MODEL

CPO 275

COLD SAW

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1.0 INTRODUCTION

The CPO-275 Cold Saw is designed to cut solids, tubes, flats and other profiles in grades of material that range from hot and cold rolled steel, annealed tool steels, stainless, aluminum, brass, copper, synthetics and extrusions.

Cold sawing is a process similar to a milling process. In most cases, this, combined with the self centering vise feature, gives a finished cut that does not require any secondary machining or de-burring.

Since milling spindle speeds are used in cold sawing, there are several things that are required to achieve quality results. The selection of the proper pitch (number of teeth) on the blade and the proper spindle speed for the type of material being cut are critical. Proper material clamping and a good quality coolant are also important.

Cold sawing has several advantages over band saws and abrasive saws. Besides the mill quality cut, cold saws have the ability to generate faster cutoff times than band saws.

There are no sparks and excessive noises that are associated with abrasive cutoff saws.

Cold saws also offer the advantage of blades that can be re-sharpened until the diameter of the blade will no longer cut through the material. The self centering vise allows for easy changeover to special clamping jaws, for profiles and extrusions. Having two spindle speeds enables the user to cut a wide range of materials.

By adding the power vise and power down feed options, the saw can be converted to a semi-automatic machine at a very reasonable price.

2.0 SAFETY PRECAUTIONS

1. **Any individual operating this machine must be qualified, responsible and well instructed. This manual is not intended to teach untrained personnel how to operate equipment.**

2. **NEVER operate this machine with the guard disconnected or removed.**

3. **Wear eye protection, at all times, when operating or observing this machine in operation.**

4. **Do not wear loose fitting clothing, gloves or jewelry when operating this machine.**

5. **All electrical connections shall be made by a qualified electrician. This machine must be grounded in accordance with the National Electric Code.**

6. **Disconnect the machine from the power source before performing maintenance or changing blades.**

7. **Practice good housekeeping. Keep the area around the machine clean and dry.**

8. **When sawing, always support long pieces and make sure that the material is properly clamped.**

9. **Keep the guard, as well as all other parts of the saw, in good working condition. Replace worn parts promptly.**

10. **Do not alter or modify this machine in any way without written permission from the manufacturer.**

11. **This machine is top heavy and must be anchored to the floor.**

3.0 WARRANTY

Scotchman Industries, Inc. will, within three years of the date of purchase, replace F.O.B. the factory or refund the purchase price for any goods which are defective in materials or workmanship, provided the buyer, at the seller's option, returns the defective goods freight and delivery prepaid to the seller, which shall be the buyer's sole and exclusive remedy for defective goods.

This warranty does not apply to machines and/or components which have been altered, changed or modified in any way or subjected to abuse and abnormal use, inadequate maintenance and lubrication or subjected to use beyond the seller's recommended capacities and specifications.

In no event shall the seller be liable for labor cost expended on such goods or consequential damages.

The seller shall not be liable to the purchaser or any other person for loss or damage directly or indirectly arising from the use of the goods or from any other cause.

No officer, employee or agent of the seller is authorized to make any oral representations or warranty of fitness or to waive any of the foregoing terms of sale and none shall be binding on the seller.

Any electrical changes made to the standard machine due to local electrical code variation must be paid by purchaser.

As we constantly strive to improve our products, we reserve the right to make changes without notification.

This warranty is effective December 1, 2009.

4.0 INSTALLATION AND SET-UP

⌦ **CAUTION: THIS SECTION DISCUSSES INSTALLATION, SET-UP AND START-UP PROCEDURES. PLEASE READ IT THOROUGHLY BEFORE OPERATING THIS MACHINE. IF YOUR MACHINE IS EQUIPPED WITH EITHER THE POWER VISE OR THE POWER DOWN FEED OPTION, READ ALL SECTIONS CONCERNING THESE OPTIONS BEFORE OPERATING THE SAW.**

4.1 PHYSICAL DIMENSIONS

SEE FIGURE 1 ON THE FOLLOWING PAGE.

DIMENSIONS	INCHES	CM
A. HEIGHT	68.5	175
B. FLOOR TO VISE	36.4	92.4
C. BASE HEIGHT	32	81
D. VISE OPENING	4	10
E. VISE DEPTH	2	5
F. BASE WIDTH	21.5	55
G. BASE DEPTH	17.25	44
H. MOUNTING HOLE CENTERS	24.5	62
I. WIDTH	26.2	66
J. WEIGHT	430 LB.	195 KG.

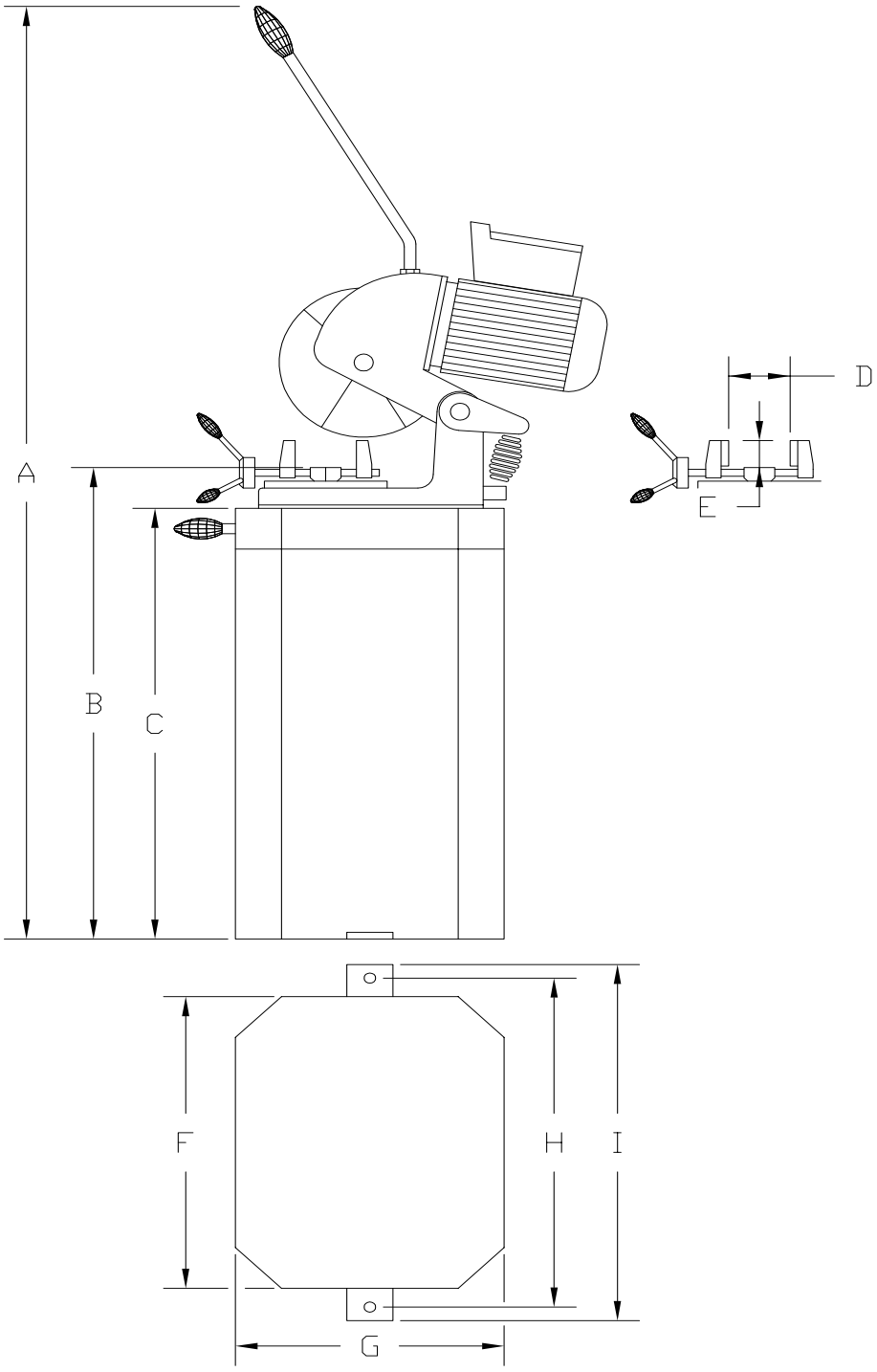


FIGURE 1

4.2 MACHINE MOVING PROCEDURES

SEE FIGURE 2 ON THE FOLLOWING PAGE.

This machine is shipped on a pallet and can be moved to the installation location by means of a fork lift.

⌦ **CAUTION: THIS MACHINE IS TOP HEAVY AND MUST BE MOVED WITH CARE, ON HARD, FLAT SURFACES ONLY.**

All saws are shipped with the head locked in the DOWN position. Before lifting the machine, release the head on manual and power vise saws by cutting the banding strap and allowing it to move to the UP position. On machines equipped with the power down feed option, release the upper stroke control collar and allow the head to move to the UP position. Lift the machine, using the lifting eyelet provided. SEE FIGURE 2. Remove the pallet and place the machine in its final location. This machine is top heavy and must be anchored to the floor.

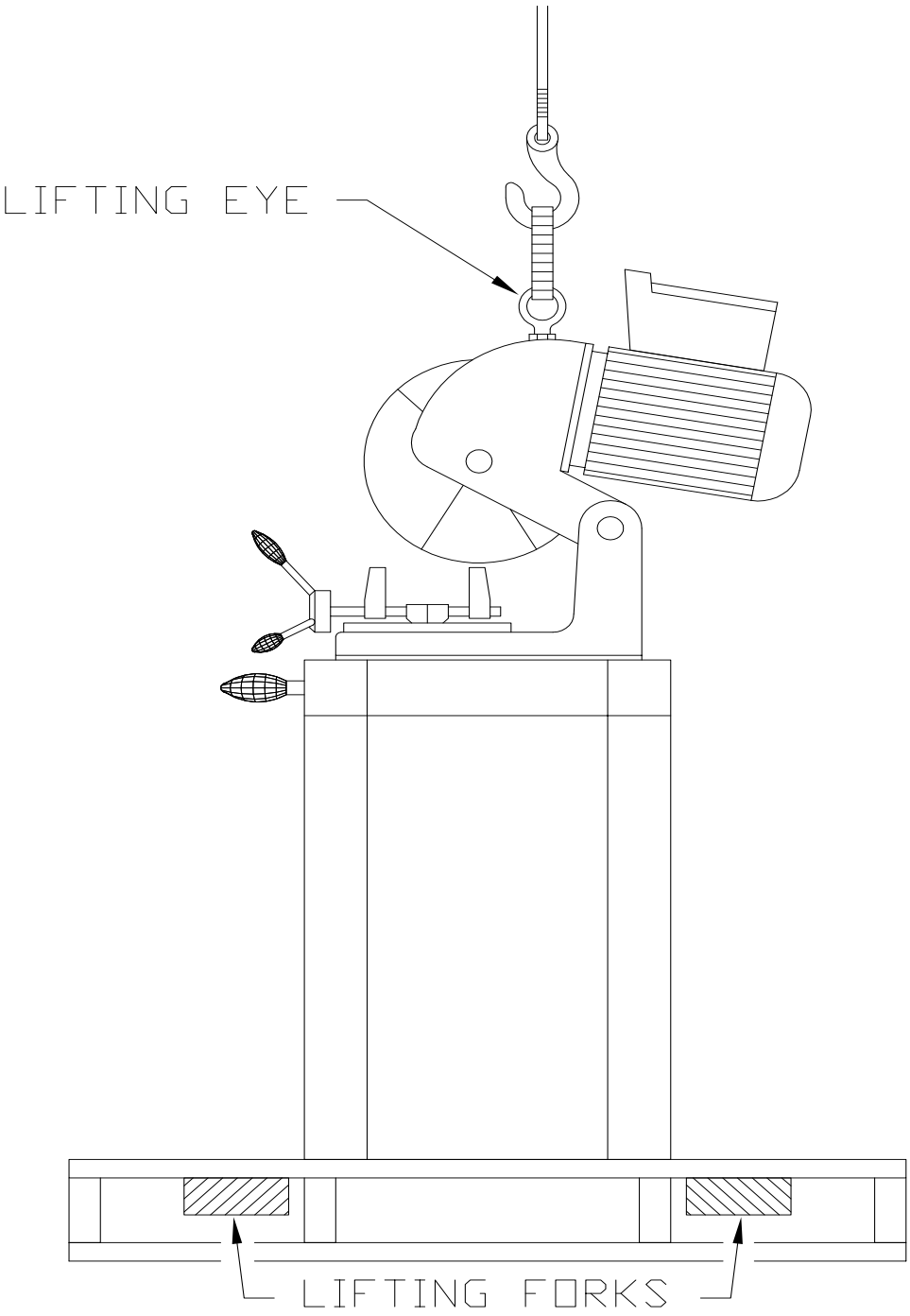


FIGURE 2

4.3 PHYSICAL INSPECTION

Once the machine is located, check it for any possible damage incurred in shipment. Remove the lifting eyelet and install the draw handle.

⌦ **CAUTION: DO NOT USE THE LIFTING EYELET FOR ANY MACHINES OTHER THAN THIS SAW. MAKE SURE THAT THE DRAW HANDLE HAS A JAM NUT ON THE THREADS BEFORE INSTALLING IT ON THE SAW. IF THE HANDLE IS INSTALLED WITHOUT THE JAM NUT, IT MAY CONTACT THE GEARS INSIDE THE HEAD.**

After the draw handle has been installed on manual and power vise machines, remove the cover from the electrical control box and connect the trigger switch wires. Remove any other packing material and draw the saw head to its DOWN position to make sure that the guard opens properly. The guard should close completely when the head is up and open freely as the head travels down. If the guard is not functioning properly, REFER TO SECTION 4.6 for the manual machines or SECTION 7.2C for machines equipped with the power down feed option. With the head in the DOWN position, check the oil level in the gear box through the sight glass in the casting just below the draw handle. If your saw is equipped with either the power vise or the power down feed option, REFER TO SECTIONS 7.1 THRU 7.2, for additional information.

4.4 ELECTRICAL REQUIREMENTS

SEE FIGURES 3-1 THRU 3-8 ON THE FOLLOWING PAGES.

⌦ **CAUTION: TO PREVENT DAMAGE TO THE MACHINE AND DANGER TO THE OPERATOR, ALL ELECTRICAL CONNECTIONS MUST BE MADE BY A QUALIFIED ELECTRICIAN. THIS MACHINE OPERATES WITH LIQUID COOLANT AND MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL ELECTRIC CODES.**

All three phase motors are dual speed and will operate on one voltage only. Single phase motors are available in the 60 RPM speed, only. If the machine is not the same voltage as your plant voltage, you will have to replace the motor and rewire the transformer and coolant pump. To insure satisfactory performance, the supply voltage should be (+ or -) 10% of the motor voltage rating. Check the motor data tag for full load current requirements. On machines equipped with the variable speed drive, the drive can be used as a phase converter.

THE ELECTRICAL DIAGRAMS FOR THIS MACHINE ARE ON PAGES 12 THRU 18, FIGURES 3-1 THRU 3-8. For supply lines ten feet (303 cm) or shorter, we recommend 12 gauge wire. For lines longer than ten (303 cm), we recommend 10 gauge wire. We do not recommend supply lines over twenty feet (606cm) in length.

CPO-275-LT. (30-60 RPM)

MOTOR VOLTAGE	FULL LOAD CURRENT		HORSEPOWER	
	HI	LOW	HI	LOW
208	4.9	4.7	1.5	.75
230	4.7	4.5	1.5	.75
460	2.6	2.5	1.5	.75
230 1/Phase	9.4		1.5	

CPO-275-HT. (60-120 RPM)

MOTOR VOLTAGE	FULL LOAD CURRENT		HORSEPOWER	
	HI	LOW	HI	LOW
208	7.9	5.7	2	1.6
230	7.7	5.5	2	1.6
460	4	2.9	2	1.6
230 1/phase		9.4		1.5

MANUAL OR PK W/ TRIGGER SWITCH

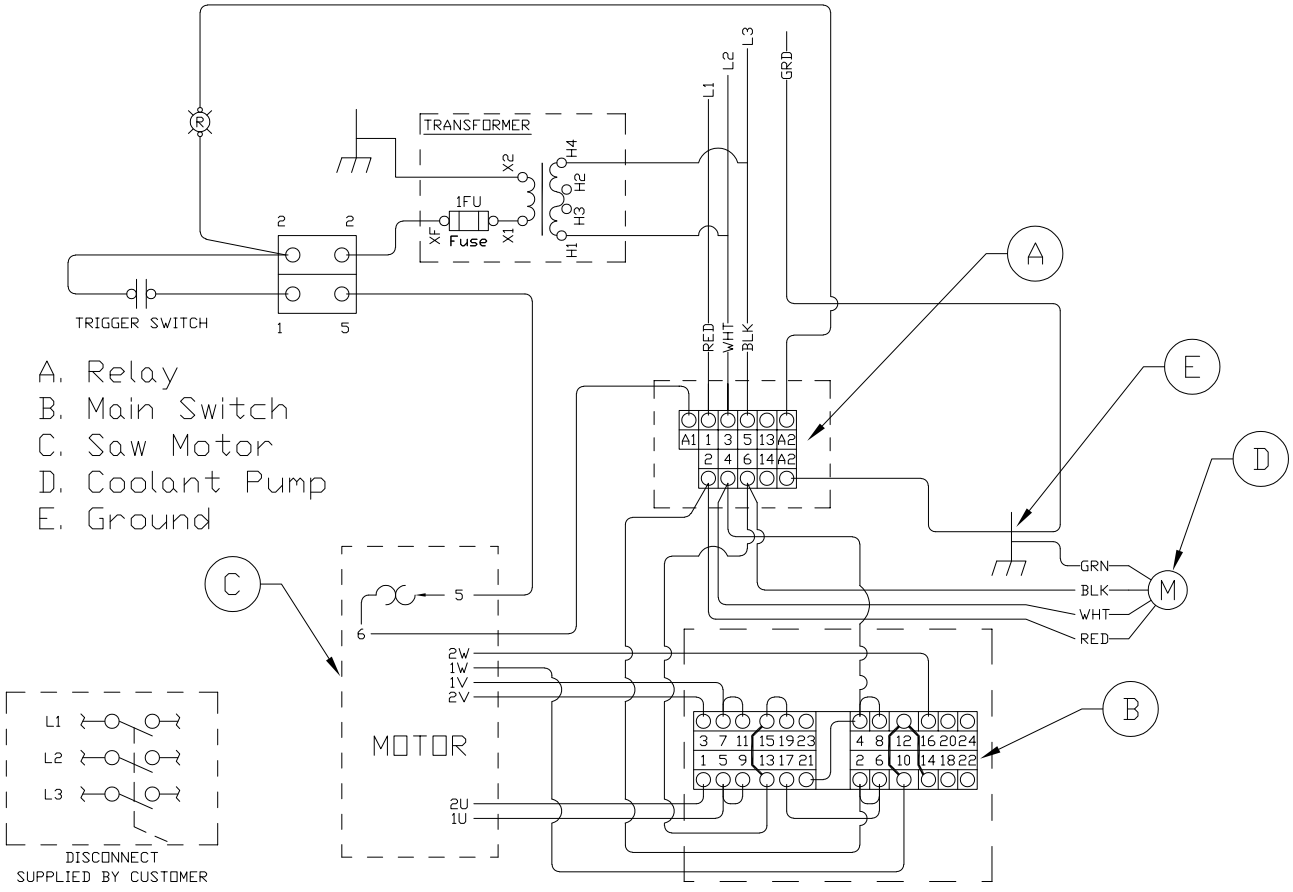


FIGURE 3-1

PKPD W/EMERGENCY STOP

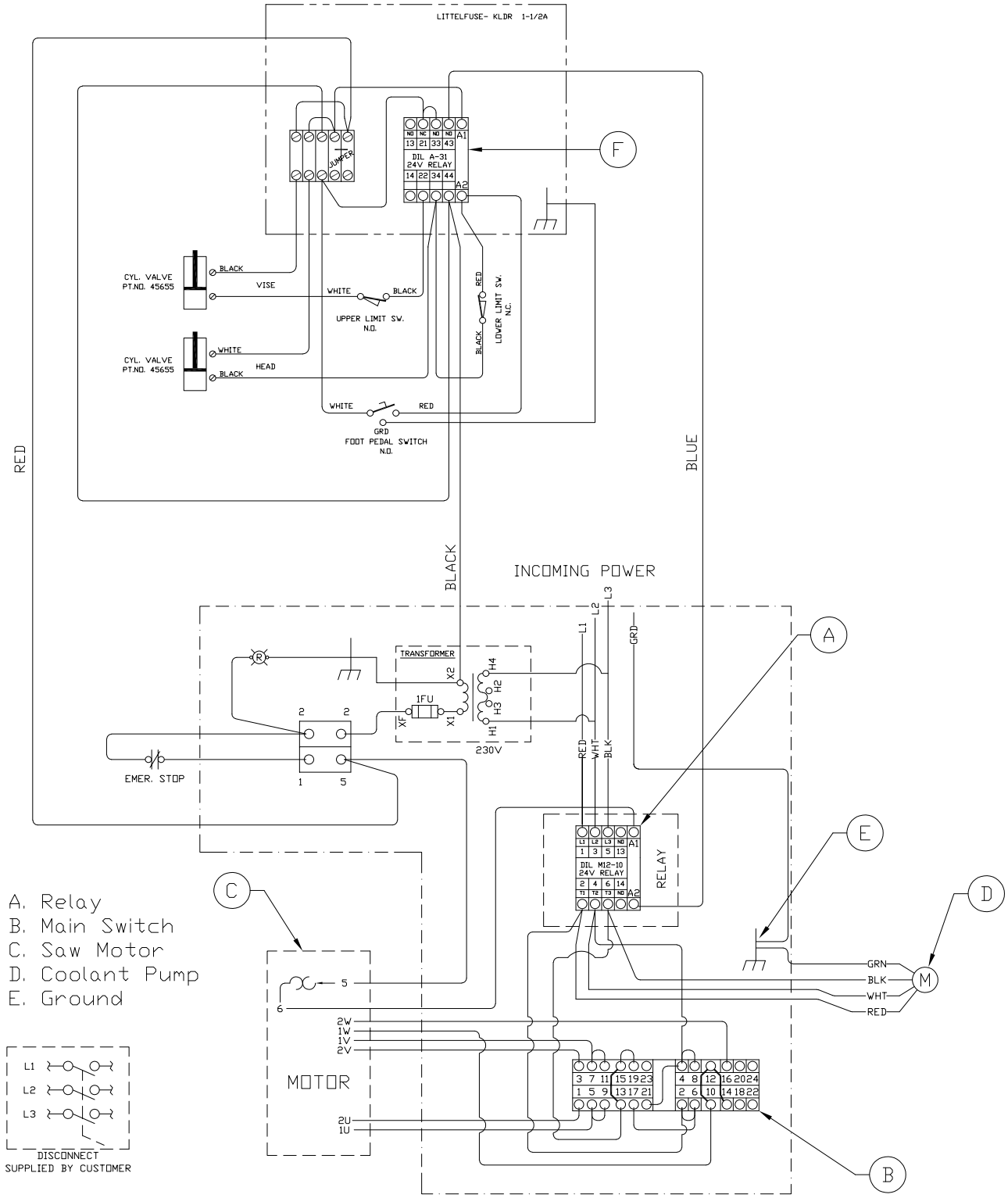


FIGURE 3-2

1-PHASE MOTOR W/TRIGGER SWITCH

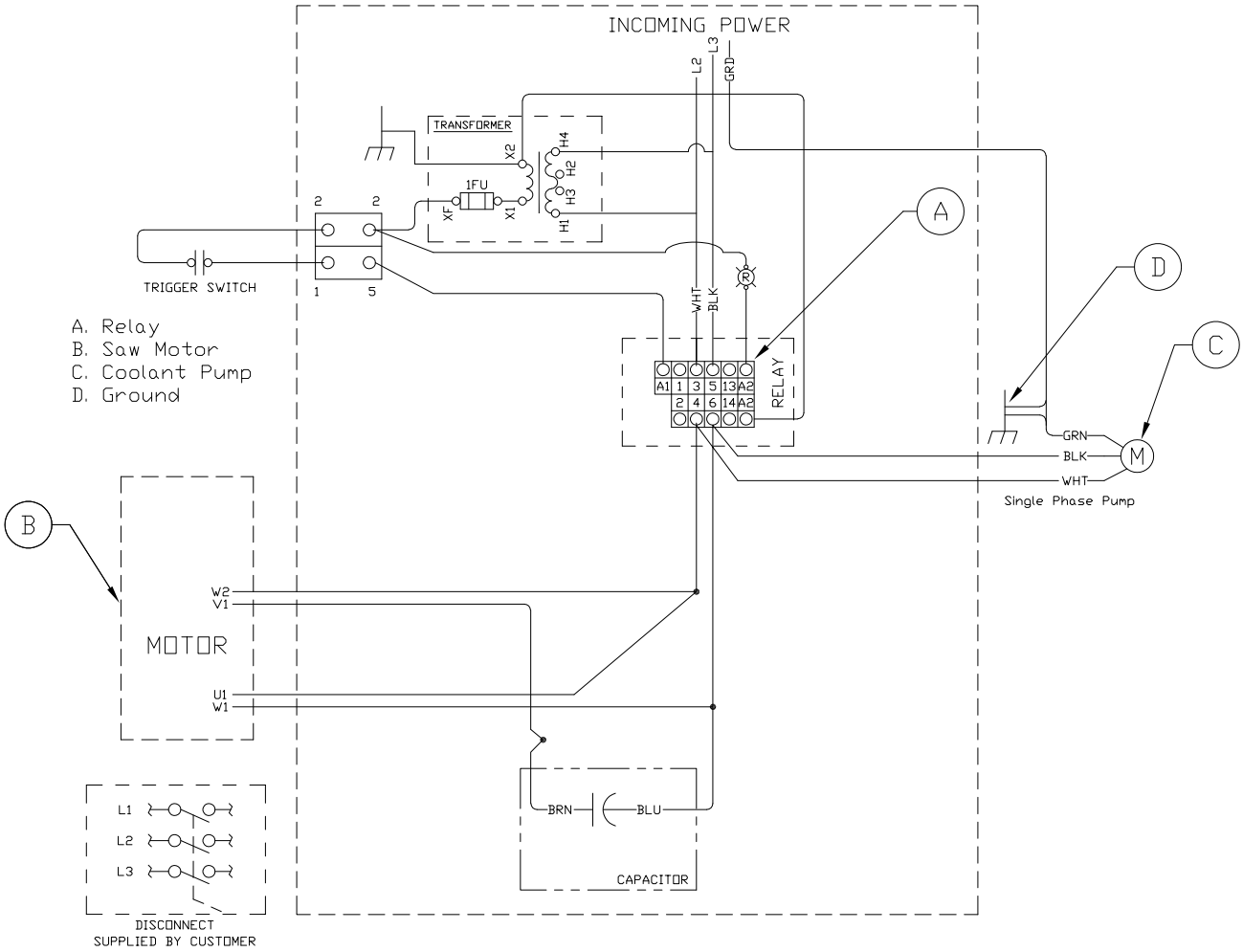


FIGURE 3-3

1-PHASE MOTOR W/E-STOP
SERIAL #'S B3431 & UP

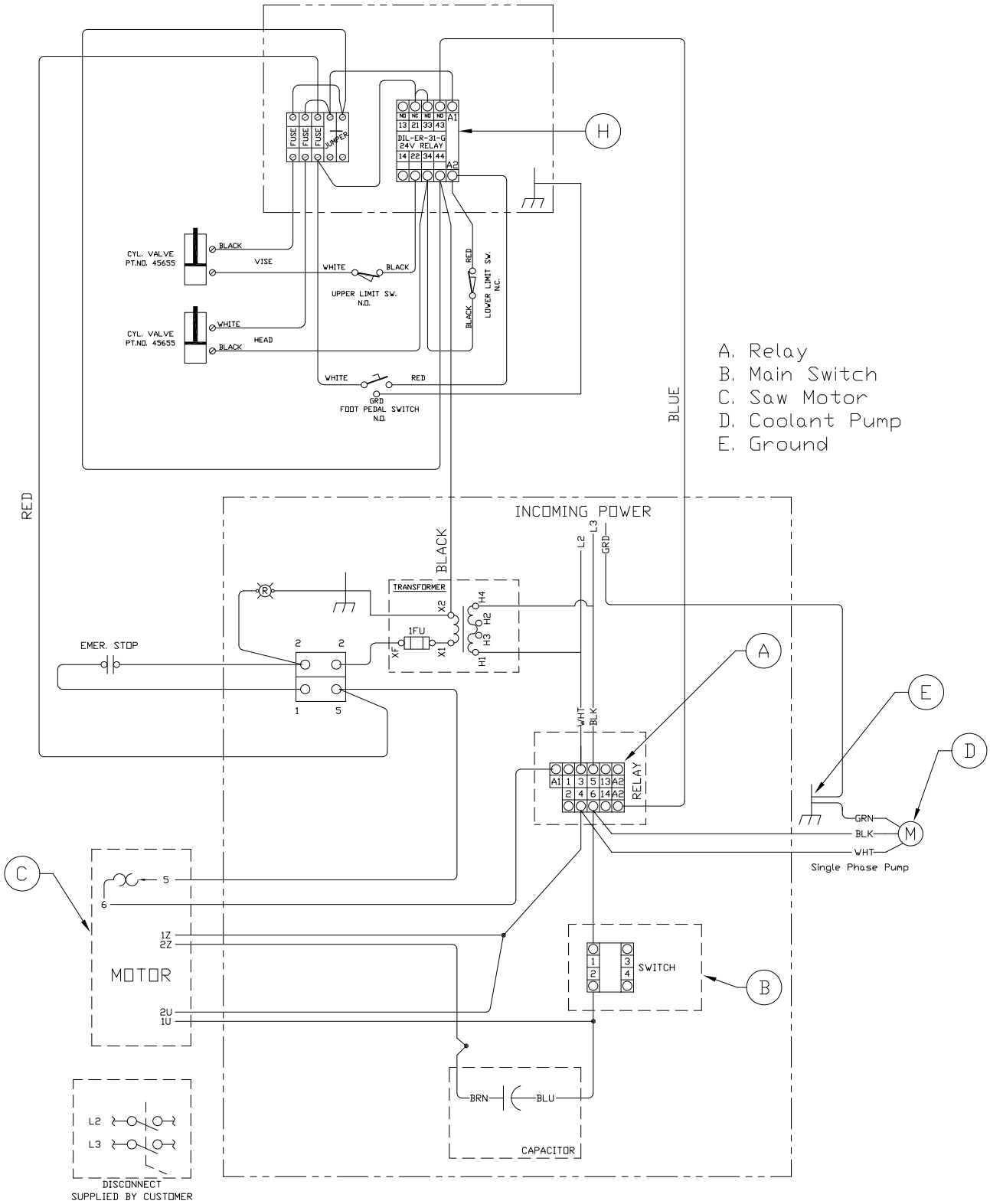


FIGURE 3-4

4.5 MACHINE START-UP

Before starting this machine, take the time to review the operator's manual thoroughly, to familiarize yourself with all of the functions of the machine.

We strongly urge you to follow OSHA directive CFR-1910.147 (effective 09-09-90) regarding lock-out, tag-out procedures. Keep in mind that the directive refers to all hazardous energy sources, not just electrical.

On machines equipped with either a power vise or a power down feed, the air supply must also be disconnected and locked or tagged. If your plant is not equipped with lock-out capabilities, Scotchman offers a lock-out switch as an option for this machine. If you are interested in this option, REFER TO SECTION 7.6 or contact your local dealer or the factory.

Do not install a blade on the saw until after it has been powered and cycled several times. To power manual and power vise machines, turn the HI-LOW switch to either the HI or LOW position and use the trigger switch mounted in the draw handle to start the motor. Always turn the HI-LOW switch to the OFF position when the saw is not in use.

On machines equipped with a 1-phase motor, use the trigger switch to start the motor.

To power machines equipped with the power down feed option, turn the HI-LOW switch to either the HI or LOW position and depress the foot switch to start the blade.

You must use the emergency stop switch to turn off the coolant pump. When the emergency stop switch is used, it must be manually reset by pulling the switch back out.

Always turn the HI-LOW switch to the OFF position when the saw is not in use.

Once the machine has been powered, check the rotation of the spindle. There is an arrow on the guard showing the proper rotation. If the rotation is not correct, the electrician will have to switch two of the three line wires.

Check the rotation of the coolant pump, also. There is an arrow cast in the top of the pump.

If the saw is equipped with either the power vise or the power down feed options, SEE SECTIONS 7.1 THRU 7.2, for additional information on electrical and air connections.

4.6 GUARD ADJUSTMENT-MANUAL MACHINES

SEE FIGURE 4 BELOW.

FOR GUARD ADJUSTMENT PROCEDURES ON SAWS EQUIPPED WITH THE POWER DOWN FEED OPTION, REFER TO SECTION 7.2C.

The proper adjustment of the blade guard on this machine is crucial to the operation of the machine and the safety of the operator. If the guard will not maintain proper adjustment, check the guard mounting bolts and rivet joints in the guard and linkage, for wear. Replace worn parts promptly.

USE THE FOLLOWING STEPS TO ADJUST THE BLADE GUARD:

1. **Turn the power OFF and disconnect from the power source.**
2. **With the head in the UP position, loosen the jam nut (G) on the guard cam (F).**
3. **Manually hold the guard open approximately 1/8 of an inch (3mm) at point H.**
4. **Rotate the guard cam (F) counterclockwise until there is tension on the linkage bar. Re-tighten the jam nut (G).**
5. **Manually cycle the head up and down several times, making sure that the guard operates properly.**

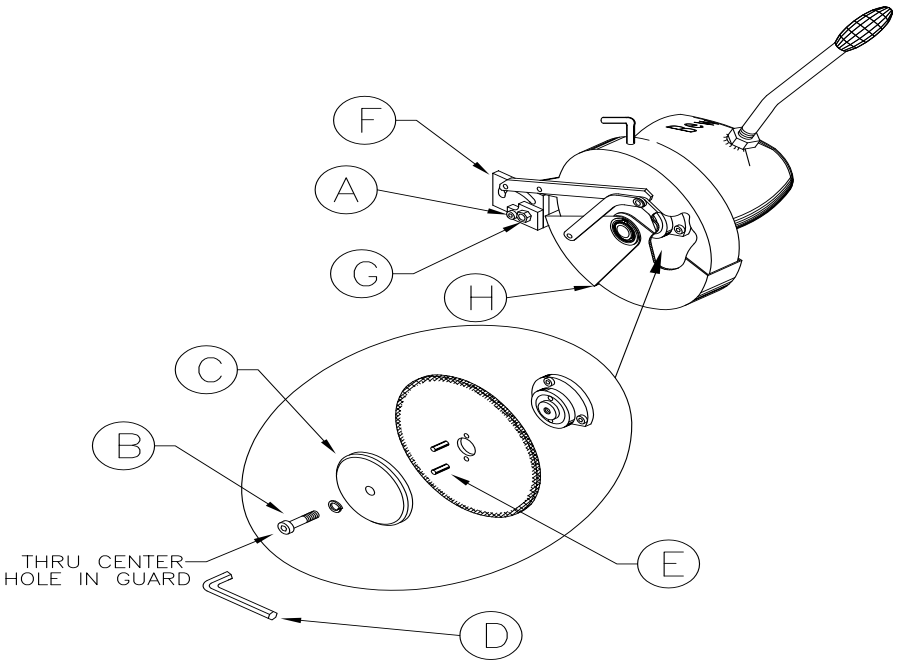


FIGURE 4

4.7 COOLANT SYSTEM

The coolant reservoir has a capacity of ten (10) gallons (37.8 liters). One gallon of coolant is shipped with the saw. For normal cutting, it should be mixed in a ratio of one part coolant to seven parts water. In conditions of heavier cutting, the ratio of water should be reduced to five parts. We recommend using only pure, synthetic, water soluble cutting oils. There is a sieve screen in the back of the cast vise base. To aid in adding coolant, the sieve screen can be removed with a screwdriver. Do not remove the sieve screen if the base of the saw is not completely clean and free of chips. The plastic panel on the back of the machine base can also be removed, to aid in adding coolant. We recommend pre-mixing the coolant before adding it to the saw. When cutting alloy steels such as stainless steel, we recommend a special mix coolant designed for these applications. For additional information on available coolants, SEE SECTION 10.5.

5.0 MAINTENANCE AND LUBRICATION

5.1 LUBRICATION

SEE FIGURE 5 BELOW.

Before operating the saw, grease the pivot pin (A) and apply penetrating oil to the vise spindle and guides (B and C). Once a week, grease all of the pivot pins and oil all of the rivet connections on the guard linkage (D). Clean the chips out of the vise at least once a day and apply penetrating oil to the spindle and guide pins. Clear the chips with a brush or similar device. DO NOT use compressed air. If your saw is equipped with a power vise or power down feed option, SEE SECTIONS 7.1 THRU 7.2, for additional information.

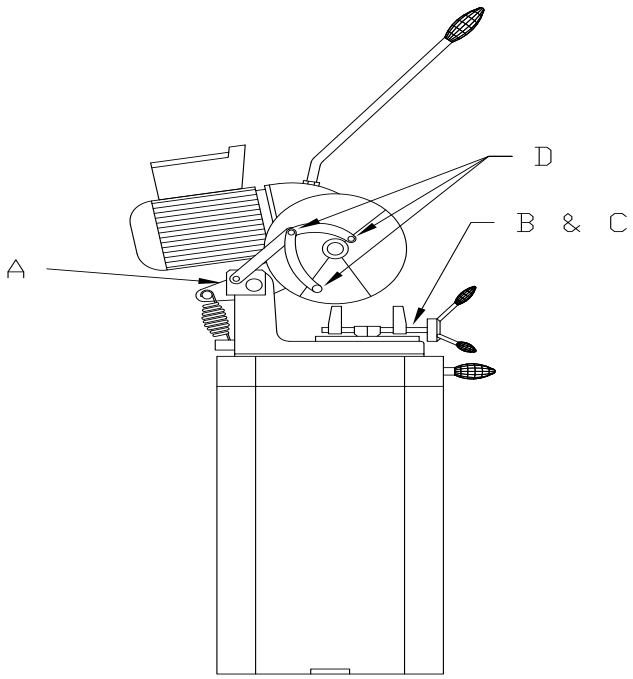


FIGURE 5

5.2 CUTTING OILS AND LUBRICANTS

SECTION 10.5 lists Scotchman's parts numbers for cutting oils and lubricants. Using high quality lubricants and oils will greatly increase the life of this equipment. We recommend using only pure, synthetic, water soluble cutting oil for coolant. For the saw head, use a Mobil 600W Super Cylinder oil.

On saws equipped with the power down feed, use a Mobil DTE Light hydraulic oil. On saws equipped with air lubricators, use a high quality air line lubricant designed for automatic oilers.

5.3 SCHEDULED MAINTENANCE

A program of scheduled maintenance should be set up and documented according to your application and the frequency with which you use this machine. The following is a list of some important things that should be included in a scheduled maintenance program.

1. EVERY 250 HOURS OR 3 MONTHS:

Drain the coolant reservoir and flush it out. Refill the coolant reservoir with new coolant.

This will extend the life of the coolant pump considerably.

2. EVERY 500 HOURS OR 6 MONTHS:

Drain the gear lube from the saw head and flush with a petroleum product. Refill the saw head with a 90 weight gear lube. Check the condition of the pivot pins on the head and on the guard.

Check the complete saw for loose connections in the electrical and air systems. If your saw is equipped with the power vise or power down feed options, SEE SECTIONS 7.1 THRU 7.2, for additional information. Since every application is different, each user must design and implement a scheduled maintenance program that fits his applications.

5.4 COOLANT PUMP MAINTENANCE

FOR OLDER MODELS, REFER TO SECTION 12.0.

IF YOUR COOLANT PUMP IS LEAKING OR LACKS POWER, USE THE FOLLOWING STEPS.

1. **We recommend replacing the pump seal kit anytime that the pump is dismantled.**

   FOR PART NUMBER IDENTIFICATION, REFER TO SECTION 9.6.

2. **Make sure that the power to the machine is off.**

3. **Remove the four bolts (J) and remove the pump from the machine.**

4. **Remove the coolant line (H) and the fitting (G). Clean any sludge out of the line and fittings.**

5. **Remove the three bolts (F) and remove the end plate (C).**

6. **Remove the screw (E), washer (D) and the impeller (B) from the pump.**

7. **Clean the sludge out of the impeller, end cap and passageway, from the bottom of the pump to the outlet port.**

8. **Reassemble the pump, reversing the above steps.**

9. **Clean out the reservoir and install new coolant.**

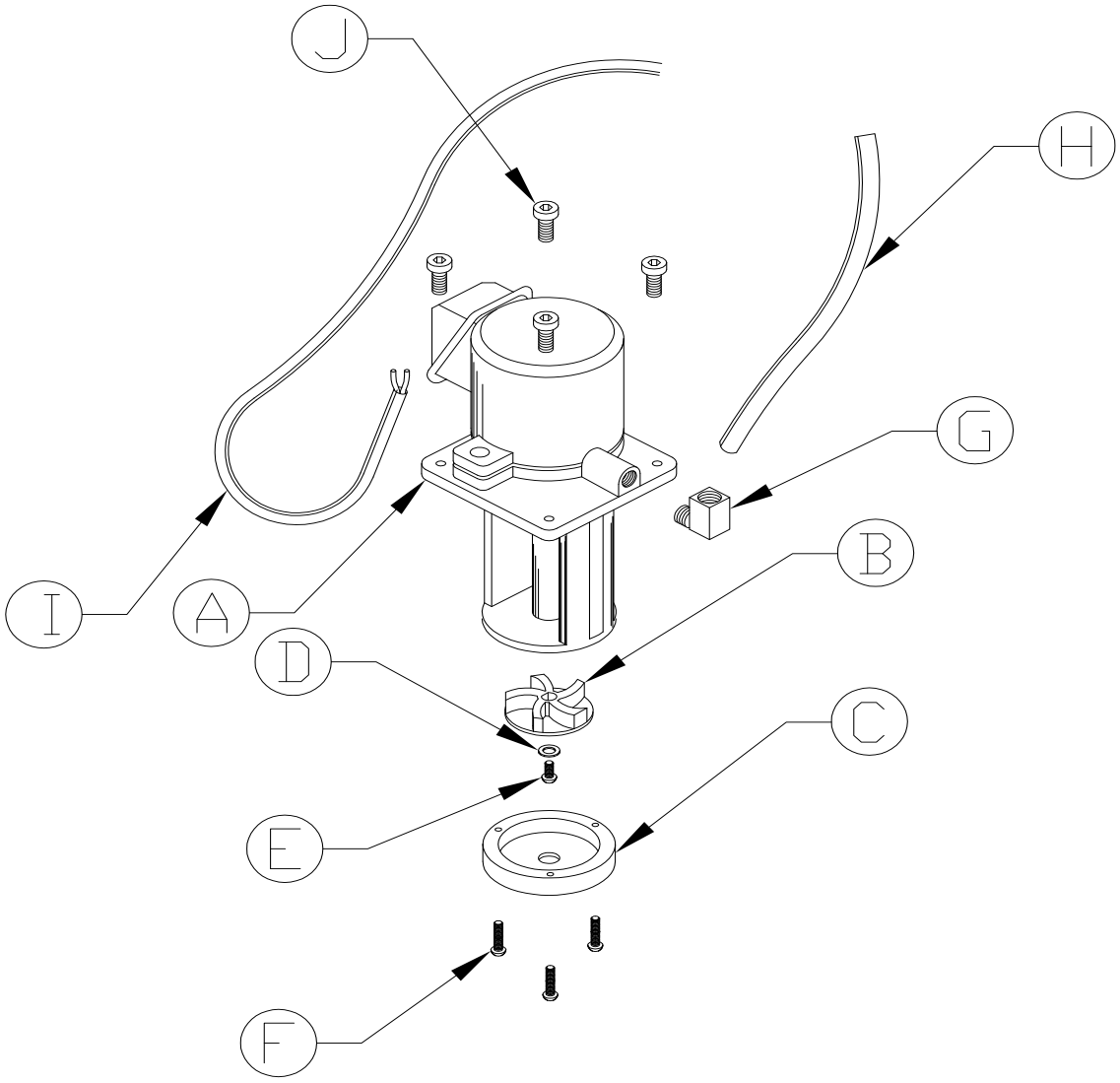


FIGURE 5A

6.0 MACHINE OPERATION

6.1 INSTALLING BLADES - MANUAL MACHINES

SEE FIGURE 6 BELOW.

FOR INSTALLING BLADES ON MACHINES EQUIPPED WITH THE POWER DOWN FEED OPTION, REFER TO SECTION 7.2D.

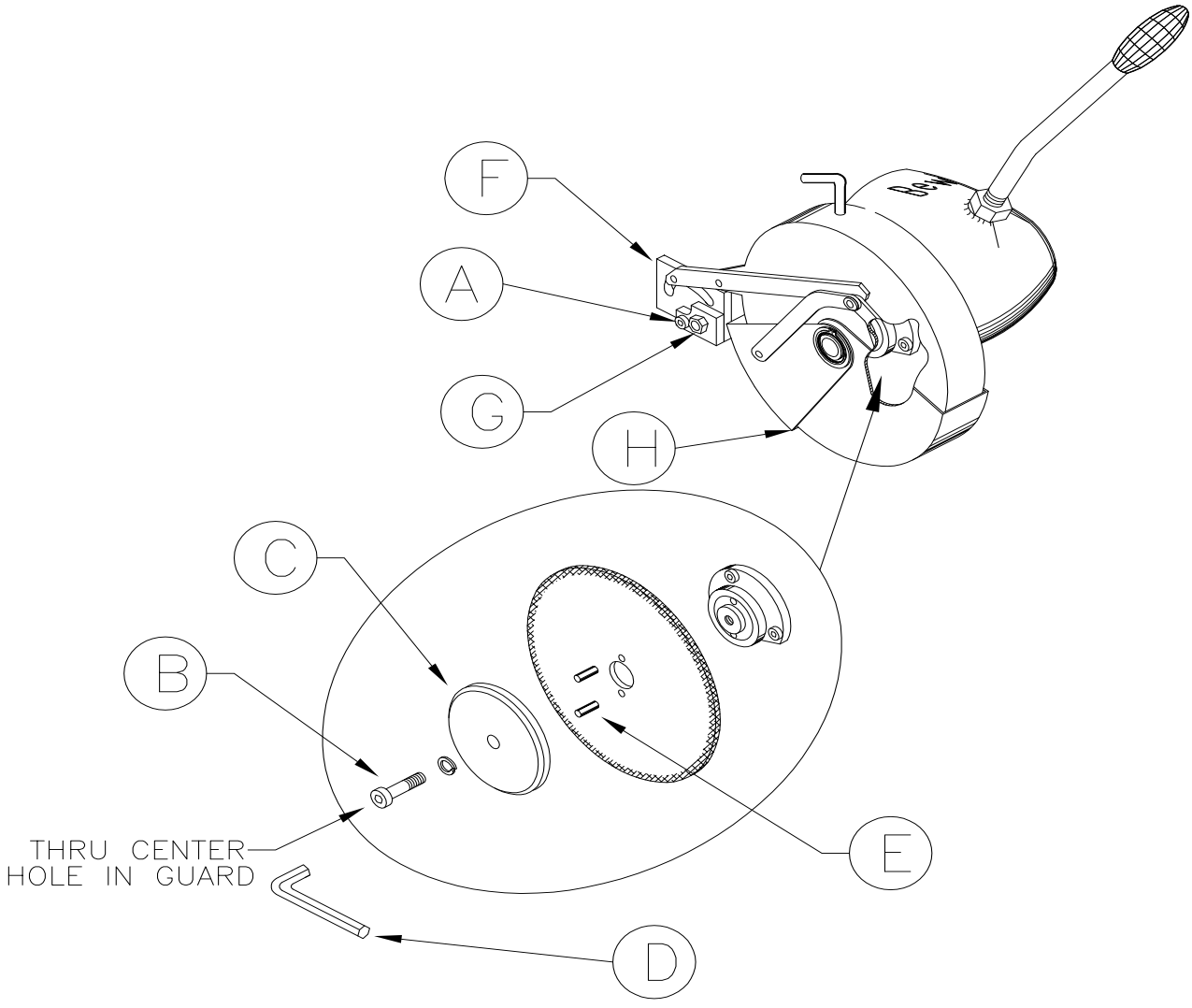


FIGURE 6

⌦ **CAUTION: USE ONLY HIGH SPEED STEEL BLADES DESIGNED FOR THIS MACHINE. DO NOT MODIFY ANY BLADE TO FIT THIS MACHINE. DO NOT USE BLADES DESIGNED FOR THIS MACHINE ON ANY OTHER EQUIPMENT.**

The CPO-275 saw is designed to use a maximum 10-3/4 inch (275mm) diameter blade. The arbor size is 32mm with two 8mm pins spaced at 45mm.

BEFORE INSTALLING THE BLADE, make sure that the power to the machine is disconnected.

USE THE FOLLOWING STEPS TO INSTALL A BLADE:
(An 8mm hex key wrench (D), shipped with each machine, is required to change blades.)

1. **Remove the bolt (A) from the guard linkage with the hex key wrench (D) and manually open the guard.**

2. **Remove the blade bolt (B) through the center hole in the blade guard.**

3. **Remove the blade flange (C).**

4. **Install the blade. Make sure that the pin holes line up to the holes in the spindle.**

5. **Replace the blade flange and start the bolt into the spindle.**

6. **Before locking the blade in position, the back lash must be taken up. To take up the back lash, rotate the bottom of the blade towards you until it seats against the drive pins.**

⌦ **CAUTION: THE BLADES ARE VERY SHARP AND CARE MUST BE TAKEN WHEN REMOVING THE BACK LASH. DO NOT GRIP THE CUTTING EDGE OF THE BLADE BARE HANDED. THE BACK LASH MUST BE TAKEN UP EVERY TIME A BLADE IS CHANGED.**

7. **After taking up the back lash, tighten the blade bolt (B).**

8. **Break in the saw blade. The teeth on new or re-sharpened blades have a sharp edge and should be manually fed through the first three or four cuts very slowly, before starting normal cutting. Besides taking up the back lash and breaking in the blade, it is very important to keep the blade flange, the spindle and the blade clean and free from nicks and chips. Failure to do these things will result in broken or damaged blades.**

6.2 SAW CAPACITIES

SEE FIGURE 7 BELOW.

CAPACITIES WITH MAXIMUM DIAMETER BLADES 10.75 IN. (275 MM)		90°	60°	45°
○	INCHES	3-3/8Ø	3-3/8Ø	3-3/8Ø
	MM.	80Ø	80Ø	80Ø
□	INCHES	3X3	$2\frac{5}{8}$X$2\frac{5}{8}$	$2\frac{5}{8}$X$2\frac{5}{8}$
	MM.	76 X 76	67 X 67	67 X 67
⊓	INCHES	3X3	$2\frac{5}{8}$X$2\frac{5}{8}$	$2\frac{5}{8}$X$2\frac{5}{8}$
	MM.	76 X 76	67 X 67	67 X 67
⌐	INCHES	3X3	$2\frac{5}{8}$X$2\frac{5}{8}$	$2\frac{5}{8}$X$2\frac{5}{8}$
	MM.	76 X 76	67 X 67	67 X 67
▭	INCHES	$3\frac{1}{2}$X$2\frac{3}{8}$	$2\frac{5}{8}$X$2\frac{5}{8}$	$2\frac{5}{8}$X$2\frac{5}{8}$
	MM.	88 X 60	67 X 67	67 X 67
●	INCHES	1-1/2Ø	1-1/4Ø	1Ø
	MM.	35Ø	30Ø	25Ø
■	INCHES	$1\frac{1}{2}$X$1\frac{1}{2}$	$1\frac{1}{4}$X$1\frac{1}{4}$	1X1
	MM.	35X35	30X30	25X25

FIGURE 7

Figure 7 above is a chart showing the maximum capacities of this machine in various materials at the most common angles from 0 degrees to 90 degrees.

6.3 SELECTING THE PROPER BLADE AND CUTTING SPEED

In cold sawing, there is no such thing as a general purpose blade. To achieve the best results from your saw, proper blade selection is important. Each saw is shipped with a pitch (number of teeth) calculator, which will help to determine the proper blade for your application.

When sawing flat stock or rectangular solid sections, determine the thickest section that will be cut and use the equivalent square size on the pitch calculator to determine the proper blade.

The CPO-350 Variable Speed saw is designed to use a maximum 14 inch (350mm) diameter blade. We recommend using smaller diameter blades if your application does not require the maximum diameter.

Using smaller diameter blades reduces the surface feet per minute and smaller blades provide greater rigidity. Smaller diameter blades available from stock for this machine are a 12-1/2 inch (315mm) and a 10-3/4 inch (275mm). For available tooth styles in stock, REFER TO SECTION 11.0.

The chart below gives the surface feet per minute for the various diameter blades.

BLADE DIAMETER		SURFACE FEET PER MINUTE			
INCH	MM	RPM'S			
		11	35	88	176
10-3/4	275	31	99	247	500
12-1/2	315	36	114	287	572
14	350	41	128	322	646

The proper blade speed is also important. The CPO-350 Variable Speed has an RPM range from 11 to 176. The heavier the material, the lower the RPM. The lighter the material, the higher the RPM.

6.4 MATERIAL CLAMPING

All work pieces must be clamped securely in the vise. Any slippage of the material can result in broken or damaged blades. The material should be clamped so that the contact surface between the material and the blade is as small as possible. For this reason, when cutting flat stock material, we recommend standing it up and cutting it through the thinnest section, whenever possible.

If the flat stock is too wide to clamp standing up, clamp it in the vise diagonally. We also recommend cutting square tubing through the diagonal section and angle iron with the web up. For examples, SEE FIGURE 8 ON THE FOLLOWING PAGE. This is not always possible when cutting materials at a miter. Some thin walled round sections and profiles will require special jaws to hold them. When trimming or cutting very short pieces that do not extend into both sides of the vise, place a piece of material the same size in the unused side of the vise, to insure uniform clamping. When setting up the saw to miter cut, pull the head down before making the first cut, to make sure that the blade clears the vise jaws.

The steel jaws have slotted mounting holes and can be adjusted for various miters. Always adjust the steel jaws so that they clamp the material as close to the blade as possible, whether miter or straight cutting. All models of the CPO-350, except those fitted with the power down feed option, have a down stroke or cutting depth adjustment. SEE FIGURE 9 ON THE FOLLOWING PAGE. This adjustment is used to keep the saw blade from cutting into the vise spindle and must be adjusted when changing sizes of materials or blades. If your saw is equipped with either the power vise or the power down feed options, SEE SECTIONS 7.1 THRU 7.2, for additional information.

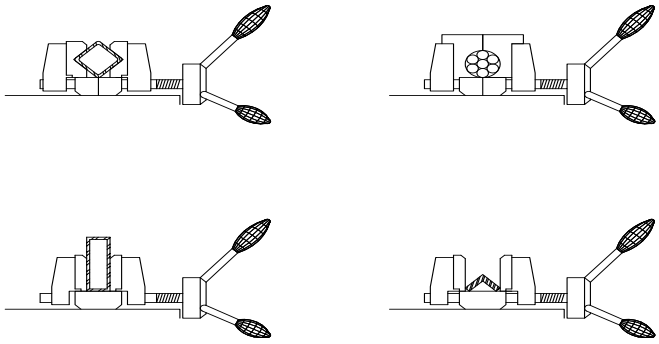


FIGURE 8

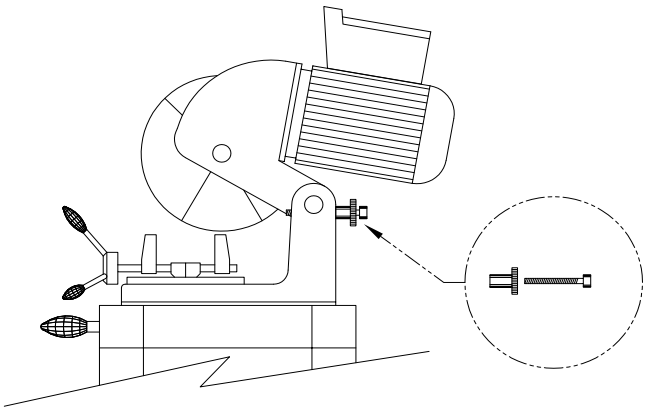


FIGURE 9

6.5 MITER LOCKING DEVICE

SEE FIGURE 10 ON THE FOLLOWING PAGE.

All models manufactured for domestic sales are equipped with a miter locking device which allows quick set-up for mitering at 45 degrees, left and right, and 90 degrees for straight cutting. A miter locking device is available as an option for models manufactured for international sales.

TO USE THE MITER LOCKING DEVICE:

1. **Unlock the tension handle (A).**
2. **Push the miter lock release handle (B).**
3. **Turn the head in the direction that you want to miter.**
4. **Release the miter lock handle and continue turning the head until the pin snaps into the slot.**
5. **Then, re-lock the tension handle. When locking the tension handle, do not over-tighten.**
6. **The miter locking device can be fine adjusted if it does not stop at an exact 45. Loosen the mounting bolts (F) and adjust the complete miter lock, left or right, to the desired position.**

IF YOU WANT TO CUT MITERS OTHER THAN 45 DEGREES:

1. **Unlock the tension handle (A).**
2. **Push the miter lock release handle (B) and turn the head to the desired angle by using the scale on the saw.**

☒ **NOTE: THE SCALE IS READ ON THE RIGHT SIDE OF THE VISE AT POINT (C), NOT IN THE CENTER.**

3. **Re-lock the tension handle (A). After a period of time, the tension handle (A) may need to be adjusted if the head will not remain in the position that it was previously set.**

TO RE-SET THE TENSION HANDLE:

1. **Remove the access panel on the back of the machine base.**
2. **Move the tension handle (A) to its unlocked position.**
3. **Loosen the jam nuts (D) on the adjustment bolts (E) and tighten the bolts finger tight, plus 1/4 of a turn.**
4. **Work the tension handle several times and re-tighten the adjusting bolts, if necessary.**
5. **Re-tighten the jam nuts (D).**

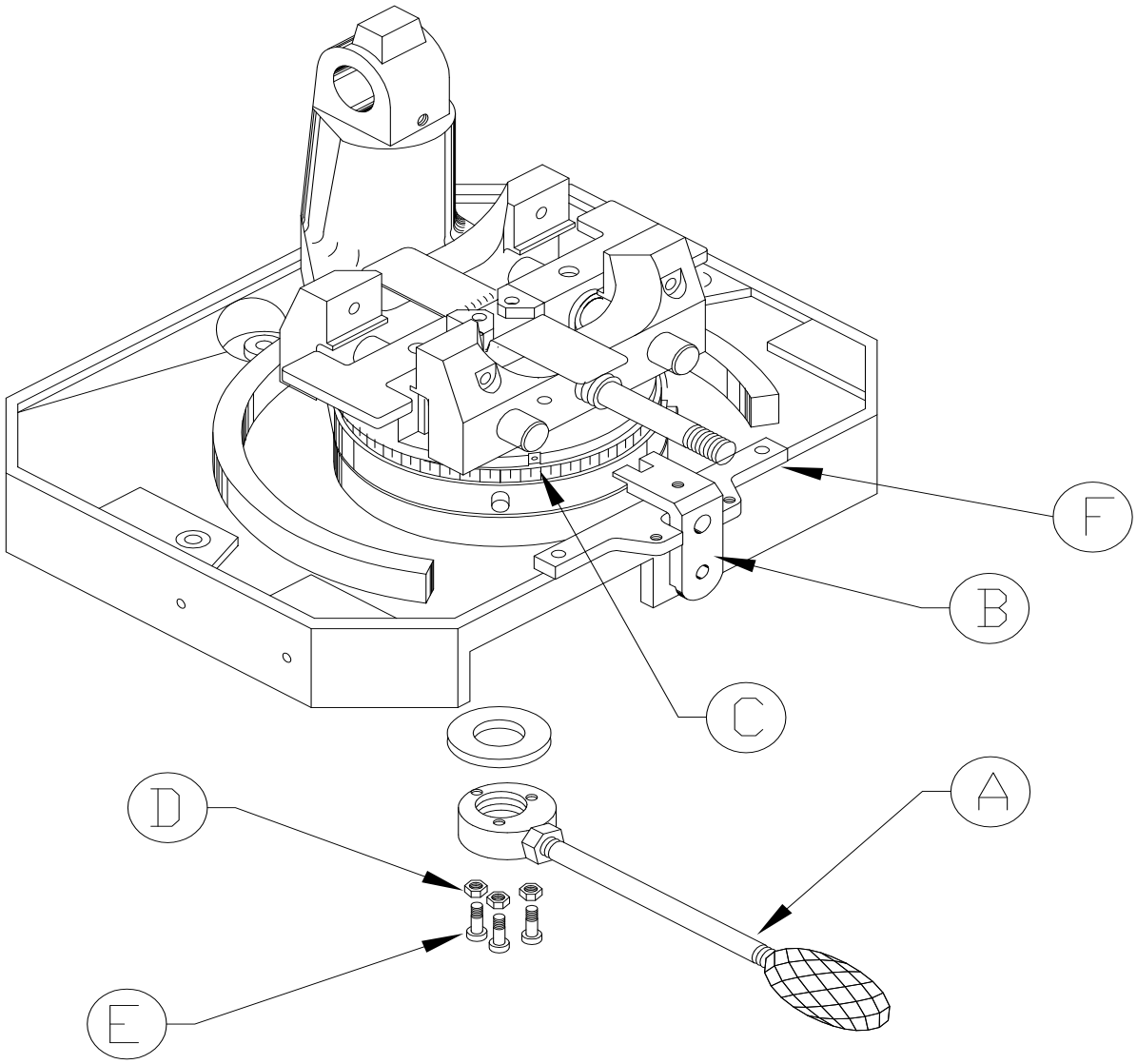


FIGURE 10

7.0 OPTIONAL EQUIPMENT

7.1 POWER VISE

The power vise is an option that is normally ordered with the saw. It is not recommended as a retro-fit in the field. The power vise allows automatic clamping of the material, which improves productivity and reduces operator fatigue. The vise automatically clamps when the saw head is drawn down and releases when the saw head returns.

7.1A POWER VISE SET-UP AND MAINTENANCE

SEE FIGURE 11 ON THE FOLLOWING PAGE.

THE FOLLOWING ARE SET-UP AND MAINTENANCE INSTRUCTIONS FOR THE POWER VISE OPTION (RETROFIT OR FACTORY INSTALLED):

1. **Before connecting the air supply to the saw, make sure that the filter/lubricating device (A) is full of oil.**

2. **Slide the shuttle valve (F) on the filter/lubricator device to the closed position.**

3. **Connect the air supply to the shuttle valve. Make sure that the vise is clear and that the head is in the UP position.**

4. **Slide the shuttle valve in to open the valve. Whenever the shuttle valve is closed, it bleeds the air pressure out of the system automatically.**

5. **Adjust the air pressure regulator (G). 90 PSI (6.2 BAR) is the minimum operating pressure. 105 PSI (7.2 BAR) is the maximum.**

6. **Before powering the saw, pull the head down several times, to make sure that the four way valve (H) and the lubricating device (A) are adjusted properly and that the air pressure setting remains constant.**

7. **The four way valve should activate the vise at the beginning of the down stroke and release it at the top of the return stroke. The four way valve is adjusted with the set screw (B) in the valve arm, just above the roller.**

8. **The lubricating device (A) should release one drop of oil every 5 to 10 cycles. On top of the lubricating device is a clear plastic dome with a small copper tube inside. The oil should drop out of the copper tube. The lubricating device is adjusted by turning the knob (C) on the top of the lubricator.**

9. **To add oil to the lubricating device, disconnect the air supply and remove the plastic bowl. The bowl is threaded and unscrews from the body. Fill the bowl approximately 3/4 full of oil designed for air lubricators and screw it back on the lubricator.**

TO ADJUST THE VISE TO THE SIZE OF MATERIAL BEING CUT:

1. **Release the locking collar (D) on the vise spindle. The vise spindle is left hand threaded and the locking collar must be turned clockwise to release it.**

2. **Open the vise, using the positioning handle (E), and place the material in the vise.**

3. **Crank the vise closed to within approximately 1/8 of an inch (3mm) from the material and relock the locking collar (D). Failure to lock the locking collar may allow the vise to vibrate open while cutting, causing damage or breakage of the blade. The power vise has approximately 1/4 of an inch (6mm) of stroke. As with the manual vise, proper clamping is very important and special jaws may be required for some materials.**
   FOR EXAMPLES, REFER TO FIGURE 8 ON PAGE 27.

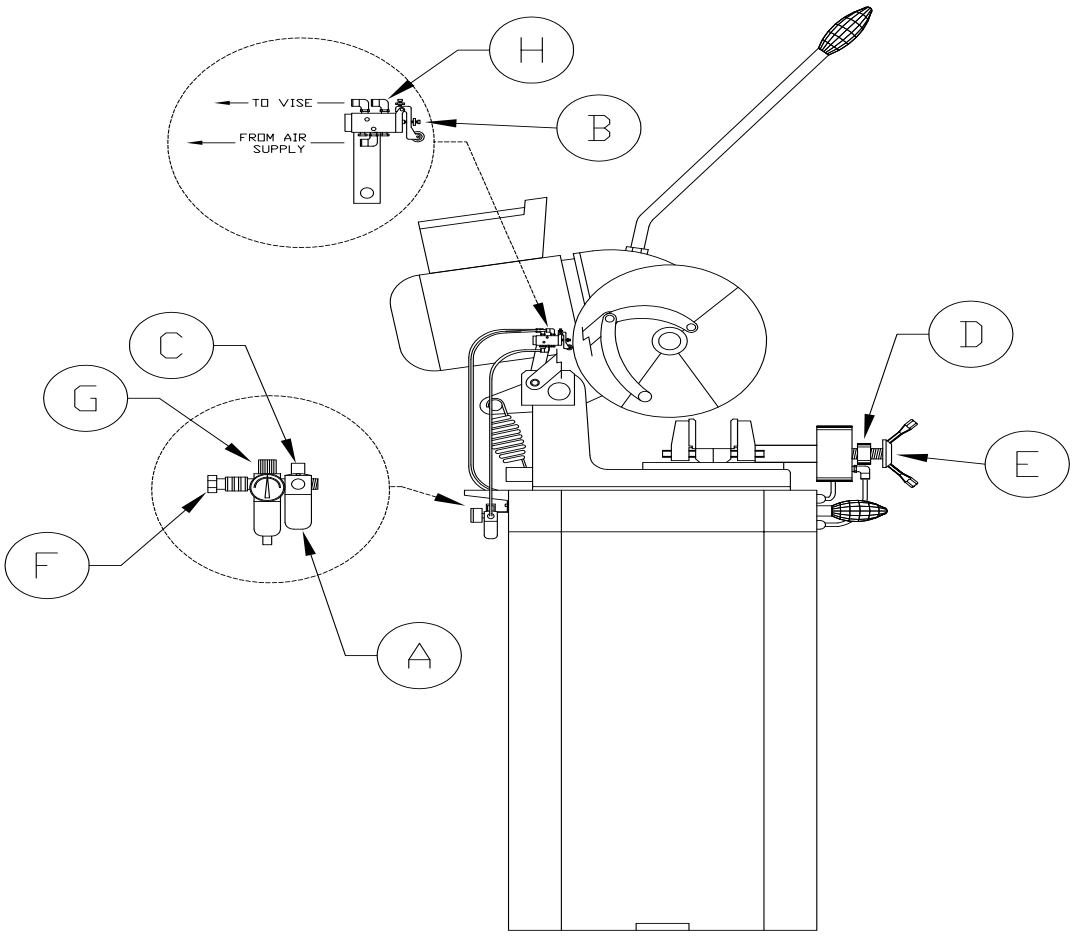


FIGURE 11

7.1B REPLACING THE SPINDLE IN THE AIR VISE

SEE FIGURE 12 BELOW.

1. **Disconnect the machine's power and air supply.**
2. **Remove the air lines (A) from the front of the cylinder.**
3. **Remove the support block (B), the bolts (C) and the spacer (I) from the base of the vise.**
4. **Remove the guide pins (D) out through the back of the vise. The head must be moved to the miter position in each direction to remove the pins.**
5. **Lift the complete vise off of the machine.**
6. **Remove the lock nut (J) from the spindle.**
7. **Unscrew the vise boss (K) from the spindle.**
8. **Unscrew he spindle from the front casting (L) and the rear casting (E).**

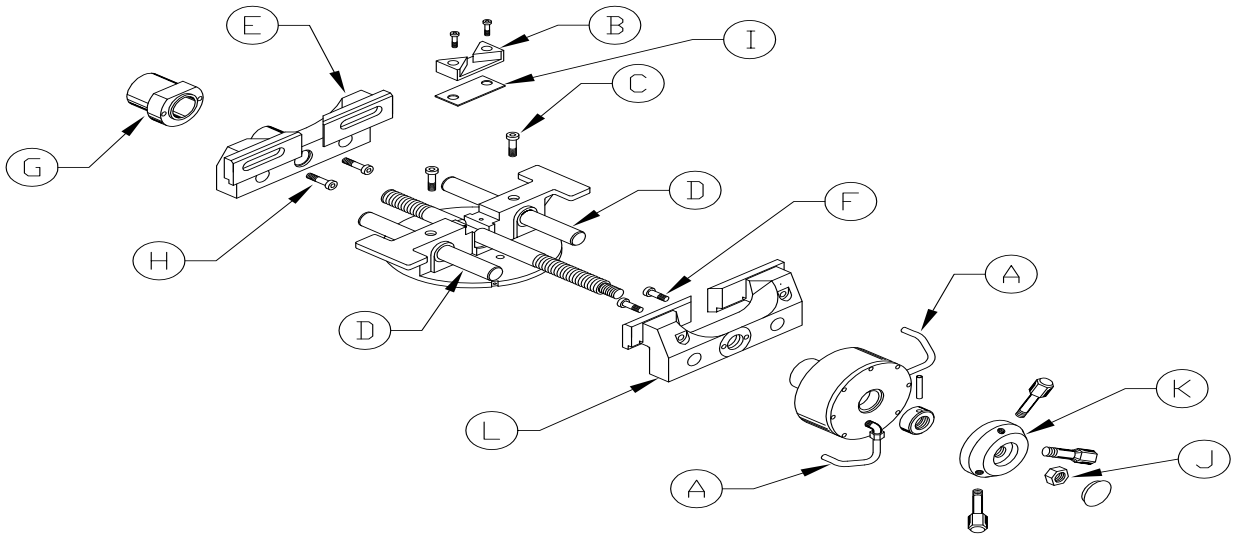


FIGURE 12

7.1C REPLACING THE SEALS IN THE AIR VISE

SEE FIGURE 13 BELOW.

1. **Open the vise to its full open position.**
2. **Disconnect the air lines from the cylinder.**
3. **Remove the jam nut (G), the hand wheel (B) and the locking collar (C) from the front of the spindle.**
4. **Remove the two bolts (D) from the front vise casting that holds the air cylinder on.**
5. **Unscrew the air cylinder from the spindle.**
6. **Remove the eight socket head cap screws (E) from the cover and remove the cover and the piston.**
7. **Remove the old seals and clean all of the parts and inspect them for any scratches or nicks.**
8. **Install the new seals and reassemble it, reversing the above steps.**

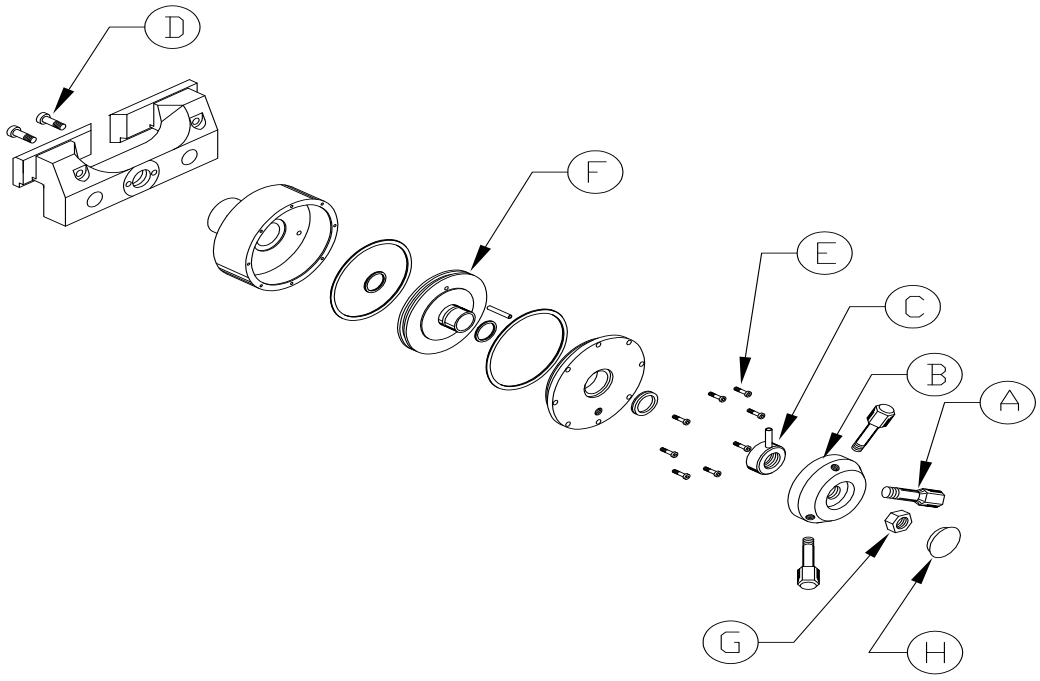


FIGURE 13

7.2 POWER DOWN FEED

The power down feed option, used in conjunction with the power vise option, changes a manual saw into a semi-automatic saw. These options will increase productivity and reduce operator fatigue. The power down feed option cannot be retrofit to machines with serial number 11940491 and prior in the field. This option can be used on machines with or without the power vise option.

7.2A POWER DOWN FEED SET-UP AND MAINTENANCE

SEE FIGURE 14 ON THE FOLLOWING PAGE.

1. **Before powering the saw, check the oil level in the reservoir (A). There is a sight glass in the back of the reservoir. The head must be in the full UP position. The recommended oil is a 10 wt., non-foaming hydraulic oil.**

⌦ **CAUTION: ALWAYS DISCONNECT THE AIR SUPPLY BEFORE REMOVING THE FILLER PLUG FROM THE RESERVOIR. IF THE FILLER PLUG IS REMOVED WHILE THE MACHINE IS CONNECTED TO THE AIR PRESSURE, THE FLUID IN THE TANK WILL BE PURGED THROUGH THE OPENING UNDER PRESSURE.**

2. **Slide the shuttle valve (D) to its CLOSED position and connect the air supply.**

3. **Slide the shuttle valve to its OPEN position and adjust the air pressure regulator. 90 PSI (6.2 BAR) is the minimum operating pressure. 105 PSI (7.2 BAR) is the maximum.**

4. **Without powering the saw, manually cycle the head up and down several times, to purge the air out of the lines. The head may cycle irregularly the first few cycles.**

5. **After cycling the head, shut the flow control valve (B) off. Then, open it one turn.**

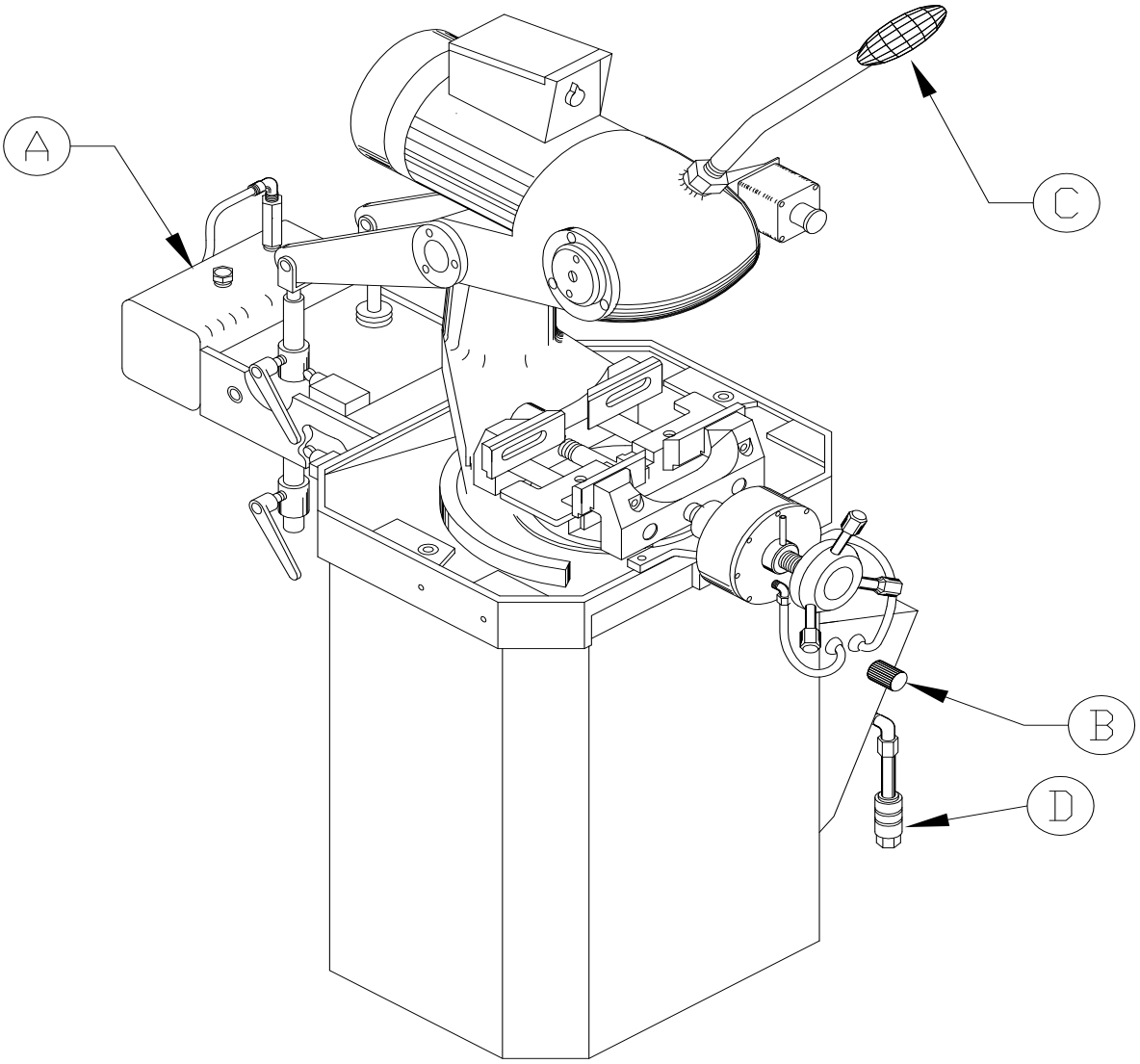


FIGURE 14

7.2B STROKE CONTROL ADJUSTMENT (POWER DOWN FEED)

SEE FIGURE 15 ON THE FOLLOWING PAGE.

Before powering the machine, the up and down strokes of the saw head must be set. The stroke is set by the collars (A & B) on the shaft (C).

TO SET THE STROKE:

1. **Without powering the saw, cycle the head down by depressing the foot switch, with the HI-Low switch in the OFF position. If this switch is in either the HI or Low position, the saw motor will start when the pedal is depressed.**

2. **Close the flow control (D) down so that the head travels down slowly. When the blade reaches the point where it will cut through the material, close the flow control valve (D) and the head will stop at that point.**

3. **Loosen the handle (E) on the collar (B) and slide the collar up until it contacts the limit switch (F).**

4. **Slowly release the flow control knob and allow the head to return until the blade is just high enough that the material will feed under the blade. Then, close the flow control valve.**

5. **Loosen the handle on the upper collar (A) and slide the collar down until it contacts the limit switch (G).**

6. **To make sure that the settings are correct, open the flow control valve (D) and cycle the head several times before powering the machine.**

⌦ **CAUTION: ANY TIME THAT THE BLADE OR THE SIZE OF THE MATERIAL BEING CUT IS CHANGED, THE STROKE OF THE MACHINE HAS TO BE CHECKED. FAILURE TO SET THE STROKE OF THE MACHINE WILL RESULT IN DAMAGE TO THE MACHINE OR TO THE BLADES.**

7. **Adjust the flow control valve (D) to the proper cutting feed rate before cutting any material. The lubricating device should produce a drop of oil every 5 to 10 cycles. It can be adjusted by the knob on top of the lubricator. There is a clear plastic dome on top of the lubricator with a copper tube inside. The oil should drop from the copper tube. The oil in the lubrication device should be checked everyday. The oil level in the reservoir should be checked every week. For recommended fluids, REFER TO SECTION 5.2.**

   As with all other functions of the saw, selection of the proper blade, spindle speed and clamping are very important in providing a quality finished product.

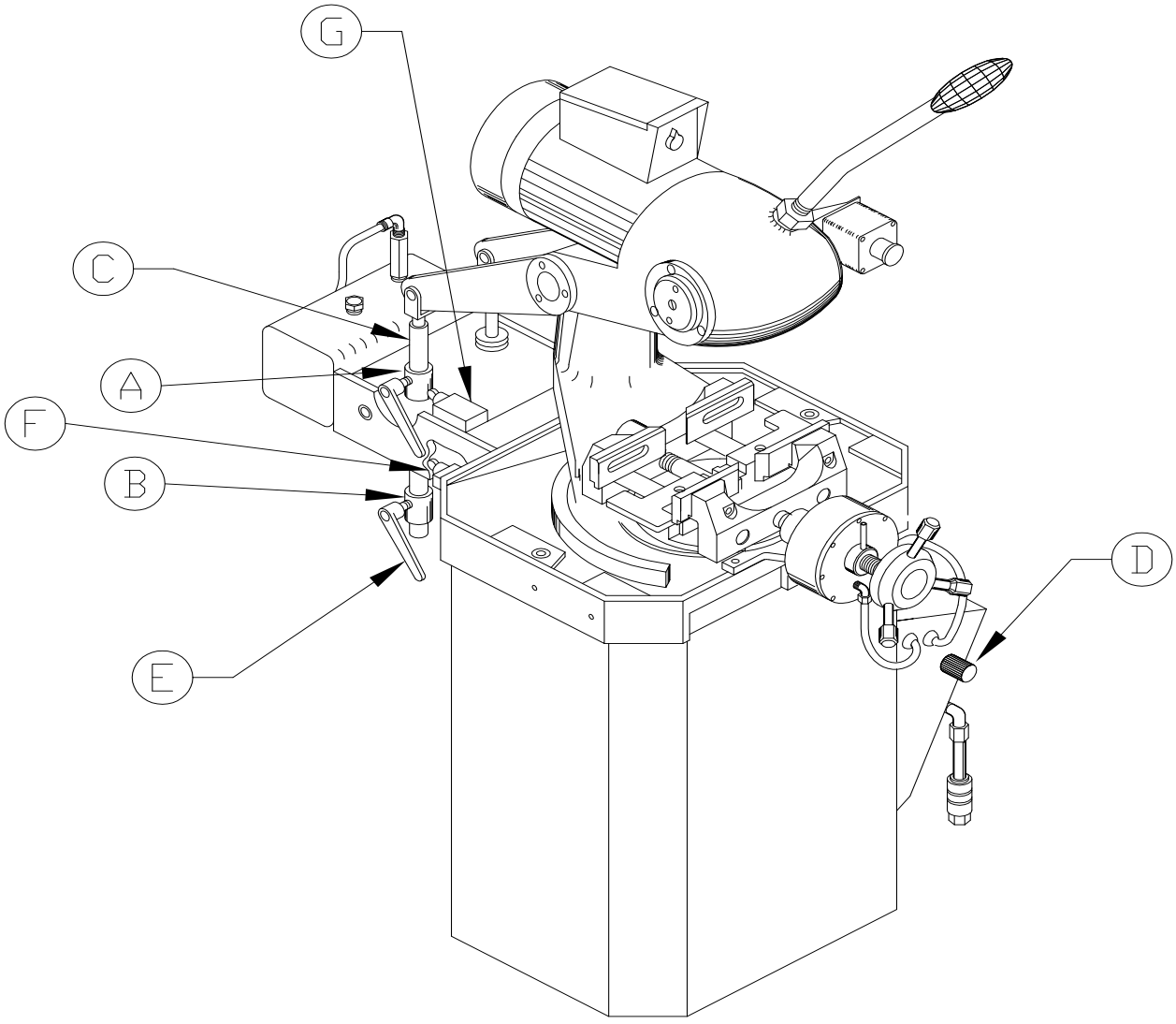


FIGURE 15

7.2C GUARD ADJUSTMENT (POWER DOWN FEED)

SEE FIGURE 16 ON THE FOLLOWING PAGE.

⌦ **CAUTION: THE GUARD MUST BE ADJUSTED EVERY TIME THAT THE STROKE OF THE MACHINE IS ADJUSTED.**

TO ADJUST THE GUARD:

1. **Before adjusting the guard, set the up and down stroke of the machine by following the instructions in SECTION 7.2.**

2. **With the saw head in the UP position, loosen the bolt (A) in the guard stop (B).**

3. **Raise the movable section of the guard (C) so that it just clears the vise jaws by no more than 1/8 of an inch (3mm).**

4. **Adjust the guard stop (B) until it contacts the stop on the fixed section of the guard and tighten the bolt (A).**

5. **Without powering the machine, cycle the head of the saw several times to make sure that the adjustment is correct.**

➲ **NEVER PLACE ANY PART OF YOUR BODY NEAR THE BLADE OR THE GUARD WHILE THE MACHINE IS RUNNING!**

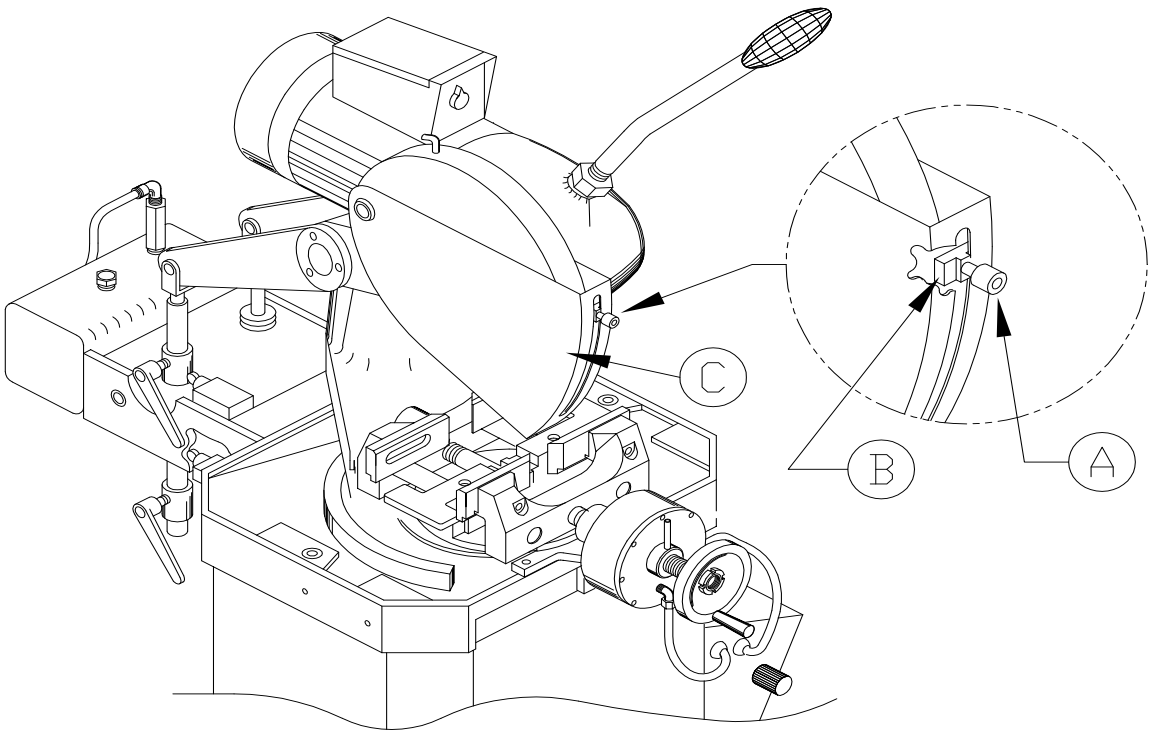


FIGURE 16

7.2D INSTALLING BLADES (POWER DOWN FEED)

SEE FIGURE 17 ON THE FOLLOWING PAGE.

⌦ **CAUTION: USE ONLY HIGH SPEED STEEL BLADES DESIGNED FOR THIS MACHINE. DO NOT MODIFY ANY BLADE TO FIT THIS MACHINE. DO NOT USE BLADES DESIGNED FOR THIS MACHINE ON ANY OTHER EQUIPMENT.**

The CPO-350 saw is designed to use a maximum 14 inch (350mm) diameter blade. The arbor size is 40mm with four 12mm pins spaced at 64mm.

BEFORE INSTALLING THE BLADE, make sure that the power to the machine is disconnected.

USE THE FOLLOWING STEPS TO INSTALL A BLADE:

(An 8mm hex key wrench (A), shipped with each machine, is required to change blades.)

1. **Release the upper stroke control and allow the head to travel to its full UP position.**
2. **Raise the movable section of the guard (B) to the OPEN position.**
3. **Remove the blade bolt (C) through the center hole in the blade guard.**
4. **Remove the blade flange (D).**
5. **Install the blade. Make sure that the pin holes line up to the holes in the spindle.**
6. **Replace the blade flange and start the bolt into the spindle.**
7. **Before locking the blade in position, the back lash must be taken up. To take up the back lash, rotate the bottom of the blade toward you until it seats against the drive pins.**

⌦ **CAUTION: THE BLADES ARE VERY SHARP AND CARE MUST BE TAKEN WHEN REMOVING THE BACK LASH. DO NOT GRIP THE CUTTING EDGE OF THE BLADE BARE HANDED. THE BACK LASH MUST BE TAKEN UP EVERY TIME A BLADE IS CHANGED.**

8. **After taking up the back lash, tighten the blade bolt (C).**
9. **Return the movable guard to the DOWN position and re-set the upper stroke control.**
10. **Break in the saw blade. The teeth on new or re-sharpened blades have a sharp edge and should be fed through the first three or four cuts, very slowly, before starting normal cutting. Besides taking up the back lash and breaking in the blade, it is very important to keep the blade flange, the spindle and the blade clean and free from nicks. Failure to do these things will result in broken or damaged blades.**

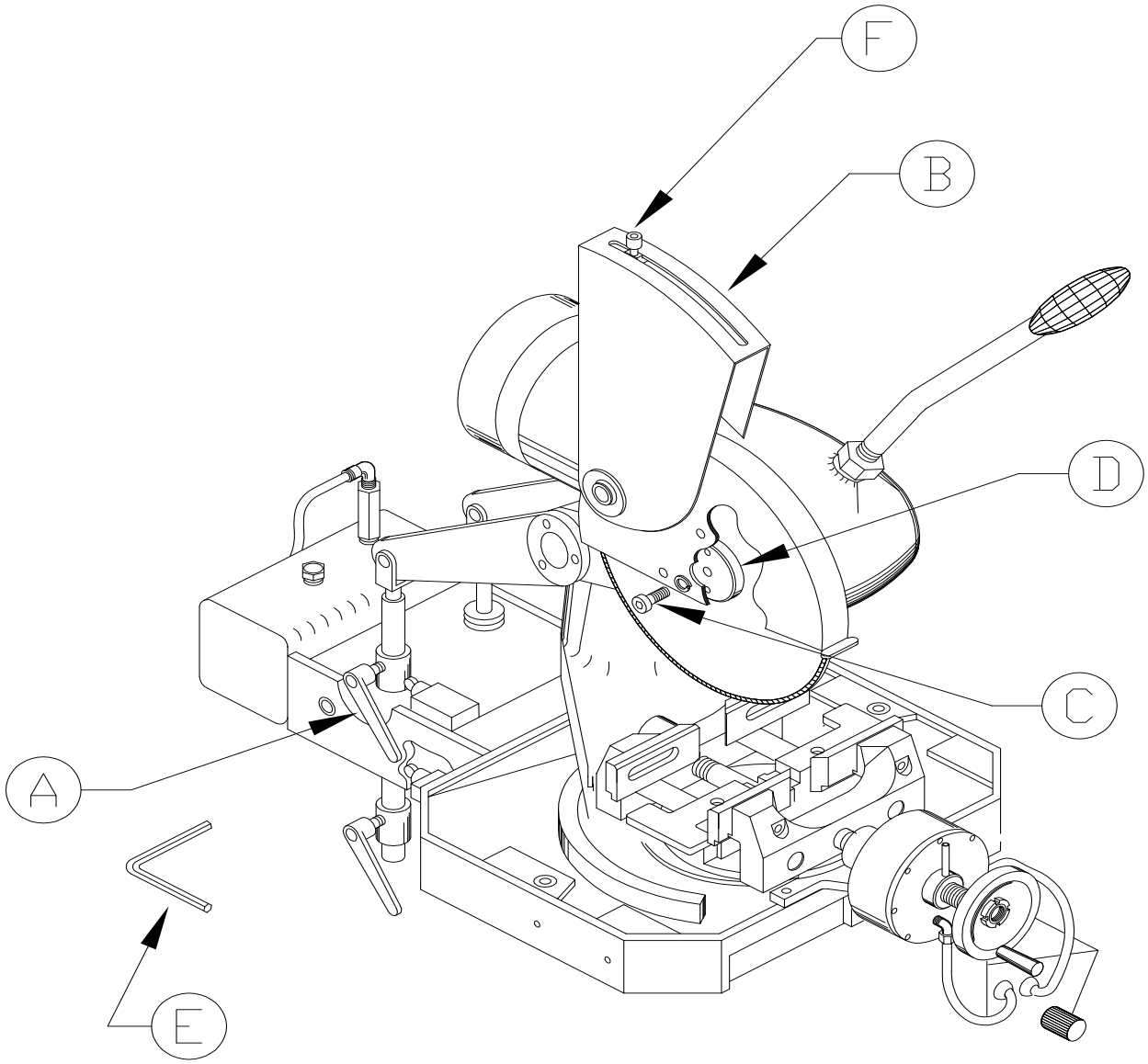


FIGURE 17

7.2E POWER DOWN FEED TROUBLESHOOTING

1. **THE HEAD FEEDS DOWN FULL SPEED WITH THE FLOW CONTROL (D) TURNED OFF.**
   Bad check valve (V): Clean or replace it.

2. **THE HEAD FEEDS FAST WITH NO CONTROL, HEAD BANGING UP, LOW OIL LEVEL.**
   Add oil (hydraulic oil).

3. **THE HEAD STOPS AND DOES NOT FEED THROUGH THE MATERIAL.**
   Adjust the Down Feed Pressure Regulator (P). Clockwise increases the pressure.

4. **THE HEAD FEEDS DOWN BUT DOESN'T RETURN.**
   Check the switch (CC).

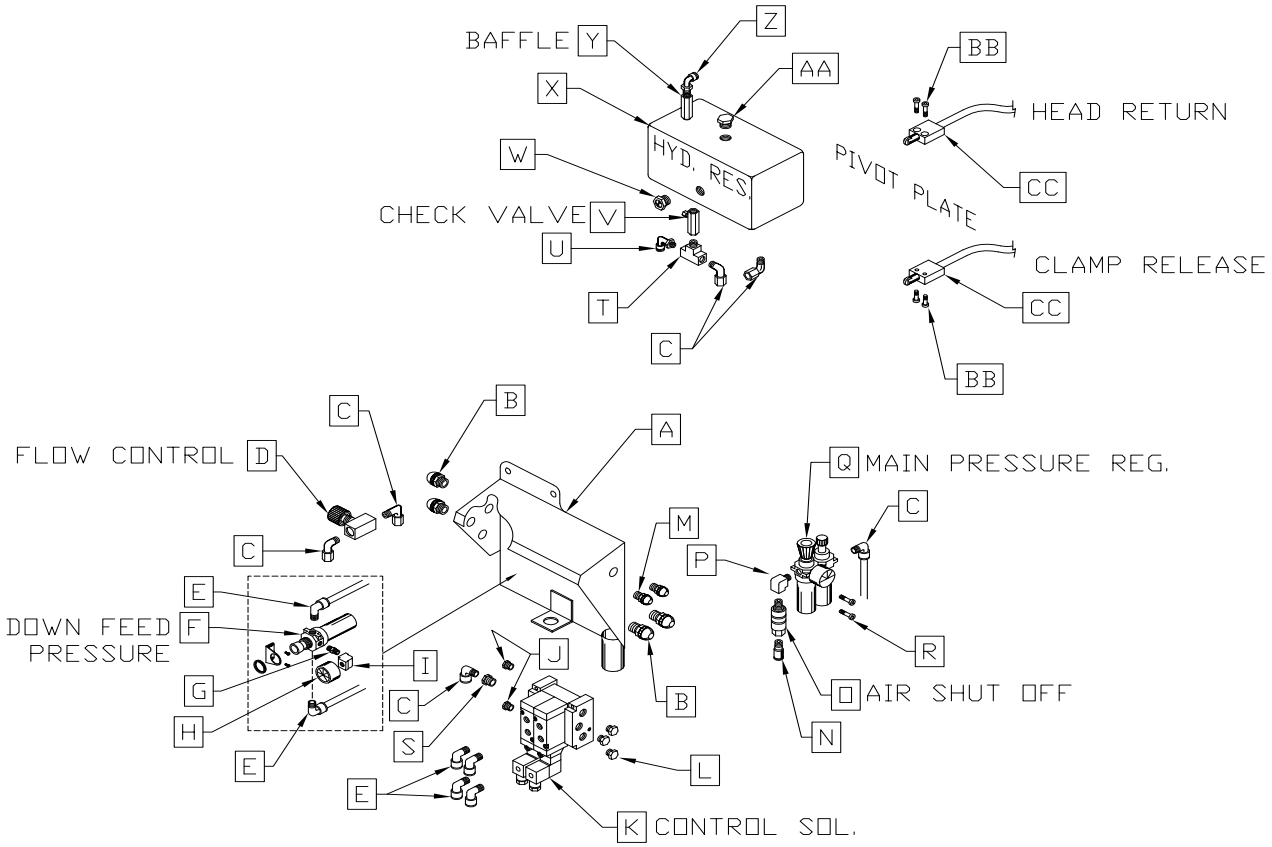

BAFFLE
Y
Z
AA
X
HYD. RES.
W
CHECK VALVE
V
U
T
C
BB
HEAD RETURN
PIVOT PLATE
CC
CLAMP RELEASE
CC
BB
C
B
A
FLOW CONTROL
D
Q
MAIN PRESSURE REG.
C
M
P
C
E
DOWN FEED
PRESSURE
F
G
H
E
I
J
C
S
E
B
R
O
AIR SHUT OFF
N
L
K
CONTROL SOL.

FIGURE 18

7.3 MATERIAL SUPPLY TRACKS

A ten foot roller supply track, that can be bolted to the input side of the saw to support longer pieces of material, is an available option for this saw. The supply tracks can also be bolted end to end, to supply longer tracks, if needed. The ten foot supply track bolts to the machine on the left side of the base casting.

SEE FIGURE 21 ON THE FOLLOWING PAGE.

1. **Attach the roller support bracket (N) to the left side of the base casting with the 10 x 30mm hex head bolts and lock washers provided.**

2. **Bolt the legs (B) to the rail assembly (A) with the remaining 10 x 30mm hex head bolts.**

3. **Place the two remaining 10 x 80mm hex bolts through the end of the rail assembly and lock them in place with the hex nuts.**

4. **Thread another nut on each bolt and attach the track to the support bracket with the remaining two 10mm hex nuts.**

5. **Space the rollers along the rail at an even spacing.**

6. **Adjust the supply track so that the rollers are at the same level as the bed of the material vise on the saw. The track is adjusted by loosening the bolts in the legs and the bolts that attach the support bracket to the track.**

7. **The track may be anchored to the floor, using the mounting holes provided.**

8. **The optional vertical guide assembly (F) can be used as a guide for materials that do not lay flat on the feed roller.**

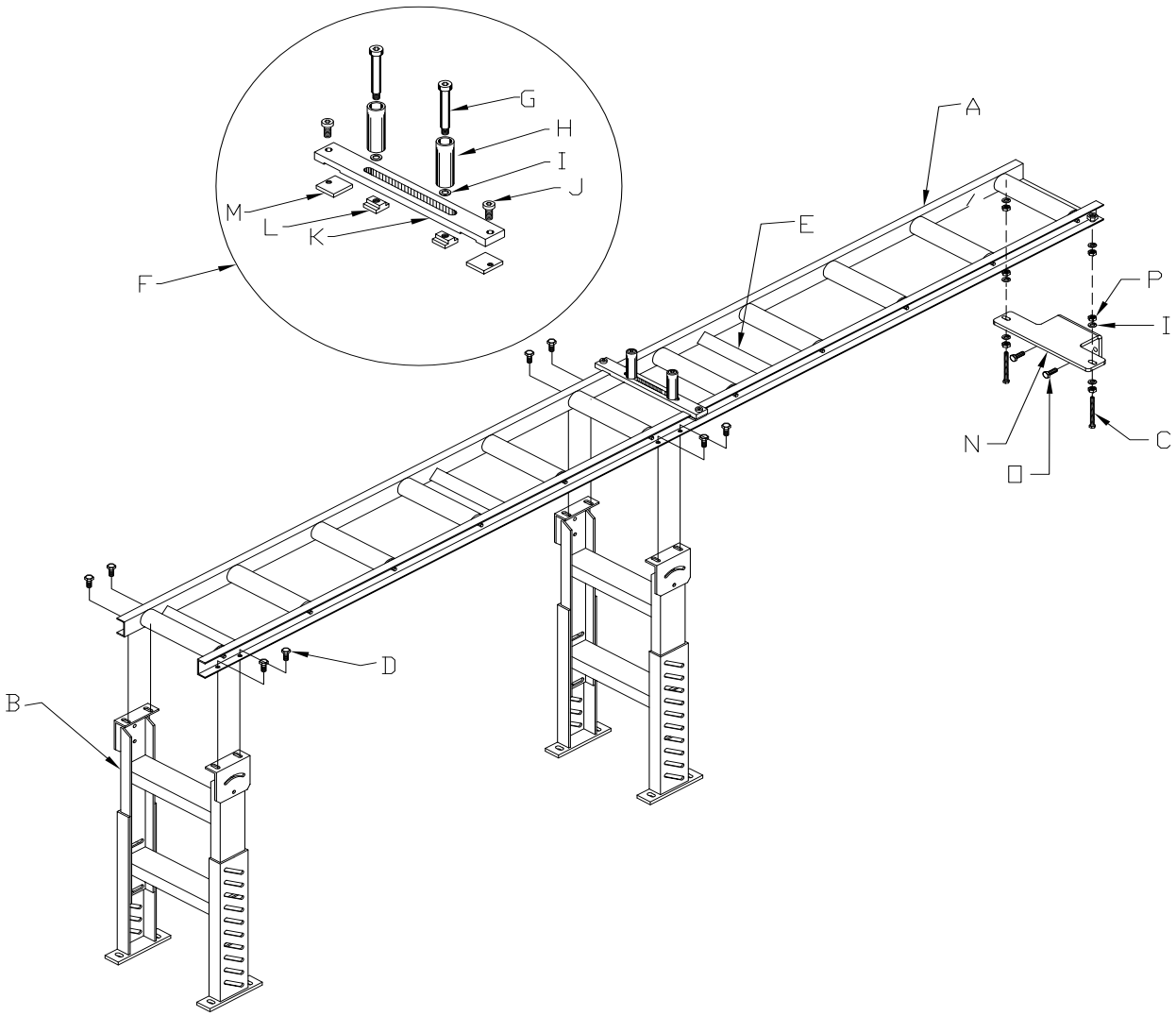


FIGURE 19

7.4 DISCHARGE TRACKS WITH SCALES

Roller discharge tracks equipped with either a right or left hand quick-loc are available in two lengths: 60" and 120" (122 & 303 CM).

The discharge tracks allow fast set-up and accuracy for various lengths of cuts.

SEE FIGURE 20 ON THE FOLLOWING PAGE.

1. **Bolt the support bracket (A) to the side of the base casting with the 10 x 30mm head bolts and lock washers provided.**

2. **Bolt the legs (B) to the rail assembly (C) with the remaining 10 x 30mm hex head bolts.**

3. **Place the two remaining 10 x 80mm hex bolts through the end of the rail assembly and lock them in place with the hex nuts.**

4. **Thread another nut on each bolt and attach the track to the support bracket with the remaining two 10mm hex nuts.**

5. **Space the rollers along the rail at an even spacing.**

6. **Adjust the discharge track so that the rollers are at the same level as the bed of the material vise on the saw. The track is adjusted by loosening the bolts in the legs and the two bolts that attach the rail to the support bracket.**

7. **After a discharge track is mounted, the scale should be calibrated. To do this, draw the saw head down and set the quick-loc extension (6) ten inches from the blade. Install the scale so that the ten inch mark lines up to the quick-loc pointer. When the quick-loc extension (5) is used, you have to add ten inches to the length of the part that you want to cut. If the stop requires fine adjustments, there is an optional fine adjustment option that can be purchased.**

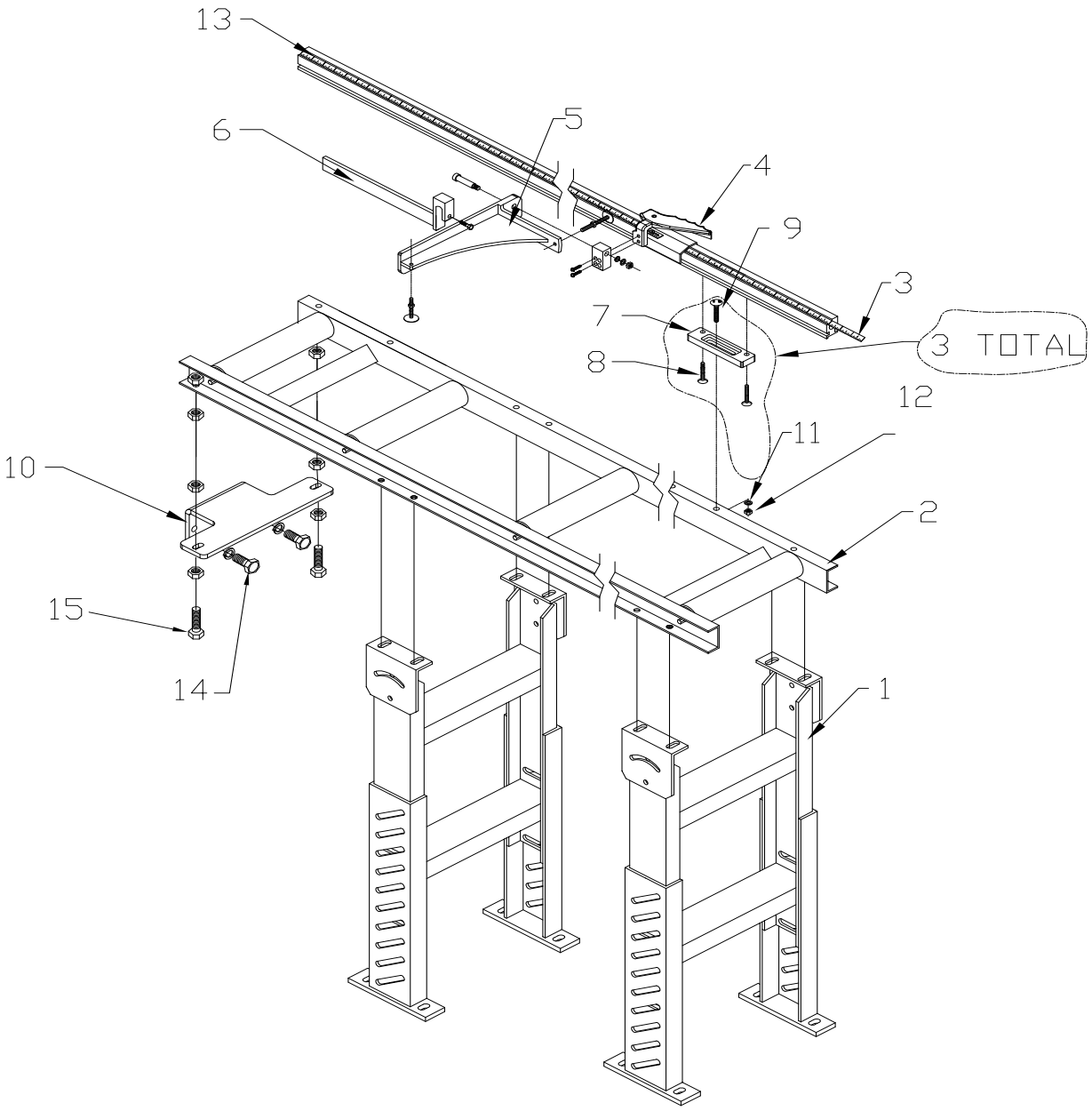


FIGURE 20

7.5 SPECIAL VISE JAWS

Special vise jaws for holding square tubing, rectangular tubing and angle iron are stock items. Jaws for holding thin wall round tubes, profiles and bundles are available on a made-to-order basis. For prices and delivery on special jaws, contact your local dealer or the factory.

7.6 LOCK-OUT DISCONNECT SWITCH

A lock-out disconnect switch is available for this machine if your plant is not equipped with lock-out capabilities. The switch mounts on the base of the saw and is shipped complete with all of the necessary parts and installation instructions.

FOR PARTS IDENTIFICATION, SEE SECTION 10.7.

7.7 LASER LIGHT

A laser light cutting guide is available for this saw, as an option. The light will pivot 45 degrees left or right, for miter cutting. FOR PARTS INFORMATION, SEE SECTION 10.7.

7.8 PNEUMATIC SCHEMATIC (POWER DOWN MACHINES)

SEE FIGURE 20A ON THE FOLLOWING PAGE.

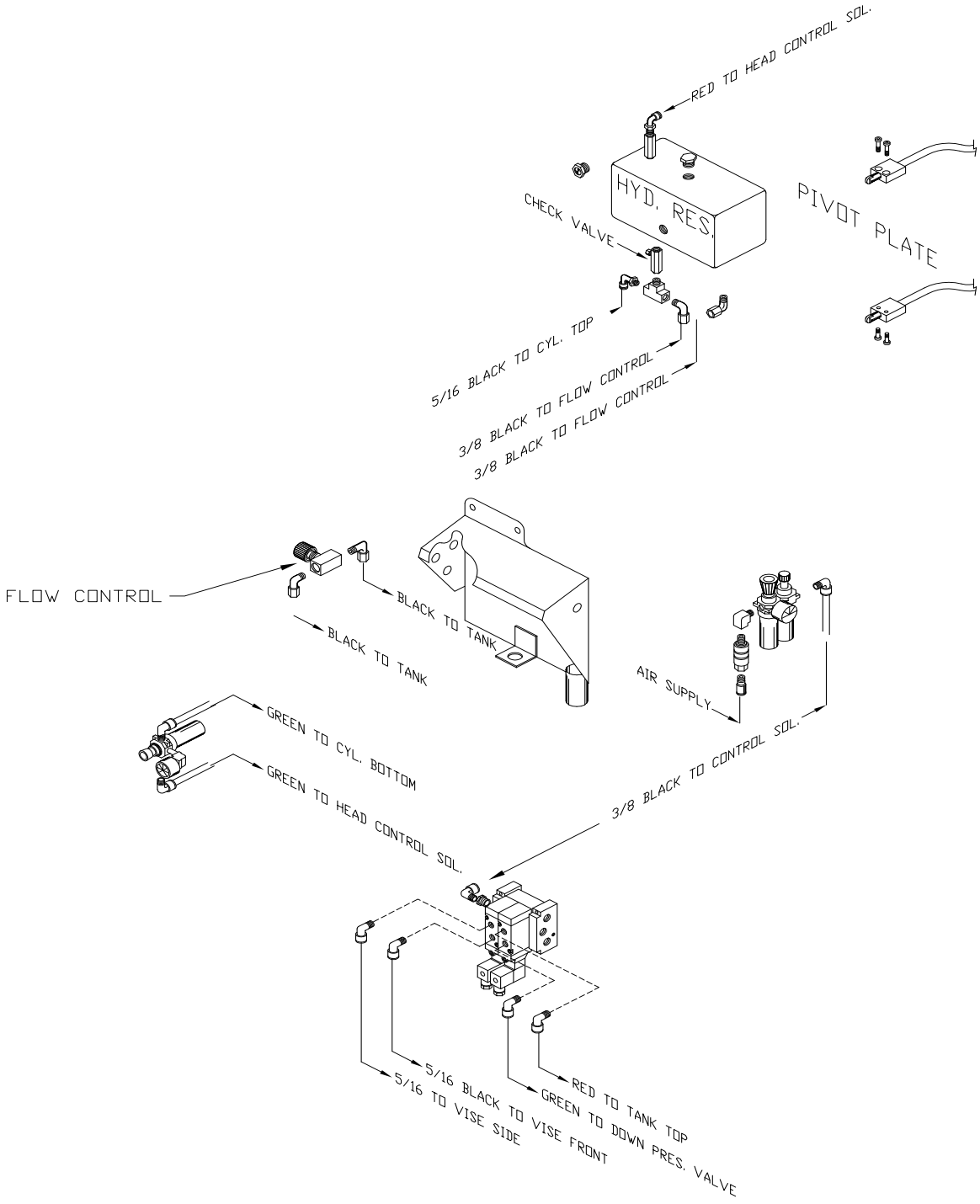

RED TO HEAD CONTROL SOL.
HYD. RES.
CHECK VALVE
PIVOT PLATE
5/16 BLACK TO CYL. TOP
3/8 BLACK TO FLOW CONTROL
3/8 BLACK TO FLOW CONTROL
FLOW CONTROL
BLACK TO TANK
BLACK TO TANK
AIR SUPPLY
GREEN TO CYL. BOTTOM
GREEN TO HEAD CONTROL SOL.
3/8 BLACK TO CONTROL SOL.
5/16 BLACK TO VISE FRONT
5/16 TO VISE SIDE
RED TO TANK TOP
GREEN TO DOWN PRES. VALVE

FIGURE 20A

8.0 TROUBLE SHOOTING GUIDE

8.1 ELECTRICAL TROUBLE SHOOTING

1. THE MOTOR WILL NOT RUN:

A. **Some models have a lock-out switch in the base of the saw. If your saw has this option, make sure that it is in the ON position.**

B. **On manual and power vise machines, the Hi-Low switch must be in either the Hi or the Low position for the trigger switch to work.**

C. **On machines equipped with the power down feed option, the HI-LOW switch must be turned to either the HI or LOW position and the foot switch depressed to start the motor.**

D. **Also, check the supply voltage to the saw to make sure that it is the same as the motor voltage. If the supply voltage is correct, the switch energizes and the motor still will not run, contact your local dealer or the factory.**

2. THE SAW MOTOR RUNS BUT DOES NOT HAVE ADEQUATE POWER:

A. **Make sure that the supply voltage and phase correspond to the saw motor's voltage and phase.**

B. **Disconnect the machine from the power source and check for any loose or disconnected wires.**

C. **The supply lines to the machine must be of adequate size to handle the load. For recommended sizes and lengths, SEE SECTION 4.4.**

D. **The worm gears in the head may be damaged. With the power to the machine disconnected, check the blade spindle for any free travel. If free play is present, drain the oil from the head and remove the motor. Check both worm gears for wear and replace, if necessary. We recommend replacing the worm gears as a set, if either shows wear.**

For instructions, REFER TO SECTION 8.4.

8.2 BREAKAGE OR EXCESSIVE DULLING OF BLADES

1. **Select the proper blade and spindle speed for the material being cut. For recommendations, REFER TO SECTION 6.3.**

2. **Always break in the blade before you start normal cutting.**

3. **Do not apply excessive down pressure on the workpiece. Excessive down pressure will cause the teeth to remove too large of a chip, resulting in premature dulling or breakage.**
4. **Use a good quality, synthetic coolant and maintain the proper ratio of coolant to water as recommended in SECTION 4.7.**

5. **Have your blades re-sharpened by someone who has the right equipment for circular cold saw blades. Improper re-sharpening is one of the most common problems encountered in cold sawing.**

6. **Keep the blade flange, the face of the blade spindle and the blade clean and free from nicks. Any contamination or nicks on the flange, spindle or the blade will cause the blade to run out of alignment.**

7. **Always remove the back lash when installing a blade. For instructions, REFER TO SECTION 6.1. Also, check the condition of the drive pins when replacing the blade. If the drive pins are broken or worn, replace them.**

8. **Any of the above problems may cause a condition known as pick-up. Pick-up is caused when small pieces of the material being cut adhere themselves to the blade. When pick-up is present, you will feel a jerking or jumping motion in the saw head while cutting. This is caused by the blade being pinched as it goes through the material where the pick-up is present.**

   Pick-up can be removed by using a fine honing stone or a very fine file. When removing pick-up, care must be taken not to remove any part of the blade. After the pick-up has been removed, review the above items to determine what caused the problem.

8.3 COOLANT SYSTEM

1. IF COOLANT WILL NOT FLOW:

A. Check the wiring connections to the pump and make sure that the pump is running in the right direction. The pump has an arrow in the casting to indicate the direction.

B. Check the level of the coolant in the reservoir. If the level is less than 3 inches, the fluid will not flow.

C. Check the reservoir for contamination or sludge build-up that may be blocking the pump inlet.

D. Remove the coolant line from the guard and make sure that it's clear. Also, make sure that the valve on the guard is open.

2. IF THE COOLANT PUMP IS LEAKING:

A. Check the connections on the coolant lines.

B. If the pump itself is leaking, there is a seal kit available. For instructions, SEE SECTION 5.4. For parts numbers, SEE SECTION 9.6.

8.4 GEAR REPLACEMENT

SEE FIGURE 21 BELOW.

1. **Remove the drain plug (A) from the head casting and allow the fluid to drain.**
2. **Remove the motor from the head.**
3. **Remove the three bolts (B) from the bearing housing (C) through the access holes in the guard.**
4. **Remove the spindle shaft (D) with a slide hammer. This shaft can also be removed by driving it out of the head casting with a brass drift pin.**
5. **Remove the snap ring (E).**
6. **The brass worm gear (F) can now be pressed off of the shaft.**
7. **Check the condition of the bearings and seals before re-assembling the head.**
8. **Check the condition of the key (G) and the keyway in the gear and the spindle shaft.**

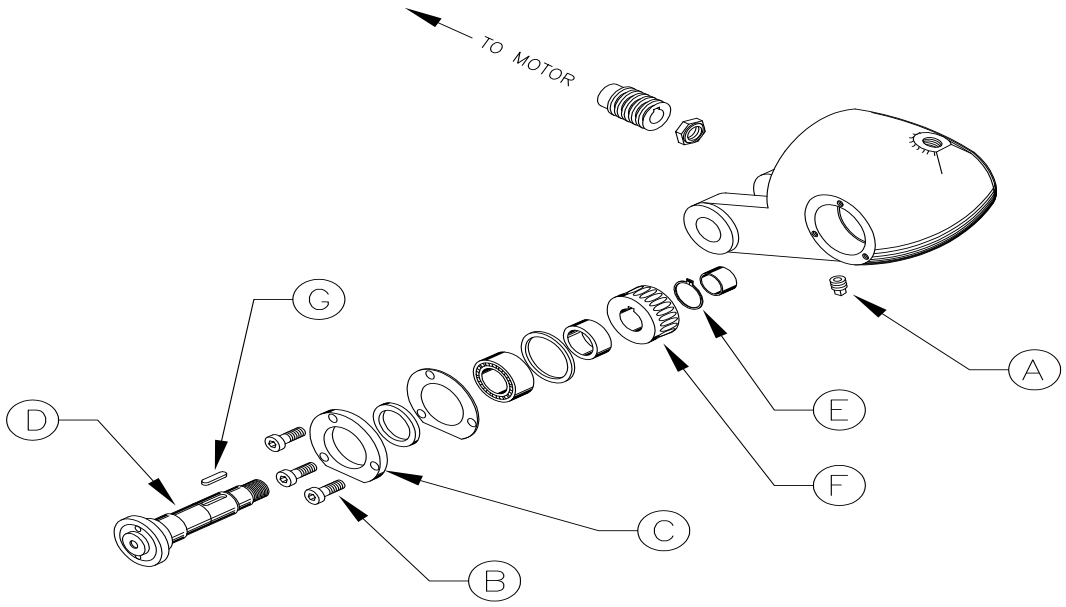


FIGURE 21

9.0 PARTS LISTS

9.1 SAW HEAD

ITEM	PART #	DESCRIPTION
A	075080	Key 7 x 8 x 32mm
B	077151	Spindle Shaft
C	077143	Spindle Cap
D	075075	Seal
E	077146	Gasket
F	075076	Roller Bearing
G	077147	Spacer Ring
H	077148	Spacer Bushing
I	077149	Worm Gear (Bronze)
J	075081	Snap Ring
K	077150	Needle Bearing
L	077153	Drain Plug
M	077141	Head Casting
N	077152	Sight Gauge
O	077002	Handle
OA	077001	Switch
P	077000	Draw Handle-Complete (Includes O, OA, P & Q)
Q	073210	M-20 Jam Nut
R	677862	Grease Nipple
S	221212	M-10 x 30 SHCS
T	077104	Pivot Shaft
T1	077122	Pivot Shaft (Power Down Feed)
U	077190	Worm Gear (Steel)
V	077189	Locking Nut
W	077145	Drive Pins
X	077144	Blade Flange (Includes W)
Y	073110	M-10 Washer
Z	221212	M-10 x 30 SHCS
AA	060110	Emergency Stop Box (Includes BB, CC, DD & LL)
BB	060101	Emergency Stop Mount
CC	201110	M-6 x 12 HHCS
DD	077864	M-5 x 12 SHCS
EE	077859	Head Gasket (Not Pictured)

FF	**073108**	**M-8 Lock Washer**
GG	**221120**	**M-8 x 25 SHCS**
HH	**080193**	**M-8 Blade Allen Wrench (Not pictured)**
II	**077630**	**Vent**
JJ	**073692**	**Eye Bolt (Not pictured)**
KK	**077107**	**Complete Head Assembly**
LL	**073106**	**M-6 Lock Washers**

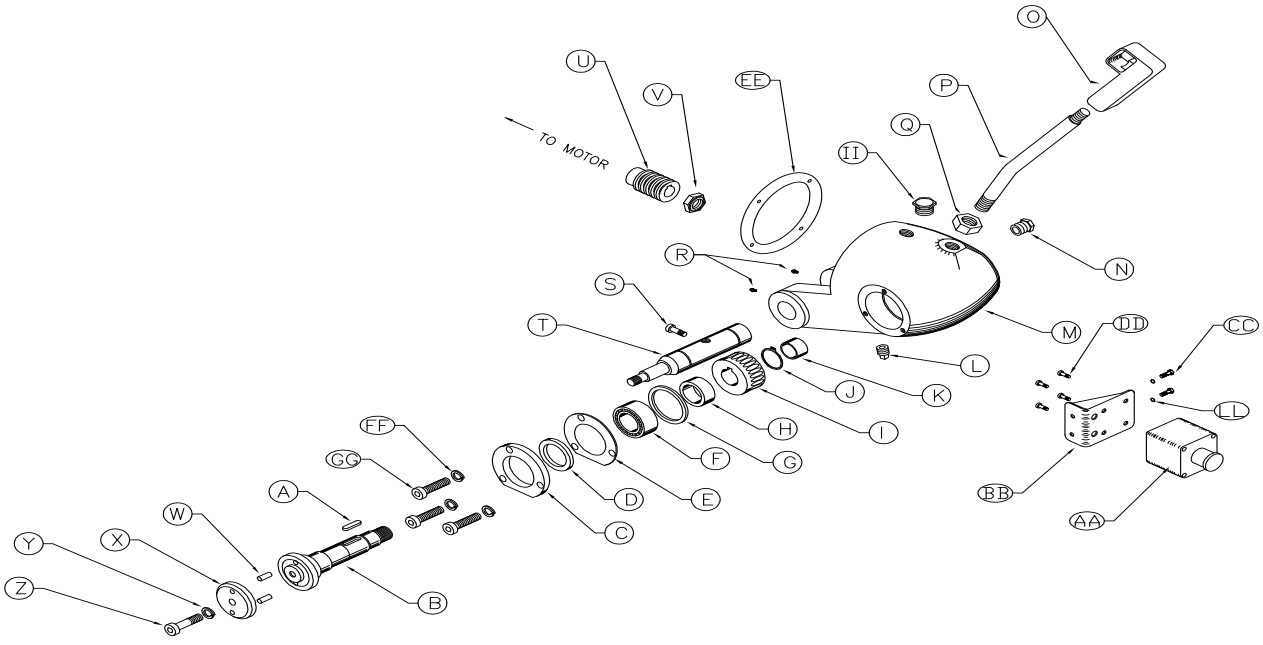


FIGURE 22

9.2 VISE ASSEMBLY

ITEM	PART #	DESCRIPTION
A	221215	M-10 x 35 SHCS
B	077128	Cast Grip Cheek (Rear)
C	077119	Vise Jaw (Right)
D	208012	M-10 Hex Nut
E	077120	Guide Shaft
F	077310	Seal
G	077130	Base
H	077100	Dowel Pin
I	077133	Screw End
J	077136	Pressure Plate
K	677879	Tension Nut Assembly (Includes L & M)
K1	077135	Tension Nut
L	208010	M-8 Hex Nut
M	073329	M-8 x 45 SHCS
N	210016	M-16 Jam Nut
O	060240	Tension Handle (Includes O, N & P)
P	077138	Knob
R	077400	Handles
S	077121	M-20 x 1.5 Jam Nut
T	060270	Covering Cap
U	060267	Boss (Includes T)
V	077125	Cast Grip Cheek (Front)
W	077126	Vise Jaw (Left)
X	060035	Vise Spindle
XA	077127-060320	Vise Spindle (Saws Mfg. Prior to 2-01-89)
Y	073420	M- 8 x 16 SHCS
AA	077129	Protecting Plate
BB	077118	Support Block
CC	073455	M-5 x 20 SHCS
EE	677103	Complete Vise Assembly
FF	076937	Square Tube Jaws
GG	060320	275 Fill Box Spacer

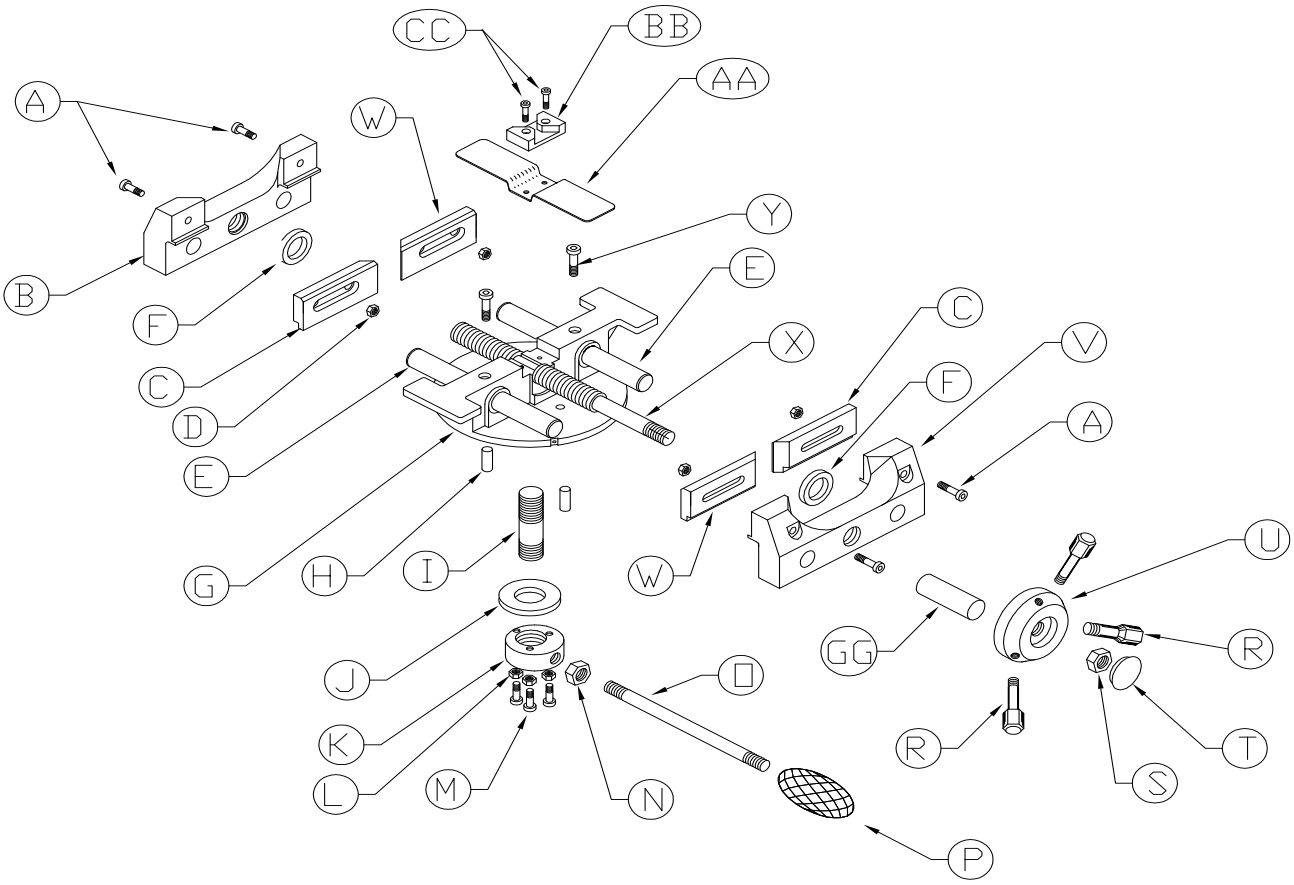


FIGURE 23

9.3 GUARD ASSEMBLY

ITEM	PART #	DESCRIPTION
A	070000	Complete Guard Assembly
B	221120	M-8 x 25 SHCS
C	077164	Spacer Ring (Thick)
D	N/A	Hinged Cap (Front)
E	077165	Spacer Ring (Thin)
F	N/A	Hinged Cap (Rear)
G	077166	Bushing
H	077167	Snap Ring
I	077160	M-8 Plastic Washer
J	077163	Coupling Rod
K	077162	Rivet
L	077161	Self Locking Ring
M	677171	Coupling Rod
N	077156	M-6 x 8 x 12 Shoulder Bolt
O	077158	Washer
P	077172	Lever
Q	073626	M-10 x 20 SHCS
R	073211	M-14 Hex Nut
S	077173	Clamp Block
T	077174	Curve Plate
U	073108	M-8 Lock Washer
V	077157	M-6 Hex Nut
W	077155	Coolant Valve
X	077154	Connecting Pipe
Y	060140	Coolant Line - 85”
	060345	Warning Label (Not Pictured)
Z	073108	M-8 Lock Washer
AA	077770	Pipe Nipple
BB	069999	Diverter Block
CC	077864	M-5 x 12 SHCS
DD	070001	Coolant Tube (Right)
EE	070002	Coolant Tube (Left)
FF	069998	Coolant Splitter Ass’y (Includes BB, CC, DD & EE)

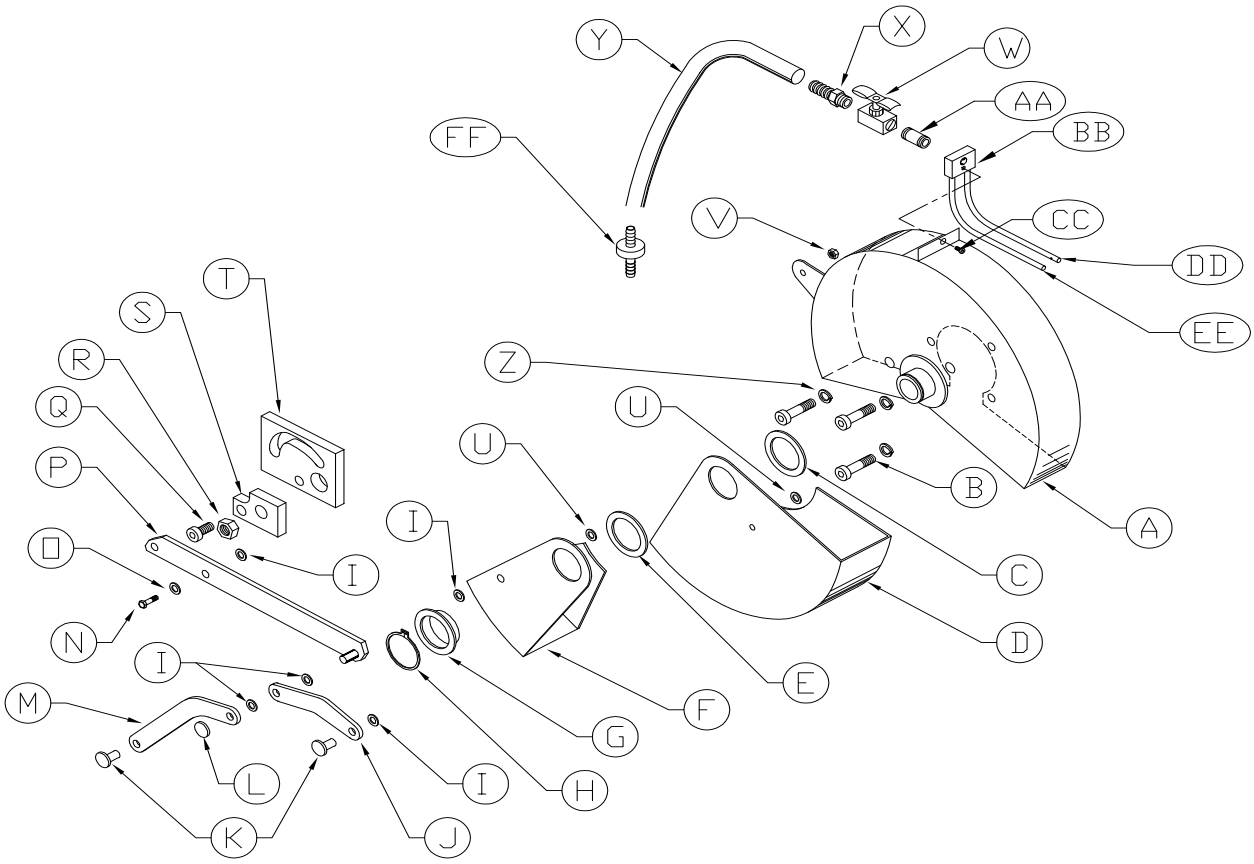


FIGURE 24

9.4 MOTOR ASSEMBLY

ITEM	PART #	DESCRIPTION
A	076555	Fan Cover
A1	076890	Fan Cover - 1 PH
B	073660	M-5 x 8 SHCS
C	076880	Fan
C1	076891	Fan - 1 PH
D	077194	End Casting
E	075050	Distance Ring
F	075049	Rear Bearing (6205 Z)
G	076369	Key 6 x 6 x 15mm
H	073326	M-8 x 30 SHCS
I	075053	Key 6 x 6 x 30mm
J	075047	Seal
K	075048	Front Bearing (5305 C)
L	077191	Safety Ring
	Complete Motors (Without Switches)	
A	076968	60-120 RPM/230 Volt
B	076970	60-120 RPM/460 Volt
C	076962	30-60 RPM/230 Volt
D	076964	30-60 RPM/460 Volt
E	676958	60-120 RPM/575 Volt
F	676960	30-60 RPM/575 Volt
G	076960	60 RPM/230 Volt 1 Phase
	Complete Motor Assemblies (With Switches)	
A	078002	60-120 RPM/230V/T-S
	078004	60-120 RPM/230V/E-S
B	078006	60-120 RPM/460V/T-S
	078008	60-120 RPM/460V/E-S
C	078010	30-60 RPM/230V/T-S
	078012	30-60 RPM/230V/E-S
D	078014	30-60 RPM/460V/T-S
	078016	30-60 RPM/460V/E-S
E	078018	60-120 RPM/575V/T-S
	078020	60-120 RPM/575V/E-S
F	078022	30-60 RPM/575V/T-S
	078024	30-60 RPM/575V/E-S

G	**078000**	**60 RPM/230 Volt 1 Phase/T-S**
	078001	**60 RPM/230 Volt 1 Phase/E-S**

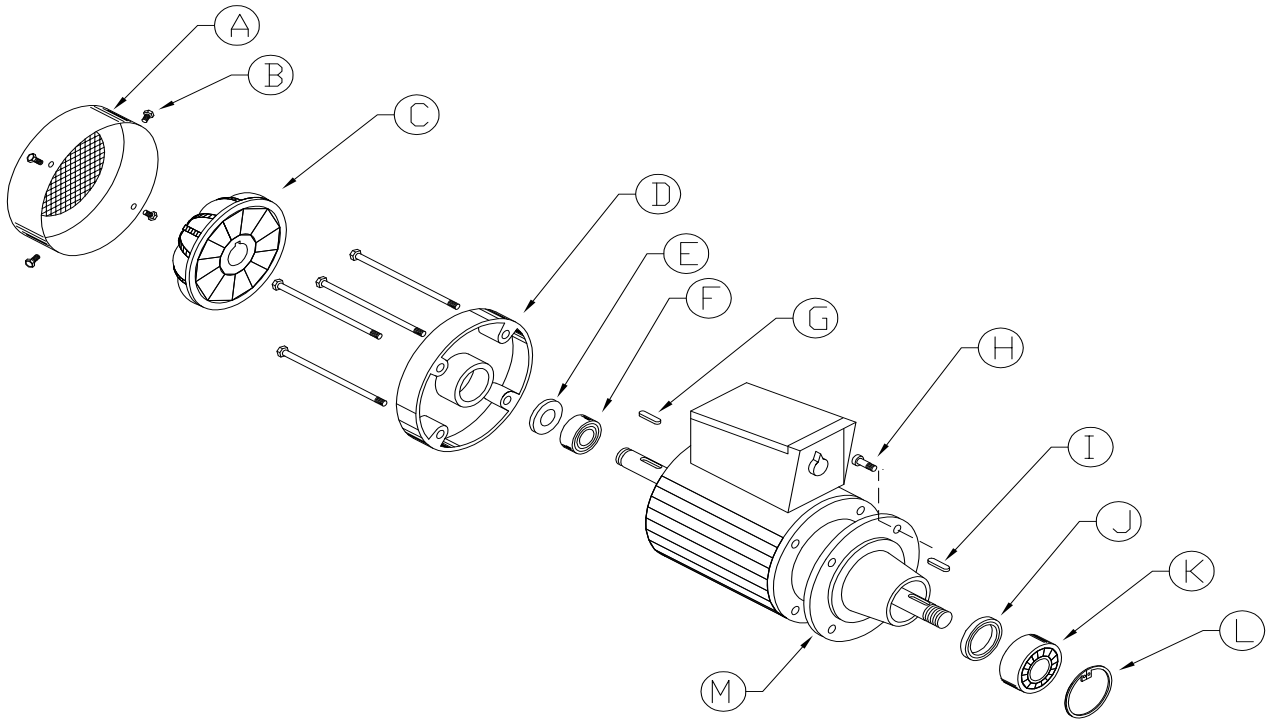


FIGURE 25

9.5 ELECTRICAL UNIT

ITEM	PART #	DESCRIPTION
A	060061	Enclosure With Cover
B	N/A	Cover
C	221002	M-4 x 12 SHCS
D	060071	Contactor-24 Volt
D1	077881	220 Volt Contactor (Used from 1990-1996)
D2	077882	460 Volt Contactor (Used from 1990-1996)
E	060072	Terminal Blocks
F	060063	Ground Lug
G	060070	Main Switch
I	060067	Knob
J	060090	Motor Cable
K	060095	Pump Cable
L	077183	Liquid Tight Connector
M	077864	Switch Screws
N	060050	Transformer-230-460 Volt
NA	060051	Transformer-575 Volt
O	563441	Liquid Tight Connector
P	060115	ON/OFF Switch For 220V/1PH PD
Q	060066	Switch Shaft
R	077564	Fuse
	060069	Complete Box & Switch Ass'y T-S 230V
	060079	Complete Box & Switch Ass'y T-S 460V
		Complete Box & Switch Ass'y T-S 575V
	060010	Complete Box & Switch Ass'y T-S 230V/1 PH
	060068	Complete Box & Switch Ass'y E-S 230V
		Complete Box & Switch Ass'y E-S 460V
		Complete Box & Switch Ass'y E-S 575V
	060011	Complete Box & Switch Ass'y E-S 230V/1 PH

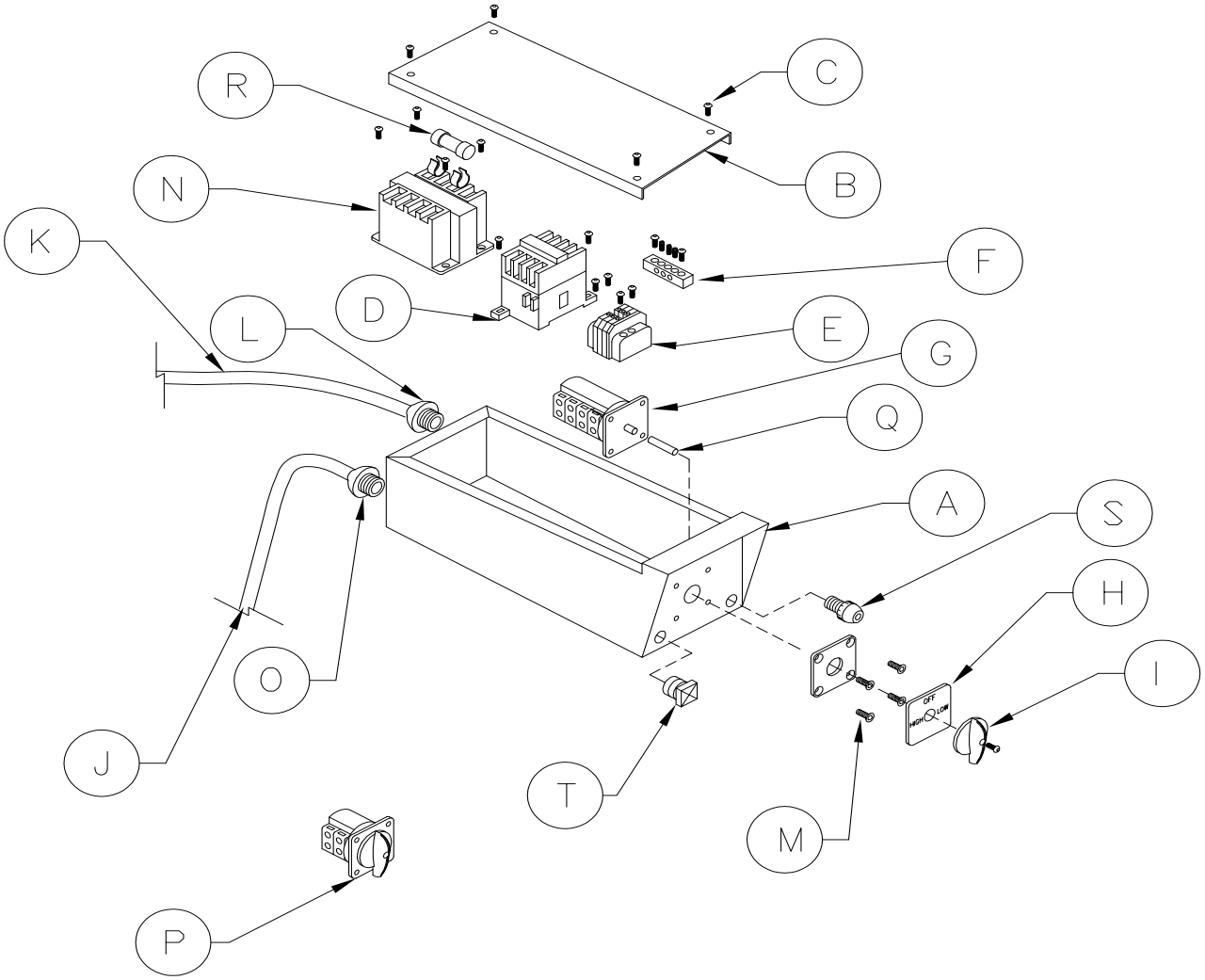


FIGURE 26

9.6 COOLANT PUMP

FOR OLDER MODELS, REFER TO SECTION 12.3.

ITEM	PART #	DESCRIPTION
A	060165	220V 1PH Pump
A1	060205	220V 1PH Pump Assembly
A2	060150	230V 3PH Pump
A3	060200	230V 3PH Pump Assembly
A4	060158	460V 3PH Pump
A5	060201	460V 3PH Pump Assembly
A6	060160	575V Coolant Pump
	Assemblies include A, G & I.	
B	060152	Impeller
C	060157	End Cap
D	060151	Pump Oil Seal
G	060080	90 Degree Hose Barb
H	060140	Coolant Line
I	060095	Pump Vable
J	077864	M-5 x 12 SHCS
K	077545	Check Valve
L	060149	Pump Screen

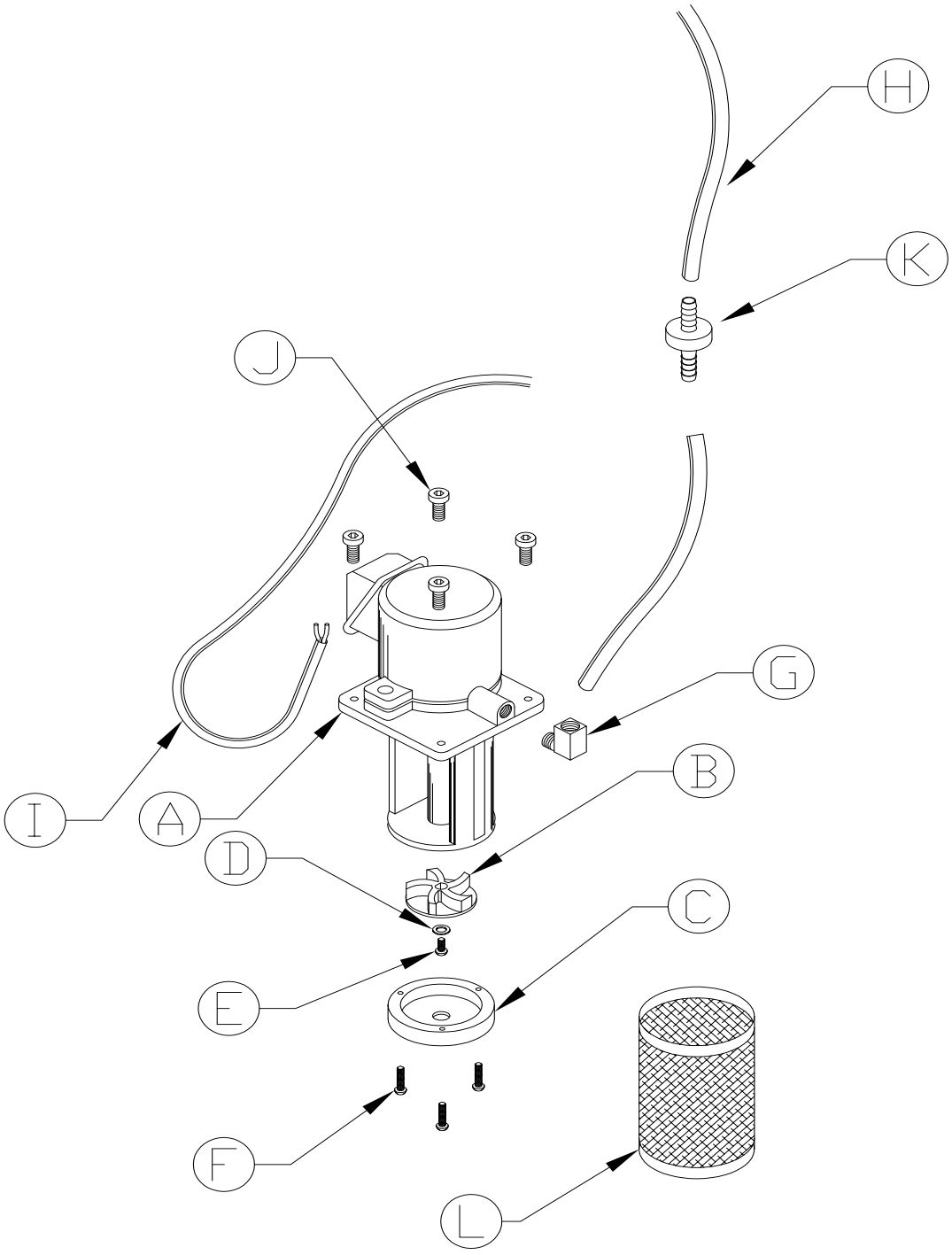


FIGURE 27

9.7 CAST BASE AND PEDESTAL

ITEM	PART #	DESCRIPTION
A	077111	Pedestal
B	077113	Base Casting
B1	660535	Base Casting Power Vise
C	203210	M-8 x 25 SHCS
D	077225	Miter Lock Mount
E	077227	Spring
F	077226	Release Handle
G	077228	Pin
H	073660	M-8 x 12 HHCS
J	073420	M-8 x 25 SHCS
K	077212	Upper Spring Mount
L	077211	Return Spring
M	677109	Adjustment Lock
N	221212	M-10 x 30 SHCS
O	677863	M-10 x 120 HHCS
P	221210	M-10 x 25 SHCS
Q	077210	Lower Spring Mount
R	077112	Sieve Screen
S	073350	M-10 x 100 HHCS
T	214012	M-10 Washer
U	077114	Complete Miter Lock (D, E, F, G, H)
V	060143	Drain Hose (Not Pictured)
W	660255	Drive Pin (Not Pictured)
X	077101	Pivot Scale
Y	077100	Dowel Pin

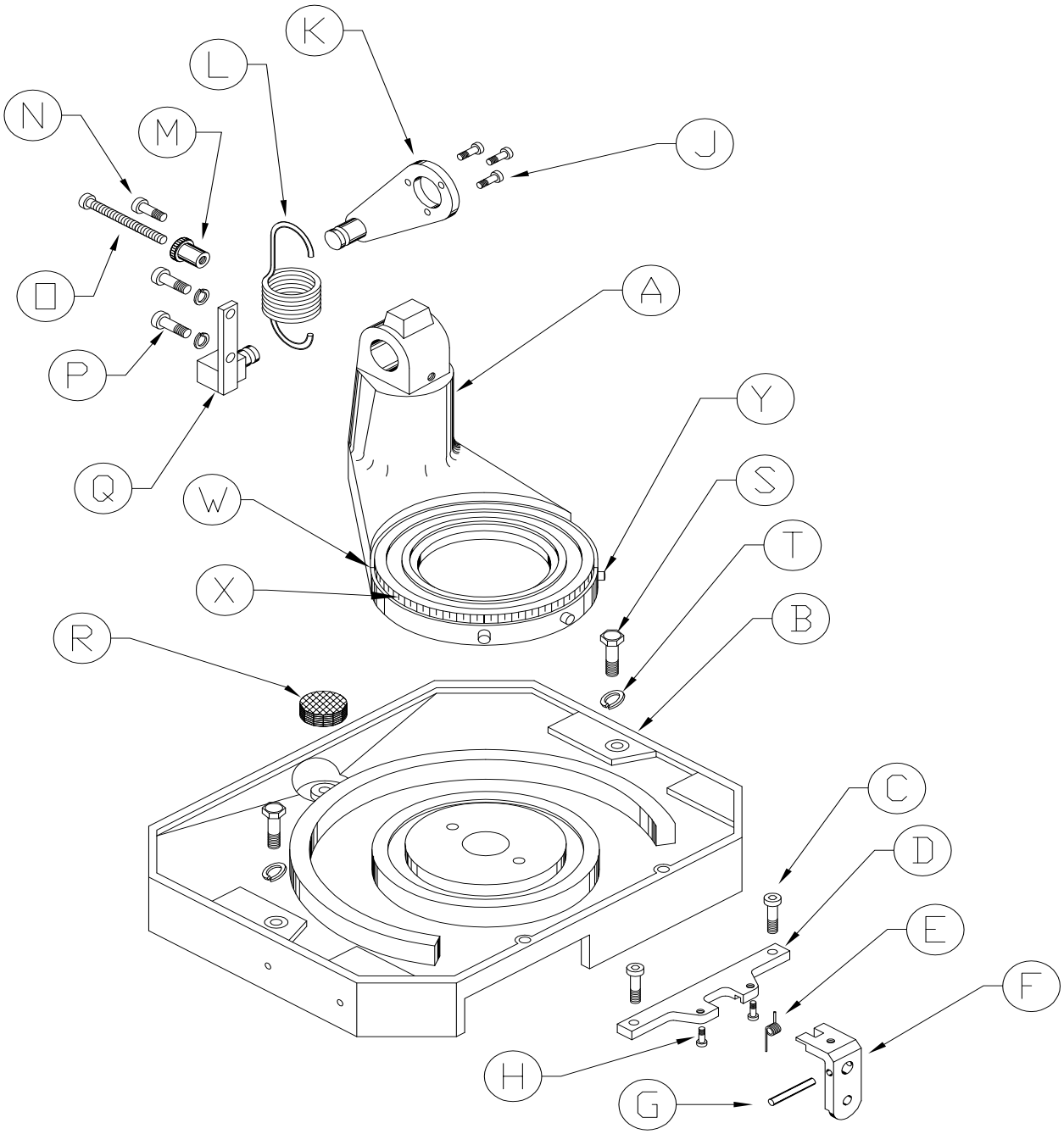


FIGURE 28

9.8 CAST BASE CABINET

ITEM	PART #	DESCRIPTION
1	760115	CPO Base Cabinet
2	760114	CPO Chip Drawer
3	760115.8	Pump Mounting Bracket
4	073420	M-8 x 16 DIN912 SHCS
5	215013	M-8 Greer Nut
6	060170	1/8” Clearflex Plastic
7	060175	Rear Cover Strap
8	154003	Alum Rivet

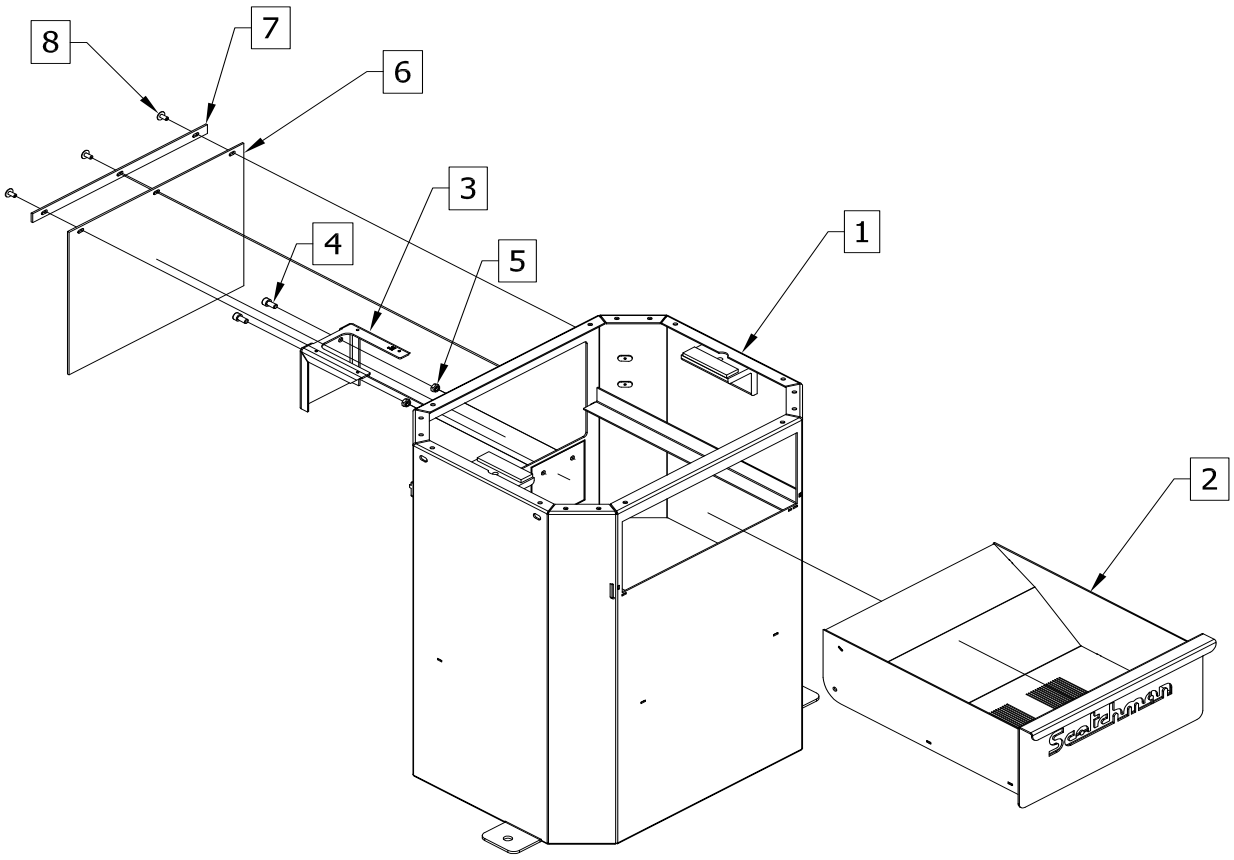


FIGURE 29

10.0 OPTIONAL EQUIPMENT PARTS LISTS

10.1 POWER VISE ASSEMBLY

ITEM	PART #	DESCRIPTION
A	077415	Acme Nut
B	077414	Cast Grip Cheeks
C	221015	M-6 x 80 SHCS
D	077422	Screw Spindle
E	060204	Cylinder Housing
F	077417	O-Ring
G	077416	O-Ring
H	077411	Piston
I	077418	Roll Pin
J	060450	Cylinder Cover
K	077419	Seal
L	077408	Roll Pin
M	060267	Boss
N	077400	Handle
O	077121	M-20 Jam Nut
P	221002	M-5 x 12 SHCS
Q	077742	1/4" Male Swivel
R	060501	5/16" Black Tube
S	077183	Cord Connector
T	077430	Four Way Valve
U	060501	5/16" Black Tube
V	077542	Lubricator Seal Kit (Parker)
W	077539	Bowl (Parker)
W1	077554	Bowl (Modular/HB)
W2	077555	Bowl (Modular/Filter)
X	077538	Gauge
Y	077540	Filter Seal Kit (Parker)
Z	077540	Regulator Seal Kit (Parker)
AA	077719	Slide Valve
BB	077553	Complete Filter/Lub Device (Modular)
CC	077431	Valve Mount
DD	221015	M-6 HHCS
EE	073455	M-5 x 20 SHCS
FF	077120	Guide Pins

GG	**077409**	**Lock Ring**
HH	**060270**	**Covering Cap**
II	**077310**	**Seal**
	077412	**Complete Air Cylinder**
	076371	**Cylinder Seal Kit (Includes F, G & K)**
	677878	**Complete Air Vise**

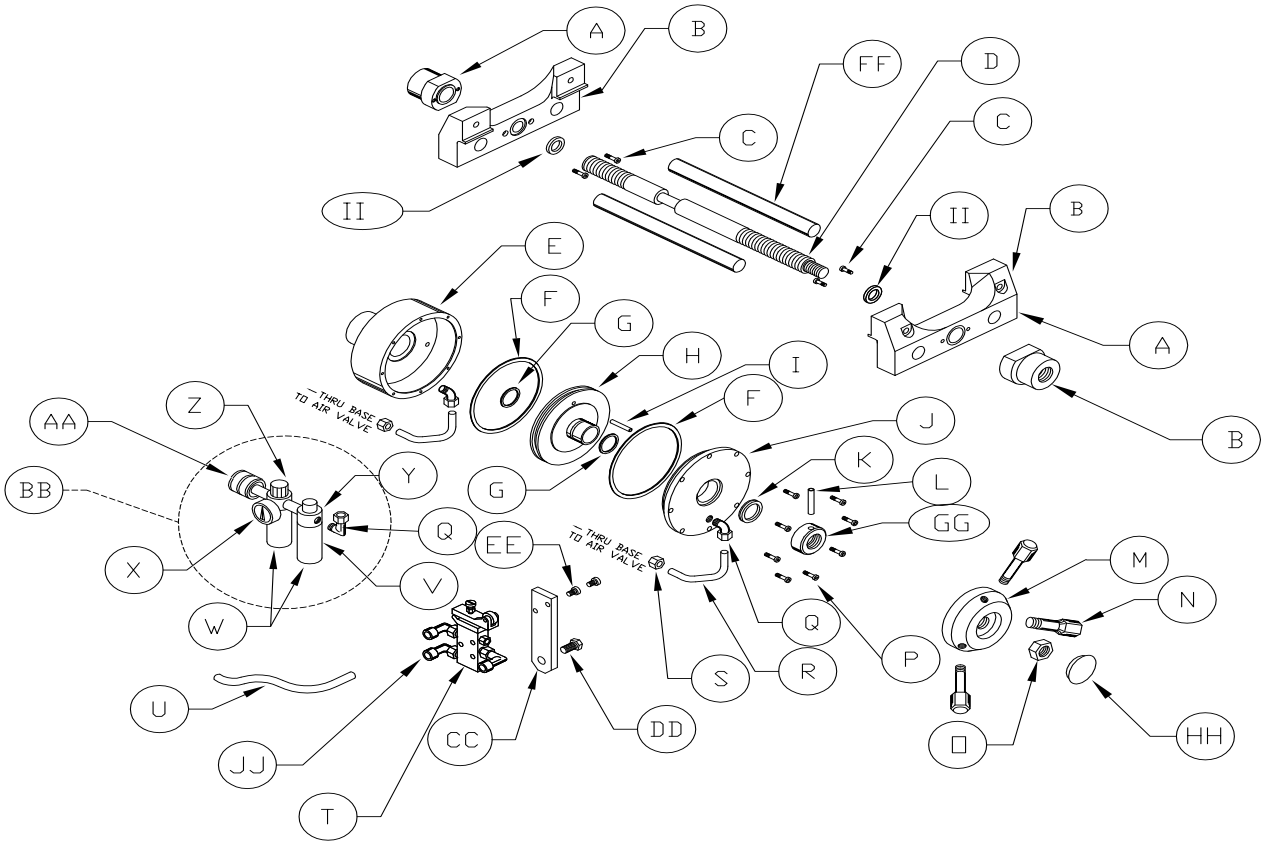


FIGURE 30

10.2 POWER DOWN FEED ASSEMBLY

ITEM	PART #	DESCRIPTION
A	065010	Bracket Assembly (Upper)
B	073420	M-8 x 16 SHCS
C	077211	Return Spring
D	078524	Cylinder Bracket
E	065025	Bracket Assembly (Lower)
F	140415	1/2" Clevis Pin
G	078520	Stroke Adjustment Rod
H	123120	1/8" Cotter Pin
I	078518	Stroke Adjustment Stop (Upper)
J	078518	Stroke Adjustment Stop (Lower)
K	080063	Stroke Adjustment Handle
L	077715	Pivot Bolt
M	077515	Festo Cylinder (M, N, O, P, Q, S & T)
M1	077706 (TPC)	Cylinder (Includes M, N, O, P, Q, S & T)
M2	077509	Cylinder Seal Kit
O	077771	Reducer Bushing
P	077742	1/4” Male SW x 169PL
Q	077713	Cylinder Clevis
R	678550	Label
S	660507	Zip Tie
T	077700	Bellows
U	077512	Nut

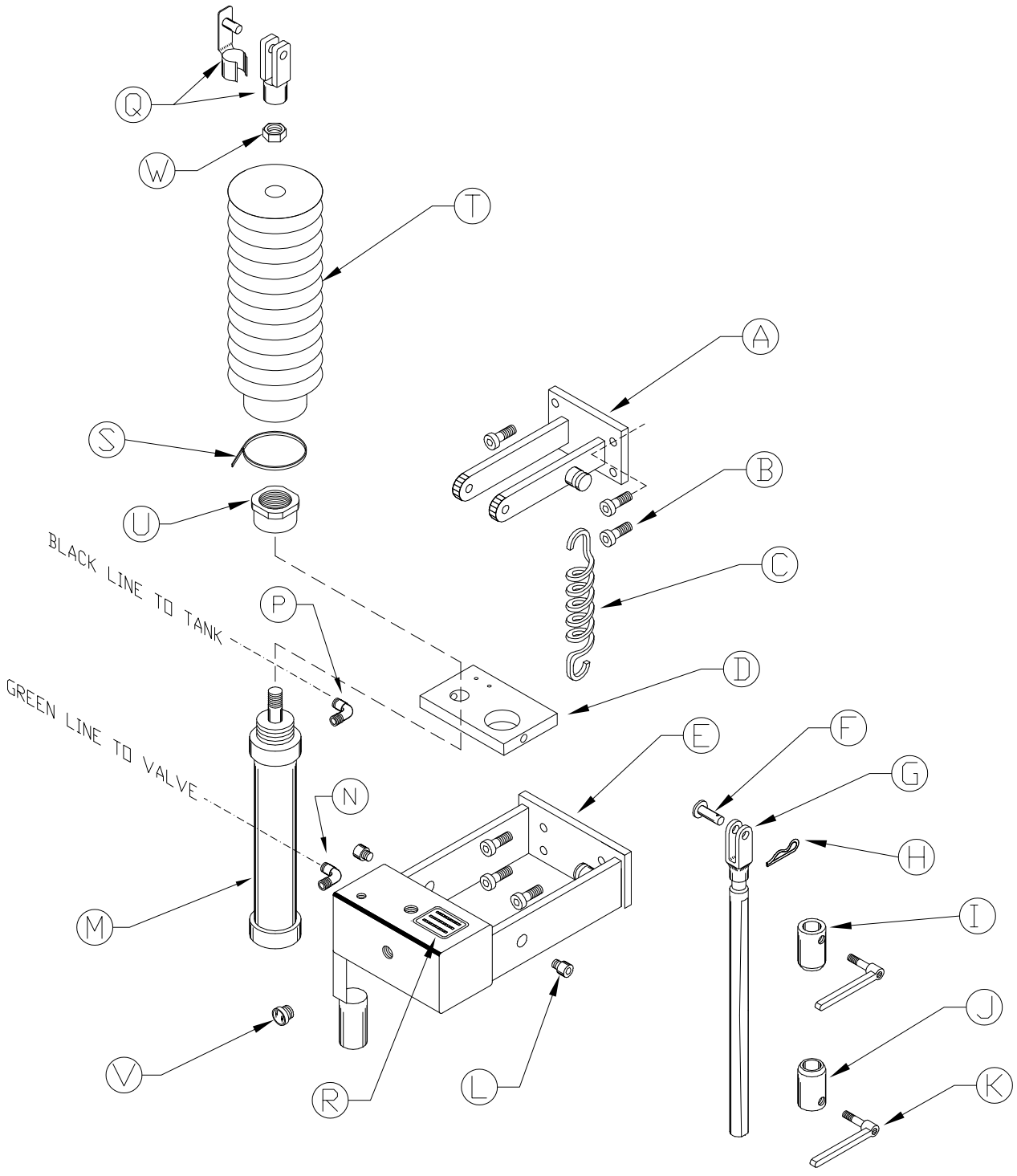

Q
W
T
A
S
B
U
C
BLACK LINE TO TANK
P
D
GREEN LINE TO VALVE
E
F
G
N
H
M
I
J
V
R
L
K

FIGURE 31

10.2A POWER DOWN FEED CONTROLS (SER. #'S B31071003 & UP)

ITEM	PART #	DESCRIPTION
A	077736	Valve Mount Assembly
B	077183	Cord Connector
C	077738	90 Degree Swivel x 169 PL
D	047535	Flow Control Valve
E	077746	1/4" NPT x 1/4" Street PL
F	078190	Regulator
G	077770	1/4" Brass Nipple
H	077538	Gauge
I	077765	Brass Elbow
J	045045	Breather
K	045667	Two Station Valve (DC)
K1	060040	Two Station Valve (AC)
L	077777	3/8" NPT Plug
M	060104	Cord Grip
N	N/A	
O	077719	Slide Valve
P	077737	1/4" NPT x 90 Degrees
Q	077553	Filter/Regulator
Q1	077554	Bowl (Lubricator)
Q2	077555	Bowl (Filter)
R	221002	M-4 x 16 SHCS
S	077740	3/8" 90° Male Swivel
T	045039	3600 x 4 Male Tee
U	077742	1/4" Male Swivel
V	077531	Check Valve
W	078455	Sight Glass
X	065025	Reservoir
Y	077701	Baffle
Z	077746	1/4" NPT x 169 PL
AA	077777	3/8" NPT Plug
BB	073331	M-5 X 45 SHCS
CC	046093	Limit Switch
DD	215010	M-5 Greer Nut

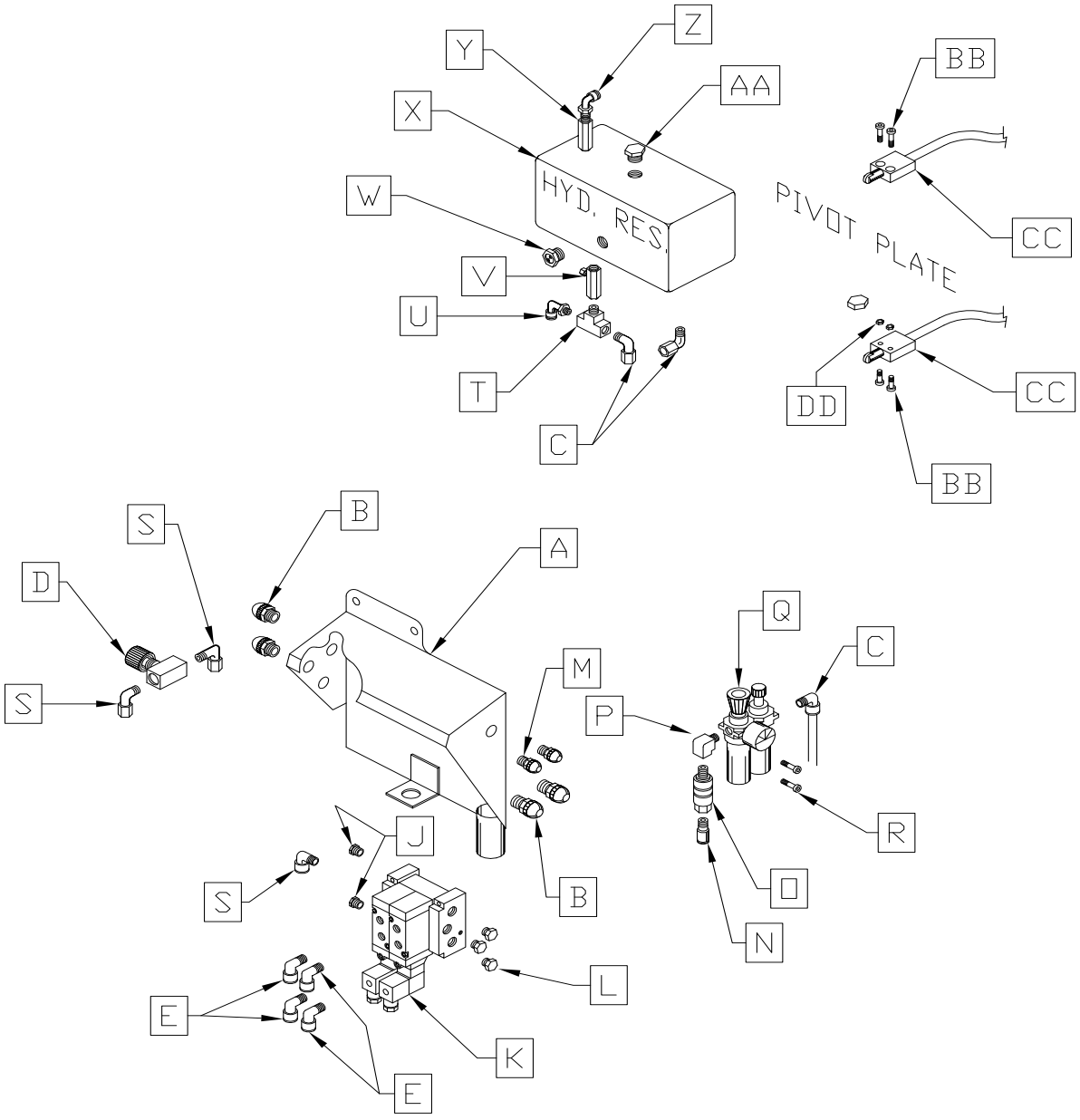

Z
Y
AA
X
HYD. RES.
W
V
U
T
C
BB
PIVOT PLATE
CC
DD
CC
BB
S
B
A
D
S
Q
C
M
P
R
J
O
S
B
N
L
E
K
E

FIGURE 32

10.2B POWER DOWN FEED ELECTRICAL CONTROLS

(SERIAL #'S B31071003 & UP)

ITEM	PART #	DESCRIPTION
A	075250	Enclosure
B	077183	Cord Grip
C	075205	Mounting Plate
D	075210	Mounting Strip
E	073440	M-4 x 6 SHCS
F	078104	End Bracket
I	078456	M-4 x 6 Terminal Block
J	078457	Jumper
K	060044	24 Volt Relay
L	060104	Cord Grip
M	660456	Cord - 90”
N	158202	Grommets
O	115011	5/16 Nylon Lock Nuts
P	073660	M-8 x 12 SHCS
Q	562452	Micro Switch
R	078500	Complete Foot Switch
U	214012	M-10 Flat Washer

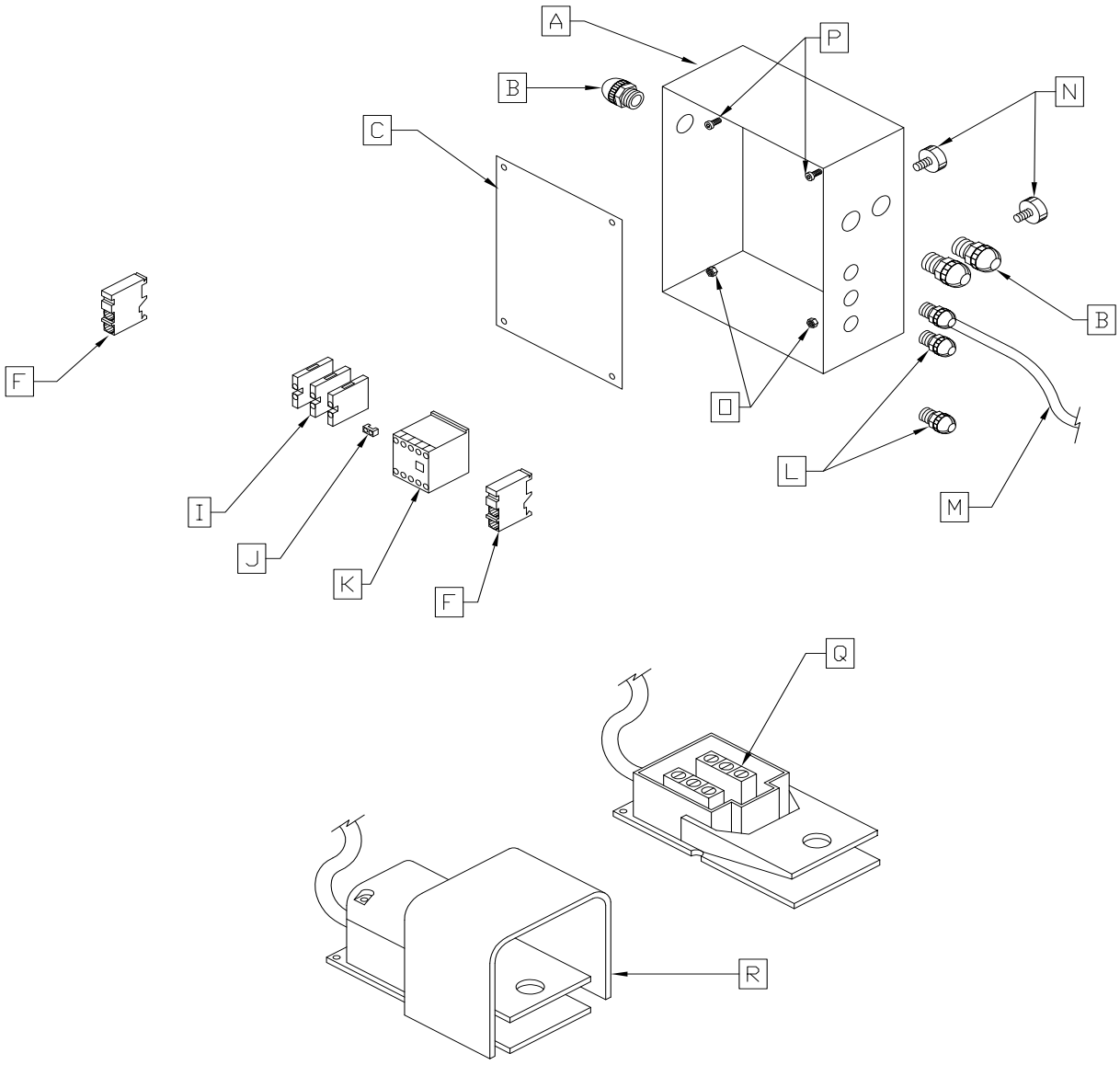


FIGURE 33

10.2C GUARD ASSEMBLY (POWER DOWN FEED)

ITEM	PART #	DESCRIPTION
A	070005	Complete Guard Assembly
B	221120	M-8 SHCS
C	N/A	Movable Guard
D	077167	Snap Ring
E	077202	Spacer Ring
F	078516	Guard Stop
G	073691	M-6 Knob
H	077165	Hub
I	060140	Coolant Line - 85”
J	077154	Hose Barb
K	077155	Valve
L	077770	Pipe Nipple
	660350	Blade Rotation Decal (Not Pictured)
	060345	Warning Label (Not Pictured)
M	069999	Diverter Block
MA	069998	Coolant Splitter Ass’y (M, P, Q)
N	077864	M-5 x 12 SHCS
O	214005	M-5 Washer
P	070001	Coolant Tube (Right)
Q	070002	Coolant Tube (Left)

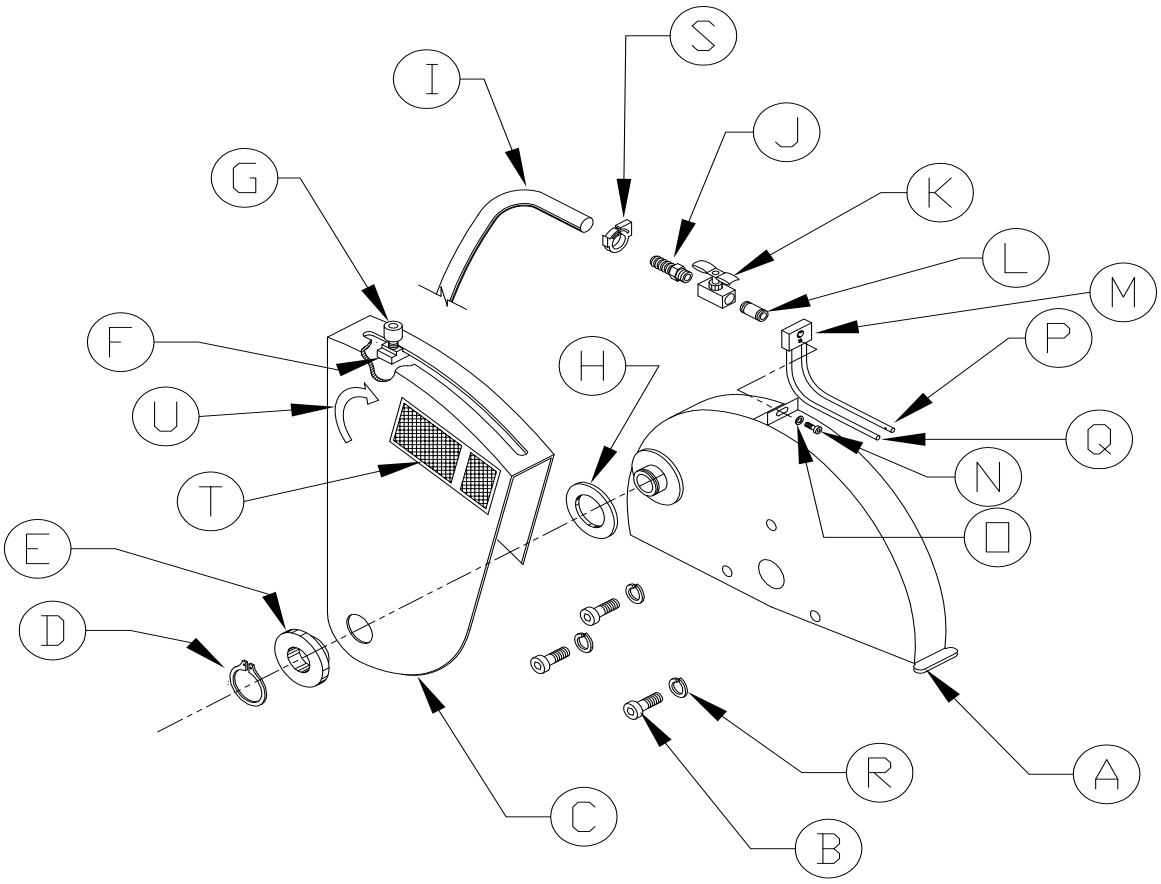


FIGURE 34

10.3 TEN FOOT (304 CM) SUPPLY TRACK

ITEM	PART #	DESCRIPTION
A	029243	Conveyor Assembly
B	029244	Leg Assembly
C	204230	M-10 x 100 HHCS
D	221210	M-10 x 25 HHCS
E	029245	Roller
F	076938	Optional Guide Assembly
G	229225	M-10 x 70 Shoulder Bolt
H	043003	Guide Roller
I	214012	M-10 Washer
J	221120	M-8 x 25 SHCS
K	076943	Mounting Plate
L	026619	Tee Nut
M	076941	Guide Bar
N	029272	Mount Support
O	203212	M-10 x 30 HHCS
P	208012	M-10 Hex Nut

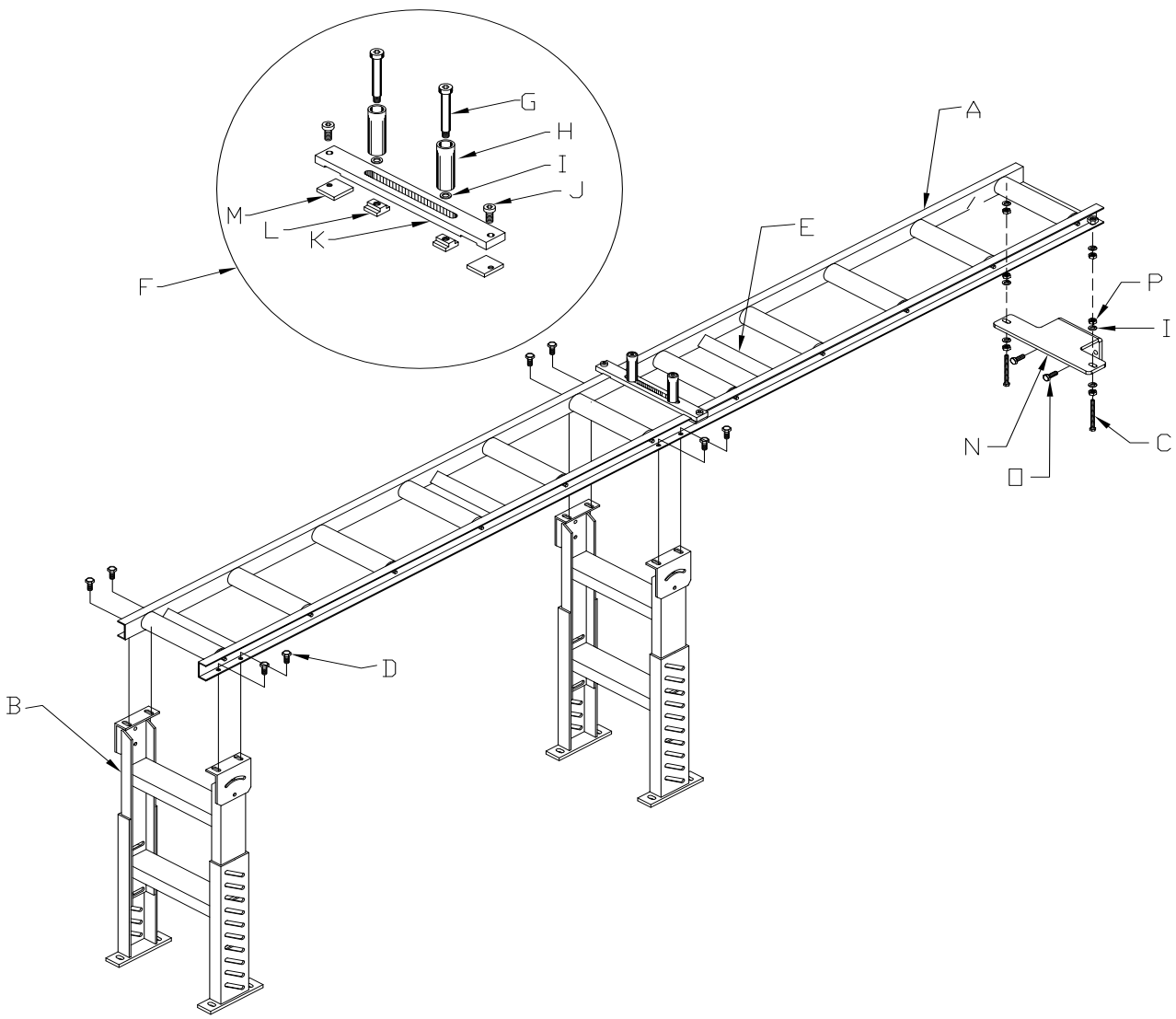


FIGURE 39

10.4 DISCHARGE TRACKS W/QUICK-LOC (60 & 120 INCH)

ITEM	PART #	DESCRIPTION
	COMMON PARTS	
1	029244	Leg Assembly
2	029241	60" Roller Conveyor
2A	029243	120" Roller Conveyor
5	029114	Quick-Loc Arm Ext.
7	029175	Rail Mounting Bracket
8	130107	5/16 x 18 x FSHCS
9	130212	3/8 x 16 x 1-1/4 C-Bolt
10	029272	Mounting Bracket
11	114011	5/16 Washer
12	108012	3/8 x 16 Hex Nut
14	203212	M-10 x 30 HHCS
15	204230	M-10 X 100 HHCS
	60" RIGHT HAND	
3	029226	Tape
4	029232	RH Quick-Loc
6	029100	RH Quick-Loc Ext.
13	029201	60" Main Rail
	60" LEFT HAND	
3	029220	Tape
4	029230	LH Quick-Loc
6	029100	LH Quick-Loc Ext.
13	029201	60" Main Rail
	120" RIGHT HAND	
3	029226	Tape
4	029232	RH Quick-Loc
6	029100	RH Quick-Loc Ext.
13	029206	120" Main Rail

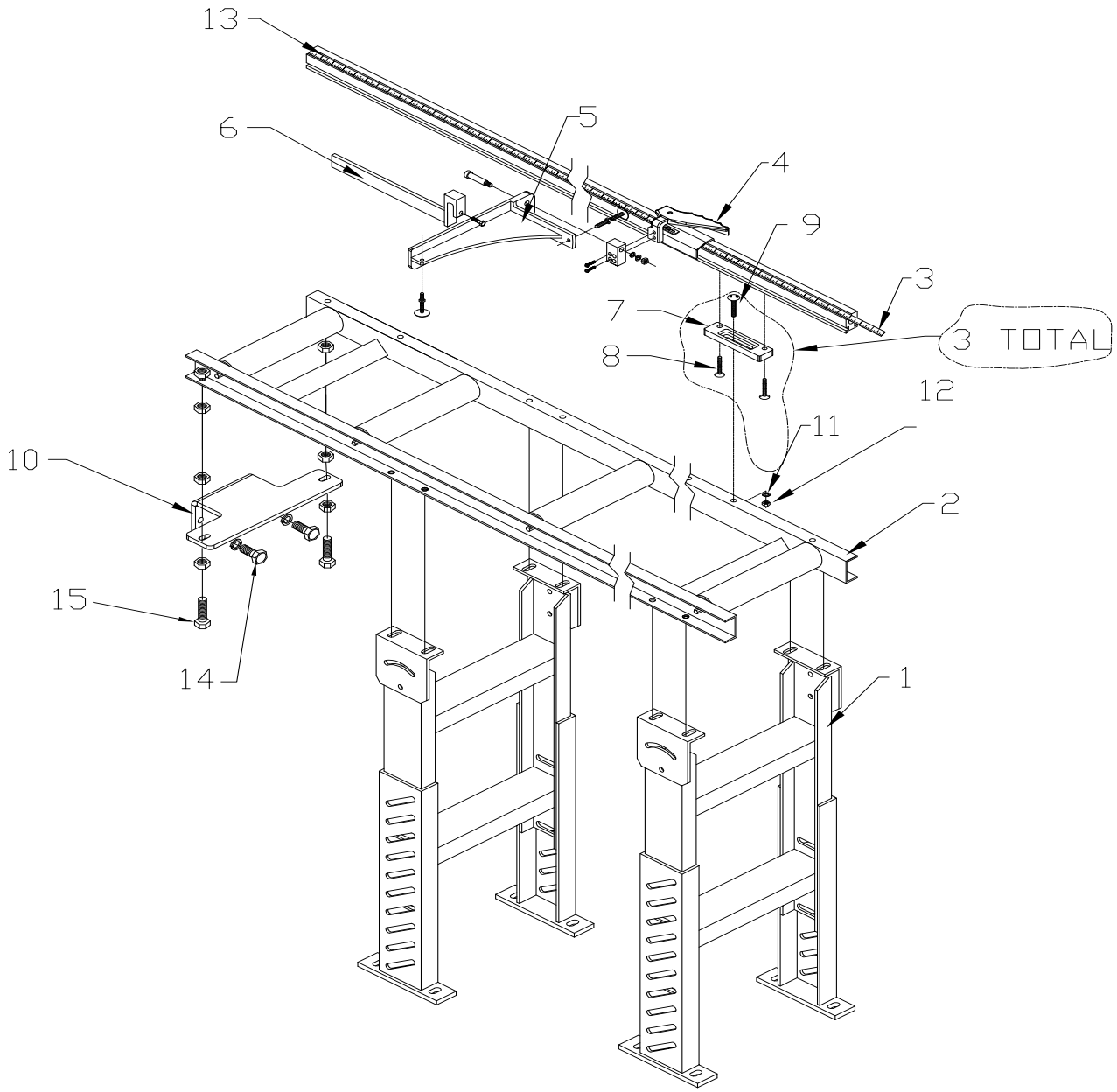


FIGURE 36

10.5 COOLANTS AND LUBRICANTS

UNIT	PART	DESCRIPTION
1 Gal.	075751	Synthetic Coolant
5 Gal.	075752	Synthetic Coolant
55 Gal.	075754	Synthetic Coolant
1 Gal.	075756	Special Mix Coolant
5 Gal.	075757	Special Mix Coolant
1 Qt.	075753	Air Line Lubricant
1 Gal.	075759	Air Line Lubricant
1 Gal.	075758	Gear Lubricant 80-90 Wt.

10.6 LOCK-OUT/DISCONNECT SWITCH

ITEM	PART #	DESCRIPTION
A	563025	Disconnect Switch
B	562250	Mounting Plate
C	N/A	Cord
D	563441	Cord Connector
E	108010	1/4" Hex Nut
F	158200	Grommet
G	224205	M-10 WLCS
H	114010	1/4" Washer
	078200	Disconnect Ass'y (A, D, E, F)

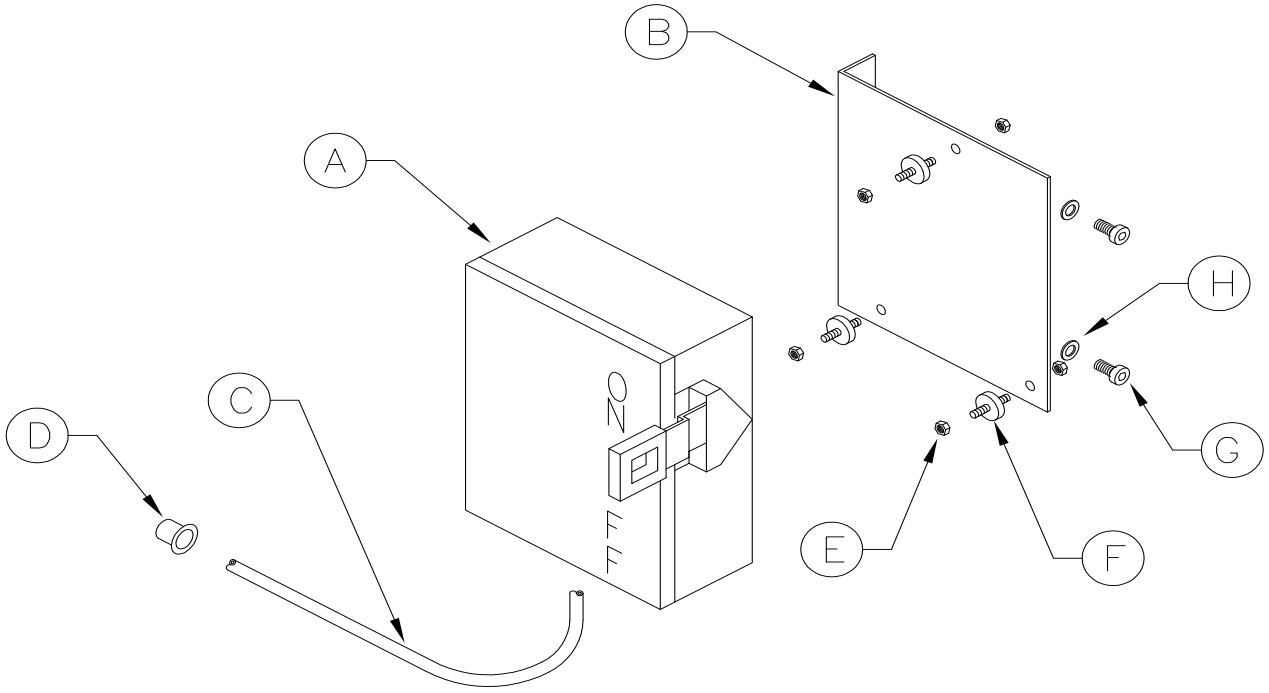


FIGURE 37

10.7 LASER LIGHT

ITEM	PART #	DESCRIPTION
1	065002	Laser
1A	065000	Complete Laser Assembly
2	065003	Laser Cover
3	065005	Laser Mounting Bracket
4	065007	Laser Pivot
5	214012	M-10 Washer
6	201200	M-10 x 12 HHCS
7	221007	M-4 x 8 SHCS
8	046094	Medium Wire Clip
9		Laser Transformer
10	012336	Toggle Switch
11	060104	Cord Grip
14	203210	M-10 x 25 HHCS

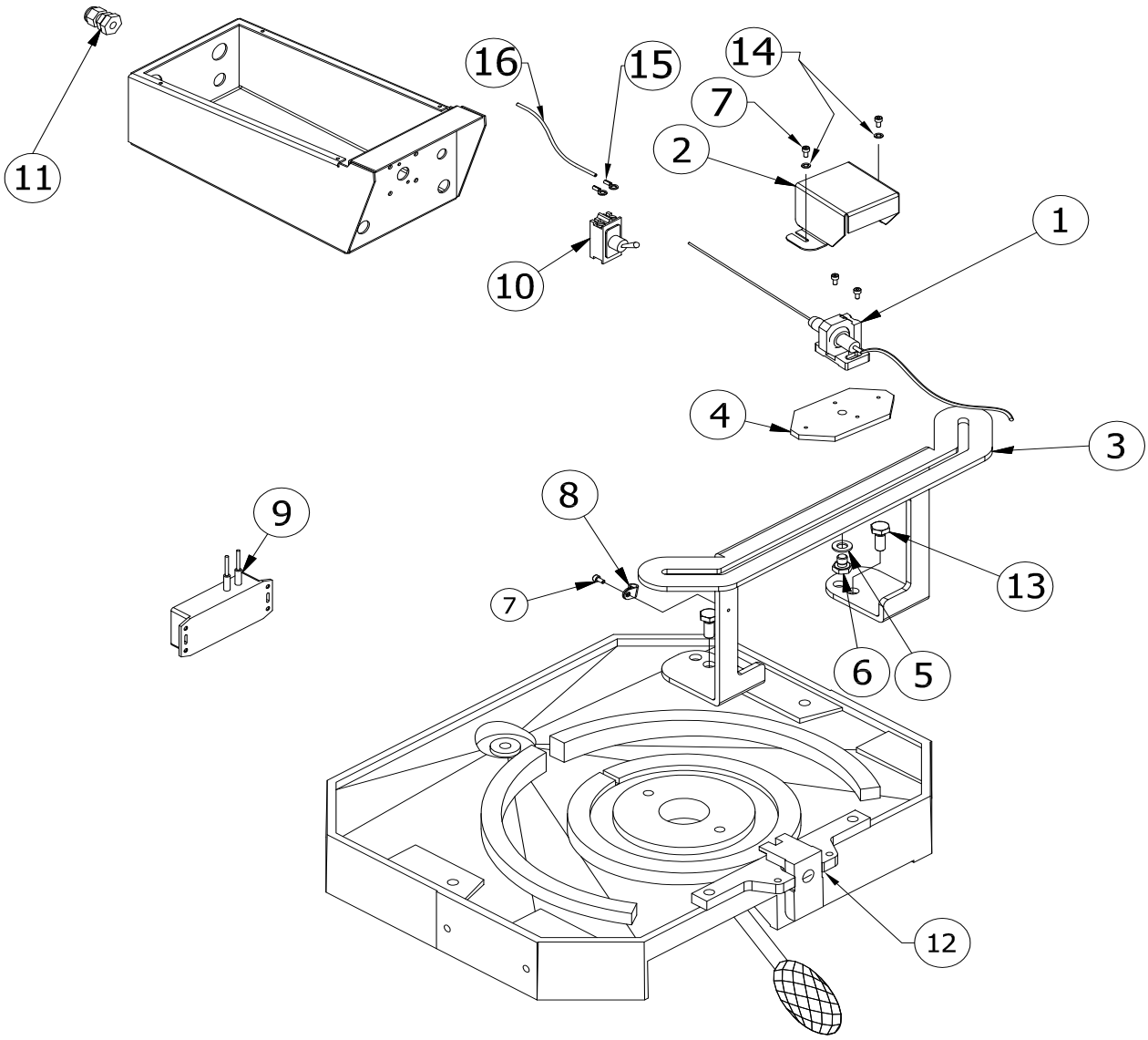


FIGURE 38

10.8 MATERIAL STOP 30 INCH (72 CM)

ITEM	PART #	DESCRIPTION
A	677436	Stop Clamp (Includes D)
B	060315	Stop Shaft
C	060310	Shaft
D	073460	M-10 x 16 SHCS
E	076930	Complete Ass'y (A, B, C, F & G)
F	080193	M-8 Wrench (Not Shown)
G	210016	M-16 Jam Nut

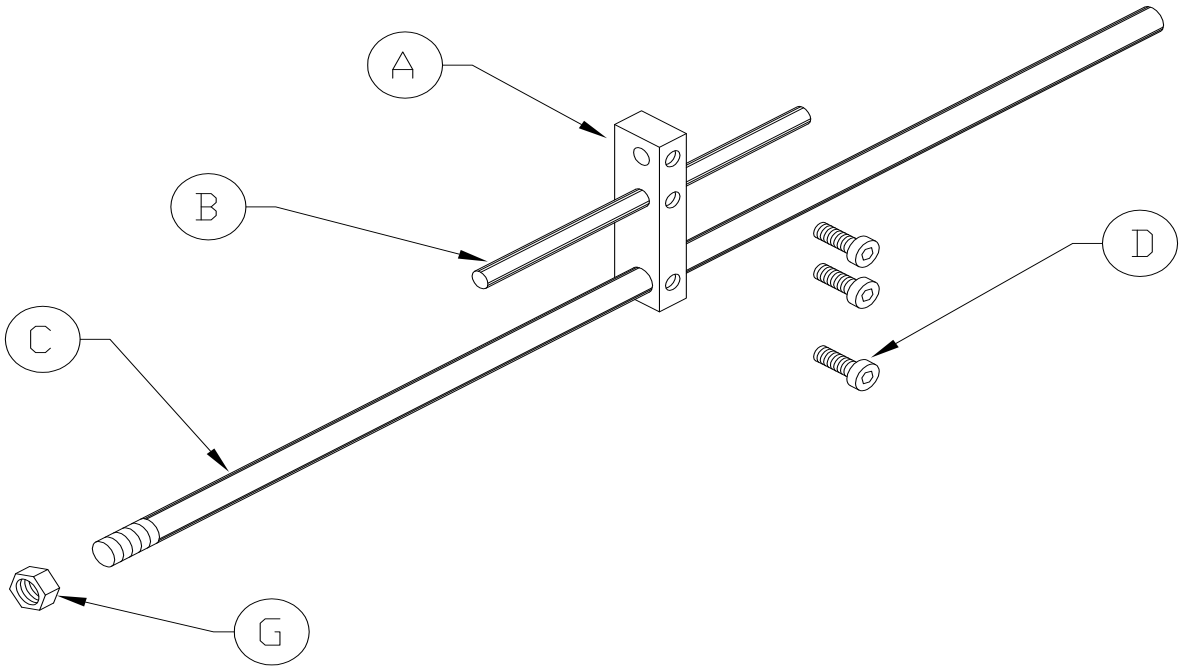


FIGURE 39

11.0 STOCK BLADES

ITEM	PART #	DESCRIPTION
A	074300	90 Tooth 10 Inch (250mm) Dia.
B	074304	100 Tooth 10 Inch (250mm) Dia.
C	074302	120 Tooth 10 Inch (250mm) Dia.
D	074306	150 Tooth 10 Inch (250mm) Dia.
E	074305	180 Tooth 10 Inch (250mm) Dia.
F	074307	240 Tooth 10 Inch (250mm) Dia.
A	074360	90 Tooth 10.75 Inch (275mm) Dia
B	074361	100 Tooth 10.75 Inch (275mm) Dia.
C	074362	120 Tooth 10.75 Inch (275mm) Dia
D	074363	150 Tooth 10.75 Inch (275mm) Dia.
E	074365	180 Tooth 10.75 Inch (275mm) Dia.
F	074366	220 Tooth 10.75 Inch (275mm) Dia.
G	074367	260 Tooth 10.75 Inch (275mm) Dia.

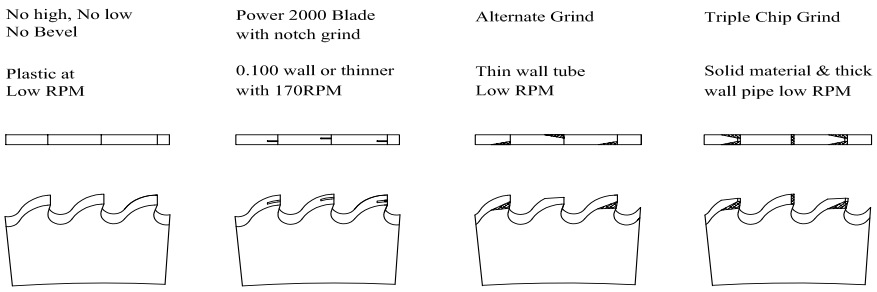


FIGURE 40

THERE ARE FOUR STYLES OF BLADES AVAILABLE:

STYLE 2: Has a round back tooth with a square face and top. This style is designed for thin wall, nonferrous tubes, plastics and synthetics.

STYLE 2A: Is an alternate top bevel grind. This grind is used on blades that have 240 teeth or more. Applications for this style are thin wall tubes, profiles with thin cross sections and nonferrous applications that require 240 teeth or more.

STYLE 3: Is a triple chip grind with a high/low tooth form. This grind is used on blades that have 220 teeth or less. This style is used for a wide range of materials from solid sections of nonferrous materials to heavy wall tubes and solid sections of steel and alloys.

POWER 2000: Is a notch grind blade designed for use on fully and semi-automatic machines with the variable speed control, only. This style is designed for.100 wall or thinner tube with a minimum blade speed of 170 RPM.

The stock blades listed above are oxide coated high speed steel. Ten inch (250mm) blades can be provided with any number of teeth, from 50 to 280.

SERIAL #'S B31071003 & UP

12.0 SUPPLEMENT FOR OLDER MODELS

12.1 ELECTRICAL DIAGRAMS

MANUAL OR PK W/TRIGGER SWITCH & VARIABLE SPEED DRIVE

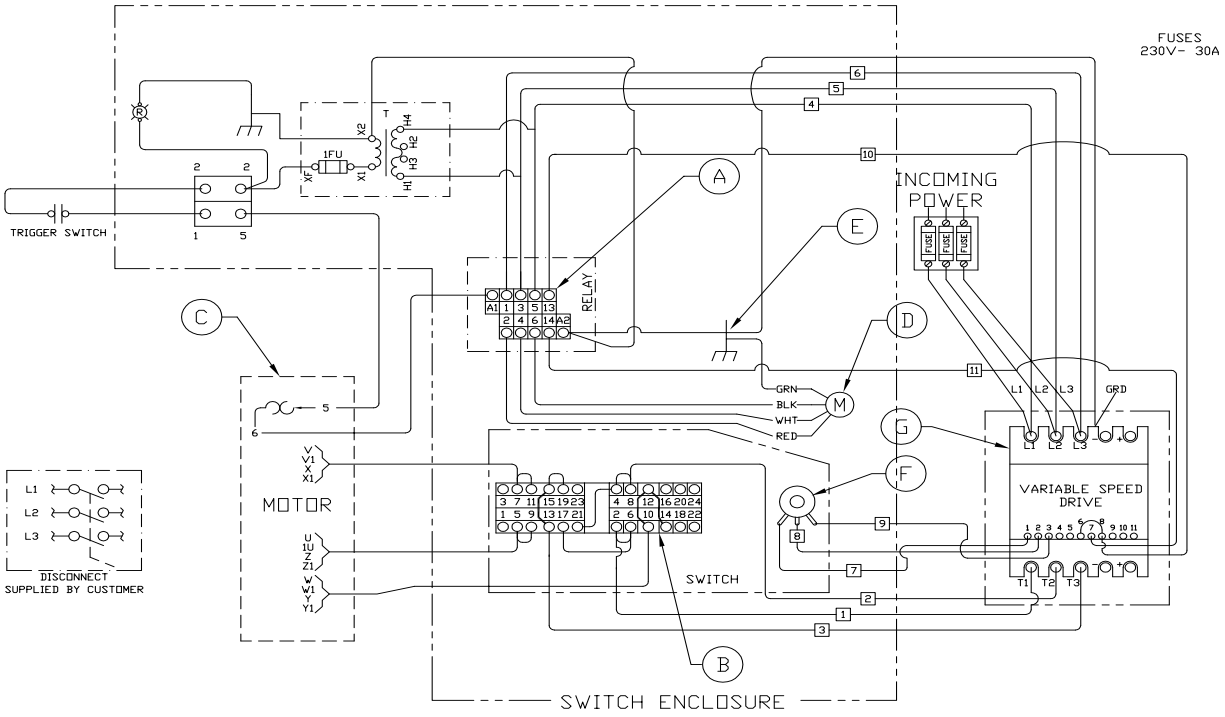


FIGURE 41

PK/PD W/E-STOP & VARIABLE SPEED DRIVE

SERIAL #'S B3431 & UP

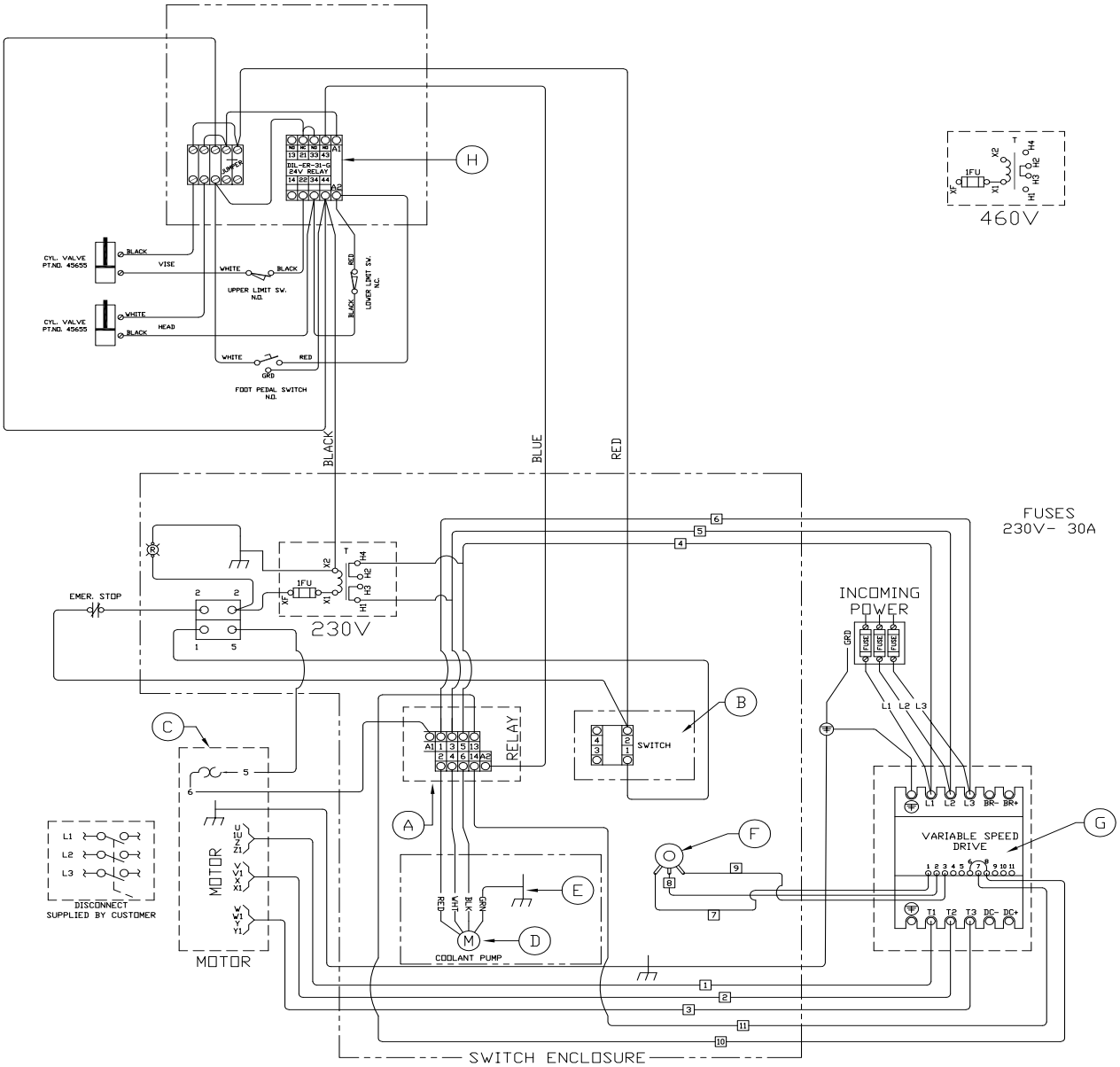
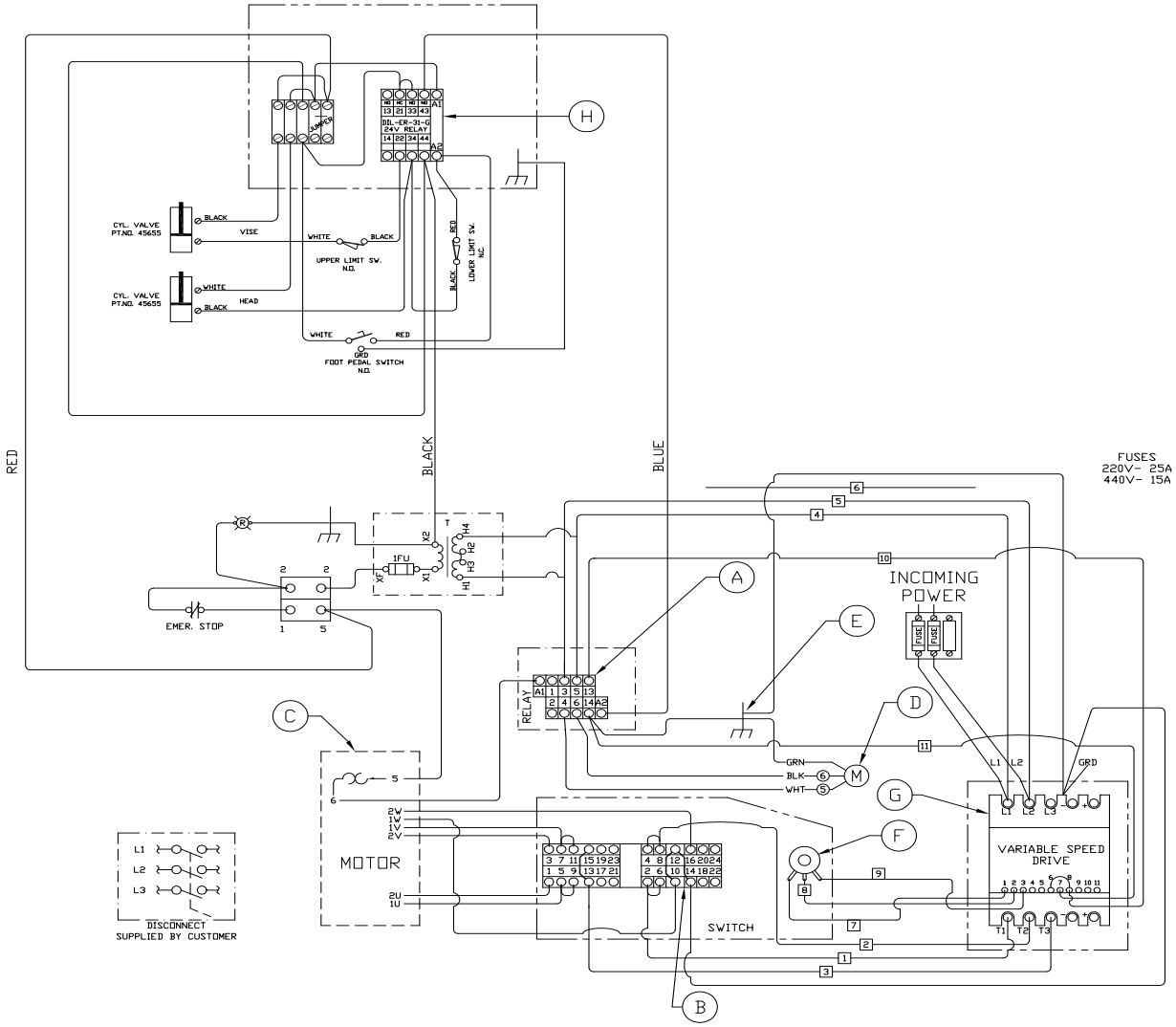


FIGURE 42

VS DRIVE USED AS PHASE CONVERTOR (POWER DOWN)

SERIAL #'S B3431 & UP

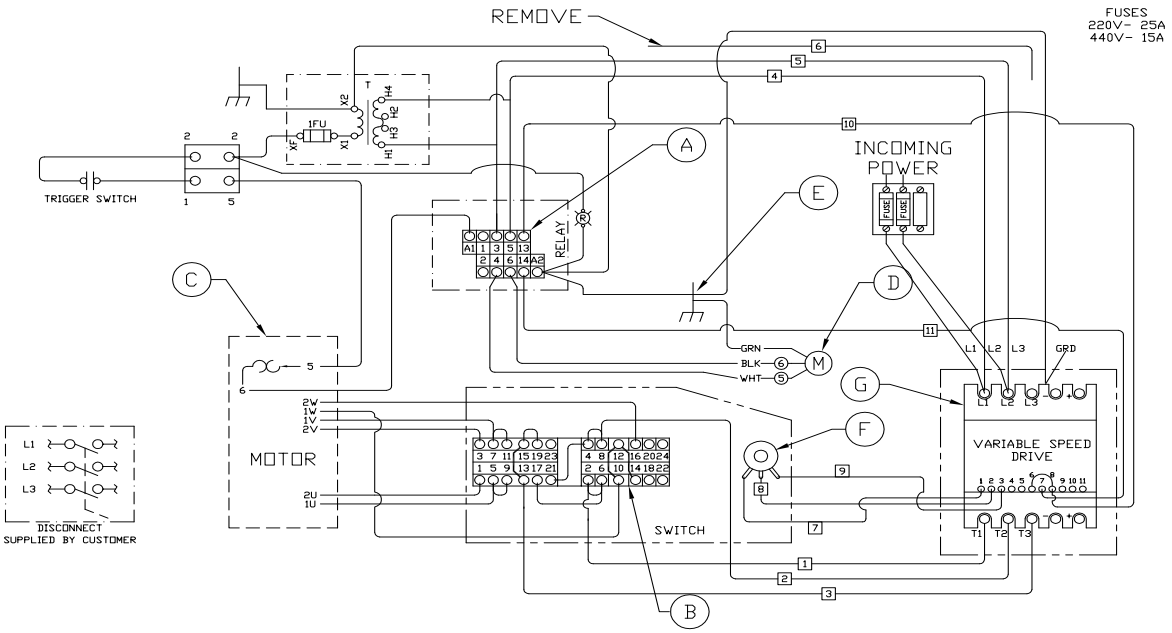


CHANGES FROM 3-PHASE TO 1-PHASE WITH VAR. SPEED
PK & PK-PD

REPLACE 3-PHASE PUMP WITH SINGLE PHASE PUMP
REMOVE POWER LINE #6 FROM #1 RELAY TO L3 VAR.SPEED
CLIP RED WIRE IN CORD FROM SWITCH TO PUMP MOTOR
AT SINGLE PHASE PUMP MOTOR CONNECT #1 & #3 BLACK TOGETHER
CONNECT #5 PUMP MOTOR TO #20 SWITCH
CONNECT #6 PUMP MOTOR TO #18 SWITCH
IF MOTOR RUNS BACKWARDS REVERSE #6 &#5 MOTOR
REMOVE JUMPERS ON SWITCH
15-19
6-17
4-21
MOVE WHITE GROUND WIRE FROM #A2 RELAY TO #13 RELAY

FIGURE 43

VS DRIVE USED AS PHASE CONVERTOR
MANUAL & PK



3 HP CHANGES FROM 3-PHASE TO 1-PHASE WITH VAR. SPEED
MANUAL SAWS AND PK, NO PD

IF THESE WIRES ARE IN PLACE-
REMOVE WIRES FROM RELAY
TO SWITCH-
R 2-SW 2
R 4-SW 8
R 6-SW 13

REPLACE 3-PHASE PUMP WITH SINGLE PHASE PUMP
REMOVE POWER LINE #6 FROM #1 RELAY TO L3 VAR.SPEED
CLIP RED WIRE IN CORD FROM RELAY TO PUMP MOTOR
AT SINGLE PHASE PUMP CONNECT #1 & #3 BLACK TOGETHER
CONNECT #6 PUMP MOTOR TO #6 RELAY
CONNECT #5 PUMP MOTOR TO #4 RELAY
IF MOTOR RUNS BACKWARDS REVERSE #6 &#5 MOTOR

FIGURE 44