

**You have downloaded a manual for our
Model SHEARMASTER 610.**





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**MODEL
SHEARMASTER
610
24" PLATE SHEAR**

SERIAL # 2094A & UP

APRIL 2023

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1.0 INTRODUCTION

The Scotchman 610 Shear is a versatile, shearing machine engineered for trouble free operation. The design of the machine combines simplicity of operation with smooth, full stroke control. The ability of the operator to control the machine's direction of movement at any point in the stroke, (stop, jog or reverse), gives the Scotchman Shear a tremendous advantage over mechanical shears. There is no chance of the Scotchman being "accidentally tripped". The Hydraulic system operates at a maximum pressure of 3,300 PSI (228 BAR) and is protected from overload by a relief valve.

2.0 SAFETY PRECAUTIONS

- 1. The operators of this machine must be qualified and well trained in the operation of the machine. The operators must be aware of the capacities of the machine and the proper use of the hold down devices and guards provided with the machine.**
- 2. All of the guards, adjustable restricters and awareness barriers must be installed on the machine and kept in good working order. Promptly replace worn or damaged parts with authorized parts.**
- 3. Never place any part of your body into or under any of the machine's moving parts.**
- 4. Wear the appropriate personal protective equipment. Safety glasses are required at all times, whether operating, setting up or observing this machine in operation. Since heavy pieces of metal with sharp edges can be processed on this machine, the operator should also wear steel-toed shoes and tight fitting leather gloves.**
- 5. Strictly comply with all warning labels and decals on the machine. Never remove any of the labels. Replace worn or damaged labels promptly.**
- 6. Always disconnect and lock out the power when performing maintenance work or setting up any tooling on the machine. Follow the procedures outlined in the operator's manual for setting up, changing or aligning any tooling on this machine.**
- 7. Never operate this machine with dull or damaged tooling. Replace worn blades promptly.**
- 8. Practice good housekeeping. Keep the area around the machine clear and well lit. Do not obstruct the operator's position by placing anything around the machine that would impede the operator's access to the machine.**
- 9. Never modify this machine in any way without the written permission of the manufacturer.**
- 10. Never leave this machine running unattended.**

11. **Never operate any of the work stations from a sitting or kneeling position.**
12. **Set up a program of routine inspections and maintenance for this machine. Make all repairs and adjustments in accordance with the manufacturer's instructions.**
13. **A safety tape or CD was mailed to you or shipped with the machine. If you did not receive it, please contact the factory or your local dealer immediately and one will be sent to you at no charge. If this machine was purchased used, please contact the factory for a safety tape.**

2.1 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.

3.0 WARNING LABELS

ITEM	QTY	PART #	DESCRIPTION
A	1	019119	208V STICKER
	1	019120	230V 1PH DECAL
	1	019121	230V STICKER
	1	019122	460V DECAL
	1	019124	575V STICKER
B	1	019127	US FLAG DECAL
C	1	010117	27" SCOTCHMAN DECAL
D	1	003100	LARGE SAFETY GLASSES
E	1	019100	U.S. DATA PLATE
F	1	017575	DECAL SHEARMaster 610
G	2	014325	WARNING HIGH PRESS HOSE
H	9	019105	DECAL "GREASE POINT"
I	1	019103	DECAL "LUBRICATE"

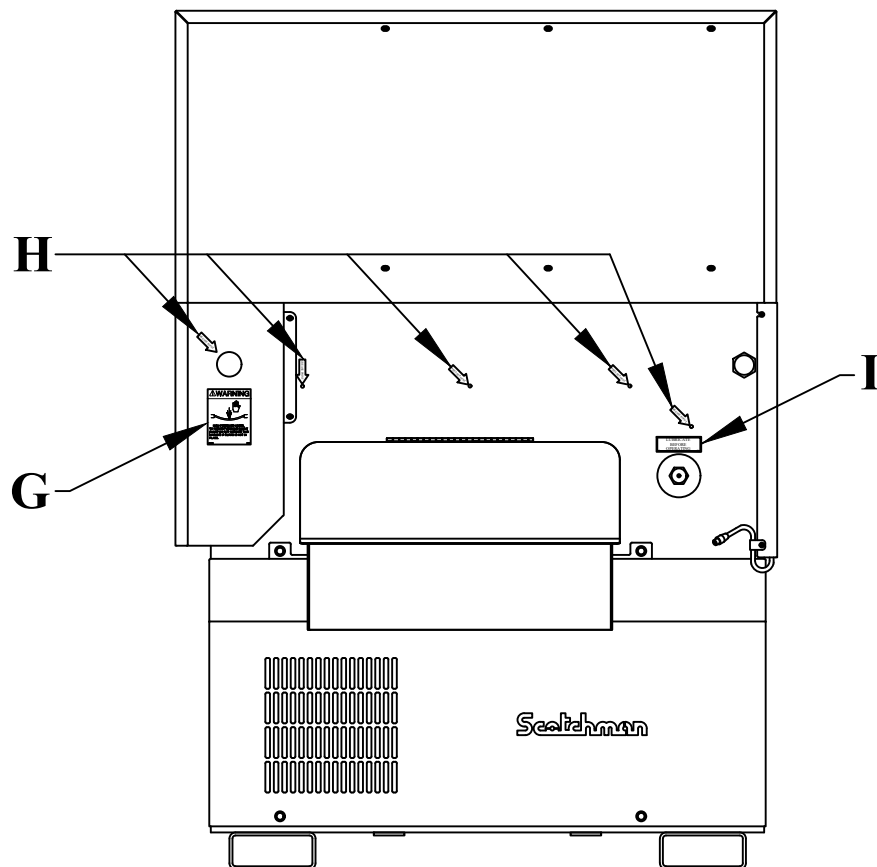
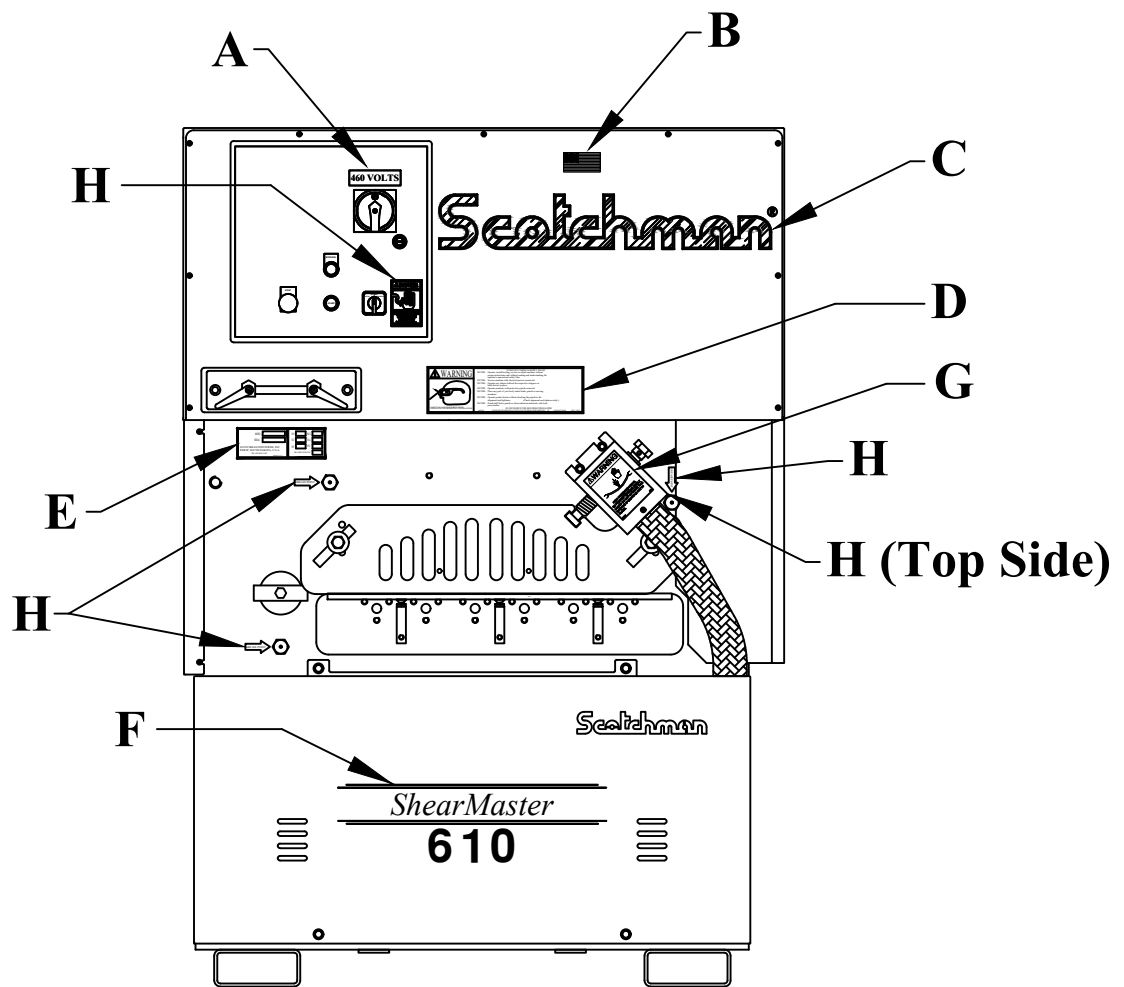


FIGURE 1

4.0 INSTALLATION AND SET-UP

⊠ **CAUTION:** THIS SECTION DISCUSSES INSTALLATION AND SET-UP PROCEDURES.
PLEASE READ THOROUGHLY BEFORE OPERATING THIS MACHINE.

4.1 PHYSICAL DIMENSIONS

ITEM	DESCRIPTION	INCHES	CM
A	Floor To Bottom Of Base	2-3/4	7.0
B	Floor To Bar Shear	32	81.3
C	Height	70	178
D	Width	33.5	85
E	Length	49	125
F	Weight	3,065 lbs.	1,390 KG.

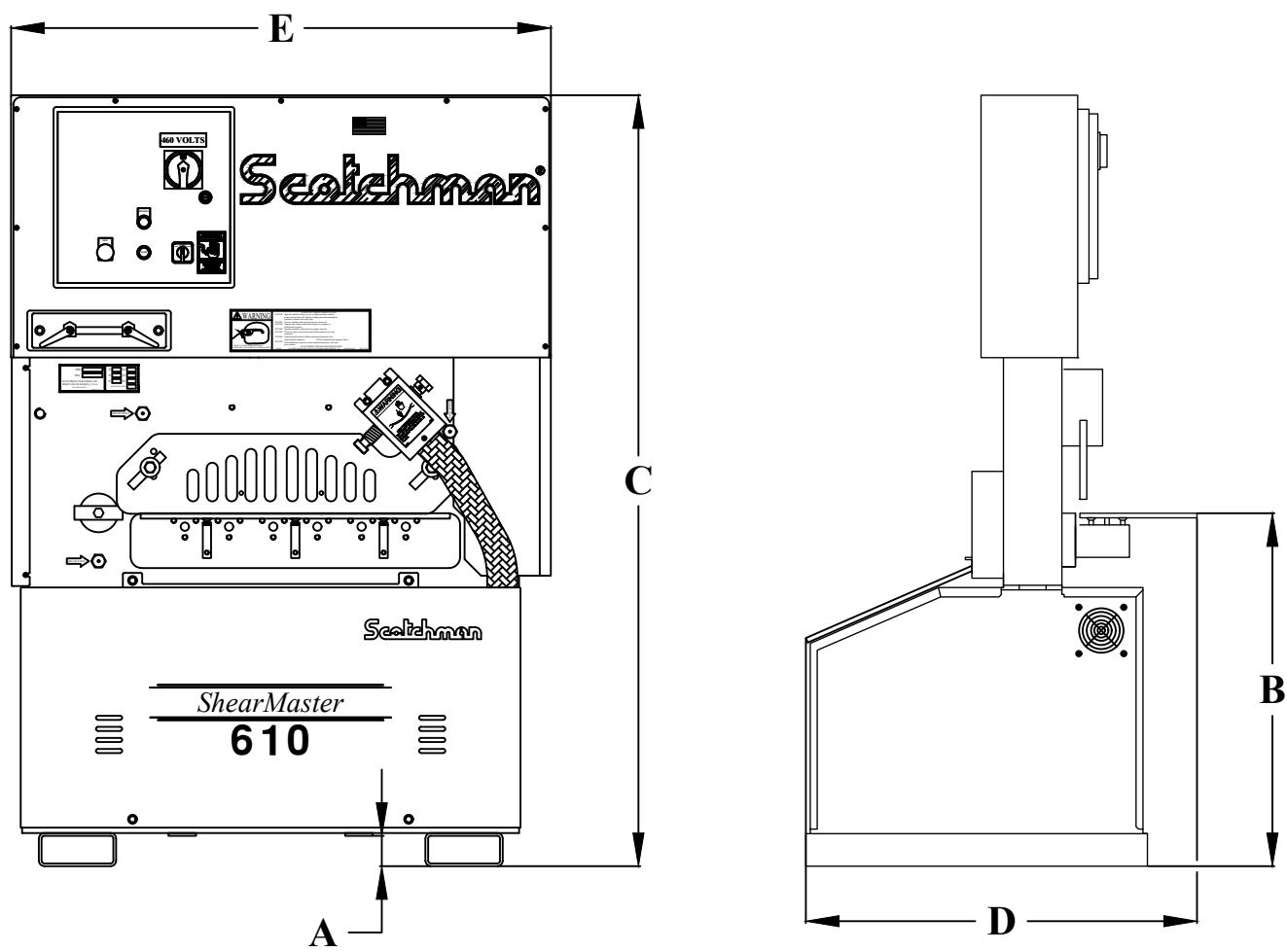


FIGURE 2

4.2 MACHINE MOVING PROCEDURES

CAUTION: BE SURE THAT ANY LIFTING DEVICE HAS ADEQUATE CAPACITY BEFORE ATTEMPTING TO MOVE THIS MACHINE. THIS MODEL WEIGHS 3,065 LBS (1,390 KG). IT IS DESIGNED TO BE MOVED BY A FORKLIFT OR AN OVERHEAD CRANE. THERE ARE FORKLIFT SLOTS DESIGNED INTO THE BASE OF THE MACHINE FOR THIS PURPOSE.

SEE FIGURE 3 BELOW.

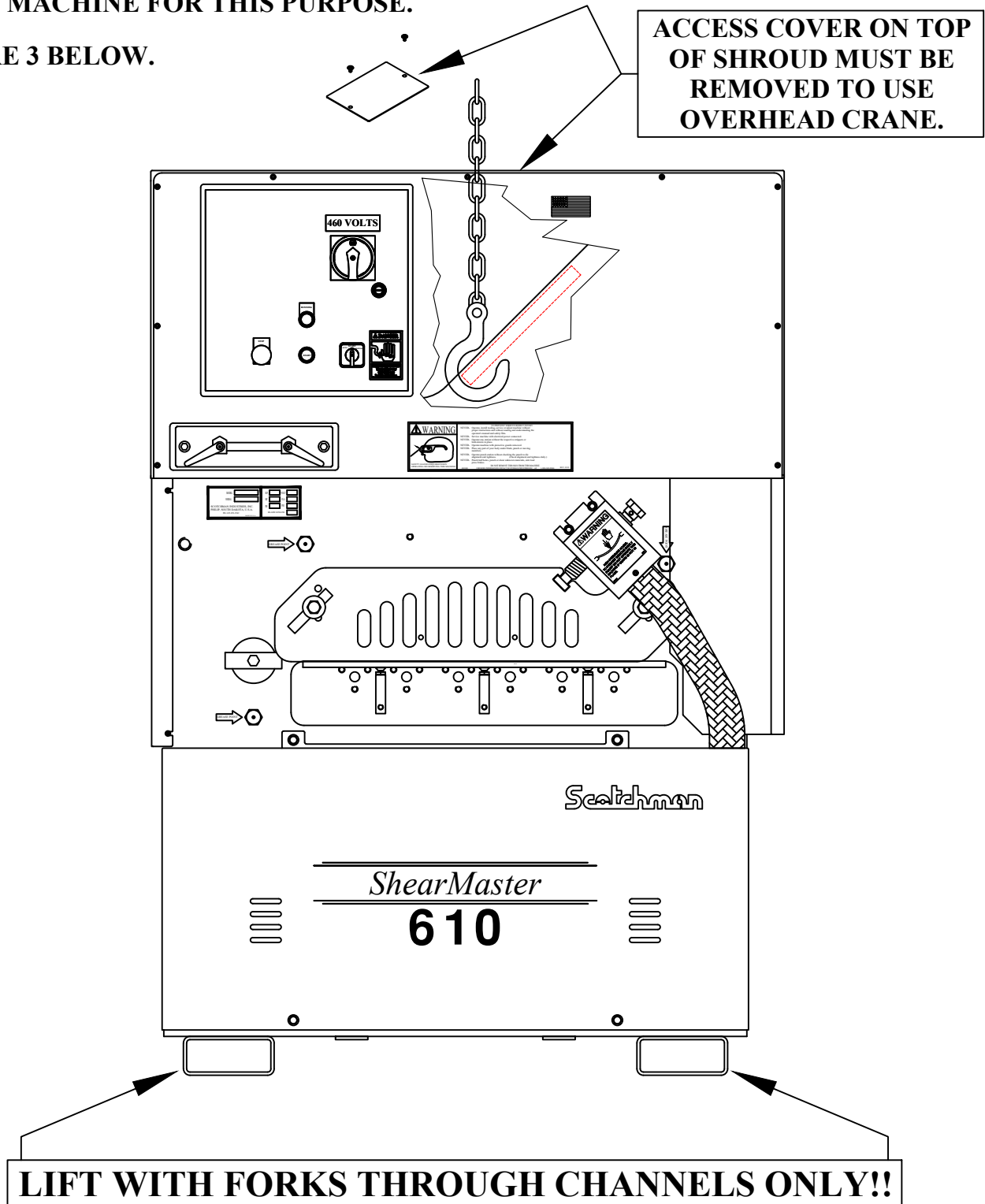


FIGURE 3

4.3 PHYSICAL INSPECTION

Any damage to the machine during shipment should be reported to the delivery carrier immediately. A damage report must be made so that a claim can be placed. The carrier is responsible for shipping damage, but it is the customer's responsibility to immediately report damages, external or internal.

After the machine has been located, remove the side shrouds and inspect the interior of the machine for possible shipping damages.

CHECK SPECIFICALLY THE FOLLOWING ITEMS:

- 1. The stroke control handles.**
- 2. The jog switch.**
- 3. The selector switch.**
- 4. The emergency stop buttons.**
- 5. Hydraulic hoses and fittings.**
- 6. A general inspection of machine shrouds, guards and awareness barriers.**
- 7. Check the re-pack box for all accessory items ordered with the machine.**

The reservoir is full of oil. The recommended oil is a lightweight, non-foaming, anti-wear hydraulic oil such as Mobil DTE 25 or equivalent. The reservoir capacity is twenty-four U.S. gallons (91 liters).

The fluid level should be approximately 2 inches (50mm) below the top of the reservoir.

⊠ CAUTION: DO NOT OVER FILL!!

4.4 ELECTRICAL REQUIREMENTS

⊠ **CAUTION:** TO PREVENT DAMAGE TO THE MOTOR AND DANGER TO THE OPERATOR, ALL ELECTRICAL CONNECTIONS SHOULD BE MADE BY A LICENSED ELECTRICIAN.

All machines are wired for three phase electrical power unless otherwise specified by customer.

The supply voltage should be (+ or -) 10% of the motor voltage rating, to insure satisfactory machine performance. Check the motor data tag for full load current requirements.

The electrical diagram for the machine is inside the cover of the control box.

THE DIAGRAM IS ALSO SHOWN IN FIGURE 4 & 4A.

For electrical supply lines ten feet (3 m) or shorter, we recommend at least 12 and preferably 10 gauge wire. For longer supply lines, use at least 10 gauge and preferably, 8 gauge.

We do not recommend supply lines longer than twenty five feet (7.5 m).

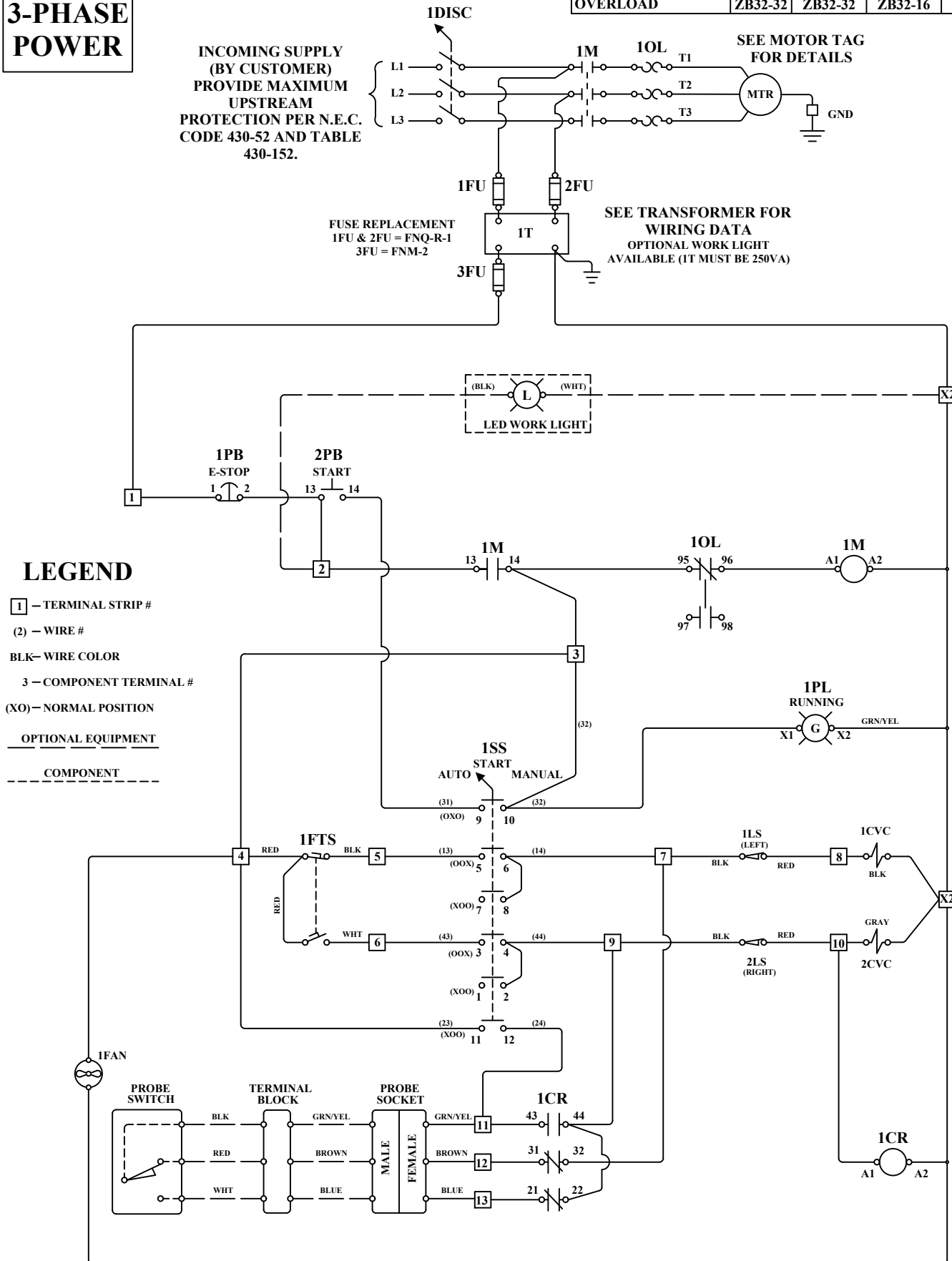
POWER REQUIREMENTS

MOTOR FRAME: 3PH=182T - 1PH=184T

<u>MOTOR VOLTAGE</u>	<u>FULL LOAD CURRENT</u>
(VAC)	(AMPS)
208	31
230	29.6
460	14.8
575	12
230 (single phase)	40
Motor power rating:	10hp Speed 1,725 RPM
KVA power rating:	7.9 KVA Frequency 60 HZ
Starting Current:	210% Full Load

3-PHASE POWER

PN 017515 RATING TABLE					
LINE VOLTAGE (3PH)	208	230	380	460	575
MAX. HP	10	10	10	10	10
MOTOR FLA	27.6	25	15.8	12.5	9.6
OVERLOAD	ZB32-32	ZB32-32	ZB32-16	ZB32-16	ZB32-16

**FIGURE 4**

SINGLE PHASE POWER

PN 017523 RATING TABLE	
LINE VOLTAGE (1PH)	230
MAX. HP	10
MOTOR FLA	40
OVERLOAD	ZB65-57

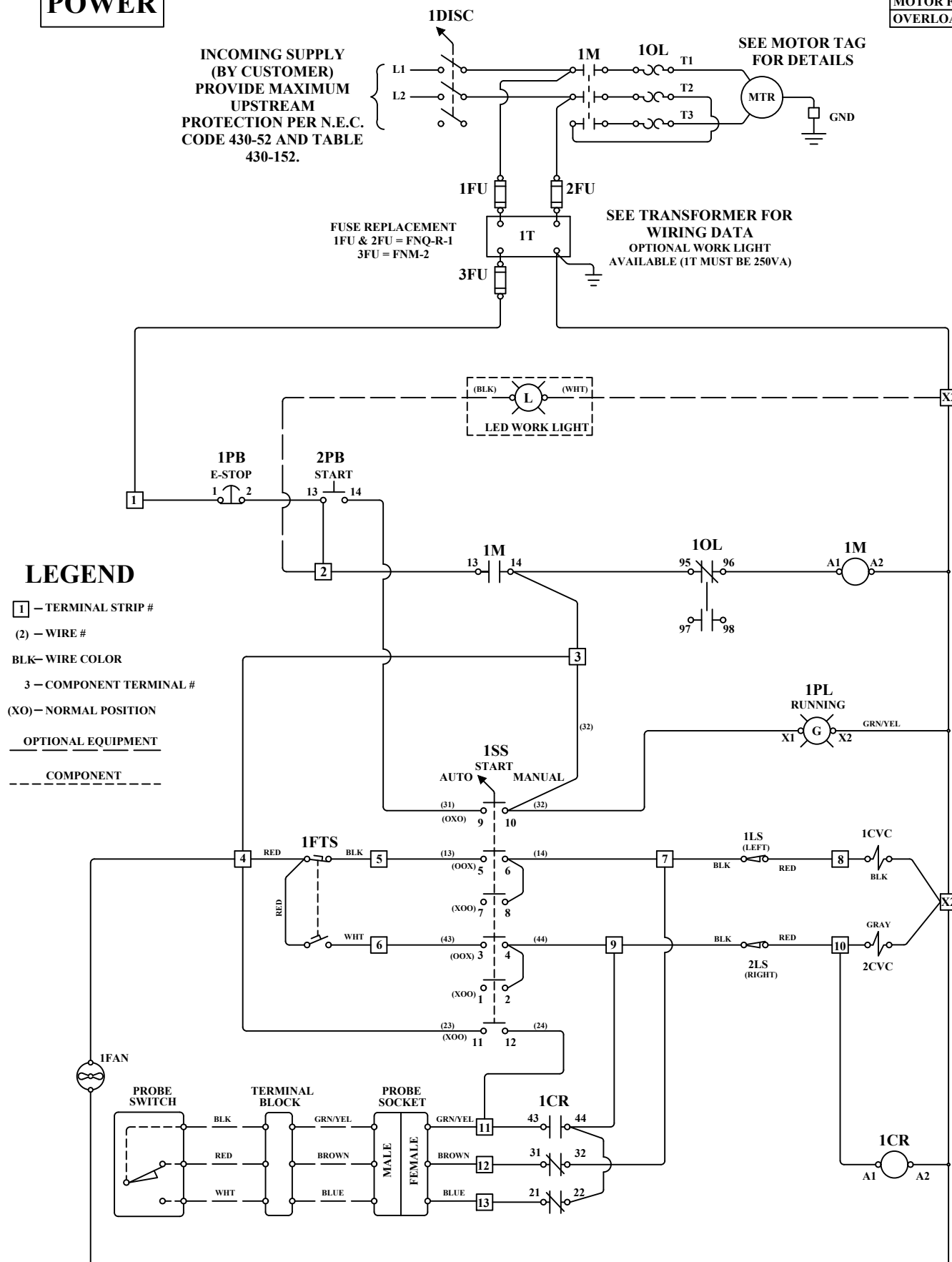


FIGURE 4A

4.5 MACHINE START-UP

NOTE: BEFORE STARTING THIS MACHINE, TAKE TIME TO THOROUGHLY REVIEW THE SAFETY CD AND THE OPERATOR'S MANUAL.

This machine is equipped with a lock-out, disconnect switch as standard equipment. We strongly urge you to follow the OSHA directive CFR-1910.147 (effective 09-01-90) regarding lock-out, tag-out procedures.

BEFORE POWERING THE MACHINE, be sure that all packing materials and tools have been removed from the machine and that all work stations are clear.

TO POWER THE MACHINE:

1. Place the disconnect switch (A) in the ON position and the selector switch (B) in the START position.
2. Power the machine by pushing the green START button.

Once the machine has been powered, it will not move until either RUN or AUTO is selected. If the machine does not move when the foot pedal is depressed, the motor rotation is not correct. The electrician will have to switch two of the line wires to change the direction of rotation. Any time that the power to the machine has been turned off, the selector switch must be placed in the START position to restart the machine.

4.6 MACHINE STROKE INSPECTION & ADJUSTMENT

The stroke setting is important for the proper operation of the machine. If this setting has changed, the machine may over-travel and cause the cylinder to "bottom out". This continued condition will eventually cause the starter overload to open. It can also cause the hydraulic oil to overheat and damage hydraulic system components. A check of the machine's stroke setting is made at the pivot end of the plate shear. However, the stroke is set at the factory and should rarely need adjustment.

SEE FIGURE 5 ON THE FOLLOWING PAGE.

1. Set the stroke control handles (C) out to their farthest position.
2. Place the disconnect switch (A) in the ON position and the selector switch (B) in the START position and push the green (D) start button .
3. Turn the run-auto switch (B) to the RUN position and allow the machine to return.
4. Turn the machine's power off.
5. Check to see if the metering boss has contacted the left limit switch. This can be seen by looking thru the slot in the mounting plate. (See Stroke Control Detail at top of page)
6. If it has not, loosen the two mounting plate bolts (E) and move the mounting plate to the right (mounting plate holes are slotted) until contact is made.
7. Tighten the screws and re-check the dimensions. Repeat, if needed.

STROKE CONTROL DETAIL

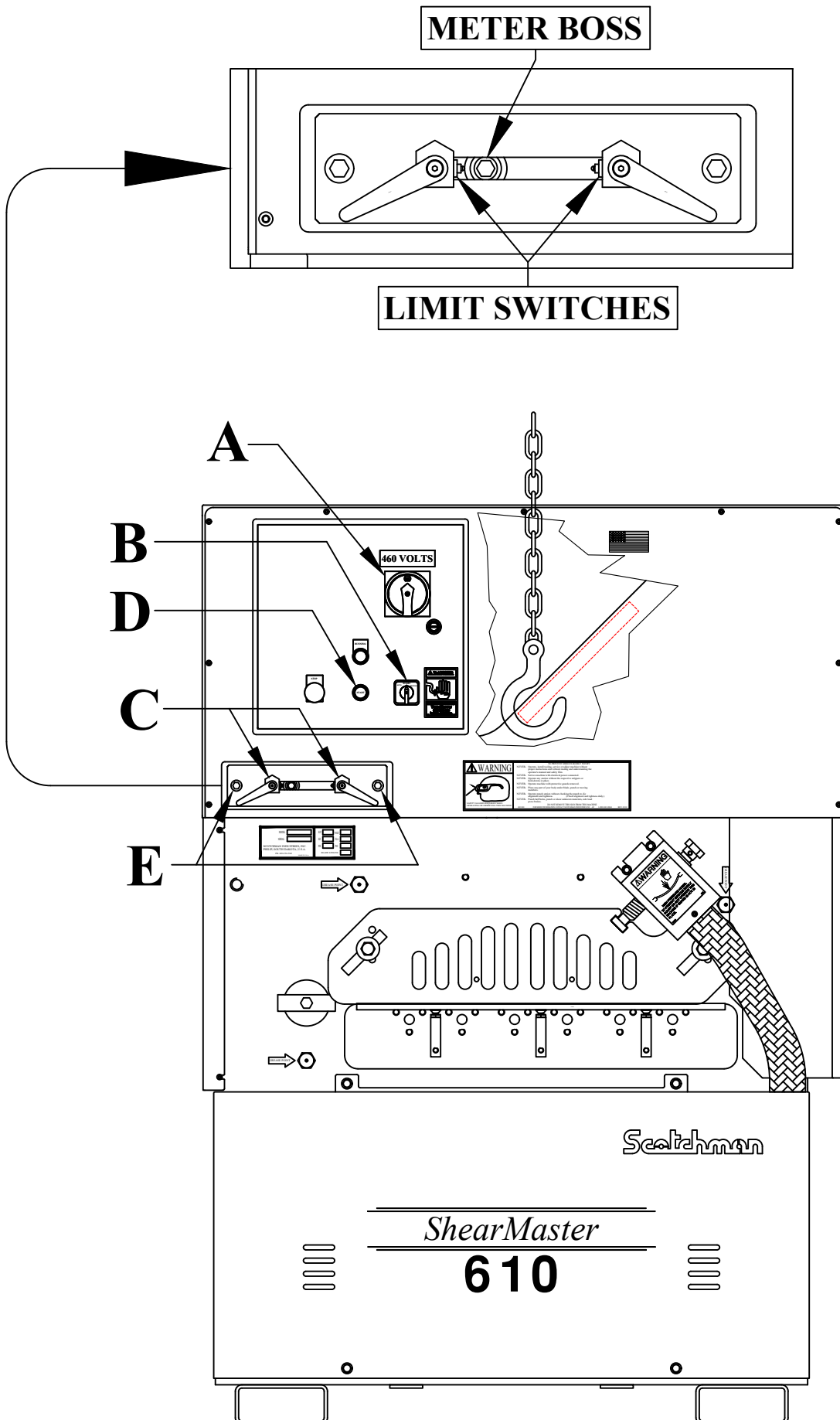


FIGURE 5

5.0 MAINTENANCE

The Scotchman Shear is an exceptionally rugged machine designed for long life with a minimum amount of maintenance. A regular program of servicing will extend the life of the machine and prevent costly down time.

5.1 LUBRICATION

➡ **IMPORTANT:** Before operating the SHEARMaster 610, apply oil to the bar shear blades.

Re-oil the blades every 10 to 15 cuts.

The oil will allow the machine to shear easier and increase tool life considerably.

We recommend cutting oil or motor oil swabbed on with a brush or applied with a squirt can or a spray applicator.

Grease the main pins daily.

SEE FIGURE 6 ON THE FOLLOWING PAGE.

Grease all other fittings twice per week.

Mobil Grease XHP 222 Special is recommended.

Once a month, check the oil level in the reservoir. It should be approximately 2 inches (50mm) below the top of the reservoir.

The recommended hydraulic oil is a lightweight, non-foaming, hydraulic oil such as Mobil DTE 25 or equivalent. The reservoir capacity is 24 U.S. gallons (91 liters).

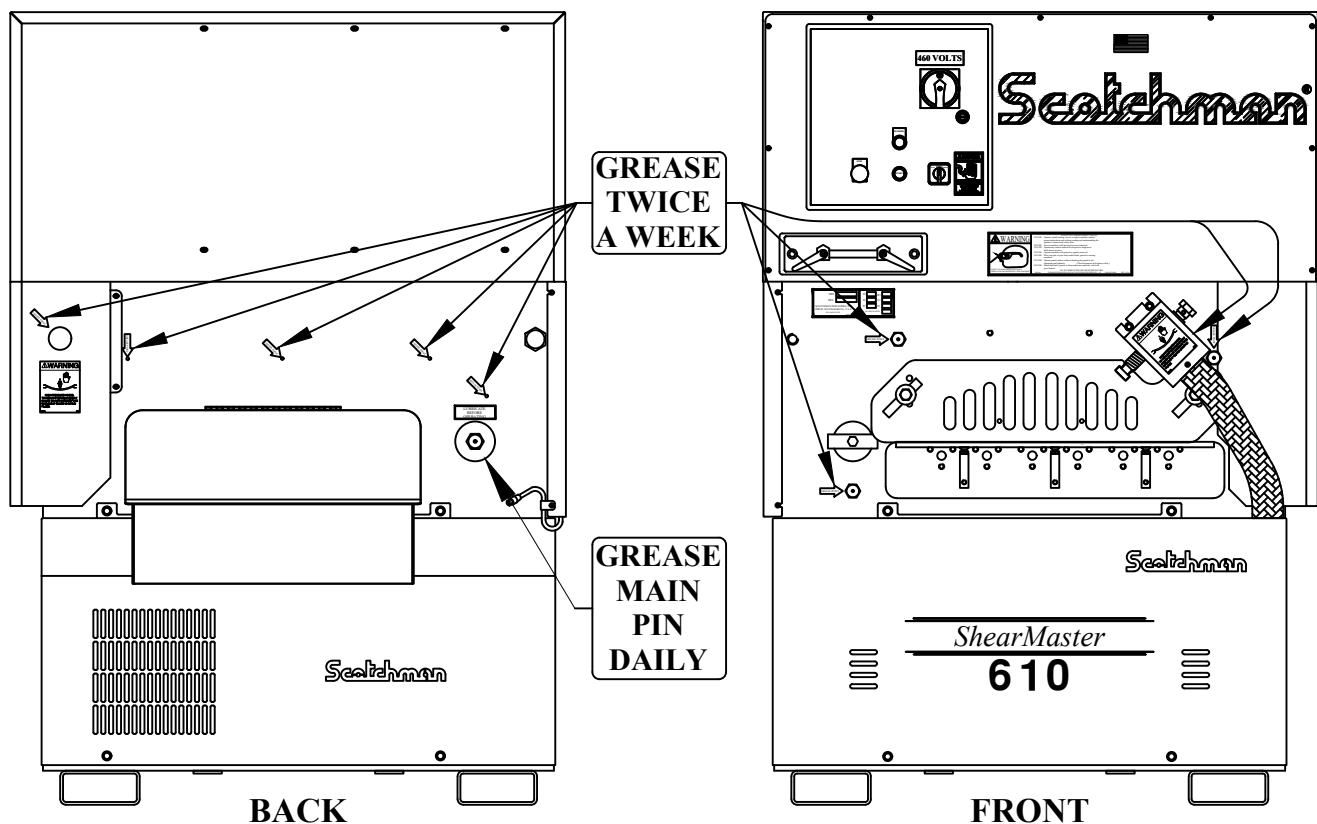


FIGURE 6

5.2 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 items that should be included in a scheduled maintenance program.

Since the 610 Shear can be used for a wide variety of applications, every user must design and implement a scheduled maintenance program that fits their needs.

1. EVERY 500 HOURS OR SIX MONTHS:

- B. Check the condition of all cutting blades on the machine.
- C. Check the condition of the bushings in the shear beam. This can be done visually by watching the beam for vertical movement while the machine is in operation. If vertical movement is noted, block or support the beam with a lifting device and remove the main pin and check the clearance. If the clearance exceeds twelve thousandths (.012) of an inch (.3mm), replace the bushing.

2. EVERY 1,500 HOURS OR 1 YEAR:

- A. Change the hydraulic fluid in the reservoir and replace the filter. For recommended fluids: SEE SECTION 5.1.

6.0 MACHINE OPERATION

6.1 BAR SHEAR OPERATION

SEE SECT. 6.3 on page 22 for instructions on how to use the Bar Shear Guide. Note that only one guide is provided. The drawing shows the different ways it can be used with the pins (top) or handles (bottom).

When using the bar shear on your Scotchman 610 ShearMaster, always use the hydraulic hold-down device. Never put any part of your body between the hold-down and the material to be sheared. A maximum clearance of 1/8" (3mm) between the hydraulic hold-down and the material is recommended. SEE FIG. 8 on page 20 & FIG. 9 on page 21

The maximum tonnage available on the bar shear is to the left, or closest to the pivot point. For applications that do not require the maximum tonnage, move the material to the right, for minimal distortion of the drop off piece. Do not attempt to shear pieces that are too short for the hold-down to grip as this will cause the material to "kick-up" and probably result in damage to the machine. SEE FIG. 9A on page 21

It is important that the hold-down is correctly adjusted (1/8" above the material) to avoid possible damage to the machine and injury to the operator. The hold-down is adjustable to cover all thicknesses of material within the rated capacity of the machine. A shear support table (See Sect. 6.3) with adjustable guide is fitted to allow the accurate feeding of material at any angle. The maximum material that can be sheared is 1 x 12 inch (25 x 305mm), 3/4 x 20" (19 x 508mm) mild steel.

The standard shear blades fitted to the machine comprise of two rectangular fixed blades. The shear blades are symmetrical and each can be rotated to expose four (4) cutting edges. After a period of time and subsequent dulling of the blades, the blades can be removed, rotated, and reinstalled back on the machine. Blade Clearance must be checked whenever blades are changed. SEE FIG. 7 on page 19, and FIG. 11 on page 23 for more information on setting the shear blade clearance.

Also, we have a curved Sabre Blade (P/N 422071) that can replace the standard upper shear blade. The Sabre Blade makes it easier for the machine to shear and will increase it's shearing capacity slightly. Keep in mind that the Sabre Blade has only two cutting edges (the curved side) and it will damage the machine if installed upside-down!!

After rotating or grinding worn blades, they must be refitted and adjusted to clearances listed in this section. But first, always make sure the shear arm is adjusted properly. The upper "moving blade" is not adjustable and the lower "fixed blade" must be adjusted to suit. The securing and adjusting screws for the lower "fixed blade" are more accessible when the shear table has been removed. An even clearance between the "moving" and "fixed blade" along their entire length is important and attention should be given to ensuring that the "fixed blade" is in a vertical plane.

REFER TO SECTION 6.4 FOR SHEAR BLADE ADJUSTMENT.

REFER TO SECTION 6.5 FOR SHEAR ARM ADJUSTMENT.

THE BASIC METHOD OF OPERATING THE BAR SHEAR CONSISTS OF THE FOLLOWING STEPS:

1. Place the material to be sheared between the shear blades.
2. Adjust the hydraulic holddown device down until it is 1/8 of an inch above the material to be sheared.

REFER TO SECTION 6.2 FOR HYDRAULIC HOLDDOWN ADJUSTMENT.

3. Depress the foot pedal and the machine will clamp and shear the material. Release the foot pedal and the shear arm will return to its up position and machine will unclamp the material.

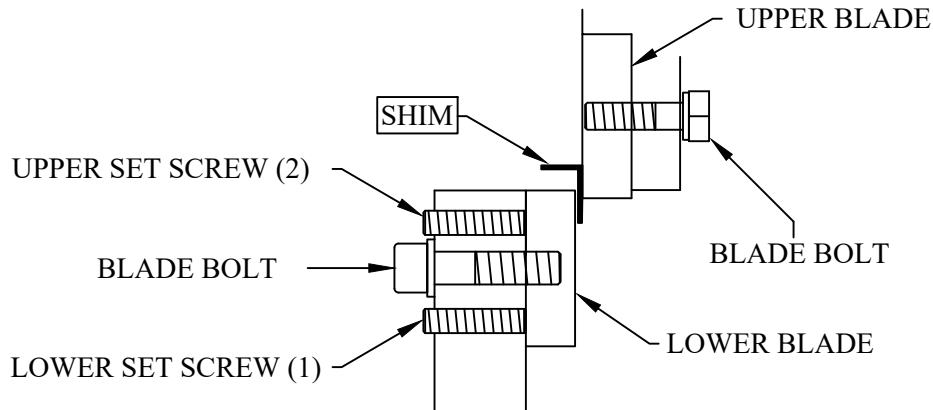
NOTE: LUBRICATING OIL SHOULD BE APPLIED TO THE BLADES EVERY 10 TO 15 CUTS.

IN ADDITION TO THESE BASIC STEPS OF OPERATION, THE OPERATOR SHOULD ALSO BE FAMILIAR WITH THE FOLLOWING:

MAINTAIN PROPER BLADE CLEARANCE.

The quality of the cut is an immediate indication of the condition of the shear blades or the amount of clearance between the blades. For adjustment procedures, REFER TO SECTIONS 6.4.

RECOMMENDED CLEARANCES FOR FLAT BAR SHEAR BLADES:



MATERIAL THICKNESS	BLADE CLEARANCE
1.0	.030-.040
7/8	.025-.035
3/4	.020-.030
5/8	.018-.026
1/2	.012-.022
3/8	.010-.017
1/4	.007-.012
1/8	.005-.008

Based on Mild Steel of 65,000 psi tensile strength.

FIGURE 7

Blade clearance is factory set to **0.020" (0.51 mm).**

DO NOT SET CLEARANCE LESS THAN 0.005" (0.13 mm).

For material thickness or blade clearances outside of this chart, consult dealer or factory.

REFER TO SECTION 6.4 FOR SHEAR BLADE ADJUSTMENT.

REFER TO SECTION 6.5 FOR SHEAR ARM ADJUSTMENT.

6.2 HYDRAULIC HOLDDOWN ADJUSTMENT

NOTE: HYDRAULIC HOLDDOWN MUST BE ADJUSTED FOR THE RELEVANT MATERIAL.

- Adjust the hydraulic holddown so the material can easily pass under the holddown but yet still allow hydraulic holddown to clamp the material firmly to the shear table.
- Hydraulic holddown height is adjusted using the hex shaped knob (see below) above the hydraulic holddown cylinder.
- A clearance of 1/8" (3mm) maximum is recommended.
- ➔ **NEVER** allow the ends of the material to pass beyond the hold-down when shearing. This may cause serious damage to the machine (See FIG. 9A). Always feed material from the hold-down side.
- Keep the blade area clean. Do not allow buildup of mill-scale.
- Stay within the rated capacity of the machine.
- The quality of the cut is usually an indication of the condition of the blades or their setting.

SETTING THE HYDRUALIC HOLDDOWN

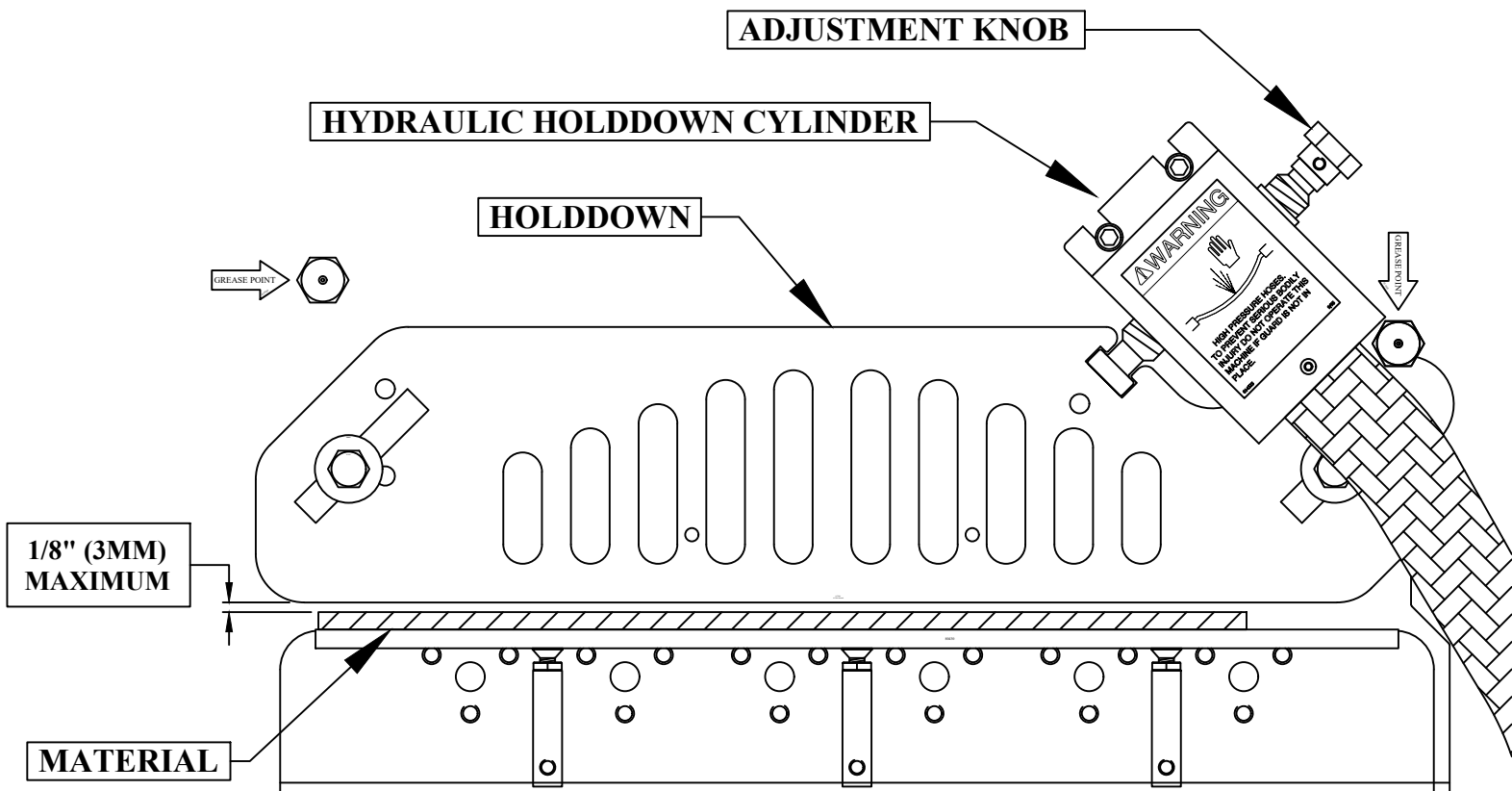
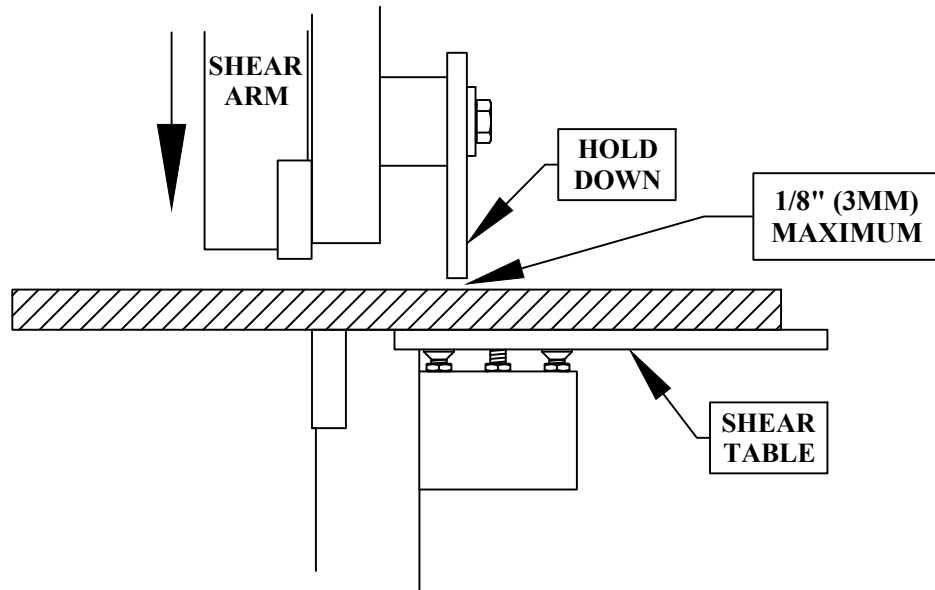


FIGURE 8

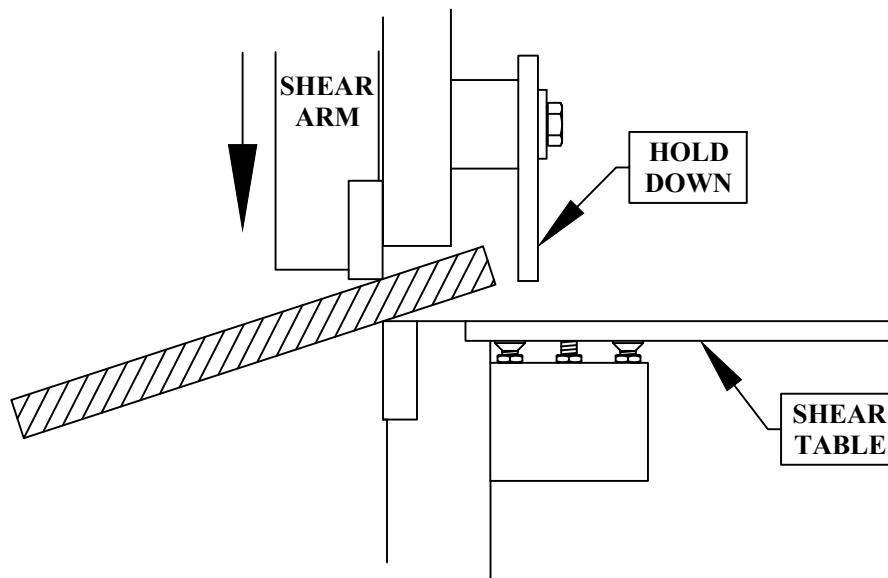
CORRECT USE OF HYD. HOLDDOWN



CORRECTLY SET HYD. HOLDDOWN

FIGURE 9

NOT CORRECT!!



**NEVER FEED THE MATERIAL BEYOND THE
HOLDDOWN AND OPERATE THE MACHINE.
THIS MAY CAUSE INJURY TO THE OPERATOR
AND SERIOUS MACHINE DAMAGE.**

FIGURE 9A

6.3 BAR SHEAR GUIDE INSTRUCTIONS

NOTE: ONLY ONE GUIDE IS PROVIDED. THE DRAWING SHOWS THE DIFFERENT WAYS IT CAN BE USED WITH THE PINS (TOP) OR HANDLES (BOTTOM).

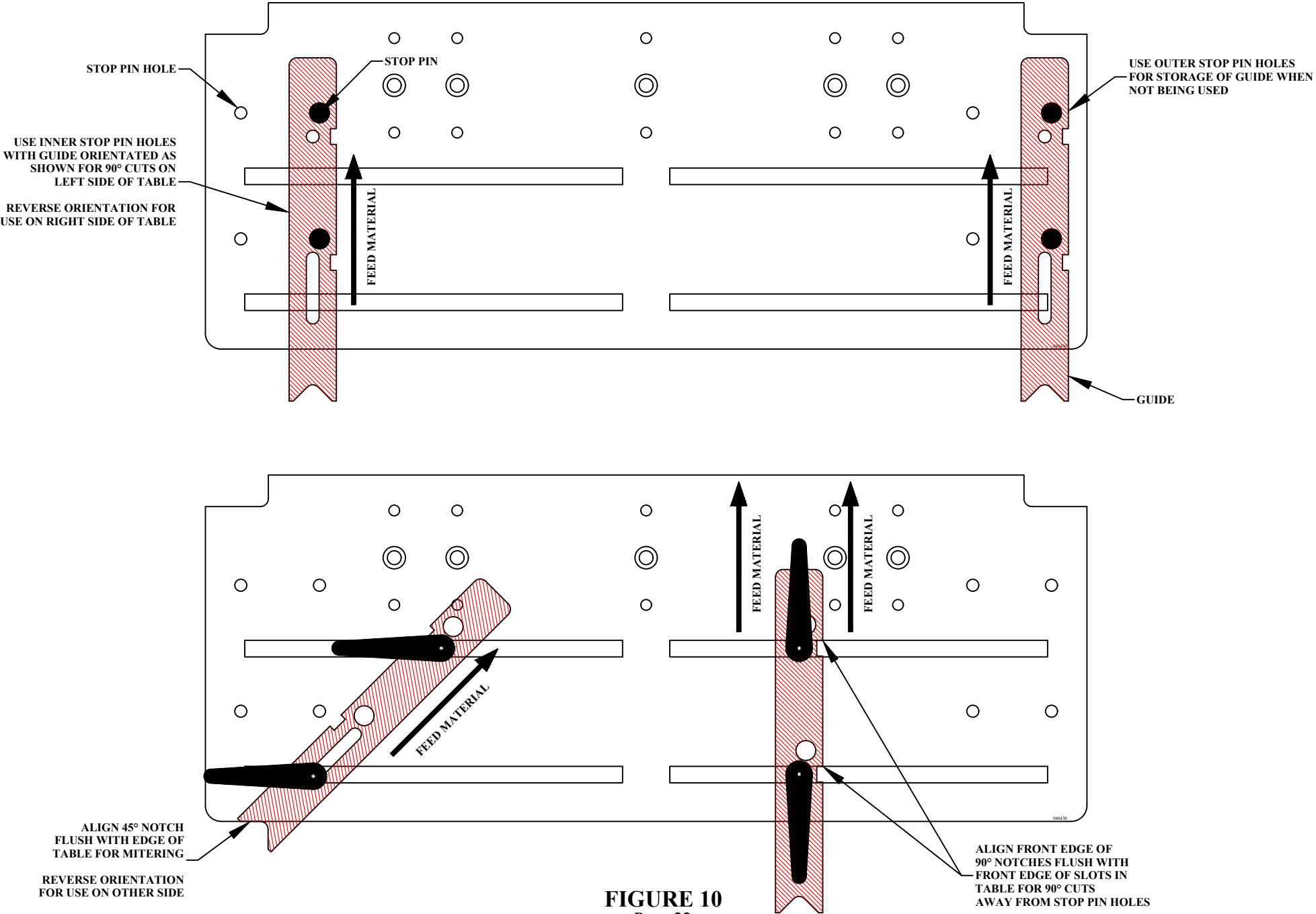


FIGURE 10
Page 22

6.4 SHEAR BLADE ADJUSTMENT

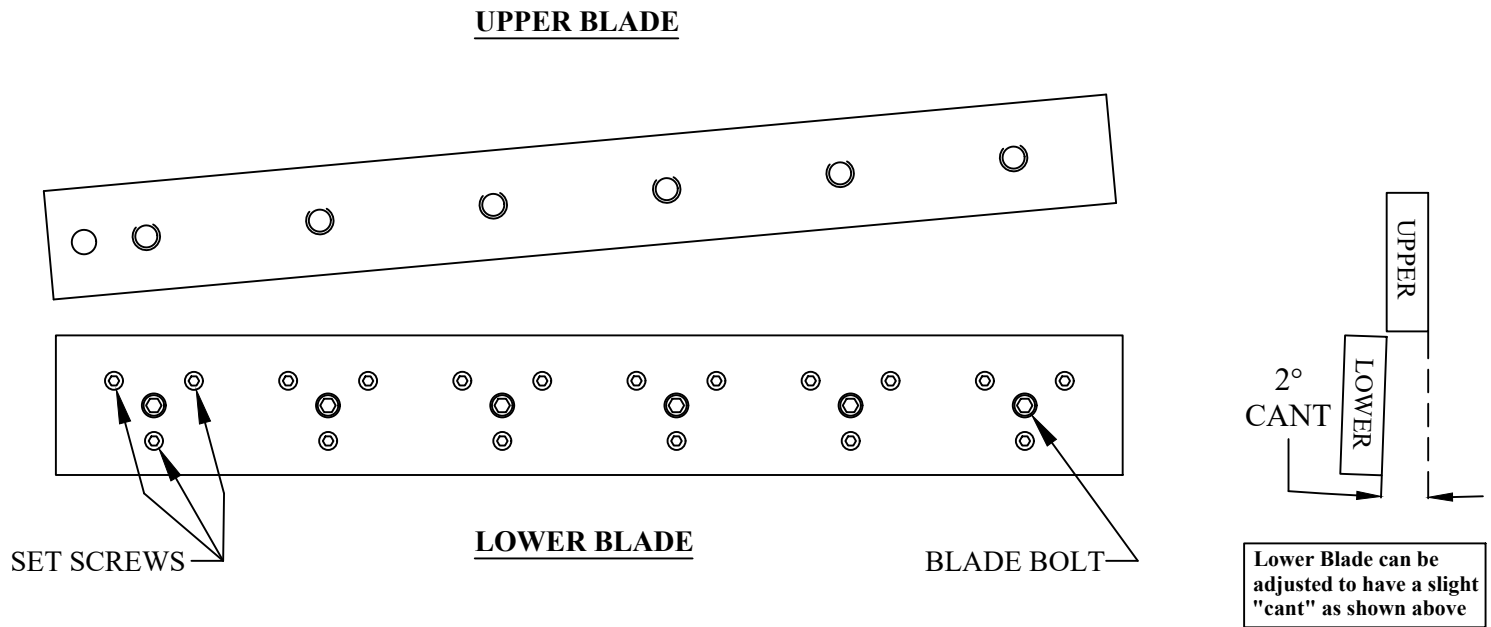


FIGURE 11

- To set the blades, lower the arm so that the upper blade passes the lower blade. (If fitting new or re-ground blades, ensure that the lower blade is fully adjusted away from the upper blade before lowering the arm.)
 - Switch off the machine.
 - Remove the shear hold-down and the shear support table.
 - Adjust the lower blade to the upper blade to achieve desired clearance. SEE FIGURE 11 ABOVE. Ensure that the lower blade is adjusted with a slight cant, or tilt of a few thousandths of an inch, as shown above right. The top cutting edge of the lower blade is closer to the top blade than the bottom edge of the lower blade.
 - Lock the upper blade in position by tightening the upper blade securing screws.
 - Check and readjust the blade setting, if necessary.
 - Re-fit the hold-down and the shear support table to the machine.
- The standard shear blades fitted to the machine comprise of two rectangular fixed blades. The shear blades are symmetrical and each can be rotated to expose four (4) cutting edges.

6.5 SHEAR ARM ADJUSTMENT

For parts identification, SEE FIGURE 12 BELOW.

⊠ **CAUTION:** BEFORE MAKING ANY ADJUSTMENTS, THE BAR SHEAR BLADES MUST BE BACKED AWAY FROM EACH OTHER.

The adjustment of the shear arm is maintained by three adjustment bolts. These three adjustment bolts hold the shear arm against the back frame of the machine. To adjust the arm, loosen the lock nuts on the three adjusting bolts. With a wrench, tighten the adjustment bolts down tight and then back them off 1/4 of a turn. Power the machine and cycle it up and down several times. With a wrench, draw the adjustment bolts up just hand-tight and lock the lock nuts. Then the shear blade clearance set. Make sure to grease these three adjustment bolts as SECTION 5.1 LUBRICATION describes.

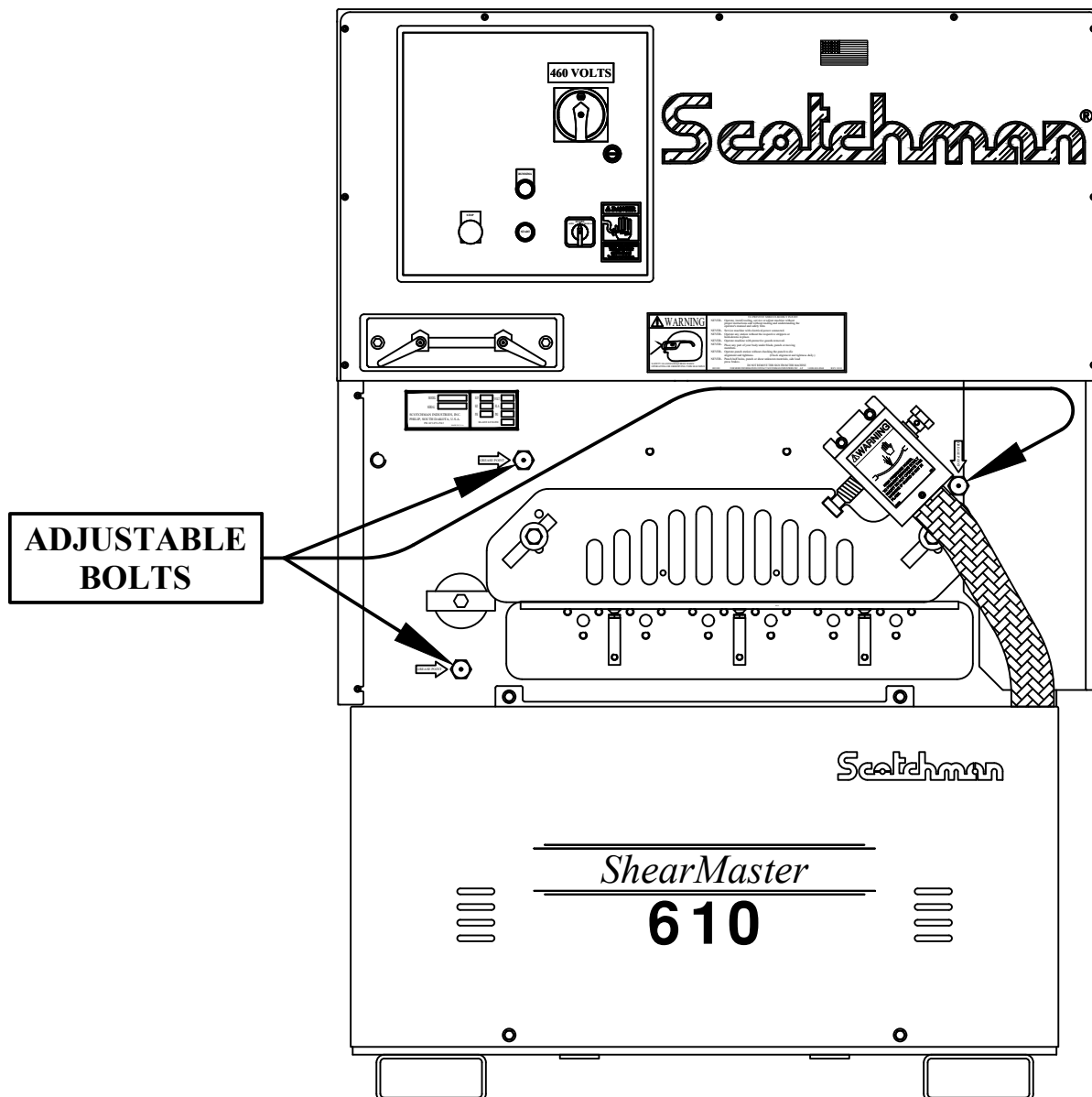


FIGURE 12

7.0 ELECTRIC BACK GAUGE

7.1 SETTING THE LENGTH STOP TO THE MACHINE

The length stop has to be set to suit the model of the machine. The following steps outline the simple procedure of installing the scale:

1. Secure the length stop assembly to the back of the machine so that the flat machined area on the large tube (B) is facing up.
2. Adjust the length stop assembly (D) so that the stop (A) is in line with the shear blades.
3. Set the slide block (C) so that the stop (A) is a measured distance from the lower (stationary) blade of 10 inches with the (A) stop depressed.
4. Secure the slide block (C) in this position by firmly tightening the handles (E).
5. Mark the position on the tube (B). Make sure that this 10" setting is correct with the stop compressed.
6. Slide the slide block off the tube (B) and align the 10" mark on the scale with the locating mark that you made on the tube (B).
7. Remove backing from scale and apply it to the flat surface on the tube (B).

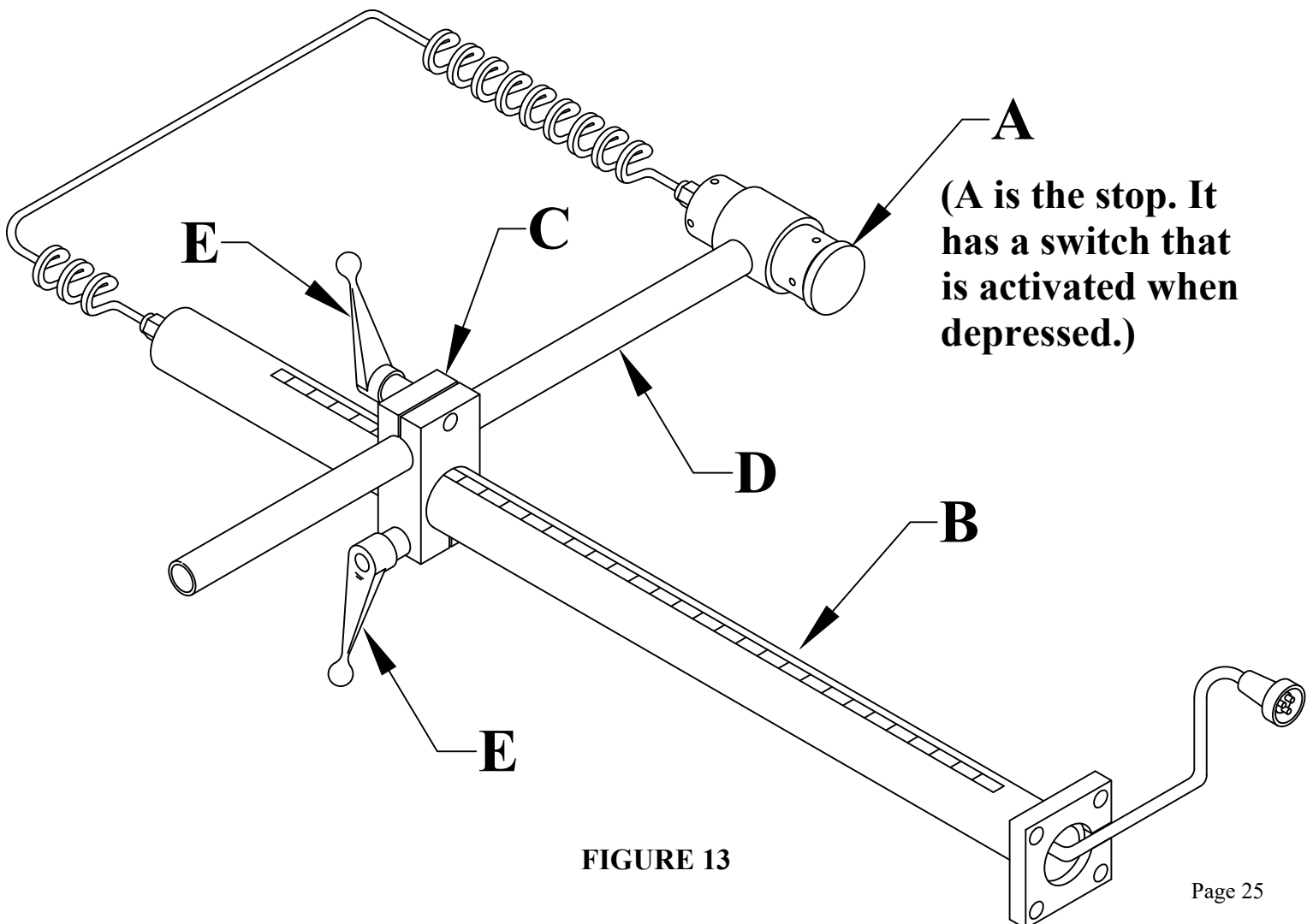


FIGURE 13

The "Touch and Cut" can be positioned anywhere along the length of the shear. It will increase productivity, particularly when cropping large batches. Do not be tempted to get that last length of cut from the bar if it is not correctly positioned under the hold down. This may cause serious damage to the machine. On the length left over, mark the desired length and crop off the off-cut.

7.2 USING TOUCH AND CUT

- **Clamp the sliding block with the pointer indicating the desired cutting length. Adjust and clamp the probe so that it is in line with the position of the feed material. When setting this position, to avoid short cuts of material jamming between the probe and the blade, set the probe off-center to the material, allowing the material to fall away as it is cut.**

SEE FIGURE 14 ON THE FOLLOWING PAGE.

- **Set the hold down for the material being cut.**
- **Power the machine and select PROBE on the selector switch. To speed up production when using the bar shear, set the top limit switch so that the moving blade just clears the material to be cut.**
- **Select PROBE on the selector switch. Selecting probe isolates the foot switch.**
- **Feed the material through the set hold down to the probe and press firmly. This will activate the shear beam to make one complete cycle of cut. When the shear beam returns to its top position, it is possible to repeat the cut. If the material jams, switch the machine to OFF and release the material.**
- **ALWAYS FOLLOW THE SAFETY GUIDELINES IN THIS MANUAL**

▶ **Ensure that the hold down is correctly adjusted and secured for the relevant material.**

⦿ **NEVER ALLOW THE ENDS OF THE MATERIAL TO PASS BEYOND THE HOLDDOWN WHEN SHEARING. THIS MAY CAUSE SERIOUS DAMAGE TO THE MACHINE.
(SEE SECTION 6.2)**

▶ **Always feed material from the holddown side.**

▶ **Keep the blade area clean. Do not allow build-up of mill scale.**

▶ **Stay within the rated capacity of the machine.**

▶ **The quality of the cut is usually an indication of the condition of the blades or their setting.**

**WHERE MATERIAL
SHOULD CONTACT STOP**

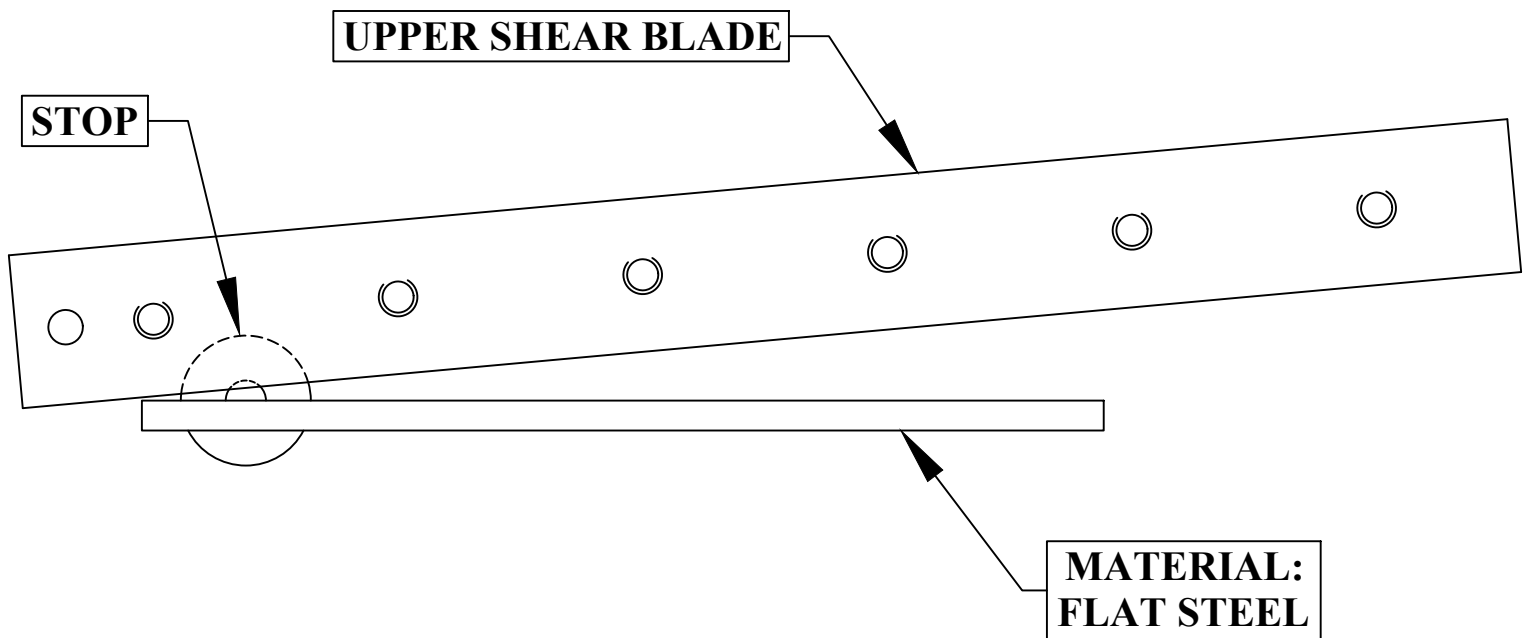


FIGURE 14

8.0 TROUBLE SHOOTING GUIDE

8.1 ELECTRICAL TROUBLE SHOOTING - MOTOR

⊗ CAUTION: ALL ELECTRICAL WORK PERFORMED ON THE 610 SHEAR SHOULD BE PERFORMED BY A QUALIFIED ELECTRICIAN.

A. MOTOR WILL NOT RUN:

- 1. Check selector switch as machine will not start unless the selector switch is in the START position.**
- 2. Check the disconnect switch. Make sure that it is in the ON position.**
- 3. Check the emergency stop buttons. A defective or stuck emergency stop button will not allow the machine to be powered. To check the emergency stop button, place a jumper wire between the terminals on the E-Stop. Turn the machine on. If the machine runs, turn the power off, remove the jumper and repair or replace the emergency stop button.**

➡ DO NOT OPERATE THIS MACHINE WITH THE EMERGENCY STOP BUTTON BY-PASSED!!

- 4. Check to be sure that the plant voltage and phase correspond to the machine voltage and phase.**
- 5. Check the line wiring connections at the starter. For the wiring diagram:
SEE SECTION 4.4 - FIGURE 4 (3 PHASE) OR FIGURE 4A (SINGLE PHASE)**
- 6. Check the line voltage at the starter. If the correct line voltage is present at the starter, either the starter or the motor is defective. Contact your local dealer or the factory.**

B. THE MOTOR RUNS BUT THE MACHINE WILL NOT CYCLE WHEN DEPRESSING THE FOOT PEDAL:

- 1. Check the selector switch. The machine will not move unless the selector switch is in either the RUN or the AUTO position.**
- 2. Check the motor rotation. It should be counterclockwise when viewed from the shaft end of the motor.**
- 3. Check the stroke control adjustment and make sure that only one limit switch is in contact with the metering boss. If both limit switches are in contact with the metering boss, the machine will not move. Loosen the stroke control handles and move the limit switches. Try the machine again.**
- 4. Check the fuses in the control box. SEE SECTION 9.5 ELECTRICAL UNIT. There are two fuses on the primary side and one on the secondary side. Remove the fuses and check them with an Ohm meter.**

5. Check the limit switches. (For procedures, REFER TO SECTION 8.2 ON THE FOLLOWING PAGE.)
6. No power from the transformer: Check the voltage across the transformer's secondary terminals. It should read 110 to 120 volts.
7. The solenoid on the control valve is not functioning. REFER TO SECTION 8.3.
8. The foot pedal switch is not functioning properly. A voltage test may be run on the terminal strip in the control box to determine if the foot switch is working properly.

⚠ **WARNING: THERE IS LINE VOLTAGE PRESENT IN THE CONTROL BOX WHEN THE MACHINE IS POWERED. THESE TESTS SHOULD BE PERFORMED BY A QUALIFIED ELECTRICIAN.**

TO TEST THE FOOT SWITCH:

Power the machine and place the selector switch in the MANUAL position.

Test the voltage between terminal #'s 5 and 6 and ground.

With the pedal up, the voltage should read 110 to 120 volts between 5 and ground.

There should be no voltage reading between 6 and ground.

With the pedal depressed, the voltage should read 110 to 120 volts between 6 and ground.

There should be no voltage reading between 5 and ground.

IF THESE READINGS ARE NOT CORRECT, continue on with the following steps.

- A. Turn off the machine's power and remove the cover on the foot pedal. Check for loose connections.
- B. Make sure that the switches are adjusted properly. (You should hear two distinct "clicks" approximately 1/2 inch (12mm) apart when depressing the pedal.) There is a set screw adjustment on the pedal shaft to adjust the switches.
- C. Check the switches with an Ohm meter.

9. **Damage to the foot pedal cord:** Check the continuity of the wires in the cord with an Ohm meter. Make sure that the power to the machine is off and locked out. The wires must be disconnected from the pedal and the terminal block.
10. The pump to motor coupler is damaged. Loosen the set screws in the pump and motor flanges and slide them apart. Inspect the coupler. If it is damaged, replace it.

8.2 LIMIT SWITCH INSPECTION PROCEDURE

To determine if the limit switches are functioning properly, move the limit switches out to their farthest position. SEE STROKE CONTROL DETAIL IN FIGURE 5 ON PAGE 15.

Place the selector switch in the START position and power the machine.

Place the selector switch in the MANUAL position.

While holding the foot pedal, use a pencil or similar device and depress the limit switch that the metering boss is traveling towards.

If the machine does not stop when the switch is depressed, the limit switch or the control valve is not functioning properly.

If the machine stops when the foot pedal control is released, the problem is in the limit switch.

For instructions if the machine does not stop when the foot control is released, SEE SECTION 8.3.

Check the limit switch plunger to make sure that it is operating freely.

The limit switch can be tested with an Ohm meter.

The limit switch wires must be disconnected from the terminal block.

The switch should read continuity with the plunger out and open with the plunger depressed.

8.3 CONTROL VALVE INSPECTION

THE MACHINE WILL ONLY TRAVEL IN ONE DIRECTION.

THIS COULD BE CAUSED BY:

- 1. Contamination in the hydraulic oil which causes the spool to stick in one position. With the machines power off, the spool of the valve can be manually shifted. To shift the spool manually, on each end of the control valve, there is a pin in the center of the knurled nut that holds the coil on. Using a small punch or similar device, push these pins in by hand; first one, then the other. After manually**

shifting the spool, turn the machine on and try it again. If the machine now operates, the hydraulic oil and filter should be changed.

2. **A defective coil on the control valve:** The coils can be checked using an Ohm meter. The wires to the coils must be disconnected. If the ohm reading shows open, the coil is defective and must be replaced.

8.4 HYDRAULICS

THE MOST COMMON HYDRAULIC PROBLEMS ARE:

1. **LOW LEVEL OF HYDRAULIC OIL IN THE RESERVOIR:** The reservoir holds 24 U.S. Gallons (91 liters). The level should be approximately 2 inches (50mm) below the top of the reservoir.
2. **CONTAMINATION IN THE HYDRAULIC OIL:** The oil and the filter should be changed at least once a year and any time that there is a possibility that contamination has gained access into the system. For recommended hydraulic oil, SEE SECTION 5.1.
3. **LOW PRESSURE CAUSED BY WORN OR DAMAGED PARTS IN THE CYLINDER OR PUMP:**

There is a pressure port for a pressure gauge provided on all machines. The port will be on the manifold or the pressure line between the pump and the valve. A gauge with a minimum capacity of 4,000 PSI (275 BAR) is required. With the machine's power off, install the pressure gauge. Power the machine and place a piece of steel in the shear section and clamp it down with the hold-down device. Attempt to shear the piece, watching the pressure gauge for a reading.

The system pressure of this machine should be 3,300 (228 BAR).

The pressure is adjustable by adjusting the shear relief valve adjustment on the control valve manifold. If the pressure cannot be increased, call your local dealer or the factory.

8.5 SEAL REPLACEMENT - CYLINDER

For parts identification, REFER TO FIGURE 15 & 16 ON THE FOLLOWING PAGES.

- 1. After removing the cylinder from the machine, lay it on its side, with the ports down, and allow the hydraulic fluid to drain.**
- 2. After the fluid drains, clamp the cylinder in a vise or similar holding device.**
- 3. The internal head (12) is held in place by the threaded ring (13) which screws into the barrel assembly (10).**
- 4. To remove the internal head, remove the set screw (14) from the threaded ring. Then place a pin wrench in the pin holes on the threaded ring and rotate it counter clockwise to remove it.**
- 5. After the threaded ring has been removed, anchor the cylinder to a floor anchor or something similar, and hook a come-along to the cylinder clevis and gently pull the internal head (12) rod (11) and piston (9) out of the barrel assembly (10).**
- 6. Remove the internal head from rod. Then remove the round nut (8) from the rod (11) and slide the piston off of the rod. Then remove all seals.**
- 7. Clean all of the parts and inspect the inside of the barrel assembly (10), the piston (9), the rod (11) and the inside of the internal head (12) for scoring or nicks.**
- 8. Install the new seals and lubricate them before re-assembling the parts.**
- 9. Place the piston on the shaft. Use Loctite and torque the round nut on the shaft to 100 ft-lbs. Stake nut to ensure it stays in place.**
- 10. Stand the barrel assembly upright in a vise and carefully place the piston/rod assembly into the barrel assembly.**
- 11. Place internal head back over the rod and into barrel assembly and install the threaded ring. Tighten the threaded ring with the pin wrench. Reinstall the set screw (14).**

025106 - SEAL KIT FOR 025105 CYLINDER

ITEM	QTY	PART #	DESCRIPTION
1	1	025105.1	WEAR RING
2	3	025105.2	BACK-UP RING
3	2	025105.3	O-RING (large)
4	1	025105.4	O-RING (small)
5	1	025105.5	WEAR RING
6	1	025105.6	LOADED U-CUP
7	1	025105.7	ROD WIPER

ITEM'S 1-7 ARE INCLUDED IN SEAL KIT P/N 025106

8	1	025105.8	ROUND NUT
9	1	025105.9	PISTON
10	1	025105.10	BARREL ASSEMBLY
11	1	025105.11	ROD
12	1	025105.12	INTERNAL HEAD
13	1	025105.13	THREAD RING
14	1	025105.14	SET SCREW

Please Note that these
Part Numbers are for
REFERENCE ONLY!!

See next page for for
the Cutaway View to
help with assembly.

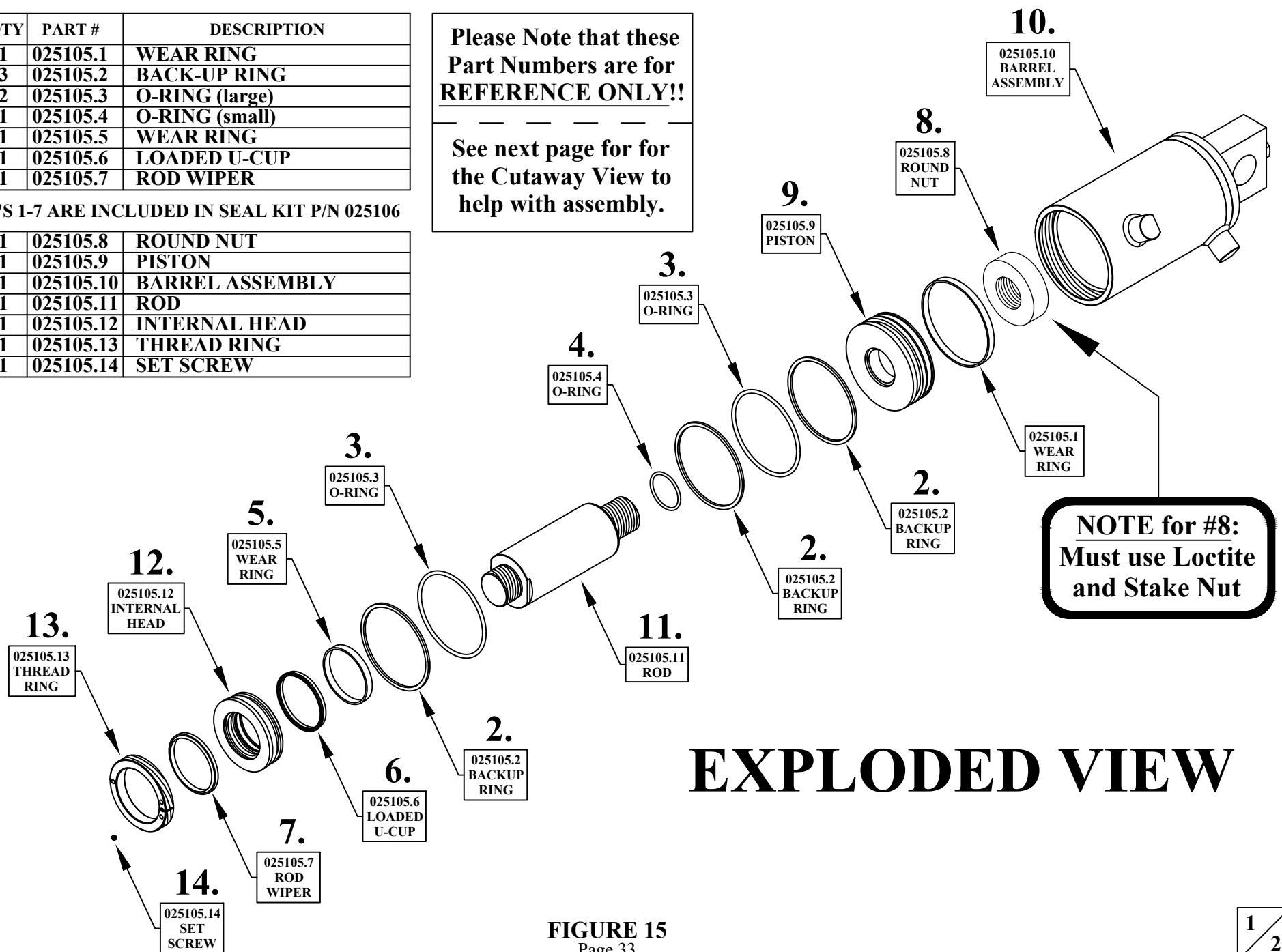


FIGURE 15
Page 33

ITEM	QTY	PART #	DESCRIPTION
1	1	025105.1	WEAR RING
2	3	025105.2	BACK-UP RING
3	2	025105.3	O-RING (large)
4	1	025105.4	O-RING (small)
5	1	025105.5	WEAR RING
6	1	025105.6	LOADED U-CUP
7	1	025105.7	ROD WIPER

ITEM'S 1-7 ARE INCLUDED IN SEAL KIT P/N 025106

8	1	025105.8	ROUND NUT
9	1	025105.9	PISTON
10	1	025105.10	BARREL ASSEMBLY
11	1	025105.11	ROD
12	1	025105.12	INTERNAL HEAD
13	1	025105.13	THREAD RING </td
14	1	025105.14	SET SCREW

Please Note that these
Part Numbers are for
REFERENCE ONLY!!
See previous page for
the Exploded View.

CUTAWAY VIEW

025105 - CYLINDER
025106 - SEAL KIT

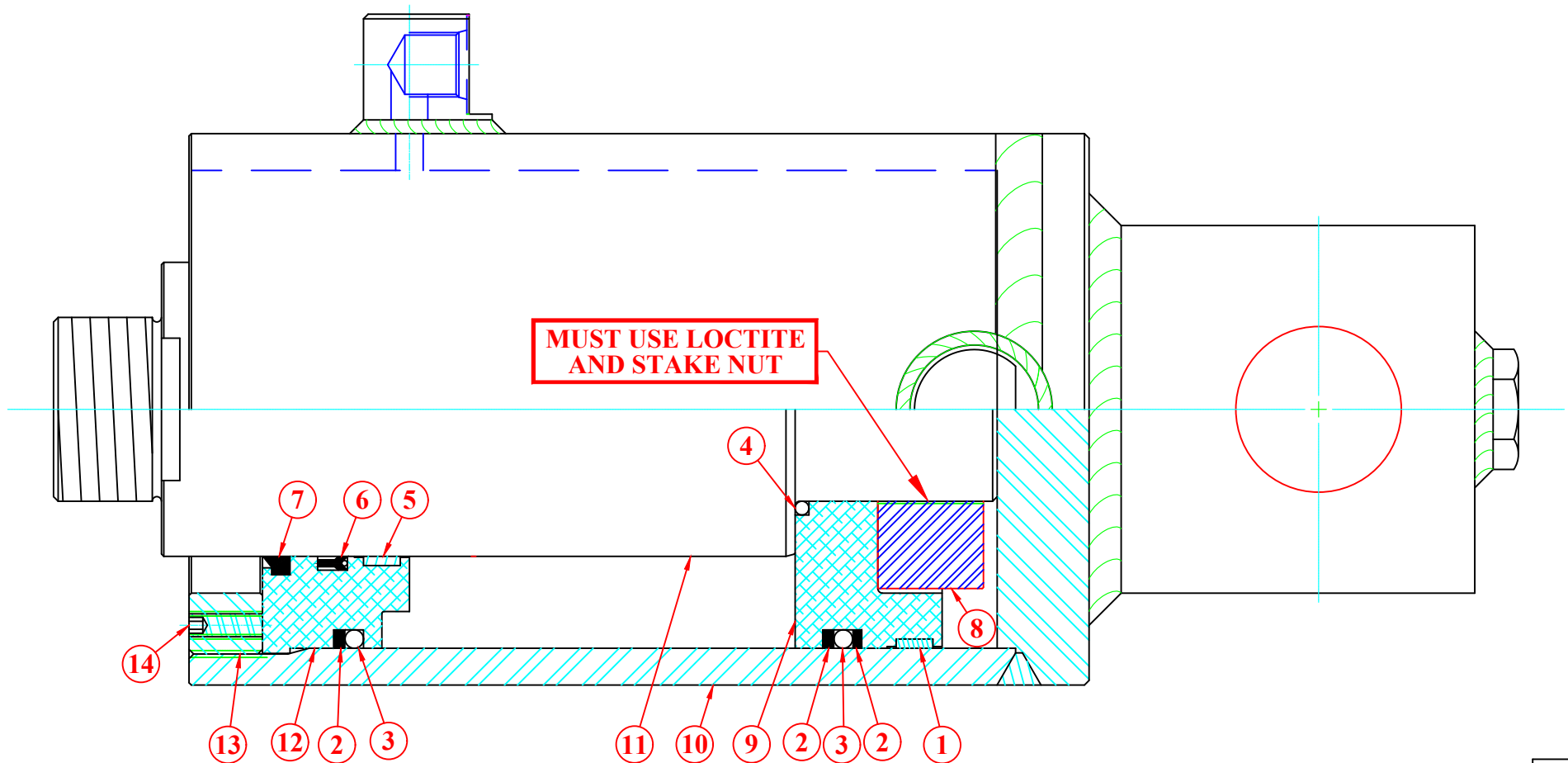


FIGURE 16
PAGE 34

SHEARMASTER WITH OPTIONAL 5ft. ROLLER CONVEYOR - P/N 026976



STANDARD FEATURES:

Hydraulic Hold-Down - Electric Back Gauge - Electric Stroke Control - Electric Foot Pedal

Two-Stage Hydraulic Pump - 10 hp Motor - Forklift Accommodations

Warranty: Three Years on Parts

MADE IN THE USA

**NOTE: THE FOLLOWING SECTIONS CONTAIN PARTS LISTS AND DRAWINGS.
FOR YOUR CONVENIENCE, ALWAYS HAVE THE COMPLETE SERIAL
NUMBER OF YOUR MACHINE IN HAND WHEN ORDERING PARTS.**

9.0 PARTS LISTS

9.1 SHEAR ARM ASSEMBLY

ITEM	PART #	DESCRIPTION
1	215014	M-12 Greer Nut
2	017486	Metering Boss
3	221328	M-12 x 75 SHCS
4	017485	Main Bushing
5	017480	Shear Beam (Includes 4 & 7)
6	221415	M16 x 40 SHCS (6 Required)
7	080169	Connecting Link Bushing
8	033175	Bar Shear Blade (2 Required)
9	212016	M16 Lock Washer
10	218120	M-12 x 50 Set Screw (18 Required)
11	221427	M16 x 70 SHCS (6 Required)
12	025069	Main Pivot Pin (Includes 9 & 13)
13	080174	M16 X 25 Grease Bolt
14	080179	M20 X 50 Grease Bolt (3 Required)
15	073210	M-20 Jam Nut (3 Required)
16	025134	Adjustable Pad (3 Required)
17	201610	M16 X 25 HHCS

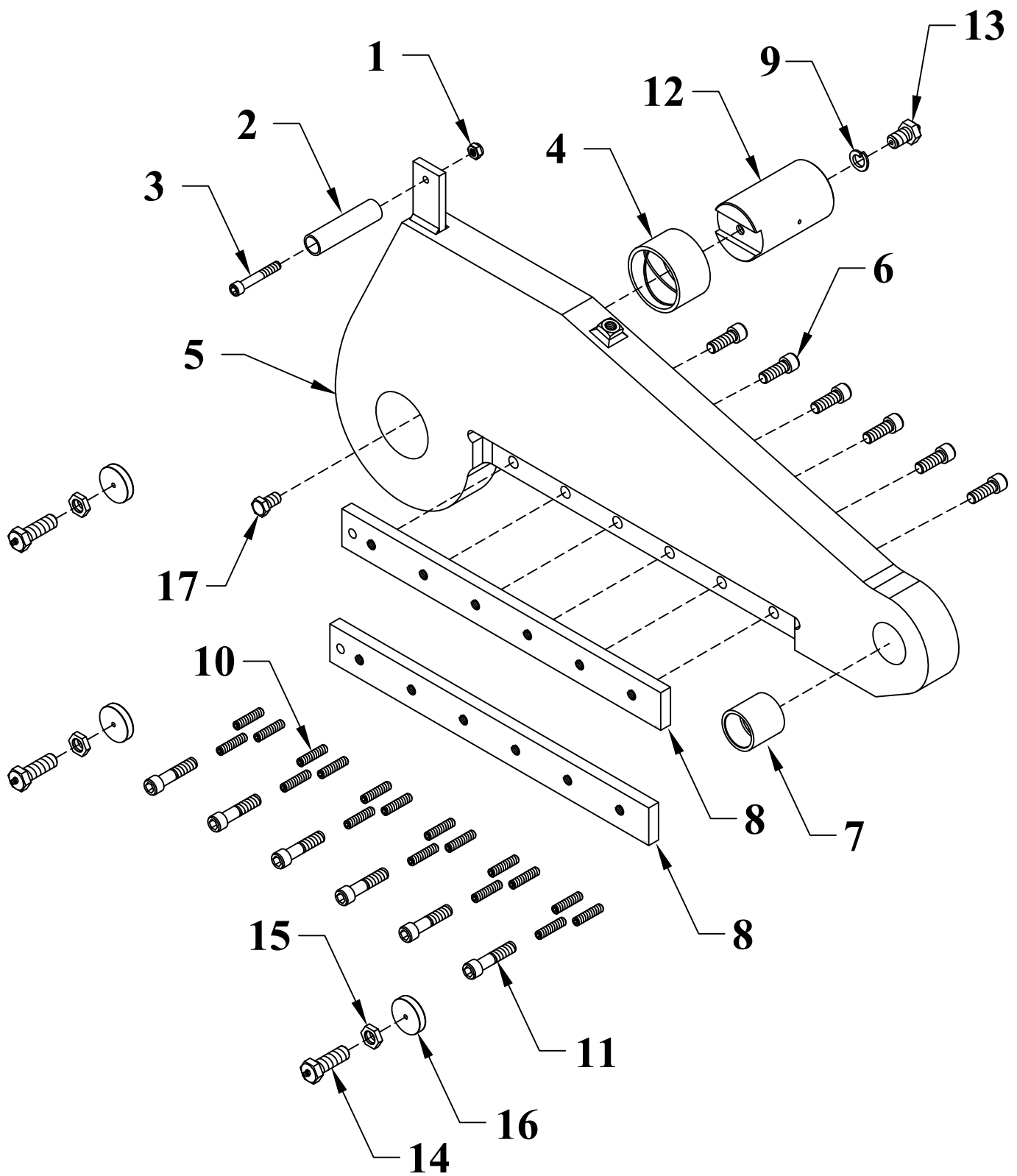


FIGURE 17

9.2 SHEAR TABLE ASSEMBLY

PARTS LIST

ITEM	QTY	PART #	DESCRIPTION
1	1	025705	Guide Finished
2	2	026618	Tee Nut (M10)
3	2	026698	Rest Button
4	2	080063	RS/Jig Handle
5	1	080430	Shear Table
6	2	214012	M10 Regular Washer

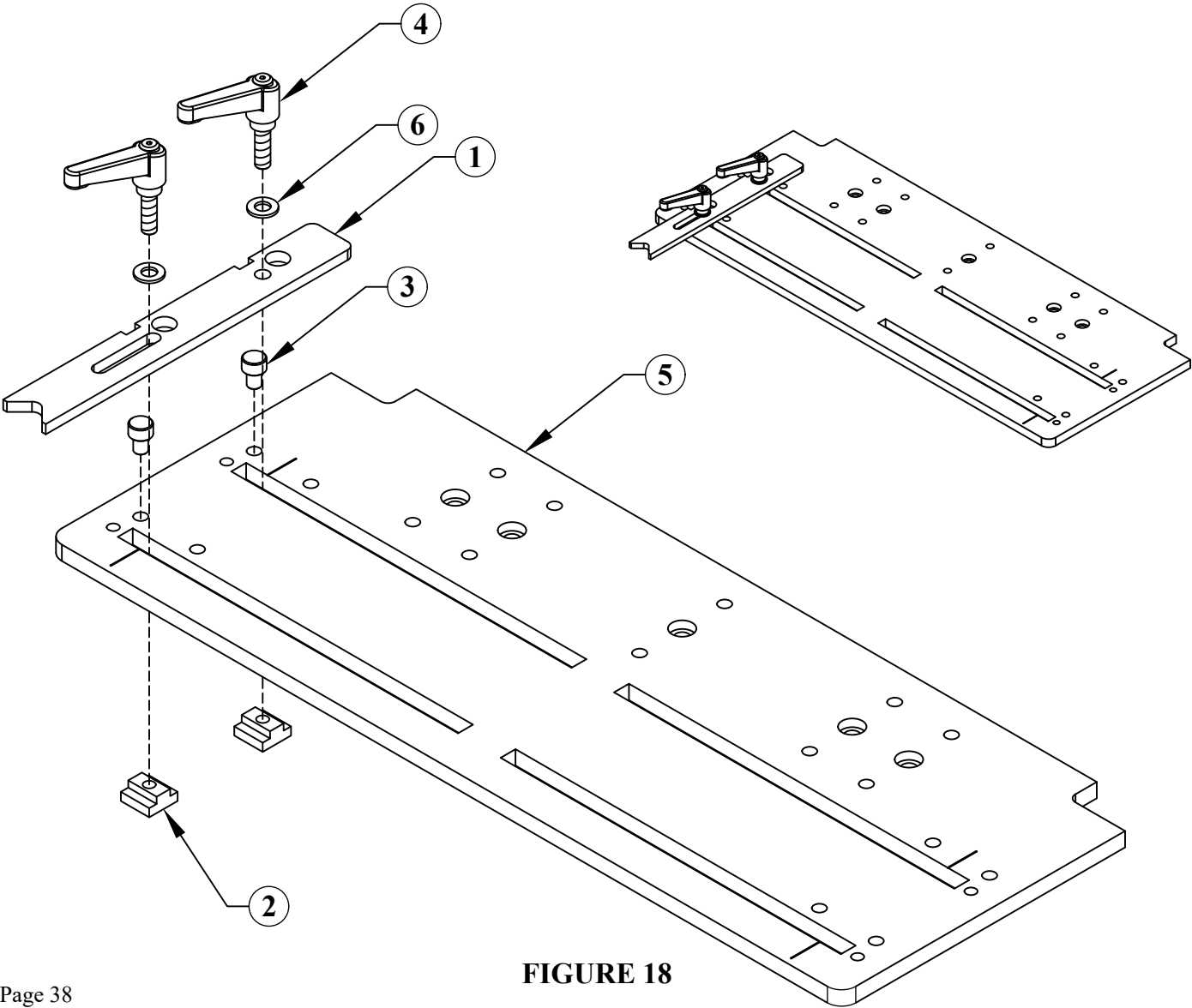


FIGURE 18

9.3 UPPER PANEL

ITEM	PART #	DESCRIPTION
1	080061	Handles
2	204225	M10 X 60MM HHCS
3	213012	M10 Black Washer
4	004087	Pointer
5	(see Sect. 9.4)	Switch Plate
6	004086	Micro Switch Mount
7	562113	M.S. Limit Switch (200)
8	(see Sect. 9.4)	Front Top Shroud

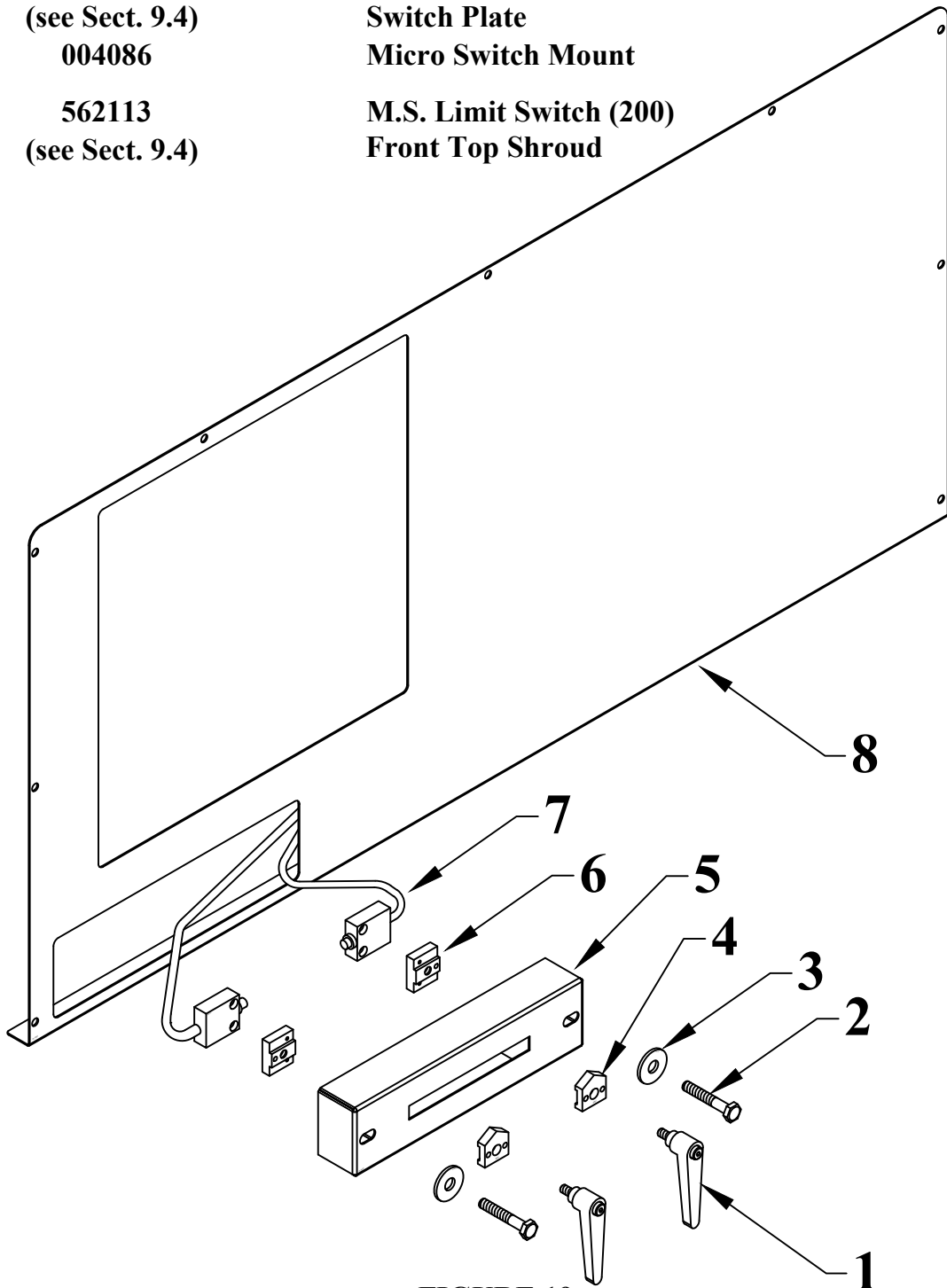


FIGURE 19

9.4 SHEET METAL

(ITEMS 2, 5, & 10 - S/N REQUIRED)

ITEM	PART #	DESCRIPTION
1	017492	Top Shroud
2	017488 017493	Front Top Shroud - S/N 2024A & Up Front Top Shroud - S/N 2023A & Prior
3	017494	Cylinder Cover
4	017500	Holddown Shroud
5	017366 017496	Switch Plate - S/N 2024A & Up Switch Plate - S/N2023A & Prior
6	017495	Wire Channel
7	017499	Slug Chute
8	017503	Shear Guard Painted
9	017491	610 Rear Shroud
10	017487 017490	Front Shroud 610 - S/N 2028A & Up Front Shroud 610 - S/N 2027A & Prior
11	017520	Access Cover
12	220016	M6 X 10MM BF (24 Required)
13	224205	M10 X 16MM WLCS (10 Required)

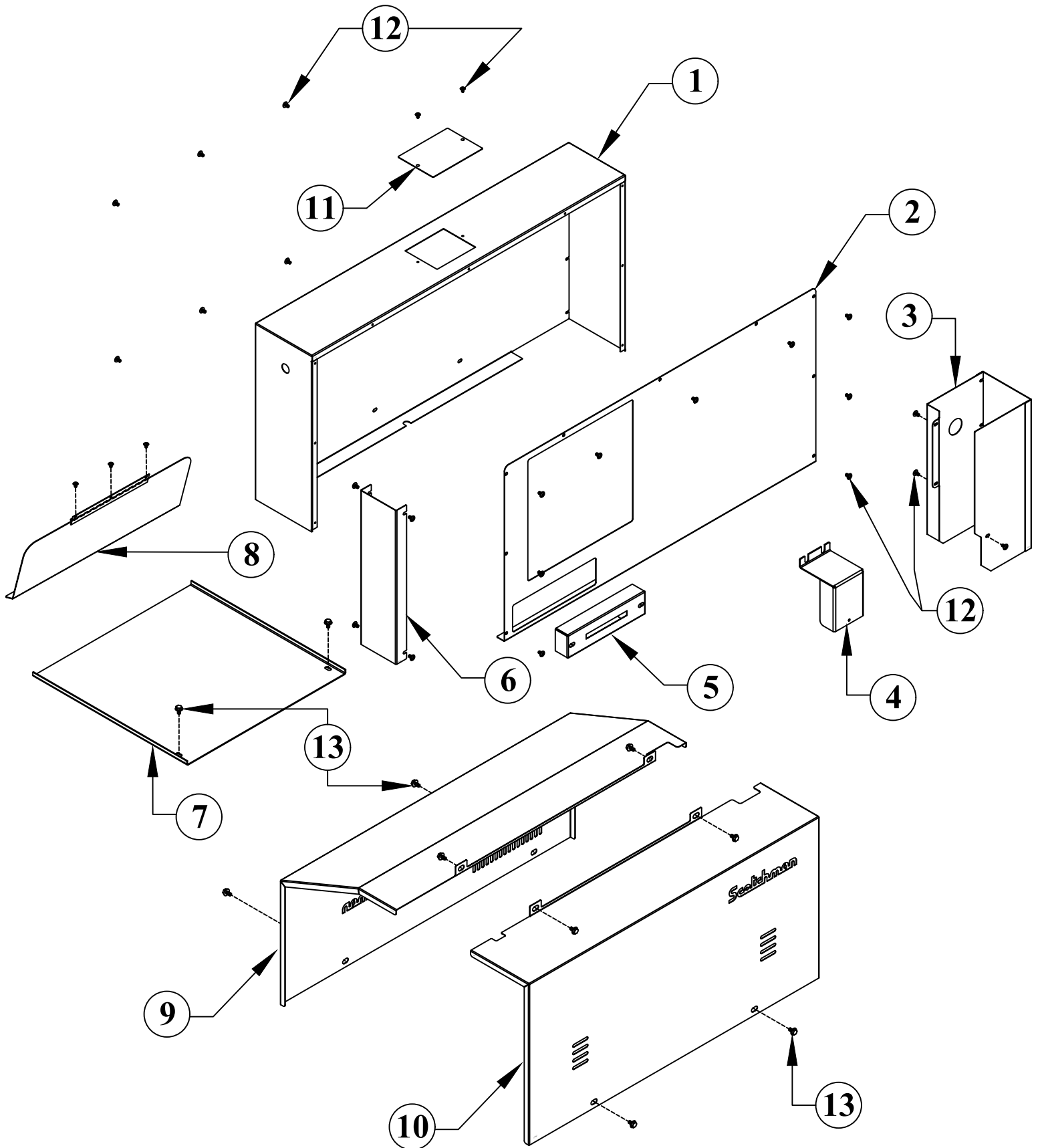


FIGURE 20

9.5 ELECTRICAL UNIT

ITEM	PART #	DESCRIPTION
1	011861	Transformer
2	011920	Primary Fuse 1 Amp
3	011835	Secondary Fuse 2 Amp
4	011862	Emergency Stop Button
4A	011867	Emergency Stop Switch
5	*011977	DILM 65 120V Contactor (1PH)
5A	*011976	DILM 32-10 Contactor (3PH)
6	011879	Start Button
7	562453	Foot Switch (not shown)
7A	011753	Cord For Foot Switch (not shown)
7B	**562451	Microswitch For <u>SSC Foot Pedal</u> (not shown)
7C	**562452	Microswitch For <u>Linemaster Foot Pedal</u> (not shown)
8	011200	Kraus & Naimer Cam Switch
8A	011216	Legend Auto/Start/Manual K&N
9	011856	Disconnect Switch
10	013221	ZB-32-32 Overload (208-230 Volt 3ph)
	013217	ZB32-16 Overload (380-460-575 Volt)
	011997	ZB65-57 Overload (220 Volt 1PH)
11	011949	Overload Mounting Base 3 PHASE
11A	011969	Overload Mounting Base 1 PHASE
12	550065	RELAY DIL ER-22 110V
13	017515	Complete Enclosure

*** REPLACEMENT CONTACTOR:** May look different than original, but will fit and function properly.

**** BEFORE ORDERING A MICROSWITCH:** Inspect foot pedal to determine if it's a LINEMASTER or SSC.

CONTROL BOX ASS'Y

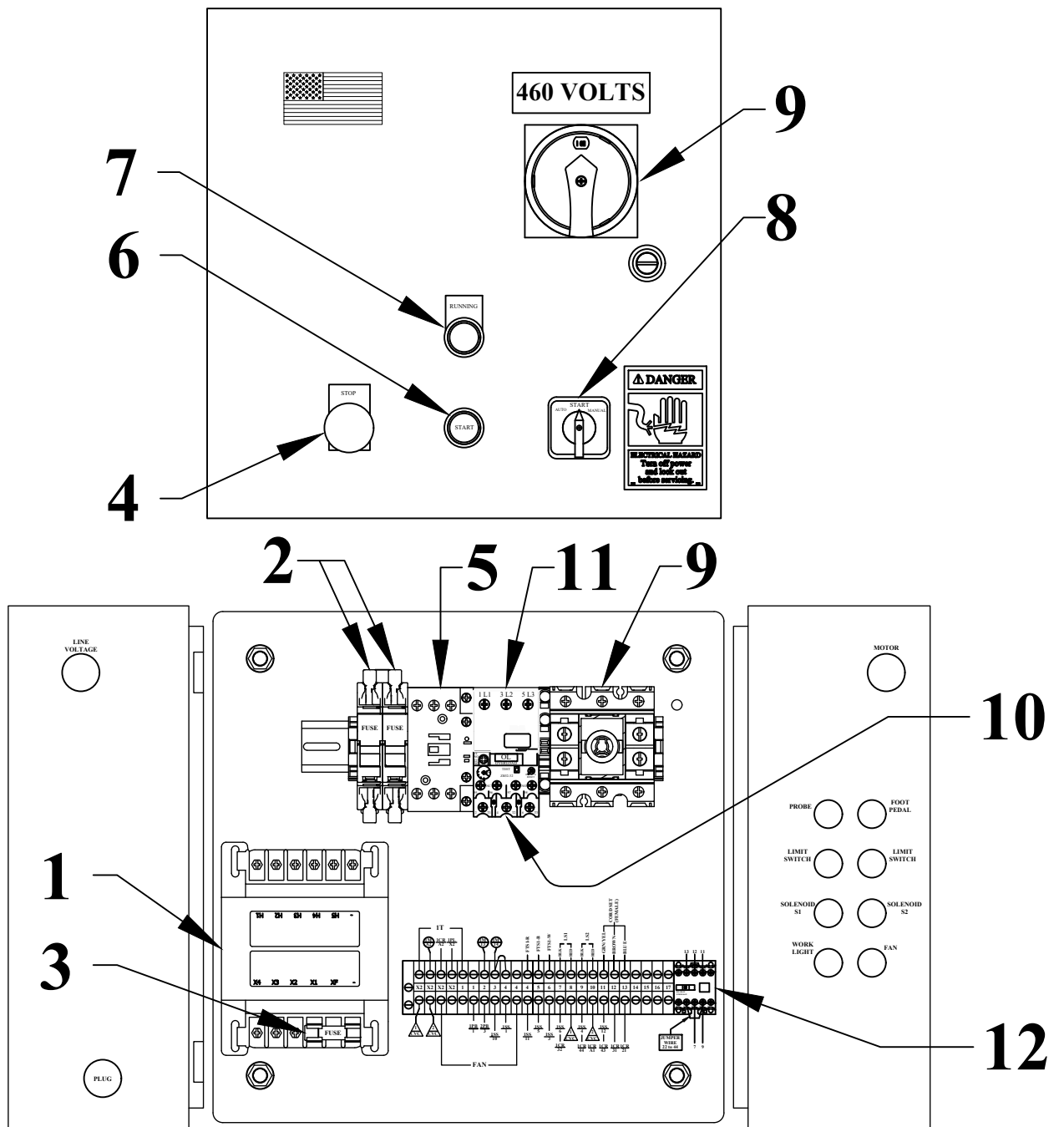


FIGURE 21

9.6 POWER UNIT

ITEM	PART #	DESCRIPTION
1	N/A	Return Line
2	014115	Fan
2A	014210	Fan Cord
3	006630	Filter
4		Breather Cap
5	017531	Hold Down Cylinder
6	003734	Pressure Hose
7	003731	Pressure Hose
8	025105	Cylinder
9	013501	Motor Assembly (220-1PH)
9A	013508	Motor Assembly (230-3PH)
9B	013509	Motor Assembly (460-3PH)
10	017552	Pressure Hose
11	017553	Relief Valve
*12	007340	Pump (see bottom of page)
13	017558	Test Port
14	017529	Valve
14A	017564	Valve Coil
15	017567	Heat Exchange
16	017570	Return Line
17	017526	Hold Down Hoses
18	017555	Suction Hose X 20-1/2"

*** If replacing a Marzocchi pump, P/N 006835 - Hose is needed**

*** If replacing a Barnes pump, P/N 003710 - Hose is needed**

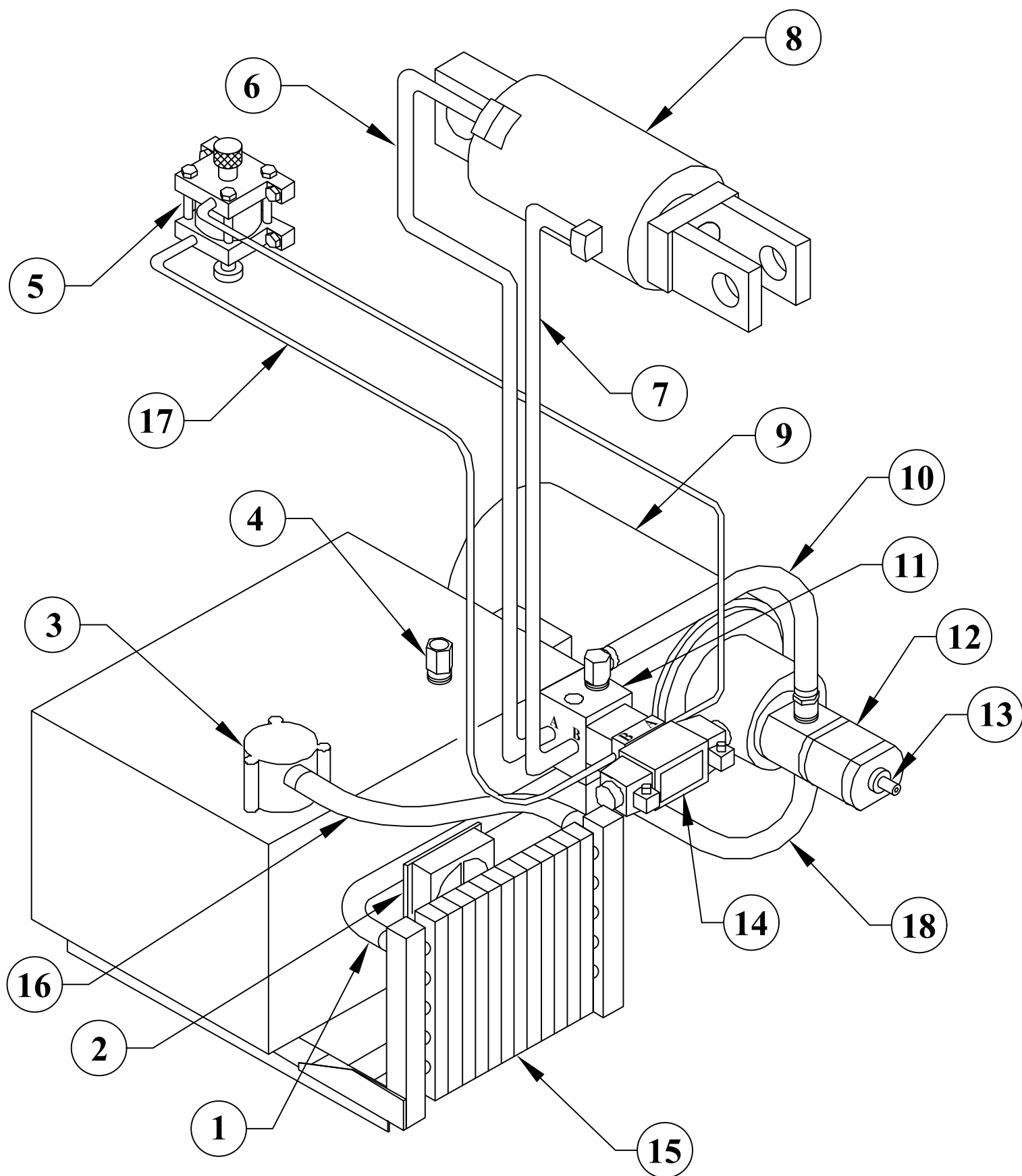


FIGURE 22

9.7 HOLD DOWN ASSEMBLY

ITEM	PART #	DESCRIPTION
1	201610	M16 x 25 HHCS
2	113017	1 3/4 OD X 21/32 ID Reid
3	017502	Hold Down Painted
4	221315	M12 x 40 SHCS
5	017505	Hold Down Guide
6	017531	Hold Down Cyl. Assy. Sales

FIGURE 23

9.8 CYLINDER ASSEMBLY

ITEM	PART #	DESCRIPTION
1	016630	2-1/2" Snap Ring
2	025071	Cylinder Anchor Pin
3	025105	Cylinder
4	017510	Clevis Pin
5	016620	Snap Ring
6	017507	Cylinder Clevis

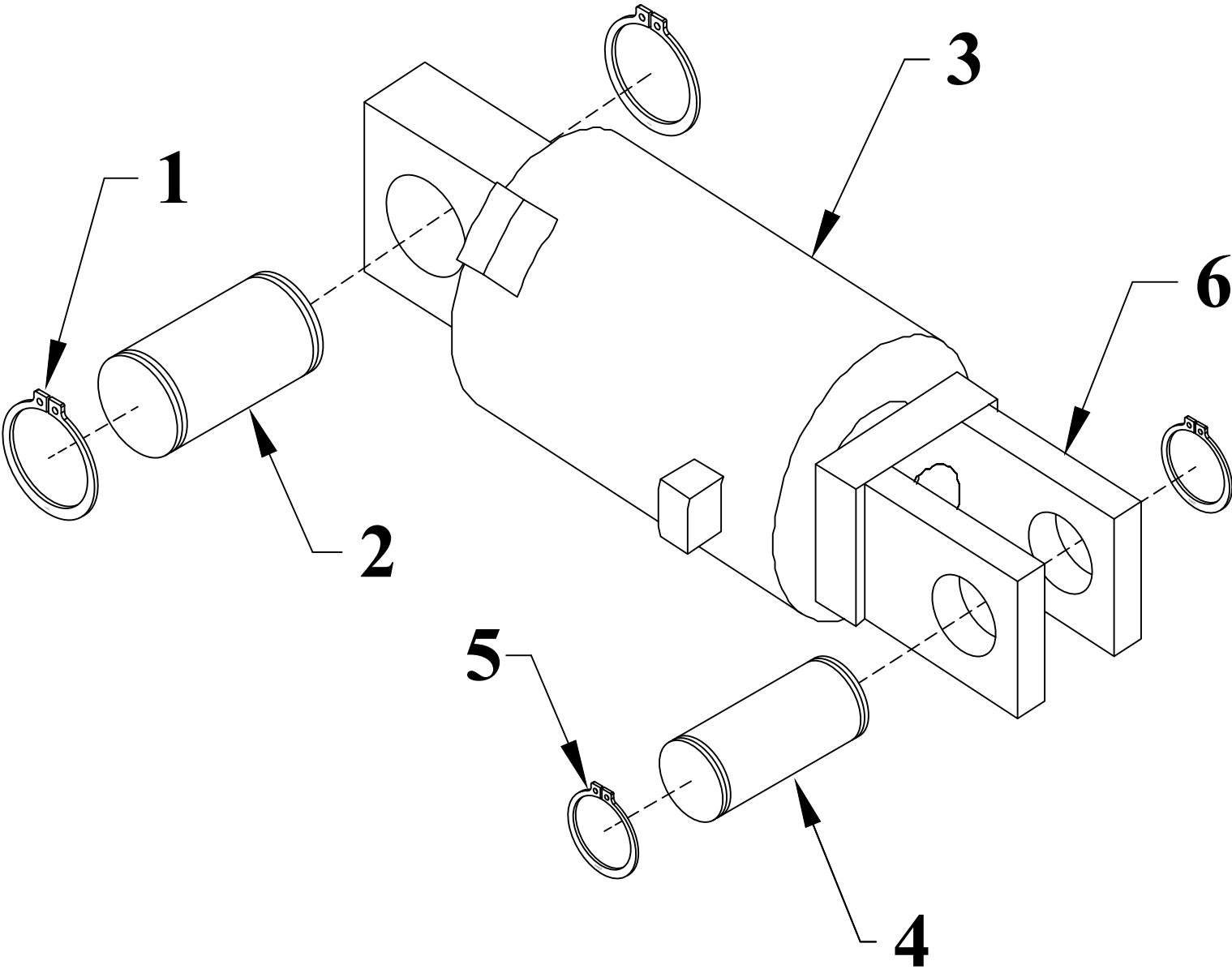


FIGURE 24

9.9 CONVEYOR SYSTEM - P/N 026976

ITEM	QTY	PART #	DESCRIPTION
1	4	016402	3/4 OD SNAP RING
2	5	026905	25" REPLACEMENT ROLLER
3	2	026945.2	UPPER LEG 25"
4	4	026955	BUMP ROLLER MOUNT ASSEMBLY
5	4	026962	BUMP ROLLER
6	2	026965	MOUNT BUMP ROLLER-PAINTED
7	1	026988	25" CONVEYOR WELD
8	4	029244.1	LOWER LEG
9	8	111000	3/8-16 SERRATED FLANGE LOCKNUT
10	8	114012	3/8 USS FLAT WASHER
11	8	130210	3/8-16 X 1 CARRIAGE BOLT

SALES ASSEMBLIES		
PART #	INCLUDES	DESCRIPTION
026945	3, 8, 9, 11	LEGS FOR 25" CONVEYOR
026960	1, 4, 5	BUMP ROLLER SALES
026970	2, 7	25" CONVEYOR 5' LONG

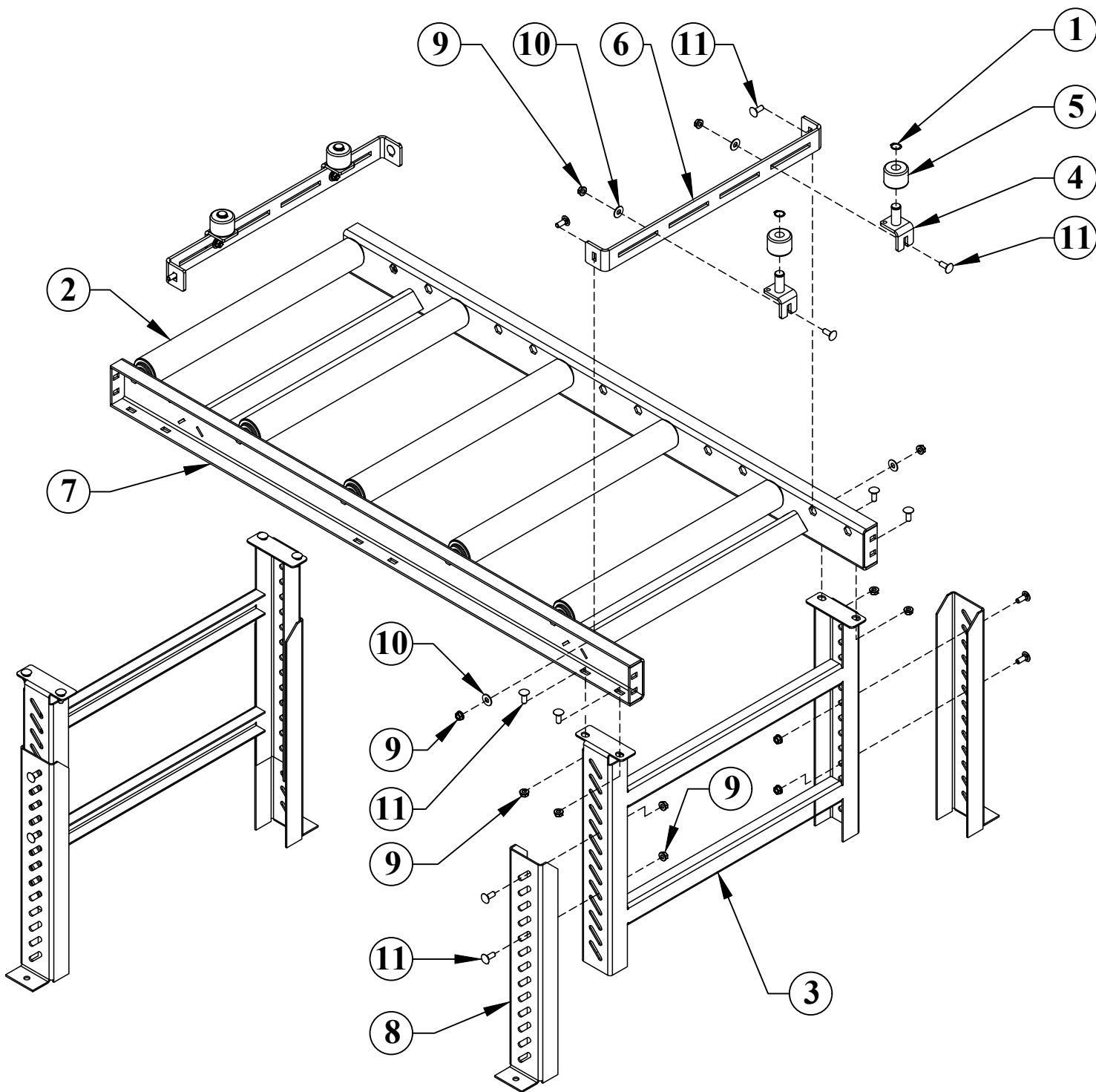


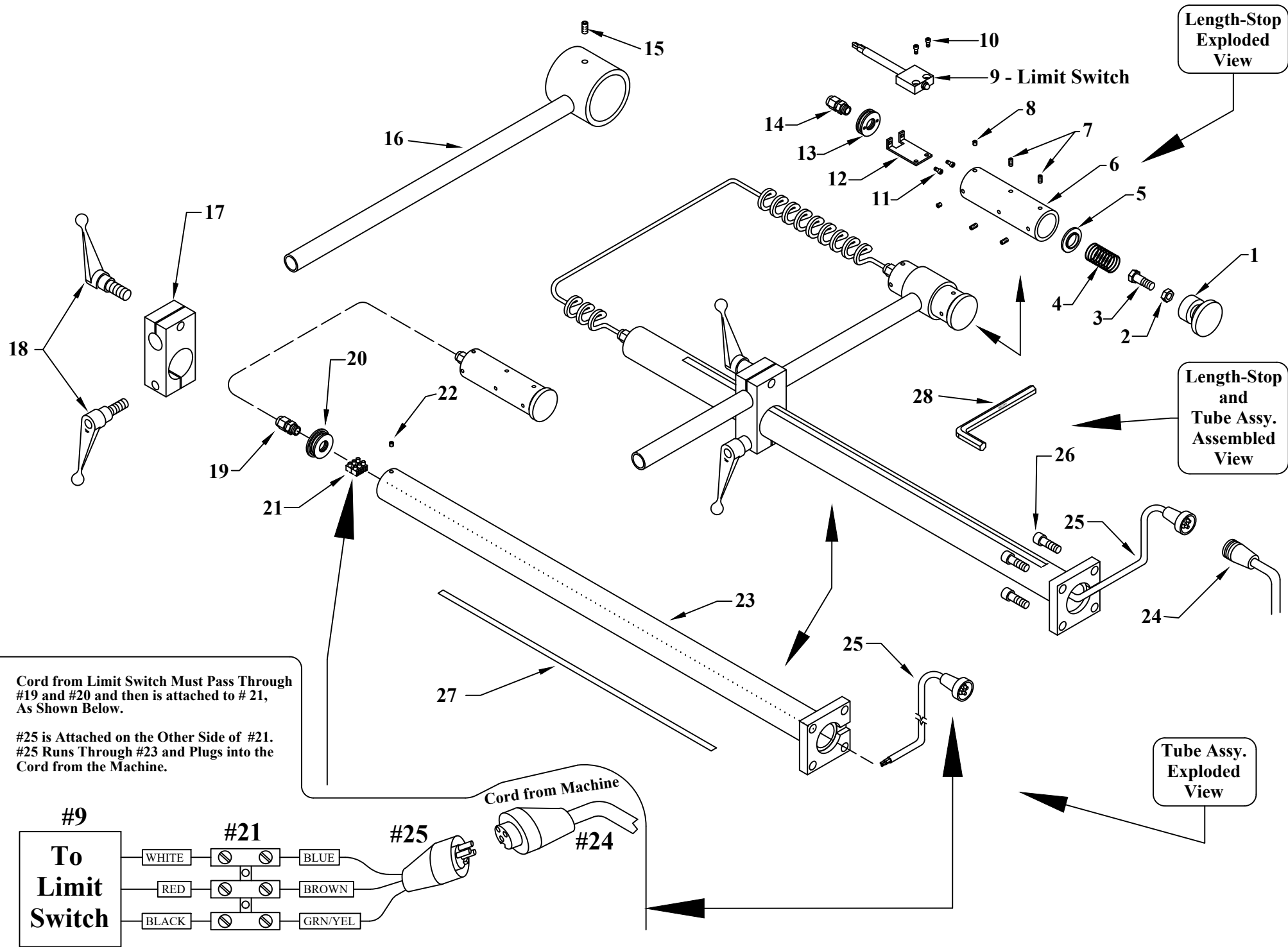
FIGURE 25

9.10 48" ELECTRIC BACK GAUGE - P/N 025600

NOTE: ELECTRIC BACK GAUGE IS INCLUDED WITH MACHINE.

ITEM	QTY	PART#	DESCRIPTION	ITEM	QTY	PART#	DESCRIPTION
1	1	025338	Stop Back Gauge	15	2	219047	M10 x 12 Set Screw
2	1	208012	M10 Hex Nut	16	1	025317	Length Stop Assembly
3	1	201220	M10 x 50 HHCS	17	1	025320	Slide Block Length Stop
4	1	025332	Bump Spring	18	2	025361	M12 x 50 Adj. Handle
5	1	025335	Spring Plate	19	2	000202	1/2" Liq. Type Cord Conn.
6	1	025323	Housing Length Stop	20	1	025330	Gland Plate Length Stop
7	6	218023	M6 x 12 Set Screw	21	1	075207	PC Terminal Block
8	3	218022	M6 x 6 Set Screw	22	2	218022	M6 x 6 Set Screw
9	1	562113	M.S. Limit Switch	23	1	025308	Tube Assembly Back Gauge
10	2	073450	M4 x 16 SHCS	24*	1	025342	Cord Set Female RKM-30
11	2	220010	M4 x 10 BHCS	25	1	025340	Cord Set Male RSM-30-2M
12	1	025329	Mount Micoswitch	26	4	221420	M16 x 50 SHCS
13	1	025326	Gland Switch Plate	27	1	029220	L/H Tape 1/2" x 12' R/L
14	2	000202	1/2" Liq. Type Cord Conn.	28	1	080189	14mm Allen Wrench

*** Machine comes with these parts installed**



Cord from Limit Switch Must Pass Through #19 and #20 and then is attached to #21, As Shown Below.

#25 is Attached on the Other Side of #21. #25 Runs Through #23 and Plugs into the Cord from the Machine.

9.11 HYDRAULIC SCHEMATIC

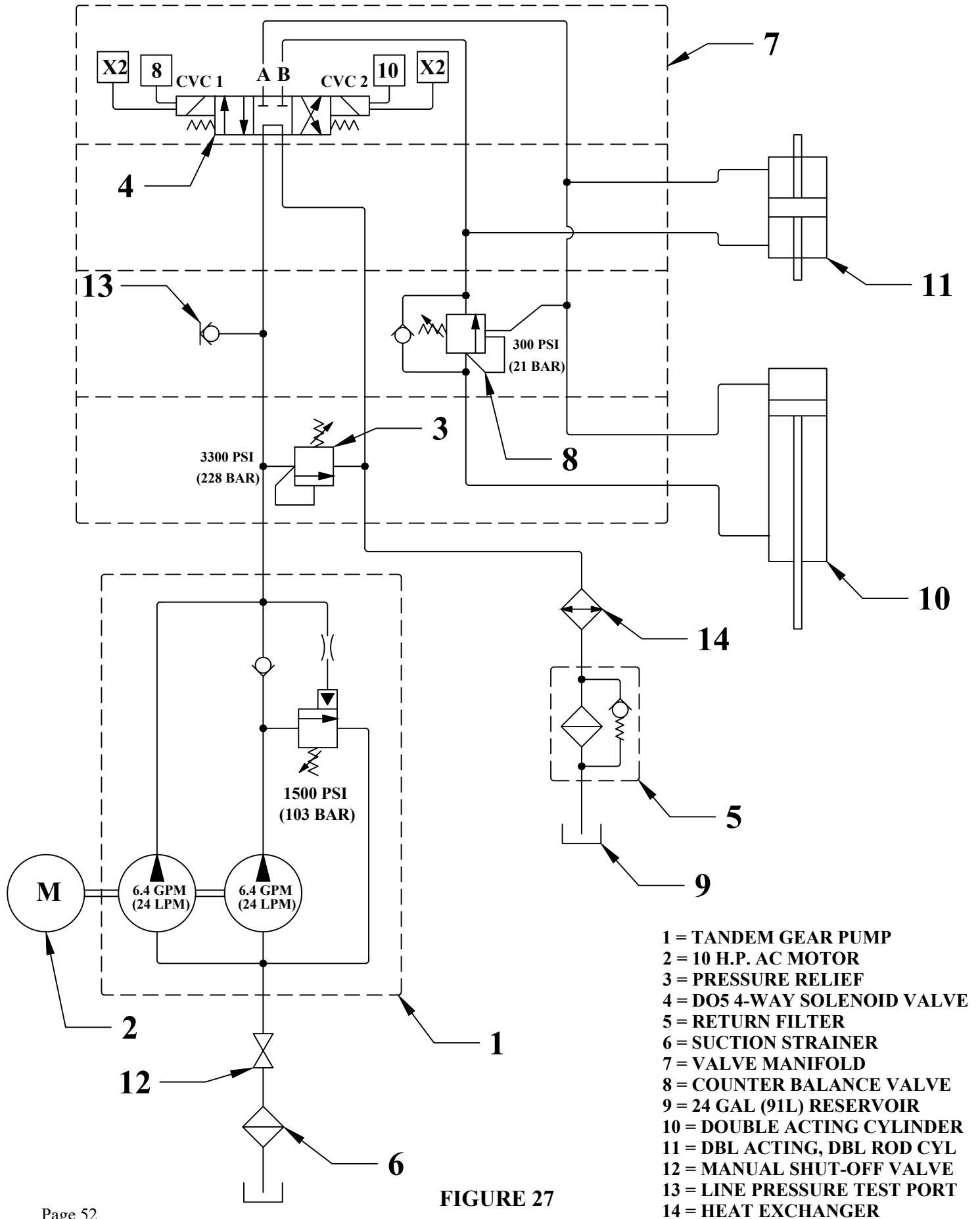


FIGURE 27

9.12 ELECTRICAL SCHEMATICS

3-PHASE
POWER

PN 017515 RATING TABLE					
LINE VOLTAGE (3PH)	208	230	380	460	575
MAX. HP	10	10	10	10	10
MOTOR FLA	27.6	25	15.8	12.5	9.6
OVERLOAD	ZB32-32	ZB32-32	ZB32-16	ZB32-16	ZB32-16

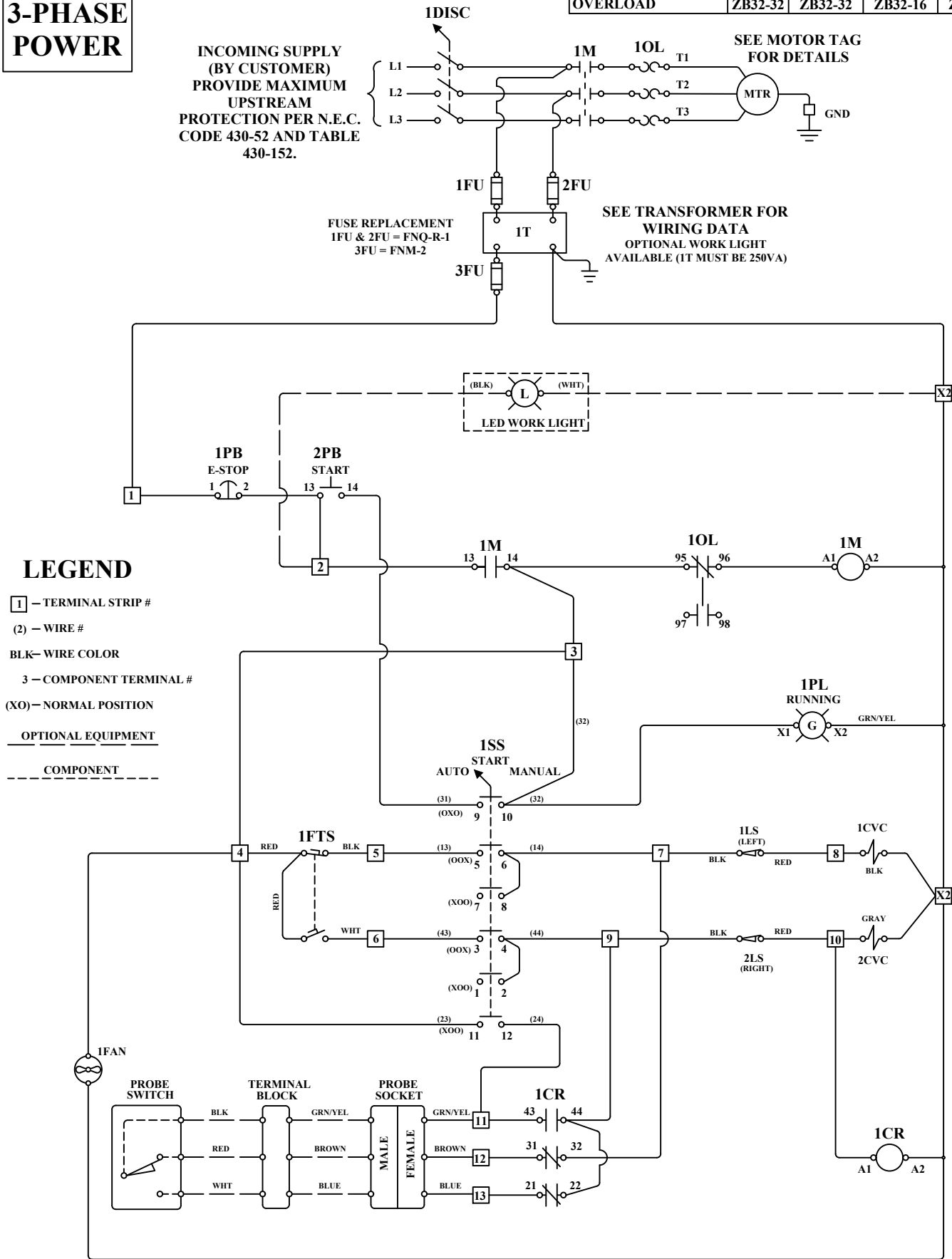


FIGURE 28

SINGLE PHASE POWER

PN 017523 RATING TABLE	
LINE VOLTAGE (1PH)	230
MAX. HP	10
MOTOR FLA	40
OVERLOAD	ZB65-57

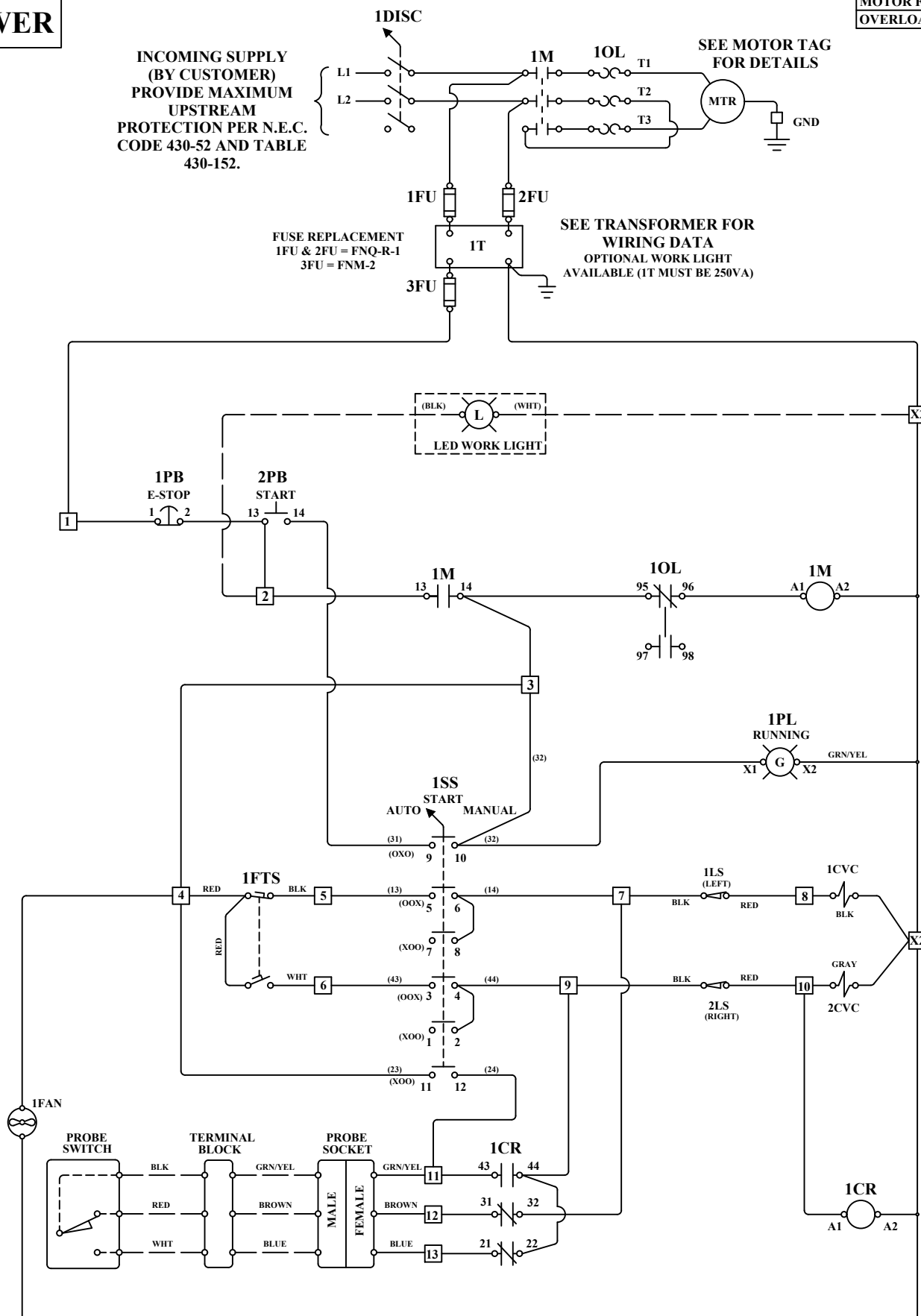


FIGURE 29

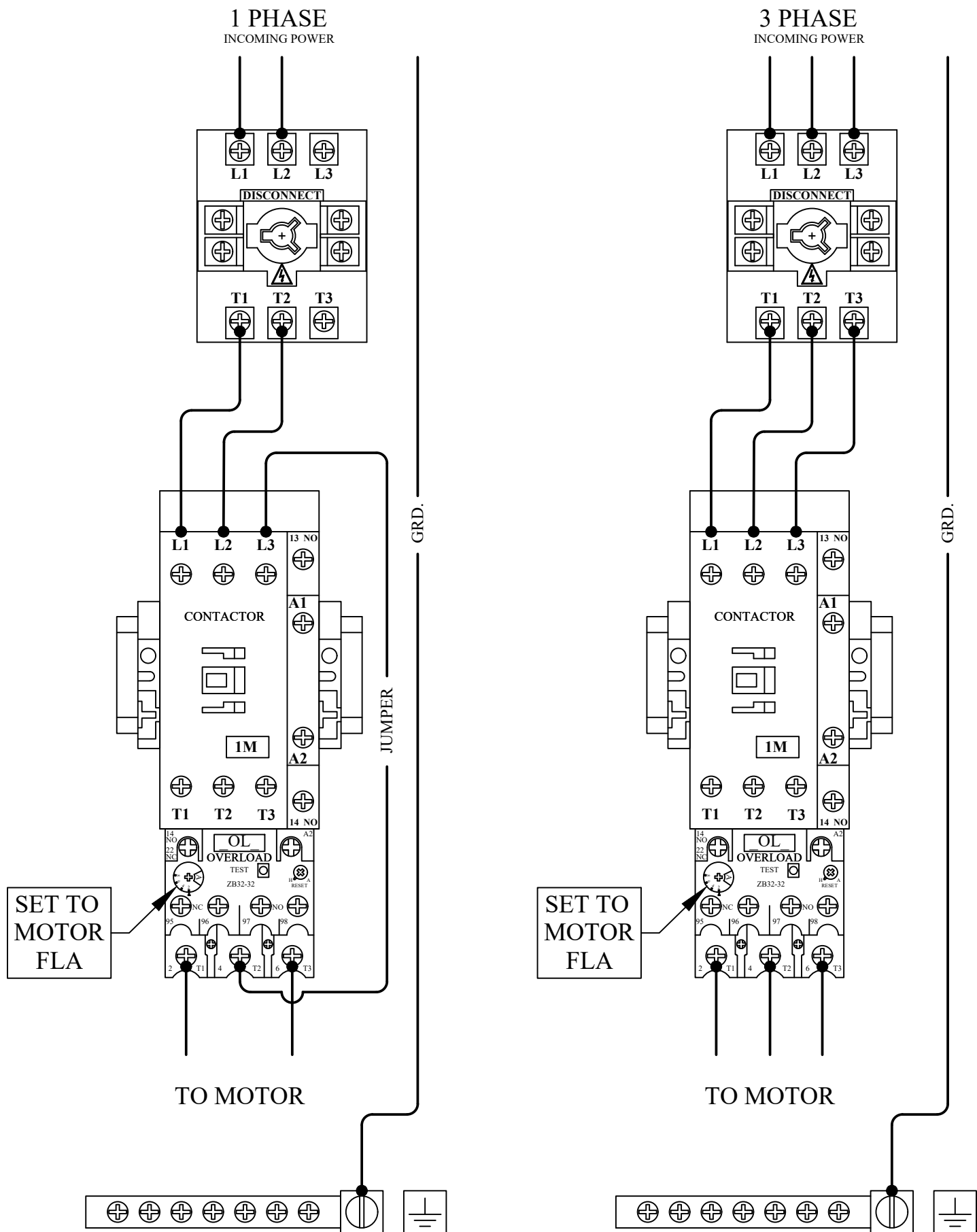
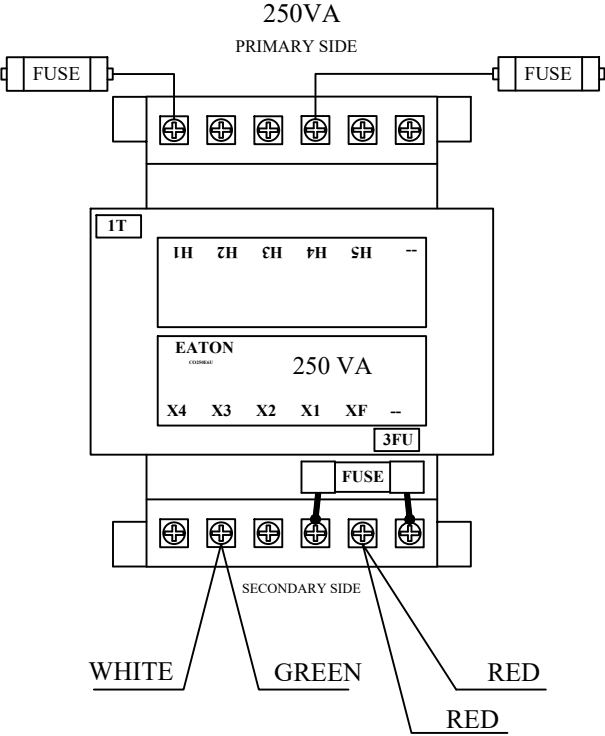


FIGURE 31

230v/460v TRANSFORMER



INCOMING VOLTAGE

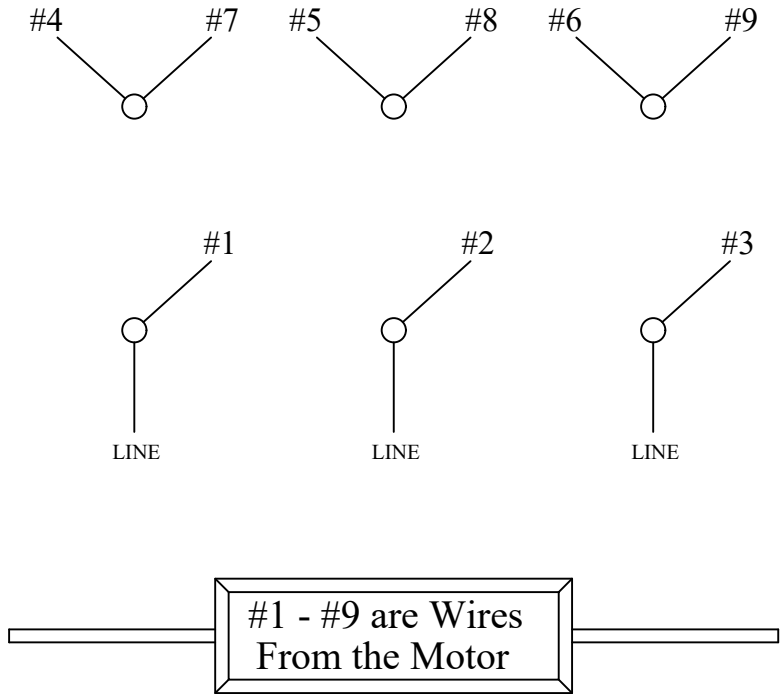
H1-H2	H1-H3	H1-H4	H1-H5
208	380	440	500
220	400	460	550
230	415	480	575
240			600

OUTPUT VOLTAGE

XF-X2	XF-X3	XF-X4
99	120	130
95	115	125
91	110	120
85	100	110

MOTOR WIRING BELOW

HIGH VOLTAGE CONNECTION
(460 VOLT 3PH)



LOW VOLTAGE CONNECTION
(230 VOLT 3PH)

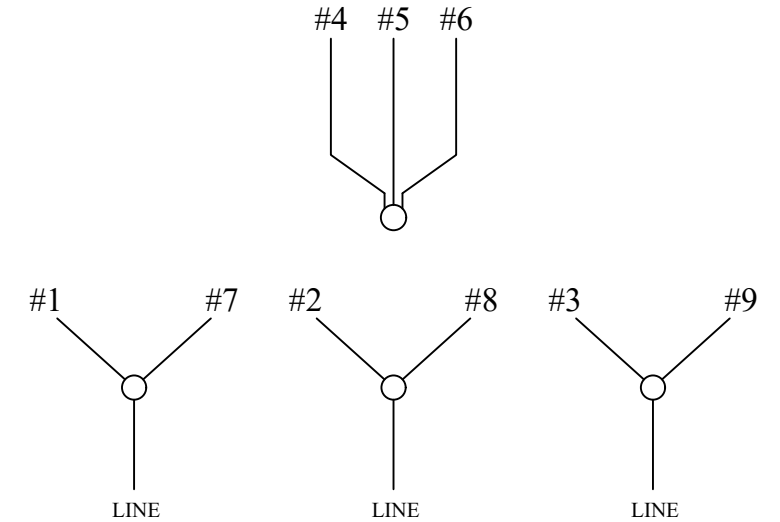


FIGURE 32