CPO-350
COLD SAW

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1.0 INTRODUCTION

The CPO-350 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. The variable speed motor control option offers an even greater range of material that can be cut with one machine. 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.

Hydraulic and electric components are subject to their respective manufacturer's warranties.

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	67.5	171.4
B.	FLOOR TO VISE	37.5	95.3
C.	BASE HEIGHT	32	81
D.	VISE OPENING	6	15.2
E.	VISE DEPTH	2.75	7
F.	BASE WIDTH	21.5	55
G.	BASE DEPTH	17.25	44
H.	MOUNTING HOLE CENTERS	4.5	62
I.	WIDTH	26.5	67
J.	WEIGHT	525 LBS.	238 KG.

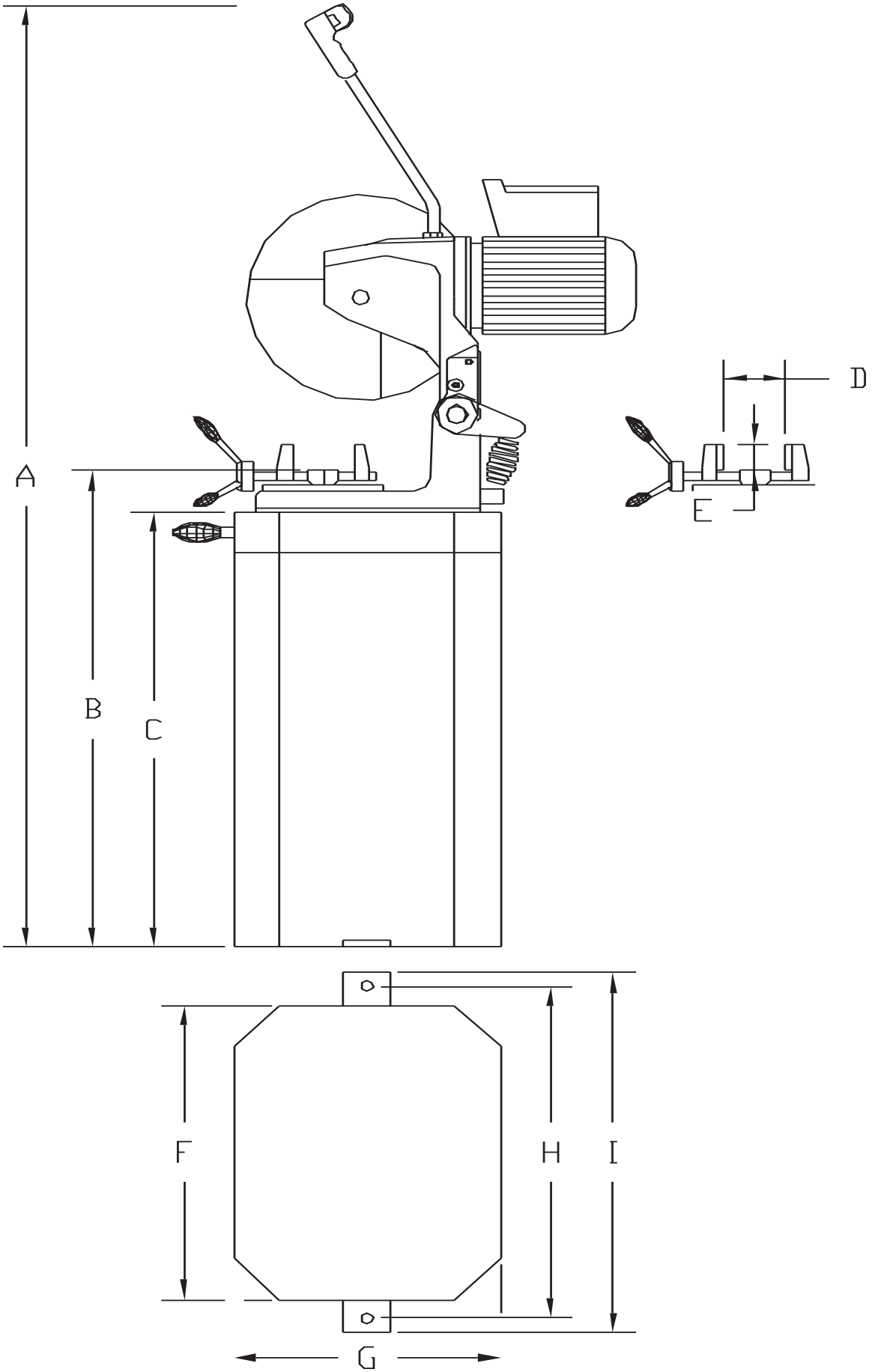


FIGURE 1

4.2 MACHINE MOVING PROCEDURES

SEE FIGURE 2 BELOW.

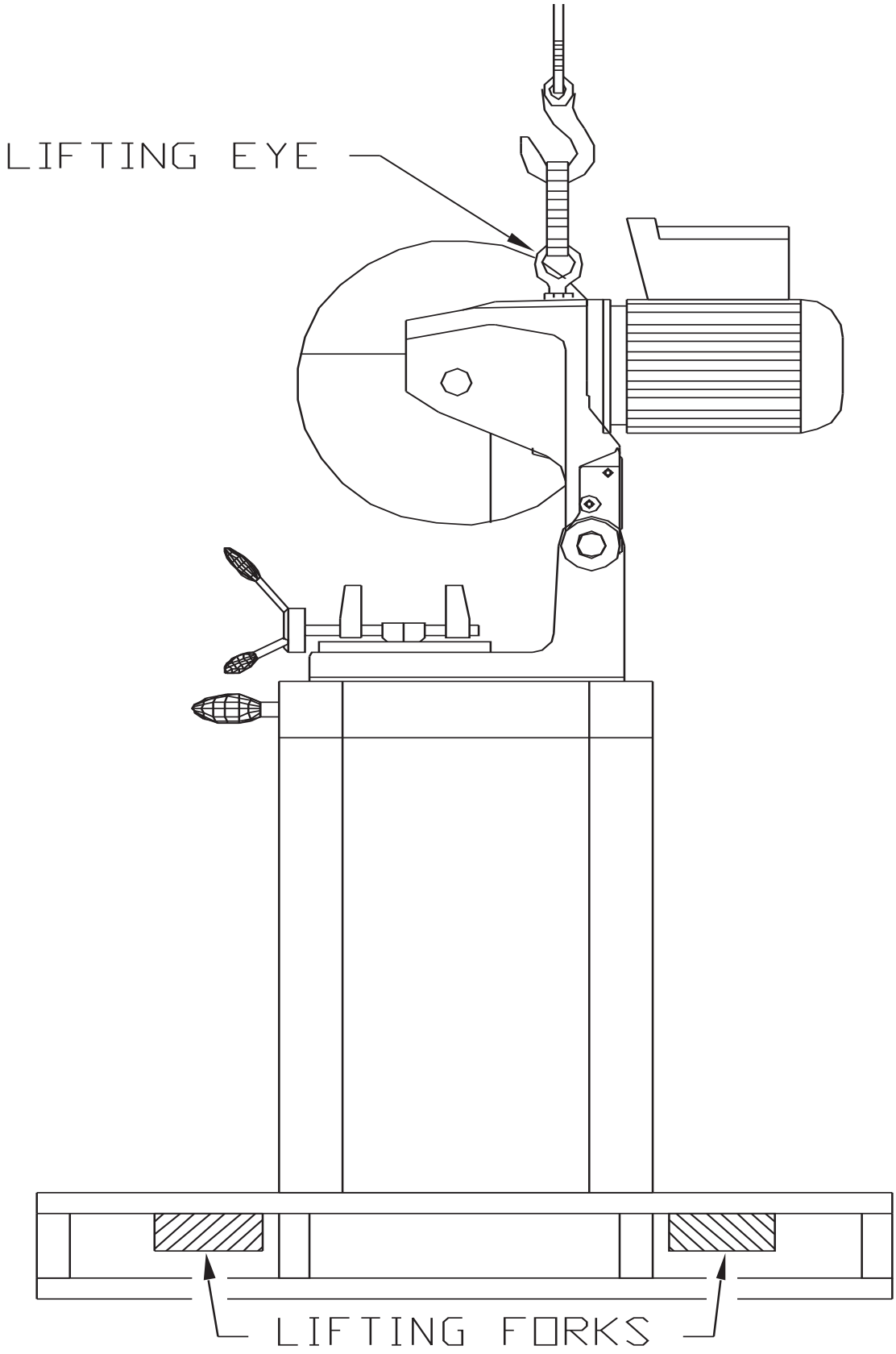


FIGURE 2

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

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

All saws, except models equipped with the power down feed option, are shipped with the head locked in the DOWN position. Before lifting the machine, release the head by opening the material vise and allowing it to move to the UP position. Lift the machine, using the lifting eyelet provided. SEE FIGURE 2 ON THE PRECEDING PAGE. Remove the pallet and place the machine in its final location. This machine is top heavy and must be anchored to the floor.

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 vice machines, remove the cover from the electrical control box and connect the trigger switch wires. REFER TO FIGURE 3-1.

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 UP position, check the oil level in the gear box through the sight glass in the casting just below the draw handle. Install the thirty (30) inch (76 cm) material length stop. The length stop mounts on the right side of the vise base.

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 FIGURE 3-1 THRU 3-5 ON THE FOLLOWING PAGES.

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

The machines can be wired for three phase power or single phase power. The three phase motors are dual speed and will operate on one voltage only. Single phase motors operate on one speed only, that is 44 RPM. If the machine is not the same voltage as your plant voltage, you will have to replace the motor and the 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. For supply lines ten feet (303 cm) or shorter, we recommend 12 gauge wire. For lines longer than ten feet (303 cm), we recommend 10 gauge wire. We do not recommend supply lines over twenty feet (606 cm) in length.

CPO-350-LT (22-44 RPM)

MOTOR VOLTAGE	FULL LOAD CURRENT		HORSEPOWER	
	HI	LOW	HI	LOW
208	7.1	3.6	2	1
230	6.5	3.3	2	1
460	3.3	1.6	2	1
230 1PH	14		2	

CPO-350-HT (44-88 RPM)

MOTOR VOLTAGE	FULL LOAD CURRENT		HORSEPOWER	
	HI	LOW	HI	LOW
208	9.7	7.1	2.7	2
230	8.8	6.5	2.7	2
460	4.4	3.2	2.7	2
230 1PH		14		2

MANUAL OR PK W/TRIGGER SWITCH

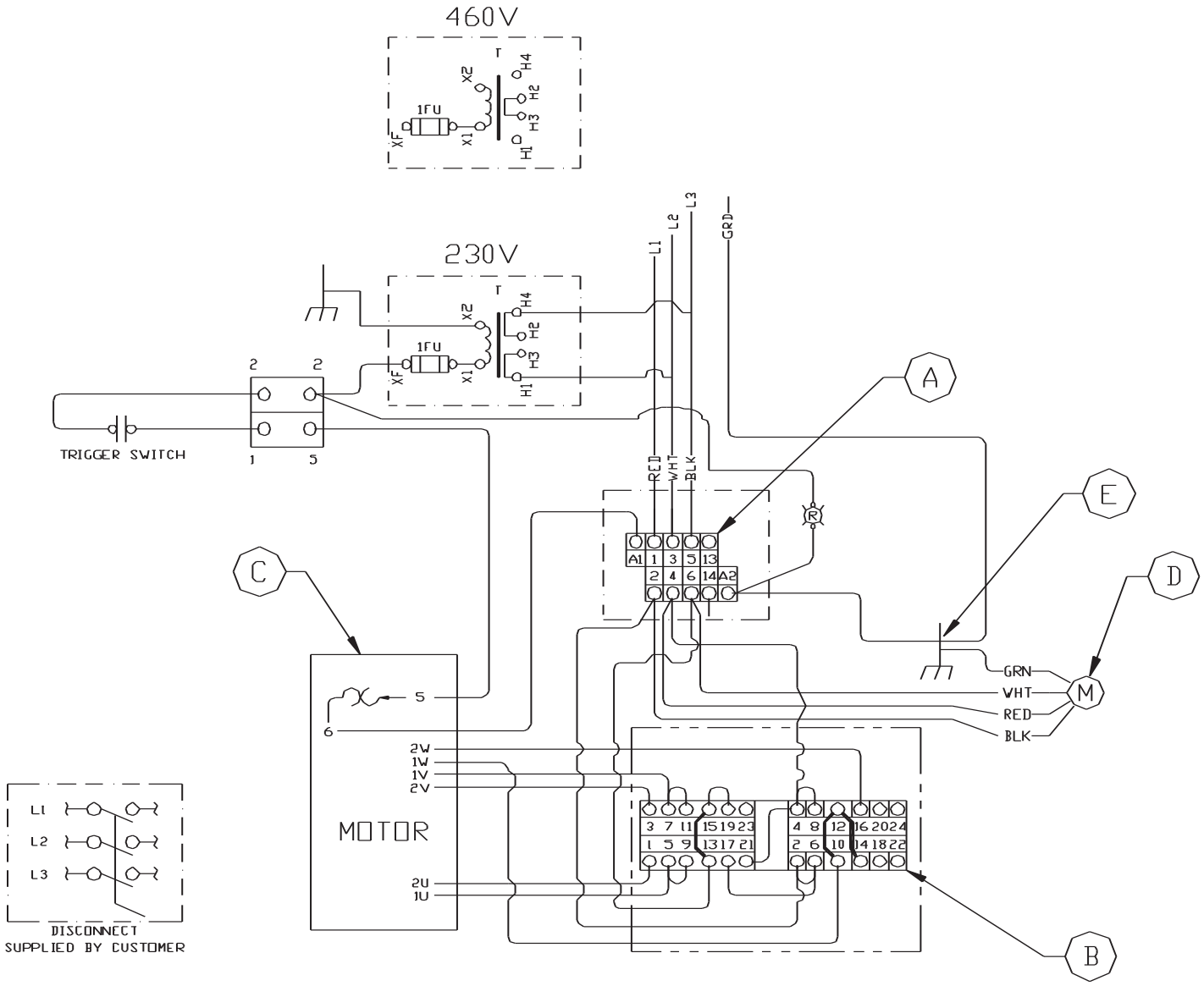
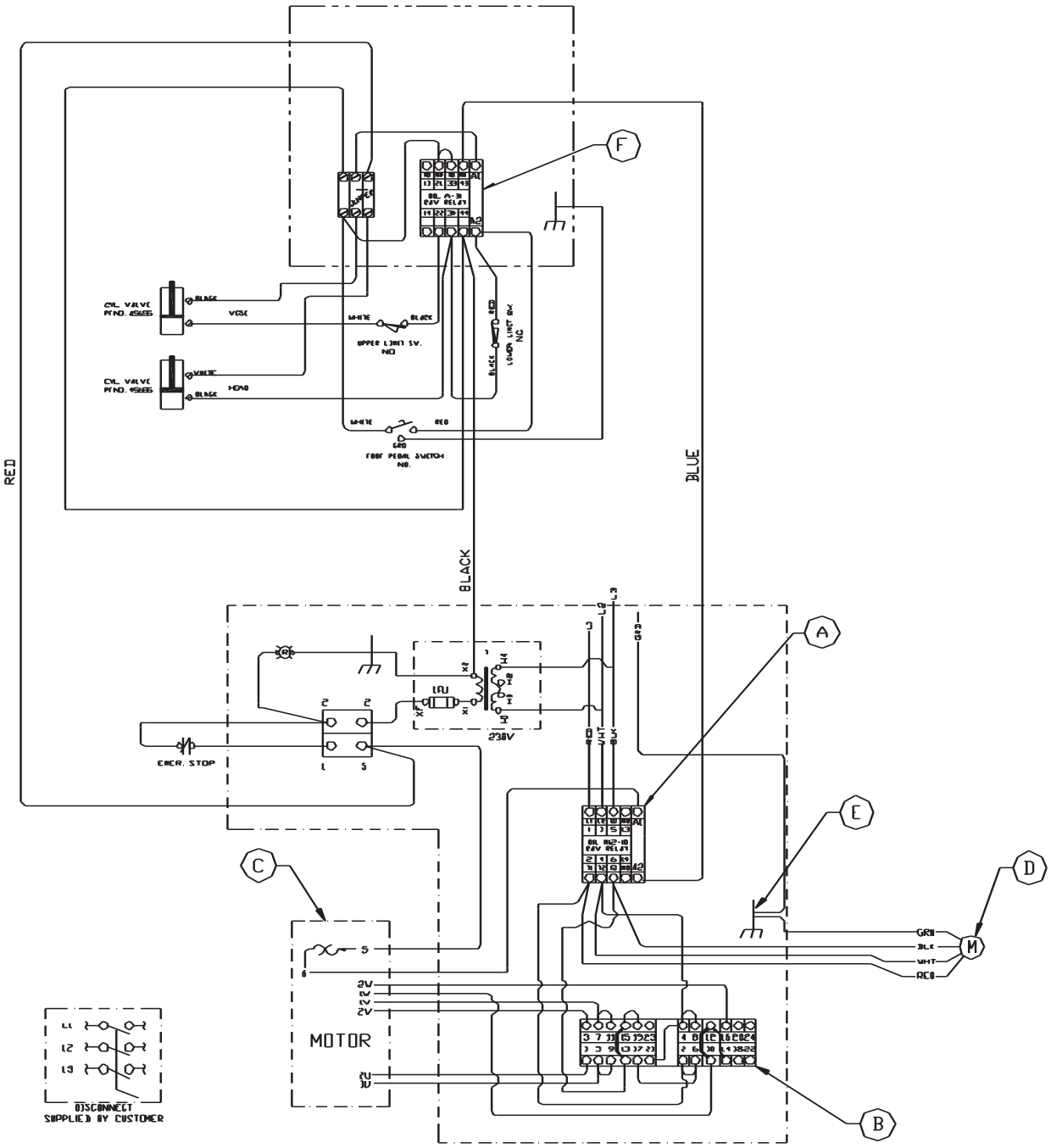


FIGURE 3-1

PKPD W/EMERGENCY STOP
(SERIAL #'S 8001 & UP)



3 HP MOTOR
PK PD

FIGURE 3-2

PD W/EMERGENCY STOP
(SERIAL #'S 8001 & UP)

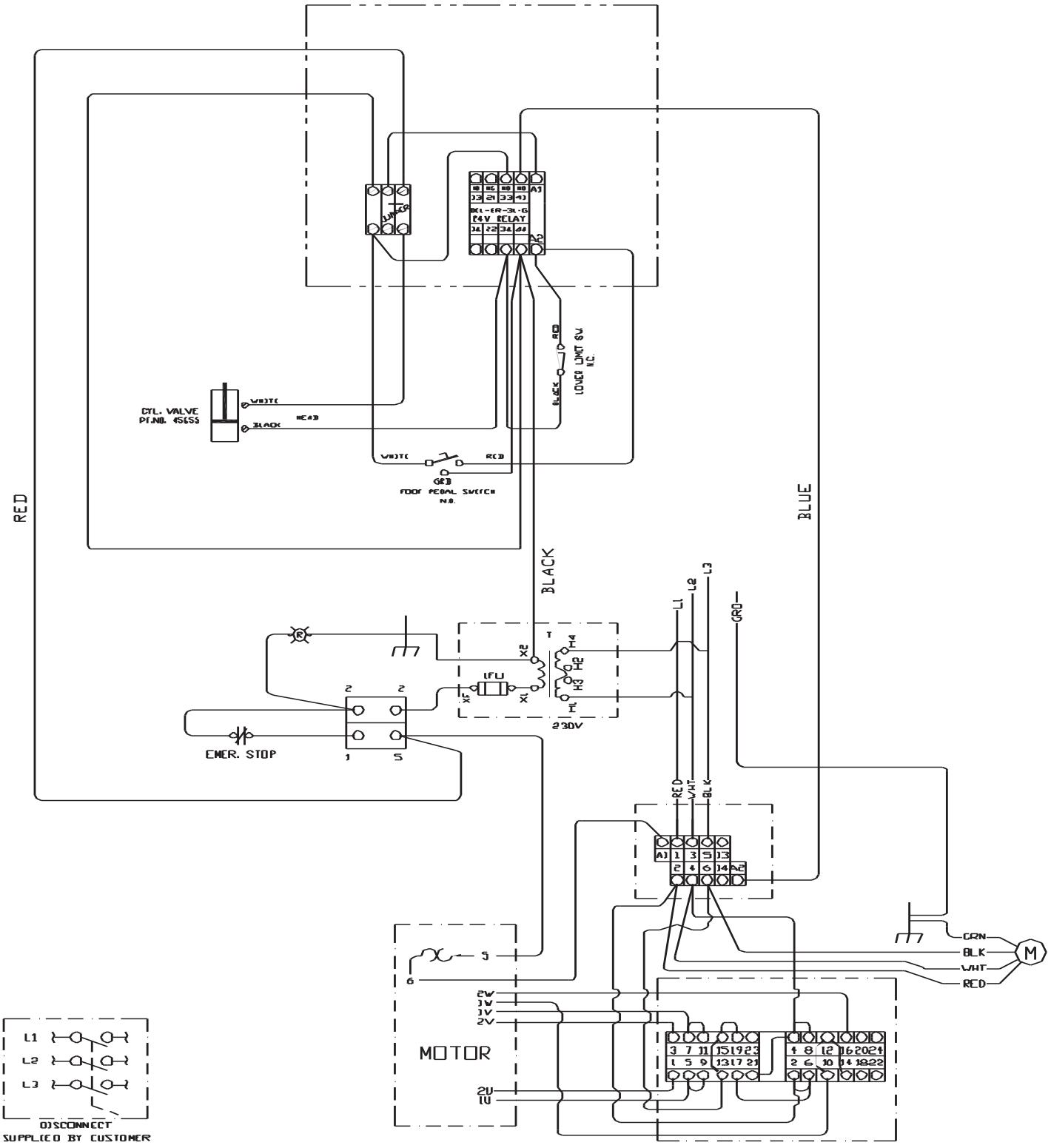


FIGURE 3-3

CPO 350 1PHASE POWER DOWN
(SERIAL #'S 8001 & UP)

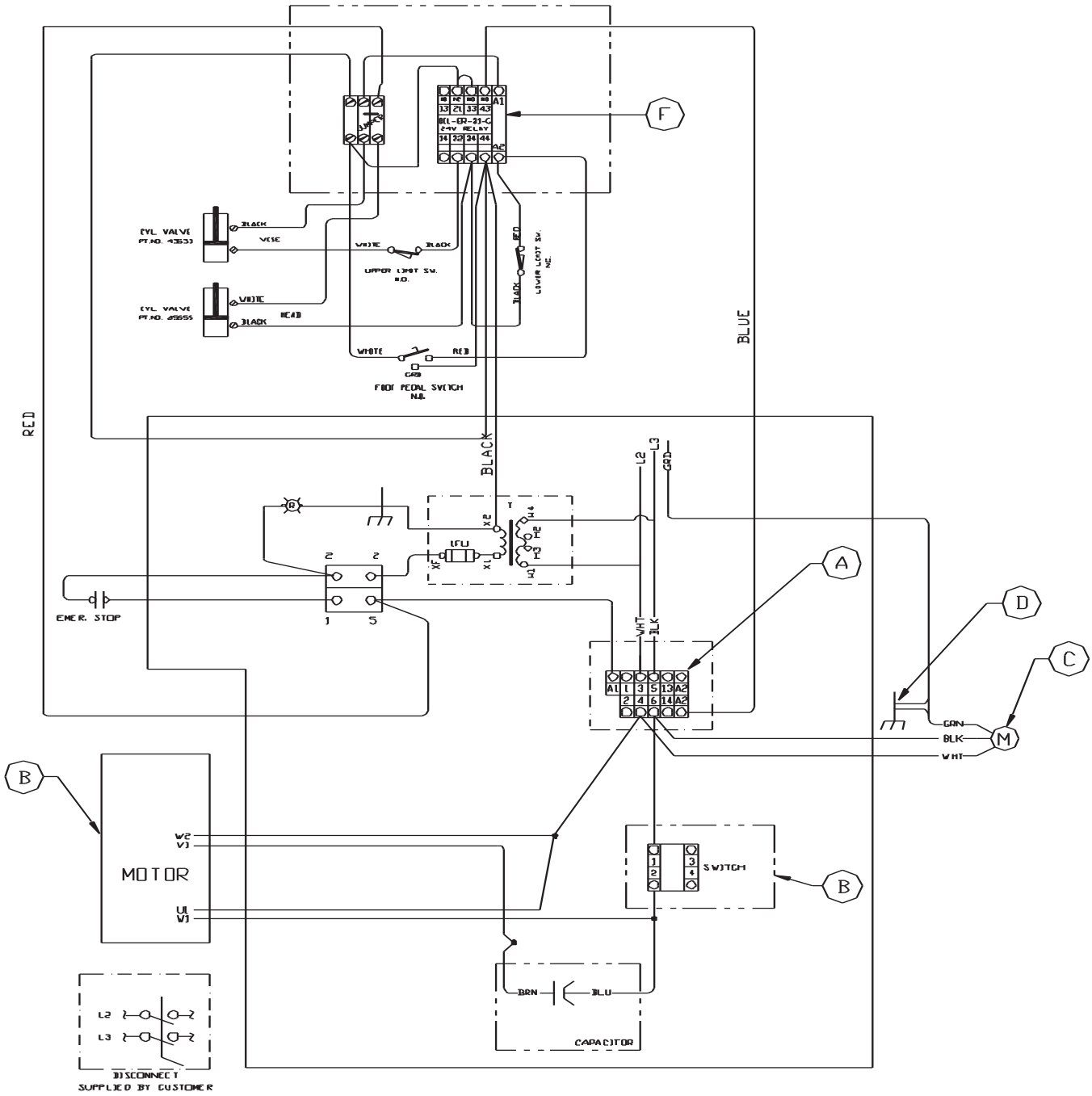


FIGURE 3-4

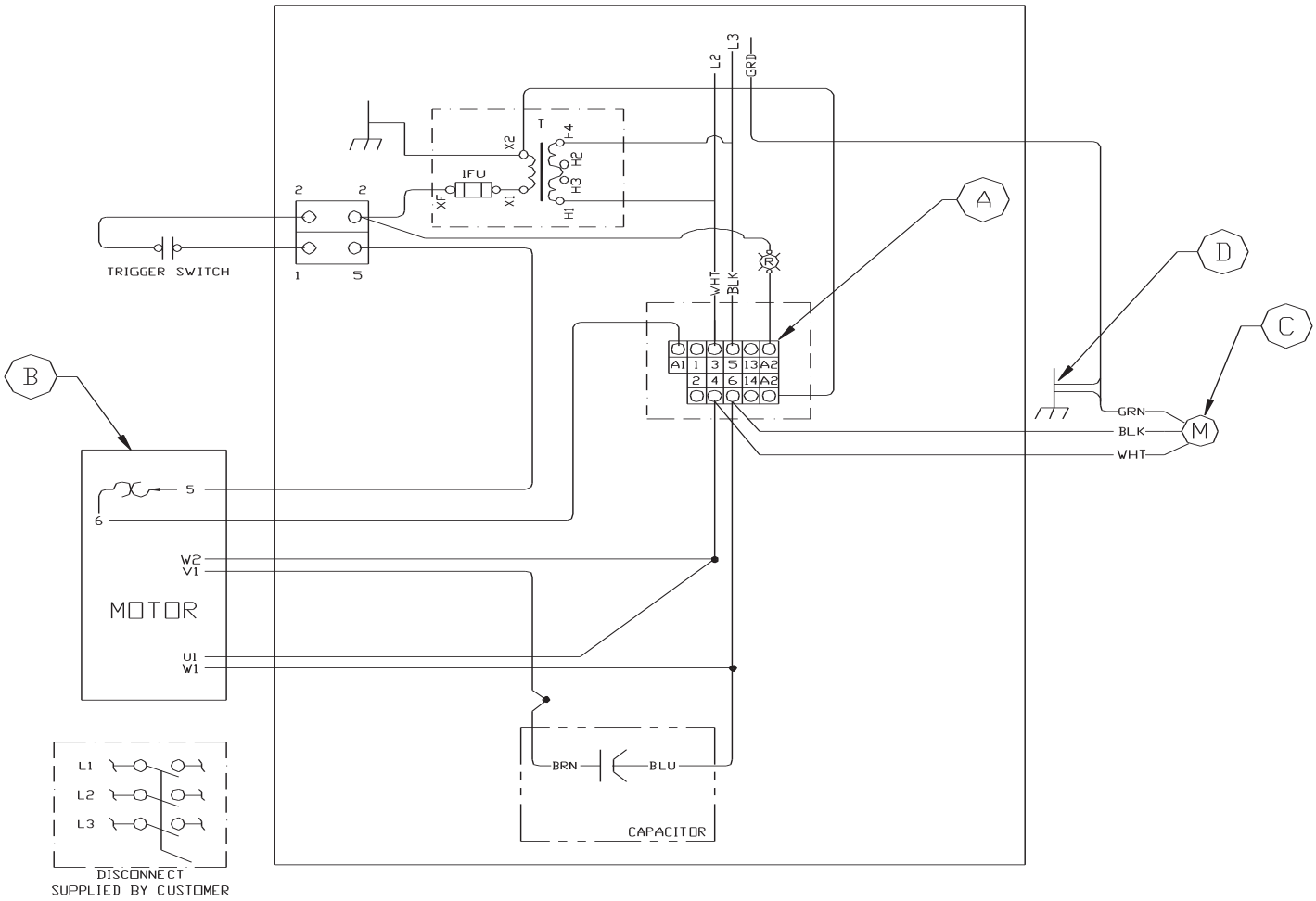

L2
L3
GRD
T
X2
H4
H2
H3
H1
1FU
XF
X1
2
2
1
5
TRIGGER SWITCH
A
D
C
B
WHT
BLK
A1 1 3 5 13 A2
2 4 6 14 A2
GRN
BLK
WHT
M
5
6
W2
V1
MOTOR
U1
W1
L1
L2
L3
DISCONNECT
SUPPLIED BY CUSTOMER
BRN
BLU
CAPACITOR

FIGURE 3-5

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. Scotchman offers a lock-out switch for this machine as an option, if your plant is not equipped with lock-out capabilities. If you are interested in this option, REFER TO SECTION 7.7 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 vice machines, turn the HIGH/LOW switch to either the HIGH or the LOW position and use the trigger switch mounted in the draw handle to start the motor. Always turn the HIGH/LOW switch to the OFF position when the saw is not in use. To power machines equipped with the power down feed option,turn the HIGH/LOW switch to either the HIGH or the LOW position and depress the foot switch to start the motor. The foot switch can be used to cycle the saw head, without starting the motor, by leaving the HIGH/LOW switch in the OFF position. We do not recommend using the emergency stop switch to turn the machine off during normal operation. If the emergency stop switch is used, it must be manually reset by pulling the switch back out. Always turn the HIGH/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. 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 ON THE FOLLOWING PAGE.

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 mounting bolts (A) on the linkage mount (B).**
3. **Manually hold the guard open approximately 1/8 of an inch (3 mm) at point (C).**
4. **Adjust the linkage mount (B) down until there is tension on the linkage bar. Re-tighten the linkage mount bolts (A).**
5. **Manually cycle the head up and down several times, making sure that the guard operates properly.**

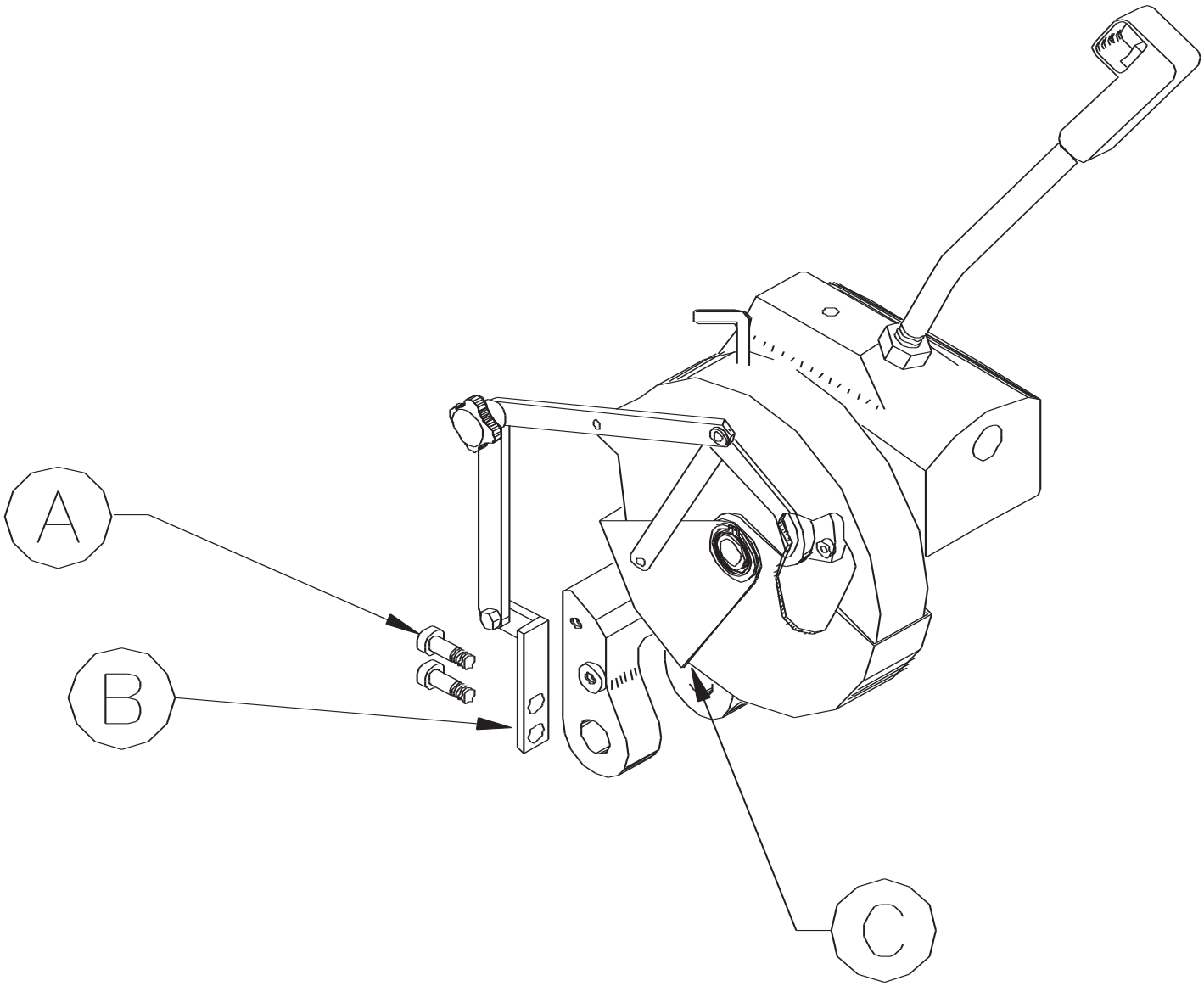


FIGURE 4

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 pure, synthetic, water soluble cutting fluids. There is a sieve screen in the back of the cast vise base. To aid in adding coolant, it 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 curtain 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 10.6.

5.0 MAINTENANCE AND LUBRICATION

5.1 LUBRICATION

SEE FIGURE 5 ON THE FOLLOWING PAGE.

Before operating the saw, grease the pivot pins (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. Check the level of the fluid in the saw head by checking the sight glass in the front of the head casting. The saw head must be in the full DOWN position when checking the fluid level. To add fluid, remove the vented plug next to the draw handle. On models not equipped with a vent plug, you have to remove the draw handle and add gear lubricant through this opening. Clean the chips out of the vise every 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. For additional information if your saw is equipped with a power vise or power down feed option, SEE SECTIONS 7.1 THRU 7.2.

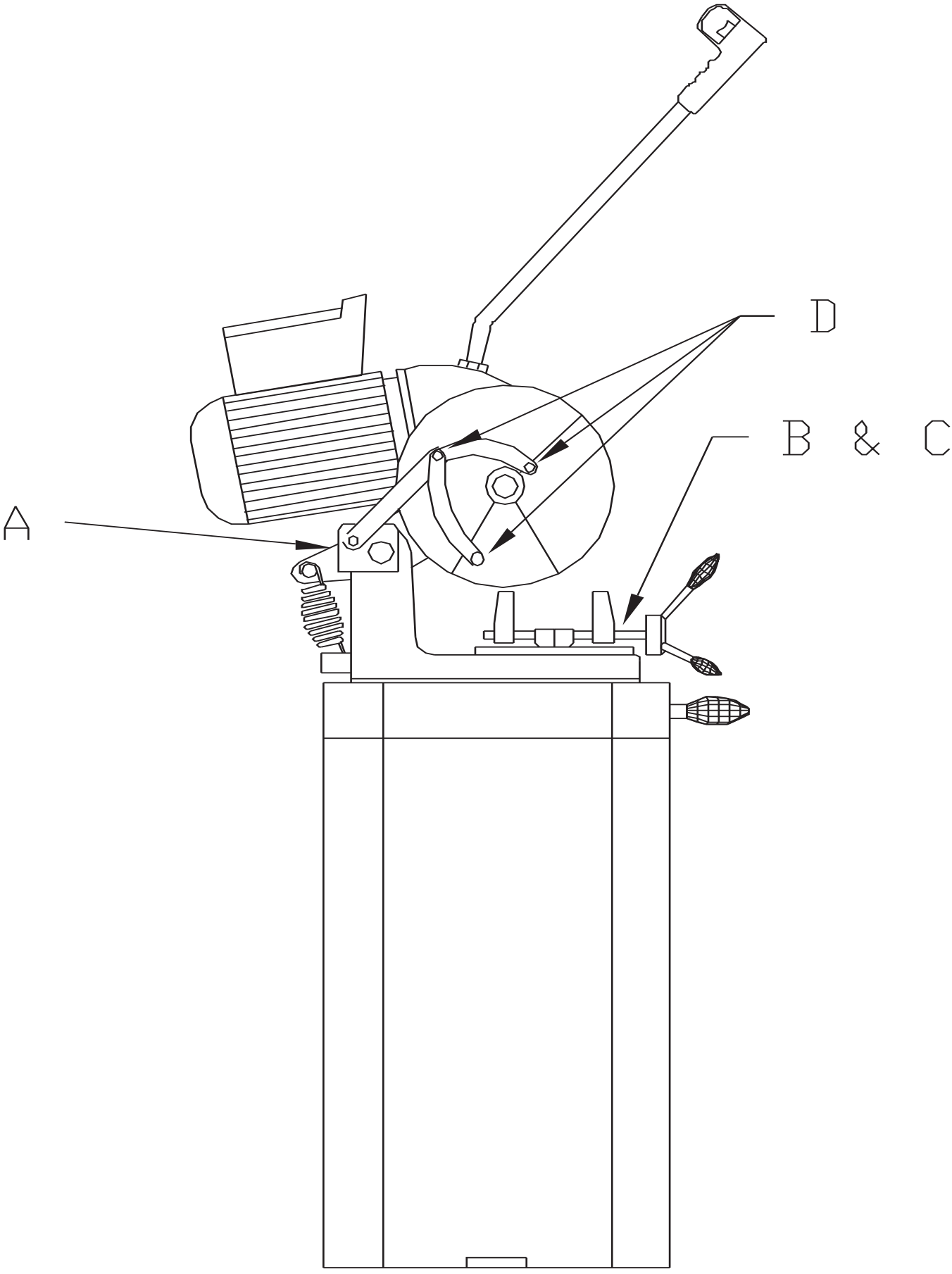


FIGURE 5

5.2 CUTTING OILS AND LUBRICANTS

SECTION 10.6 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 or equivalent.

On saws equipped with the power down feed, use a Mobil DTE Light hydraulic oil, or equivalent, in the reservoir.

On saws equipped with air lubricators, use Mobil DTE Light hydraulic oil.

5.3 SCHEDULED MAINTENANCE

A program of scheduled maintenance should be set up and documented according to your application and the frequency 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 Mobil 600W Super Cylinder Oil or equivalent.

Gear lube is added to the saw by removing the draw handle or lifting lug from the top of the saw head.

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.

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5.5 PNEUMATIC SCHEMATIC (POWER DOWN MACHINES)

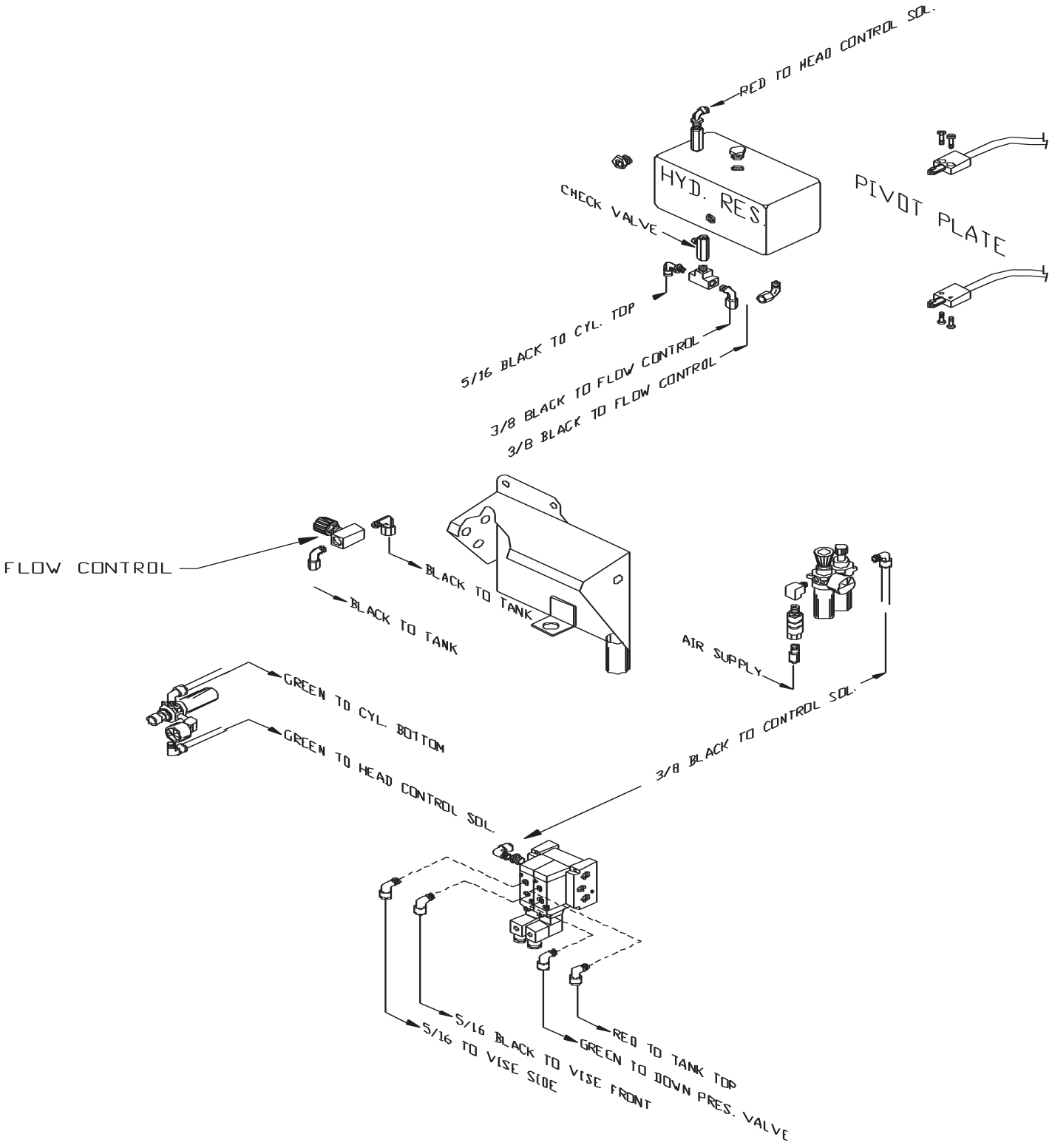


FIGURE 7

6.0 MACHINE OPERATION

6.1 INSTALLING BLADES-MANUAL MACHINES

SEE FIGURE 8 BELOW.

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

⌦ CAUTION: USE ONLY HIGH SPEED STEEL BLADES DESIGNED FOR THIS MACHINE. DO

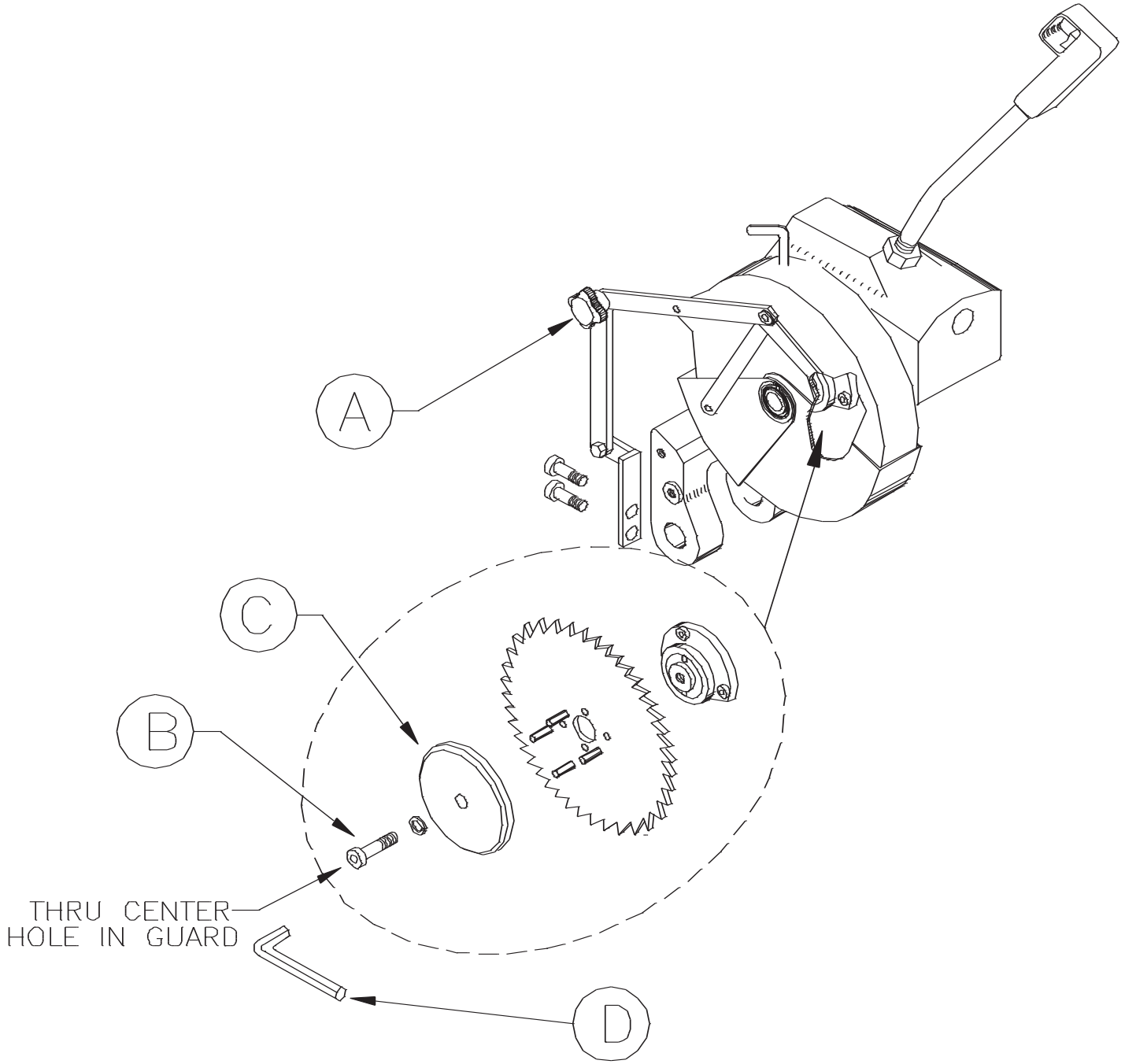


FIGURE 8

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 (D), shipped with each machine, is required to change blades.)

1. **Remove the knob (A) from the guard linkage 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. Failure to do these things will result in broken or damaged blades.

6.2 SAW CAPACITIES

SEE FIGURE 9 BELOW.

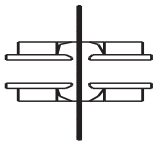
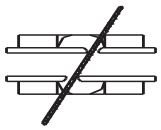
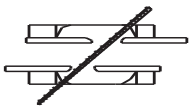
CAPACITIES WITH MAXIMUM DIAMETER BLADES 14 IN. (350 MM)		90° 	60° 	45° 
	INCHES MM.	ø4-1/2 ø115	ø4-1/4 ø108	ø4 ø100
	INCHES MM.	4¼ X 4¼ 108 X 108	4¼ X 4¼ 108 X 108	4 X 4 100 X 100
	INCHES MM.	4¼ X 4¼ 108 X 108	4¼ X 4¼ 108 X 108	4 X 4 100 X 100
	INCHES MM.	4⅜ X 4⅜ 110 X 110	3½ X 3½ 89 X 89	3½ X 3½ 89 X 89
	INCHES MM.	5½ X 4 140 X 100	5 X 4 125 X 100	4 X 4 100 X 100
	INCHES MM.	2 ø 50ø	1-3/4ø 45ø	1-3/4ø 45ø
	INCHES MM.	2X2 50X50	$1\frac{3}{4}$X$1\frac{3}{4}$ 45X45	$1\frac{3}{4}$X$1\frac{3}{4}$ 45X45

FIGURE 9

Figure 9 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 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	
		22	44	88
10-3/4	275	61	123	247
12-1/2	315	72	143	287
14	350	80	161	322

The proper blade speed is also important. The CPO-350 is available in three models. The LT model is a 22-44 RPM, the HT model is a 44-88 RPM and the single phase machine is 44 RPM.

The HT model (44-88 RPM) is recommended primarily for thin wall tube up to 1/8 of an inch (3mm) wall thickness and nonferrous materials. The Low speed (44 RPM) should be used for tubes with wall thicknesses of one hundred thousandths (.025mm) and thicker and for solid sections of nonferrous materials. The High speed (88 RPM) is recommended for thin walled tubes and nonferrous tubes and profiles. Some materials will require test cuts at both speeds to determine the best speed for the application.

The LT model (22-44 RPM) is recommended for cutting solid sections, alloy tubes and nonferrous materials. The Low speed (22 RPM) is recommended for solid sections of mild steel and alloy tubes. The High speed (44 RPM) is recommended for tubes and nonferrous materials. As with the HT model, some materials will require test cuts to determine the best speed.

A variable speed motor control option that will greatly increase the RPM range of these machines is available for both models of this saw.

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 10 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 11 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.

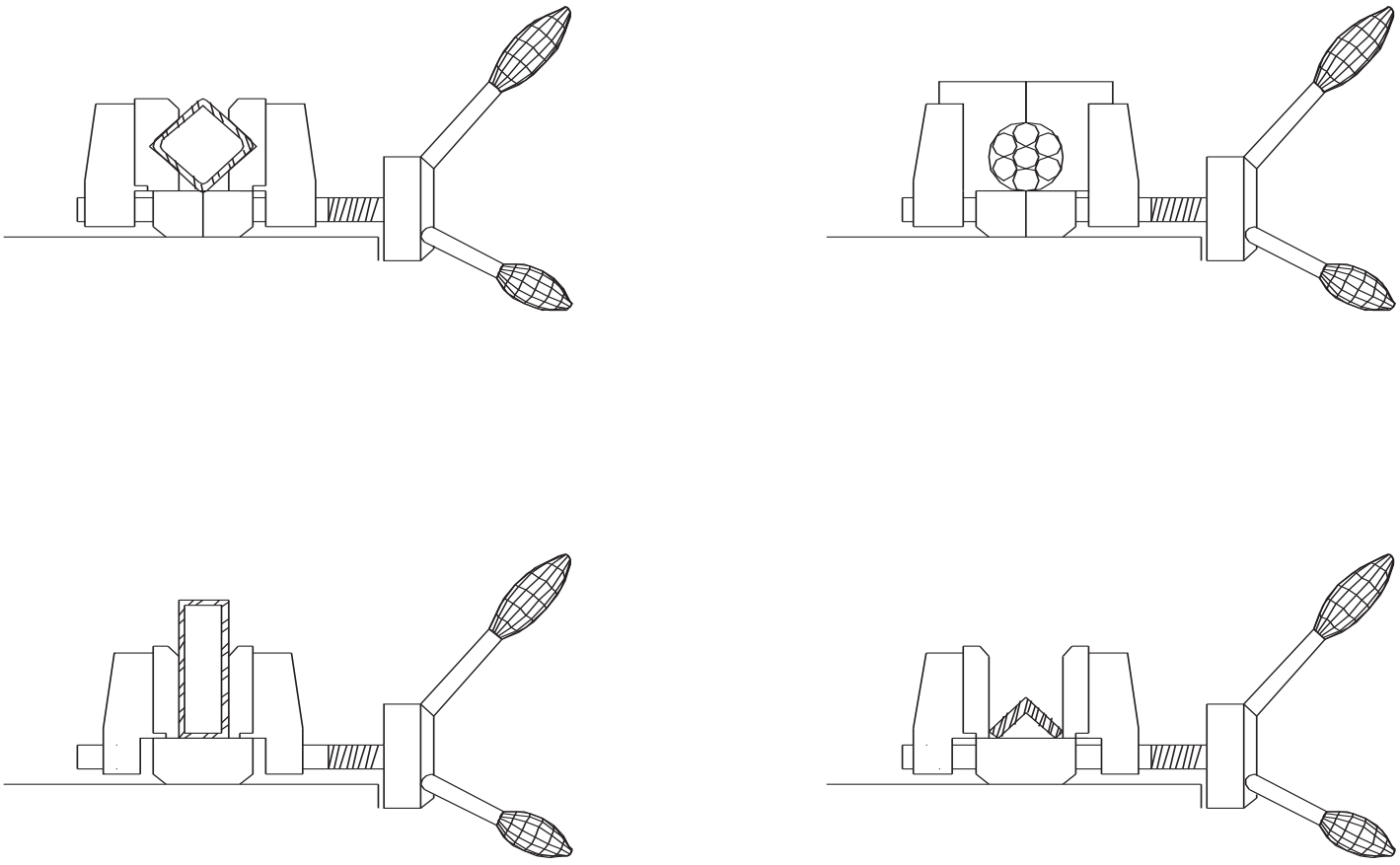


FIGURE 10

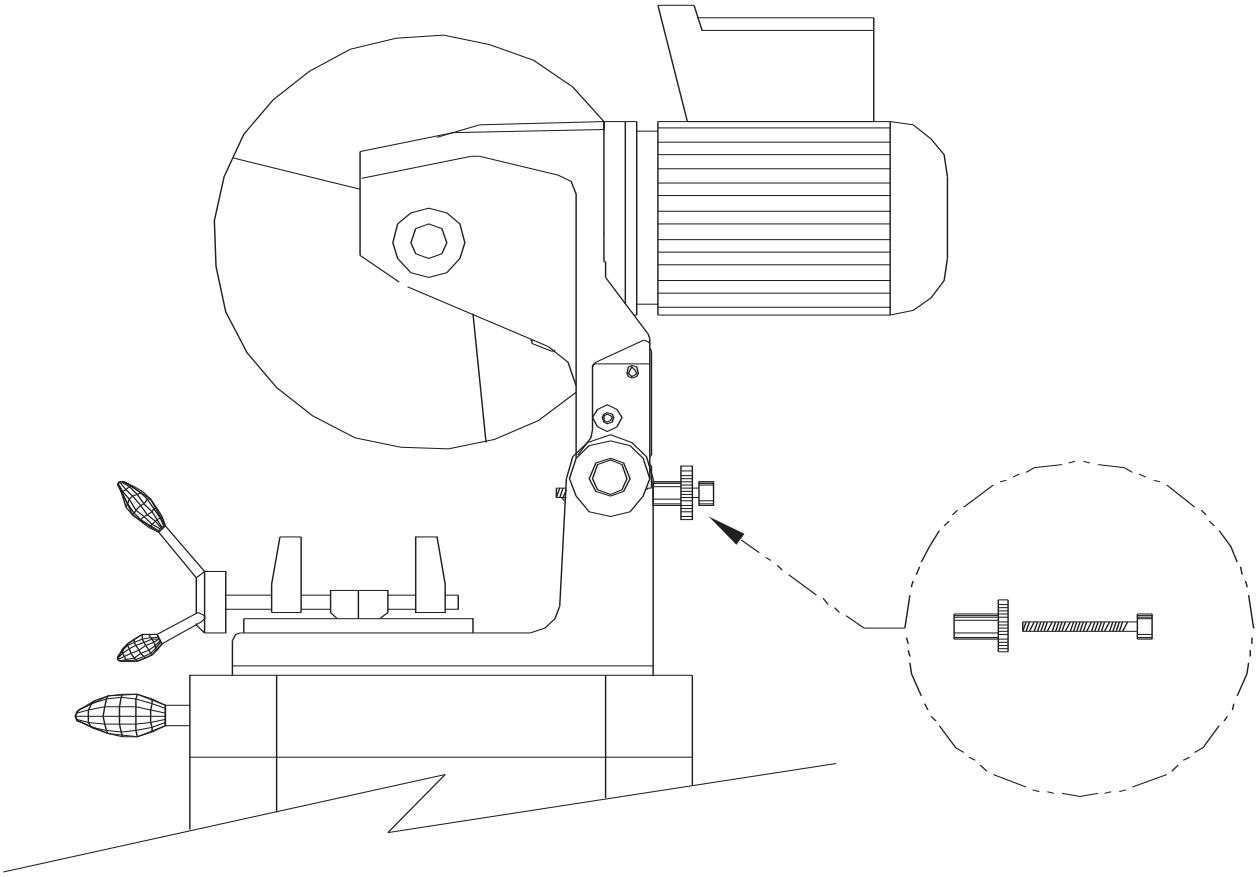


FIGURE 11

6.5 MITER LOCKING DEVICE

SEE FIGURE 12 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).**

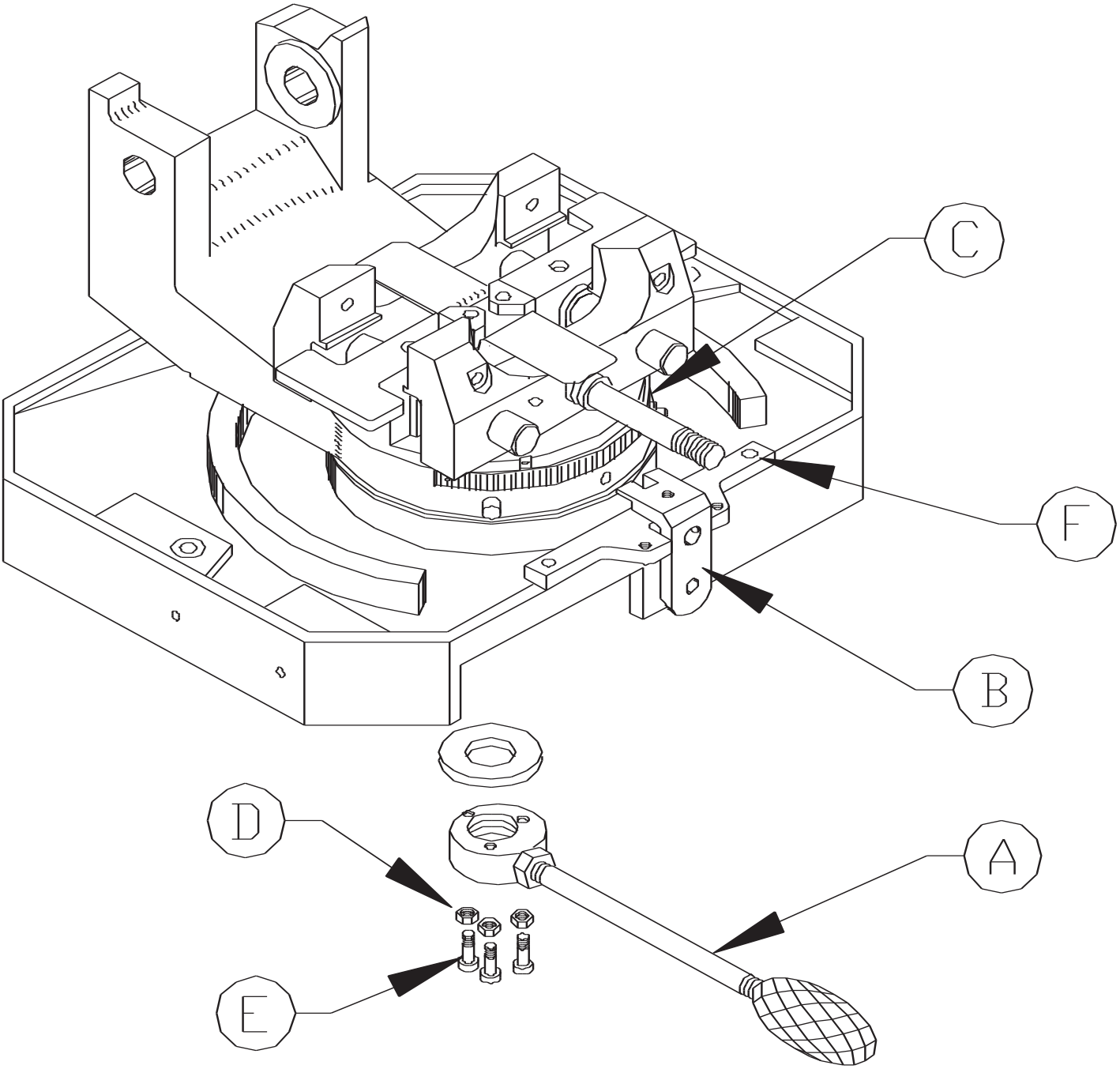


FIGURE 12

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-fir 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 13 BELOW.

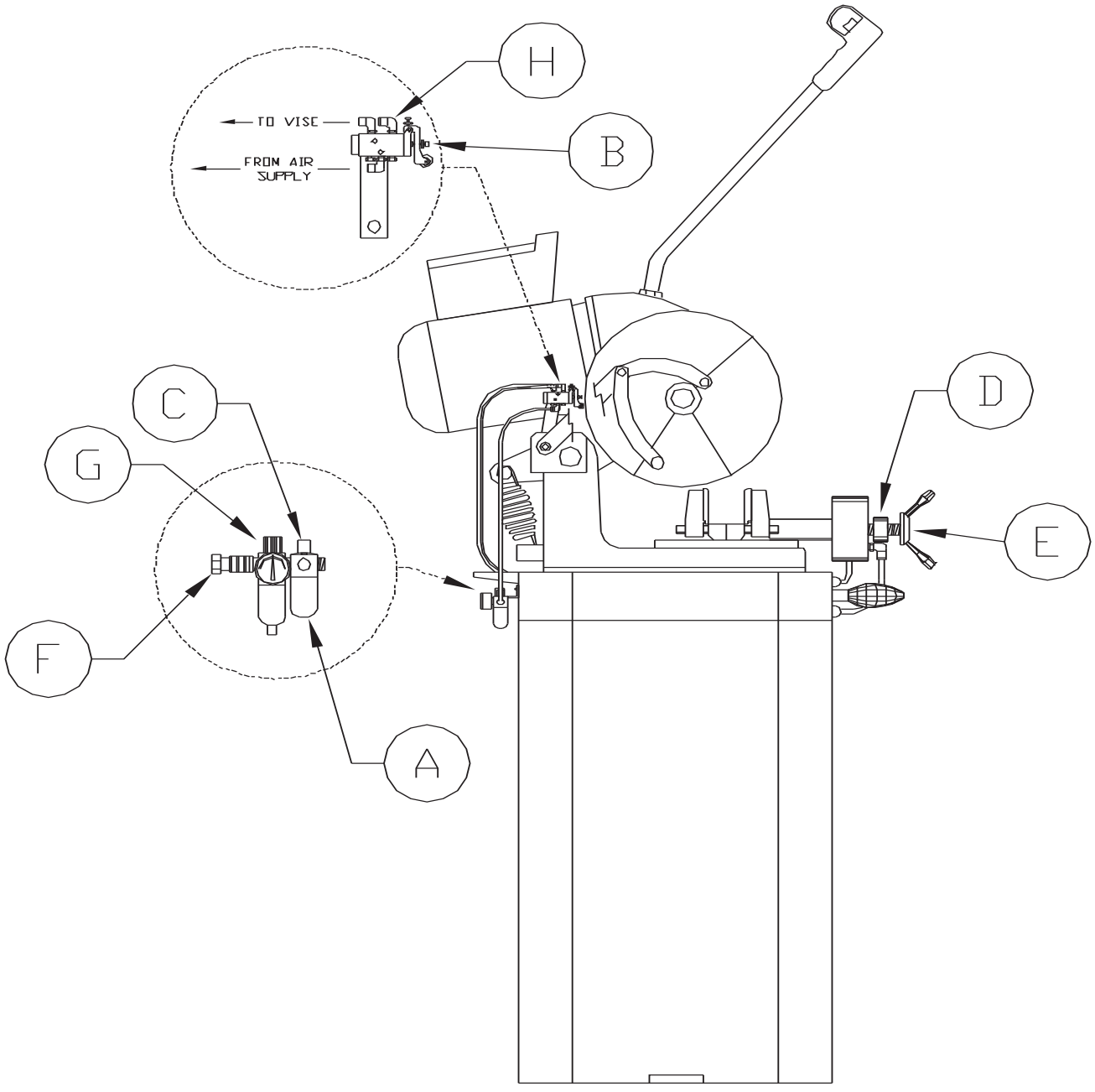


FIGURE 13

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 downstroke 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 10 ON PAGE 29.

7.1B REPLACING THE SPINDLE IN THE AIR VISE

SEE FIGURE 14 ON THE FOLLOWING PAGE.

1. **Disconnect the machine's power and air supply.**
2. **Remove the air lines (A) from the front of the cylinder.**
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. **Unscrew the back casting (E) off of the spindle.**
7. **Remove the two bolts (F) holding the air cylinder to the front casting and unscrew the air cylinder from the vise spindle.**
8. **Install the new spindle and reassemble the vise, reversing the above steps.**

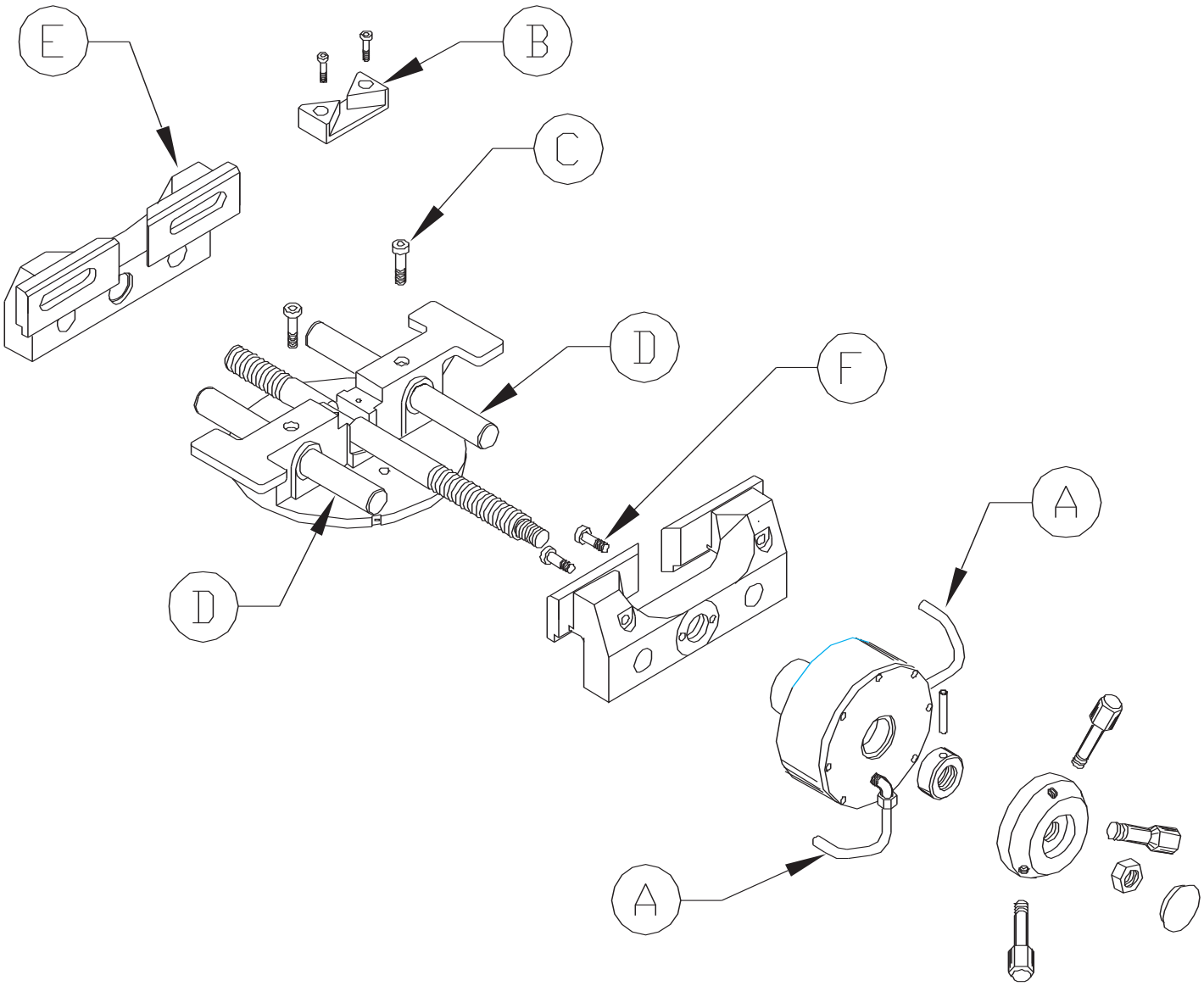


FIGURE 14

7.1C REPLACING THE SEALS IN THE AIR VISE

SEE FIGURE 15 ON THE FOLLOWING PAGE.

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.**

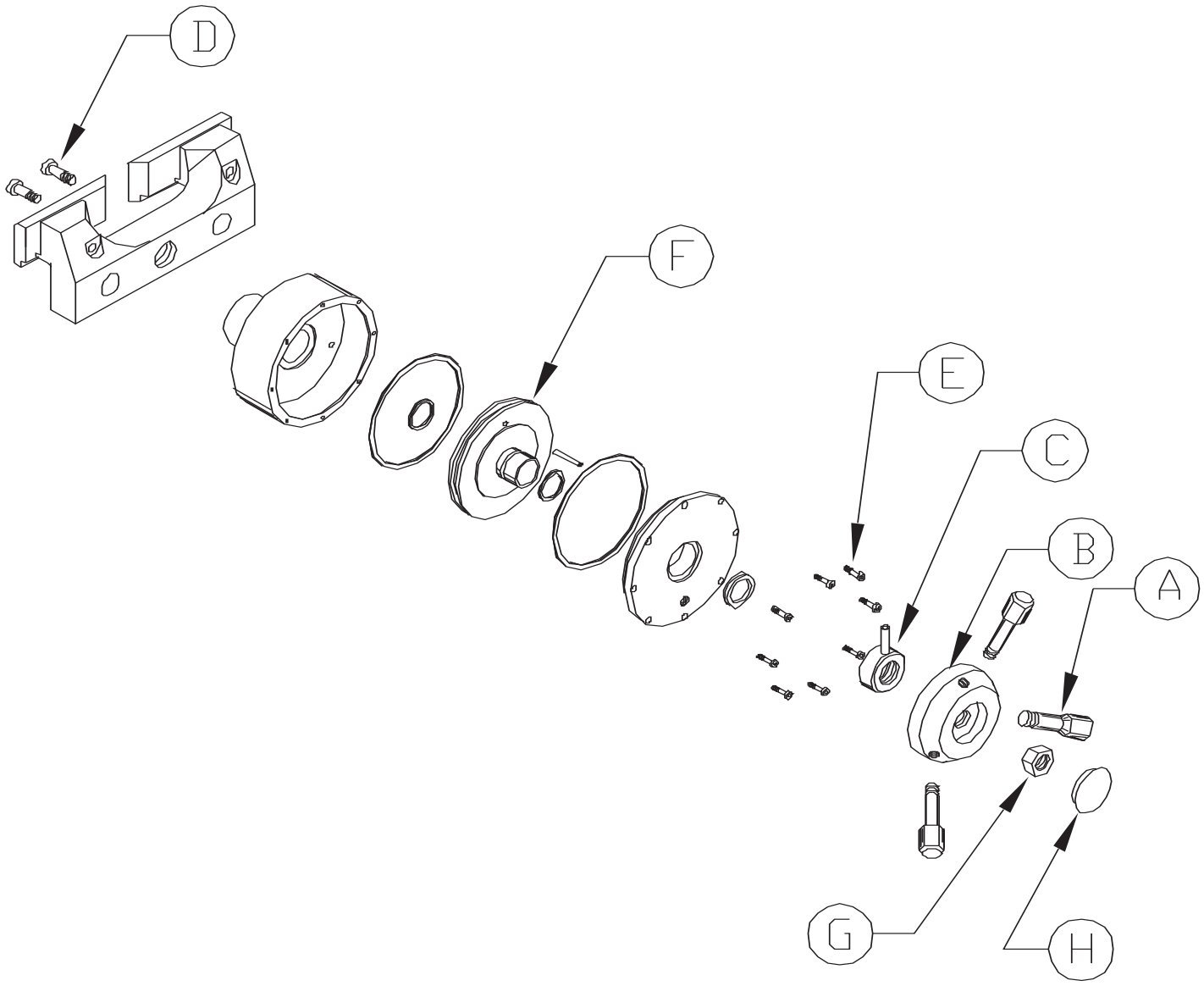


FIGURE 15

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 16 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.**

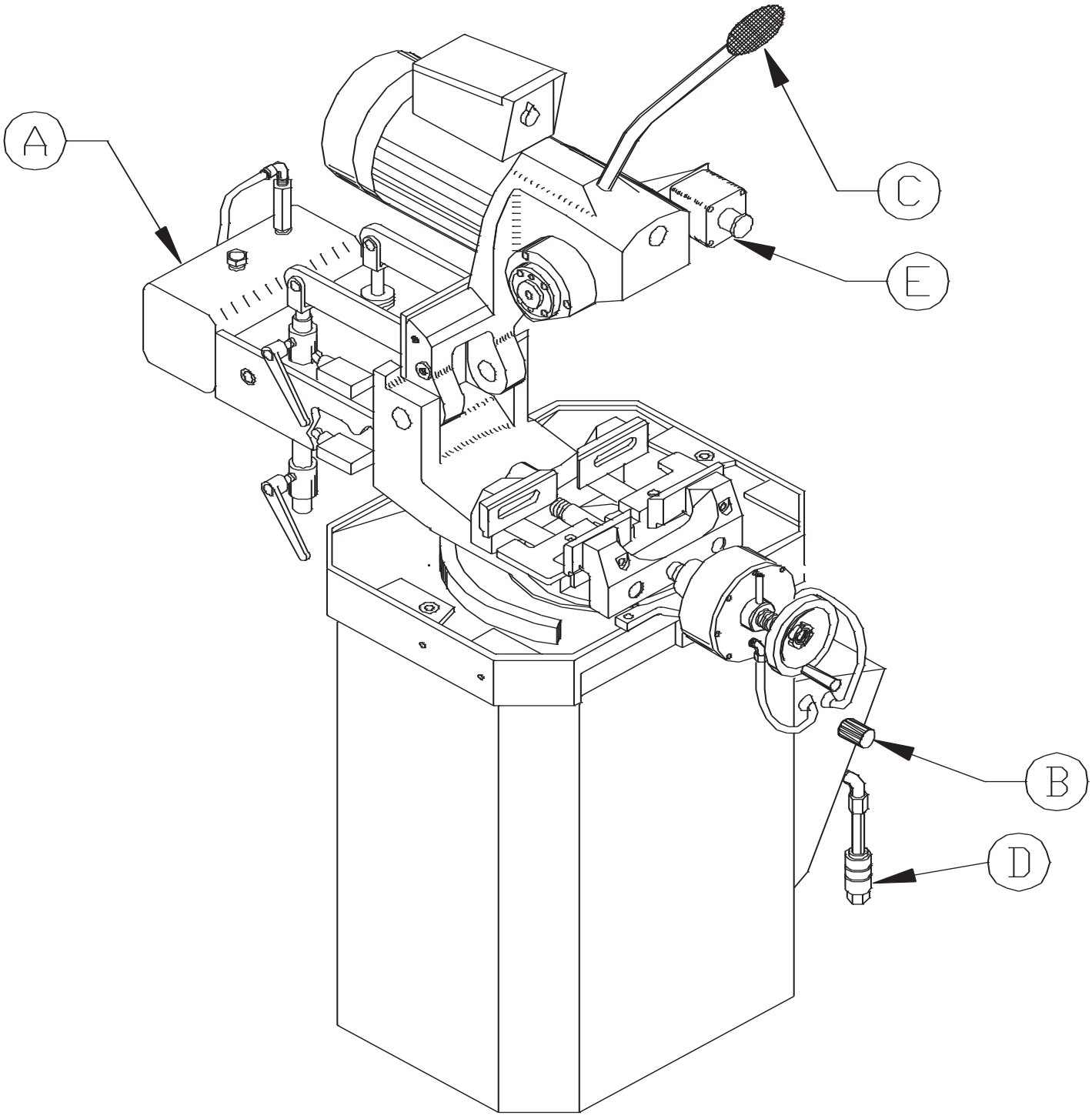


FIGURE 16

7.2B STROKE CONTROL ADJUSTMENT (POWER DOWN FEED)

SEE FIGURE 17 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.

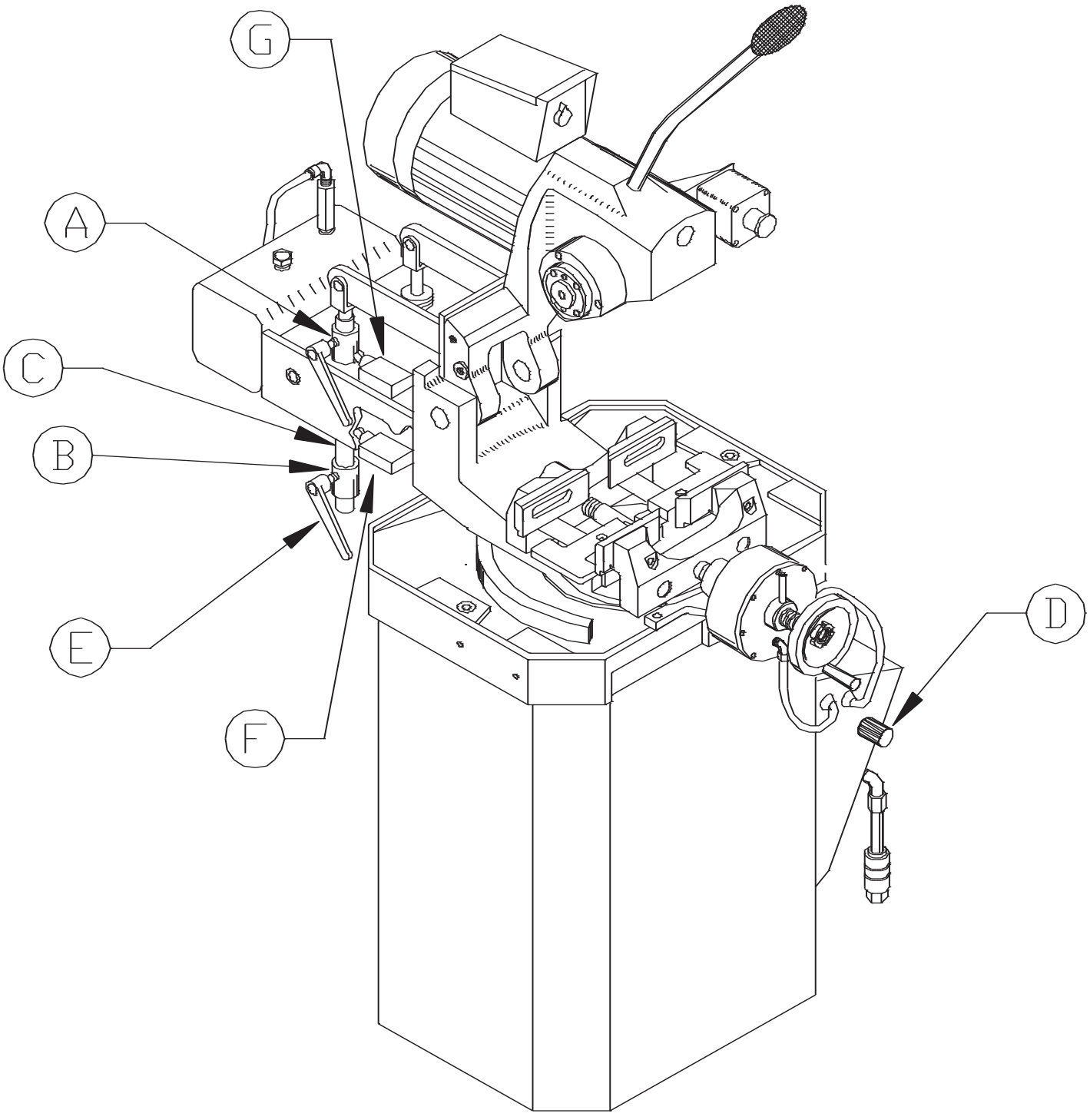


FIGURE 17

7.2C GUARD ADJUSTMENT (POWER DOWN FEED)

SEE FIGURE 18 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!

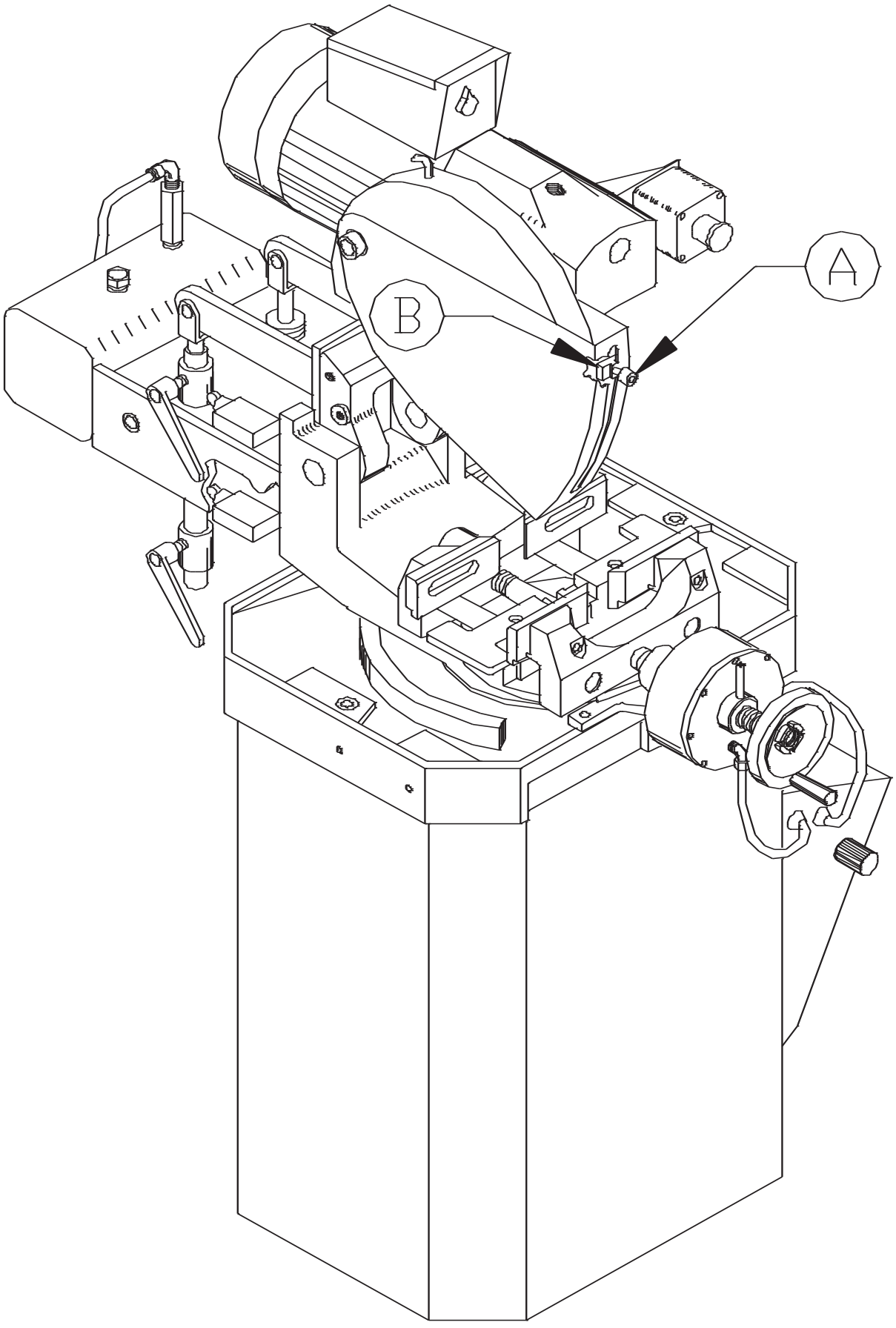


FIGURE 18

7.2D INSTALLING BLADES (POWER DOWN FEED)

SEE FIGURE 19 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.**

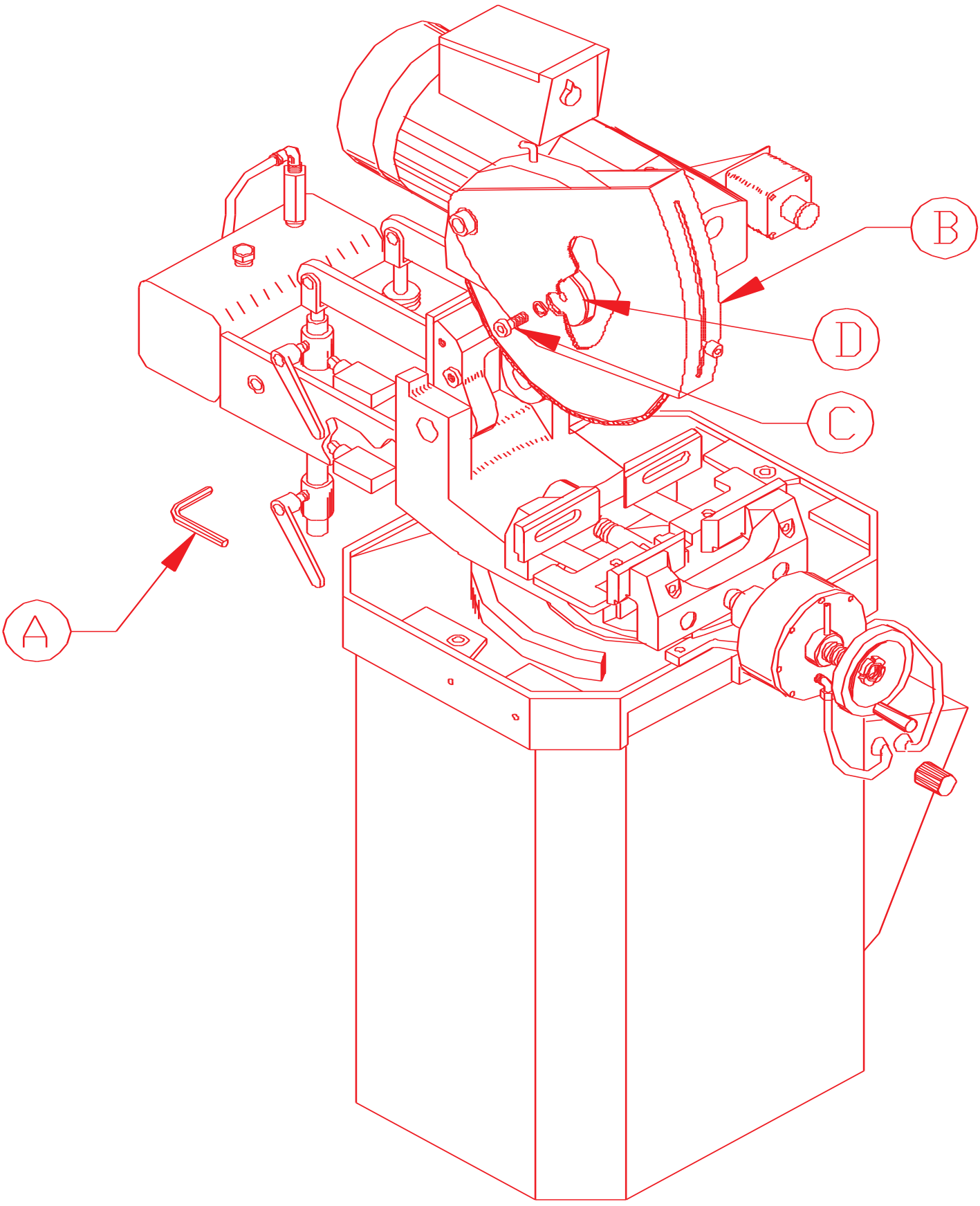


FIGURE 19

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).

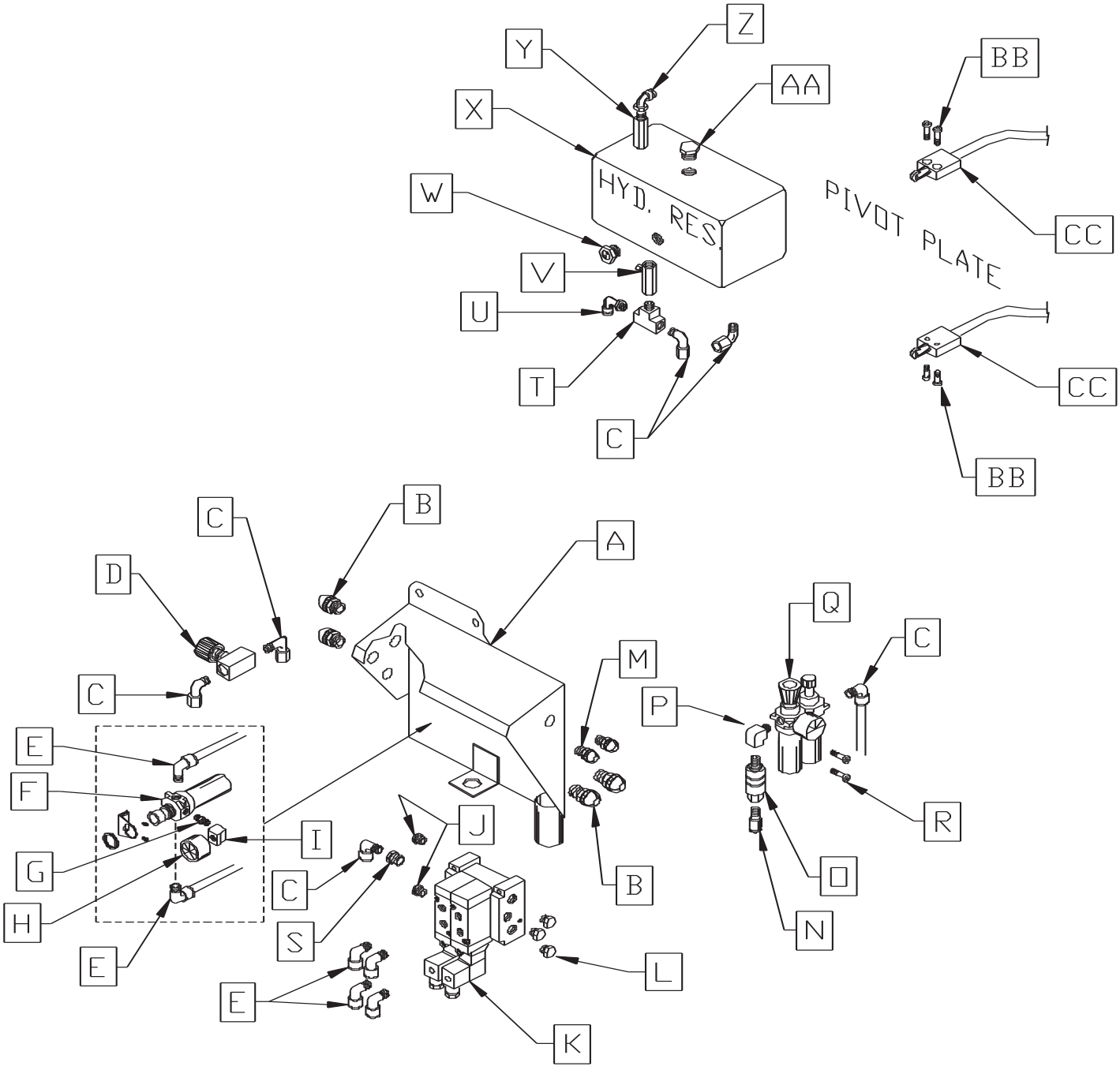

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FIGURE 20

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 20 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.**

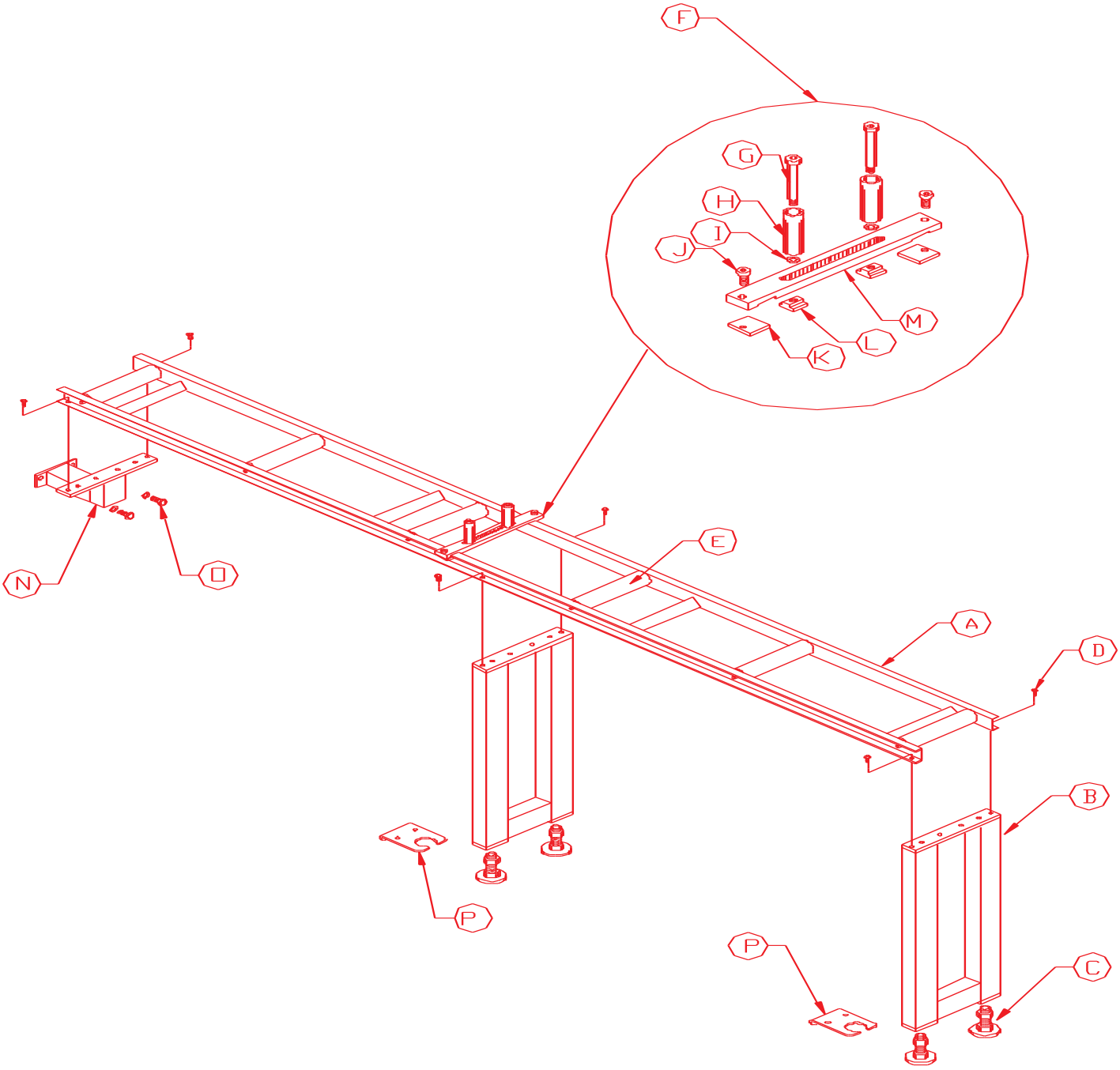


FIGURE 21

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 mount to the machine in place of the 30 inch (76 CM) stop that was provided with

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

SEE FIGURE 22 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, remove the quick-loc handle from the track and turn it over. There is a fine adjustment on the bottom side of the quick-loc handle.**

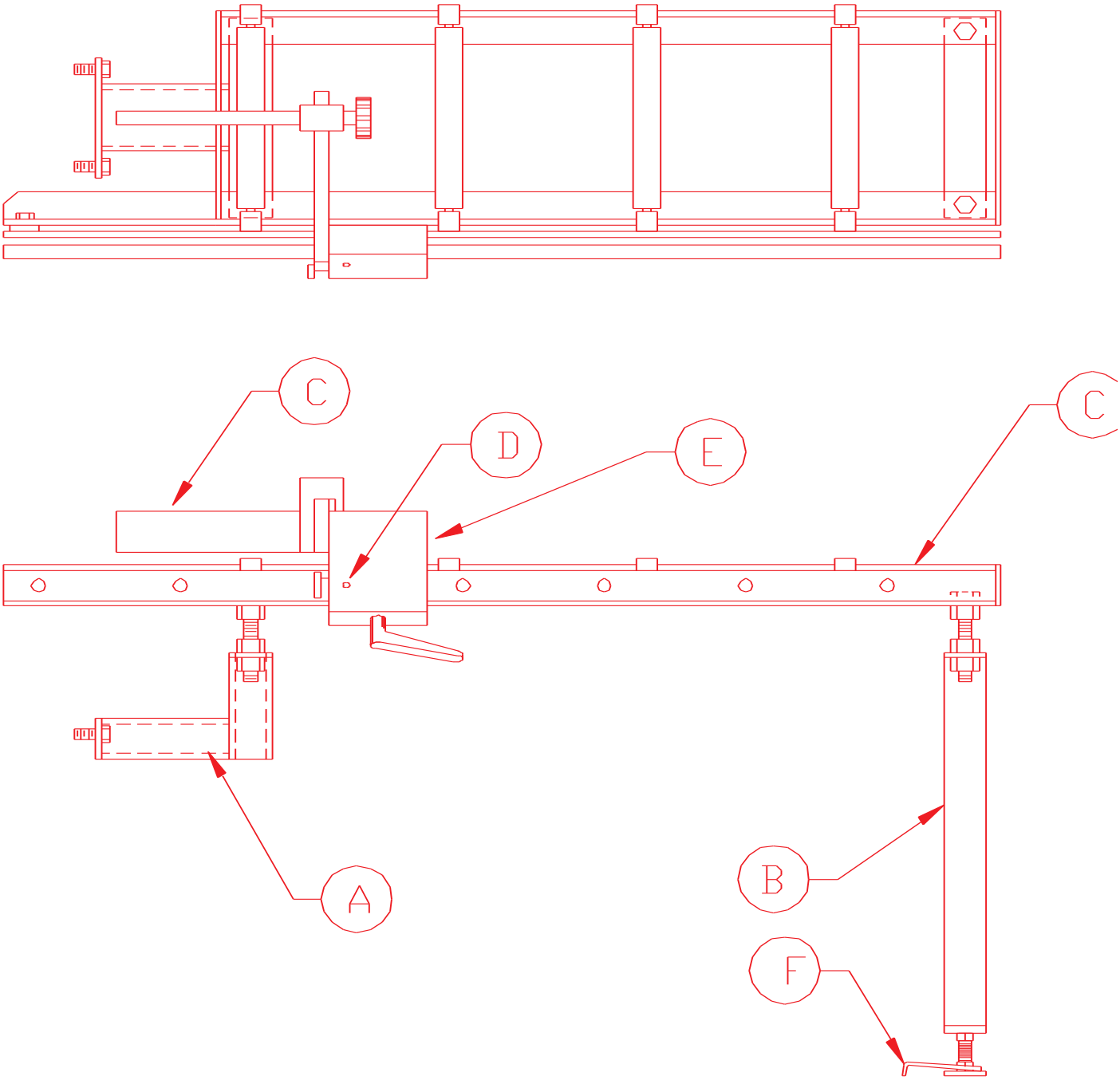


FIGURE 22

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.

8.0 TROUBLE SHOOTING GUIDE

8.1 ELECTRICAL TROUBLE SHOOTING

1. THE MOTOR WILL NOT RUN:

A. 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. The first time that the saw is started after it has been disconnected from the power source, you have to click the trigger switch twice to start the machine.

B. On machines equipped with the power down feed option, the Hi-Low switch must be in either the Hi or the Low position for the foot switch to energize the motor.

C. 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.

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 part numbers, SEE SECTION 9.6.

8.4 GEAR REPLACEMENT

SEE FIGURE 23 ON THE FOLLOWING PAGE.

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 four bolts (B) from the bearing retainer (C).**

4. **Remove the worm shaft assembly (D). The worm shaft has a 10mm threaded hole in the end of it for a slide hammer.**

5. **Inspect the worm shaft, drive gear and bearings for wear.**

6. **After the worm shaft has been removed, remove the three bolts (E) from the bearing housing (F).**

7. **Remove the spindle shaft (G) with a slide hammer.**

8. **Remove the snap ring (H).**

9. **The brass worm gear (I) can now be pressed off of the shaft.**

10. **Check the condition of the bearings and the seals before re-assembling the head.**

11. **Check the condition of the key (J) and the keyway in the gear and the spindle shaft before pressing the new gear onto the shaft.**

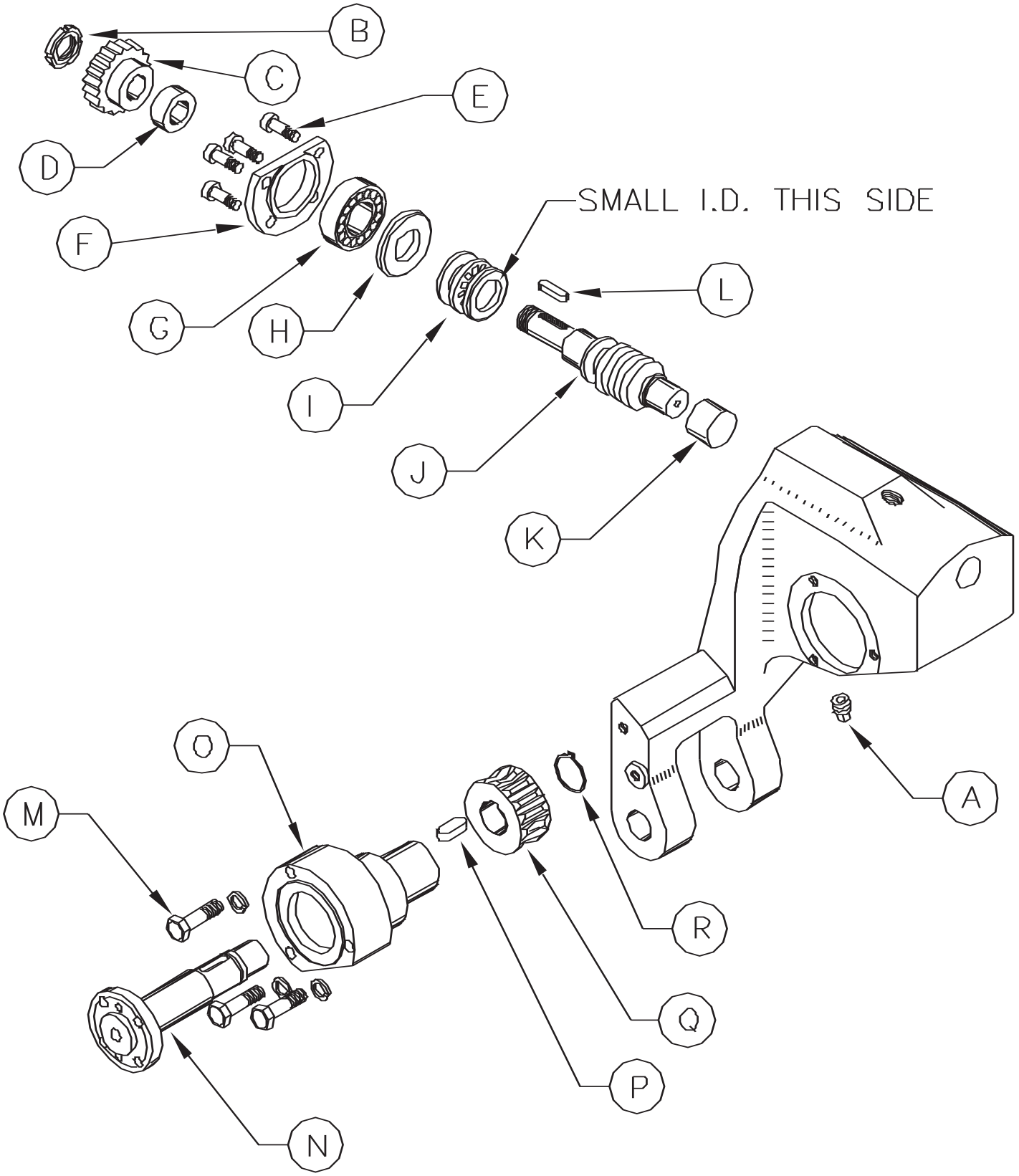


FIGURE 23

9.0 PARTS LISTS

9.1 SAW HEAD

ITEM	PART #	DESCRIPTION
	CPO-350	
A	077150	Needle Bearing
B	077322	Worm Shaft
C	077323	Pivot Bearing
D	077324	Spacer Ring
E	077325	Bearing
F	077330	Hub
G	077326	Spacer Ring
H	077321	Lock Nut
I	077328	Gear Wheel
J	060250	M-10 SHCS
JA	073110	M-10 Lock Washer (Not Pictured)
K	075080	Key 8 x 7 x 32
L	073210	M-20 Jam Nut
M	077000	Draw Handle Complete (Includes N, NA & M)
N	077002	Handle
NA	077001	Switch
O	077152	Sight Gauge
P	077153	Drain Plug
Q	077622	Head Casting
R	077110	Stroke Adj. Nut
S	201235	M-10 x 80 HHCS
T	073326	M-8 x 30 HHCS
U	077333	Worm Wheel
V	077334	Bushing
W	075076	Bearing
X	075075	Seal
Y	077628	Bearing Housing
Z	077624	Saw Spindle
AA	077626	Saw Flange (Includes DD)
BB	221212	M-10 x 30 SHCS
CC	073110	M-10 Lock Washer
DD	073920	Dowel Pins (4-Flange)
EE	073641	M-10 x 65 SHCS
FF	077335	Snap Ring
GG	077337	O-Ring

HH	**077340**	**Key 10 x 8 x 32**
II	**075081**	**Snap Ring**
JJ	**077864**	**M-5 x 12 SHCS**
KK	**201110**	**M-6 x 12 HHCS**
LL	**060101**	**Emergency Stop Mount**
MM	**060110**	**Emergency Stop Box**
NN	**077620**	**Complete Head Assembly**
OO	**077860**	**Head Gasket (Not Pictured)**
PP	**077630**	**3/8 BSPT Breather**
QQ	**073692**	**I-Bolt (Not Pictured)**
RR	**073106**	**M-6 Lock Washer**

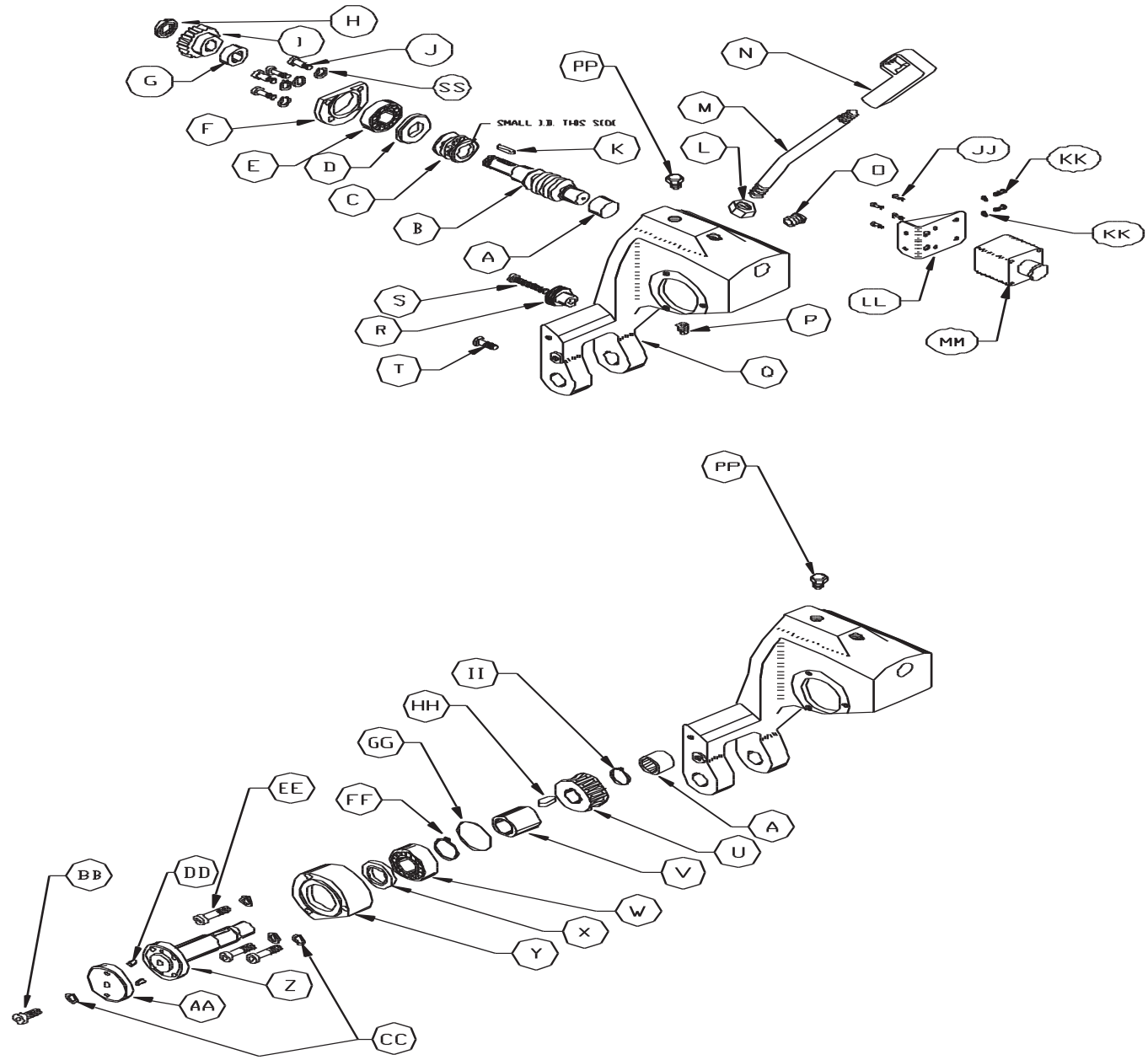


FIGURE 24

9.2 VISE ASSEMBLY

ITEM	PART #	DESCRIPTION
A	221220	M-10 x 40 SHCS
B	077319	Cast Grip Cheek (Rear) (Includes F)
C	077610	Vise Jaw (Right)
CA	077612	Vise Jaw Set (4 Pcs.) (Serial #38110297 & Prior)
D	208012	M-10 Hex Nut
E	077309	Guide Shaft
F	077310	Seal
G	077308	Base
H	077100	Dowel Pin
I	077133	Screw End
J	077136	Pressure Plate
K	677879	Tension Nut Ass'y (Includes L & M)
L	208010	M-8 Hex Nut
M	073329	M-8 x 45 SHCS
N	210016	M-16 Jam Nut
O	060240	Tension Handle
P	077138	Knob
R	077400	Handles
S	077121	M-20 x 1.5 Jam Nut
T	060270	Covering Cap
U	060267	Boss
V	077318	Cast Grip Cheek (Front) (Includes F)
W	077611	Vise Jaw (Left)
WA	077612	Vise Jaw Set (4 Pcs.) (Serial # 38110297 & Prior)
X	077305	Vise Spindle
Y	073460	M-10 x 16 SHCS
AA	077314	Filling Block
BB	077311	Support Block
CC	221212	M-10 x 30 SHCS
EE	060220	Complete Vise Assembly
FF	076910	Diagonal Tube Jaws

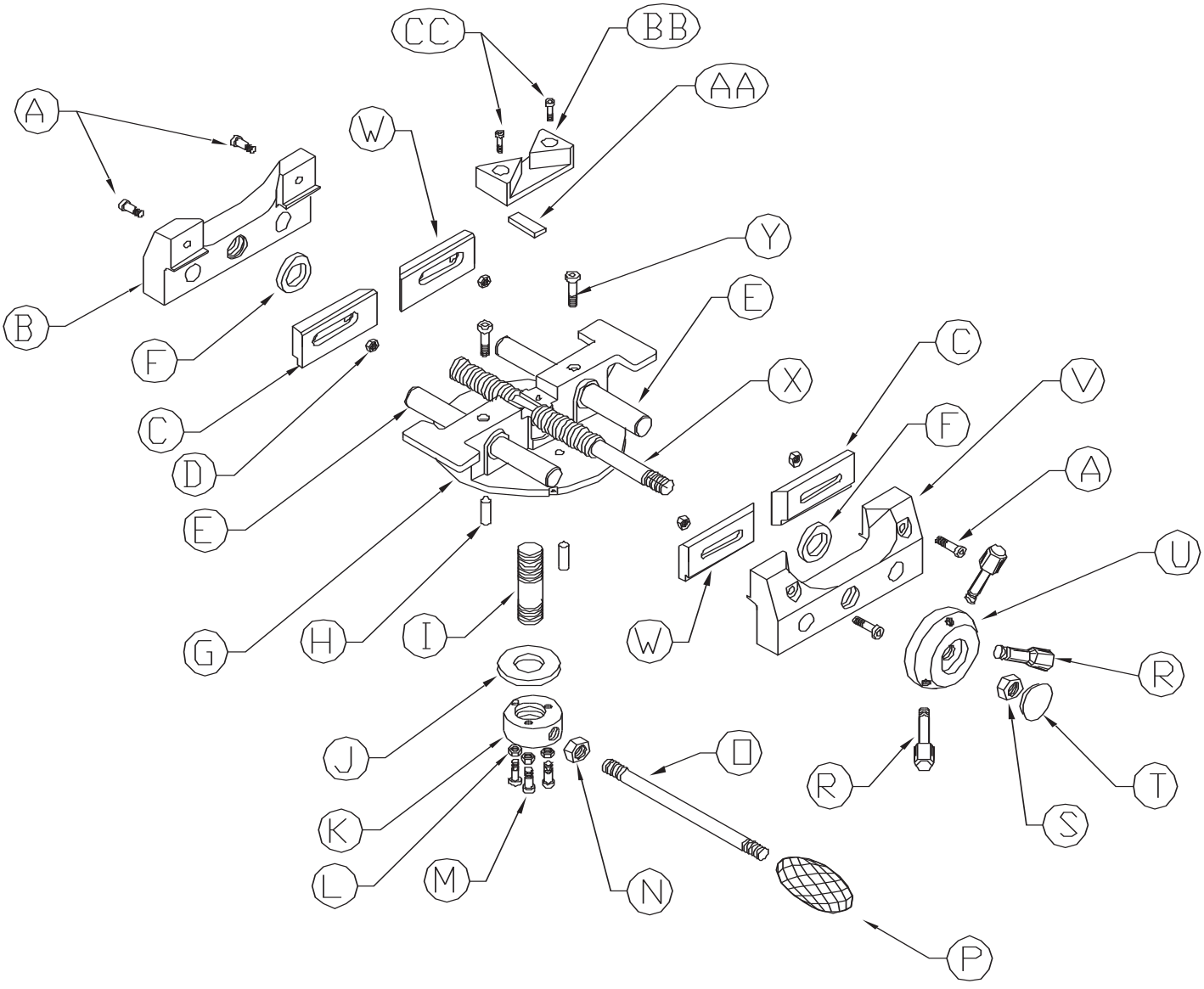


FIGURE 25

9.3 GUARD ASSEMBLY (Manual & Power Vise Machines)

ITEM	PART #	DESCRIPTION
A	N/A	Guard Shell
B	077165	Spacer Ring (Thin)
C	N/A	Hinge Cap (Front)
D	077164	Spacer Ring (Thick)
E	N/A	Hinge Cap (Rear)
F	077166	Hub
G	077167	Snap Ring
H	077160	Plastic Washer
I	N/A	Coupling Arm
J	077162	Pin
K	077161	Locking Ring
L	077361	Bracket
LA	060490	Bracket (Power Vise)
M	221210	M-10 x 25 SHCS
N	077366	M-10 SHCS
O	077362	Bushing
P	077359	Knob
Q	077360	Brass Box
R	077356	Lever Arm
RA	060480	Lever Arm (Power Vise)
S	077358	Spacer Bushing
T	218010	M-5 x 10 Set Screw
U	077609	Pivot Arm
V	N/A	Coupling Arm
W	073641	M-10 x 65 SHCS
X	212012	M-10 Lock Washer
Y	060140	Coolant Line
Z	077154	Hose Barb
AA	077155	Valve
BB	077770	1/8 Close Nipple
CC	069998	Coolant Splitter Assembly
DD	077864	M-5 x 12 SHCS
EE	070001	Tube (Right)
FF	070002	Tube (Left)
GG	214012	M-10 Flat Washer
HH	214005	M-5 Flat Washer
II	660350	Rotation Label (Not Pictured)
	060345	Warning Label (Not Pictured)
	077869	Complete Guard

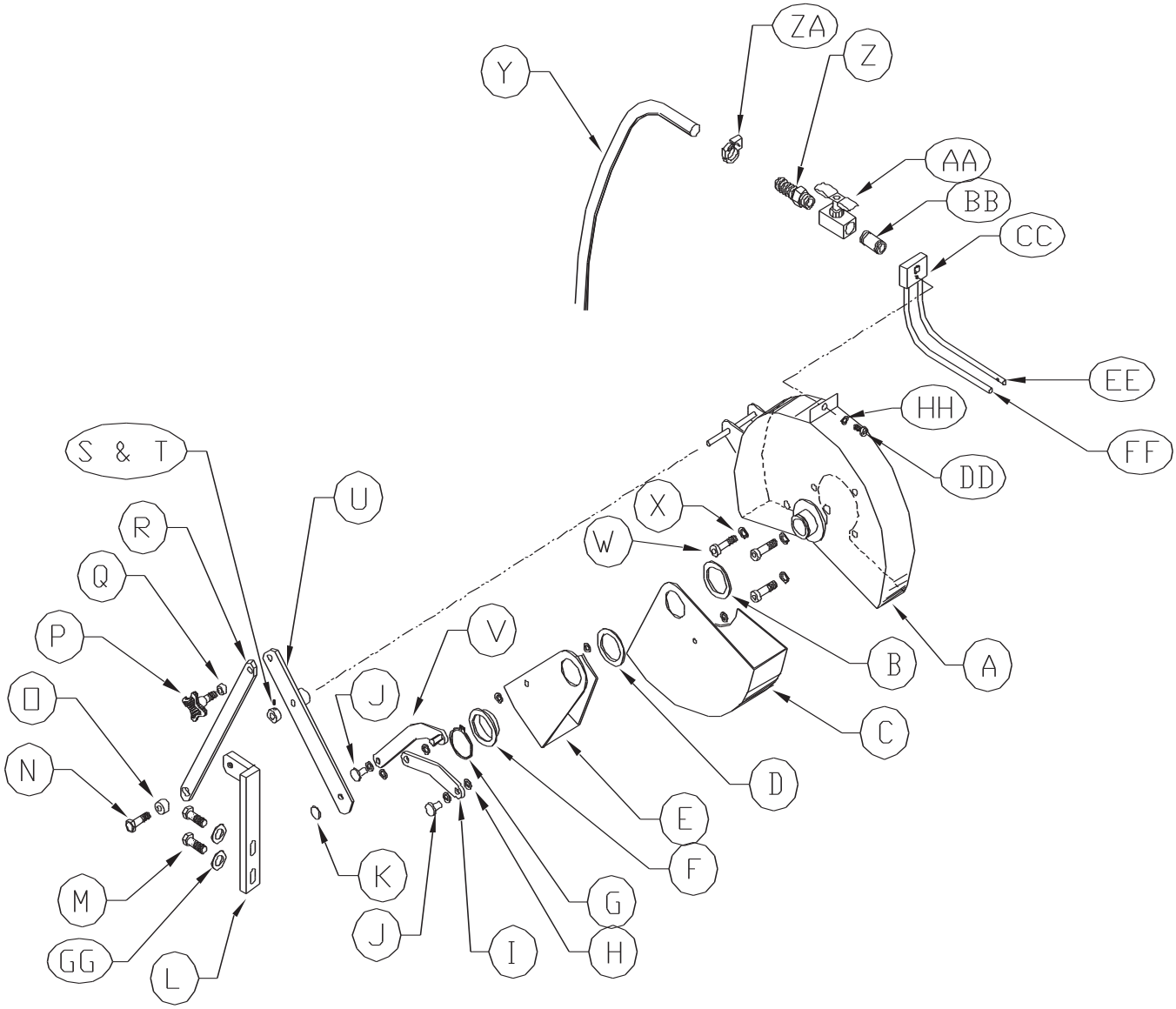


FIGURE 26

9.4 MOTOR ASSEMBLY

ITEM	PART #	DESCRIPTION
A	076883	Fan Cover
A1	076892	Fan Cover 1 PH
B	073407	M-5 x 8 SHCS
C	076881	Fan (25mm Bore)
C1	076884	Fan (30mm Bore)
C2	076893	Fan 1 PH Motor
D	N/A	End Casting (25mm Bore)
DA	077381	End Casting (30mm Bore)
E	075049	Motor Bearing (6205Z)(25mm)
EA	077325	Motor Bearing (6206)(30mm)
F	077191	Snap Ring
G	077345	Key
H	203210	M-10 SHCS
I	077370	Key 6 x 4 x 32mm
J	077376	Seal
K	075050	Spacer Washer
L	076556	Snap Ring (30mm Only)
M	077378	End Casting (Front)
N	077375	Pinion Gear
O	077189	Lock Nut
	Complete Motors (Without Switches)	
A	076980	44-88 RPM/230 Volt
B	076982	44-88 RPM/460 Volt
C	076974	22-44 RPM/230 Volt
D	076976	22-44 RPM/460 Volt
E	076984	44-88 RPM/575 Volt
F	076978	22-44 RPM/575 Volt
G	076972	44 RPM/220 Volt/1 PH
	Complete Motor Assemblies (With Switches)	
A	078026	44-88 RPM/230V/T-S
	078028	44-88 RPM/230V/E-S
B	078030	44-88 RPM/460V/T-S
	078032	44-88 RPM/460V/E-S
C	078034	22-44 RPM/230V/T-S
	078036	22-44 RPM/230V/E-S
D	078038	22-44 RPM/460V/T-S
	078040	22-44 RPM/460V/E-S
E	078042	44-88 RPM/575V/T-S
	078044	44-88 RPM/575V/E-S

F	**078046**	**22-44 RPM/575V/T-S**
	078048	**22-44 RPM/575V/E-S**
G	**077020**	**44 RPM/230V/1 PH/T-S**
	077020	**44 RPM/230V/1 PH/E-S**

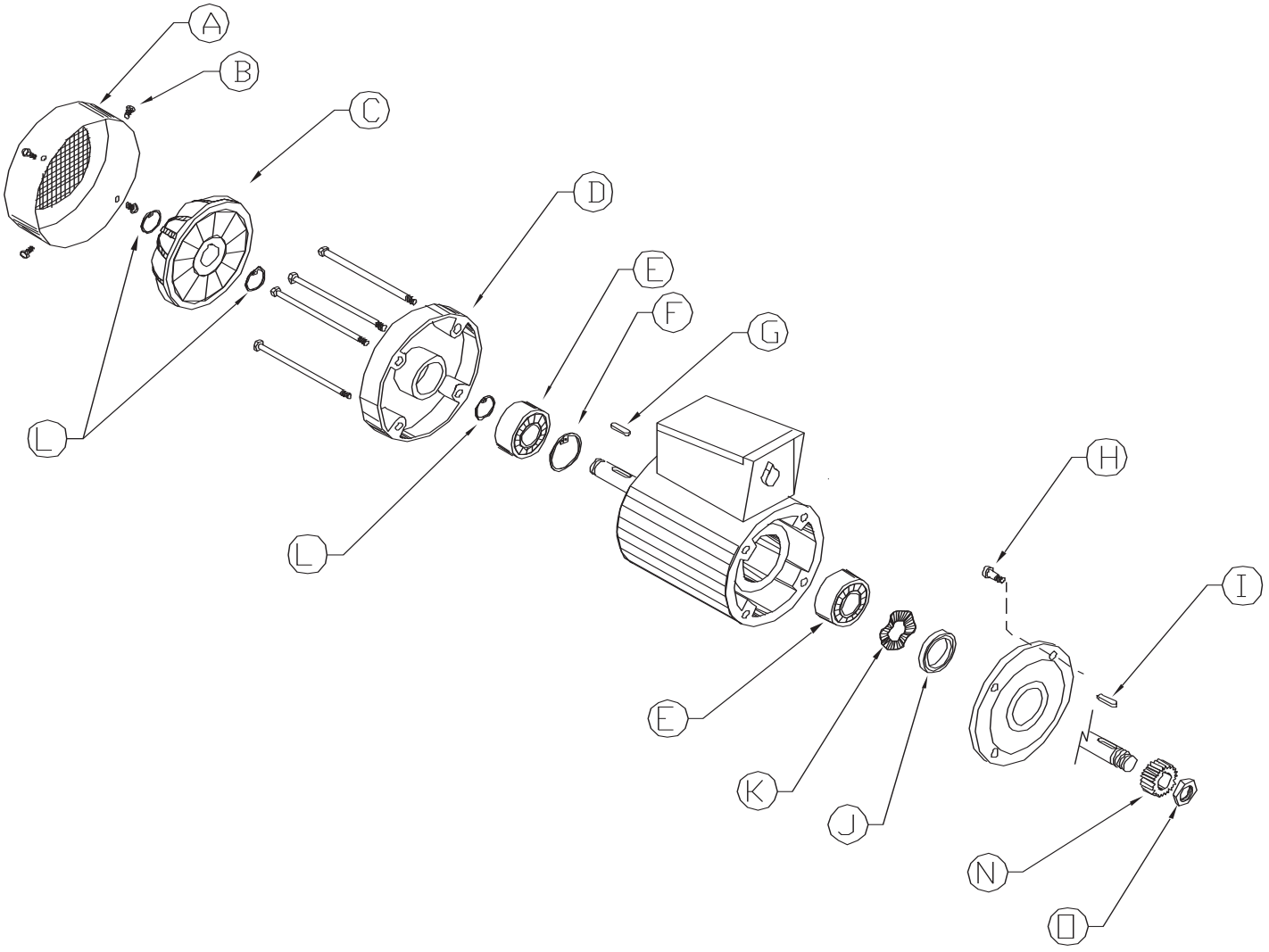


FIGURE 27

9.5 ELECTRICAL UNIT

ITEM	PART #	DESCRIPTION
A	060061	Enclosure W/Cover
B	N/A	Cover
C	221002	M-4 x 12 SHCS
D	060071	Contactor - 24 Volt
E	060072	Terminal Blocks
F	060063	Ground Lug
G	060070	Main Switch
H	N/A	
I	060067	Knob
J	060090	Motor Cable
K	060095	Pump Cable
L	077183	Liquid Tight Connector
M	077864	Switch Screw
N	060050	Transformer - 230 - 460 Volt
N1	060051	Transformer - 575 Volt
O	563441	Liquid Tight Connector
P	060115	ON/OFF Switch for 220V/1PH Power Down
Q	060066	Switch Shaft
R	077564	Fuse
S	060104	Liquid Tight Connector
T	060055	Pilot Light
U	003120	Danger Voltage Label
	019121	230 Volt Label
	019122	460 Volt Label
	019124	575 Volt Label
	060068	Complete Switch & Box Assembly E/S 230V
	060078	Complete Switch & Box Assembly E/S 460V
	060088	Complete Switch & Box Assembly E/S 575V
	060069	Complete Switch & Box Assembly T/S 230V
	060079	Complete Switch & Box Assembly T/S 460V
	060089	Complete Switch & Box Assembly T/S 575V
	060010	Complete Switch & Box Assembly T/S 220V1PH
	060011	Complete Switch & Box Assembly E/S 220V1PH

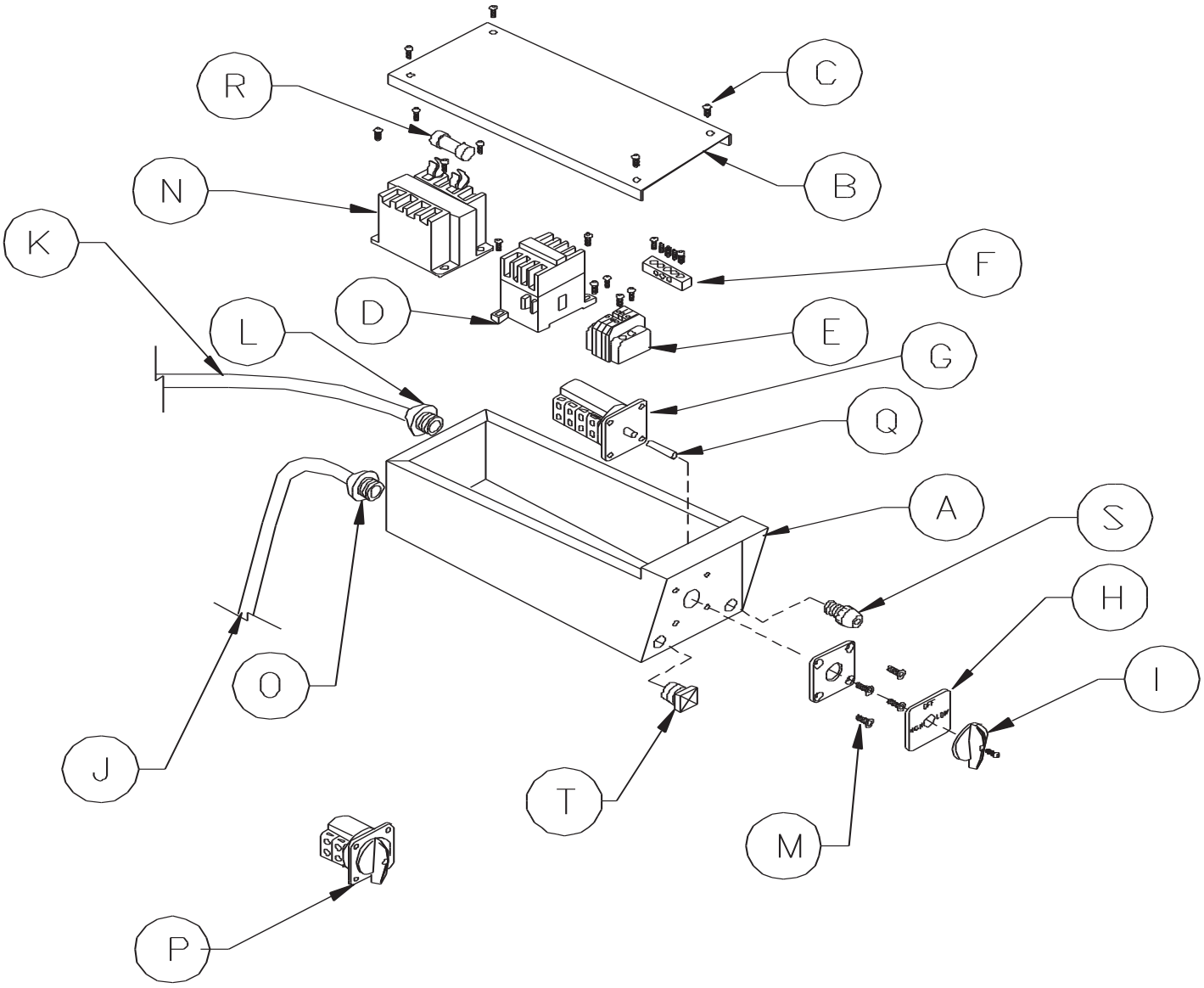


FIGURE 28

9.6 COOLANT PUMP

ITEM	PART #	DESCRIPTION
A	060150	230 & 460 3PH
	060165	230V 1PH
	060158	460V Pump
A1	060160	575 Volt Coolant Pump
B	060095	Pump Cable
C	077864	M-5 x 12 SHCS
D	060140	Coolant Line
E	060140	Coolant Line
F	060149	Screen
G	060080	90 Degree Hose Barb
H	077545	Check Valve
I	046300	Hose Clamp

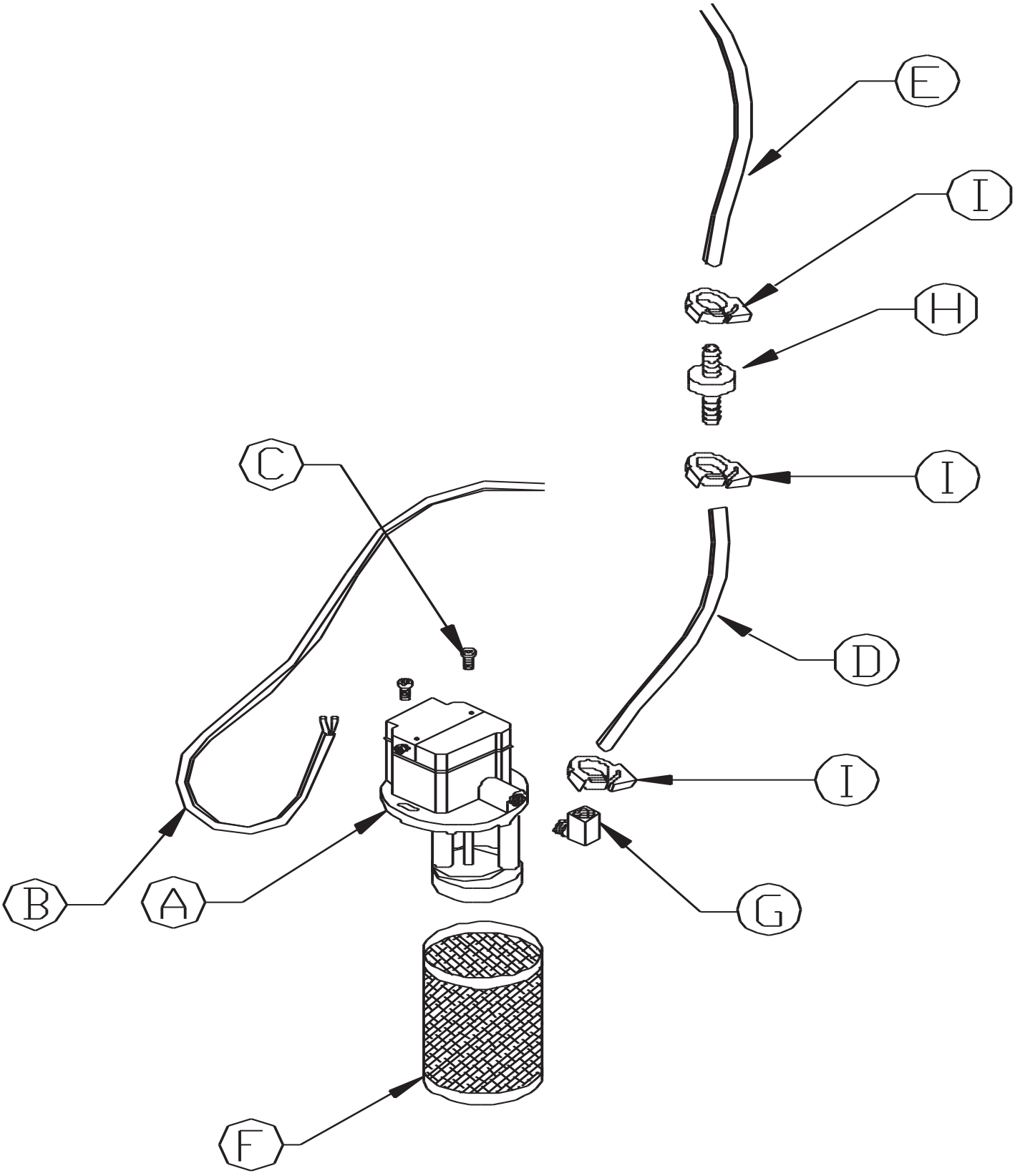


FIGURE 29

9.7 CAST BASE AND PEDESTAL

ITEM	PART #	DESCRIPTION
A	077300	Pedestal (Includes S, R & V)
B	078600	Pivot Shaft
C	077364	Spring Mount (Lower)
D	077365	Return Spring
E	221210	M-10 SHCS
F	077363	Spring Mount (Upper)
G	077142	Grease Nipple
H	077109	Cast Base (Includes I & U)
HA	660535	Cast Base (Power Vise)
I	077112	Sieve Screen
J	073350	M-10 HHCS
K	214012	M-10 Washer
L	203210	M-10 x 25 HHCS
M	077225	Miter Lock Mount
N	077227	Spring
O	077226	Release Handle
P	077228	Pin
Q	073660	M-8 x 12 HHCS
R	077101	Scale
S	077100	Dowel Pin
T	077114	Complete Miter Lock
U	060143	Drain Tube (Not Pictured)
V	660255	Drive Pin (Scale-Not Pictured)

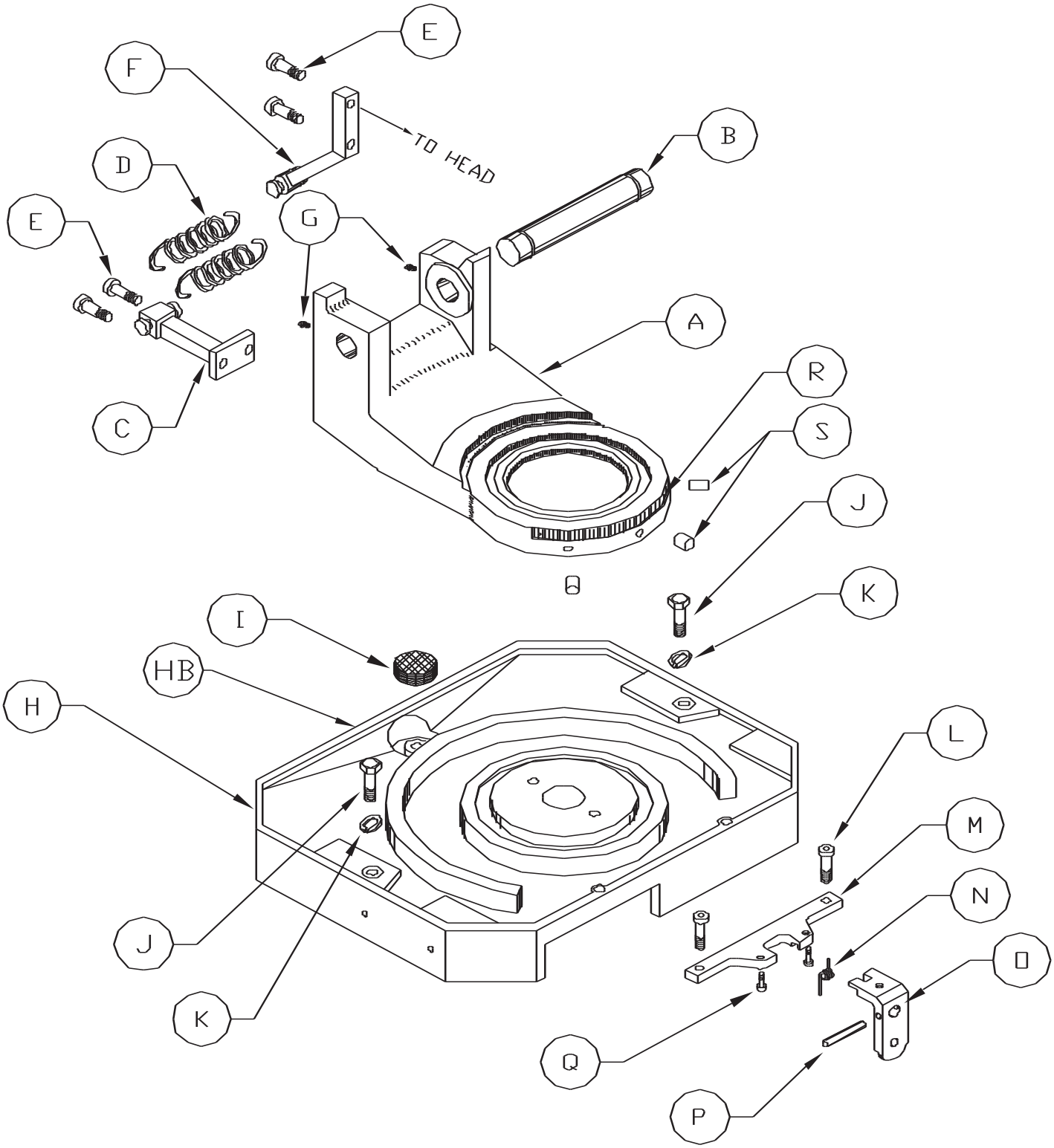


FIGURE 30

9.8 MATERIAL STOP 30 INCH (76 CM)

ITEM	PART #	DESCRIPTION
A	677436	Stop Clamp
B	060315	Stop Shaft
C	060310	Shaft
D	073460	M-10 x 16 SHCS
E	076930	Complete Assembly
F	080193	Hex Key Wrench (Not pictured)

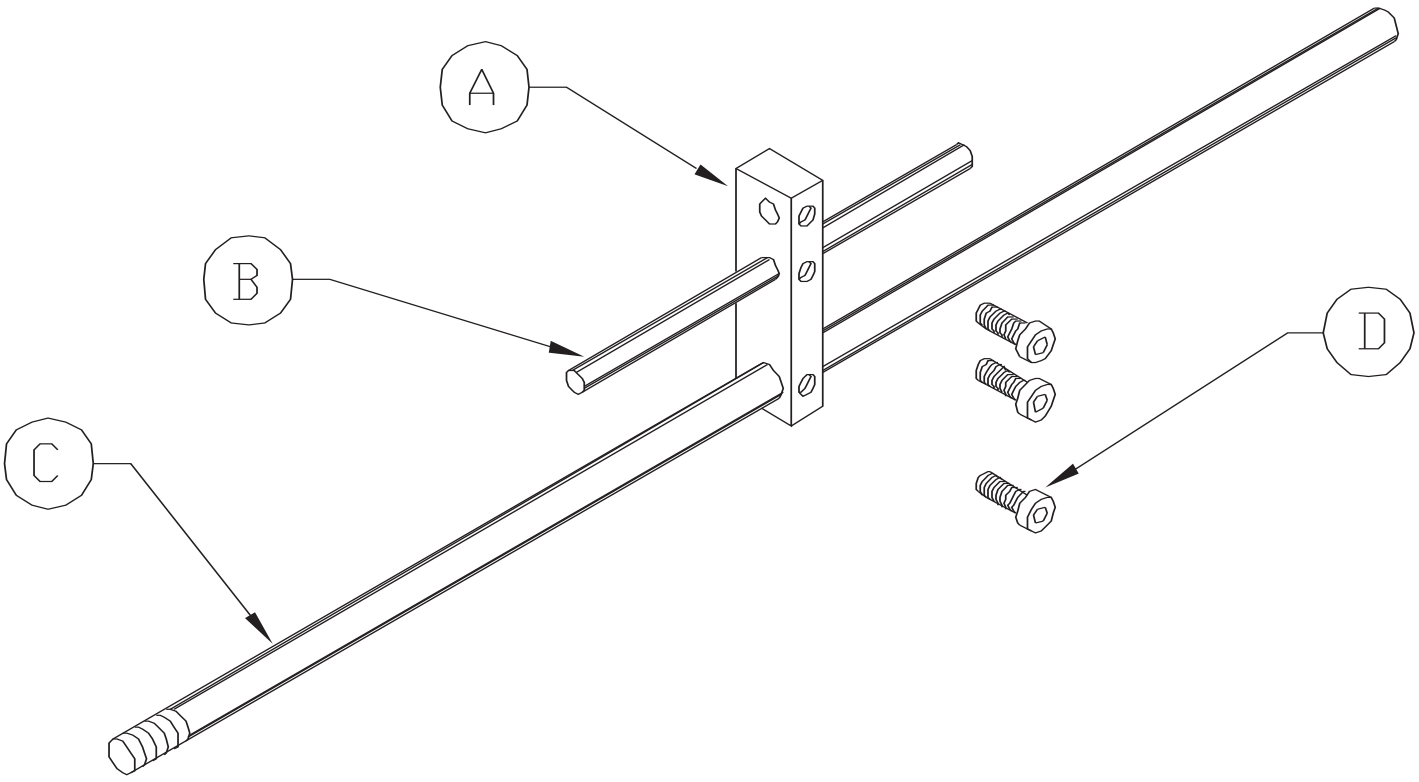


FIGURE 31

10.0 OPTIONAL EQUIPMENT PARTS LISTS

10.1 POWER VISE ASSEMBLY

ITEM	PART #		DESCRIPTION
A	077462		Cast Grip Cheek (Front) (Includes II)
B	077319		Cast Grip Cheek (Rear) (Includes II)
C	073457		M-6 x 80 SHCS
D	077460		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-4 x 12 SHCS
Q	077742		1/4" Male Swivel
R	060501		154" Black Tube
S	077183		Cord Connector
T	077430		Four Way Valve
U	060501		48" Black Tube
V	077542		Lubricator Seal Kit
W	077539		Bowl
X	077538		Gauge
Y	077540		Filter Seal Kit
Z	077540		Regulator Seal Kit
AA	077719		Slide Valve
BB	077543	(Does not include AA/Q)	Complete Filter/Lubricating Device
EE	073415		M-4 x 25 SHCS
FF	077309		Guide Pins
GG	077409		Lock Ring
HH	060270		Covering Cap
II	077310		Seal
JJ	077741		90 Degree Fitting
KK	060490		PK Bracket
LL	076371		Cylinder Seal Kit (Includes F, G & K)
MM	060541		Complete Air Vise
NN	077412		Complete Air Cylinder

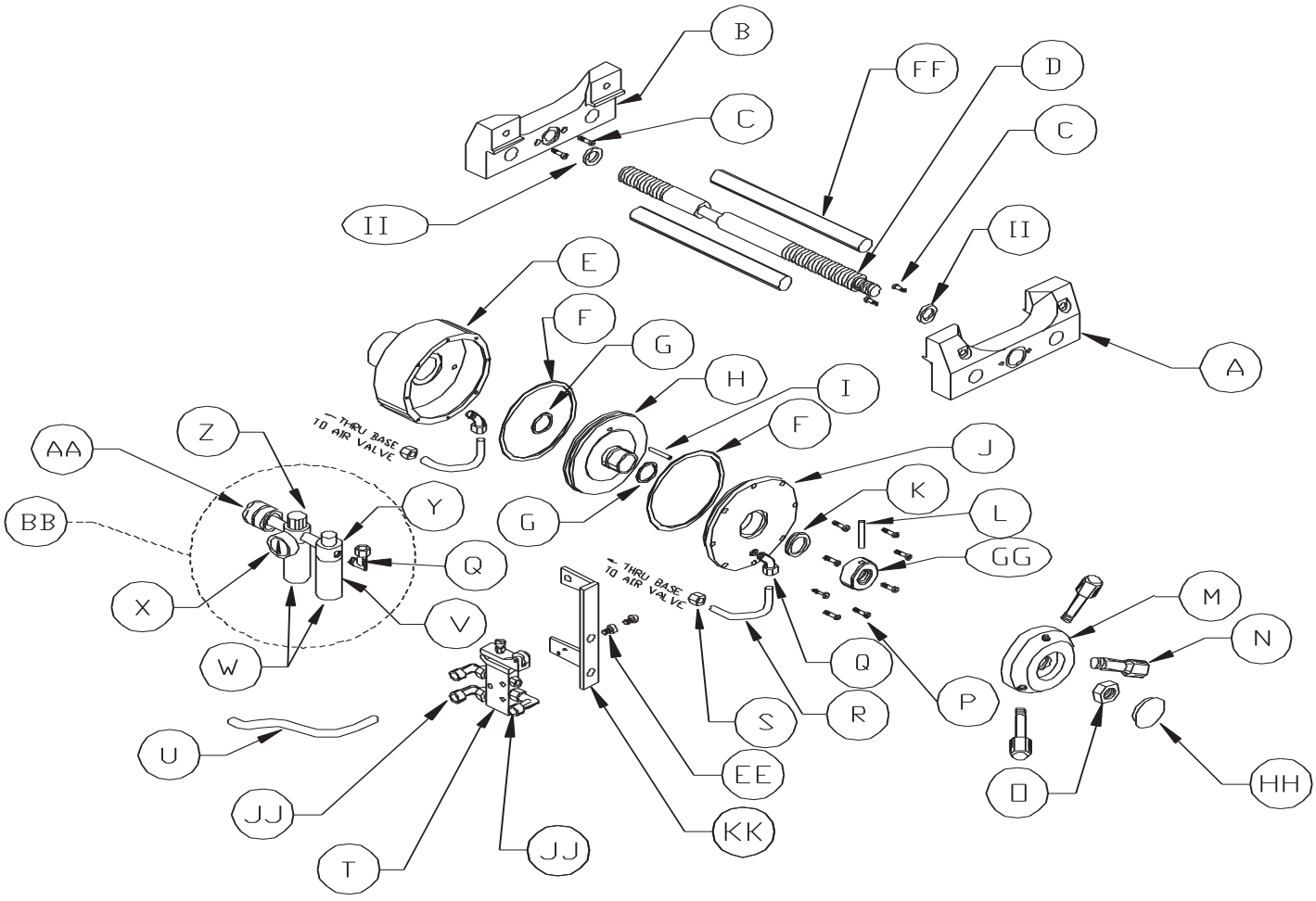

B
FF
D
C
C
II
II
E
F
G
H
I
F
A
Z
AA
THRU BASE TO AIR VALVE
J
K
L
Y
BB
G
GG
Q
M
N
X
V
THRU BASE TO AIR VALVE
W
Q
P
S
R
U
EE
O
HH
JJ
KK
T
JJ

FIGURE 32

10.2 POWER DOWN FEED ASSEMBLY

ITEM	PART #	DESCRIPTION
A	078510	Bracket Assembly (Upper)
B	221210	M-10 SHCS
C	077211	Return Spring
D	078524	Cylinder Bracket
E	078525	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	080062	Stroke Adjustment Handle
L	077715	Pivot Bolt
M	077510	Cylinder (Includes P & Q)
M1	077509	Seal Kit
N	077746	1/4" NPT x 169 PL
O	077771	Reducer Bushing
P	077742	5/16" NPT x 169 PL
Q	077716	Cylinder Clevis
R	678550	Label
S	078455	Sight Glass
T	203210	M-10 x 25 HHCS
U	111015	5/8 Jam Nut
	078483	Complete Power Down Feed (E/S)
	078482	Complete Power Down Feed (T/S)

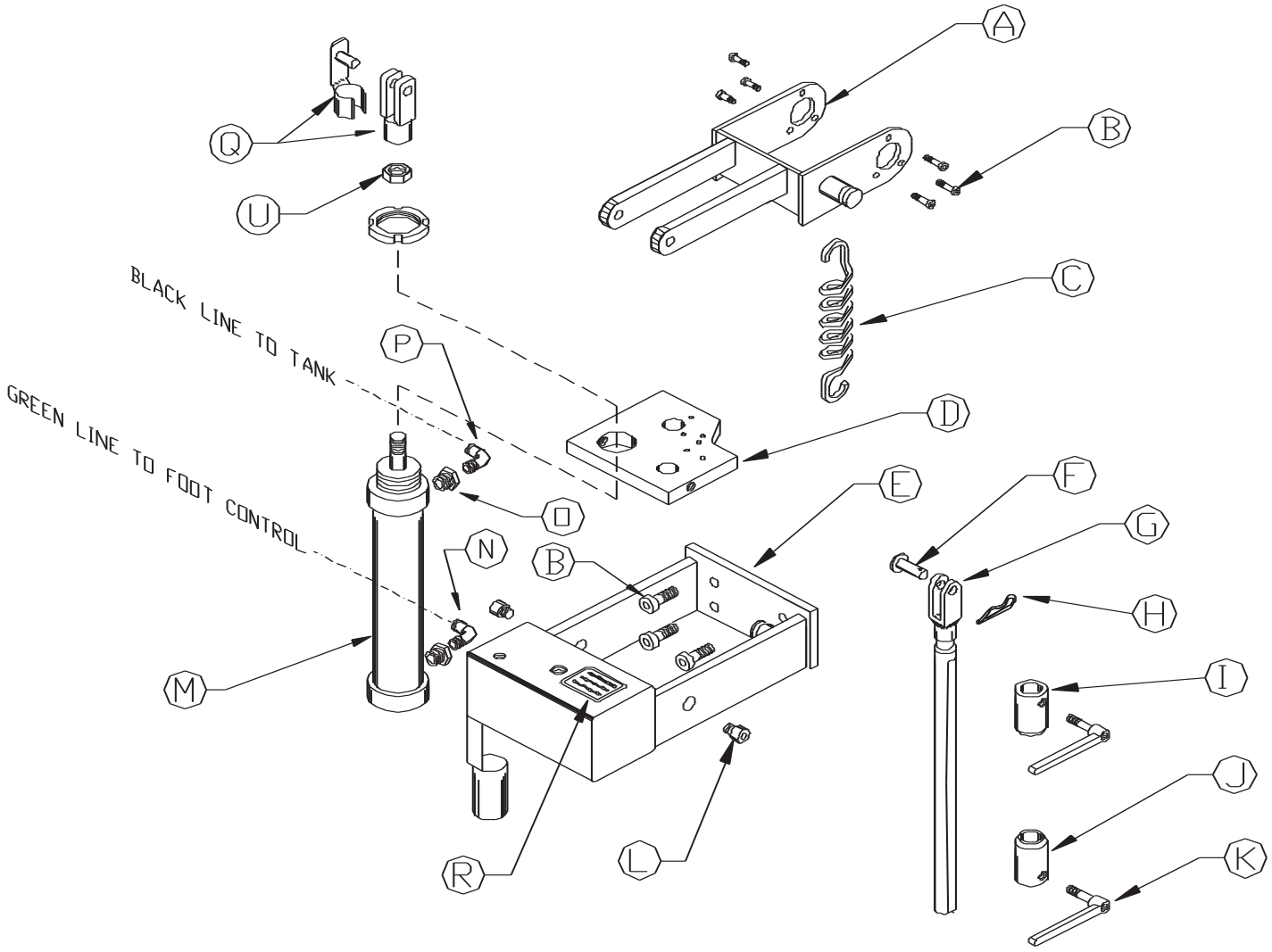

A
B
Q
U
C
BLACK LINE TO TANK
P
D
GREEN LINE TO FOOT CONTROL
O
E
F
N
B
G
H
M
I
J
K
R
L

FIGURE 33

10.2A POWER DOWN FEED CONTROLS (SER. #'S B64251003 & 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--Ser.#B8001 & Up)
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	077543	Filter/Regulator
R	221002	M-4 x 12 SHCS
S	077740	3/8" Ninety Degree Swivel
T	045039	3600 x 4 Male Tee
U	077742	1/4" Male Swivel
V	077531	Check Valve
W	078455	Sight Glass
X	078525	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	677548	Wire Conduit (Not Picturedd)
EE	215010	M-5 Lock Nut

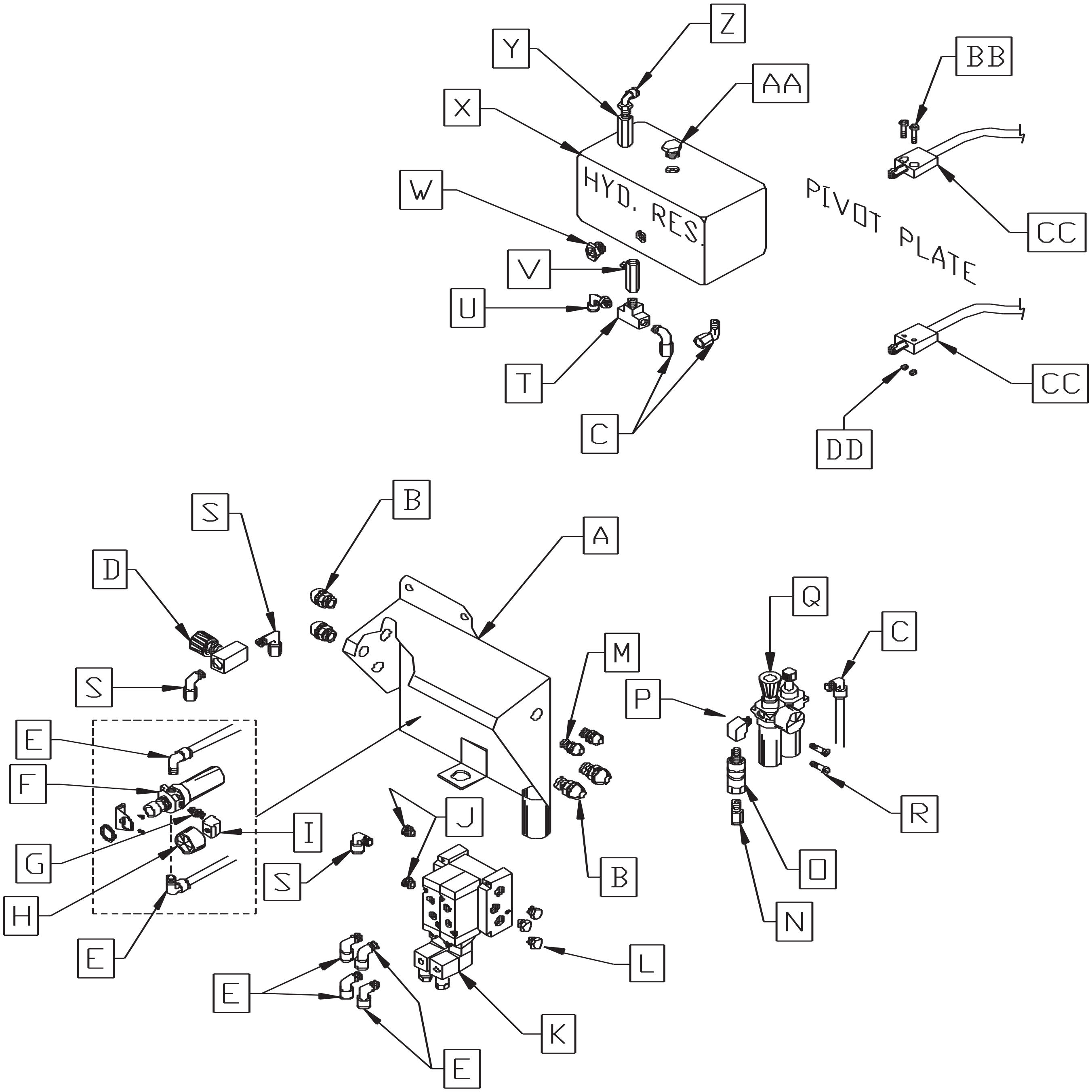

Z
Y
AA
BB
X
HYD. RES.
W
PIVOT PLATE
CC
V
U
T
CC
C
DD
S
B
A
D
Q
C
M
S
P
E
F
I
G
J
R
O
S
H
B
N
E
L
E
K
E

FIGURE 34

10.2B POWER DOWN FEED ELECTRICAL CONTROLS

ITEM	PART #	DESCRIPTION
A	075250	Enclosure
B	077183	Cord Grip
C	075205	Mounting Plate
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
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
S	075210	Mount Strip
U	214012	M-10 Washer

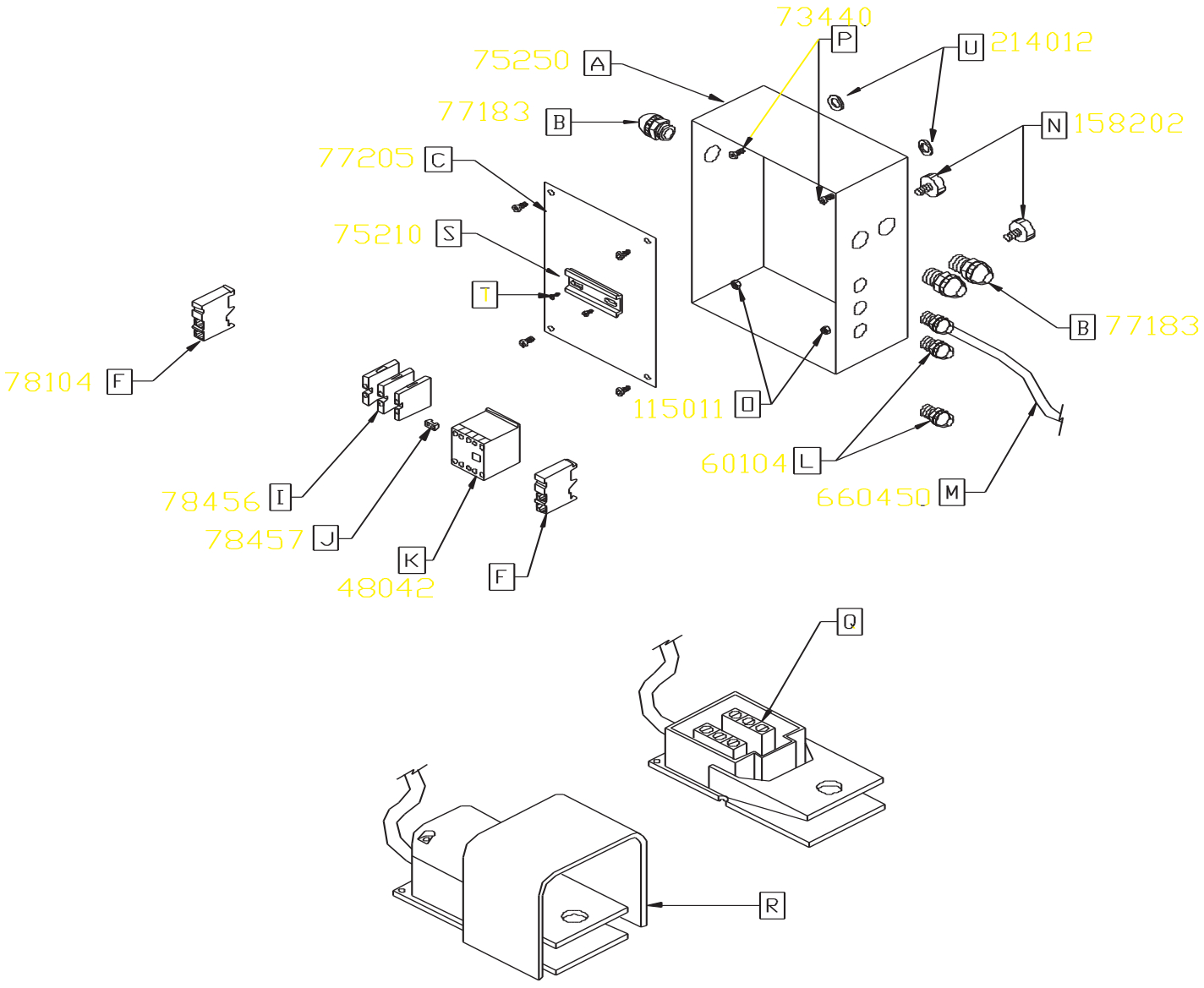

73440
P
75250
A
U
214012
77183
B
N
158202
77205
C
75210
S
T
B
77183
78104
F
115011
D
78456
I
60104
L
660450
M
78457
J
K
48042
F
Q
R

FIGURE 36

10.2C GUARD ASSEMBLY (POWER DOWN FEED)

ITEM	PART #	DESCRIPTION
A	N/A	Guard Shell (Fixed)
B	073641	M-10 x 65 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
J	077154	Hose Barb
K	077155	Valve
L	077770	Pipe Nipple
M	069998	Coolant Splitter Assembly
N	077864	M-5 x 12 SHCS
O	214005	M-5 Washer
P	060345	Warning Label (Not Pictured)
Q	077645	Complete Guard Assembly
R	073110	M-10 Lock Washer
S	046300	Hose Clamp
T	060345	Danger Decal
U	660350	Rotation Sticker (Not Pictured)

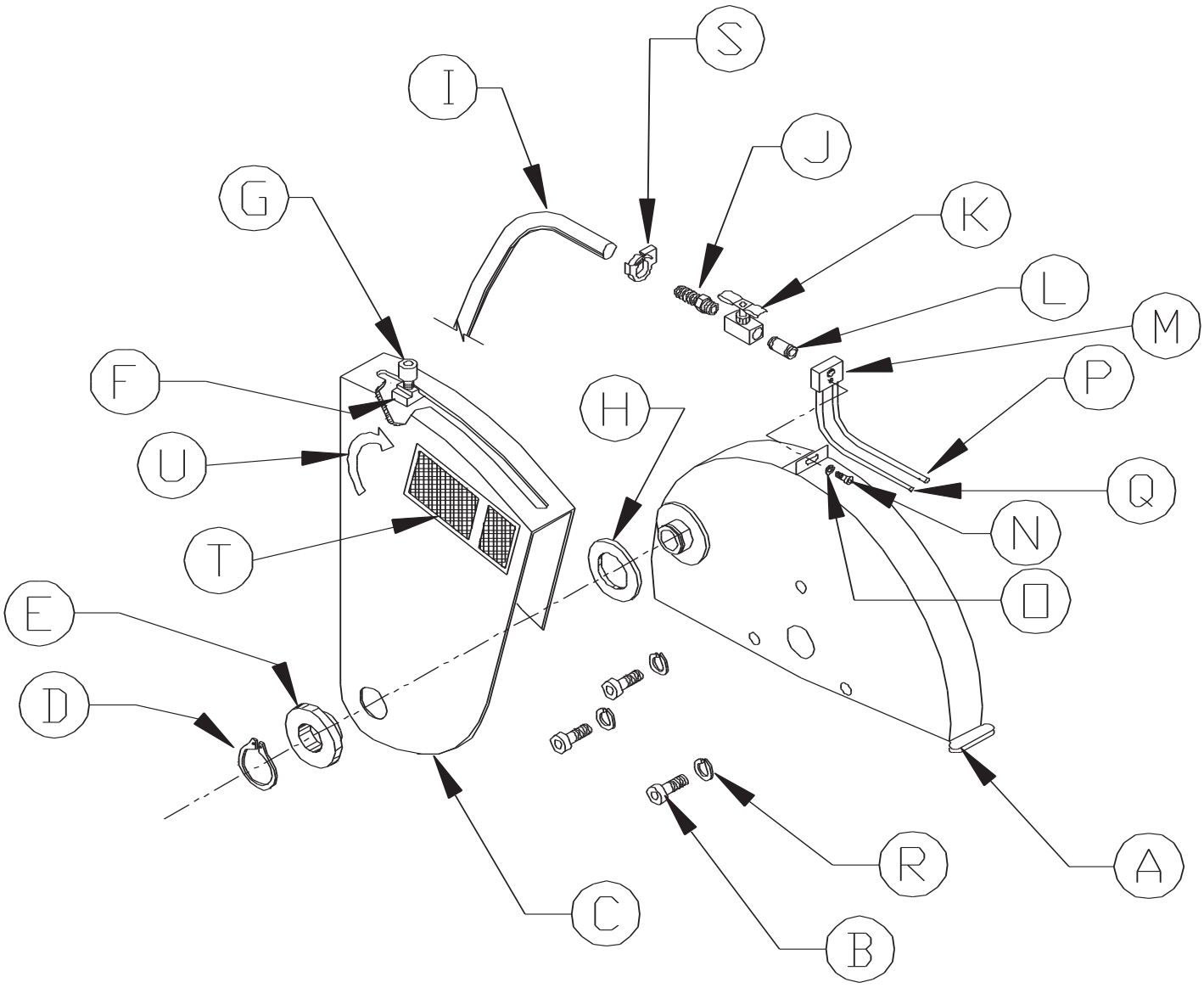


FIGURE 36

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

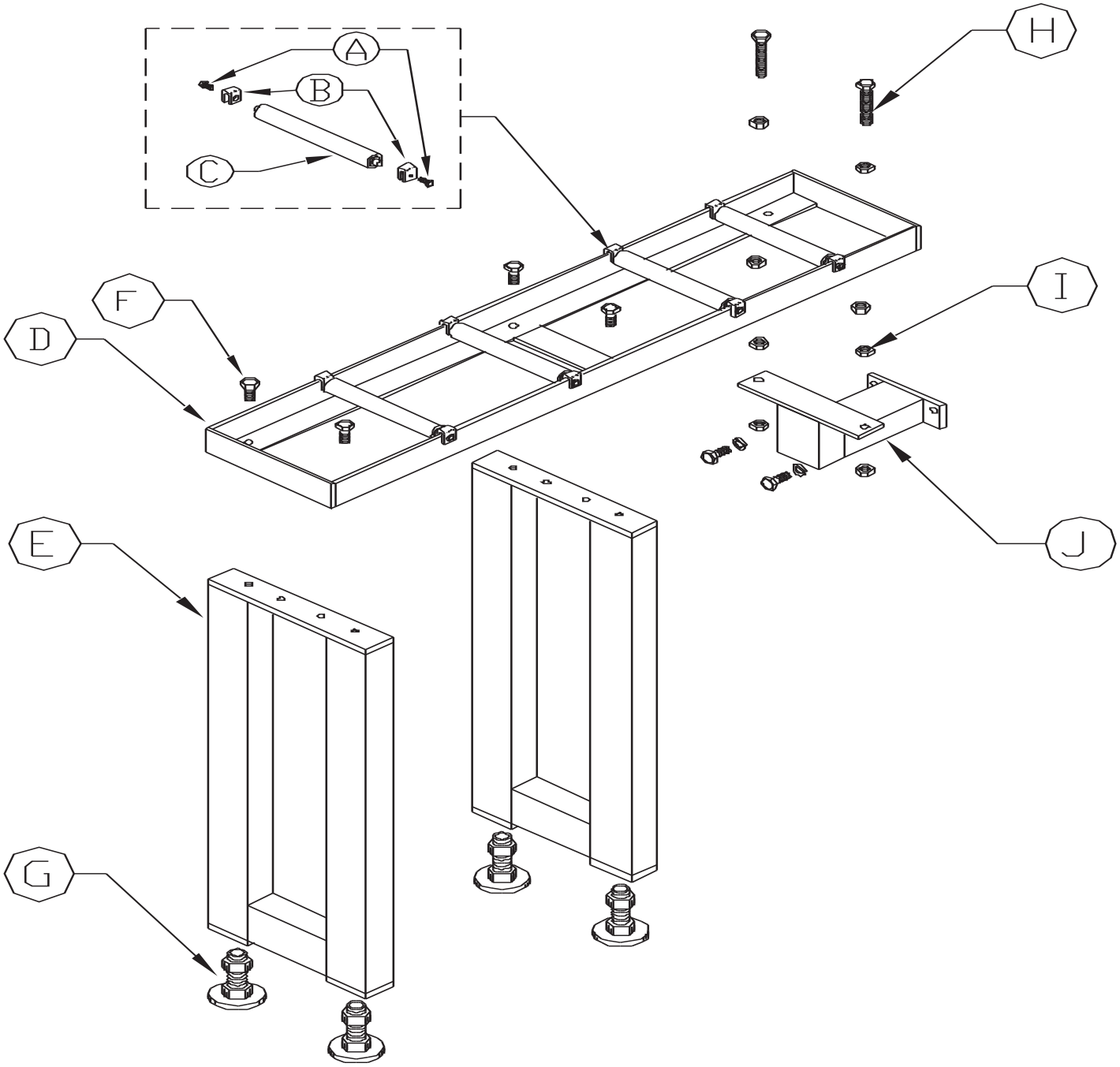


FIGURE 37

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 Extension
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	029102	RH Quick-Loc Extension
13	029201	60" Main Rail
	60" LEFT HAND	
3	029220	Tape
4	029230	LH Quick-Loc
6	029100	LH Quick-Loc Extension
13	029201	60" Main Rail
	120" RIGHT HAND	
3	029226	Tape
4	029232	RH Quick-Loc
6	029102	RH Quick-Loc Extension
13	029206	120" Main Rail
	120" LEFT HAND	
3	029220	Tape
4	029230	LH Quick-Loc
6	029100	LH Quick-Loc Extension
13	029206	120" Main Rail

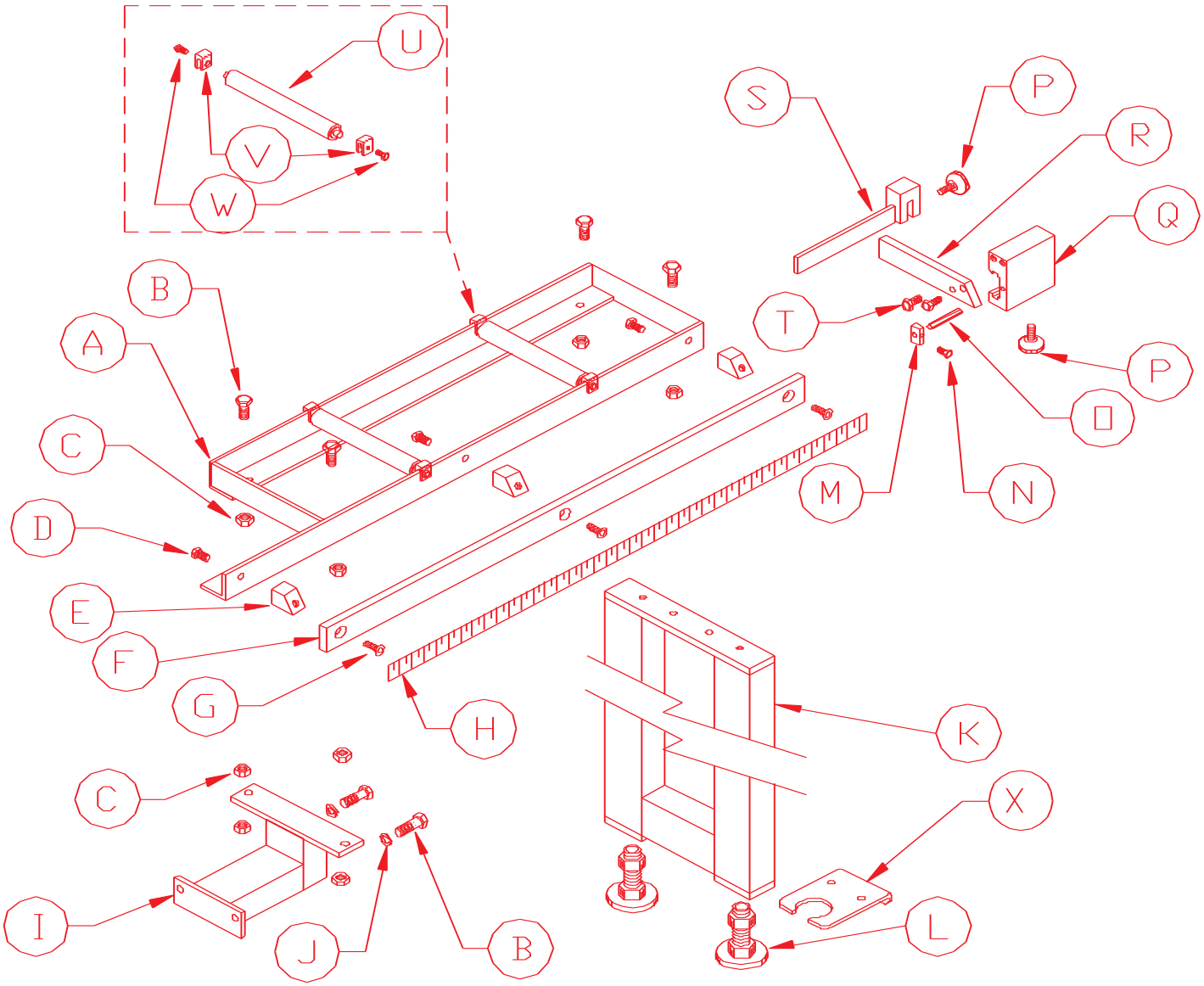


FIGURE 38

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	660115	Base
D	N/A	Wire Bushing
E	108010	1/4" Hex Nut
F	158200	Grommet
G	563441	Cord Grip
	078200	Disconnect Switch Assembly

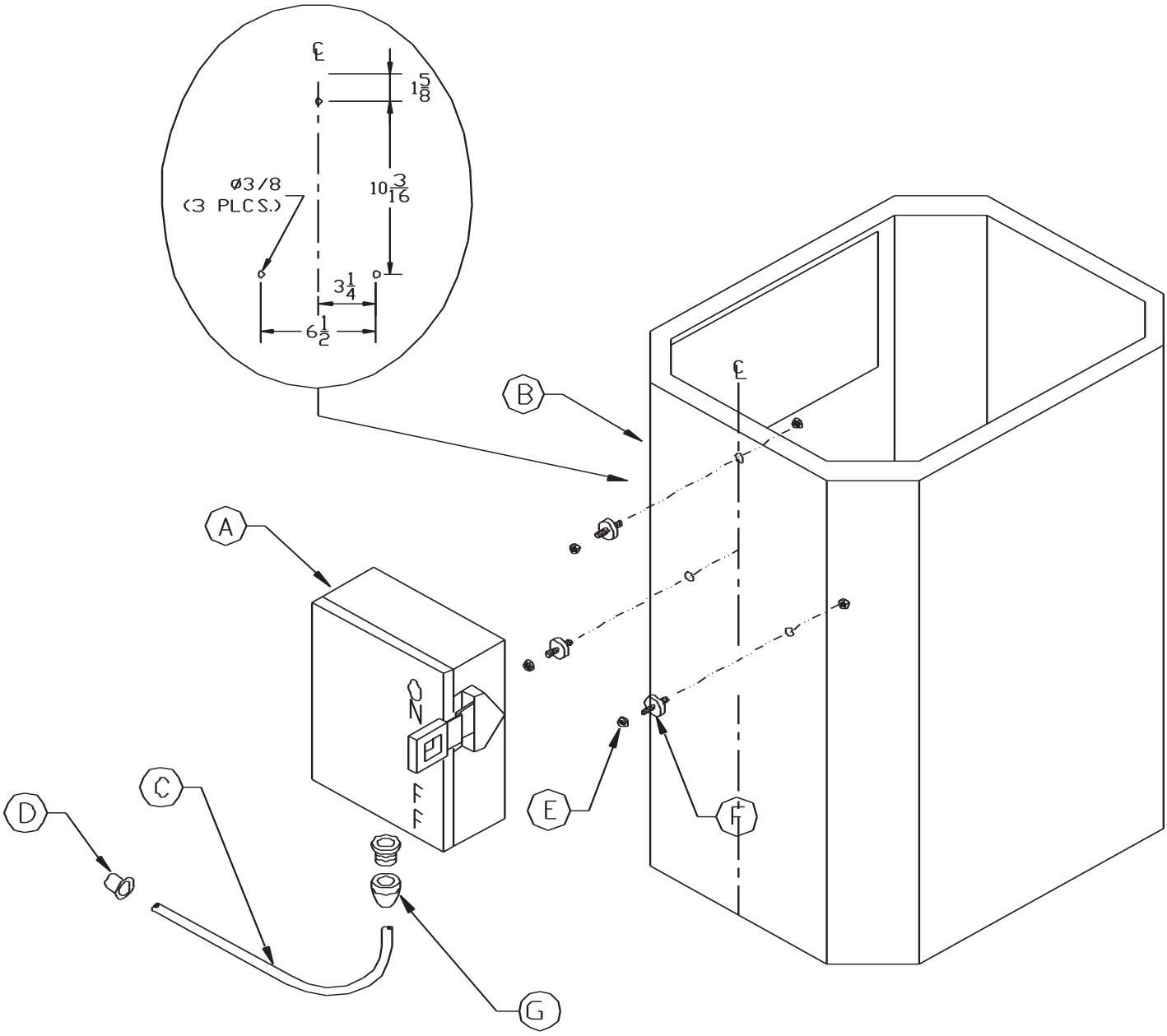


FIGURE 39

11.0 STOCK BLADES

ITEM	PART #	DESCRIPTION
	10-3/4 INCH (275 MM)	
A	074309	90 Tooth
B	074308	100 Tooth
C	074310	120 Tooth
D	074311	150 Tooth
E	074312	180 Tooth
F	074313	240 Tooth
G	074314	260 Tooth
	12-1/2 INCH (315 MM)	
A	074355	90 Tooth
B	074356	100 Tooth
C	074357	110 Tooth
D	074345	120 Tooth
E	074348	150 Tooth
F	074350	180 Tooth
G	074352	220 Tooth
H	074354	280 Tooth
	14 INCH (350 MM)	
A	074390	90 Tooth
B	074391	100 Tooth
C	074392	110 Tooth
D	074393	120 Tooth
E	074394	150 Tooth
F	074395	180 Tooth
G	074396	220 Tooth
H	074397	280 Tooth

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.

No high, No low, No bevel	**Power 2000 Blade with Notch Grind**	**Alternate Grind**	**Triple Chip Grind**
Plastic at Low RPM	**.100 wall or thinner with 170 RPM**	**Thin wall tube Low RPM**	**Solid material & thick wall pipe Low RPM**

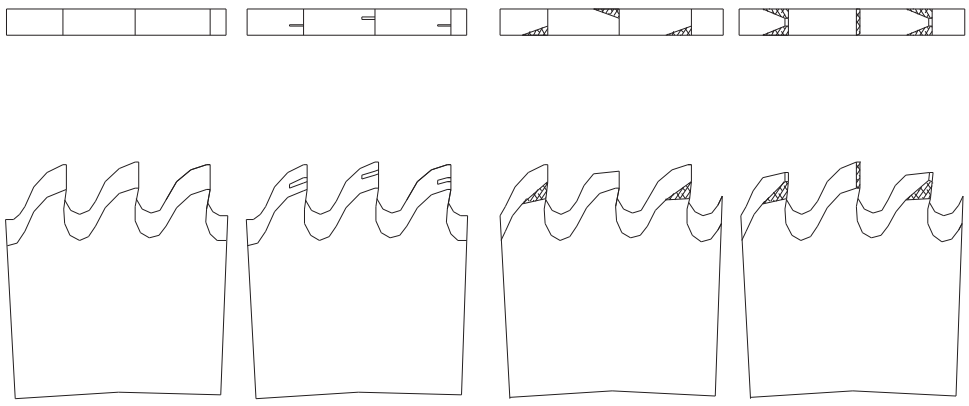


FIGURE 40

12.0 SUPPLEMENT FOR OLDER MODELS

12.1 COOLANT PUMP MAINTENANCE

SEE FIGURE 41 ON THE FOLLOWING PAGE.

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. **Drain the coolant reservoir and remove the pump from the machine.**
3. **Remove the impeller housing (D) from the pump by turning it clockwise approximately 1/8 of a turn.**
4. **Remove the impeller (C) by placing two screwdrivers under it from each side and prying up gently, with even pressure from both sides.**
5. **Remove the coolant fan (F) in the same manner as the impeller.**
6. **Remove the two screws (E) from the motor housing and slide the bearing retainers off both ends of the motor.**
7. **Remove the armature and clean both of the brass bushings and sleeves.**
8. **Oil the bushings and reassemble the pump, reversing the above steps.**

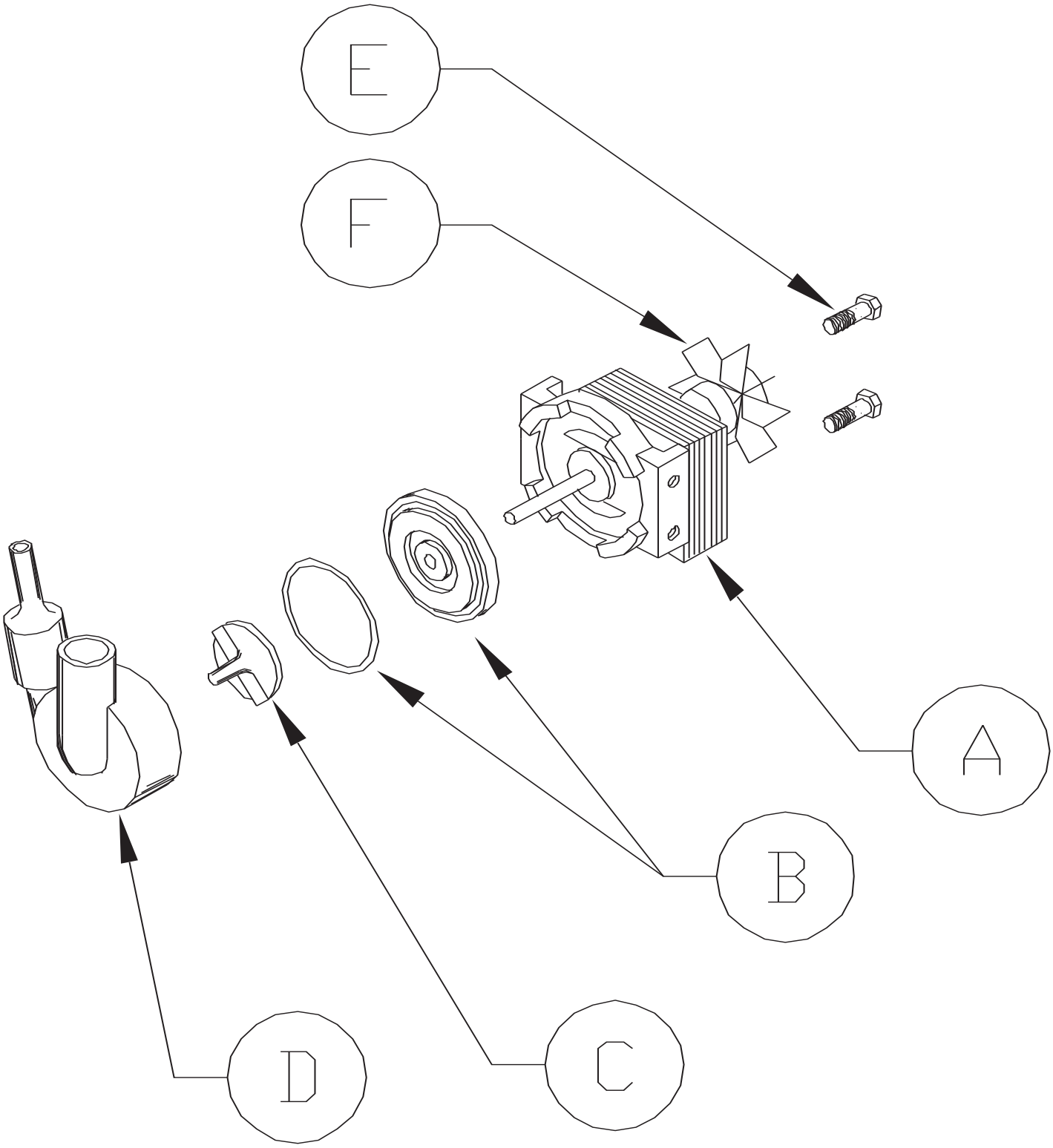


FIGURE 41

12.2 COOLANT SYSTEM AND BASE

ITEM	PART #	DESCRIPTION
A	076846	Pump 230 Volt
AA	076847	Pump 460 Volt
B	075223	Seal Kit
C	075265	Impeller
D	075268	Pump Housing
E	060140	Coolant Line
F	060125	Suction Line
G	201110	M-6 x 12 HHCS
H	075264	Fan
I	060095	Pump Cable
J	077183	Cord Connector
L	N / A	Rear Cover
M	073450	M-4 x 12 SHCS
N	660115	Base Cabinet

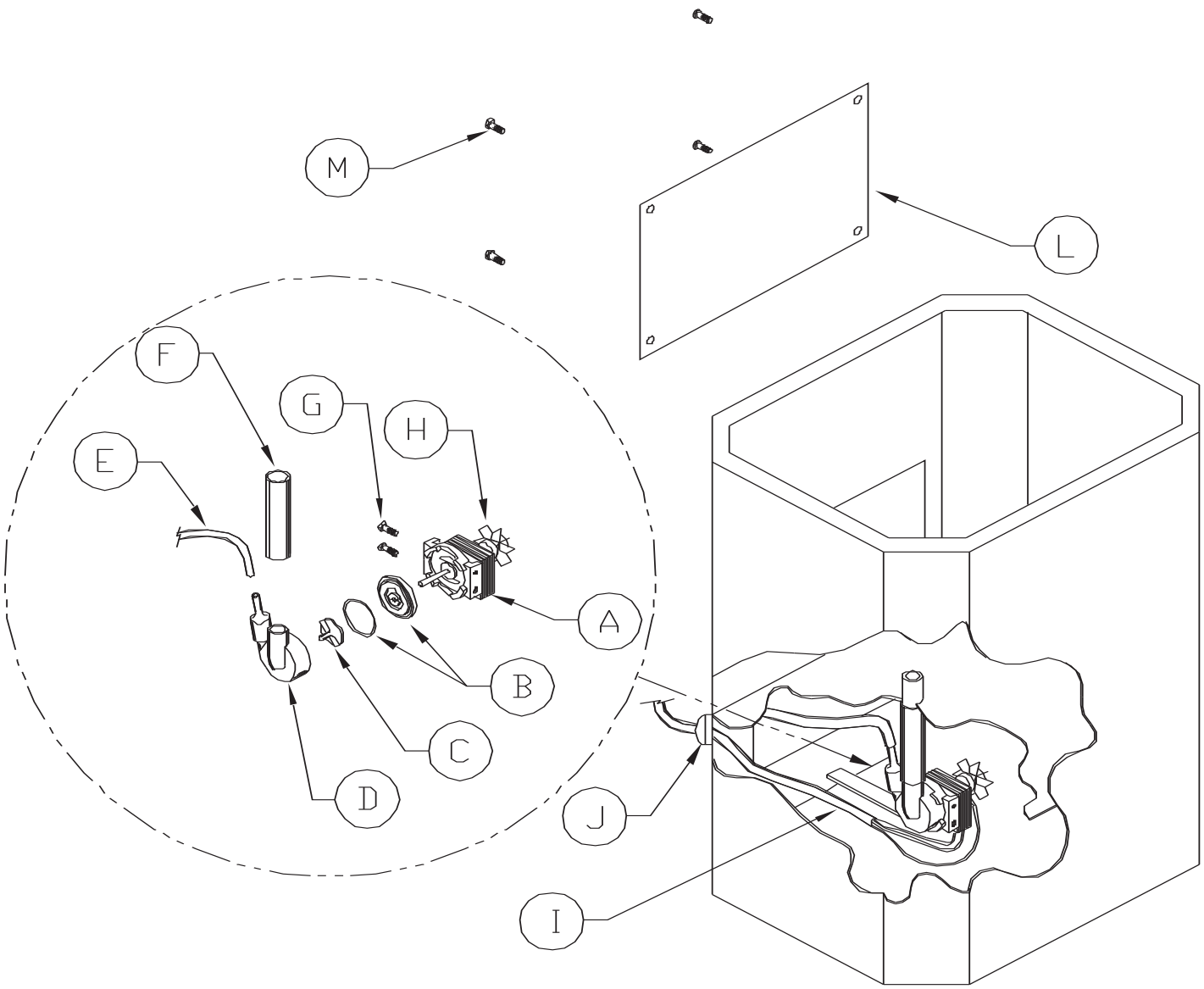


FIGURE 42

12.3 COOLANT PUMP

ITEM	PART #	DESCRIPTION
A	060165	Pump 230V 1PH
	060150	230 Volt Coolant Pump
	060150	440 Volt Coolant Pump
A1	060160	575 Volt Coolant Pump
B	060152	Impeller
C	060157	End Cap
D	060151	Seal Kit
E	N/A	Bolt
F	N/A	Bolt
G	060080	90 Degree Hose Barb
H	060140	Coolant Line
I	060095	Pump Cable
J	077864	M-5 x 12 SHCS
K	077545	Check Valve
L	060149	Screen

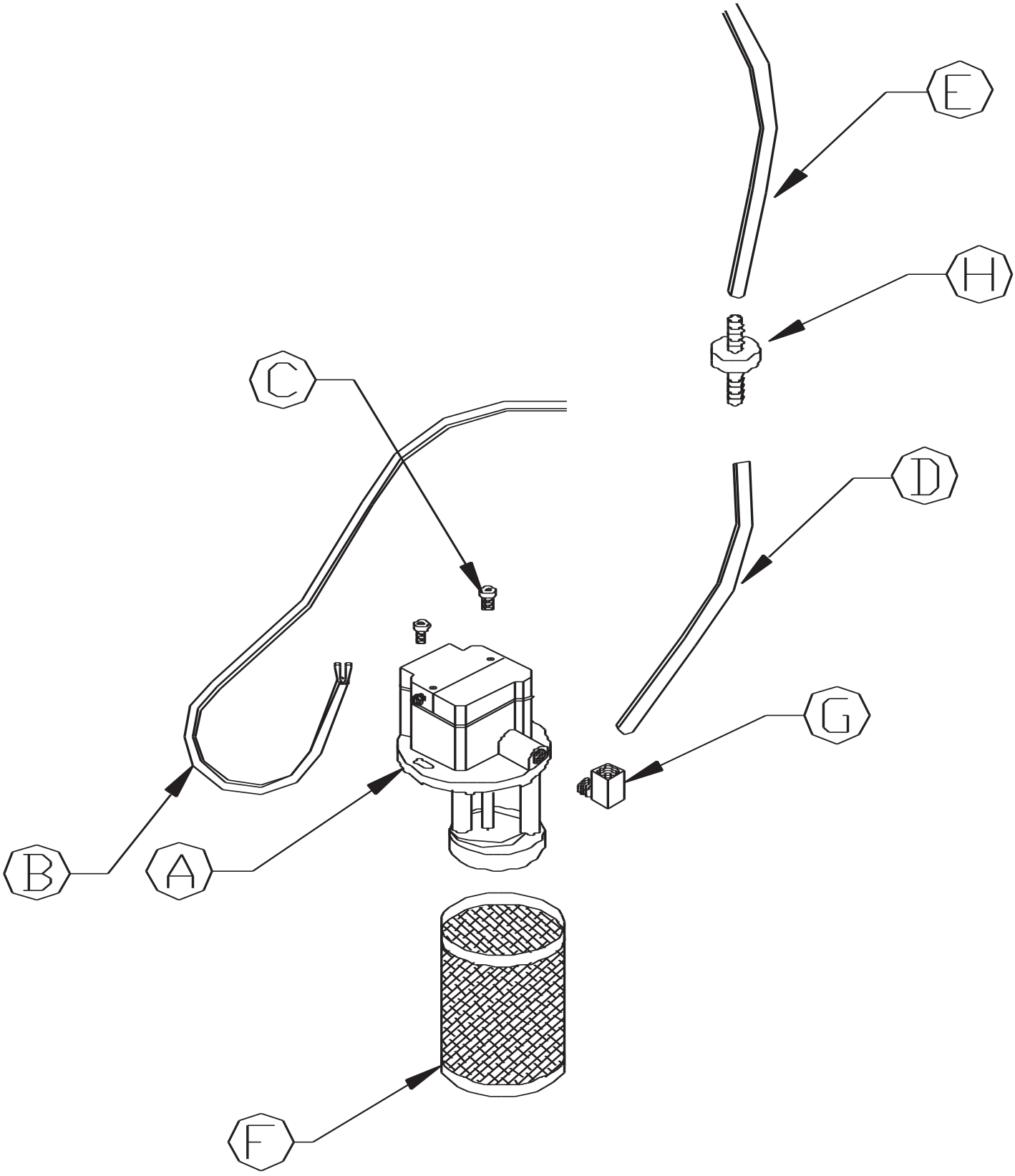


FIGURE 43

12.4 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 44 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 four 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 using the leveling pads in the foot of the legs and the bolts that attach to the support bracket.**
7. **The track may be anchored to the floor, using the mounting plates (P).**
8. **The optional vertical guide assembly (F) can be used as a guide for materials that do not lay flat on the feed roller.**

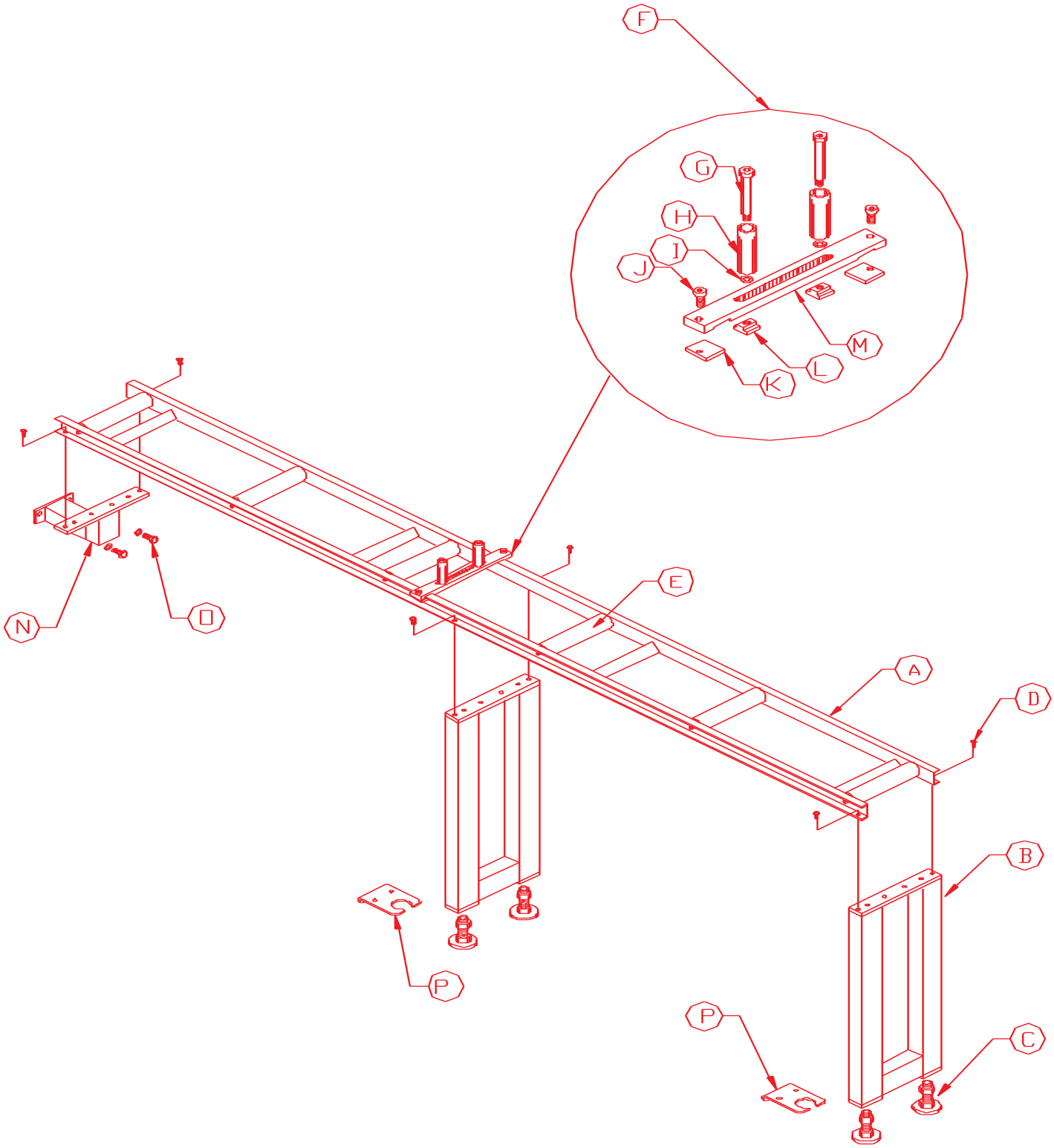


FIGURE 44

12.5A TEN FOOT (303 CM) SUPPLY TRACK

ITEM	PART #	DESCRIPTION
A	201105	M-6 x 8 HHCS
B	076965	Roller Mounts
C	076963	Roller
D	076934	Rail Assembly
E	076953	Leg
F	203212	M-10 x 30 HHCS
G	079217	Leveling Pads
H	201235	M-10 x 80 HHCS
I	076961	Mount Support
J	203212	M-10 x 30 HHCS
K	076920	Complete Supply Track

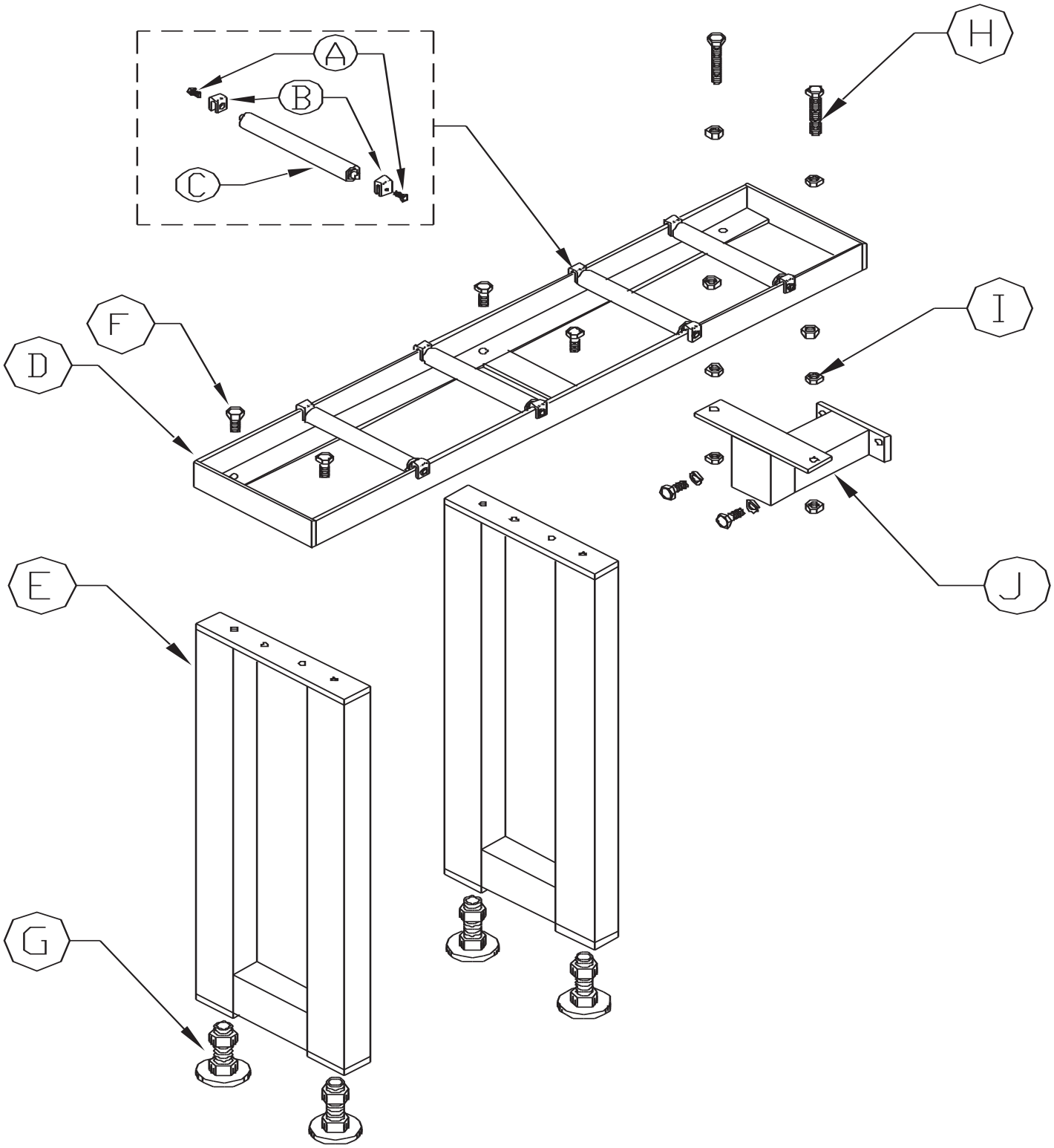


FIGURE 45

12.5B TEN FOOT (304 CM) SUPPLY TRACK

ITEM	PART #	DESCRIPTION
A	076920	Track Assembly
B	042041	Leg
C	079217	Leveling Pads
D	203212	M-10 x 30 HHCS
E	076967	Roller
F	076935	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	076941	Mounting Plate
L	026619	Tee Nut
M	076942	Guide Bar
N	076961	Mount Support
O	221210	M-10 x 25 SHCS
P	049330	Anchor

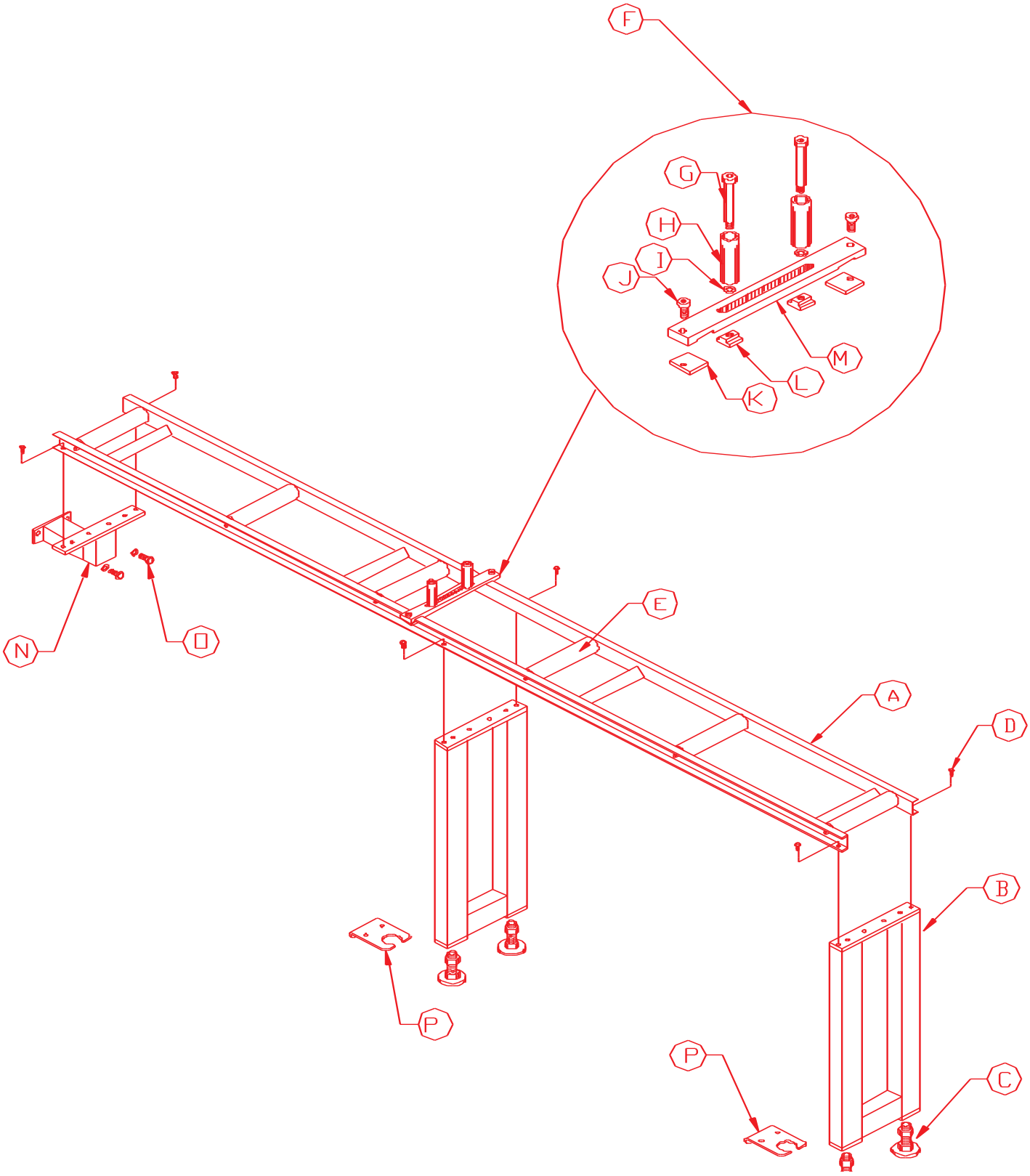


FIGURE 46

12.6 DISCHARGE TRACKS WITH SCALES

Roller discharge tracks with incremental scales are available in three lengths: 48 inch, 84 inch and 120 inch (122, 212 & 303 CM).

The discharge tracks mount to the machine in place of the 30 inch (76 CM) stop that was provided with the machine. The discharge tracks allow fast set-up and accuracy for various lengths of cuts.

SEE FIGURE 47 ON THE FOLLOWING PAGE.

1. **Bolt the support bracket (A) to the right 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 two 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 using the two leveling pads in the foot of 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 slide the length stop (C) up to the blade. Loosen the bolt (D) in the reading block (E) and adjust the reading block to 0.**

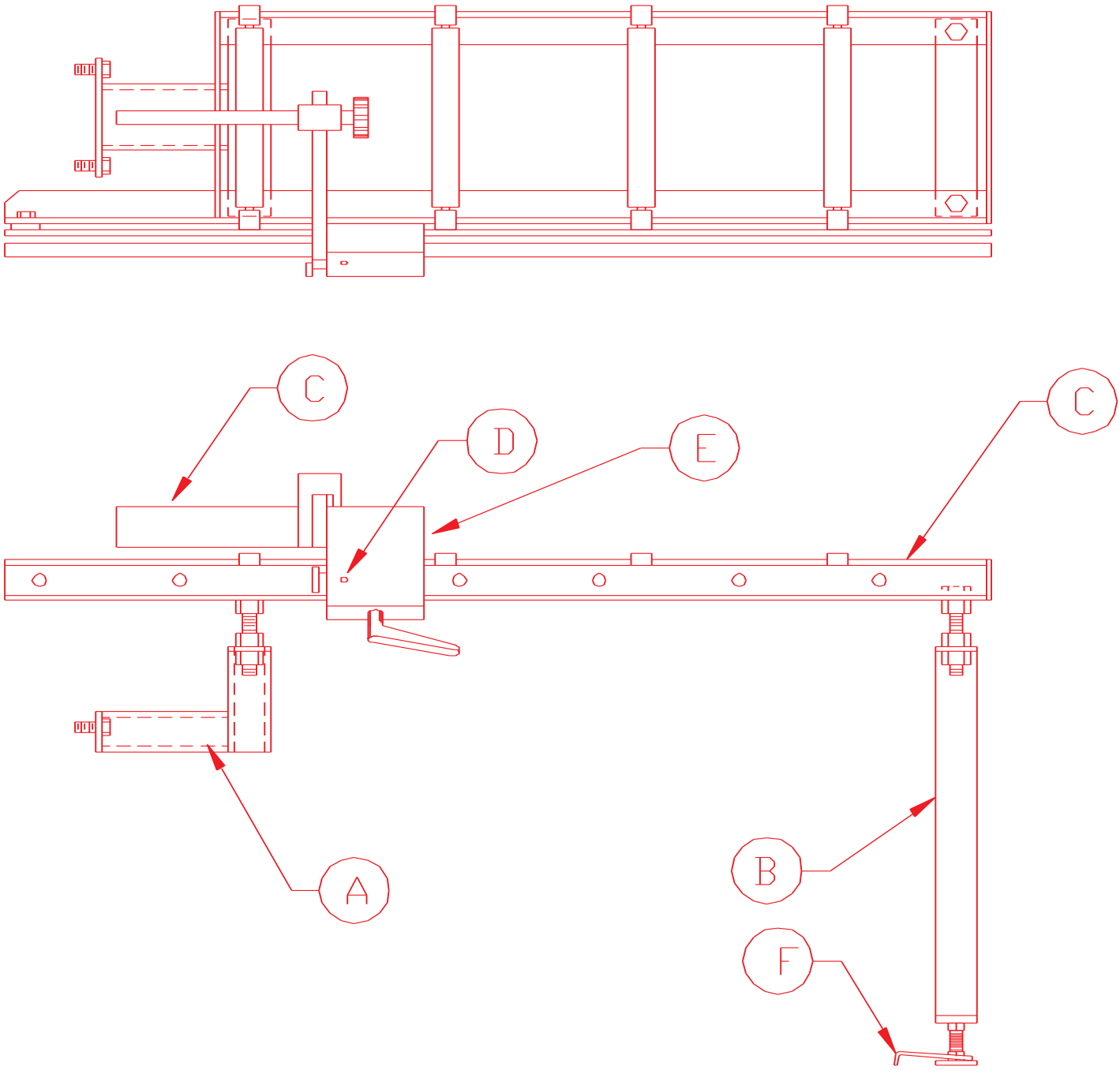


FIGURE 47

12.7A DISCHARGE TRACKS - 40, 80 & 120 INCH (101, 202 & 303 CM)

ITEM	PART #	DESCRIPTION
	COMMON PARTS	
B	201235	M-10 x 80 HHCS
C	208012	M-10 Hex Nut
D	203212	M-10 x 30 HHCS
E	079029	Scale Mounting Block
G	230207	M-10 x 20 FSHCS
H	079041	Scale
I	076961	Mount Support
J	212012	M-10 Lock Washer
K	076953	Leg
L	079217	Leveling Pads
M	079023	Reading Block
N	218010	M-5 x 10 HHCS
O	079025	Pin
P	090400	Knob
Q	079015	Slider Block
R	079013	Stop Strip
S	079017	Aux. Stop Strip
T	203212	M-10 x 30 HHCS
U	076963	Roller
V	076965	Roller Mount
W	201105	M-6 x 8 SS
X	049217	Anchor
	40" TRACK	
A	079005	Rail Assembly
F	079031	Scale Rail
	80" TRACK	
A	079055	Rail Assembly
F	079053	Scale Rail
	120" TRACK	
A	079045	Rail Assembly
F	079043	Scale Rail

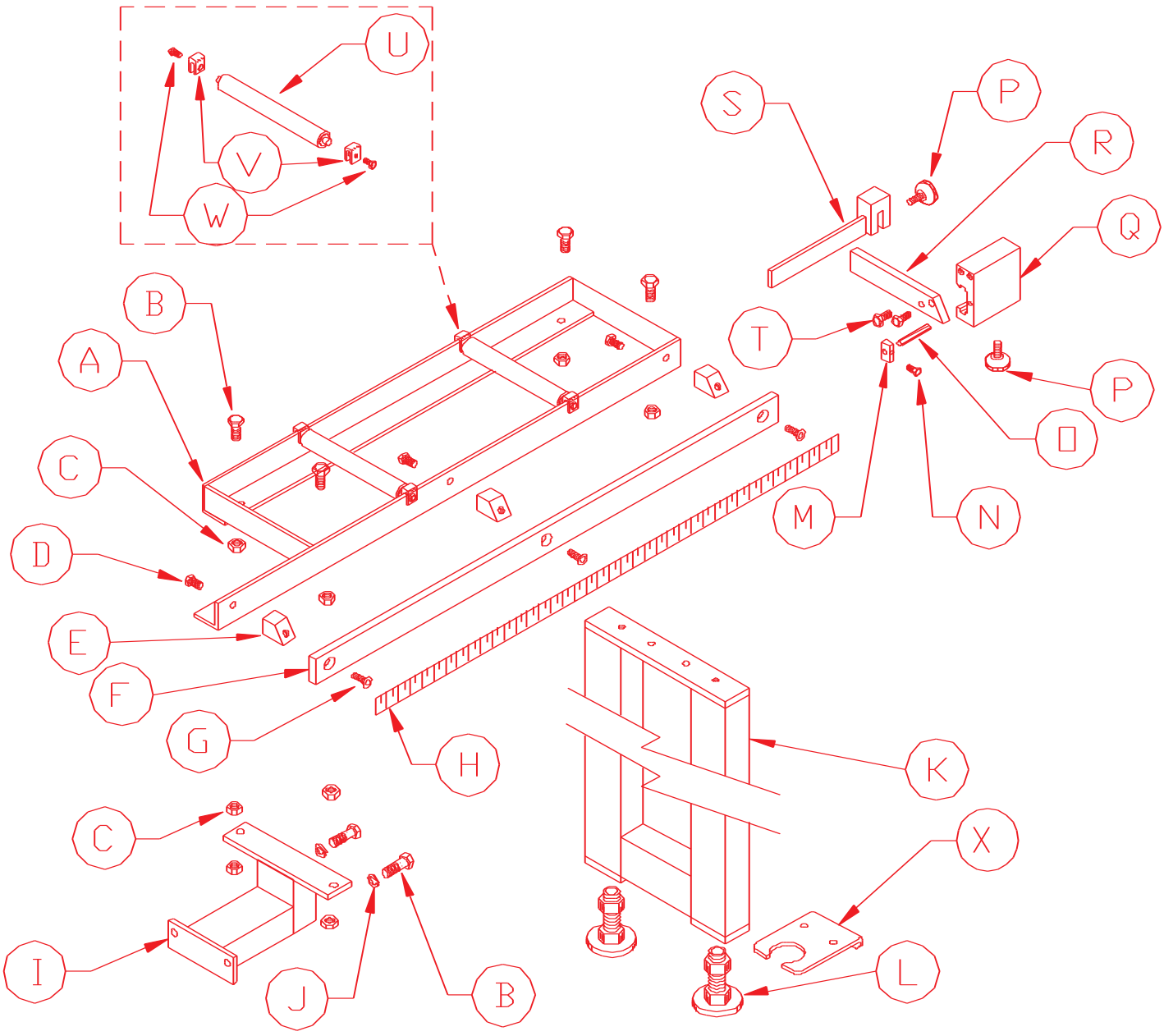


FIGURE 48

12.7B DISCHARGE TRACKS (48, 84 & 120 INCH)

ITEM	PART #	DESCRIPTION
	COMMON PARTS	
B	201235	M-10 x 80 HHCS
C	208012	M-10 Hex Nut
D	221210	M-10 x 35 HHCS
E	079029	Scale Mounting Block
G	230207	M-10 x 20 FSHCS
H	079041	Scale
I	076961	Mount Support
J	212012	M-10 Lock Washer
K	042041	Leg
L	079217	Leveling Pads
M	079023	Reading Block
N	218010	M-5 x 10 HHCS
O	079025	Pin
P	090400	Knob
Q	079015	Slider Block
R	079013	Stop Strip
S	079017	Aux. Stop Strip
T	203212	M-10 x 30 HHCS
U	049330	Foot Anchor
V	076967	Roller
W	203212	M-10 x 30 HHCS
	48" TRACK	
A	079008	Rail Assembly
F	079032	Scale Rail
	006925	Complete Track
	84" TRACK	
A	079058	Rail Assembly
F	079054	Scale Rail
	076927	Complete Track
	120" TRACK	
A	076934	Rail Assembly
F	079044	Scale Rail
	076929	Complete Track

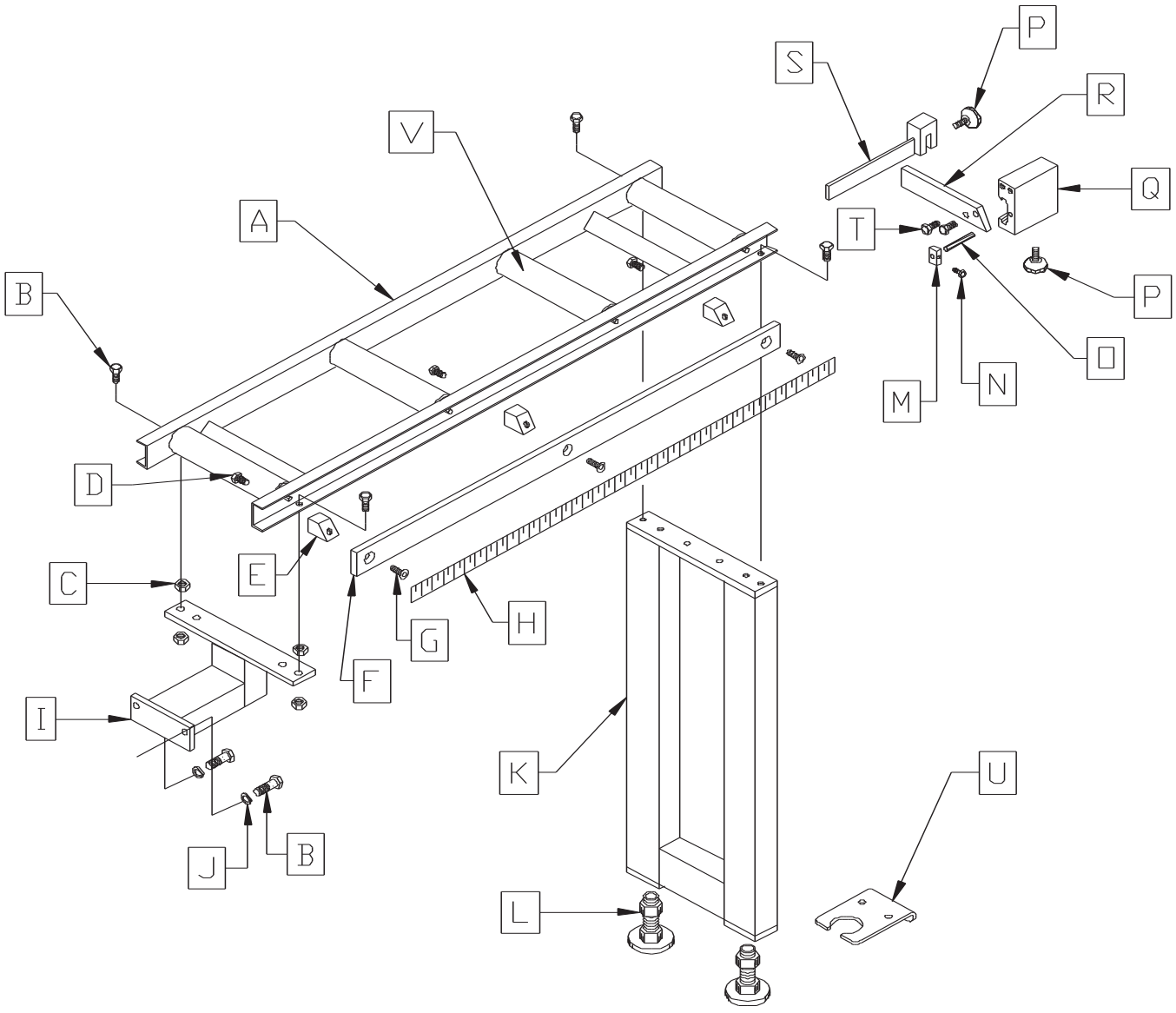


FIGURE 49

12.8 DIGITAL READOUT

ITEM	PART #	DESCRIPTION
A	550050	Display
B	550045	Mounting Bracket
C	077864	M-5 x 12 SHCS
D	073204	M-4 Hex Nut
E	073415	M-4 x 25 SHCS
F	079015	Reading Block
G	550055	Magnetic Strip

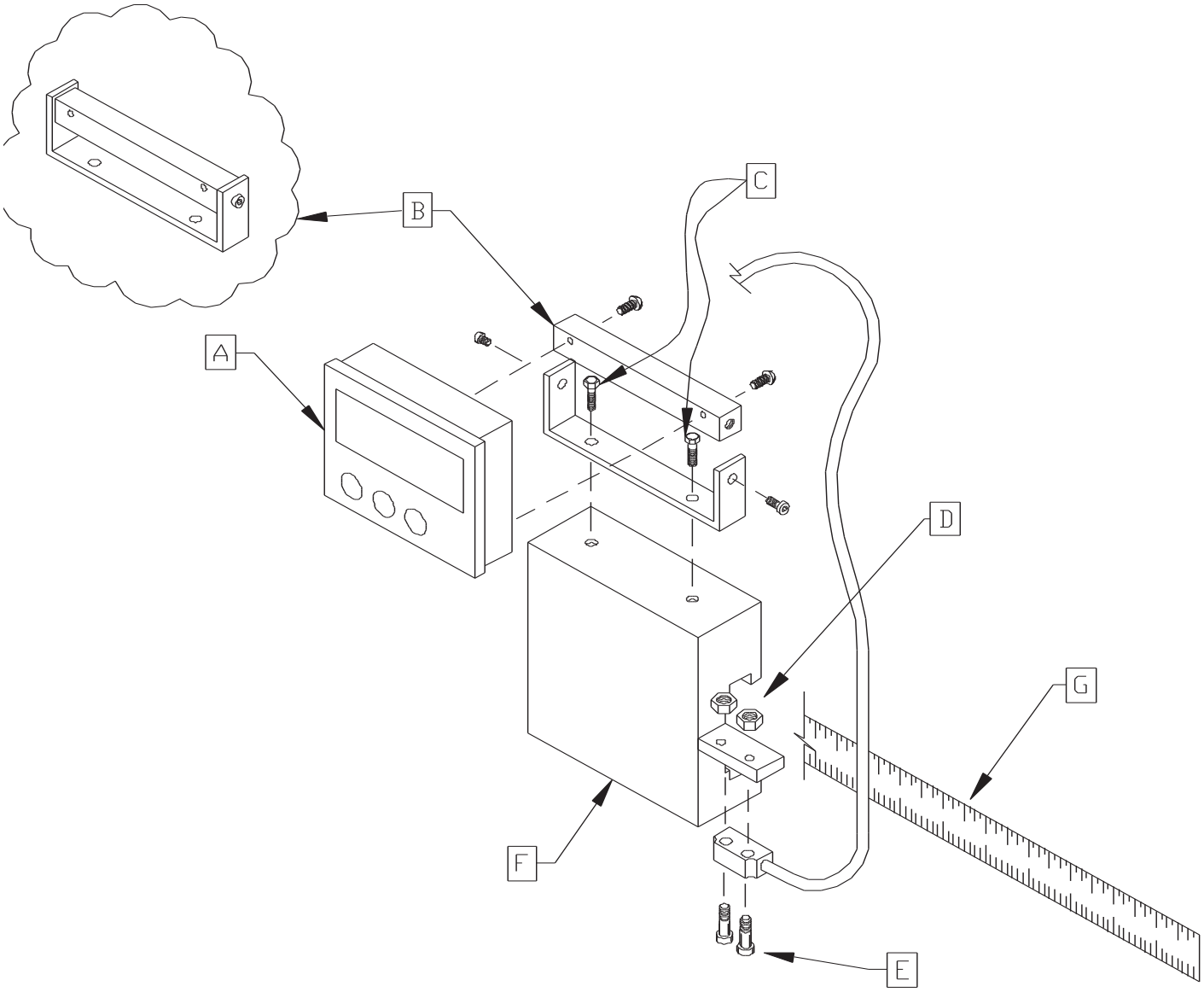


FIGURE 50

12.9A POWER DOWN FEED VALVES (SER. #51750300 & PRIOR)

ITEM	PART #	DESCRIPTION
A	077746	1/4" NPT x 169 PL
B	077701	Baffle
C	077777	3/8" NPT Plug
D	077738	90 Degree Swivel x 169 PL
E	077726	Roller Valve
F	077722	1/8" NPT Breather
G	077533	Valve (Vise)
H	073415	M-4 SHCS
I	073416	M-4 SHMS
J	077531	Check Valve
K	065051	Guard (Not Pictured)
L	077779	1/4" Brass Nipple
M	677745	1/4" Brass Tee

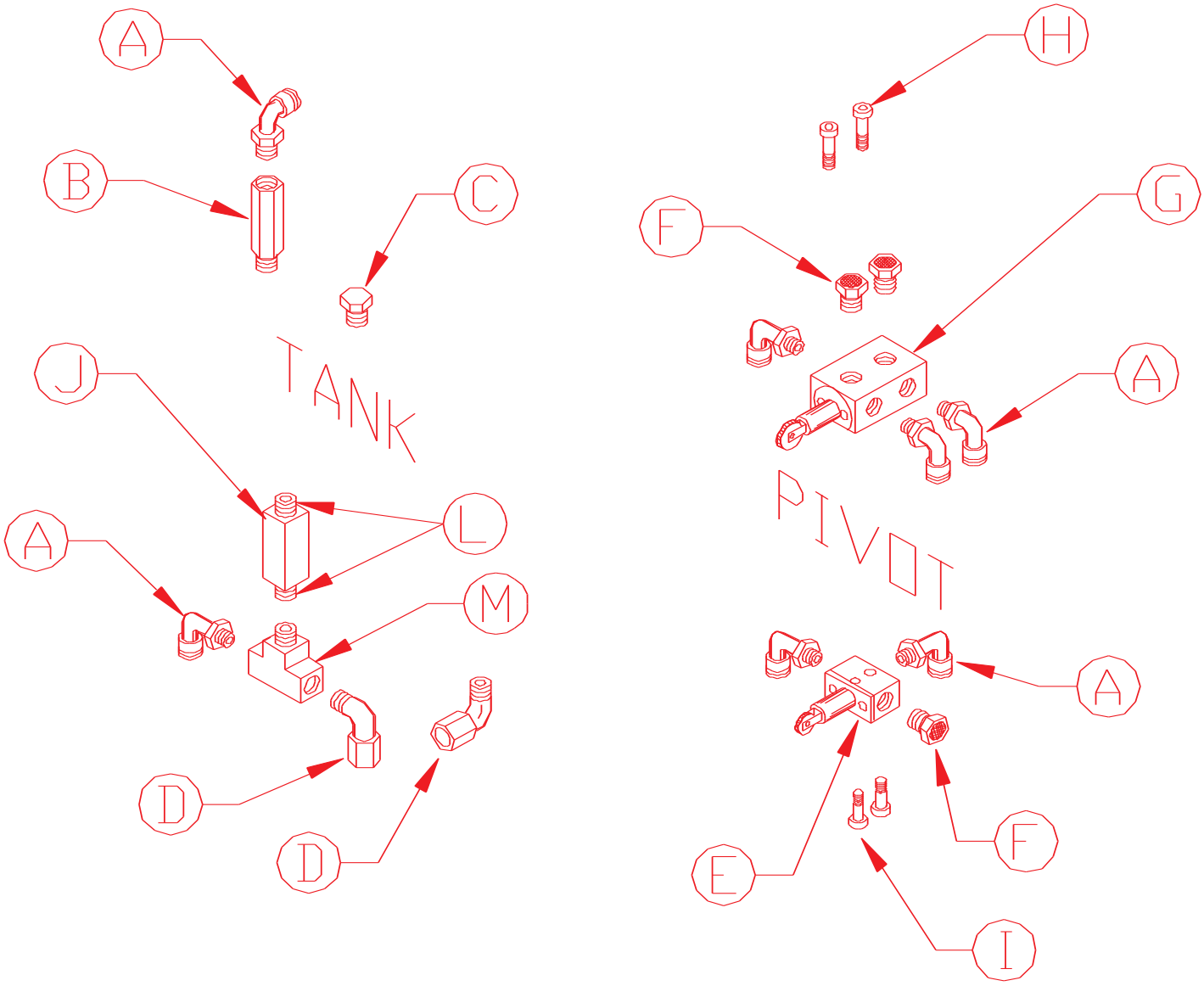


FIGURE 51

12.9B POWER DOWN FEED CONTROLS (SER. # 51750300 & PRIOR)

ITEM	PART #	DESCRIPTION
A	077736	Valve Mount Assembly
B	077183	Cord Connector
C	077738	90 Degree Swivel x 169 PL
D	077535	Flow Control Valve
E	077737	1/4" NPT x 1/4" Street PL
F	077719	Slide Valve
G	077543	Filter/Regulator/Lubricator
H	077874	1/4" Brass Nipple
I	077746	1/4" Male Swivel
J	077739	1/4" NPT Cross
K	077742	1/4" Swivel x 169 PL
L	073440	M-4 SHCS

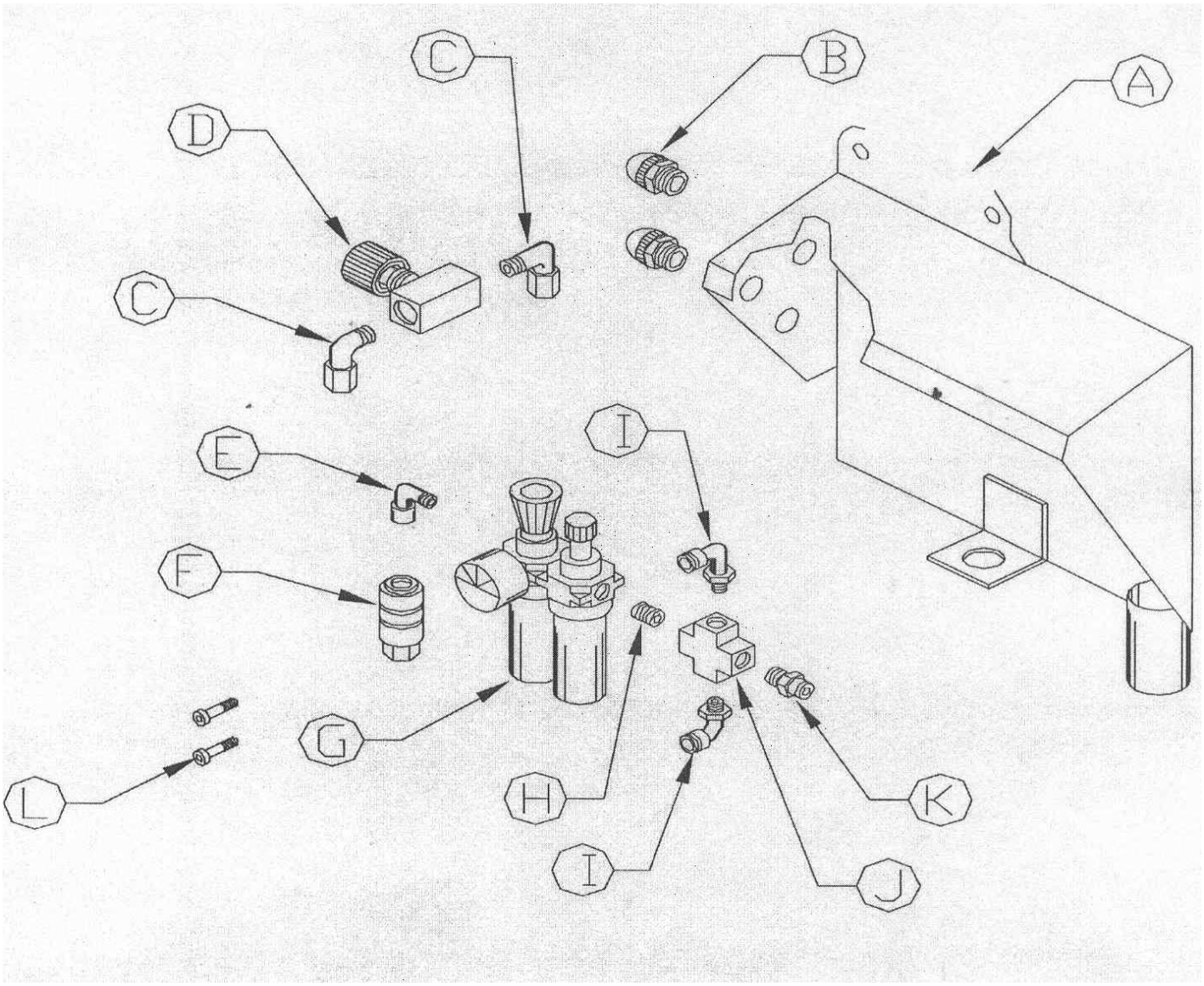


FIGURE 52

12.9C POWER DOWN FEED ELECTRICAL CONTROLS

(SERIAL #'S B6425 TO B8000)

ITEM	PART #	DESCRIPTION
A	075250	Enclosure
B	077183	Cord Grip
C	077205	Mounting Plate
D	060053	Bridge Rectifier
E	221002	M-4 x 12 SHCS
F	078104	End Bracket
G	048080	Fused Terminal Block
H	048081	Fuse
I	078456	M-4 x 6 Terminal Block
J	078457	Jumper
K	048042	24 Volt Relay
L	060104	Cord Grip
M	660456	Cord (90")
N	158202	Grommets
O	115011	5/16 Nylon Lock Nuts
P	073660	M-4 x 12 SHCS
Q	562452	Micro Switch
R	078500	Complete Foot Switch

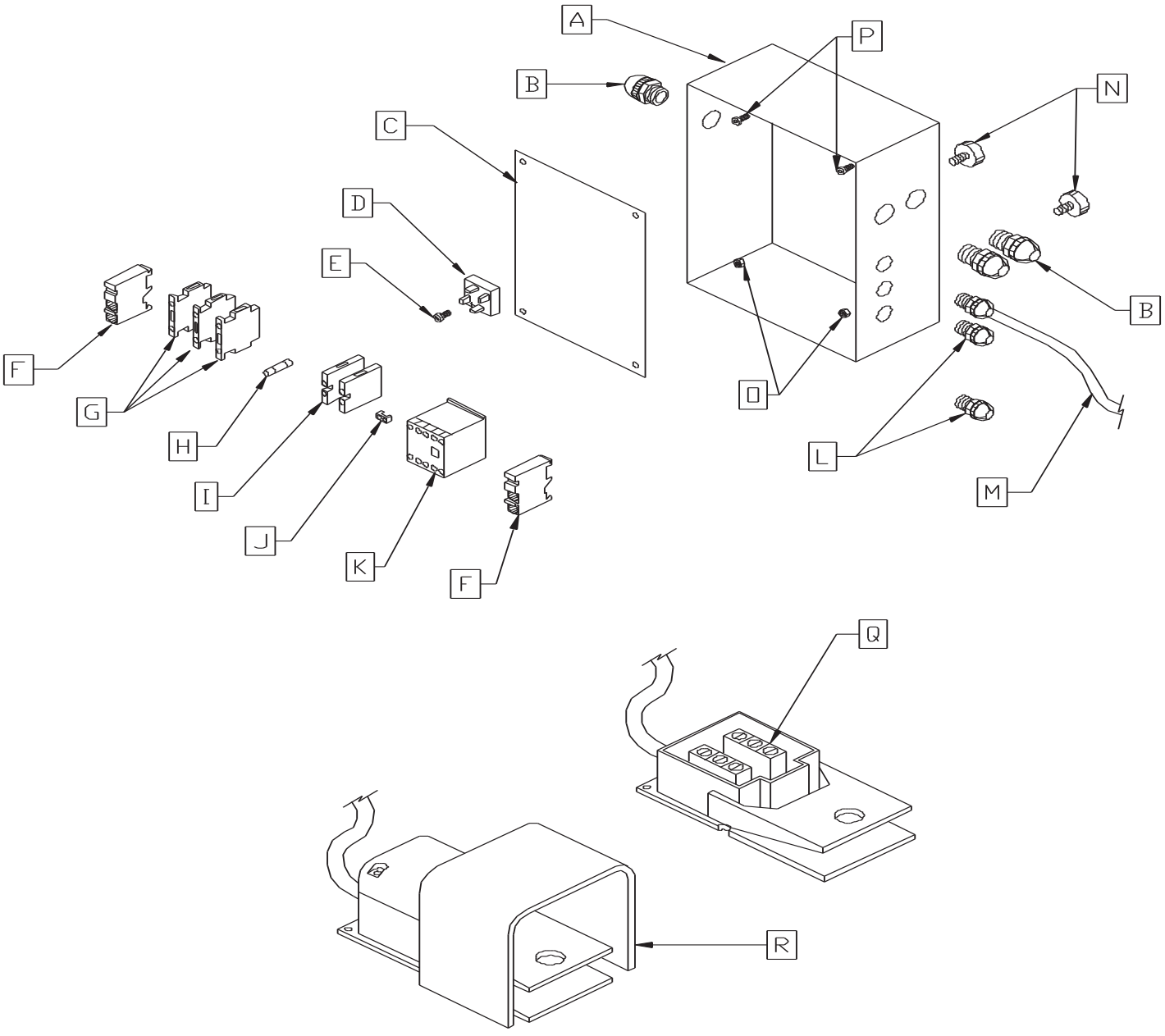


FIGURE 53

12.10 VARIABLE SPEED MOTOR CONTROL W/3 HP MOTOR

(SER.# 19990696 & UP)

ITEM	PART #	DESCRIPTION
A	003120	Voltage Sticker (Not Pictured)
B	045550	230 Volt Variable Speed Control
	045555	460 Volt Variable Speed Control
	045562	575 Volt Variable Speed Control
BA	045552	230 V Fuse Variable Speed Drive
	045553	460 V Fuse Variable Speed Drive
C	045557	Variable Speed Switch
D	045558	Knob
E	061005	Conduit
F	077867	Ground Lug
G	078090	Enclosure
H	078095	Mounting Plate
I	115011	5/16 x 18 Nyloc Nut
J	158201	Grommet
K	158202	Grommett (Single Stud)

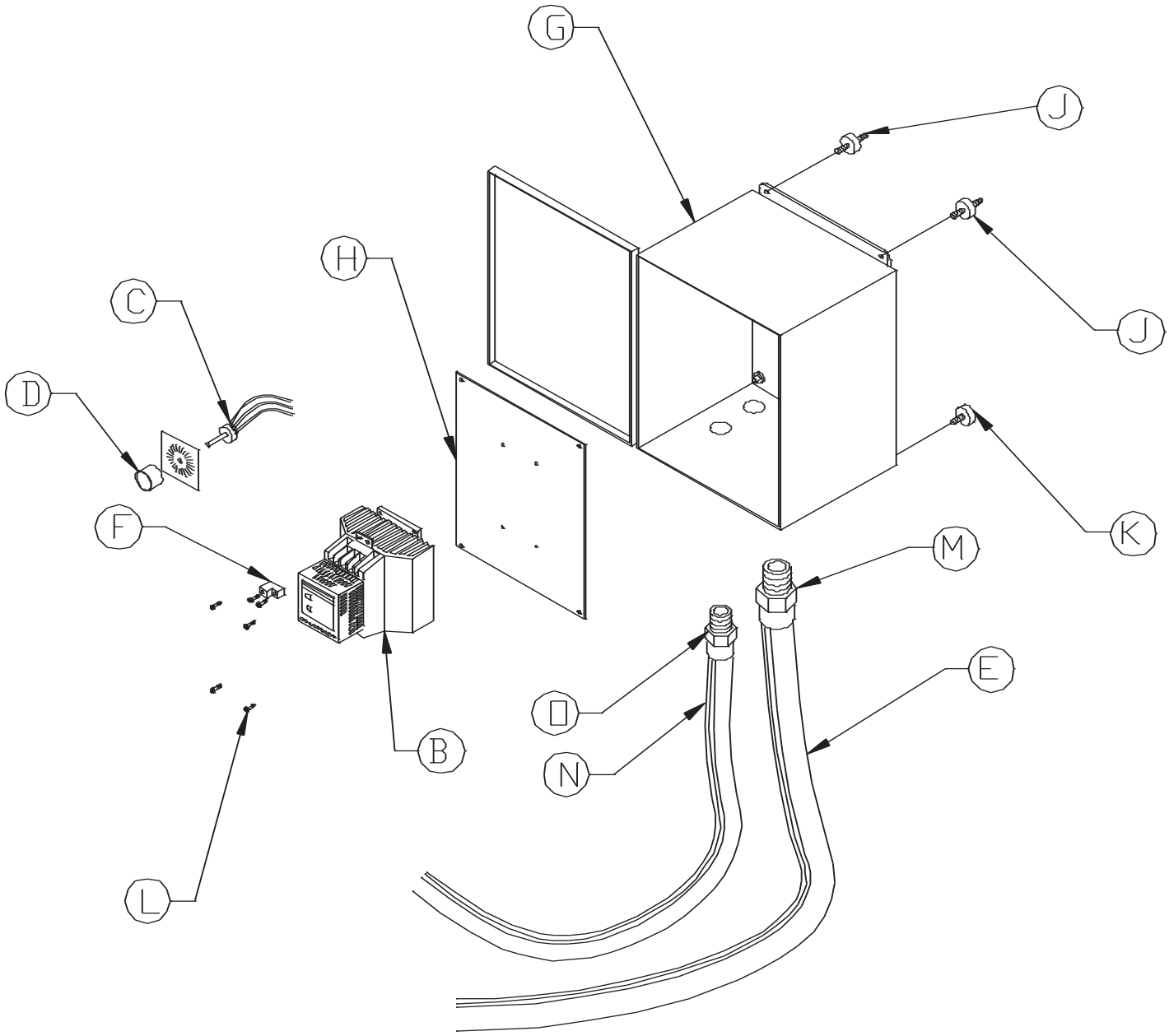


FIGURE 54

12.11 PNEUMATIC SCHEMATIC (POWER DOWN MACHINES)

(SERIAL #'S 51750300 & PRIOR)

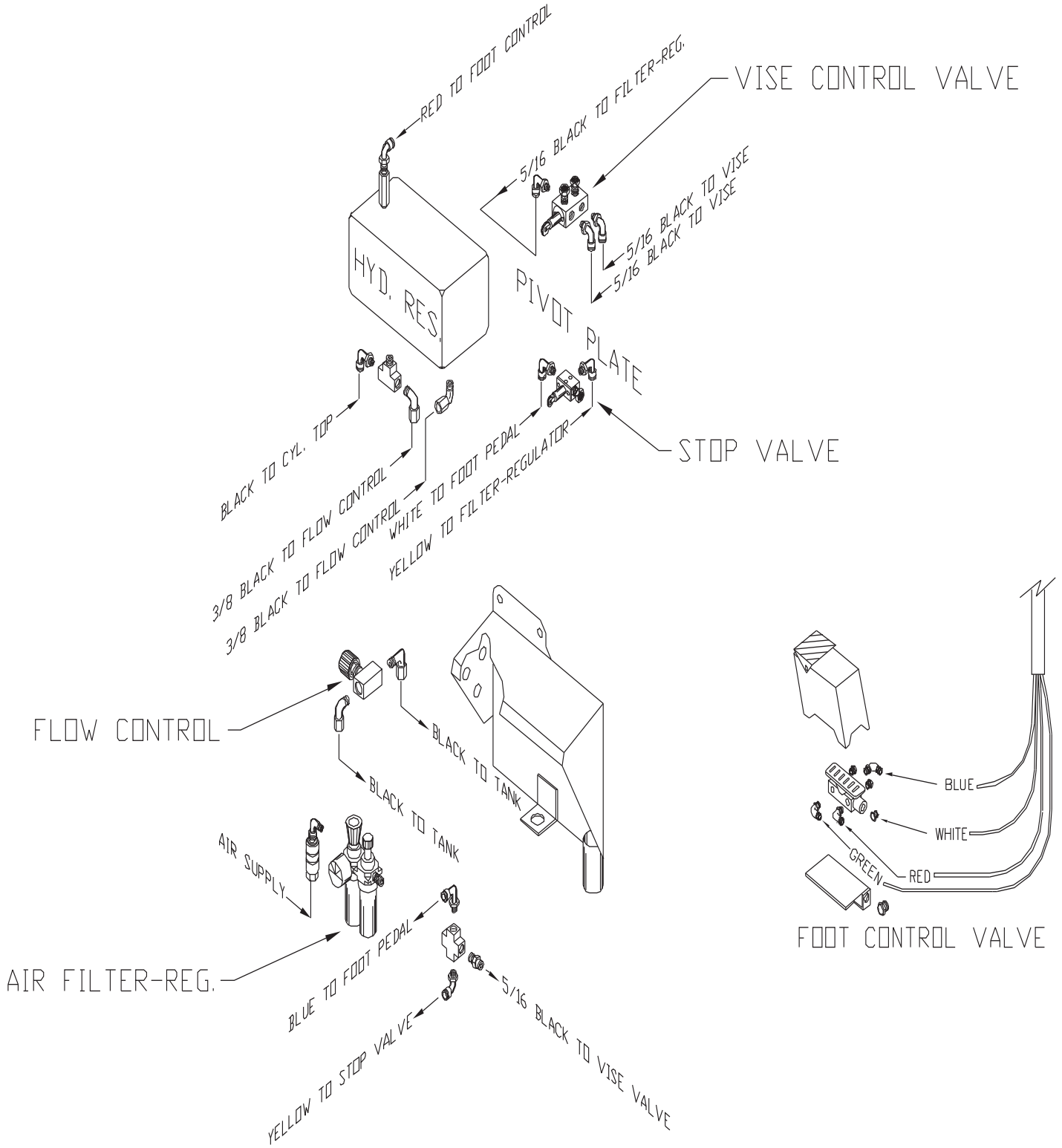


FIGURE 55

12.12 WIRING DIAGRAMS

MANUAL OR PK W/TRIGGER SWITCH & VARIABLE SPEED DRIVE W/3 HP MOTOR

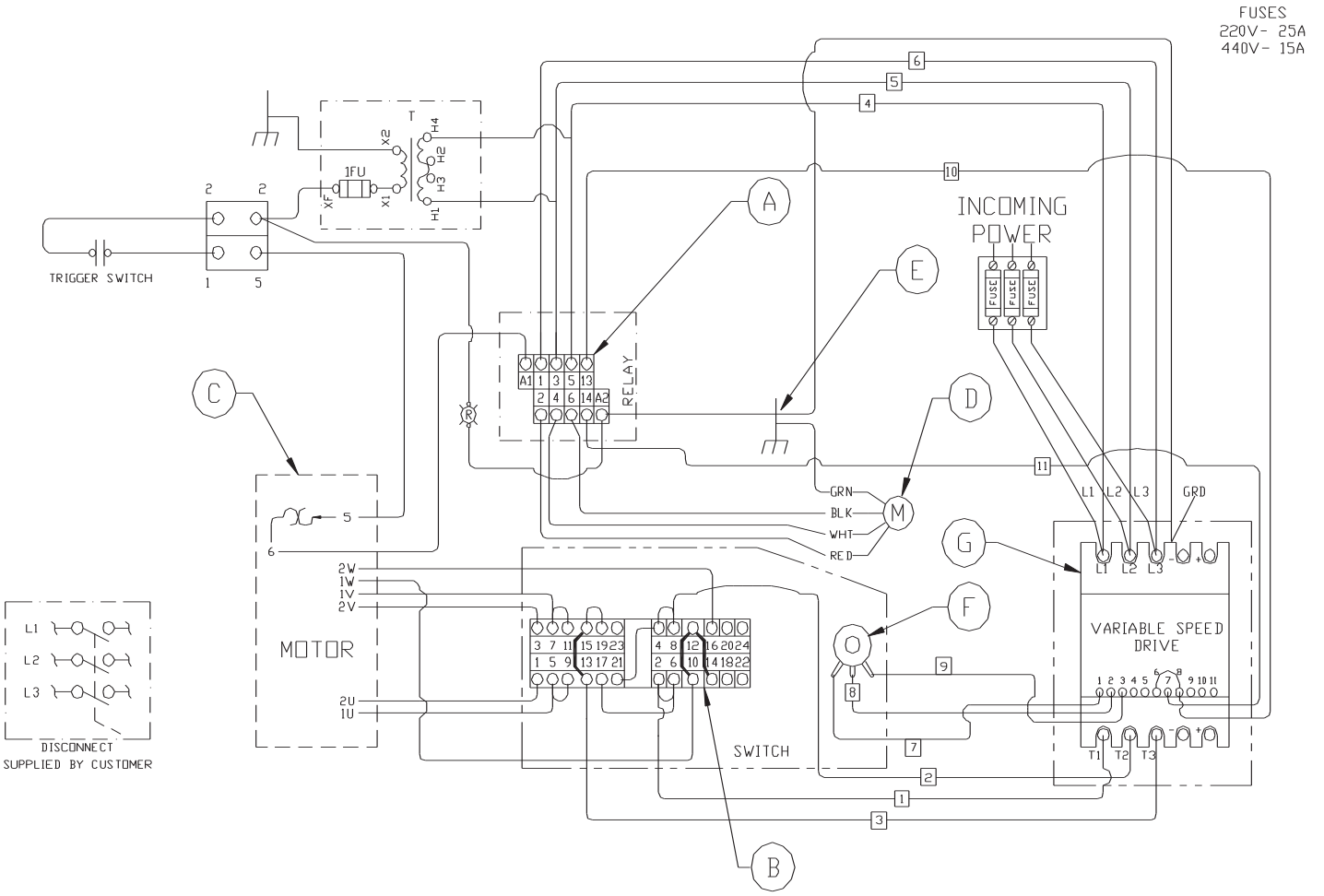


FIGURE 56

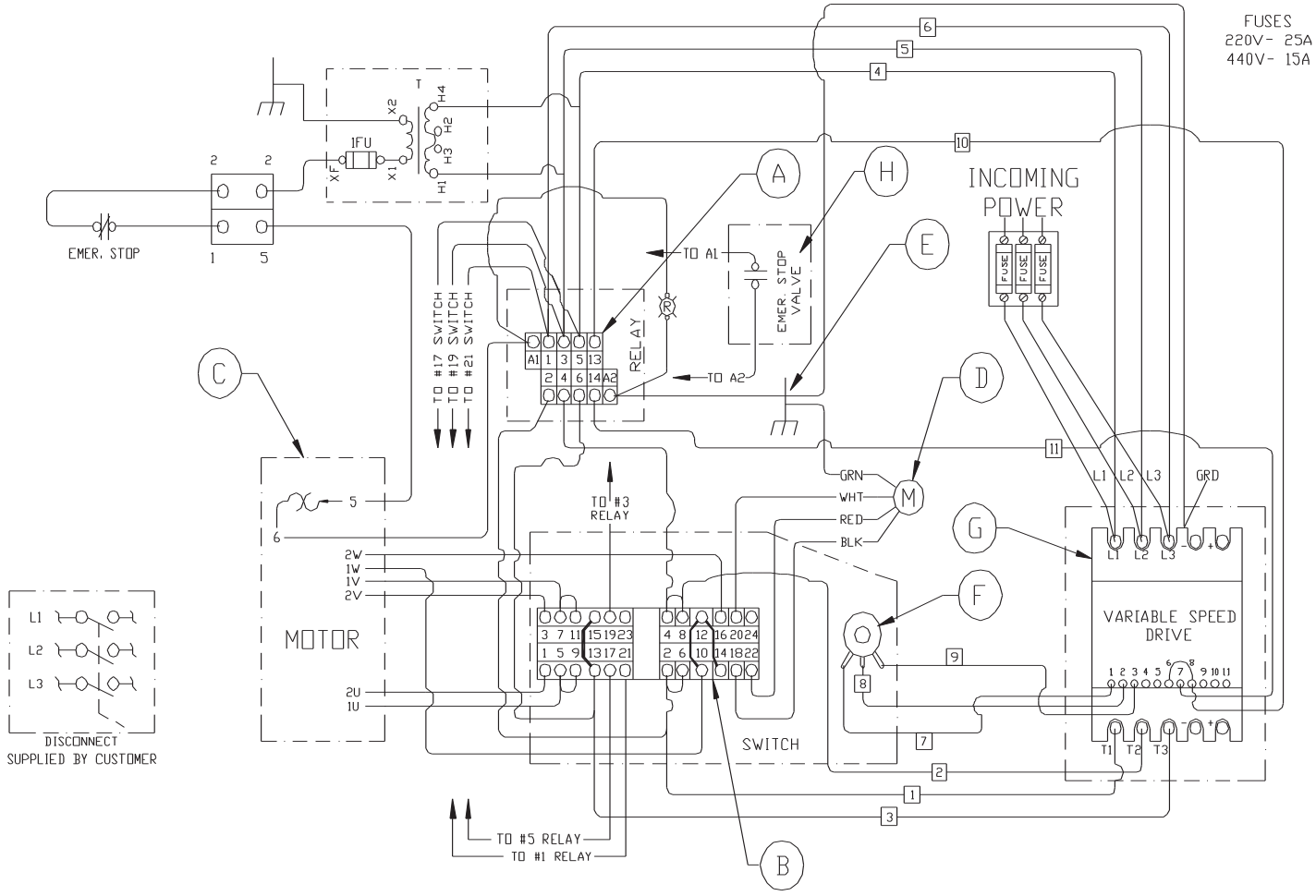
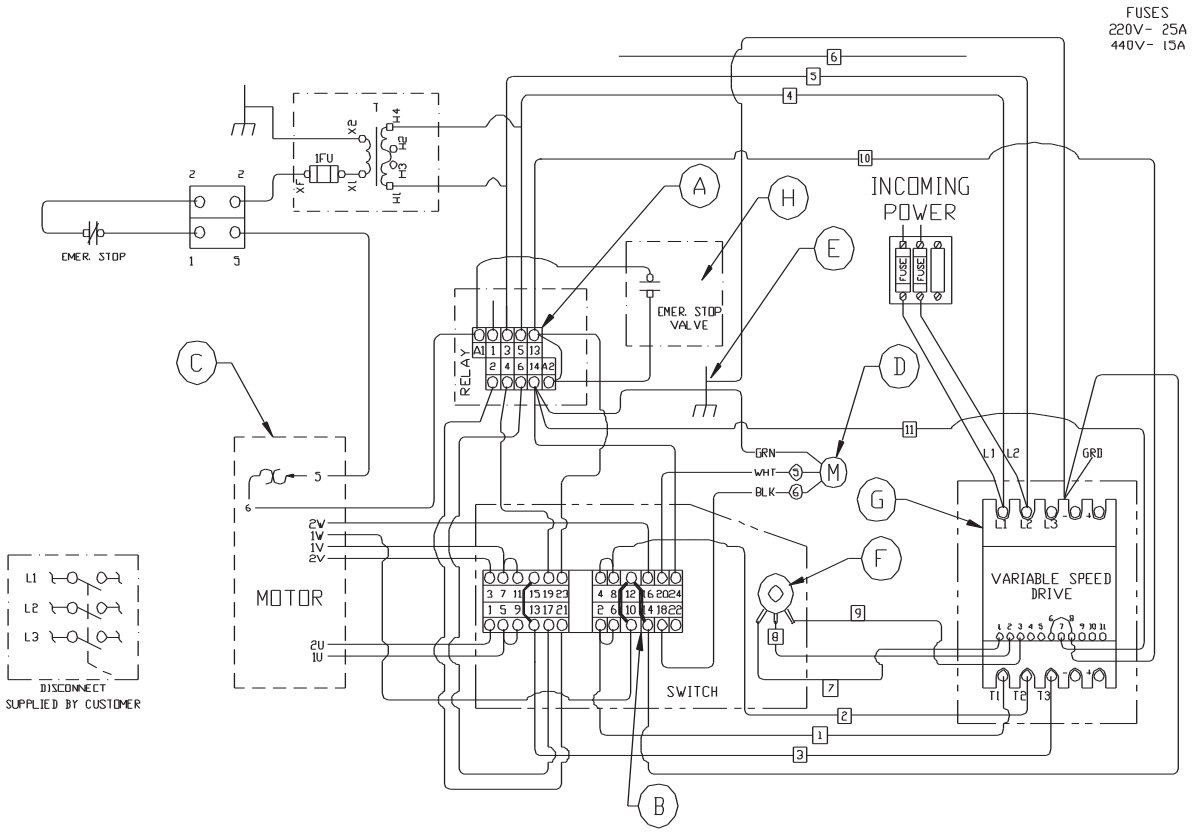

FUSES
220V- 25A
440V- 15A
INCOMING
POWER
FUSE
FUSE
FUSE
EMER. STOP
1FU
T
X2
H4
H2
H3
H1
X1
XF
2
2
1
5
TO #17 SWITCH
TO #19 SWITCH
TO #21 SWITCH
RELAY
TO A1
TO A2
EMER. STOP VALVE
A
H
E
C
D
TO #3 RELAY
GRN
WHT
RED
BLK
M
G
F
L1 L2 L3 GRD
VARIABLE SPEED DRIVE
MOTOR
2W
1W
1V
2V
2U
1U
SWITCH
TO #5 RELAY
TO #1 RELAY
B
L1
L2
L3
DISCONNECT
SUPPLIED BY CUSTOMER
T1 T2 T3

FIGURE 57



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 MOTOR TO #20 SWITCH
CONNECT #6 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 58

*CHANGES FROM 3-PHASE TO 1-PHASE W/VARIABLE SPEED **W/3 HP MOTOR***
MANUAL SAWS & PK, NO PD

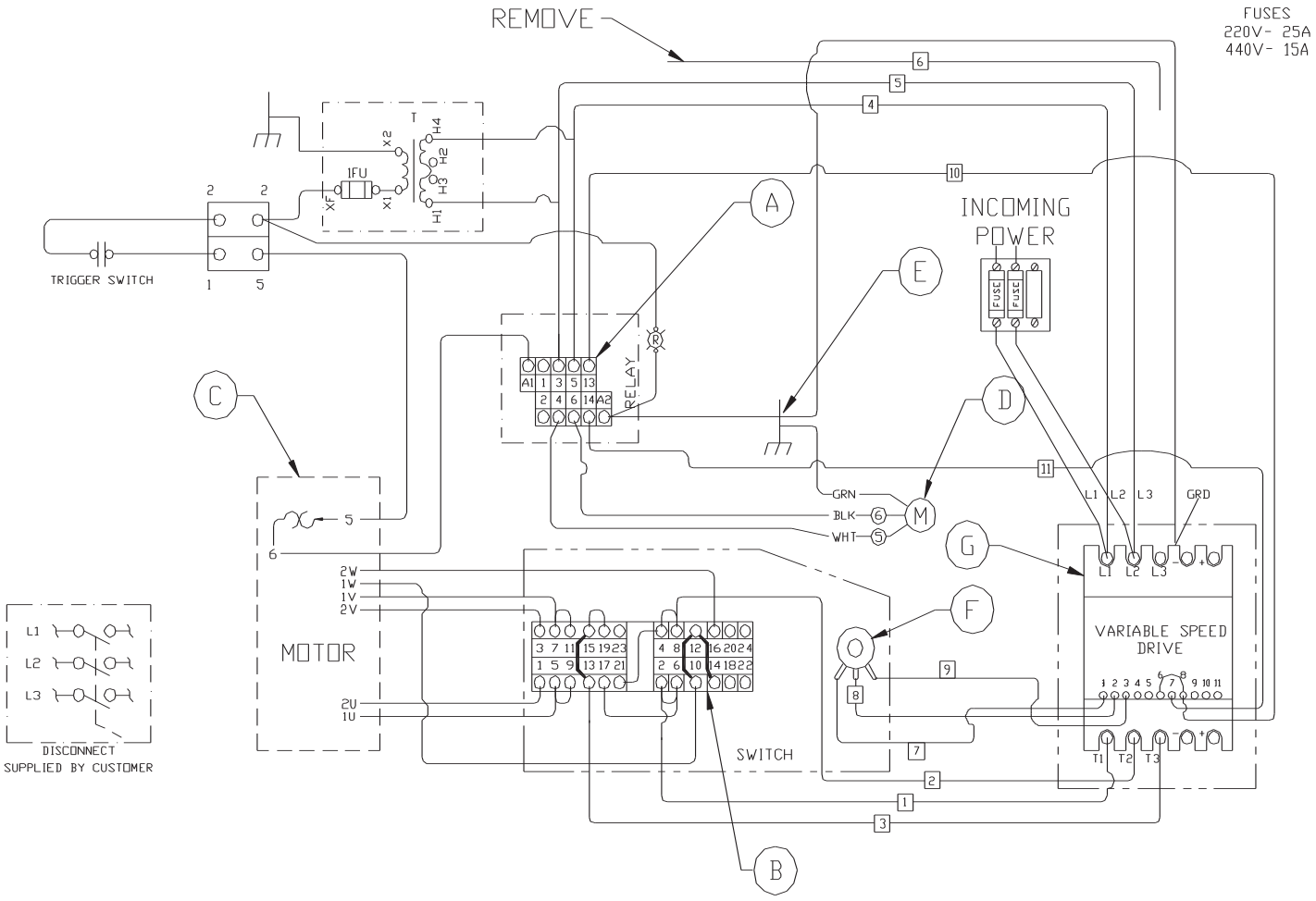


FIGURE 59

PKPD W/EMERGENCY STOP
(SERIAL #'S B6425 TO B8000)

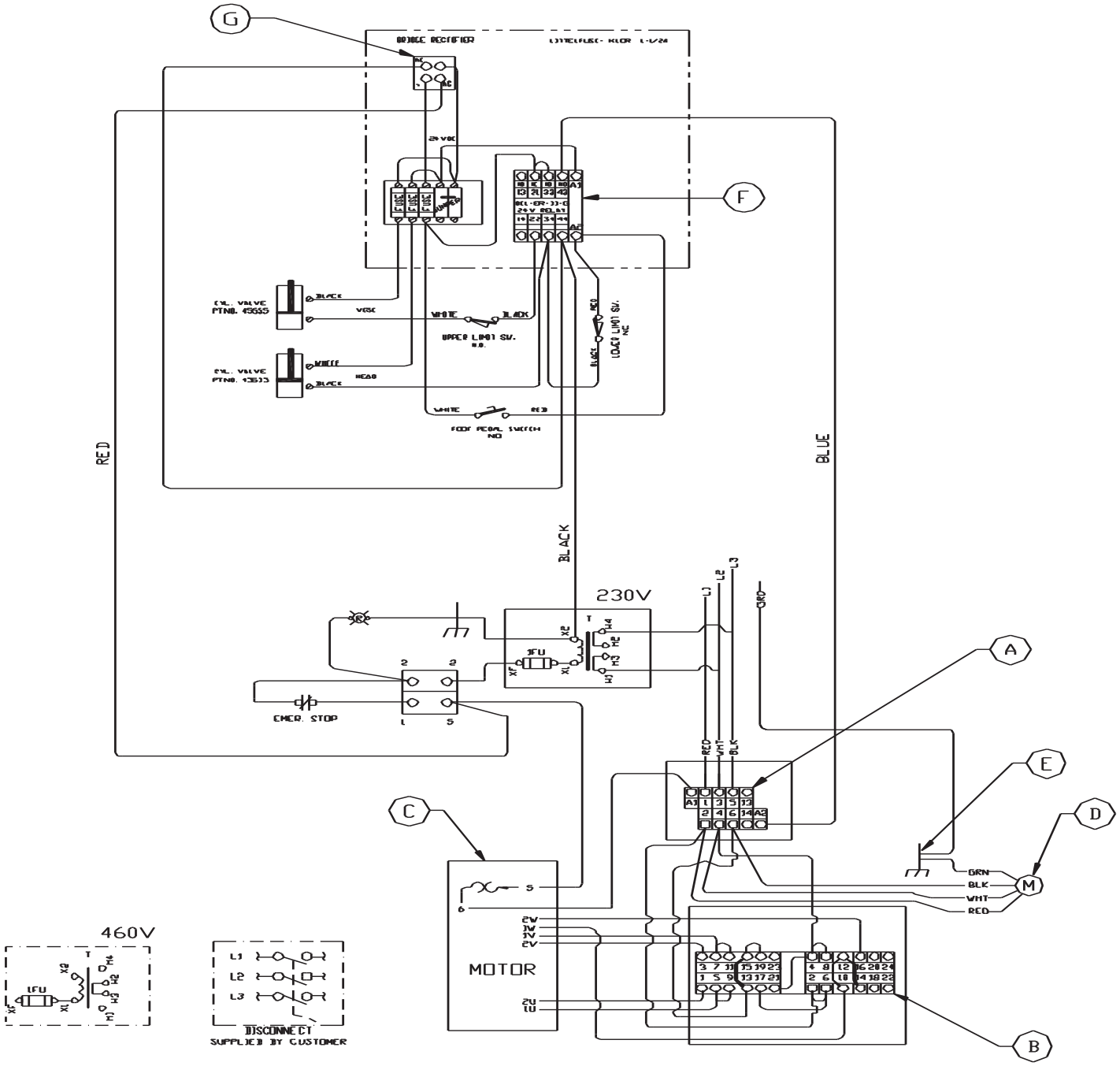


FIGURE 60

I PH POWER DOWN
(SERIAL #'S B6425 TO B8000)

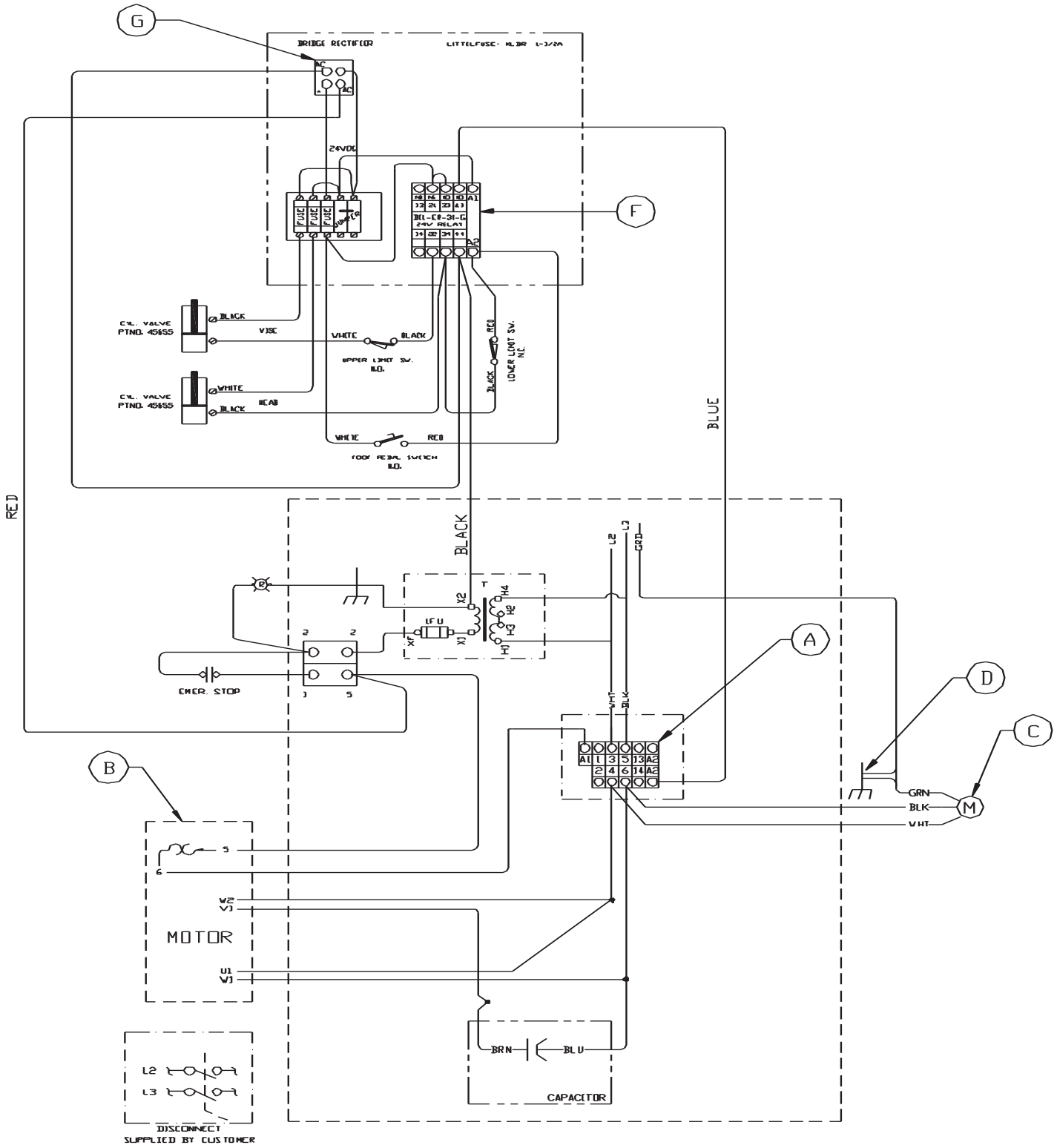


FIGURE 61