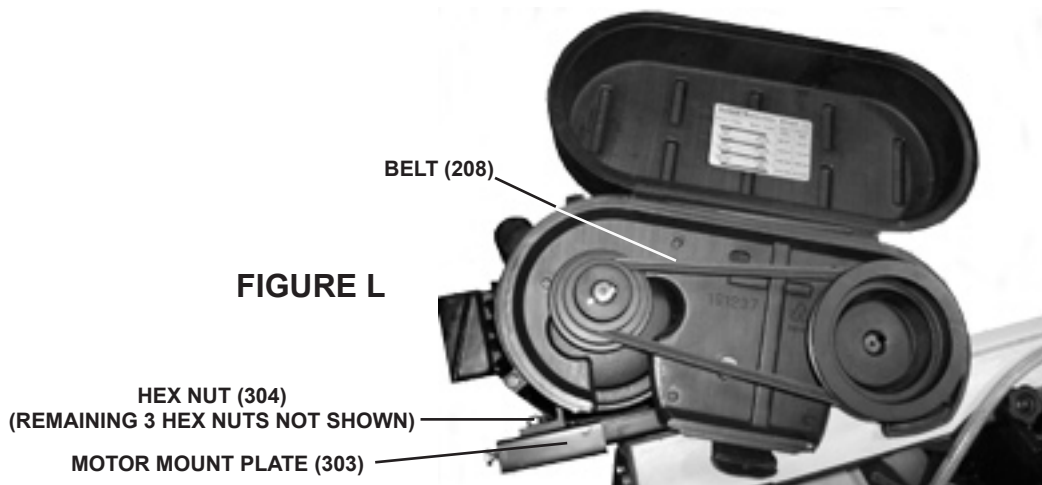
- When using the Bandsaw, always change the Saw Blade (251) speed to best suit the material being cut. The illustration below shows several settings for several types of materials. (See Figure K.)

| Material   | Speed<br>(Feet Per Minute) | Belt Groove Used |            |
|--|----------------------------|------------------|------------|
|  |                            | Motor Pulley     | Saw Pulley |
| Stainless Alloy Steels<br>Bearing Bronze             | 90 FPM                     | Small            | Largest    |
| Medium to High Carbon Steels<br>Hard Brass or Bronze | 135 FPM                    | Medium           | Large      |
| Low to Medium Carbon Steel<br>Soft Brass             | 195 FPM                    | Large            | Medium     |
| Aluminum<br>Plastic                                  | 255 FPM                    | Largest          | Small      |

**FIGURE K**



- To adjust the Saw Blade (251) speed, loosen the two Hex Nuts (304) and Hex Screws (307-2). Slide the Motor (300) forward to release tension on the Belt (208). (See Figure L.)



- Remove the Belt (208) from its two Pulleys (206, 296). Place the Belt onto the two Pulleys according to the Saw Blade (251) speed desired. Then move the Motor (300) back to its original position and secure in place by tightening the previously loosened two nuts and two screws. (See Figures L and M.)

| Saw Pulley | Motor Pulley | Speed<br>(Feet Per Minute) |
|------------|--------------|----------------------------|
|            |              | 90 FPM                     |
|            |              | 135 FPM                    |
|            |              | 195 FPM                    |
|            |              | 255 FPM                    |

**FIGURE M**

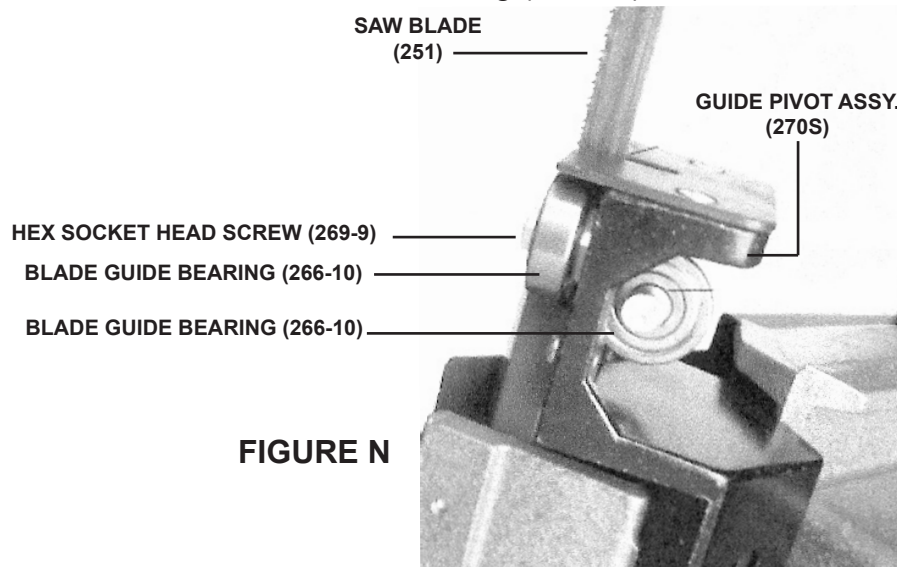
- Verify belt tension by pressing the belt between the pulleys. Deflection should be about 3.8". In time, the belt will stretch and lose its tension. Loosen the Hex Nut (302) and back off the Belt Tension Limiter Bolt (301). Turn the Belt Tension Limiter Bolt (301) against the Motor Mount Bracket (307) and tighten the Hex Nut (302).

### TO ADJUST THE BLADE GUIDE BEARINGS

- IMPORTANT:** Blade Guide Bearings (266-10) adjustment is a critical factor in the performance of the Bandsaw. It is always best to try a new Saw Blade (251) to see if it will correct poor cutting quality before attempting to adjust the Blade Guide Bearings. For example, if a Saw Blade becomes dull on one side sooner

than the other, it will begin cutting crooked. A Saw Blade replacement will correct this problem, whereas Blade Guide Bearings adjustment will not.

2. If a new Saw Blade (251) does not correct the problem, check the clearance between the Saw Blade and Blade Guide Bearings (266-10) to obtain proper clearance. **NOTE:** There should only be a maximum of 0.001 clearance between the Saw Blade and Blade Guide Bearing. To obtain this clearance, adjust as follows:
  - The Blade Guide Bearings (266-10) are mounted to the Guide Pivot Assemblies (270S) and can be adjusted. **(See Figure N.)**
  - Loosen the Hex Socket Head Screw (269-9) while holding the Guide Pivot Assembly (270S) with an allen wrench (not included). **(See Figure N.)**
  - Position the Guide Pivot Assembly (270S) by turning it to the desired position of clearance. Then re-tighten the Hex Head Socket Screw (269-9). **(See Figure N.)**
  - Adjust the second Blade Guide Bearing (266-10) in the same manner.

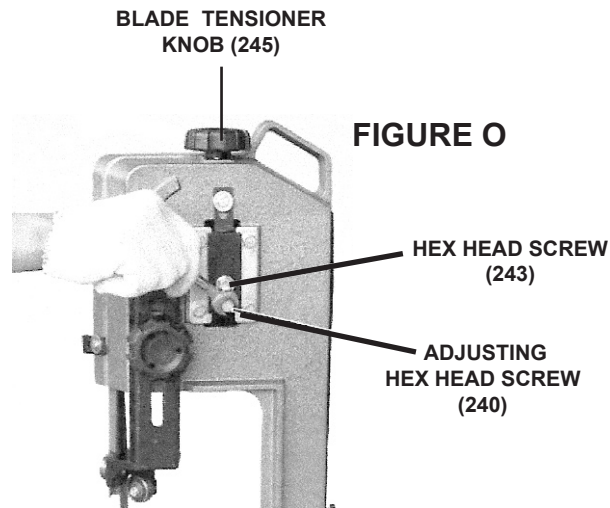


**FIGURE N**

### **TO ADJUST THE BLADE TRACKING**

1. Raise the Bandsaw to its full vertical position, making sure it locks in position by turning the Cylinder (216) to its "OFF" position. **(See Figure H.)**
2. Turn on the Bandsaw. The Saw Blade (251) is tracking properly when the back of the Blade is just touching the edge of the Idler Wheel (250-1) flange. The back of the Blade should not be rubbing against the flange. **(See Figure O, next page.)**
3. If adjustment is necessary, the Blade Guide Bearings (266-10) should be clear of the Saw Blade (251). **(See Figure N.)**
4. Loosen the upper Hex Head Screw (243) to a point where it is just barely snug. **(See Figure O, next page.)**

5. With the Bandsaw running, turn the Adjusting Hex Head Screw (240) until the Saw Blade (251) is tracking properly, making sure Blade tension is maintained by turning the Adjustable Blade Knob (245) clockwise. **(See Figure O.)**
6. Make sure to retighten the upper Hex Head Screw (243) when adjustment is complete. **(See Figure O.)**



### TO ADJUST THE BLADE TENSION

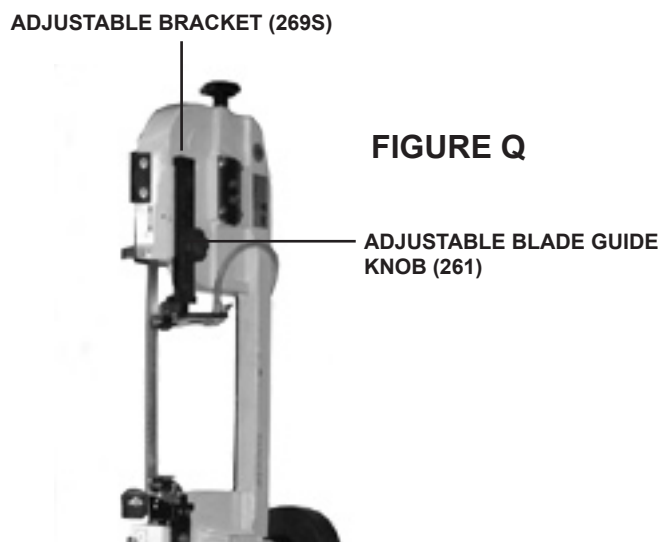
1. Turn the Blade Tensioner Knob (245) clockwise to increase tension on the Saw Blade (251). Turn the Knob counterclockwise to decrease tension on the Saw Blade. Correct tension is acquired when the Saw Blade does not slip on the Drive and Idler wheels (231S and 250-1). **(See Figure O.)**
2. **NOTE:** When the Bandsaw is not in use over long periods of time, release the tension on the Saw Blade (251).

### TO ADJUST THE FEED RATE

**Note:** Feed rate is adjusted by the Bleed Valve above on/off valve of the cylinder. Turning the wheel clockwise slows down the arm's movement.

## TO ADJUST THE BLADE GUIDE BRACKETS

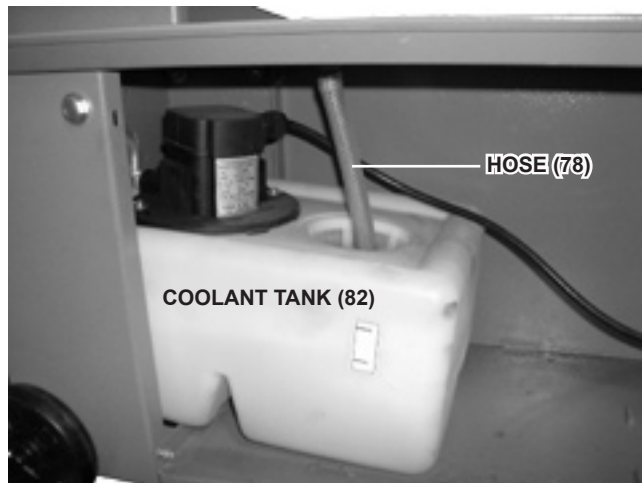
1. The Adjustable Blade Guide Knob (261) is adjusted by loosening the Knob and sliding the Adjustable Bracket (269S) up or down to accommodate the width of the workpiece. **(See Figure Q.)**
2. The Adjustable Bracket (269S) should be set as close as possible to the workpiece, without interfering with the workpiece. **(See Figure Q.)**
3. Once the adjustment is made, make sure to retighten the Adjustable Blade Guide Knob (261). **(See Figure Q.)**



## TO FILL THE COOLANT TANK

1. **NOTE:** When cutting magnesium, use soluble oils or emulsions (oil/water mix) as water only will greatly intensify any accidental magnesium chip fire. See your industrial coolant supplier for specific coolant recommendations when cutting magnesium.
2. Remove the Hose (78) at the top of the Coolant Tank (82). Then slide the Coolant Tank out from under the Stand (77S) of the Bandsaw. **(See Figure R.)**
3. Fill the Coolant Tank to about 80% capacity with a clean, water-soluble coolant (not included). **(See Figure R.)**
4. Slide the Coolant Tank (82) back under the Stand (77S) of the Bandsaw. Then re-insert the Hose (78) through the top of the Coolant Tank. **(See Figure R.)**
5. **IMPORTANT:** The water-soluble coolant should be replaced as often as is necessary to keep metal debris in the coolant from clogging the hoses.

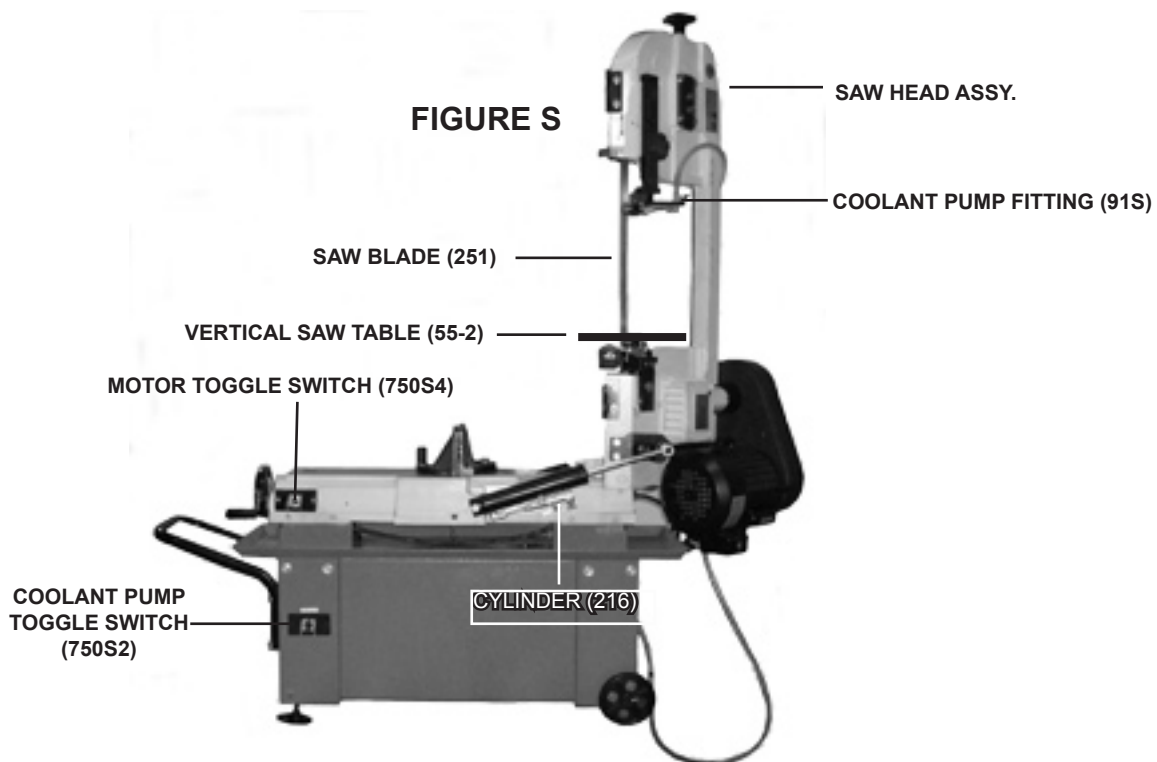
**FIGURE R**



## **BASIC BANDSAW OPERATION - VERTICAL POSITION**

1. **WARNING!**
  - Always wear ANSI-approved safety impact eye goggles when operating the Bandsaw. Never wear loose fitting clothin.
  - When operating the machine, keep the Bandsaw Blade enclosure closed.
  - Do not plug the Power Cord into an electrical outlet until all necessary adjustments (as previously discussed in this manual) have been made.
  - Cut only flat workpieces when the Bandsaw is in its vertical position. Never attempt to cut pipes or other round objects with the Bandsaw in its vertical position.
  - Before cutting, turn on the Bandsaw and check for excessively loose Saw Blade (251) tension or machine vibration. If this is found, turn off the Bandsaw and correct the problem before using.
  - Always keep hands and fingers safely away from the cutting area.
2. Raise the Saw Head Assembly to its full vertical position, making sure it locks in place by turning the Cylinder (216) to its “OFF” position. (See Figure S.)
3. Check to make sure the Motor Toggle Switch (750S4) and Coolant Pump Toggle Switch (750S2) are both in their “OFF” positions. (See Figure S.)
4. Plug the Power Cable (500) into the nearest **120 volt, grounded, electrical outlet**. **NOTE:** If the Bandsaw has been re-wired to operate on a 240 volt system then plug the Power Cord into the nearest 240 volt, grounded, electrical outlet.

5. Turn the Coolant Pump Fitting (91S) to its **“OPEN”** position. Then turn the Coolant Pump Toggle Switch (750S2) to its **“ON”** position. **(See Figure S.)**
6. Turn the Motor Toggle Switch (750S4) to its **“ON”** position. **(See Figure S.)**
7. Set the workpiece on the Vertical Saw Table (55-2), making sure to keep downward pressure on the workpiece throughout the cutting process. **(See Figure S.)**
8. When cutting a large workpiece, make sure its entire length is properly supported. If necessary, use a roller stand (not included) with a large workpiece.
9. Allow the Saw Blade (251) to turn up to full speed before feeding the workpiece into the Blade. **(See Figure S.)**
10. Feed the workpiece into the Saw Blade (251) gradually. Do not force the Bandsaw to remove material faster than it is designed to cut. **(See Figure S.)**

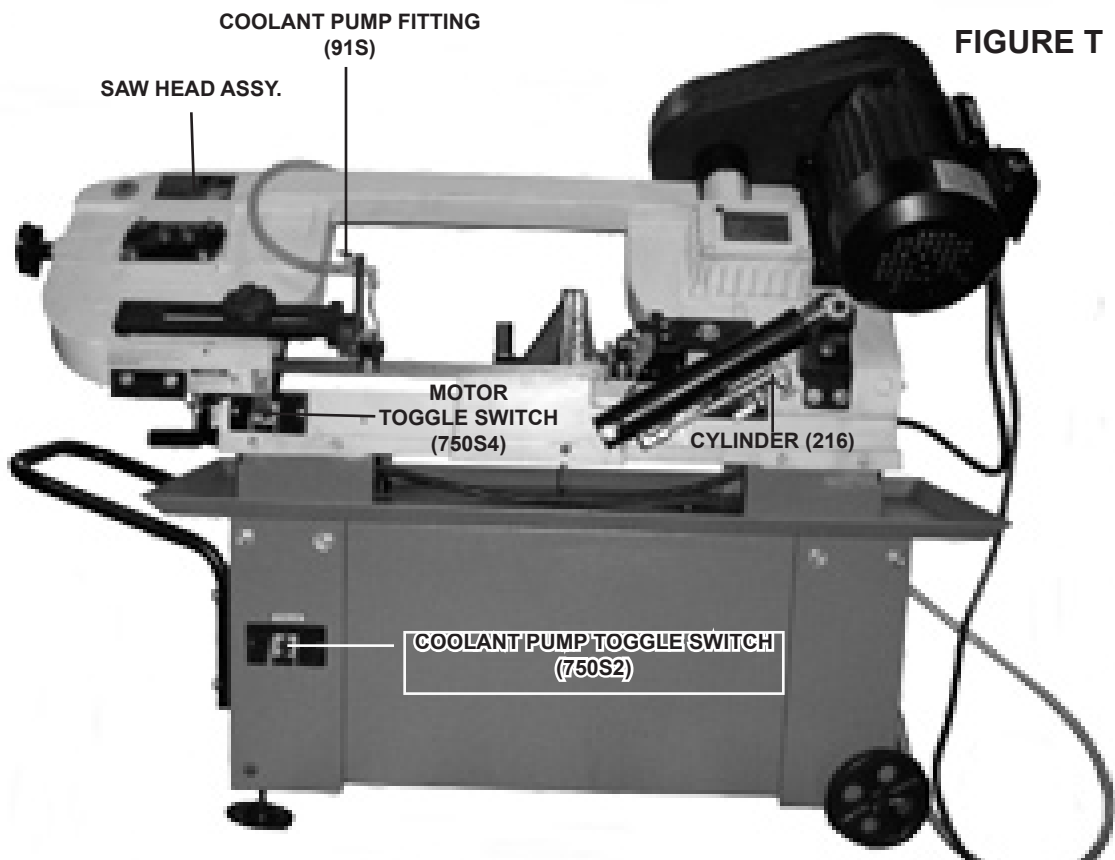


11. Never attempt to remove material stuck in the moving parts of the Bandsaw while it is plugged in and running. Turn off the Bandsaw if the workpiece is to be backed out of an uncompleted cut.
12. Once the cut is made, turn the Motor Toggle Switch (750S4) to its **“OFF”** position. Turn the Coolant Pump Toggle Switch (750S2) to its **“OFF”** position. Turn the Coolant Pump Fitting (91S) to its **“CLOSED”** position. The unplug the Power Cord (500) from its electrical outlet. **(See Figure S.)**
13. Wait until the Saw Blade (251) comes to a complete stop. Then remove the workpiece and scrap material from the Vertical Saw Table (55-2). **(See Figure S.)**
14. Turn the Cylinder (216) to its **“ON”** position. Slowly lower the Saw Head Assembly to its horizontal position. Then turn the Cylinder to its **“OFF”** position to lock the Saw Head Assembly in place. **(See Figure S.)**

## **BASIC BANDSAW OPERATION - HORIZONTAL POSITION**

1. **WARNING!**
  - **Always wear ANSI-approved safety impact eye goggles when operating the Bandsaw.**
  - **When operating the machine, keep the Bandsaw Blade enclosure closed.**
  - **Do not plug the Power Cord into an electrical outlet until all necessary adjustments (as previously discussed in this manual) have been made.**
  - **Before cutting, turn on the Bandsaw and check for excessively loose Saw Blade (251) tension or machine vibration. If this is found, turn off the Bandsaw and correct the problem before using.**
  - **Always keep hands and fingers safely away from the cutting area.**
2. Turn the Cylinder (216) to its **“ON”** position, and raise the Saw Head to its full vertical position. Then turn the Cylinder to its **“OFF”** position to lock the Saw Head in place. **(See Figure T, next page.)**
3. Secure the workpiece in the Vise (9, 22) assembly. When cutting a large workpiece, make sure its entire length is properly supported. If necessary, use a roller stand (not included) with a large workpiece. **(See Figure T, next page.)**
4. If cutting several workpieces at the same length, you may wish to adjust the Stop Block (41) to the desired position. **(See Figure T, next page.)**
5. Check to make sure the Motor Toggle Switch (750S4) and Coolant Pump Toggle Switch (750S2) are both in their **“OFF”** positions. **(See Figure T, next page.)**

6. Plug the Power Cable (500) into the nearest **120 volt, grounded, electrical outlet**. **NOTE:** If the Bandsaw has been re-wired to operate on a 240 volt system then plug the Power Cord into the nearest 240 volt, grounded, electrical outlet.
7. Turn the Coolant Pump Fitting (91S) to its “**OPEN**” position. Then turn the Coolant Pump Toggle Switch (750S2) to its “**ON**” position. **(See Figure T.)**
8. Turn the Motor Toggle Switch (750S4) to its “**ON**” position. **(See Figure T.)**
9. Turn the Cylinder to its “**ON**” position, and slowly lower the Saw Head until the Saw Blade (251) is just above the workpiece cut line. **(See Figure T.)**
10. Allow the Saw Blade (251) to turn up to full speed before feeding the Blade into the workpiece. **(See Figure T.)**
11. Through the Hydraulic Feed System, allow the Saw Arm to lower, while it gradually feeds the Saw Blade (251) into the workpiece. Do not force the Bandsaw to remove material faster than it was designed to cut. **NOTE:** The speed at which the Saw Arm moves downward may be increased or decreased by adjusting the Bleed Valve on the Cylinder (216). **(See Figure T.)**
12. Never attempt to remove material stuck in the moving parts of the Bandsaw while it is plugged in and running. Turn off the Bandsaw if the workpiece is to be backed out of an uncompleted cut.





13. **IMPORTANT:** When in the horizontal cutting mode only, the Motor Toggle Switch (750S4) will automatically turn to its “OFF” position and shut off the Bandsaw’s Motor when the cut has been completed. (See Figure T.)
14. Once the cut is made, and the motor is switched off, turn the Coolant Pump Toggle Switch (750S2) to its “OFF” position. Turn the Coolant Pump Fitting (91S) to its “CLOSED” position. Then unplug the Power Cable (500) from its electrical outlet. (See Figure T.)
15. Wait until the Saw Blade (251) comes to a complete stop. Then raise the Saw Head to its full vertical position. Turn the Cylinder (216) to its “OFF” position to lock the Saw Head in place. Remove the workpiece from the Vise (9, 22) assembly and scrap material from the Base (1) of the Bandsaw. (See Figure T.)
16. Turn the Cylinder (216) to its “ON” position. Slowly lower the Saw Head to its horizontal position. Then turn the Cylinder to its “OFF” position to lock the Saw Head in place. (See Figure T.)

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## MAINTENANCE AND SERVICING

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### **⚠ WARNING**

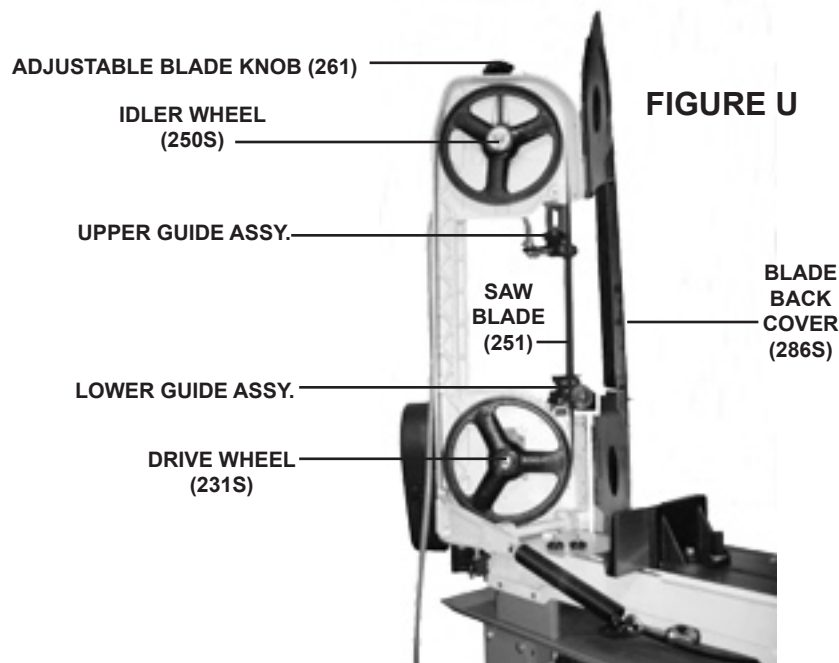
**Risk of serious personal injury from accidental starting or electric shock. Turn the Power Switch of the Bandsaw to its “OFF” position and unplug the tool from its electrical outlet before performing any inspection, maintenance, or cleaning procedures.**

**Damaged equipment can fail, causing serious personal injury. Do not use damaged equipment. If abnormal noise or vibration occurs, have the problem corrected before further use.**

### INSPECTION, MAINTENANCE, AND CLEANING

1. **Before each use**, inspect the general condition of the Bandsaw. Check for loose screws, misalignment or binding of moving parts, cracked or broken parts, damaged electrical wiring, and any other condition that may affect its safe operation. **Do not use damaged equipment.**
2. **Before each use**, inspect the Saw Blade (251). Using a dull Saw Blade will cause excessive wear on the Motor of the Bandsaw and will not produce a satisfactory cut. Replace with a new Saw Blade when needed. To replace the Saw Blade:
  - **NOTE:** Make sure to wear heavy duty work gloves to avoid accidental injury from the Saw Blade (251) when performing this procedure.

- Turn the Cylinder (216) to its “**ON**” position, and raise the Saw Head to its full vertical position. Then turn the Cylinder to its “**OFF**” position to lock the Saw Head in place. **(See Figure U.)**
- Open the Blade Back Cover (286S). **(See Figure U.)**
- Release Saw Blade (251) tension by turning the Adjustable Blade Knob (261). **(See Figure U.)**
- Slip the old Saw Blade (251) off the Idler Wheel (250S), Drive Wheel (231S), and Guide assemblies. **(See Figure U.)**
- Place the new Saw Blade (251) between each of the Guide assemblies and around the Idler Wheel (250S) and Drive Wheel (231S). **IMPORTANT: The teeth must be pointing downward toward the Motor. (See Figure U.)**
- Tighten the tension on the new Saw Blade (251) by turning the Adjustable Blade Tensioner Knob (261) in a clockwise direction. **(See Figure U.)**
- Close the Blade Back Cover (286S). **(See Figure U.)**



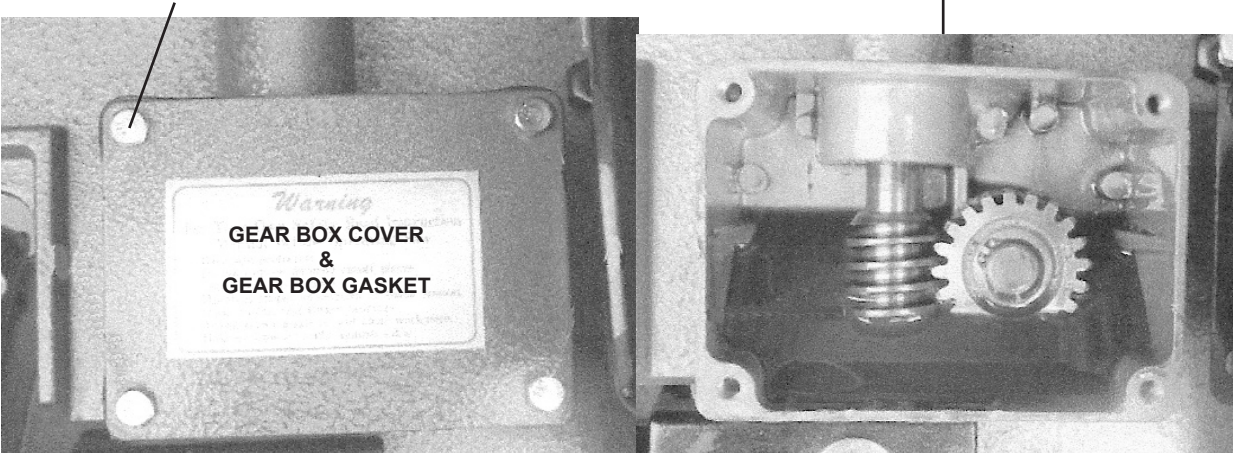
3. **To lubricate the Worm Gear Shaft Assembly:** The Worm Gear Shaft Assembly (202S) runs in an oil bath Gear Box Assembly (201S) and should not require an oil change more than once a year, unless the oil becomes contaminated or a leak occurs due to improper replacement of the Gear Box Cover. To change oil in the Gear Box Assembly:
  - Position the Saw Arm in the horizontal position.
  - Remove the four Hex Socket Head Screws, Gear Box Cover, and Gear Box Gasket. **(See Figure V.)**

- Remove the old oil from inside the Gear Box Assembly (201S) and replace the oil using 140 weight gear oil (not included). The new oil should just come to the edge of the Gear Box (202-1). Do not overfill. **(See Figure V.)**
- Replace the Gear Box Gasket, Gear Box Cover, and four Hex Socket Head Screws. **(See Figure V.)**

HEX SOCKET HEAD SCREWS

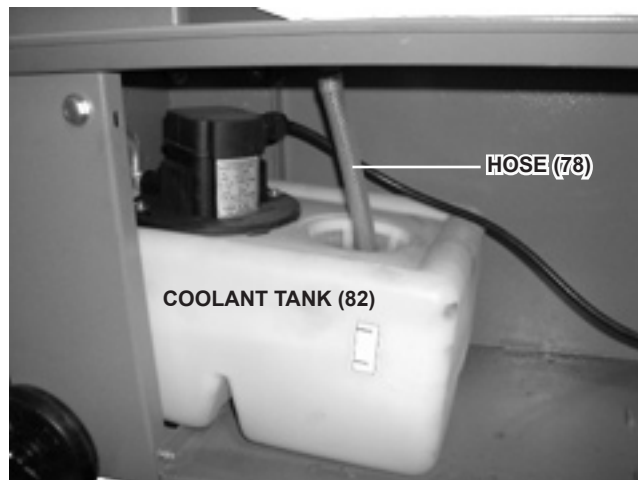
**FIGURE V**

GEAR BOX ASSY. (201S)



4. **To replace the coolant:** Remove the Hose (78) at the top of the Coolant Tank (82). Then slide the Coolant Tank out from under the Stand (77S) of the Bandsaw. **(See Figure W.)**
- Fill the Coolant Tank to about 80% capacity with a clean, water-soluble coolant (not included). **(See Figure W.)**
  - Slide the Coolant Tank (82) back under the Stand (77S) of the Bandsaw. Then re-insert the Hose (78) through the top of the Coolant Tank. **(See Figure W.)**
  - **IMPORTANT:** The water-soluble coolant should be replaced as often as is necessary to keep metal debris in the coolant from clogging the hoses.

**FIGURE W**



5. **To clean the exterior parts of the Bandsaw**, use only a clean cloth and mild detergent or mild solvent to clean the body of the Saw. **Do not immerse any electrical part of the machine in liquid.**
6. **CAUTION! All maintenance, service, and repairs not mentioned in this manual must only be performed by a qualified technician.**

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### **PLEASE READ THE FOLLOWING CAREFULLY**

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THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

# TROUBLESHOOTING

| Problem                             | Possible Cause(s)  | Possible Solution   |
|-------------------------------------|--|---|
| Excessive blade breakage.           | <ol style="list-style-type: none"> <li>1. Incorrect Blade tension.</li> <li>2. Incorrect speed or feed.</li> <li>3. Material loose in vise.</li> <li>4. Blade rubs on Wheel Flange.</li> <li>5. Teeth too coarse for material.</li> <li>6. Teeth in contact with material before Saw started.</li> <li>7. Misaligned Guides.</li> <li>8. Blade too thick for Wheel diameter.</li> </ol>  | <ol style="list-style-type: none"> <li>1. Tighten Blade tension.</li> <li>2. Adjust the speed and/or feed for the material being cut.</li> <li>3. Clamp work securely.</li> <li>4. Adjust blade tracking.</li> <li>5. Check manual for recommended Blade type.</li> <li>6. Allow Blade to spin up to full speed before feeding material into it.</li> <li>7. Adjust Guides.</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. Hard spots or scale in/on material.</li> <li>4. Work hardening of material.</li> <li>5. Blade installed backwards.</li> <li>6. 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. Reduce speed, increase feed pressure.</li> <li>4. Increase feed pressure by reducing spring tension.</li> <li>5. Remove Blade. Then properly install Blade.</li> <li>6. Increase tension to proper level.</li> </ol>   |
| Blade cuts crooked.                 | <ol style="list-style-type: none"> <li>1. Workpiece not square.</li> <li>2. Feed pressure too great.</li> <li>3. Guide Bearing 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> </ol> | <ol style="list-style-type: none"> <li>1. Adjust Vise so it is square with Blade. Always clamp work tightly in Vise.</li> <li>2. Reduce pressure by increasing spring tension on side of Saw.</li> <li>3. Adjust Guide Bearing to .001 greater than maximum thickness, including the weld of the Saw.</li> <li>4. Increase Blade tension a little at a time.</li> <li>5. Move Guide as close to work as possible.</li> <li>6. Replace Blade.</li> <li>7. Check manual for recommended speeds.</li> <li>8. Tighten Blade Guide assembly.</li> <li>9. Tighten Blade Guide Bearing assembly.</li> <li>10. Re-track Blade according to operating instructions.</li> </ol> |
| Blade cuts rough.                   | <ol style="list-style-type: none"> <li>1. Too much speed or feed.</li> <li>2. Blade is too coarse.</li> </ol>  | <ol style="list-style-type: none"> <li>1. Reduce speed and feed.</li> <li>2. Replace with finer Blade.</li> </ol>   |
| Blade is twisting.                  | <ol style="list-style-type: none"> <li>1. Cut is binding Blade.</li> <li>2. Too much Blade tension.</li> </ol>   | <ol style="list-style-type: none"> <li>1. Decrease feed pressure.</li> <li>2. Decrease Blade tension.</li> </ol>  |
| Unusual wear on side/back of blade. | <ol style="list-style-type: none"> <li>1. Blade Guides worn.</li> <li>2. Blade Guide Bearings not adjusted properly.</li> <li>3. Blade Guide Bearing Bracket is loose.</li> </ol>  | <ol style="list-style-type: none"> <li>1. Replace Blade Guides.</li> <li>2. Adjust according to operator's manual.</li> <li>3. Tighten Blade Guide Bearing Bracket.</li> </ol>  |
| Teeth ripping from blade.           | <ol style="list-style-type: none"> <li>1. Teeth too coarse for work.</li> <li>2. Too heavy feed or too slow feed.</li> <li>3. Vibrating workpiece.</li> <li>4. Teeth filled with debris.</li> </ol>  | <ol style="list-style-type: none"> <li>1. Use finer tooth Blade.</li> <li>2. Increase feed pressure and/or speed.</li> <li>3. Clamp work securely.</li> <li>4. Use coarse tooth Blade or brush to remove debris.</li> </ol>   |
| Motor running too hot.              | <ol style="list-style-type: none"> <li>1. Blade tension too high.</li> <li>2. Drive Belt tension too high.</li> <li>3. Blade is too coarse for work.</li> <li>4. Blade is too fine for work.</li> <li>5. Gear not aligned properly.</li> <li>6. Gears need lubrication.</li> </ol>   | <ol style="list-style-type: none"> <li>1. Reduce tension on Blade.</li> <li>2. Reduce tension on Drive Belt.</li> <li>3. Use finer Blade.</li> <li>4. Use coarser Blade.</li> <li>5. Adjust Gears so that Worm is in center of Gear.</li> <li>6. Check Oil Bath.</li> </ol>   |

## PARTS LIST

| Part | Description             | Specifications | Qty. |
|------|-------------------------|----------------|------|
| 1    | Base                    |                | 1    |
| 2    | Acme Screw              |                | 1    |
| 3    | Washer                  | 1/2"x28xt2     | 1    |
| 4    | Key                     | 5x5x15L        | 1    |
| 5S   | Wheel                   |                | 1    |
| 7    | Fixed Bolt              |                | 1    |
| 8    | Washer                  | 3/8"x25xt2     | 2    |
| 9    | Vise Jaw Bracket(Front) |                | 1    |
| 10   | pin                     |                | 1    |
| 11   | Bracket                 |                | 1    |
| 12S  | Acme Nut Assembly       |                | 1    |
| 13   | Scale                   |                | 1    |
| 14   | Washer                  | 3/16"x12xt0.8  | 2    |
| 15   | Cross Round Head Screw  | 3/16"x3/8"L    | 2    |
| 16   | Wire Nipple             | 5/8"           | 1    |
| 17   | Carriage Screw          | 1/2"x2"L       | 1    |
| 18   | Hex. Nut                | 1/2"           | 1    |
| 19   | Washer                  | 1/2"x28xt2     | 2    |
| 20   | Hex. Head Screw         | 3/8"x1-1/2"L   | 1    |
| 21   | Hex. Head Screw         | 1/2"x2"L       | 1    |
| 22   | Vise Jaw Bracket(Rear)  |                | 1    |
| 23   | Bushing                 |                | 1    |
| 24   | Support Rod             |                | 1    |
| 25   | Screw                   | 5/16"x3/4"L    | 1    |
| 26   | Pivot Bracket           |                | 1    |
| 27   | Washer                  |                | 1    |
| 28   | Hex. Head Screw         | 3/8"x1-1/2"L   | 2    |
| 28-1 | Spring Washer           | 3/8"           | 2    |
| 29   | Support Plate           |                | 1    |
| 30   | Fixed Plate             |                | 1    |
| 31   | Spring                  |                | 1    |
| 32   | Spring Adjusting Rod    |                | 1    |

## PARTS LIST - CONTINUED

| Part | Description             | Specification | Qty. |
|------|-------------------------|---------------|------|
| 33   | Spring Handle Bracket   |               | 1    |
| 34   | Hex. Head Screw         | 5/16"x3/4"L   | 1    |
| 35   | Washer                  | 5/16"x23xt2   | 1    |
| 35-1 | Hex. Nut                | 5/16"         | 1    |
| 36   | Hex. Nut                | 3/8"          | 1    |
| 37   | Washer                  | 3/8"x23xt2    | 1    |
| 38   | Thumb Screw             |               | 1    |
| 39   | Hex. Head Screw         | 5/16"x3/4"L   | 1    |
| 40   | Stock Stop Rod          |               | 1    |
| 41   | Stop Block              |               | 1    |
| 42   | Hex. Head Screw         | 5/16"x1-1/2"L | 1    |
| 42-1 | Washer                  | 1/4"x19xt1.5  | 1    |
| 45   | Support Plate           |               | 1    |
| 46   | Hex. Head Screw         | 3/8"x1-3/4"L  | 1    |
| 47   | Hex. Nut                | 3/8"          | 1    |
| 48   | Hex. Head Screw         | 5/16"x3/4"L   | 2    |
| 49   | Washer                  | 5/16"x18xt1.5 | 2    |
| 50   | Hex. Head Screw         | 3/8"x1-3/4"L  | 1    |
| 51   | Hex. Nut                | 3/8"          | 1    |
| 52   | Hex. Head Screw         | 5/16"x3/4"L   | 2    |
| 53   | Washer                  | 5/16"x18xt1.5 | 2    |
| 55-2 | Vertical Saw Table      |               | 1    |
| 65   | Filter                  |               | 1    |
| 66   | Switch Cut Off Tip      |               | 1    |
| 68   | Washer                  | 3/8"x18xt1.5  | 8    |
| 69   | Hex. Nut                | 5/16"         | 9    |
| 72   | Hex. Head Screw         | 5/16"x1"L     | 7    |
| 73   | Hex. Head Screw         | 5/16"x1-1/4"L | 1    |
| 75   | Cross Round Head Screw  | 3/16"x3/8"L   | 2    |
| 77S  | Stand Complete Assembly |               | 1    |
| 78   | Hose                    | 5/8"x200mm    | 1    |
| 82   | Coolant Tank            |               | 1    |

## PARTS LIST - CONTINUED

| Part  | Description              | Specifications | Qty. |
|-------|--------------------------|----------------|------|
| 84S   | pump                     | 230V 1/8HP     | 1    |
| 85    | Cross Round Head Screw   | 1/4"x5/8"L     | 2    |
| 86    | Washer                   | 1/4"x19xt1.5   | 2    |
| 88    | Coupler                  | PT3/8x5/16"    | 1    |
| 89    | Hose Clip                | 5/8"           | 2    |
| 89-1  | Cross Round Head Screw   | M5X20L         | 2    |
| 90    | Hose                     | OD12xID8x2000  | 1    |
| 91S   | Fitting                  |                | 1    |
| 91-1  | Valve                    | 1/8"PT         | 1    |
| 91-2  | Hose Bib                 |                | 1    |
| 92S1  | Coaster of Stand         | 3/8"           | 2    |
| 92-1  | Washer                   | 3/8"           | 2    |
| 92-2  | Wheel                    |                | 2    |
| 92-3  | Cotter Pin               | ∅3x25L         | 2    |
| 92-4  | Wheel Rod                |                | 1    |
| 93    | 3/8" Leveler             |                | 2    |
| 98S   | Hand Rod                 |                | 1    |
| 98-1  | Hand Rod                 |                | 1    |
| 98-2  | Hex. Head Screw          | 5/16"x1-1/2"L  | 4    |
| 98-3  | Washer                   | 5/16"x18xt1.5  | 8    |
| 98-4  | Hex. Nut                 | 5/16"          | 4    |
| 135   | Washer                   | 5/16"x23xt3    | 1    |
| 136   | Hex. Head Screw          | 5/16"x3/4"L    | 1    |
| 139   | Washer                   |                | 1    |
| 140   | Cylinder Lower Support   |                | 1    |
| 141   | Washer                   | 5/16"x19xt1.5  | 1    |
| 142   | Hex. Head Screw          | 5/16"x1/2"L    | 1    |
| 201S  | Gear Box Assembly        |                | 1    |
| 201-1 | Gear Box                 |                | 1    |
| 201-2 | Transmission Wheel Shaft |                | 1    |
| 201-3 | Bushing                  |                | 1    |
| 201-4 | Bushing                  |                | 1    |



## PARTS LIST - CONTINUED

| Part   | Description                  | Specifications | Qty. |
|--------|------------------------------|----------------|------|
| 201-5  | Bearing                      | 6205LLU        | 2    |
| 201-6  | Key                          | 6x6x20L        | 1    |
| 201-7  | C-Retainer Ring              | S25            | 1    |
| 201-8  | Gear Box Gasket              |                | 1    |
| 201-9  | Gear Box Cover               |                | 1    |
| 201-10 | Cross Socker Hex. Head Screw | 1/4"x5/8"L     | 4    |
| 201-11 | Vent Plug                    | M8xP1          | 1    |
| 201-12 | Bearing Cover                |                | 1    |
| 201-13 | Cross Round Head Screw       | 3/16"x3/8"L    | 3    |
| 201-14 | Worm Gear                    |                | 1    |
| 201-15 | Hex. Socker Headless Screw   | 5/16"x1/2"L    | 1    |
| 201-16 | Plug                         |                | 1    |
| 202S   | Worm Gear Shaft Assembly     |                | 1    |
| 202-1  | Worm Shaft                   |                | 1    |
| 202-2  | Bearing Bushing              |                | 1    |
| 202-3  | Bearing                      | 6003LLU        | 2    |
| 202-4  | C-Retainer Ring              | S17            | 1    |
| 203    | Key                          | 5x5x30L        | 1    |
| 206    | Spindle Pulley               |                | 1    |
| 207    | Hex. Socker Headless Screw   | 1/4"x3/8"L     | 2    |
| 208    | Belt                         | 3Vx270,Belt    | 1    |
| 209    | Cover                        |                | 1    |
| 210    | Hex. Nut                     | 3/8"           | 1    |
| 211    | Washer                       | 3/8"x20xt2     | 1    |
| 212    | Cylinder Upper Support       |                | 1    |
| 213    | Washer                       | 5/16"x18xt1.5  | 3    |
| 214    | Hex. Head Screw              | 5/16"x1"L      | 3    |
| 215    | Washer                       | 3/8"x23xt2     | 2    |
| 216    | Cylinder Complete Set        | RF-712N        | 1    |
| 217    | Hex. Socket Head Screw       | 3/8"x2-1/4"L   | 1    |
| 218    | Body Frame                   |                | 1    |
| 219    | Spring Washer                | 3/8"           | 4    |
| 220    | Hex. Head Screw              | 3/8"x1-1/4"L   | 4    |

## PARTS LIST - CONTINUED

| Part  | Description                  | Specifications            | Qty. |
|-------|------------------------------|---------------------------|------|
| 230   | C-Retainer Ring              | S25                       | 1    |
| 231S  | Drive Wheel                  |                           | 1    |
| 232   | Key                          | 6x6x20L                   | 1    |
| 233   | Hex. Head Screw              | 5/16"x3/4"L               | 1    |
| 234   | Cross Socker Hex. Head Screw | 1/4"x5/8"L                | 2    |
| 235   | Washer                       | 1/4"x16xt1.5              | 2    |
| 236   | Support Plate                |                           | 1    |
| 237   | Sliding Plate                |                           | 2    |
| 238   | Blade Tension Sliding Block  |                           | 1    |
| 239   | Hex. Socker Headless Screw   | 5/16"x3/4"L               | 1    |
| 240   | Hex. Head Screw              | 5/16"x1-1/2"L             | 2    |
| 241   | Washer                       | 5/16"x12xt2               | 2    |
| 242   | Spring Washer                | 5/16"                     | 4    |
| 243   | Hex. Head Screw              | 5/16"x3/4"L               | 4    |
| 244   | Spring                       |                           | 1    |
| 245   | Blade Tensioner Knob         |                           | 1    |
| 246   | Washer                       | 3/8"x25xt2                | 1    |
| 249S  | Shaft Assembly               |                           | 1    |
| 250S  | Idler Wheel Assembly         |                           | 1    |
| 250-1 | Idler Wheel                  |                           | 1    |
| 250-2 | Bushing                      |                           | 1    |
| 250-3 | C-Retainer Ring              | R35                       | 1    |
| 250-4 | Ball Bearing (6202ZZ)        | 6202ZZ                    | 2    |
| 250-5 | Bushing                      |                           | 1    |
| 250-6 | Bearing Cover                |                           | 1    |
| 250-7 | Flat Cross Head Screw        | 3/16"x3/8"L               | 3    |
| 250-8 | Washer                       | 5/16"x20xt3               | 1    |
| 250-9 | Hex. Head Screw              | 5/16"x3/4"L               | 1    |
| 251   | Blade                        | 0.032" x 3/4" x 93" - 10T | 1    |
| 252   | Switch Cut Off Tip           |                           | 1    |
| 253   | Washer                       | 1/4"x16xt1.5              | 1    |
| 254   | Cross Socker Hex. Head Screw | 1/4"x5/8"L                | 1    |
| 255   | Hex. Head Screw              | 3/8"x1-1/4"L              | 1    |

## PARTS LIST - CONTINUED

| Part   | Description                        | Specifications | Qty. |
|--------|------------------------------------|----------------|------|
| 256    | Washer                             | 3/8"x25xt2     | 1    |
| 258S   | Brush Assembly                     |                | 1    |
| 259    | Cross Round Head Screw             | 3/16 x5/8 L    | 2    |
| 261    | Blade Adjustable Knob              |                | 1    |
| 262    | Washer                             | 3/8"x25xt2     | 1    |
| 266S   | Adjustable Bracket Assembly (Rear) |                | 1    |
| 266-1  | Adjustable Bracket(Rear)           |                | 1    |
| 266-2  | Blade Adjustable (Rear)            |                | 1    |
| 266-3  | Deflector Plate                    |                | 1    |
| 266-4  | Washer                             | 5/16"x18xt1.5  | 1    |
| 266-5  | Spring Washer                      | 5/16"          | 1    |
| 266-6  | Hex. Socket Head Screw             | 5/16"x1-1/4"L  | 1    |
| 266-7  | Flat Cross Head Screw              | 1/4"x1/2"L     | 2    |
| 266-8  | Hex. Nut                           | 3/8"UNF        | 2    |
| 266-9  | Spring Washer                      | 3/8"           | 2    |
| 266-10 | Bearing                            | 6000ZZ         | 1    |
| 266-11 | Bearing Pin                        |                | 1    |
| 267S   | Guide Pivot Assembly               |                | 1    |
| 267-1  | Guide Pivot                        |                | 1    |
| 267-2  | Bearing                            | 6000ZZ         | 2    |
| 267-3  | C-Retainer Ring                    | S10            | 1    |
| 268S   | Bearing Shaft Assembly             |                | 1    |
| 268-1  | Bearing Shaft                      |                | 1    |
| 268-2  | Bearing                            | 6000ZZ         | 2    |
| 268-3  | C-Retainer Ring                    | S10            | 1    |
| 269S   | Adjustable Bracket (Front)         |                | 1    |
| 269-1  | Adjustable Bracket(Front)          |                | 1    |
| 269-2  | Blade Adjustable (Front)           |                | 1    |
| 269-3  | Bearing Pin                        |                | 1    |
| 269-4  | Bearing                            | 6000ZZ         | 1    |
| 269-5  | Hex. Nut                           | 3/8"UNF        | 2    |
| 269-6  | Spring Washer                      | 3/8"           | 2    |

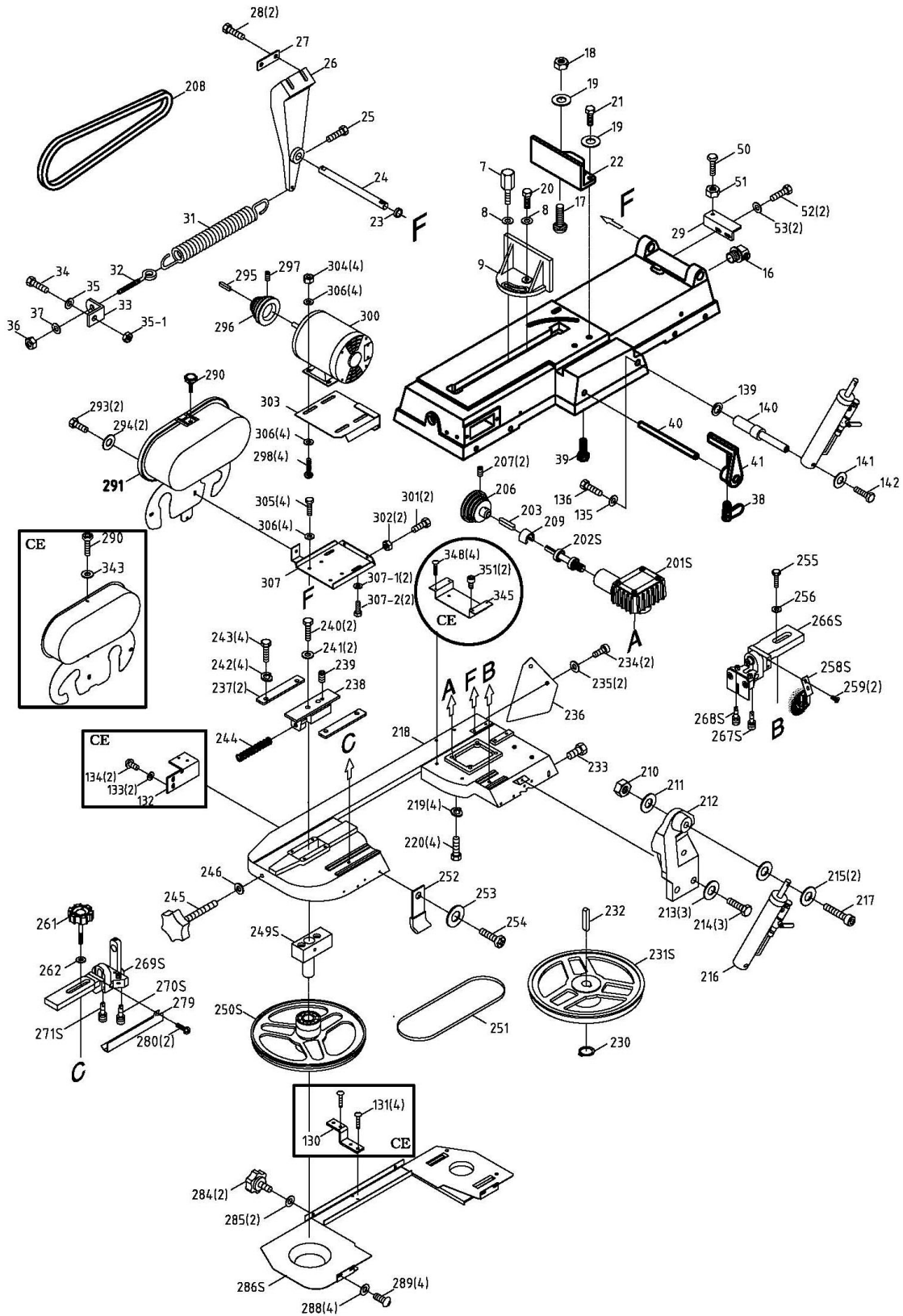
## PARTS LIST - CONTINUED

| Part  | Description                  | Specifications           | Qty. |
|-------|------------------------------|--------------------------|------|
| 269-7 | Hex. Socker Headless Screw   | 1/4"x3/8"L               | 1    |
| 269-8 | Nozzle Cock Support          |                          | 1    |
| 269-9 | Hex. Socket Head Screw       | 5/16"x1-1/4"L            | 1    |
| 270S  | Guide Pivot Assembly         |                          | 1    |
| 270-1 | Guide Pivot (Right)          |                          | 1    |
| 270-2 | Bearing                      | 6000ZZ                   | 2    |
| 270-3 | C-Retainer Ring              | S10                      | 1    |
| 271S  | Bearing Shaft Assembly       |                          | 1    |
| 271-1 | Bearing Shaft                |                          | 1    |
| 271-2 | Bearing                      | 6000ZZ                   | 2    |
| 271-3 | C-Retainer Ring              | S10                      | 1    |
| 279   | Blade Cover(Front)           |                          | 1    |
| 280   | Cross Round Head Screw       | 5/32"x1/4"L              | 2    |
| 284   | Plum handle                  |                          | 2    |
| 285   | Washer                       | 1/4"x16xt1.5             | 2    |
| 286S  | Blade Back Cover             |                          | 1    |
| 288   | Washer                       | 1/4"x16xt1.5             | 4    |
| 289   | Cross Round Head Screw       | 1/4"x1/2"L               | 4    |
| 290   | Plum handle                  |                          | 1    |
| 291   | Motor Pulley Cover           |                          | 1    |
| 293   | Cross Socker Hex. Head Screw | 1/4"x5/8"L               | 2    |
| 294   | Washer                       | 1/4"x19xt1.5             | 2    |
| 295   | Key                          | 5x5x30L                  | 1    |
| 296   | Motor Pulley                 |                          | 1    |
| 297   | Hex. Socker Headless Screw   | 1/4"x3/8"L               | 1    |
| 298   | Carriage Screw               | 5/16"x1"L                | 4    |
| 300   | Motor                        | 1HP 110/220V 60HZ<br>1PH | 1    |
| 301   | Belt Tension Limiter Bolt    | 5/16"x1"L                | 2    |
| 302   | Hex. Nut                     | 5/16"                    | 2    |
| 303   | Motor Mount Plate            |                          | 1    |
| 304   | Hex. Nut                     | 5/16"                    | 4    |
| 305   | Hex. Head Screw              | 5/16"x3/4"L              | 4    |

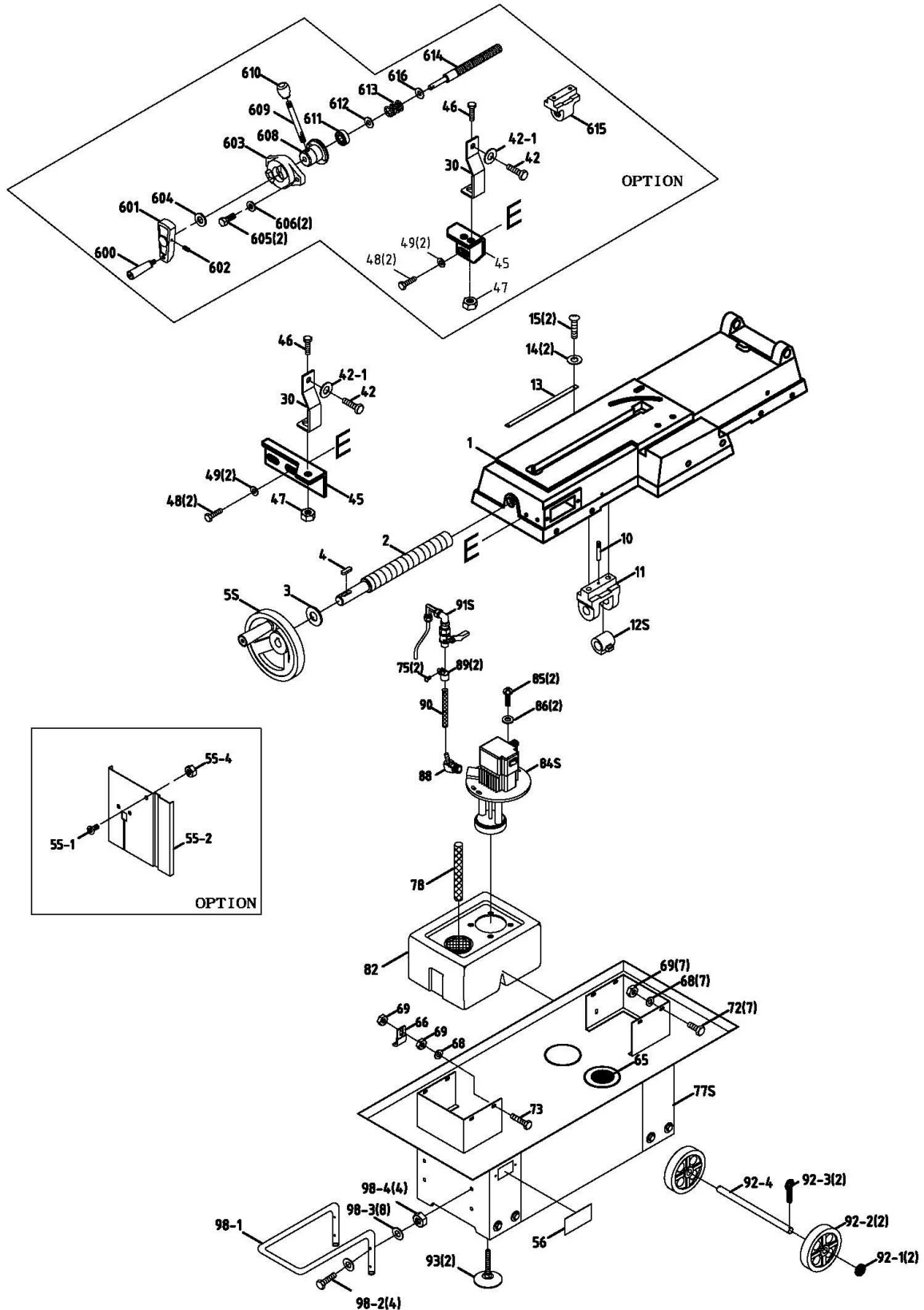
## PARTS LIST - CONTINUED

| Part   | Description            | Specifications | Qty. |
|--------|------------------------|----------------|------|
| 306    | Washer                 | 5/16"x23xt2    | 12   |
| 307    | Motor Mount Bracket    |                | 1    |
| 307-1  | Washer                 | 5/16"x23xt2    | 2    |
| 307-2  | Hex. Head Screw        | 5/16"x7/8"L    | 2    |
| 500    | Power Cable            |                | 1    |
| 501    | Pump Cable             |                | 1    |
| 502    | Pump Cable             |                | 1    |
| 503    | Motor Cable            |                | 1    |
| 504    | Wire                   |                | 1    |
| 750S2  | Toggle Switch Assembly |                | 1    |
| 750-1  | Toggel Switch Cover    |                | 1    |
| 750-2  | Switch Cover           |                | 1    |
| 750-3  | Toggle Switch Assembly |                | 1    |
|        | Switch indicator       |                | 1    |
|        | Hex. Nut               |                | 1    |
| 750-4  | Screw                  | 3/16"x3/8"L    | 2    |
| 750-5  | Cover                  |                | 1    |
| 750-6  | Rubber Plate           |                | 1    |
| 750-7  | Electrical Box         |                | 1    |
| 750-8  | Screw                  | 5/32"x1/8"L    | 2    |
| 750-9  | Wire Nipple            | 5/8"           | 2    |
| 750-10 | Wire Nipple            | 1/2"           | 2    |
| 750-9  | Cable-Gland            | PG13.5         | 1    |
| 750-10 | Cable-Gland            | PG11           | 1    |
| 750S4  | Toggle Switch Assembly |                | 1    |
| 750-1  | Toggel Switch Cover    |                | 1    |
| 750-2  | Switch Cover           |                | 1    |
| 750-3  | Screw                  | 3/16"x3/8"L    | 2    |
| 750-4  | Cover                  |                | 1    |
| 750-5  | Toggle Switch Assembly |                | 1    |
| 750-6  | Electrical Box         |                | 1    |
| 750-7  | Screw                  | 5/32"x1/8"L    | 2    |
| 750-8  | Wire Nipple            | 1/2"           | 2    |
| 750-8  | Cable-Gland            | PG13.5         | 2    |
| 750-9  | Wire Guard             | Y3             | 2    |
| 865    | Screw Assembly         |                | 1    |

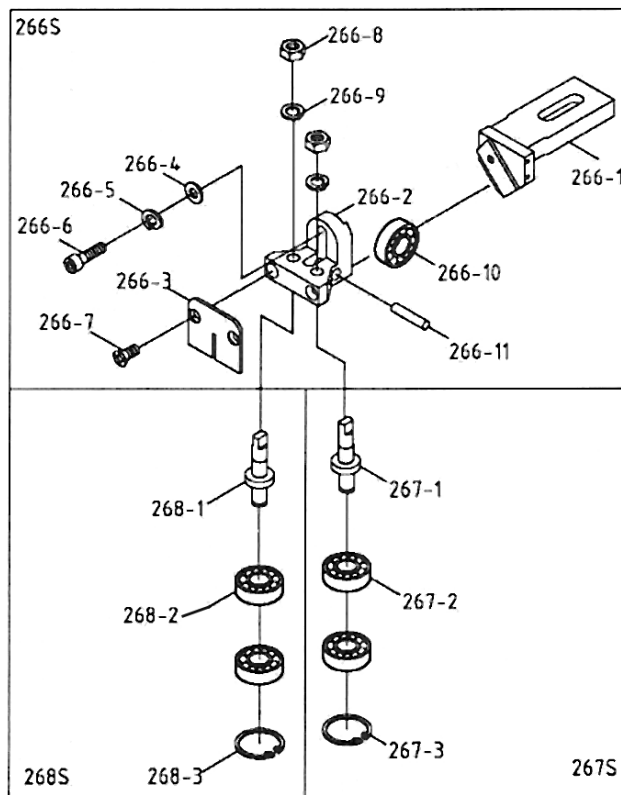
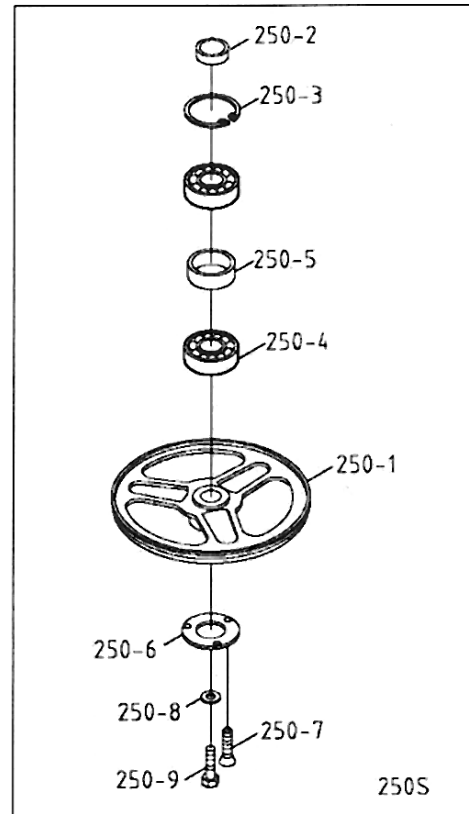
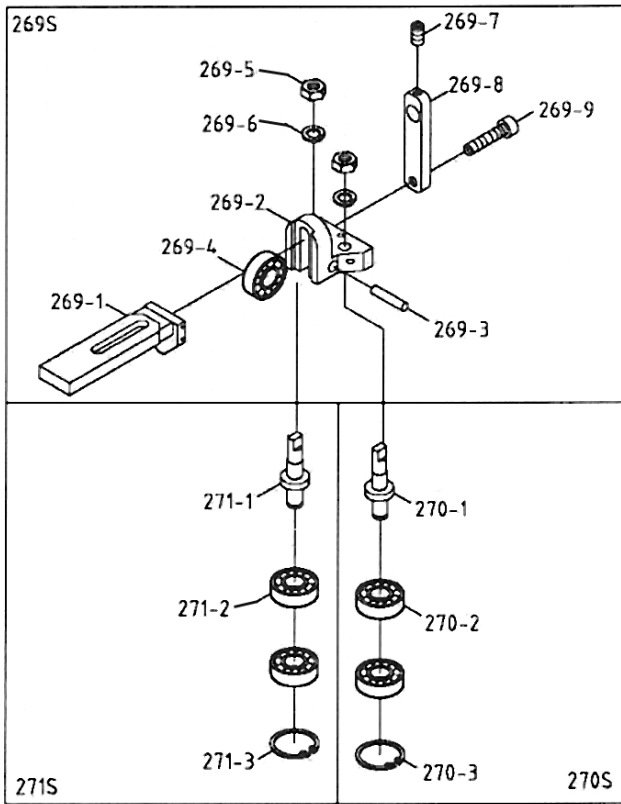
# ASSEMBLY DIAGRAM



# ASSEMBLY DIAGRAM - CONTINUED

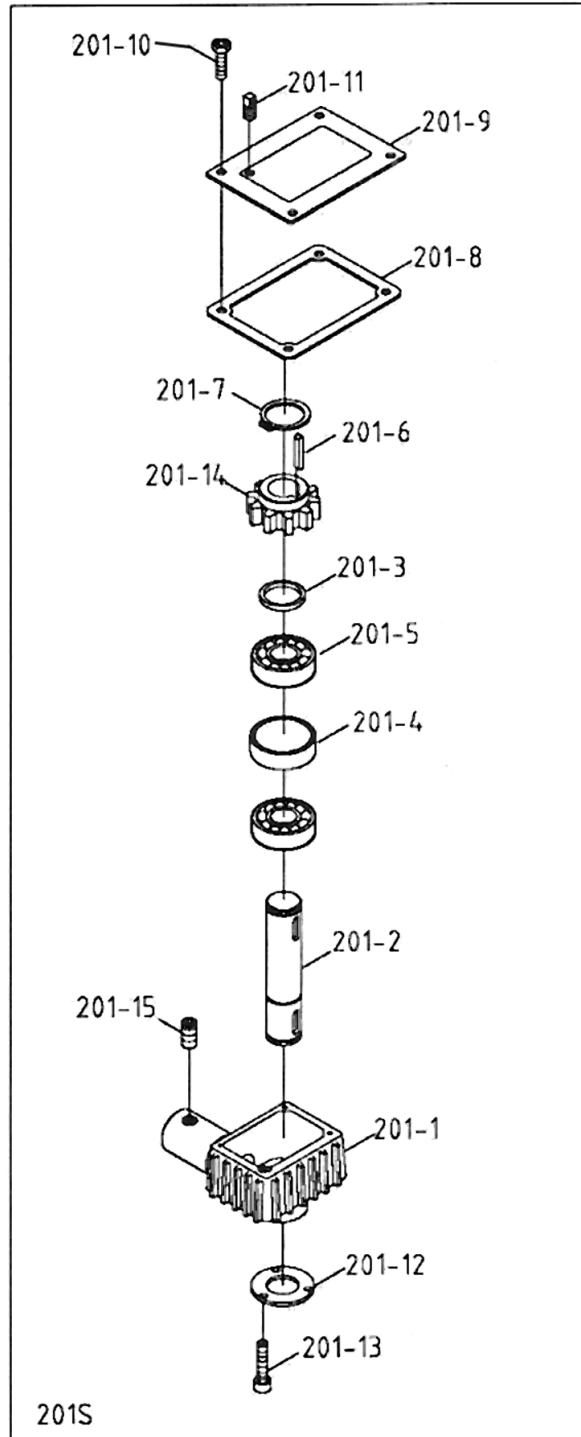
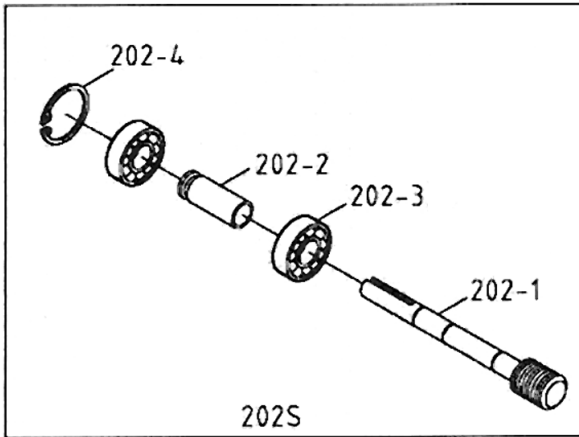


## ASSEMBLY DIAGRAM - CONTINUED

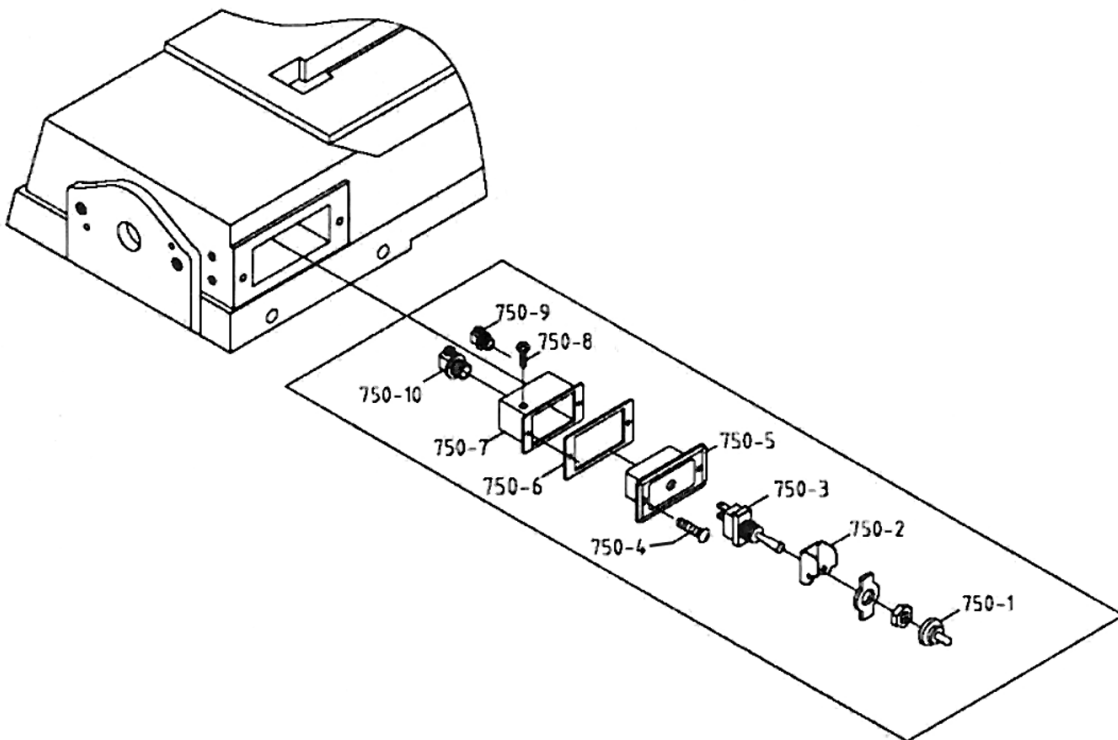
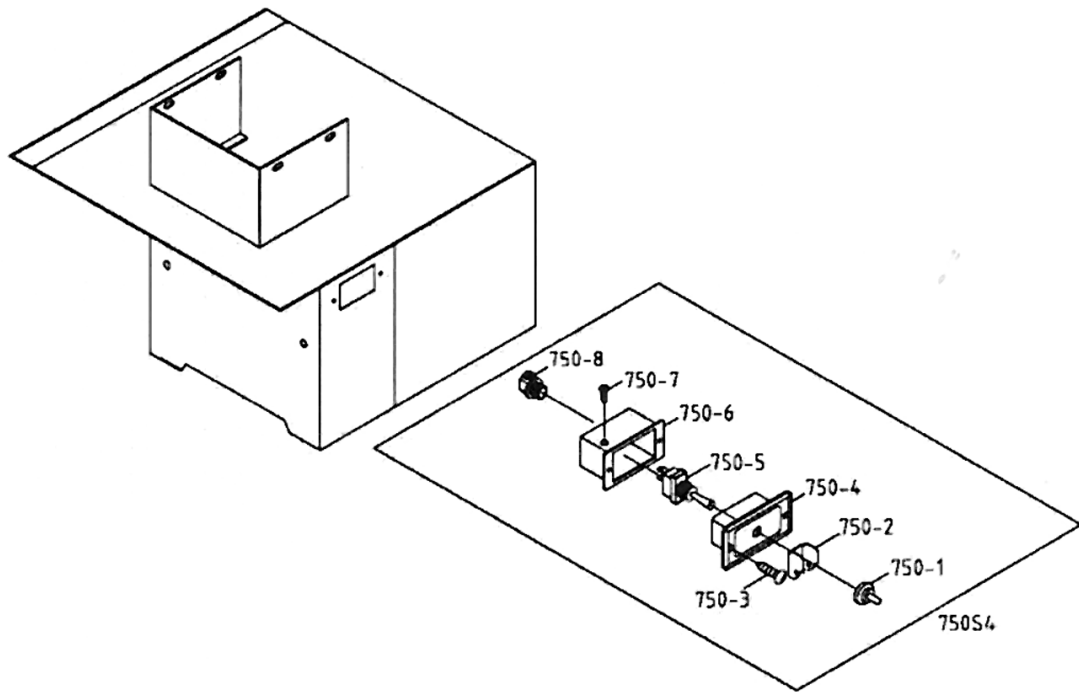




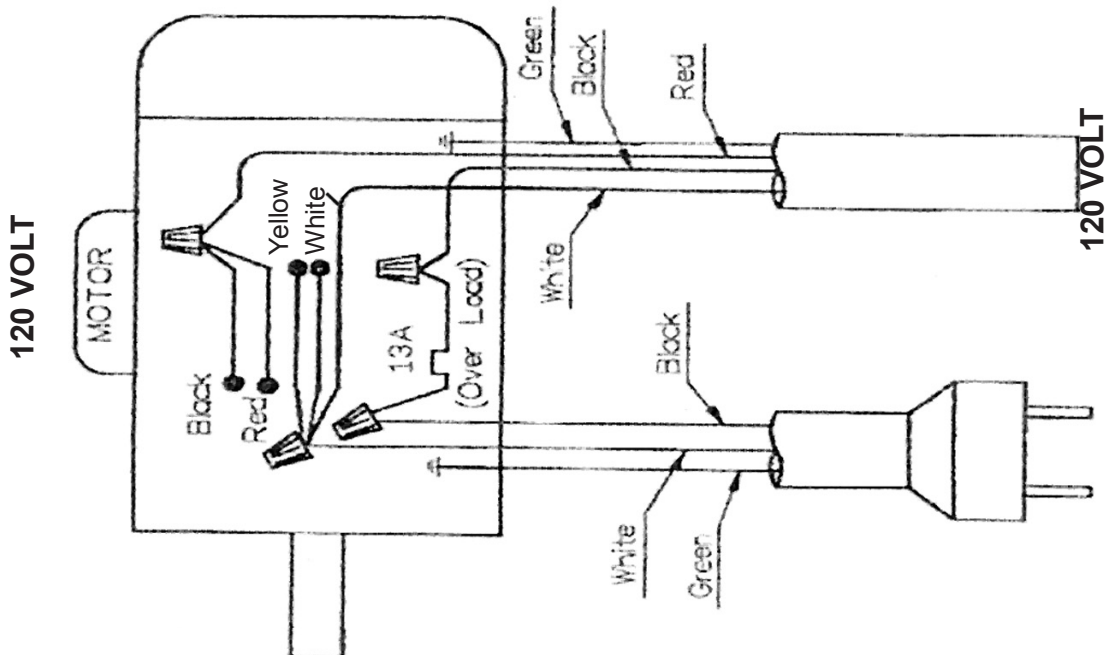
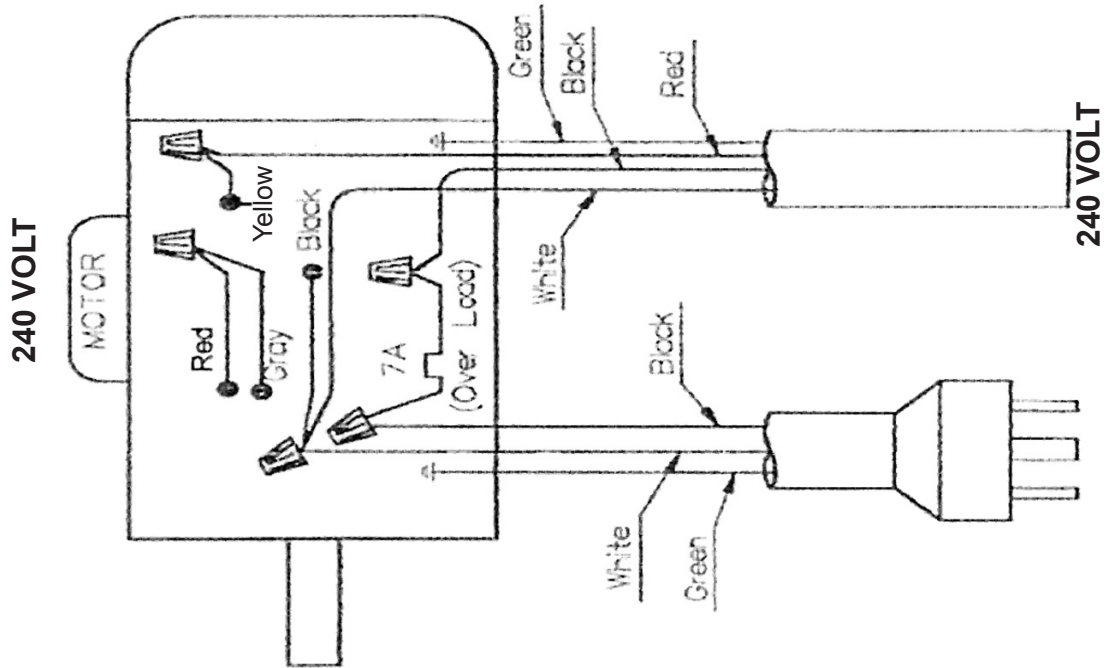
# ASSEMBLY DIAGRAM - CONTINUED



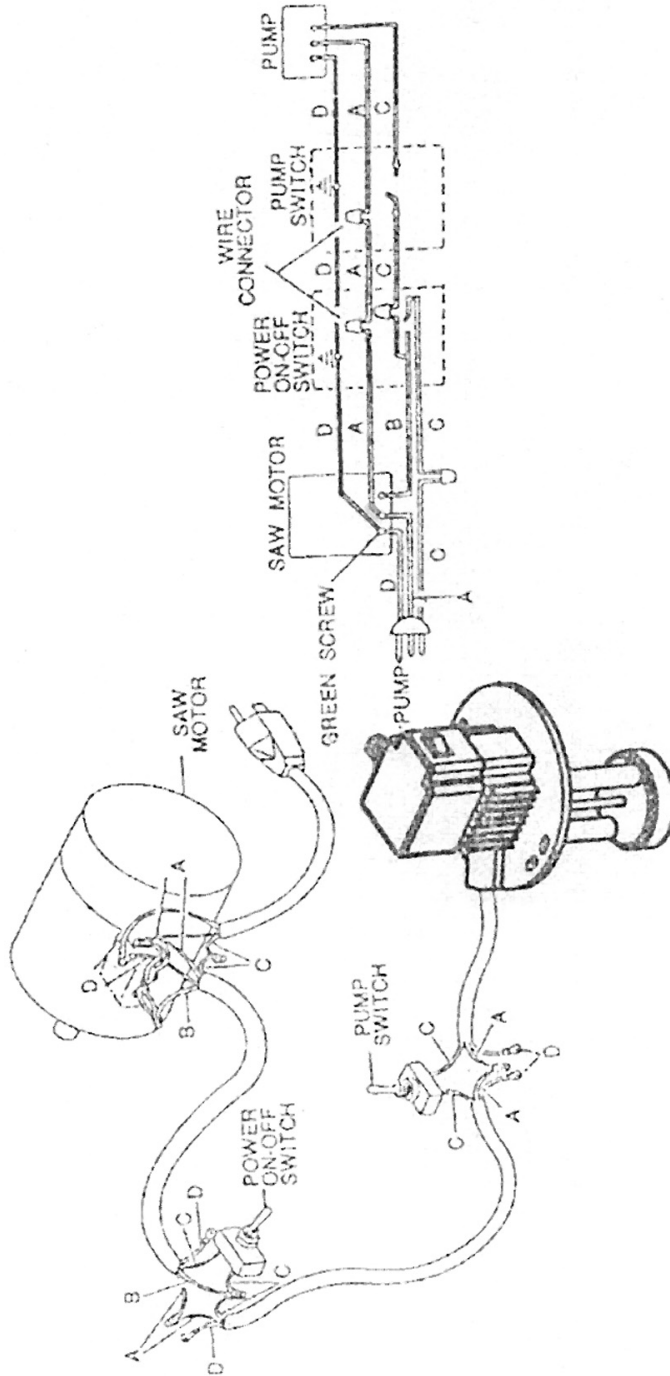
## ASSEMBLY DIAGRAM - CONTINUED



# ELECTRICAL SCHEMATIC

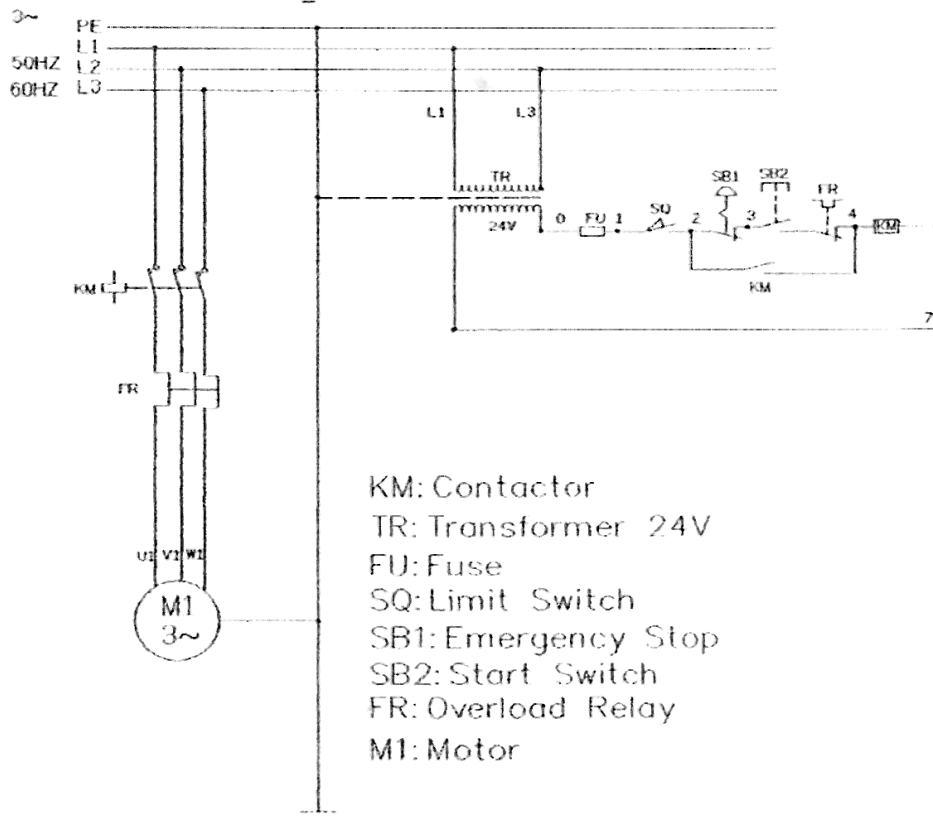
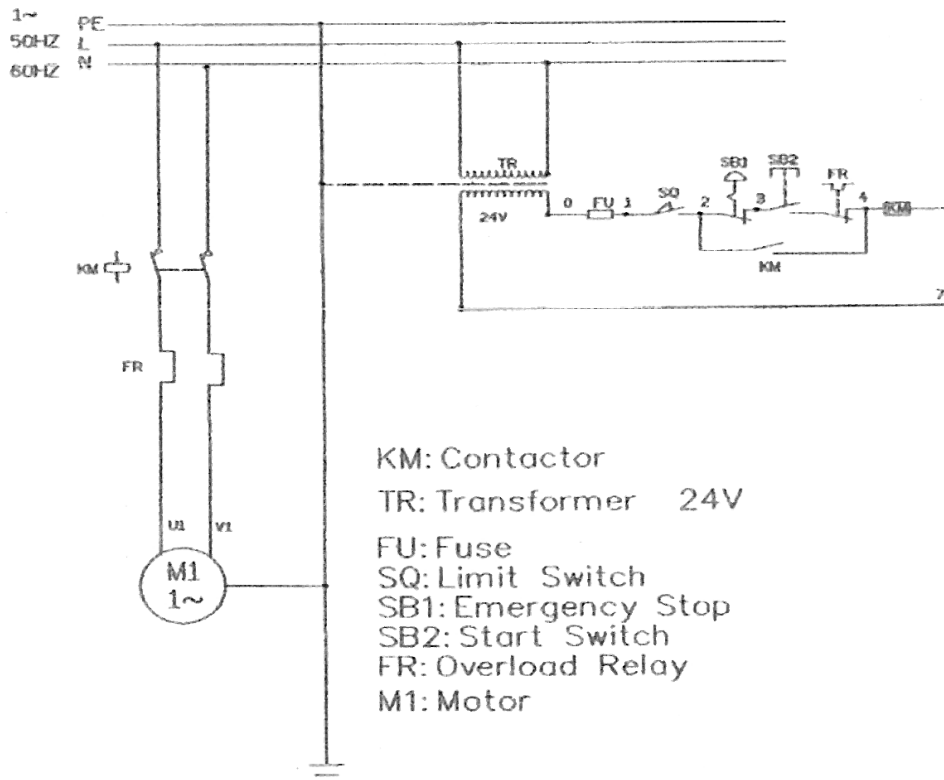


# ELECTRICAL SCHEMATIC - CONTINUED



| COLOR | REF NO. | A     | B     | C     | D            |
|-------|---------|-------|-------|-------|--------------|
| HZ    |         | BLUE  | BLACK | BROWN | YELLOW GREEN |
|       | 50      |       |       |       |              |
|       | 60      | WHITE | RED   | BLACK | GREEN        |

## ELECTRICAL SCHEMATIC - CONTINUED



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## LIMITED 90 DAY WARRANTY

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This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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**Record Product's Serial Number Here:** \_\_\_\_\_

**Note:** If product has no serial number, record month and year of purchase instead.

**Note:** Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.

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