



INSTRUCTIONS AND REPAIR PARTS MANUAL



IRONWORKERS • PRESS BRAKES • SHEARS • BENDING ROLLS

PIRANHA

IRONWORKER MODEL NO. PII-110

Publication December, 2004



Be sure to register your
model and serial number to
receive Piranha Service
and Product Updates.

www.piranhafab.com
800-338-5471

FOREWORD

This manual has been prepared for those persons who will operate and maintain the Piranha. It is important that all persons responsible for the care and operation of this equipment read and understand the information presented in this publication.

The illustrations and instructions on the following pages were the most recent available at the time of publication and selection of this material was made on the basis of a standard unit arrangement. Differences between the unit you received and the views contained in this manual are the result of design improvement and/or the addition of optional accessories specified on your order.

WARRANTY

Mega Mfg. will replace F.O.B. the factory, or refund the purchase price for any goods which are defective in materials and workmanship within 12 months of date of purchase, provided the buyer returns the warranty registration card within thirty (30) days of purchase date, and, at the seller's option, returns the defective materials freight and delivery prepaid to the seller, which shall be the buyer's sole remedy for defective materials. Seller shall not be liable to purchaser or any other person for consequential or incidental damages. Hydraulic and electrical components are subject to their respective manufacturer's warranties. This warranty does not apply to machines and/or components which have been altered in any way, or subjected to abusive or abnormal use, inadequate maintenance and lubrication, or to use beyond seller recommended capacities and specifications. Seller shall not be liable under any circumstances for labor costs expended on such goods or consequential damages. Seller shall not be liable to 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 employee, agent, officer or seller is authorized to make oral representations or warranty of fitness or to waive any of the foregoing terms of sale and none shall be binding on the seller.

SAFETY PRECAUTIONS

The operator of this machine should thoroughly understand this manual before starting any operation.

Wear eye protection at all times.

Use the proper voltage outlet for your machine.

Assure that all guards and cover shields are down before starting machine. CAUTION: Do not remove guards.

Keep hands off working tables and out of path of moving parts during operation.

Remove all material from the tables except what you are using.

Remove all tooling from punch end before starting shearing or coping operations.

Assure all tooling is properly held in position before starting any operation.

The area around the machine should be well lighted, dry, and as free as possible from obstructions.

All maintenance and repair work should be performed by a person familiar with this publication.

At the end of the working day, the operator should turn the power off to the machine.

Set punchend stroke controls to allow $\frac{1}{4}$ " maximum clearance between bottom of stripper foot or bending punch and top of the material. Contact the factory for proper stroke adjustments on special tooling.

Turn the machine OFF when changing tooling or performing maintenance work.

MEGA Manufacturing, Inc.

Electrical System Design/Manufacture:

The machines manufactured in Hutchinson, KS, are furnished with electrical/electronic products that are UL (Underwriter's Laboratory) approved. These components have the UL numbers printed or stamped on them and can be easily traced to the point of manufacture. In addition, all of the machines meet the current "Ontario Hydro" electrical code for proper manufacture of the electrical circuits.

Hydraulic System Design/Manufacture:

Hydraulic components used in Piranha machines are approved by NFPA (National Fluid Power Association), and those approval numbers can be traced through the manufacturer's part numbers.

ANSI/OSHA Compliance:

Mega Manufacturing meets the current ANSI construction standards for manufacturing of ironworkers, press brakes, and shears:

ANSI B11.5—Ironworkers, Construction, Care, and Use

ANSI B11.3—Power press brakes, Construction, Care, and Use

ANSI B11.4—Shears, Construction, Care, and Use

The ANSI B11 standards were developed to establish levels of responsibility for manufacturing safe products, installation, training, and use of these products. The levels of responsibility are fairly evenly distributed between the manufacturer, the owner/end user of the equipment, and the operator. Specific guarding requirements are in general assigned to the owner/end user of the equipment.

With specific reference to Ironworkers, OSHA (Occupational Safety and Health Administration) made a ruling on March 4th of 1991 under their standard number 1910.212, specific to the OSHA machine guarding standard 29 CFR 1910.212(a)(1). This ruling is stated verbatim below:

"If an employer provides an iron worker machine (at his or her workplace), which is manufactured in compliance with the safety requirements specified in ANSI B11.5-1988, and the guarding is maintained as required; then that employer meets OSHA's machine guarding requirements for that machine."

Please understand that this ruling places the primary burden of responsibility for maintenance of guarding on the owner/end user of the equipment. Inherent in this requirement is the responsibility of the owner/end user of the equipment to develop and maintain guarding specific to their application for the equipment. These ANSI safety requirements may be acquired from:

American National Standard Institute
1430 Broadway
New York, New York 10018
Telephone (212) 354-3300

PO Box 457
Hutchinson, KS 67504-0457
Phone: (800) 338-5471
Fax: (316) 669-8964

INTRODUCTION

The Piranha Ironworker is a compact hydraulic powered unit that provides you several important advantages surpassing most other ironworkers in today's market, and offering, for your shop, a one stop ironworking center. It shears, punches, bends, notches, and copes; all in a low silhouette, efficiently designed unit resulting in minimal floor space requirements. The integral lifting lug provides instant portability and the unit arrives fully assembled at your shop requiring only the addition of hydraulic oil and a power source to become fully operational. The large platen has eighteen 5/8 - 11 tapped holes giving a wide base for increased flexibility of attachment sizes. The shearing operation features an adjustable automatic hold down allowing the operator to clamp the work piece with a slight initial adjustment. All work stations are located approximately 44" off the floor for ease of operation.

The first part of this manual provides maintenance instructions including an introduction, dimension and function drawings, lubrication instructions and a section on trouble shooting various problems which may occur. The second part of this manual provides repair parts information and a complete list of parts and their respective part numbers.

Proper understanding and application of the information and procedures given in this manual will aid in establishing a preventative maintenance program and provide assistance for correcting malfunctions that may occur in the machine. The repair parts list provides information for parts procurement and assembly breakdowns to aid in disassembly and assembly for repair part installation.

MACHINE SPECIFICATIONS

HYDRAULIC SYSTEM

Drive Motor 15HP 230/460 volt 3 phase
Hydraulic tank capacity 40 gallons
Hydraulic oil Mobil DTE 13
ISO Grade 32-Consult Meag Mfg for a
local distributor to cross reference

WORKING SURFACE

Platen 16" x 36"
Coping 18.5" x 18.5"

CAPACITIES

Punch Maximum 1 7/16" thru 1" thick material or 110 tons
Bending Maximum 110 tons
Punch End Maximum 110 tons
Bar 2" round or 1 3/8" square
Plate 3/4" x 18" or 1" x 12" width
Angle 5" x 5" x 1/2" with 4 radius knife
Coper-Notcher 3.5" x 5" x 3/8"

WEIGHT

Shipping Weight (approx) 10000 lbs.

INSTALLATION

LOCATION

For the best overall performance, install the Piranha in a location which is clean and well lighted. Provide sufficient space in all directions to allow for material lengths of the workpieces to be processed by the Piranha.

FOUNDATION

To maintain the accurate alignment built into the Piranha and to prevent undue stress on the moving parts under load, the Piranha should be placed on a stable base or floor adequately constructed to withstand the unit weight. Use the leveling bolts provided.

WIRING

The Piranha is shipped totally wired through the electrical enclosure box. It has been left to the owner's discretion whether to wire direct to a disconnect or to install a cord and plug for mobility of the Piranha. CAUTION: Compare machine wiring to input voltage prior to connecting power.

LIFTING

The lifting lug system on the Piranha is an integral part of the machine. Use a device with adequate lifting capacity to handle the Piranha. CAUTION: Unit is extremely top heavy!!! Lifting from the underside of the machine may cause damage to the cabinet structure.

MAINTENANCE

NOTE: The machine should be shut OFF while maintenance checks are being performed.

HYDRAULIC FILTER ELEMENT

The hydraulic oil filter is a vital component of the hydraulic system as it filters impurities and foreign particles to avoid hydraulic component malfunctions. CAUTION: When the filter element is plugged, hydraulic fluid will by-pass the element allowing contamination to enter the hydraulic system. It is recommended that the filter element be changed every 3 months, depending on work load and environmental conditions. One extra element is furnished with the basic unit. This element should be installed after the first 40 hours of use. The filter housing is mounted inside the access door on the machine. See repair parts list for reordering instructions and the part number.

FASTENERS AND CONNECTIONS

The efficiency and accuracy of the Piranha is dependent upon proper alignment of all parts. Alignment can only be achieved by keeping the fasteners tight. Check all bolts and nuts for tightness every 40 hours of operation or when lubricating the machine. Unless specified in parts illustrations, torque socket head bolts and hinge pin jam nuts to the specifications in the table on page 16.

Check all hydraulic hose and fitting connections for tightness when lubricating the machine. Use of Loctite hydraulic sealant or equivalent is recommended on all connectors.

Note: Tighten the cylinder tie bolts after the first 40 hours use.

Check to insure the hydraulic cylinder clevis is screwed tight on the piston rod each time machine is lubricated.

HYDRAULIC OIL LEVEL

The Piranha is equipped with a dipstick indicator on the fill cap located inside the access door. The dipstick is marked to help maintain proper fluid level. This should be checked as part of your normal maintenance cycle.

NOTE: It is recommended to implement a weekly maintenance program to inspect and lubricate your Piranha. A service record chart is provided in this manual on page

TOOL LIST

The following tool list is only to be used as a guideline for performing maintenance and to assist you in trouble shooting your machine. Many of these items would already be included in your stockroom or a maintenance personnel tool box.

1. Grease gun with a flexible connection.
2. Open end wrenches - 3/4" thru 1 1/4".
3. Adjustable wrench - 1 1/2" thru 2 1/4" opening.
4. Allen wrenches - 3/16" thru 5/8".
5. Screwdrivers - miscellaneous sizes.
6. Voltimeter.

RECOMMENDED FASTENER TORQUE SPECIFICATIONS

Unless Otherwise Specified

Bolt Size	Torque (Ft-Lbs)
3/8-16	45
7/16-14	70
1/2-13	100
5/8-11	210
3/4-10	375
Jam Nut	600

PUNCH & DIE CHART

CLEARANCE CHART FOR STEEL

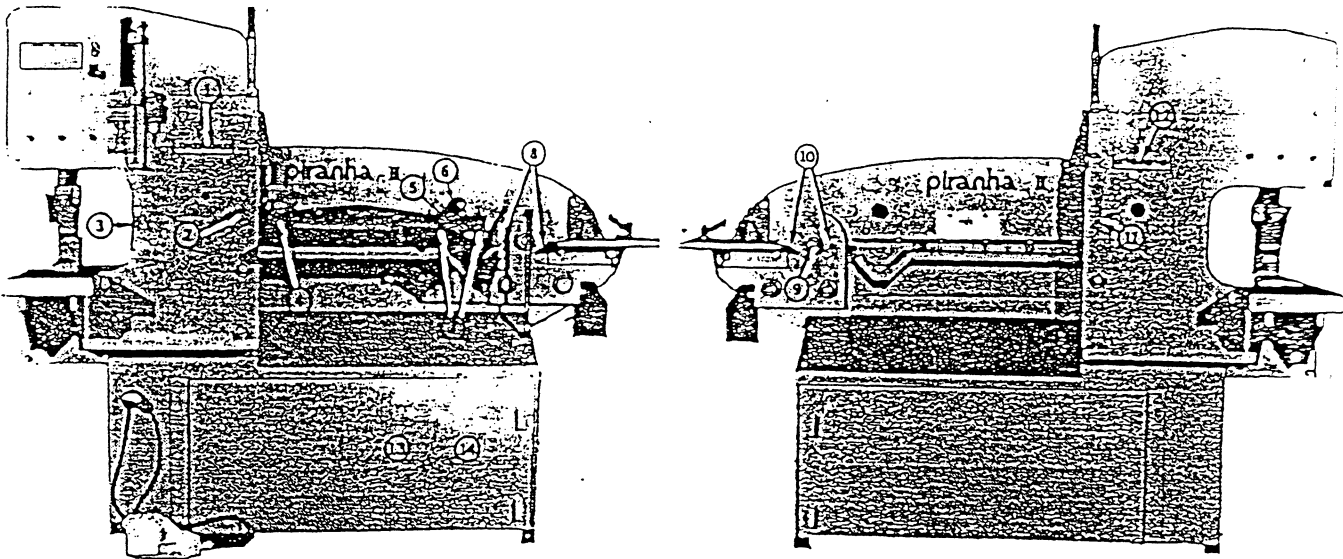
Gauge	Approx. Thickness	Clearance Add to Punch Size	Gauge	Approx Thickness	Clearance Add to Punch Size
30	.0120	Slip fit	17	.0538	.005
29	.0135	Slip fit	16	.0598	.005
28	.0149	Slip fit	15	.0673	.007
27	.0164	Slip fit	14	.0747	.007
26	.0179	Slip fit	13	.0897	.010
25	.0209	.002	12	.1046	.010
24	.0239	.002	11	.1196	.010
23	.0269	.002	10	.1345	1/64"
22	.0299	.003	9	.1345	1/64"
21	.0329	.003	8	.1644	1/64"
20	.0359	.003	7	.1793	1/64"
19	.0418	.003	1/4 to 1/2" plate	—	1/32"
18	.0478	.005	1/2" plate and over	—	1/16"

LUBRICATION

GENERAL

The importance of correct lubrication cannot be over emphasized. Under no circumstances should the machine be operated without complying with the lubrication requirements set forth in this publication.

LUBRICATION DIAGRAM



LUBRICATION CHART

Station	Part Lubricated		Frequency	Instructions	Type Lube
1	Trunion Pin - On Side		Every 40 Hours Or Weekly With Normal Use	Apply Grease Gun Until Grease Appears Around Edge of Parts	Mobile MP Or Any Multi- Purpose Grease
12	Trunion Pin - Off Side				
2	Gib - On Side				
11	Gib - Off Side				
8	Coper Side Plate-On Side (2 Places)				
10	Coper Side Plate-Off Side (2 Places)				
7	Angle Guide Pins (2 Places)				
4	Hold Down Shaft				
5	Angle Knife Bushing				
6	Hold Down Link				
3	Cylinder Clevis				
9	Rear Hinge Pin				
13	Drive Motor	Located Inside The Cabinet	Every 100-150 Operating Hour	One Shot From Grease Gun	Multi- Purpose Grease
14	Drive Motor				

ADDENDUM TO OPERATOR's MANUAL PII-110, PII-140, SEPP-140

Limit switch controls:

Of the two limit switch buttons, the lower of the two (the button on the bottom part of the threaded rod) activates the UP TRAVEL limit switch. When the UP LIMIT SWITCH is made, the UP GREEN LIGHT will come on, showing the user that the machine is at the top of stroke.

Of the two limit switch buttons, the higher of the two (the button on the top part of the threaded rod) activates the DOWN TRAVEL limit switch. When the DOWN LIMIT SWITCH is made, the DOWN GREEN LIGHT will come on, showing the user that the machine is at bottom of stroke.

This machine is equipped with a HARD LIMIT SWITCH that is permanently wired to allow only enough down stroke of the machine to pass a figure 26 punch into a figure 62 die using the standard punch holder and die block. There is more down stroke available ONLY FOR USE WITH SPECIAL TOOLING. To access the extra down stroke, the supervisor must use a key to switch the HARD LIMIT switch to the OFF position. This switch is mounted on the electrical enclosure. When the supervisor turns this switch OFF, the RED LIGHT on the operator's panel will light, WARNING the user that the HARD LIMIT has been bypassed. The DOWN TRAVEL limit will work normally and allow full adjustment throughout the additional down stroke of the machine, but the RED LIGHT will be ON at all times that the HARD LIMIT has been turned OFF. This feature will allow for more DOWN TRAVEL of the machine, but it must be used with care and MUST ONLY BE USED FOR SPECIAL TOOLING. The HARD LIMIT key switch should NEVER be turned OFF when using the standard punch and die setup.

THIS KEYSWITCH AND LABEL WILL BE INSTALLED ON THE ELECTRICAL ENCLOSURE FOR THE MACHINE. The HARD LIMIT toggle switch used now will be REPLACED by an On/Off switch with a key.

Warning !!!

Keyswitch in the OFF position will BYPASS the hard limit switch to allow more DOWN TRAVEL of the punch and make the HARD LIMIT BYPASS RED LIGHT COME ON. Use ONLY with special tooling and consult owner's manual for proper use.

Hard Limit

On Off

KEYSWITCH

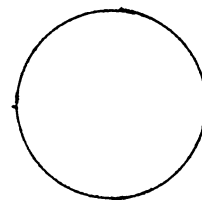
THIS LIGHT AND LABEL WILL BE INSTALLED ON THE FRONT PANEL OF THE MACHINE
The RED LIGHT will be in the same position as the existing RESET button and light.

WARNING!!!!

When the red light is ON the HARD LIMIT SWITCH for PUNCH DOWN travel is BYPASSED. For use with SPECIAL TOOLING ONLY!! THIS LIGHT SHOULD NEVER BE ON when using the standard punch and die setup. Consult OWNER's Manual.

**Hard Limit
Bypass**

Red Light



OPERATING INSTRUCTIONS

The Piranha ironworker comes pre-assembled and pre-wired, requiring only the addition of a power source from a disconnect to the electrical enclosure box located inside the cabinet.

The unit can be started and stopped by the push-pull button switches located at the upper front of the machine and the rear control box. Pull to start the machine, push to stop the machine. Both switches must be pulled out to start the machine. Either switch will stop the machine by pushing it in. Note: Proper positioning of the ON/OFF selector switch and JOG/RUN selector switch located at the punch end controls is required upon startup. The ON/OFF should be in the "off" position, the JOG/RUN in the "jog" position.

The ironworker is hand controlled by a 3 position momentary joystick operator. When the joystick is released from any position, it will return to the neutral (center) position stopping the machine movement instantly. The joysticks are located at the upper right side of the punch end (facing machine) and at the rear control box near coper notcher area (material feed side).

The 2 controlling positions of the joystick are:

Punch end

1. Up (pushing the handle up)
2. Down (pulling the handle down)

Rear control box (with JOG/RUN selector switch at punch controls area in "run" position)

1. Shear section Up (pushing the handle to the Coper/Notcher end)
2. Shear section Down (pulling the handle to the Punch end)

The ironworker can also be controlled by a footswitch. (see figure "F") The footswitch is used by plugging the 4-pole plug into the 4-pole receptacle located at the lower front of the machine (Punch end) and at the rear control box (Coper/Notcher end). It works in conjunction with the ON/OFF selector switch located on the upper front of the machine (Punch end), and at the rear control box (Coper/Notcher end). The footswitch is a three position switch allowing hands free operation. By fully depressing the footswitch lever, ram movement is downward until the stroke limit setting is met (see "F2") or by allowing the footswitch lever to elevate to the center position, ram movement will stop (see "F3"). Completion of the downward cycle is accomplished by depressing the footswitch lever again. The ram will move down until the stroke limit setting is met (see "F4"). Removing foot pressure from the foot switch entirely allows the ram to move upward until the stroke limit setting is met, completing the upstroke cycle (see "F5").

PUNCH END OPERATION

To set the punch stroke, use the following procedure:

1. Turn the remote foot control ON/OFF selector switch to the "off" position.
2. Turn the JOG/RUN selector switch to the "jog" position.
3. Plug in the remote foot control.
4. Activate the punch end joystick (pull downward) to lower the ram to the desired "down" setting.
5. Move the top limit switch button to make contact with the limit switch and stop the ram at the desired "down" position.
6. Activate the punch end joystick (pull upward) to raise the ram to the desired "up" setting.
7. Move the lower limit switch button to make contact with the limit switch and stop the ram at the desired "up" position.
8. Turn the JOG/RUN selector switch to the "run" position.
9. Turn the remote foot control ON/OFF selector switch to the "on" position.
10. Fully depress the remote foot control lever allowing the ram to lower.
11. Allow the remote foot control lever to elevate, raising the ram.

NOTE: When punching, bending, or using any attachment on the punch end of the machine, the upper and lower limit settings should allow for 1/4" maximum clearance between the bottom of the upper tooling and the work material. The setting will change when the work material thickness changes.

Allowing the upper tooling to raise into the machine "C" frame area due to an incorrect stroke limit control setting, can damage the tooling and/or the machine. Always check the stroke limit settings before installing tooling.

PUNCH ATTACHMENT ALIGNMENT

The alignment of the punch and die should be accomplished in the following manner:

1. Turn the machine off.
2. Locate the slotted mounting hole on the stripper. Loosen the nut on the stripper stud and rotate the stripper out of the way.
3. Remove the coupling nut from the punch stem using the coupling wrench.
4. Insert the punch into the coupling nut and tighten onto the punch stem using the coupling wrench.
5. Insert the die into the die block. Tighten the set screw against the die. Be sure the die ID is larger than the punch OD by at least 10% of the material thickness.
6. Slide the die block around the set screws on the platen table. Do not tighten the flanged nuts.

7. Start the machine and plug the remote foot control in. With the remote foot control ON/OFF selector switch in the "off" position, and the JOG/RUN selector switch in the "jog" position, lower the ram using the punch end joystick. Stop the ram movement when the punch is approximately 1/8" above the die.
8. Visually and by hand movement of the die block, align the punch and die. Move the ram down again until the punch has passed through into the die, 1/8" maximum.
9. Tighten the flanged nuts on the set screws to secure the die block firmly to the platen table.
10. Set the limit switch buttons to control the length of the stroke "up" and "down" (see procedure previously listed in Punch End operation)
11. Turn the JOG/RUN selector switch to the "run" position.
12. Turn the remote foot control ON/Off selector switch to the "on" position.
13. Depress the remote foot control lever allowing ram to lower to "down" setting.
14. Allow the remote foot control lever to elevate allowing the ram to raise to the "up" setting.
15. Rotate the stripper back into position and adjust, using the nuts on the stripper studs, to a maximum distance of 1/4" above the work material.
16. Recheck the "up" and "down" stroke settings to make sure the punch coupling nut will not come in contact with the bottom of the material stripper. If the coupling nut does contact the bottom of the stripper foot, adjust the stripper assembly up, using the stripper stud nuts, and reset the lower limit setting.
17. Start operation.

SHEAR END OPERATION

The shearing section of the Piranha contains workstations to shear round or square bar, flat bar and angle iron. It can be operated with either the joystick or remote foot control from the REAR CONTROL BOX only. The foot control is used in conjunction with the upstroke and down stroke limit switches located near the rear control box. On the backside of the rear control box is the ON/OFF selector switch for activating these limit switches. The front limit adjusting screw (closest to the punch end) controls the beam's upward movement. The back adjusting screw (furthest from the punch end) controls the beam's downward movement. Adjust each limit switch setting by loosening the lock nut and adjusting the knurled screw to obtain the desired stroke. To set the beam stroke for shearing flat, angle, and round bar using the limit switch stops, use the following procedure:

1. Plug in foot switch at rear control box.
2. Turn the JOG/RUN selector switch to the "run" position.
3. Turn OFF/ON selector switch to "on" position.
4. Turn SHEAR/COPER selector switch to "shear" position.
5. Loosen the down stroke limit stop locking nut and turn the knurled knob to the desired setting.
6. Fully depress foot switch lever allowing beam to move downward.
7. Adjust limit switch stop until contact with the beam down stroke switch stops beam movement at the desired lower limit.

8. Tighten locking nut to hold limit switch stop firmly in place.
9. Loosen the upstroke limit stop locking nut and turn the knurled screw to the desired setting.
10. Allow foot switch lever to elevate allowing beam to raise.
11. Adjust upstroke limit switch stop until contact with the beam upstroke switch stops beam movement at the desired upper limit.
12. Tighten locking nut to hold limit switch stop firmly in place.
13. Start operation.

To set the beam stroke for the coper/notcher section, follow the same procedure as above except in number 3. Turn the SHEAR/COPER selector switch to "coper" position.

NOTE: The limit switch closest to the punch end controls the down stroke limit on the coper end. The upstroke on the coper end is controlled by the limit switch closest to the coper end.

Hold Down Assembly Adjustment

The adjustment on the hold down assembly should be accomplished by the following manner:

1. Raise the upper beam to its full upstroke limit.
2. Loosen the long hex head nut without removing it from the swing raising the holddown assembly.
3. Assure the hold down bar has raised until it is directly under the long nut.
4. Insert material to be sheared under the hold down assembly.
5. Tighten the long hex head nut to allow for approximately 1/8" clearance between the bottom of the shear urethane and the top of the material to be sheared. The material should move freely and not be held by the hold down assembly at this point.
6. Lower the beam using the rear control box joystick until the hold down assembly firmly clamps the material. Note: The hold down assembly must firmly clamp the material before the shear knives engage the material surface.
7. If the foot switch is to be used during the operation, adjust the limit switches to control the length of stroke (see procedures previously listed).

NOTE: Do Not Attempt to shear any material that will not be held by the hold down assembly.

3 Position Holddown Settings vs Material thickness:

Locator hole nearest punch end - 3/8 " thick and less

Locator hole center position - 3/8" to 5/8" thick

Locator hole nearest the coper end - 5/8" to 1" thick

BENDING ATTACHMENT ALIGNMENT

The alignment of the bending punch and bending die should be accomplished in the following manner (see Bending Attachments – Optional Tooling page for visual reference):

1. Turn the machine off with the ram in the up position and all other tooling removed from the punch end.
2. Bolt the ram adapter onto the ram.
3. Loosen the bolt on the limit switch clamp and raise to 3 1/8" above the ram adapter. Tighten the bolt.
4. Install the limit switch stop on the limit switch rod between the lower limit button and the lower roll pin. Position the button against the limit switch stop (page RP-).
5. Place the bending die on the platen table directly under the punch ram. Do not secure it yet.
6. Place the bending punch in the top "V" groove of the bending die. Visually align the bending punch to the punch stem.
7. Turn the remote foot control ON/OFF selector switch to the "OFF" position.
8. Turn the JOG/RUN selector switch to the "jog" position.
9. Start the machine and activate the punch end joystick (pull downward) to lower the ram. Stop the ram movement when the ram adapter is approximately 1/8" above the bending punch.
10. Align the bending punch to the ram adaptor and carefully lower the ram into the bending punch collar until fully seated.
11. Rotate the complete bending attachment parallel to the front edge of the platen table and tighten the clamping bolt on the bending punch collar.
12. Secure the four wedge blocks to the platen table to position the bending die on the center line of the bending punch.
13. Set the limit switch buttons to control the length of the stroke and the degree of the bend (see the procedure previously listed).
14. Turn the foot pedal toggle switch to the "ON" position and start the operation.

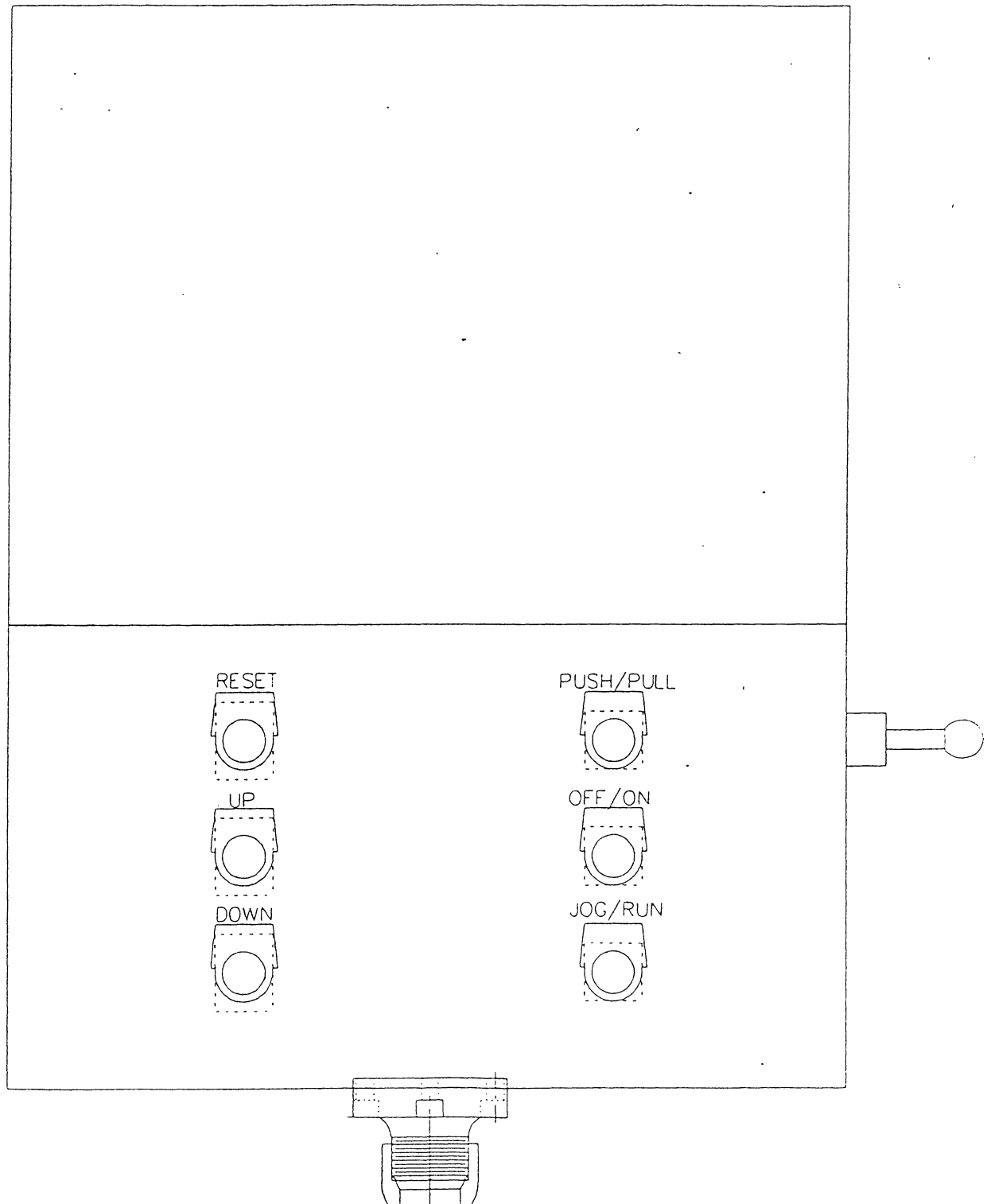
NOTE: Do not remove the limit switch stop while the bending attachment is installed.

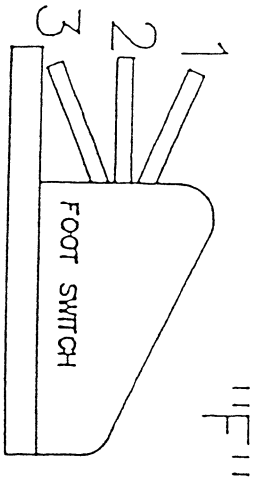
Set the limit switch button to allow for 1/4" maximum clearance between the bottom of the bending punch and the work material.

Always center the work material under the punch ram. Side loading will damage the tooling and/or machine.

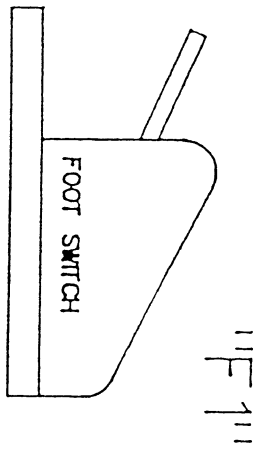
Replace the limit switch clamp in the original position when finished with the bending application.

PUNCH CONTROLS

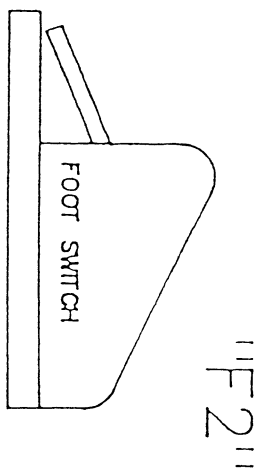




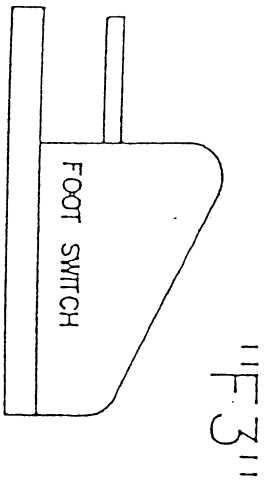
- FOOT SWITCH LEVER POSITIONS
- 1) RAM MOVES UP
 - 2) RAM IS STOPPED
 - 3) RAM MOVES DOWN



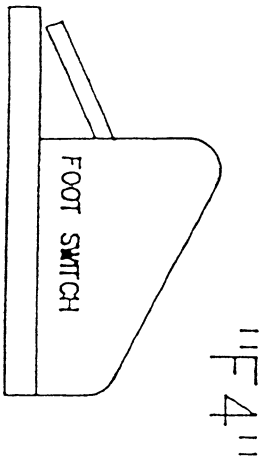
FOOT SWITCH LEVER
FULL UP POSITION
RAM ELEVATES
TO LIMIT SETTING



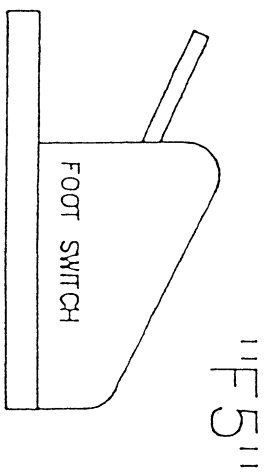
FOOT SWITCH LEVER
DEPRESSED PAST CENTER
RAM MOVES DOWN
TO LIMIT SETTING



FOOT SWITCH LEVER
NEUTRAL POSITION
RAM TRAVEL
IS HALTED

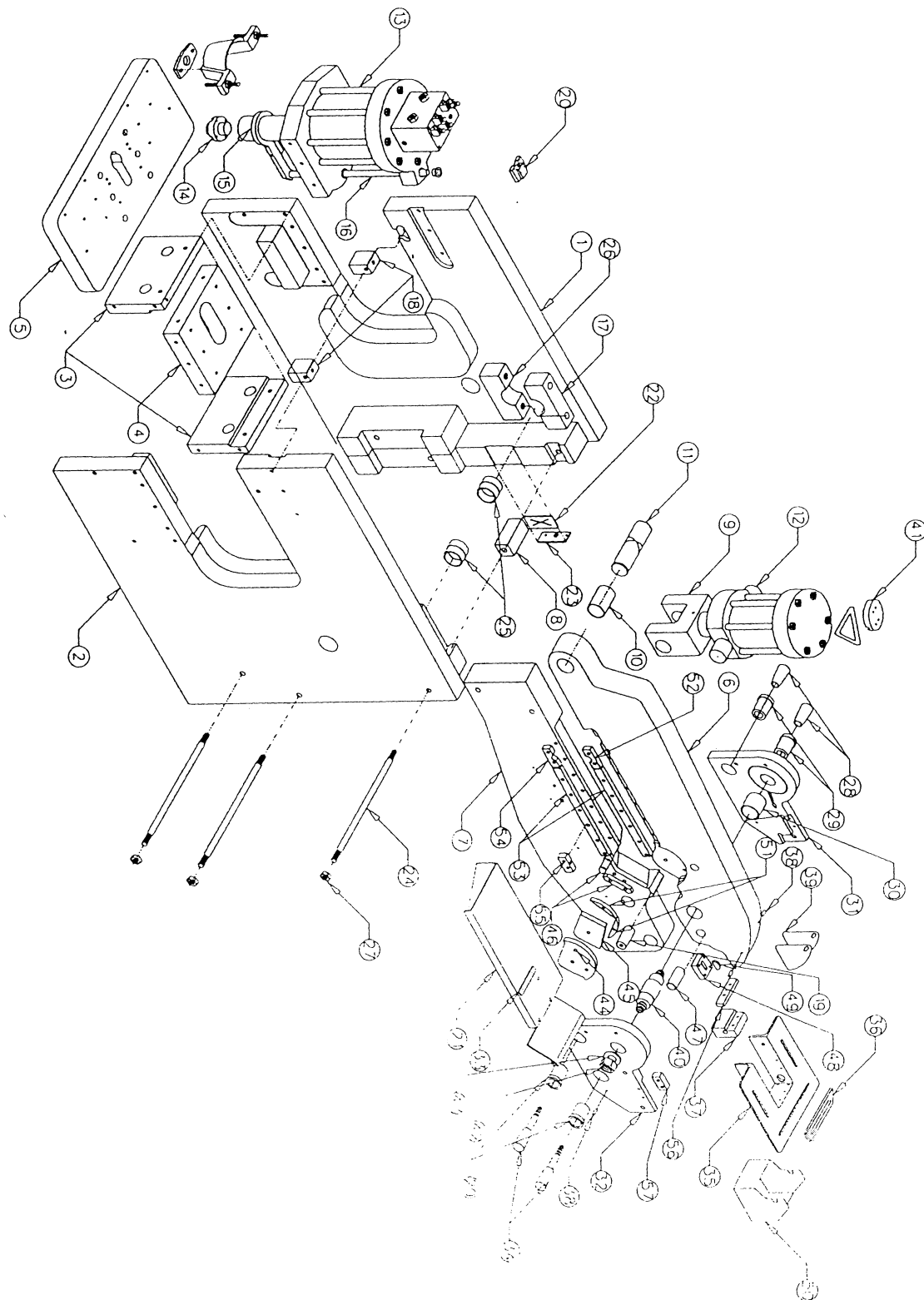


FOOT SWITCH LEVER
DEPRESSED PAST CENTER
RAM MOVES DOWN
TO LIMIT SETTING



FOOT SWITCH LEVER
FULL UP POSITION
RAM ELEVATES
TO LIMIT SETTING

PII 110 BASIC UNIT



PII 110 BASIC UNIT

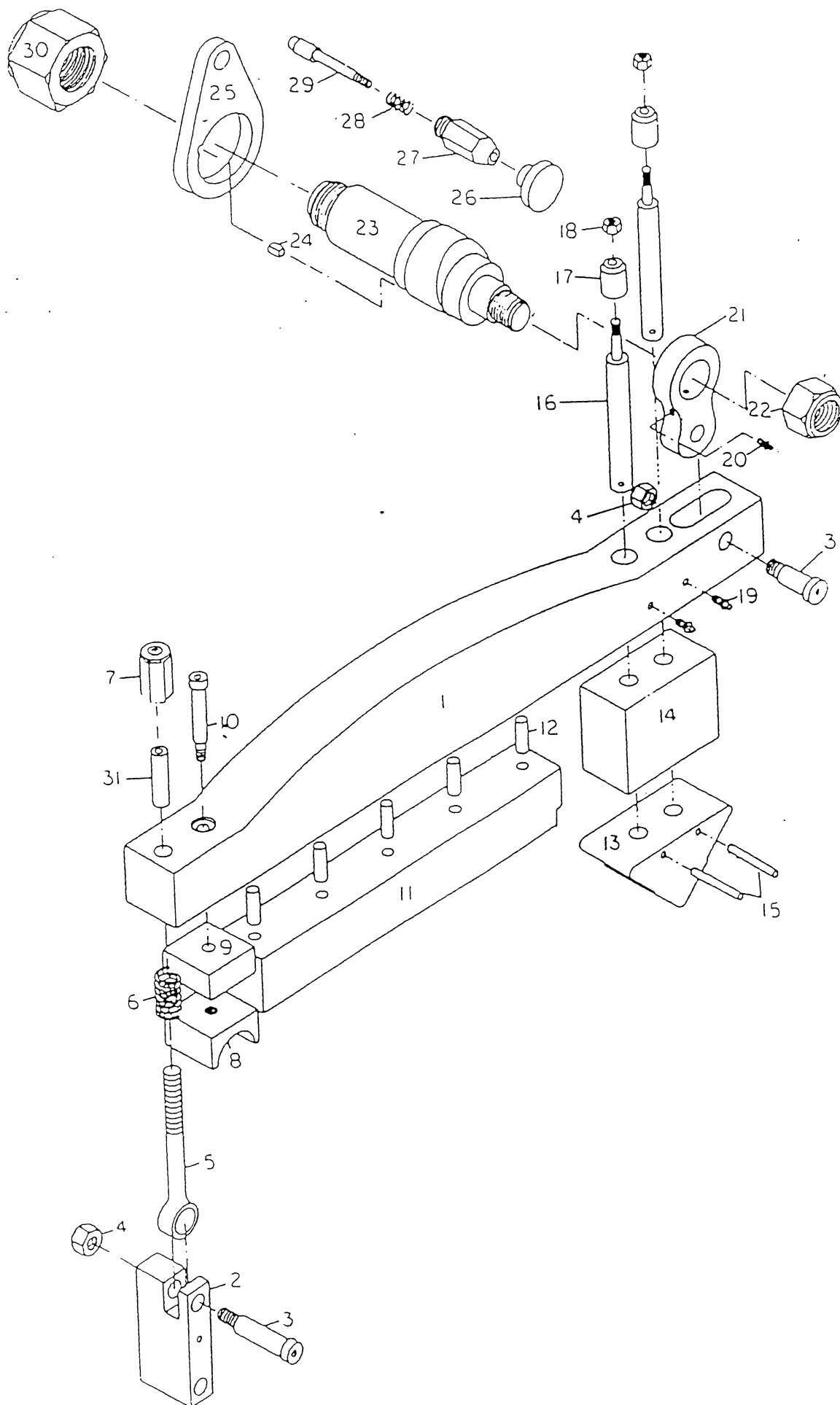
Figure and Index No.	Part Number	Description	Qty
RP-1	0275114	P110 Support C Frame-Offside	1
-2	0275113	P110 Support C Frame-Onside	1
-3	0278117	Gusset C Frame, Front and Rear	2
-4	0278115	Platen Support Block	1
-5	0278120	Platen Table	1
-6	0275100	Upper Beam Assy	1
-7	0275101	Lower Beam Assy	1
-8	0378401	Spacer Block	1
-9	0278152	PII 110 Cylinder Clevis	1
-10	0350168	PII 110 Clevis Bushing	1
-11	0278164	Cylinder Clevis Pin	1
-12	0278710	7" Rear Cylinder Assy	1
-13	0275700-1	9" Front Cylinder Assy	1
-14	0278125	PII 110 Fig 26 Punch Stem	1
-15	0278157	Limit Switch Clamp	1
-16	0278677	Limit Switch Rod	1
-17	0278718	Upper Pillow Block	2
-18	0278404	Stripper Mount Block	2
-19	0250154	Urethane Spacer	1
-20	0278260	Hard Limit Switch Mount	1
-21	0250121	Combo Table	1
-22	0278145	Bronze Wear Plate	1

PII 110 BASIC UNIT, CONTINUED

Figure and Index No.	Part Number	Description	Qty
-23	0278146	Bronze Wear Plate Cartridge	1
-24	0275156	C-Frame Thru Bolt 22 ¼	3
-25	0278707	Cylinder Trunion Bushing	2
-26	0278717	Lower Pillow Block	2
-27	0531260	1"-14 NF Hex Nut	6
-28	0250163	Taper Pin Plug	2
-29	0250161	Taper Pin Split Bushing	4
-30	0350170	Rear Hinge Pin Bushing	1
-31	0250116	Coper Side Plate Offside	1
-32	0275116	Coper Side Plate Onside	1
-33	0250140	Plate Shear Guide	1
-34	0250160	Taper Pin	2
-35	N/A	Coper Table Assy	1
-36	0330128	Coper Table Guide	3
-37	0250117	Coper End Knife Support	1
-38	0531352	½ X 1 ½ Roll Pin	2
-39	0250142	Coper Guard Assy	1
-40	0250166	Rear Hinge Pin	1
-41	0541400	CL-120-HR Hoist Ring	1
-42	0541250	2-12 JN	2
-43	0541303	2.035 ID X 4" OD X .255 Washer	2

PII 110 BASIC UNIT, CONTINUED

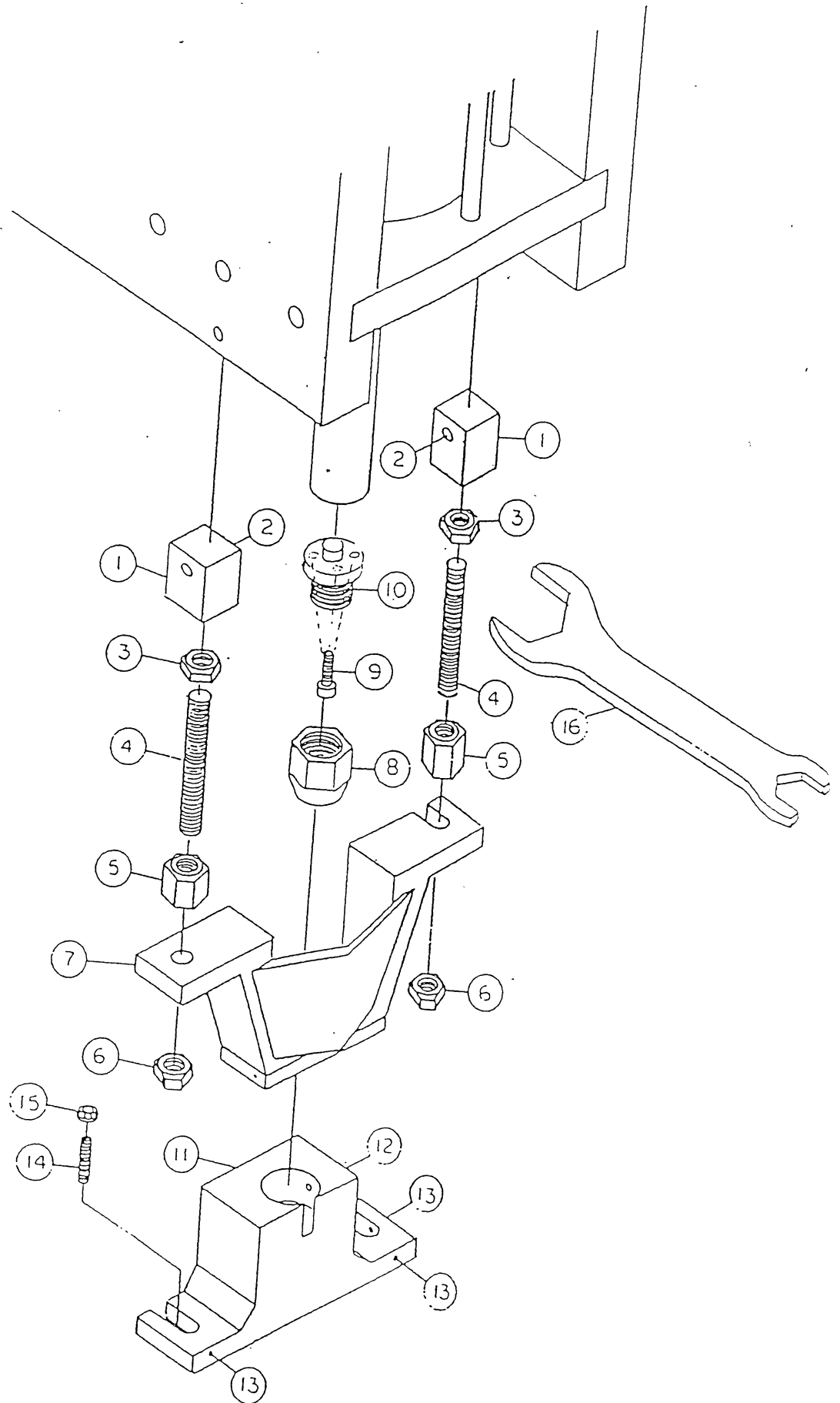
Figure and Index No.	Part Number	Description	Qty
-44	0250146	Angle Knife Cover	1
-45	0250273	Upper Angle Knife	1
-46	0250274	Lower Angle Knife	2
-47	0250155	Pipe Spacer	1
-48	0250277	Upper Coper Knife	1
-49	0531330	3/8 X 2 3/4 T Woodruff Key	2
-50	0250143	Coper Chip Bucket	1
-51	0240168	Angle Knife Block	2
-52	2402561	1 1/4 Round Bar Knife Short	1
-53	0250250	16.625" Flat Shear Knife	2
-54	0240256	1 1/4 Round Bar Knife Tall	1
-55	0240157	Shear Table Adjust Block	1
-56	0250278	Lower Coper End Knife	1
-57	0250278	Lower Coper Side Knife	2



HOLD DOWN ASSEMBLY

PART #0250200

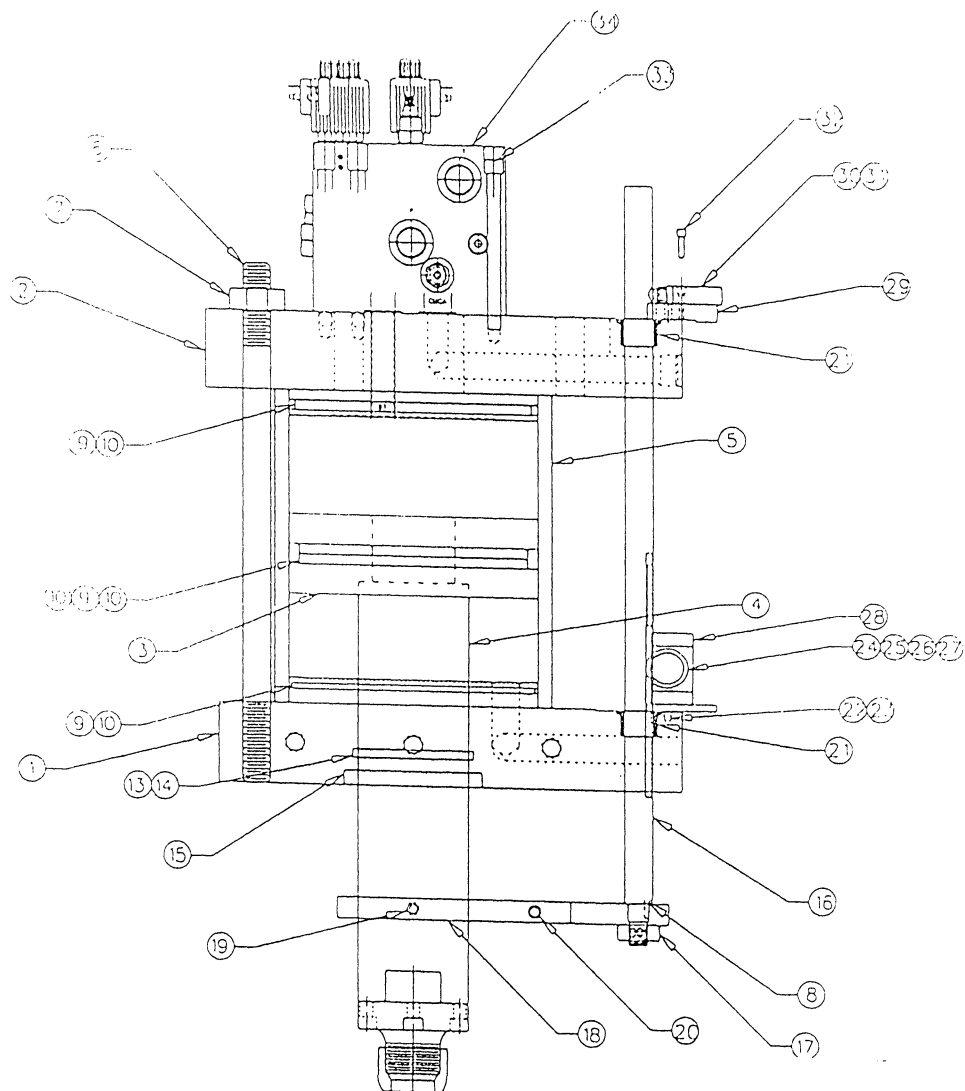
Figure And Index No.	Part Number	Description	Qty.
- 1	0350200	Hold Down Bar	1
- 2	0240206	Swingbolt Block	1
- 3	0541160	3/4" x 2 3/4" SB	2
- 4	0531250	5/8" Nylock Nut	2
- 5	0541395	CL-76 Swingbolt	1
- 6	0340217	Swingbolt Spring	1
- 7	0541396	CL-4 Coupling Nut	1
- 8	0340205	Round Bar Block	1
- 9	0340209	Round Bar Urethane	1
-10	0541112	1/2" x 3 1/4" SB	1
-11	0350207	Shear Urethane	1
-12	0531352	1/2" x 1 1/2" Roll Pin	5
-13	0340204	Angle Block	1
-14	0350208	Angle Urethane	1
-15	0541062	5/16" x 2 1/2" Spiral Pin	2
-16	0350201	Angle Guide Pin	2
-17	0340211	Angle Guide Pin Sleeve	2
-18	0531212	3/8" Nylock Nut	2
-19	0531360	1610 B Zerk	2
-20	0531363	1636 B Zerk	1
-21	0340202	Hold Down Link	1
-22	0541225	1 1/4" Nylock Jam Nut	1
-23	0250201	Hold Down Pin	1
-24	0340215	Hold Down Pin Key	1
-25	0350215	Locator Plate	1
-26	0541393	Locator Pin Knob	1
-27	0340213	Locator Pin Housing	1
-28	0340216	Locator Pin Spring	1
-29	0340212	Locator Pin	1
-30	0531270	1 1/2" NF Jam Nut	1
-31	0350210	Hold Down Bar Bushing	1



PII 110 PUNCH ASSEMBLY

Figure And Index No.	Part Number	Description	Qty.
RP- 1	0278404	Stripper Mount Blocks	2
- 2		SHCS	
- 3	0541185	3/4 JN	6
- 4	0276405	Stripper Stud	2
- 5	0541396	3/4 CL-4-CN	2
- 6	0541182	3/4 HN	2
- 7	0276401	Stripper Assembly	1
- 8	0276126	Coupling Nut	1
- 9	0531070	7/16 x 1 3/4 SHCS	4
-10	0278125	Fig. 26 Punch Stem	1
-11	0280400	Die Block	1
-12	0531055	3/8 x 1/2 SSS	1
-13	0531002	1/4 x 3/4 SSS	3
-14	0541127	5/8 x 3 1/2 SSS	2
-15	0531251	5/8 Flanged Nut	2
-16	0241410	Coupling Wrench	1

PII-110 FRONT CYLINDER ASSY

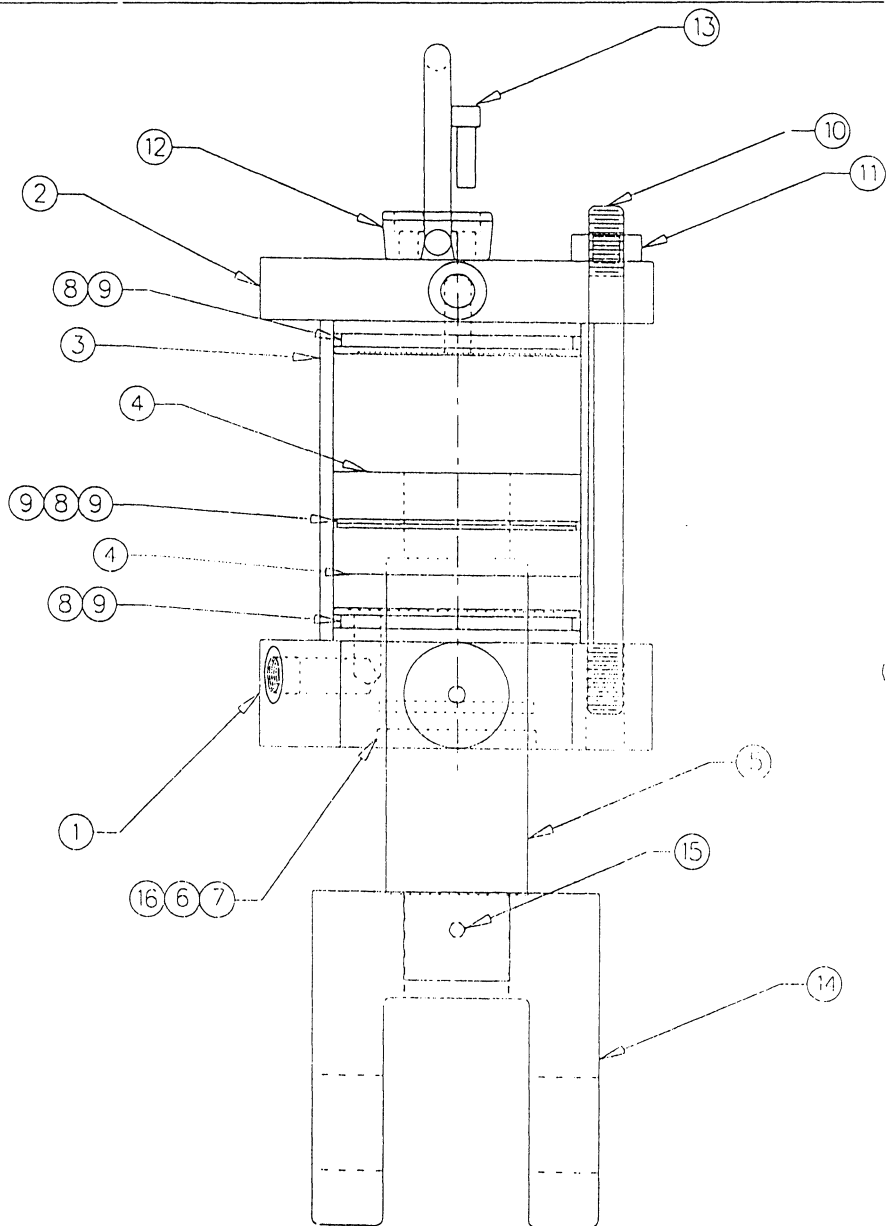


P11-110 FRONT CYLINDER ASSEMBLY
PART # 0275700-1

FIGURE AND INDEX NO.	PART NUMBER	DESCRIPTION	QTY
1	0375704	P11 110 9" Cylinder Bearing Cap	1
2	03757021	P11 110 9" Cylinder Top Cap	1
3	03757011	P11 110 9" Cylinder Piston	1
4	0378705	P11 110 Front Cylinder Rod	1
5	0375703	P11 110 9" Cylinder Tube	1
6	0378706	P11 110 9" Cylinder Tie Bolts	8
7	0531260	1"-14 NF ND Hex Nut	8
8	0278266	1/4" Sq Keystock (1/2" Long)	1
9	0591713	9" OD Buna O-Ring 446	2
10	0591714	9" OD Buna Backup Ring 446	2
AND	0591715	9" Polypak Seal Cylinder Piston	1
	REPLACES The 2 # 10's and 1 # 9 on Cylinder Piston 03757011		
11	N/A	N/A	N/A
12	N/A	N/A	N/A
13	0591703	4.375" OD Buna N O-Ring 345	1
14	0591704	4.375" OD Buna N Backup Ring 345	1
15	0591711	4" Piston Rod Seal 327215	1
16	0278677	Limit Switch Rod Current Production	1
OR	0278158	Limit Switch Rod For Encoder	OR
17	0591090	3/4-16 Jam Nut	1
18	0278157	Limit Switch Clamp	1
19	0531085	1/2-13 x 1/2" SSS	1
20	0531081	1/2-13 x 1 1/4" SHCS	1
21	0591370	Limit Switch Rod Guide Bushings	2
	22-28 No Longer Used On Current Production Models		
22	0531000	1/4-20 x 1/2" SHCS	2
23	0531006	1/4" x 1 1/2" Dowel Pin	2
24	05915901	Kep 250 Encoder	1
25	0591005	M3-.5 x 8mm Screw	3
26	0278263	Encoder Spur Gear Assy	1
27	0591003	#6-32 x 1/4" SSS	2
28	02781591	Limit Switch Encoder Mount Brk't	1
29	0278260	Limit Switch Mount	1
30	0278632	Limit Switch With Cable	1
OR	0591636	Limit Switch ONLY	OR
31	0591008	10-24 x 3/4" RHCS	2
32	0531001	1/4-20 x 3/4" SHCS	2
33	0591075	1/2-13 x 4 1/2" SHCS	4
34	05915341	Valve Body Assembly	1

PII 110 REAR CYLINDER ASSEMBLY

PART # 0278710

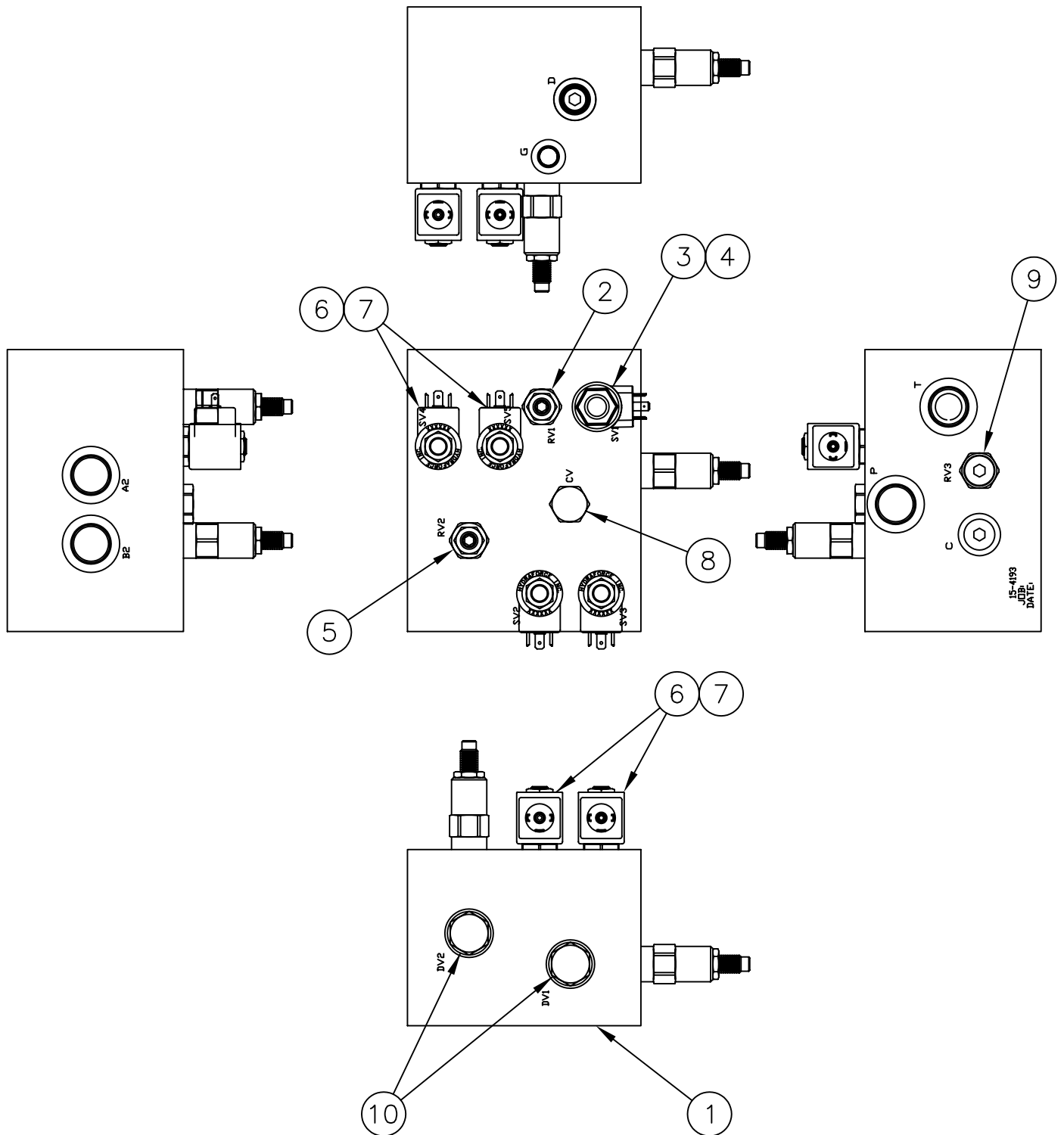


PII 110 REAR CYLINDER ASSEMBLY PART # 0278710

Figure and Index No.	Part Number	Description	Qty
RP-1	0378714	7" Cylinder Trunion	1
-2	0378712	7" Cylinder End Cap	1
-3	0378713	7" Trunion Cylinder Tube	1
-4	0378711	7" Cylinder Piston	1
-5	0378715	7" Cylinder Piston Rod	1
-6	0591703	ARP345 O-Ring 4.375"	1
-7	0591704	4.375" OD X 4" ID Back Up	1
-8	0591707	ARP439 O-Ring 7"	3
-9	0591708	439 Backup Ring 7"	4
-10	0378716	7" Cylinder Tie Bolts 14-3/4"	6
-11	0531260	1"-14 NF Hex Nut	6
-12	0541400	CL-120-HR Hoist Ring	1
-13	0531086	½ X 1 ¾ SHCS	4
-14	0278152	PII 140 Cylinder Clevis	1
-15	0531085	½ -13 X ½ SSS	1
-16	0591711	4" Piston Rod Seal 327215	1
Not pictured	0531531	6801-12 Hyd Fitting	2

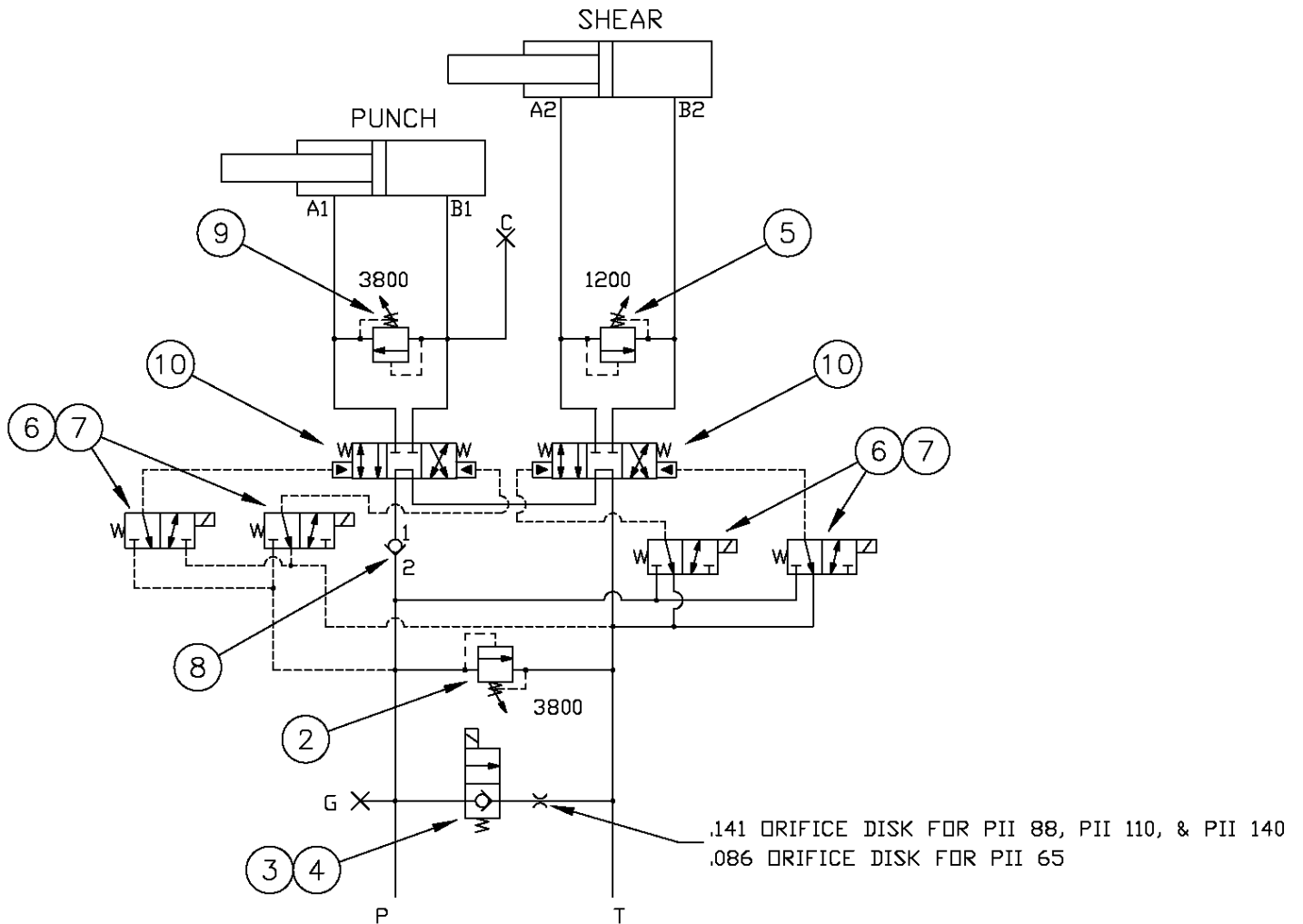
VALVE BODY ASSEMBLY

PART No. 05915341-1



VALVE BODY ASSEMBLY **PART # 05915341-1**

Figure and Index No.	Part Number	Description	Qty.
RP-1	0591534	Valve Body	1
-2	T3581	Pressure Relief Valve 50/38	1
-3	0591540-1	Solenoid Valve Normally Closed	1
-4	0591541-1	115V AC Solenoid Coil	1
-5	0591538-1	Pressure Relief Valve 25/12	1
-6	0591539-1	Solenoid Valve	4
-7	05915342	115V AC Solenoid Coil	4
-8	0591546	Cavity Plug	1
-9	T3581	Pressure Relief Valve 50/38	1
-10	0591536	Directional Valve Cartridge	2

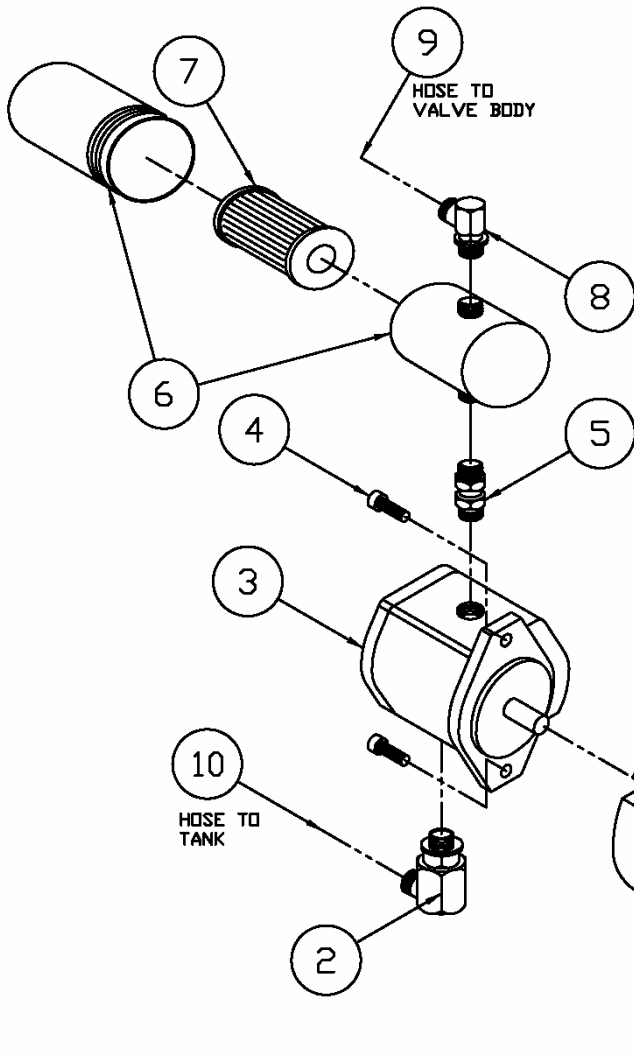


HYDRAULIC SCHEMATIC

Begins with S/N xxxx

PII110 MOTOR, PUMP AND FILTER ASSY PART # 0275600-1

Figure and Index No.	Part Number	Description	Qty.
-1	0551600-1	15 HP Motor 208/220/440V (Hollow Shaft)	1
OR	0551665-1	15 HP Motor 575V (Hollow Shaft)	1
-2	0533539	Hyd. Fitting 6801-16	1
-3	05915691-1	Hydraulic Pump	1
-4	0531081	½" x 1 ¼" SHCS	2
-5	0551511	6402-12-12 Hyd. Fitting	1
AND	0591506	6400-12-12 Hyd Fitting	1
-6	0591550-1	Filter Assy. 8" Pall	1
-7	0591551-1	Filter Element 8" Pall	1
-8	0531676	6801-16-12 Hyd. Fitting	1
-9	0591520	Hose to Valve Body 120"	1
-10	0551523	Hose to Tank 30"	1

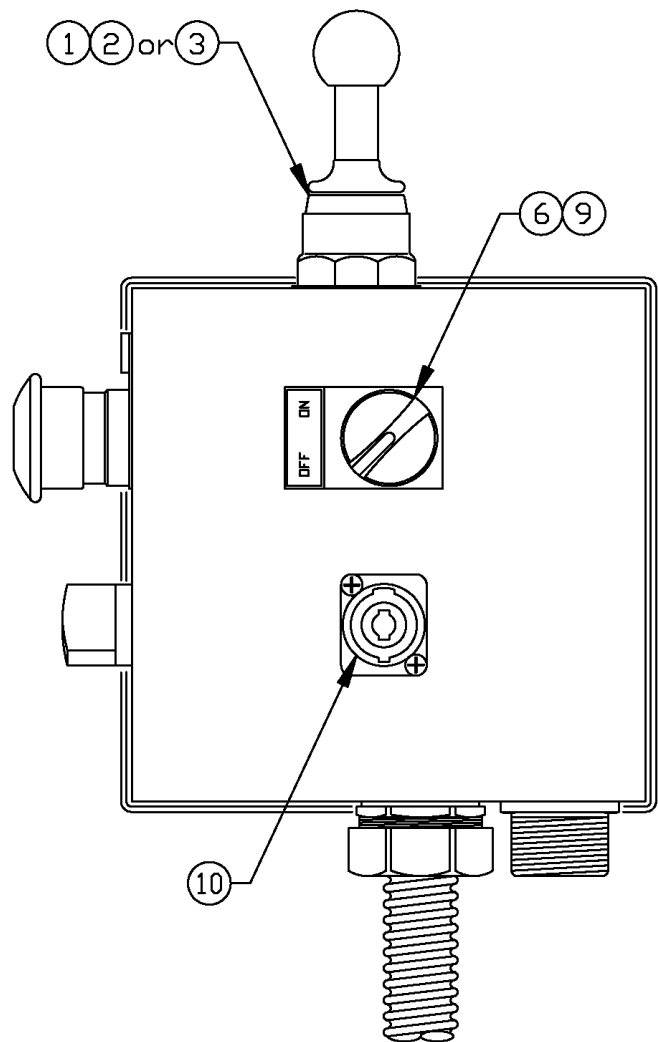
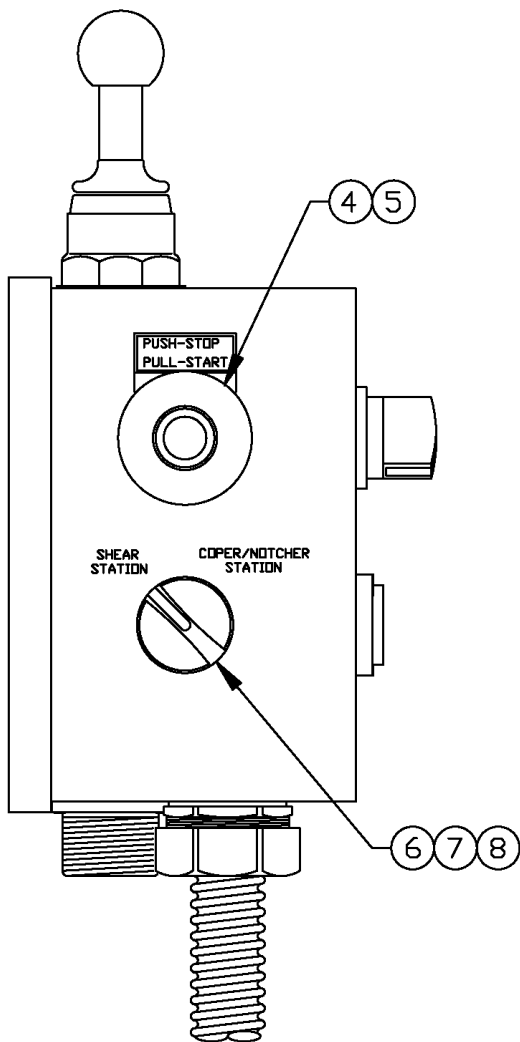


MOTOR WIRING

LOW VOLTAGE			HIGH VOLTAGE		
6	5	4	6	5	4
9	8	7	9	8	7
3	2	1	3	2	1
RED	WHT	BLK	RED	WHT	BLK
CANADIAN 600 VT					
3	2	1			
RED	WHT	BLK			

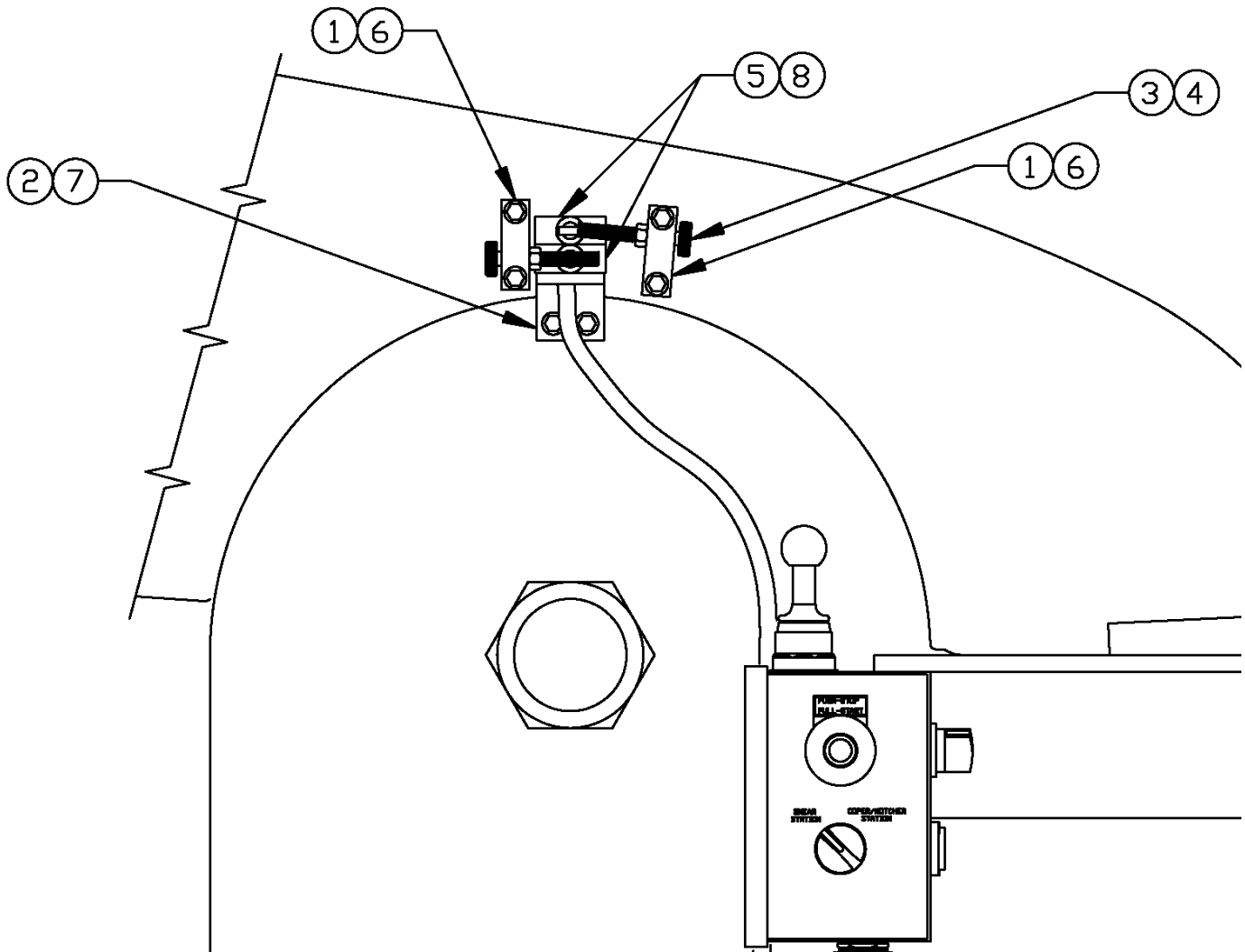
PII REAR BOX ASSEMBLY PART #0278630-1

Figure and Index No.	Part Number	Description	Qty.
RP-1	0591608	Joystick	1
-2	0531644	Contact Block	2
-3	0591608-1	Joystick Assy. (W/Contact Blocks)	1
-4	0531643-1	Push Pull Button	1
-5	05316121-1	Contact Block with Base N.C.	1
-6	0531695-1	Selector Switch 2-Position	1
-7	0531678-1	Mounting Base with 2-N.O. Contacts	1
-8	0591596-1	Contact Block N.C.	3
-9	0531696-1	Contact Block with Base N.O.	1
-10	0531618	4 Pole Receptacle	1

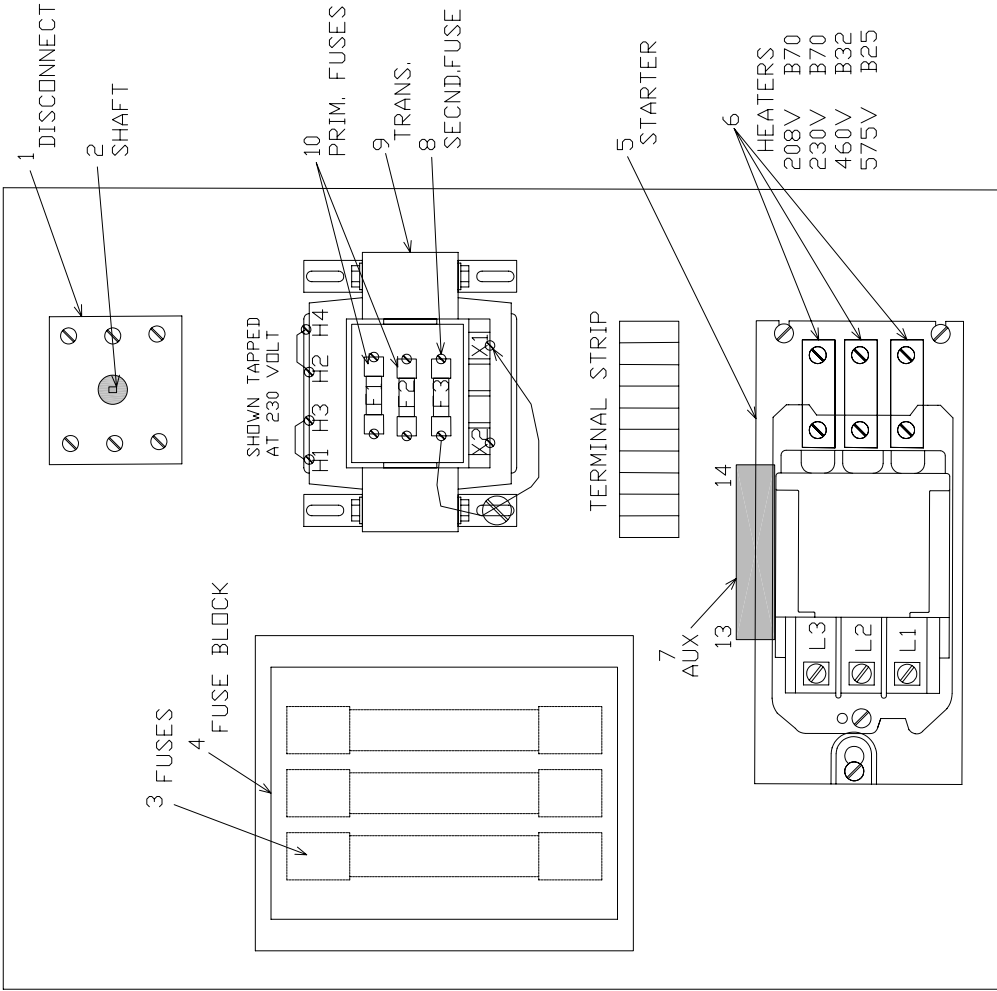


PII REAR LIMIT SWITCH ASSEMBLY

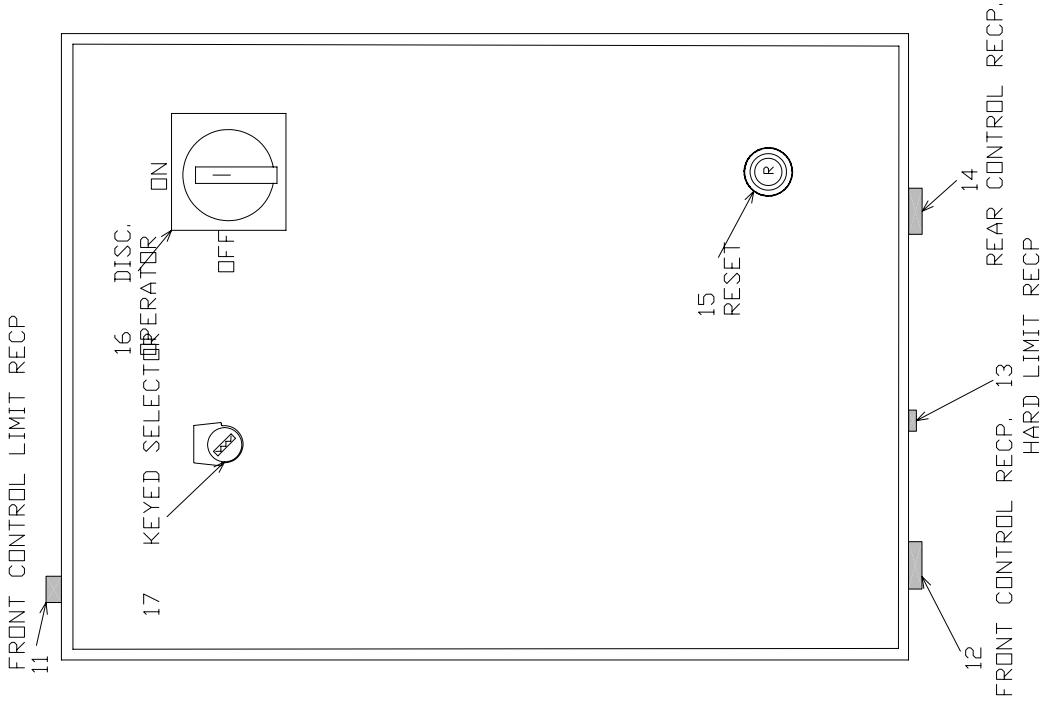
Figure and Index No.	Part Number	Description	Qty.
RP-1	0278153	PII110/140 Rear Limit Switch Adjusting Block	2
OR	0276151	PII65/88 Rear Limit Switch Adjusting Block	2
-2	0278154	PII Rear Limit Switch Mounting Bracket	1
-3	0541060	5/16" Knurled Head Screw	2
-4	0541025	5/16" Hex Nut	2
-5	0531615	Limit Switch	2
-6	0531022	5/16" x 2" SHCS	4
-7	0531039	3/8" x 3/4" SHCS	2
-8	0278635	Rear Limit Switch Box Assy. (Includes Box, Limit Switches and Cable)	1



ENCLOSURE BACK PLATE



ENCLOSURE DOOR



PIRANHA

TITLE	PII-110	IRON WORKER
DRAWING	0275640-2	2,PII-110
DATE	9-29-04	
REV#	-	
DRAWN BY	BOB RILEY	
PAGE	2	OF 2

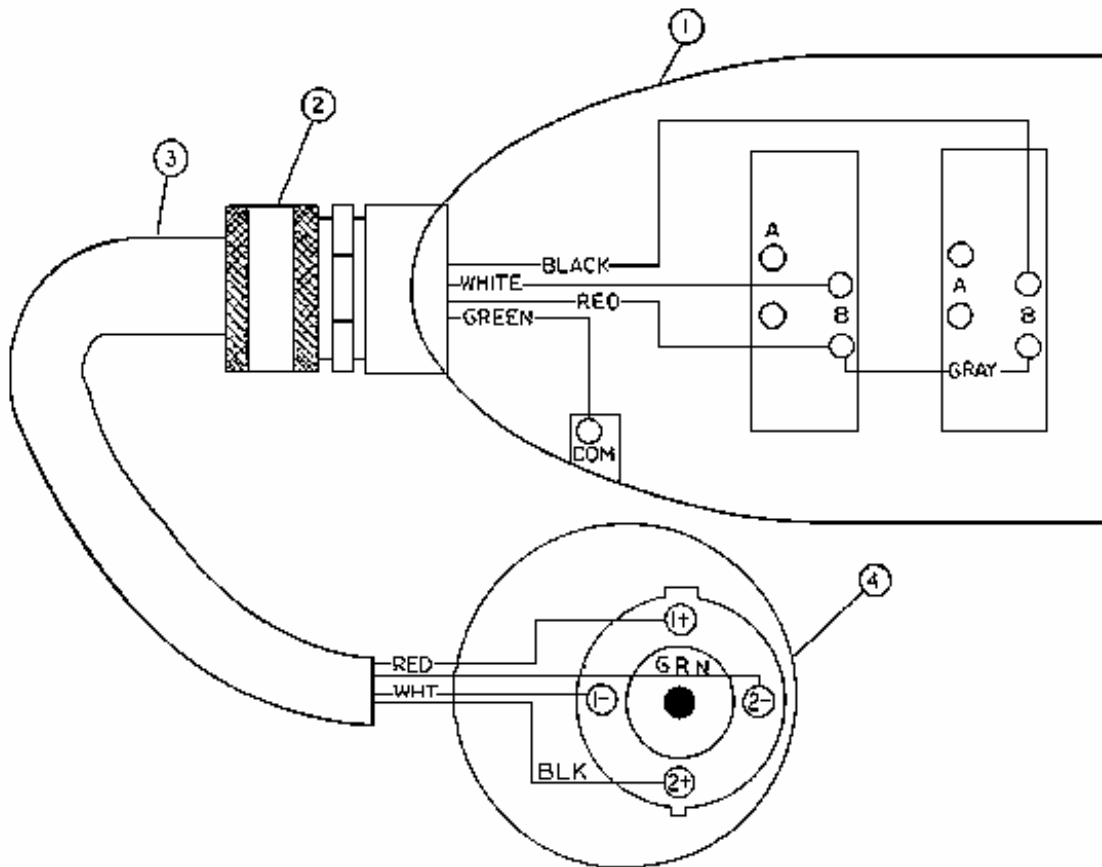
PII110 ELECTRICAL ENCLOSURE

PART # 0275640-2

Figure and Index No.	Part Number	Description	Qty.
RP-1	0591602	Disconnect	1
-2	T0727	Disconnect Shaft	1
-3	T0779	Fuse Motor Short Circuit 208V	3
OR	T0779	Fuse Motor Short Circuit 230V	3
OR	T0775	Fuse Motor Short Circuit 460V	3
OR	T0774	Fuse Motor Short Circuit 575V	3
-4	T0782	Fuse Block Motor Short Circuit 208/230V	1
OR	T0783	Fuse Block Motor Short Circuit 460/575V	1
-5	0541641	Motor Starter, All Voltages	1
-6	0541642	Heater Coils 208V 3 Phase	3
OR	0541642	Heater Coils 230V 3 Phase	3
OR	0541643	Heater Coils 460V 3 Phase	3
OR	0541616	Heater Coils 575V 3 Phase	3
-7	T2253	Starter Aux. Contact	1
-8	0531714	Secondary Fuse All Voltages	1
-9	0541638	Transformer 208V	1
OR	05416491	Transformer 230/460V	1
OR	0541639	Transformer 575V	1
-10	T0768	Primary Fuse, 208/230V	2
OR	T0767	Primary Fuse, 460/575V	2
-11	N/A	Front Control Limit Receptacle	1
-12	N/A	Front Control Receptacle	1
-13	N/A	Hard Limit Receptacle	1
-14	N/A	Rear Control Receptacle	1
-15	0531686-1	Reset Button	1
-16	0531604	Disconnect Operator	1
-17	0531694-1	Keyed Selector Switch	1

FOOT SWITCH ASSEMBLY **PART # 0231628**

Figure and Index No.	Part Number	Description	Qty.
RP-1	0531655	Foot Switch	1
-2	0531636	Cord Grip	1
-3	0531637	16-4 SEO Cord	
-4	0531617	4 Pole Plug	1



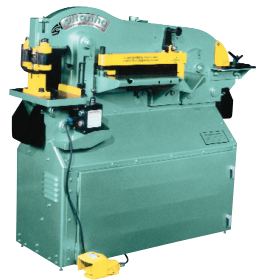
KNIVES

Figure And Index No.	Part Number	Description	Qty.
	0250250	14.625 Shear Knives	2
	2402631	1/2" Rd Bar Knife - Short	1
	0240263	1/2" Rd Bar Knife - Tall	1
	2402641	5/8" Rd Bar Knife - Short	1
	0240264	5/8" Rd Bar Knife - Tall	1
	2402521	3/4" Rd Bar Knife - Short	1
	0240252	3/4" Rd Bar Knife - Tall	1
	2402531	7/8" Rd Bar Knife - Short	1
	0240253	7/8" Rd Bar Knife - Tall	1
	2402541	1" Rd Bar Knife - Short	1
	0240254	1" Rd Bar Knife - Tall	1
	2402551	1 1/8" Rd Bar Knife - Short	1
	0240255	1 1/8" Rd Bar Knife - Tall	1
	2402561	1 1/4" Rd Bar Knife - Short	1
	0240256	1 1/4" Rd Bar Knife - Tall	1
	2402571	1 3/8" Rd Bar Knife - Short	1
	0240257	1 3/8" Rd Bar Knife - Tall	1
	2402581	1 1/2" Rd Bar Knife - Short	1
	0240258	1 1/2" Rd Bar Knife - Tall	1
	2402591	1 5/8" Rd Bar Knife - Short	1
	0240259	1 5/8" Rd Bar Knife - Tall	1
	2402601	1 3/4" Rd Bar Knife - Short	1
	0240260	1 3/4" Rd Bar Knife - Tall	1
	2402611	1 7/8" Rd Bar Knife - Short	1
	0240261	1 7/8" Rd Bar Knife - Tall	1
	2402621	2" Rd Bar Knife - Short	1
	0240262	2" Rd Bar Knife - Tall	1
	2402821	1/2" Sq Bar Knife - Short	1
	0240282	1/2" Sq Bar Knife - Tall	1
	2402831	5/8" Sq Bar Knife - Short	1
	0240283	5/8" Sq Bar Knife - Tall	1
	2402841	3/4" Sq Bar Knife - Short	1
	0240284	3/4" Sq Bar Knife - Tall	1
	2402851	7/8" Sq Bar Knife - Short	1
	0240285	7/8" Sq Bar Knife - Tall	1
	2402861	1" Sq Bar Knife - Short	1
	0240286	1" Sq Bar Knife - Tall	1
	2402871	1 1/8" Sq Bar Knife - Short	1
	0240287	1 1/8" Sq Bar Knife - Tall	1
	2402881	1 1/4" Sq Bar Knife - Short	1
	0240288	1 1/4" Sq Bar Knife - Tall	1
	2402891	1 3/8" Sq Bar Knife - Short	1
	0240289	1 3/8" Sq Bar Knife - Tall	1
	0240270	Round Bar Blank	1
	0250274	Lower Angle Knives	2
	0250273	Upper Angle Knife	1
	0250278	Lower Coper Knives	2
	0250277	Upper Coper Knife	1
	0531120	1/2" x 2 1/4" SHCS Upper Shear Knife	7
	0541100	1/2" x 2 3/4" SHCS Shear & Lower Angle Knives	13
	0531069	7/16" x 1 1/2" SHCS, Upper Coper	6
	0531330	Woodruff Key, Upper Coper	2
	0531071	7/16" x 2" SHCS Lower Coper Side Knives	6
	0551140	7/16" x 2 3/4" SHCS Lower Coper End Knife	3

Additional Fabricating Equipment



Dual Operator Ironworkers
35 to 140 tons



Single Operator Ironworkers
36 to 120 tons



Punch Presses
35 to 140 tons



Press Brakes
25 to 500 tons

Precision Press Brakes
25 to 500 tons



Hydro-Mechanical Shears
1/4" to 1/2"



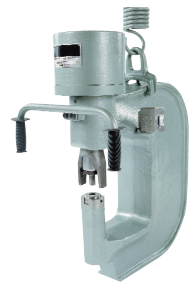
3 & 4 Roll
Manual/Hydraulic



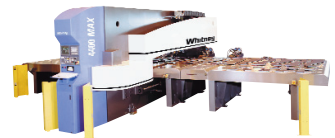
Section Bending Rolls

Whitney

The **Leader in Plate**
Technology



Portable Presses



Punch Plasmas



Plasma Tables

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