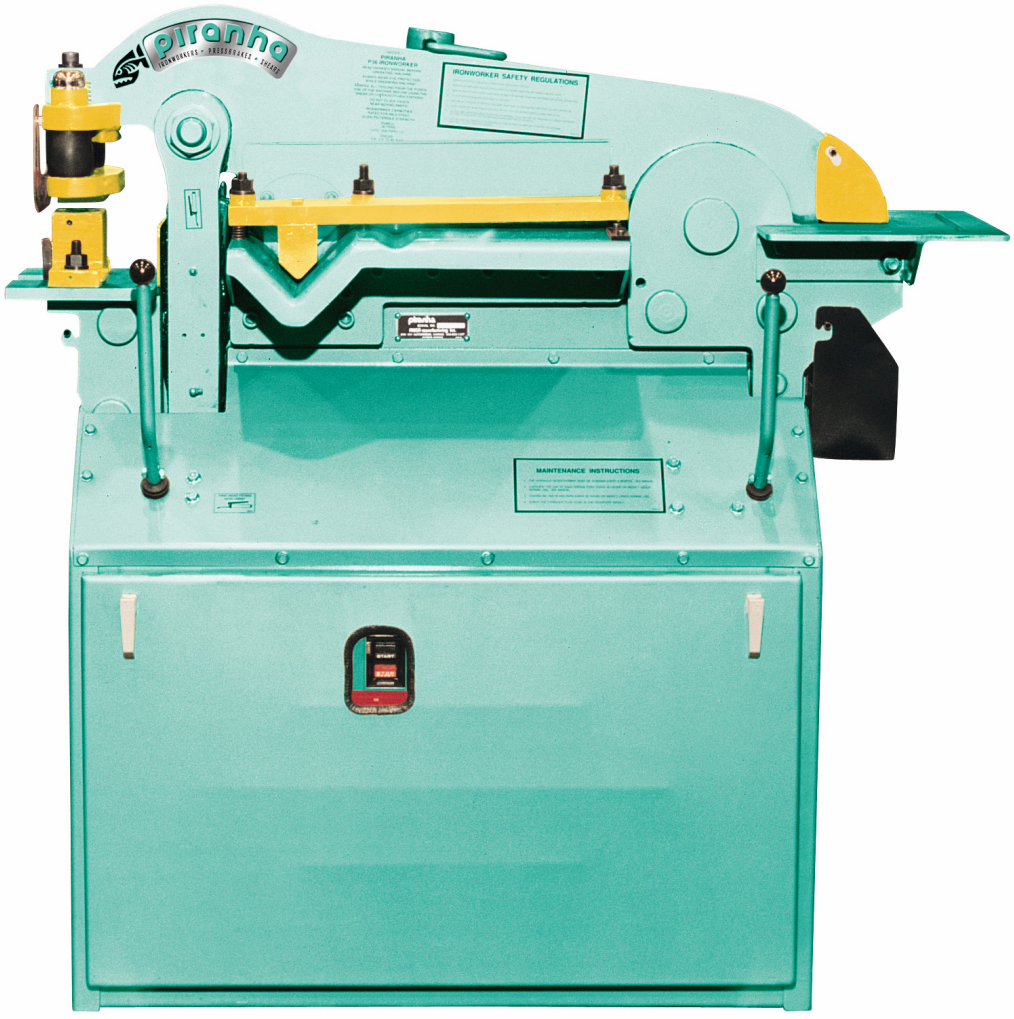
IRONWORKERS • PRESS BRAKES • SHEARS • BENDING ROLLS

INSTRUCTIONS AND REPAIR PARTS MANUAL FOR

PIRANHA

IRONWORKER MODEL NO. P-36

Publication December, 2004



For Serial Numbers P36-599 to Current

www.piranhafab.com

800-338-5471

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

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Refer to second section of this manual for information on repair parts breakdown and ordering repair parts.

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.

This machine is designed for use by one operator at a time.

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 the 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 lit, 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.

INTRODUCTION

The Piranha Ironworker is a compact hydraulic powered unit that provides you with 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 and 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 punch platen has six 5/8 - 11 tapped holes giving a wide base for increased flexibility of attachment sizes. The shearing operation features an adjustable hold down allowing the operator to clamp the work piece with a slight initial adjustment. All work stations are located approximately 42" off the floor for ease of operation.

The first part of this manual provides maintenance instructions including an introduction, dimensions 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	5HP 230/460 volt 3 phase
Hydraulic tank capacity	12 gallons
Hydraulic oil	Mobile DTE 13 or equivalent ISO Grade 32 - Consult your local distributor for cross reference

WORKING SURFACE

Platen	8" x 10"
Coping	12" x 14"

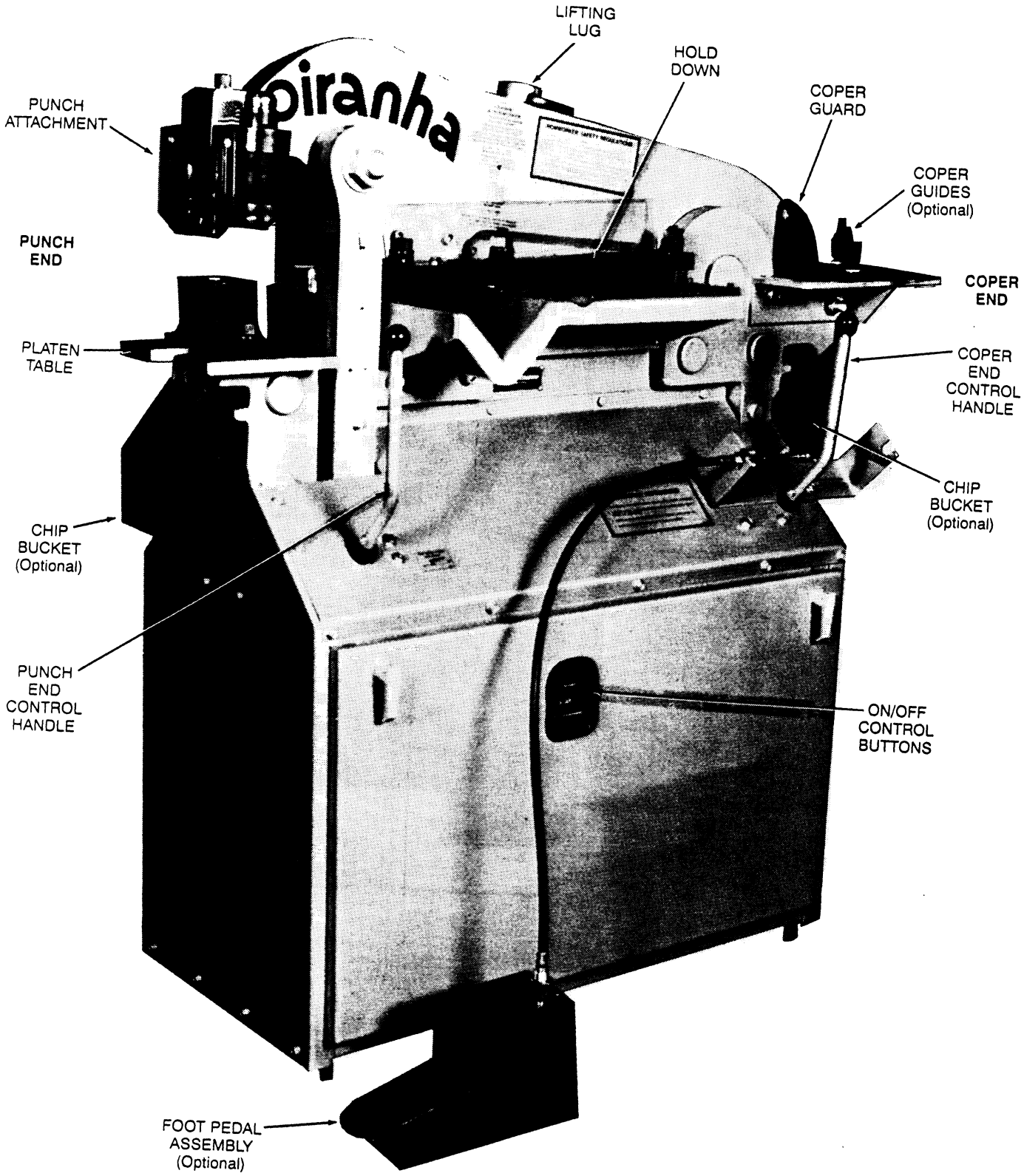
CAPACITIES

Punch	Maximum 13/16" hole thru 1/2" thick material or 33 tons
Bending	Maximum 36 tons
Punch End	maximum 36 tons
Bar	3/8" round or 1" square
Plate	5/8" x 6",1/2" x 8", or 1/4" x 13"
Angle	3 1/2" x 3 1/2" x 5/16"
Coper-Notcher	2 1/4" x 3" x 1/4"

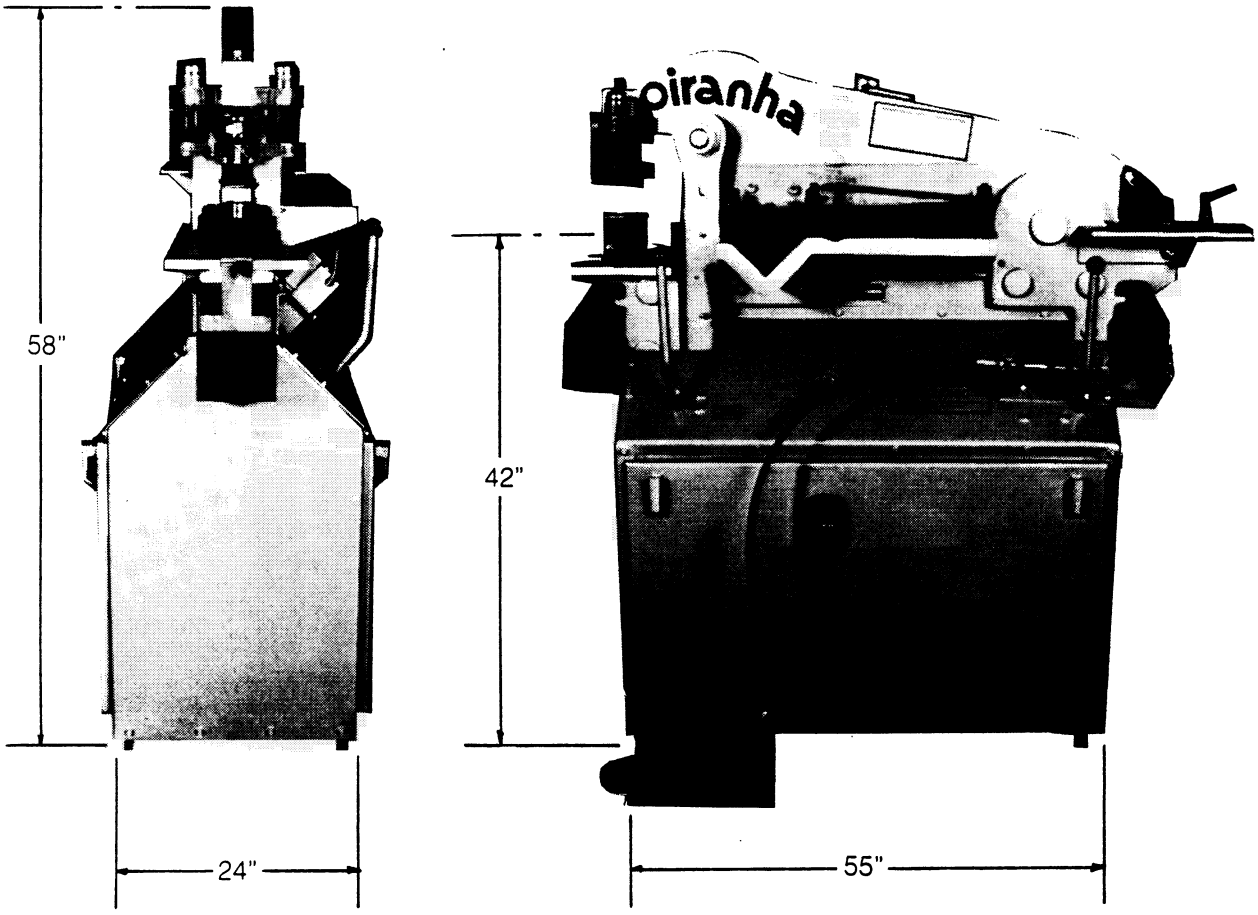
WEIGHT

Shipping Weight	1700 lbs.

FUNCTIONAL DIAGRAM



DIMENSIONAL DATA



INSTALLATION

LOCATION

For the best overall performance, install the Piranha in a location which is clean and well lit. Provide sufficient space in all directions to allow for material lengths of the work pieces 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 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.

ASSEMBLY

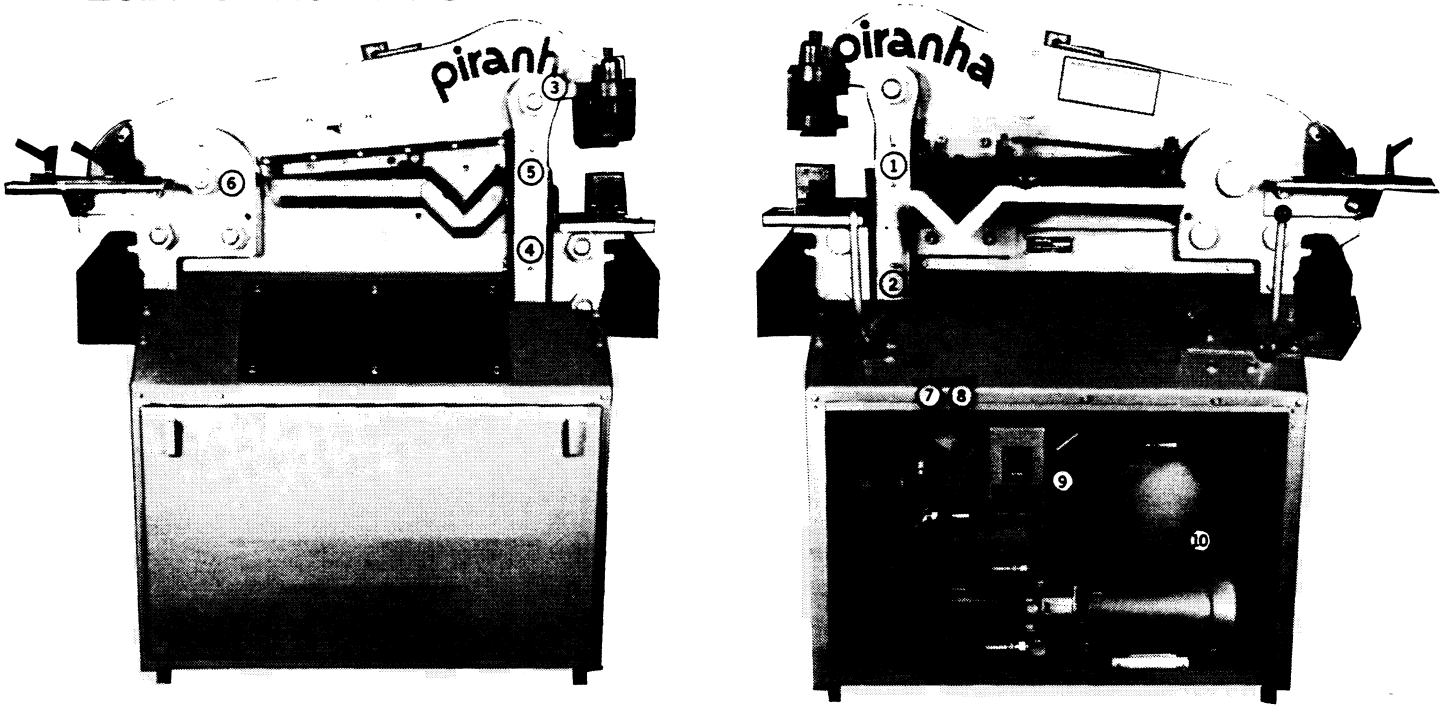
The Piranha is pre-assembled at the factory requiring only the addition of hydraulic oil and a power source.

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	Upper Pull Arm Material Feed Side	Every 40 Hours	Apply Grease	Mobile MP Or
2	Lower Pull Arm Material Feed Side	Or Weekly With	Until it Appears	Any Multi-
3	Upper Pull Arm Hinge Pin Material Drop Side	Normal Use	Around the Edge	Purpose
4	Lower Pull Arm Material Drop Side	"	Of Parts	Grease
5	Upper Pull Arm Material Drop Side	"	"	"
6	Rear Hinge Pin Off Side	"	"	"
7	*Lower Pull Arm Hinge Pin Material Drop Side	"	"	"
8	*Crank Arm Hinge Pin Material Feed Side	"	"	"
9	*Clevis Pin Material Feed Side	"	"	"
10	*Drive Motor	Every 100-150 Operating Hours	One Shot From Grease Gun	Multi Purpose Grease

*Inside Cabinet

MAINTENANCE

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 at the tank door inside 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 15.

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

Check to insure the hydraulic cylinder clevis is screwed tight on the piston rod each time machine is lubricated. (see page RP13)

HYDRAULIC OIL LEVEL

Oil level shouldn't get any lower than 3" below the top of the reservoir. If the oil level drops below 3" additional fluid should be added to the reservoir.

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 RP17.

TROUBLE SHOOTING

The following material is a trouble shooting guide to be followed by maintenance personnel should a problem occur with your machine. Many of these problems can be solved in your shop by following a step-by-step procedure for isolating the deficiency. If the deficiency can not be isolated and corrected in your shop, any information regarding your effort to isolate the area should be related to the service technician at Mega Manufacturing, Inc. to assist him in finding a solution. These efforts will assure restoring your machine to full operational status with a minimum amount of downtime.

PROBLEMS

P1 - Machine will not start

For possible cause, check:

1. Start button pushed in on the machine
2. Incoming voltage to motor starter
3. Outgoing voltage to the motor
4. Overloads/Reset tripped out

P2 - Machine starts but will not operate

For possible cause, check:

1. If motor rotation is correct
2. Binding control linkage
3. Key stock sheared on the pump shaft, remove pump from motor and replace key stock (See RP12)

P3 - Punch end of machine will lower, but not raise or raises slowly

For possible cause, check:

1. Determine if the pump is developing flow. If not, check:
   A. Oil level.
   B. If inlet filter is plugged.
   C. If motor rotation is correct.
   D. If motor/pump keystock is sheared. (See RP12)
   E. The hydraulic suction line fittings for tightness.
   F. For defective pump.
2. To determine if the spool in the manual control valve is stuck in the center position. If stuck remove end cap of control valve and free the spool. Inspect for contamination.
3. Coper relief cartridge in the manual valve for contamination (See RP11).
4. Internal leak in the cylinder.

P4 - Punch end of machine will raise, but not lower or lowers slowly.

For possible cause, check:

1. Determine if the pump is developing flow. If not, check:
   A. Oil level.
   B. If inlet filter is plugged.
   C. If the motor rotation is correct.
   D. If the motor/pump keystock is sheared. (See RP12)
   E. The hydraulic suction line fittings for tightness.
   F. For defective pump.
2. To determine if the spool in the manual control valve is stuck in the center position. If stuck, remove end caps of the control valve and free the spool. Inspect for contamination.
3. Punch relief cartridge in the manual valve for contamination (See RP11).
4. Internal leak in the cylinder.

P5 - Machine does not seem to have enough pressure to punch or cope

Install a 3000 PSI pressure gauge into the system at pump outlet. Then bottom out the punch end (cylinder extension). The pressure should read 2100 psi. The coper end bottom out (cylinder retraction) should read 1000 psi.

1. If pressures are good, check:
   A. Tonnage rating of hole to punch (See page 14).
   B. Type of material being punched. Machine capacities are rated on mild steel.
      Note: Torching some metals increase their hardness.
   C. Proper punch to die clearance on material thickness (See page 15).
   D. If punch and die is properly sharpened.
2. If pressures are low, check:
   A. Pressure gauge is giving accurate reading.
   B. Check cylinder for internal leak or (1) for low punch pressure check punch relief valve for contamination (See page RP11); (2) for low coper pressure check coper relief valve for contamination (See page RP11).

Note: Relief valve operating pressure may need reset. Contact the factory for adjustment procedure.

Remove pressure gauge when trouble shooting is complete.

P6 - Machine overheats

For possible cause, check:

1. Fluid level in reservoir is low.
2. Low line voltage to machine.
3. Any orifice type situation in the hydraulic system. Example: Contaminated cartridge valve, restricted or kinked hose, etc.

P7 - Reset on motor starter kicks out

For possible cause, check:

1. Internal overheating. See P6 for trouble shooting procedure.
2. Insure proper sized heater coils are being used (see wiring diagram Page RP9).
3. Line voltage.
4. Connections on motor cable loose at starter or motor.

P8 - Edges on knife blade chipped by material

For possible cause, check:

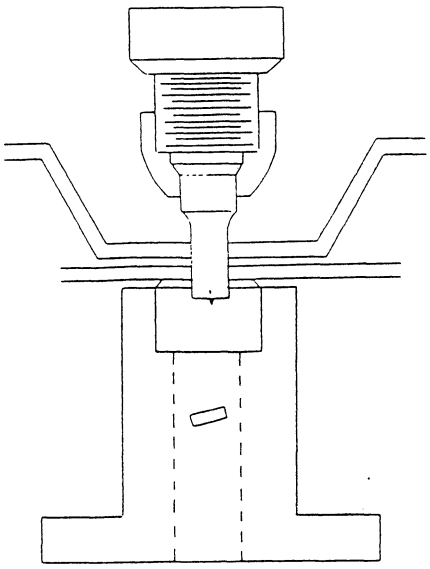
1. Knife clearance - .007" to .010". If not,:
   A. Shear combo table bolts may have become loose, allowing scale and contamination between table and beam. Remove table and clean.
   B. Shear combo table bolts may have stretched the threads in the beam. Remove table and lightly sand beam surface flat.
   C. Knives may have been ground. Shim to recommended clearance.
2. Knives dull creating a pulling effect on shearing edge.
3. Material may be too hard.
4. Material may be thicker than rated capacities.

P9 - Machine leaves burr when shearing

For possible cause, check:

1. Knife clearance - .007" to .010". If not, follow procedure in P8.
2. That knives are sharp.
3. That hold down is clamping material securely.

TONS OF PRESSURE REQUIRED FOR PUNCHING MILD STEEL



This table shows the tons of pressure required for single punching mild steel derived by the formula: Tons pressure required = hole size x material thickness constant 80. All figures shown are tons. or percentages of tons. For intermediate sizes interpolations can be made.

Tonnage for punch sizes over 1" round can also be computed

Example: What pressure is required to punch a 2 1/4" round hole in 7/8" thick material? Since a 1" round hole in 7/8" thick material requires 70 tons pressure a 2 1/4" round hold in 7/8" thick material required 157.50 tons.

2.25 round hole x 70 tons = 157.50.

Do not punch a hole with smaller diameter than the thickness of the material.

MATERIAL THICK-NESS

PUNCH SIZE

	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
3/32	1	1	2	2	3	3	4	4	5	5	5	6	7	7	
1/8	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10
3/16		3	4	5	6	7	8	9	9	10	11	12	13	14	15
1/4			5	6	8	9	10	11	13	14	15	16	18	19	20
5/1				8	9	11	13	14	16	17	19	20	22	23	25
3/8					11	13	15	17	19	21	23	24	26	28	30
7/16						15	18	20	22	24	26	28	30	33	35
1/2							20	23	25	28	30	33	35	38	40
9/16								26	28	30	34	36	40	42	45
5/8									31	34	38	41	44	47	50
11/16										38	41	44	48	51	55
3/4											45	49	53	56	60
13/16												53	57	61	65
7/8													61	66	
15/16														71	75
1															80

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

CLEANCE CHART FOR STEEL

Gauge	Approx. Thickness	Clearance Add to Punch Size	Guage	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"

OPERATING INSTRUCTIONS

The Piranha Ironworker comes pre-assembled and pre-wired, requiring only the addition of hydraulic fluid in the reservoir to 3" below tank top and a power source from a disconnect to the electrical enclosure box located inside the cabinet.

The unit can be started and stopped by the start/stop buttons located on the material feed side of the machine.

The ironworker can be controlled manually with the levers located at each end of the machine.

1. Pushing either control handle towards to coper end of the machine, will raise the punch end of the machine.
2. Pulling either control handle towards the punch end of the machine, will lower the punch end of the machine.

The ironworker can be controlled by a optional manual foot control (part #4421500), which operates the manual lever controls.(up-raises, down-lowers)

Punch Attachment Alignment

The alignment of the punch and die should be accomplished in the following manner (refer to page 15 for proper punch and die clearance):

1. Shut off machine and remove all tooling.
2. Mount the punch stripper assembly on the punch end of the machine.
3. Tighten the stripper by turning the cap screw clockwise thus locking the stripper assembly firmly in place.
4. Remove the coupling nut from the punch stem using the coupling wrench.
5. Insert the punch in the coupling nut and tighten onto the punch stem using the coupling wrench.
6. Insert the female die in the die block.
7. Tighten the set screw against the female die.
8. Slide the die block around the set screws on the platen table. DO NOT TIGHTEN the 5/8" flanged nuts.
9. Start the machine. Pull the handle toward the punch end to move the beam downward. Stop beam movement when the bottom of the stripper foot is approximately 1/8" above the die block.
10. Visually, and by hand movement of the die block, align the punch and die. Move down again slightly and align. Continue this procedure until the punch has passed through into the die.
11. Tighten flanged nuts on the set screws to hold the die block firmly to the platen table.
12. Start operation.

Bending Attachment Alignment

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

1. Align and bolt bending punch assembly on the punch end of the machine.
2. Slide the bending die base around the set screws on the platen table, DO NOT TIGHTEN the 5/8" flanged nuts.
3. Start the machine, using manual controls to move the beam downward.
4. When contact between the bending punch and the bending die block opening is made, the bending die block will center itself.
5. Tighten 5/8" nuts to hold die block firmly to the platen.
6. Start operation.

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 (3) 5/8" flanged nuts without removing them from the studs.**
3. **Insert material to be sheared under the hold down assembly.**
4. **Tighten the flanged nuts to allow 1/8" clearance between the hold down bar and material.**

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

Stripper Assembly Adjustment

The adjustment of the stripper assembly to compensate for varying punch lengths should be accomplished in the following manner:
(see page RP5 for visual reference)

NOTE: The correct adjustment should have the tip of the punch 1/16" below the bottom of the stripper foot plate with the stripper foot plate level.

1. **Install the stripper assembly on the upper beam (see instructions previously listed).**
2. **Insert punch in the stripper assembly (see instructions previously listed).**
3. **Check the adjustment on the punch length.**
4. **If the tip of the punch extends more than 1/16" below the bottom of the stripper foot, adjustment is required.**
5. **Lower the punch assembly onto the punch die block to relieve pressure on the stripping blocks (#13 page RP5). Remove the chrome caps #01. (See page RP5). Turn the two (2) socket head cap screws (#02) counter clockwise 1/4 turn, raise punch assembly up and check to see if the tip of the punch extends 1/16" below the bottom of the stripper foot plate. The stripper foot plate MUST remain level or parallel to the work material. The punch tip should be able to line up on a center punch mark before the stripper foot plate engages the material.**
6. **If the tip of the punch does not extend 1/16" below the bottom of the stripper foot or if the stripper foot plate is not parallel with the work material, adjustment is required.**
7. **Follow the procedure listed in 5 above except turn the socket head cap screws clockwise.**

ORDERING REPAIR PARTS FOR A PIRANHA

The following assembly parts lists are shown in four columns. In the first column are the index numbers of the parts illustrated. ***THE SECOND COLUMN CONTAINS THE MEGA MANUFACTURING PART NUMBER, FOLLOWED BY THE DESCRIPTION IN THE THIRD COLUMN.*** **The last column shows the quantity of parts required for the assembly.**

Electrical wiring diagrams and hydraulic diagrams are shown with the Mega Manufacturing part numbers. Some of these items shall be considered as an assembly and only one part number will be given, even though they are comprised of component parts.

You will receive quicker service when ordering repair parts by adhering to the following procedure.

1. **Give complete serial number of the machine. The machine serial number is stamped on the name plate and is located on the right hand side of the machine under the combo shear table on the material feed side of the machine (when facing the punch end).**

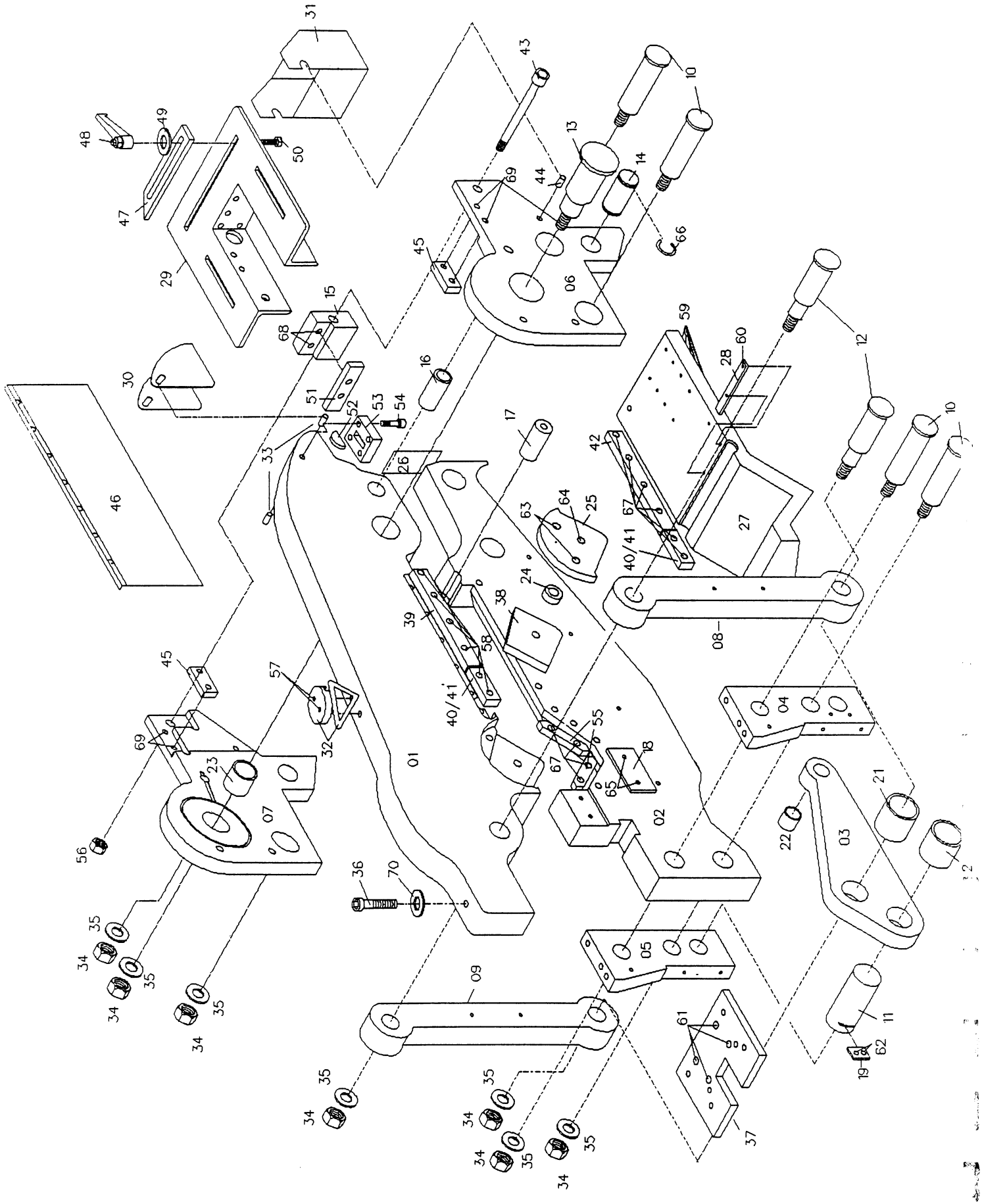
2. **Give part number, description, and the quantity of parts that you require.**

3. **Specify each individual piece required. Do NOT use the term "complete assembly".**

4. **Specify how and where to ship. Define the method of transportation desired. UPS, Emery, and Yellow Freight are most frequently used at Mega Manufacturing.**

ALWAYS GIVE COMPLETE SERIAL NUMBER

REPAIR PARTS ILLUSTRATIONS

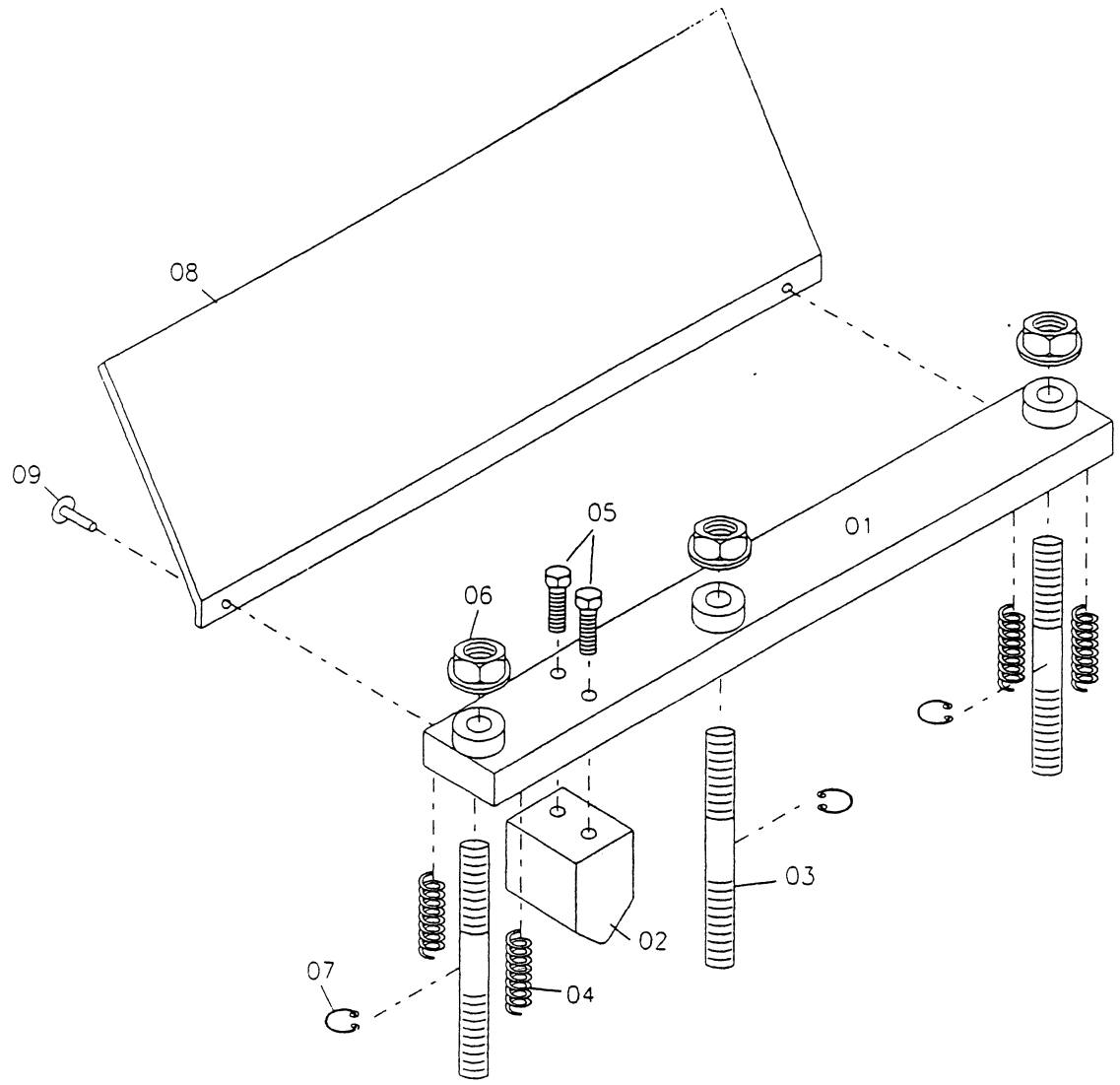


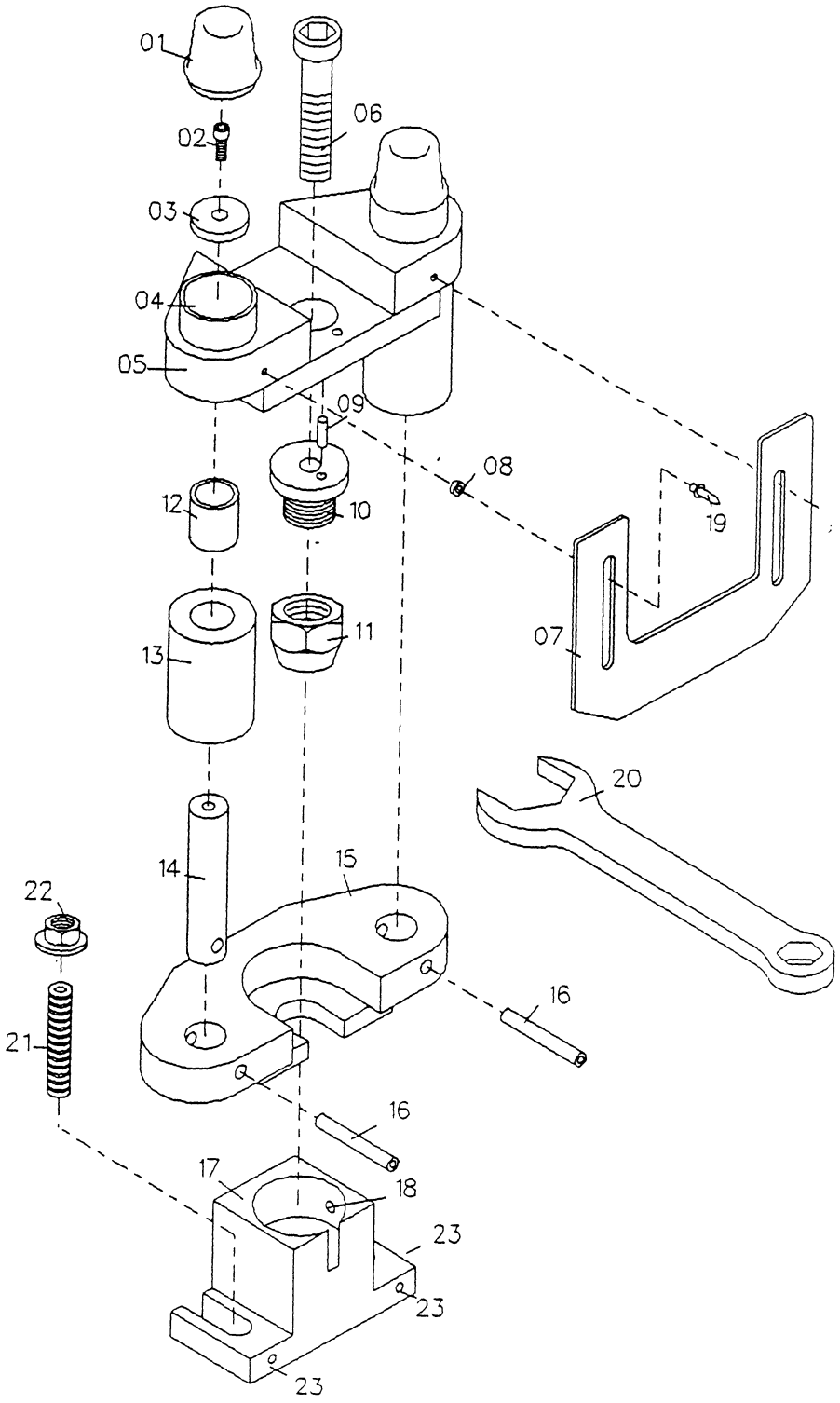
P36 BASIC UNIT

Figure And Index No.	Part Number	Description	Qty.
RP - 1	0220100	Upper Beam Assembly	1
- 2	02201011	Lower Beam Assembly	1
- 3	0220112	Crankarm Assembly	1
- 4	0220113	Platen Support-on side	1
- 5	0220114	Platen Support-off side	1
- 6	0220115	Coper Side Plate-on side	1
- 7	0220116	Coper Side Plate-off side	1
- 8	0220110	Pull Arm-on side	1
- 9	0220111	Pull Arm-off side	1
-10	0220160	Machine Pin	4
-11	0220164	Crank Arm Hinge Pin	1
-12	02201651	Pull Arm Hinge Pin	2
-13	0220166	Rear Hinge Pin	1
-14	0220172	Cylinder Pin	1
-15	0220117	Coper End Knife Support	1
-16	0220155	Black Pipe Spacer	1
-17	0220154	Urethane Spacer	1
-18	0220145	Bronze Wear Plate	1
-19	0230148	Crank Arm Pin Lock Plate	1
-20	0320168	Crank Arm Bushing	1
-21	0320168	Crank Arm Bushing	1
-22	0531372	P 125-12 1 1/4 x 1 1/2 x 1 1/2	1
-23	0320170	Rear Hinge Pin Bushing	1
-24	0220167	Angle Knife Bushing	1
-25	0220146	Angle Knife Cover	1
-26	0321409	Coper End Filler Plt	1
-27	0220122	Combo Shear Table	1
-28	0220140	Plate Shear Guide	1
-29	0220124	Coper Table Assembly	1
-30	0220142	Coper Guard Assembly	1
-31	0220143	Chip Bucket (OPTIONAL)	1
-32	0531400	Lifting Lug	1
-33	0531351	3/8 x 1 Roll Pin	2
-34	0521270	1 1/2 NF Jam Nut	7
-35	0531303	1.535ID x 3OD x.255 Washer	7
-36	0531095	5/8 x 4 1/2 SHCS	1
-37	0220120	Platen Table	1
-38	0220275	Upper Angle Knife	1
-39	0220250	10" Flat Shear Knife	1
-40	0220270	Round Bar Knife Blank	2
-41	(Page RP16)	Round Bar Knife (OPTIONAL)	2
-42	0220250	10" Flat Shear Knife	1
-43	0531097	5/8 x 6 1/2 SHCS	2
-44	0531352	1/2 x 1 1/2 Roll Pin	2
-45	0220278	Lower Coper Side Knives	2
-46	0372415	Shear Guard	1
-47	0330128	Coper Table Guides (OPTIONAL)	3
-48	0531715	KP 79 (1/2-13) Plastic Handle (OPTIONAL)	3
-49	0531307	1/2 Flat Plated Washer (OPTIONAL)	3
-50	0531088	1/2 x 1 1/2 Carriage Bolt (OPTIONAL)	3
-51	0220276	Lower Coper End Knife	1
-52	0531330	3/8 x 2 3/4 T Woodruff Key	1
-53	0220277	Upper Coper Knife	1
-54	0531050	3/8 x 1 SHCS	4
-55	0220274	Lower Angle Knives	2
-56	0531250	5/8 Nylock HN	2
-57	0531086	1/2 x 1 3/4 SHCS	2
-58	0531069	7/16 x 1 1/2 SHCS	6
-59	0531092	5/8 x 2 1/4 SHCS	9
-60	0531000	1/4 x 1/2 SHCS	2
-61	0531106	5/8 x 1 1/2 FHCS	4
-62	0531060	3/8 x 3/4 HHCS Grade 8	2
-63	0531081	1/2 x 1 1/4 SHCS	2
-64	0531090	5/8 x 1 3/4 SHCS	1
-65	0531062	3/8 x 3/4 FHCS	2
-66	0531340	5103-125 Snap Ring	2
-67	0531071	7/16 x 2 SHCS	10
-68	0531071	7/16 x 2 SHCS	2
-69	0531069	7/16 x 1 1/2 SHCS	4
-70	0521047	5/8 Flat Waher	1

P36 HOLD DOWN ASSEMBLY
PART #0220200

Figure And Index No.	Part Number	Description	Qty.
RP - 1	0320200	Hold Down Bar	1
- 2	0320204	Angle Block-Hold Down	1
- 3	0320201	5/8 x 4 Stud W/Groove	3
- 4	0320208	Hold Down Springs	4
- 5	0521025	3/8 x 1 3/4 HHCS	2
- 6	0531251	5/8 CL-4-FLDG Nut	3
- 7	0520155	5133-50 Snap Ring	3
- 8	0220203	Hold Down Guard	1
- 9	0531012	AD612BS2F Rivet	2
NOTE: Hold Down Assembly, #0220200 Includes Index Numbers 1, 2 & 5			

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P36 PUNCH ASSEMBLY
PART #0220410

Figure And Index No.	Part Number	Description	Qty.
RP - 1	0531395	Dust Cap	2
- 2	0531050	3/8 x 1 SHCS	2
- 3	0531302	13/32 ID X 1.5 OD X 7GA Ring Washer	2
- 4	0330405	Dust Cover Extender	2
- 5	0320410	Punch Head	1
- 6	0531095	5/8 x 4 1/2 SHCS	1
- 7	0330400	Punch Guard P-50	1
- 8	0531013	Punch Guard Spacer	2
- 9	0531350	1/4 x 3/4 Roll Pin	1
-10	02204071	Fig 16 Punch Stem	1
-11	0330406	C-56 Coupling Nut	1
-12	0531370	P102-10 Bush 1 x 1 1/4 x 1 1/4	2
-13	0330403	Urethane Stripper Block	2
-14	0330402	Stripper Guide Pin	2
-15	0330401	Stripper Foot	1
-16	0531356	3/8 x 2 1/2 Spiral Pin	2
-17	02204001	1 13/16 Die Block Fig 55	1
-18	0531055	3/8 x 1/2 SSS	1
-19	0531012	AD612BSLF Rivet	2
-20	0231410	2" Coupling Wrench	1
-21	0531100	5/8 x 3 SSS	2
-22	0531251	5/8 CL-4-FLGD Nut	2
-23	0531002	1/4 x 3/4 SSS	3

NOTE: Punch Assembly, #0220410 includes index numbers RP1-5, 7-16, & 19.

SPECIAL NOTE: When ordering replacement parts check serial numbers.

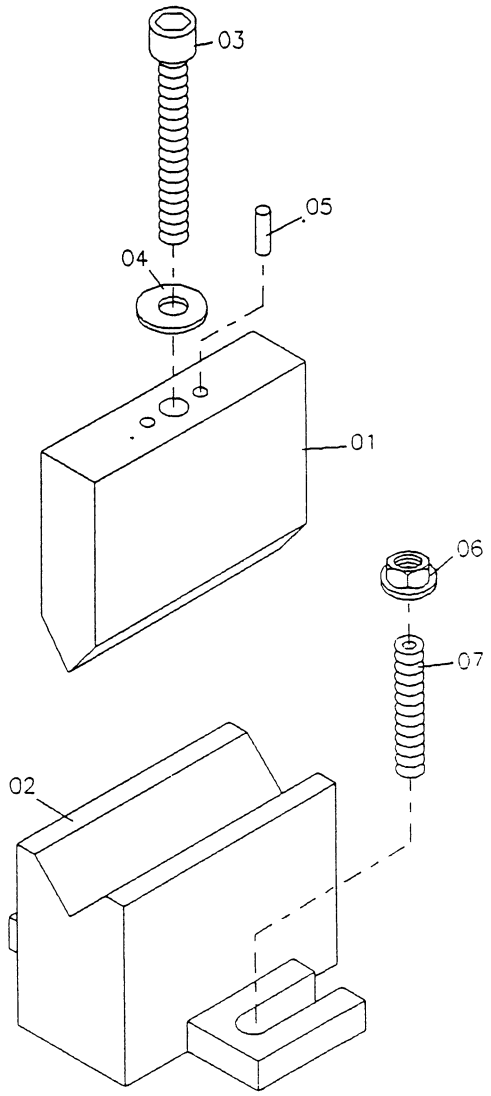
At Serial #599 to #622 the P36 machine was supplied with a fixed stripper assy (not pictured), Part # 02204011, and Punch Stem # 0220407(not pictured). The same coupling nut was supplied.

The Urethane Stripper Assy (0220410) (pictured) was added to the machine as standard at serial # 623.

P36 6" BENDING ASSEMBLY OPTIONAL
PART #4421660

Figure And Index No.	Part Number	Description	Qty.
RP - 1	4421651	6" Bending Punch Assy	1
- 2	4421661	6" Bending Die Assy	1
- 3	0531095	5/8 x 4 1/2 SHCS	1
- 4	0521047	5/8 Flat Washer	1
- 5	0521013	5/16 x 3/4 Dowel Pin	1
- 6	0531251	5/8 CL-4-FLG NUT	2
- 7	0531100	5/8 x 3 SSS	2

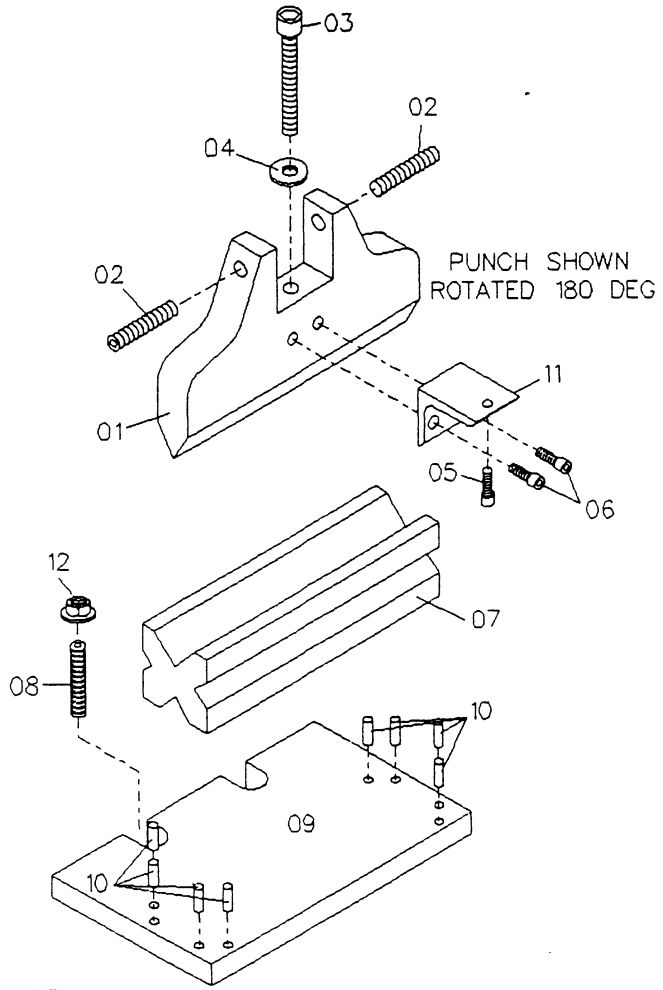
NOTE: 6" Bending Assembly, Part #4421660 Includes Index Numbers 1, 2, & 5.



P 36 12" BENDING ASSEMBLY OPTIONAL
PART # 4421665

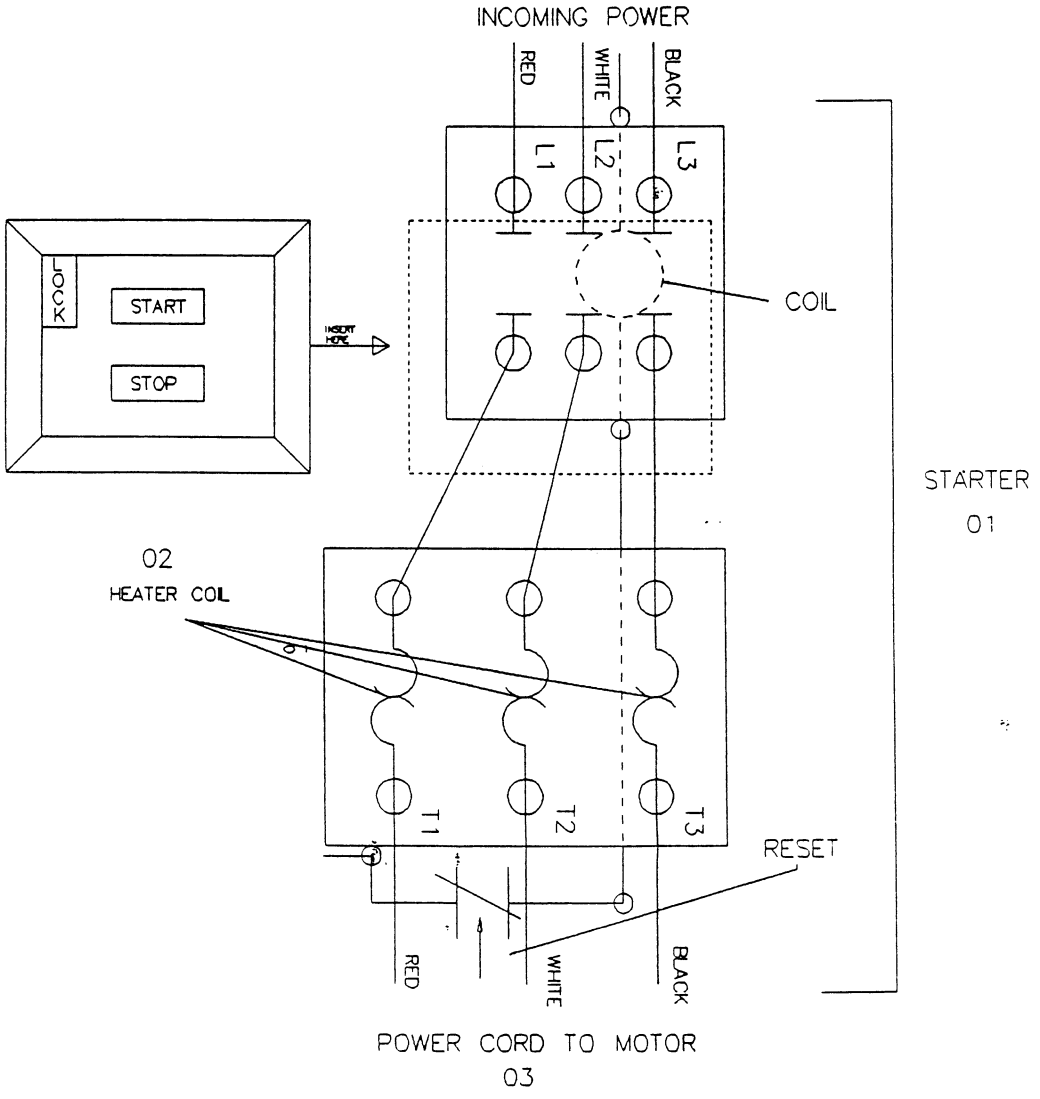
Figure And Index No.	Part Number	Description	Qty.
RP - 1	4421667	12" Bending Punch	1
- 2	0531100	5/8 x 3 SSS	2
- 3	0531095	5/8 x 4 1/2 SHCS	1
- 4	0521047	5/8 Flat Washer	1
- 5	0531039	3/8 x 3/4 SHCS	1
- 6	0531080	1/2 x 1 SHCS	2
- 7	4433503	12" Bending Die Block	1
- 8	0531100	5/8 x 3 SSS	2
- 9	4421669	12" Bending Die Base	1
-10	0531351	3/8 x 1 Roll Pin	8
-11	4421668	12" Bend Stabilizer	1
-12	0531251	5/8 CL-4 FLDG Nut	1

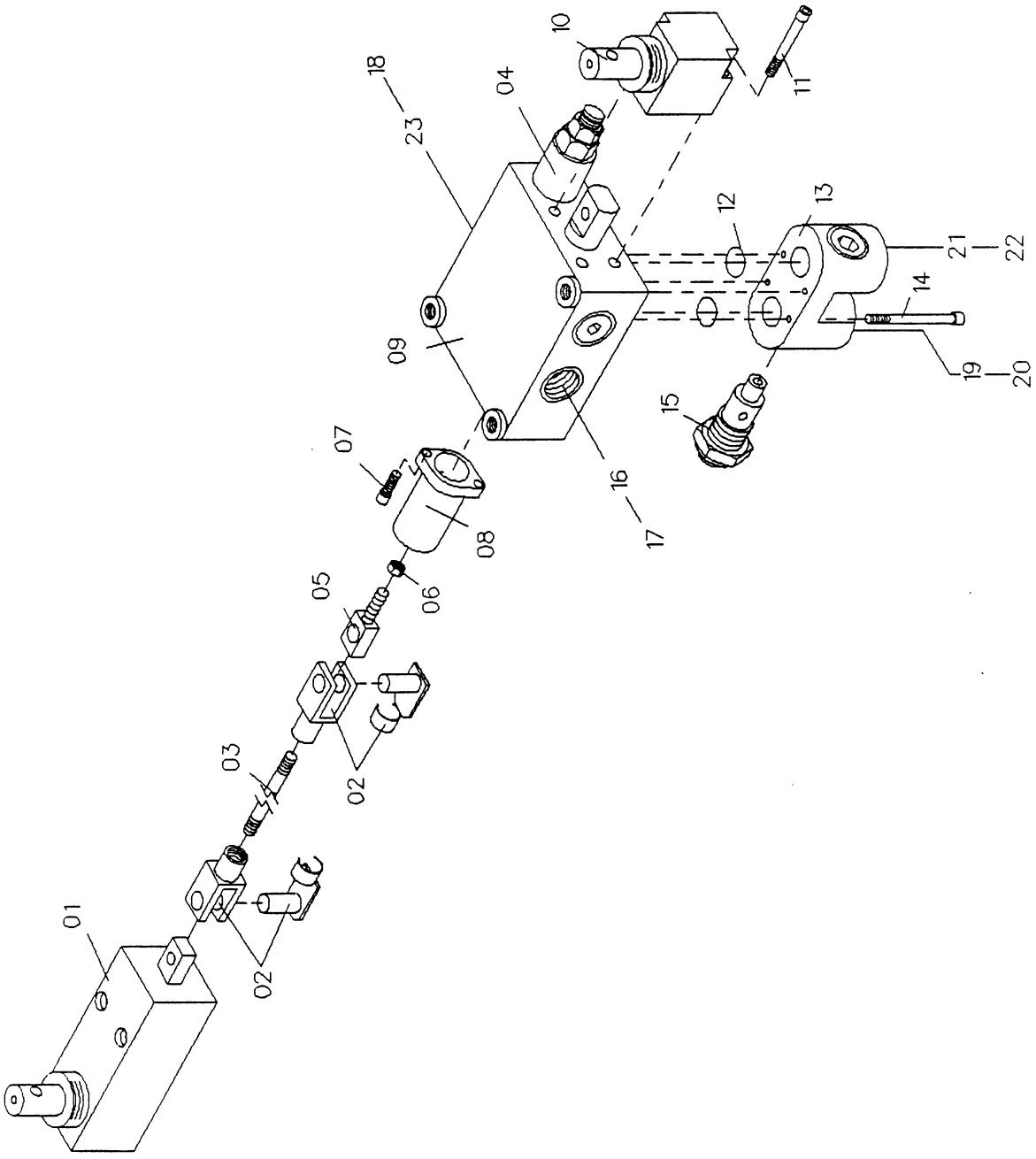
NOTE: 12" Bending Punch Assembly, Part #4421666 includes indes numbers 1, 2, 5, 6 & 11.



P36 ELECTRICAL ENCLOSURE ASSEMBLY PART # 02216401

Figure And Index No.	Part Number	Description	Qty.
RP -1	0521642	Square D Starter With Buttons	1
-2	0521616	220 Vt Heater Coil B-25	3
-OR	0521617	440 Vt Heater Coil B-11.5	3
-OR	0521618	575 Vt Heater Coil B-9.10	3
-3	0531656	3/4 RomexConnector	1

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VALVE BODY ASSEMBLY
PART # 02215301

Figure And Index No.	Part Number	Description	Qty.
RP - 1	0521535	Remote Lever Box	1
- 2	0521536	Clevis and Keeper	2
- 3	03207031	Connecting Rod	1
- 4	0521537	Punch Pressure Relief Valve	1
- 5	0521538	Clevis Link	1
- 6	0521539	Clevis Link HN	1
- 7	0521540	SHCS	2
- 8	0521541	Linkage Cap	1
- 9	0521542	Valve Body	1
-10	0571534	Cap Assy	1
-11	0521543	M5 x 35 SHCS	2
-12	0521544	-017 O-Rings	2
-13	0521545	Valve Block	1
-14	0521546	M5 x 40 SHCS	4
-15	0521547	Coper Pressure Relief Valve	1
-16	0571504	6801-12-8 Hyd Fitting	1
-17	0531543	32" Hyd Hose to Tank Fitting #04	1
-18	0531521	50" Hyd Hose to Pump Fitting #03	1
-19	0521573	6400-10-6 Hyd Fitting	1
-20	0581502	24" Hyd Hose to Cylinder Fitting #10	1
-21	0521573	6400-10-6 Hyd Fitting	1
-22	0581502	24" Hyd Hose to Cylinder Fitting #09	1
-23	0571512	6801-10-8 Hyd Fitting	1

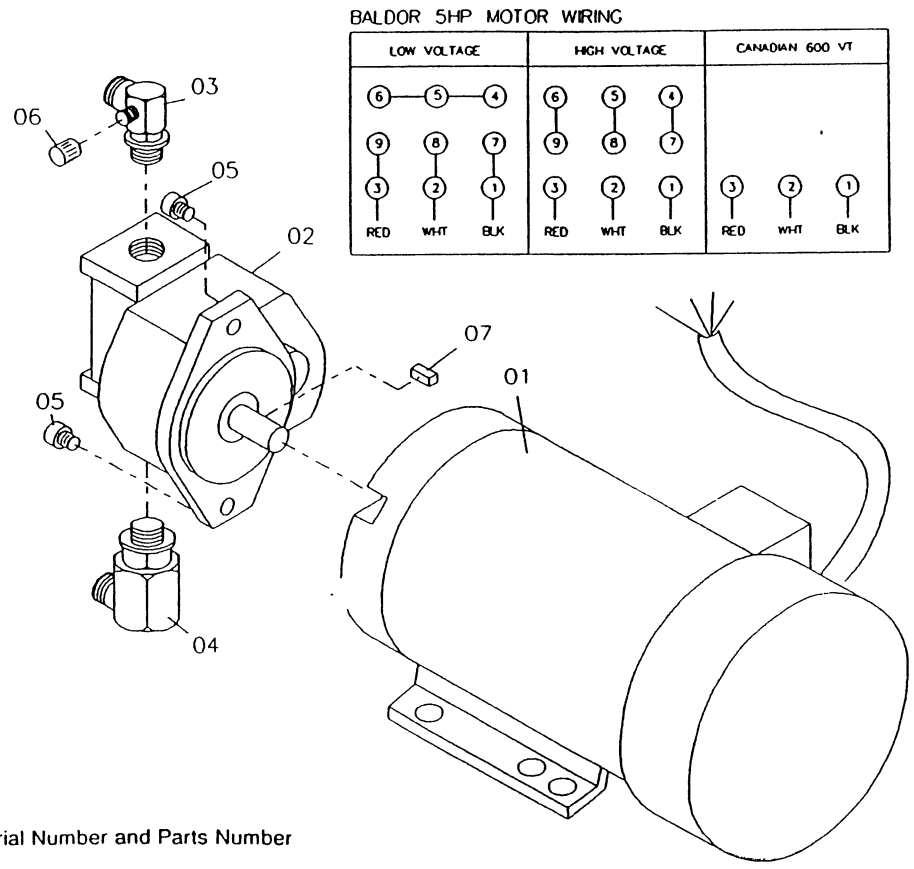
P36 MOTOR ASSEMBLY
PART #02216001

Prior to Serial Number P2-1073

Figure And Index No.	Part Number	Description	Qty.
RP - 1	0521661	5 HP Motor 220/440V Hollow Shaft	1
-OR	0521667	5 HP Motor 575V Hollow Shaft	1
-OR	0521672	5 HP Motor Single Phase Hollow Shaft	1
- 2	0521569	Rexroth Pump	1
- 3	0531508	6801-10-12 Fitting	1
- 4	0531538	6801-12-16 Fitting	1
- 5	0531050	3/8 x 1 SHCS Also Needed 3/8 Lock Washer (#0531306)	2
- 6	0541531	304-C-6 Fitting	1

Serial Number P2-1073 to present

Figure And Index No.	Part Number	Description	Qty.
RP - 1	05216612	5 HP Motor 220/440V (5/8" Hollow Shaft)	1
-OR	05216672	5 HP Motor 575V (5/8" Hollow Shaft)	1
-OR	05216722	5 HP Motor Single Phase (5/8" Hollow Shaft)	1
- 2	05215691	Rexroth Pump	1
- 3	0531508	6801-10-12 Fitting	1
- 4	0531531	6801-12 Fitting	1
- 5	0531050	3/8 x 1 SHCS Also Needed 3/8 Lock Washer (#0531306)	2
- 6	0541531	304-C-6 Fitting	1

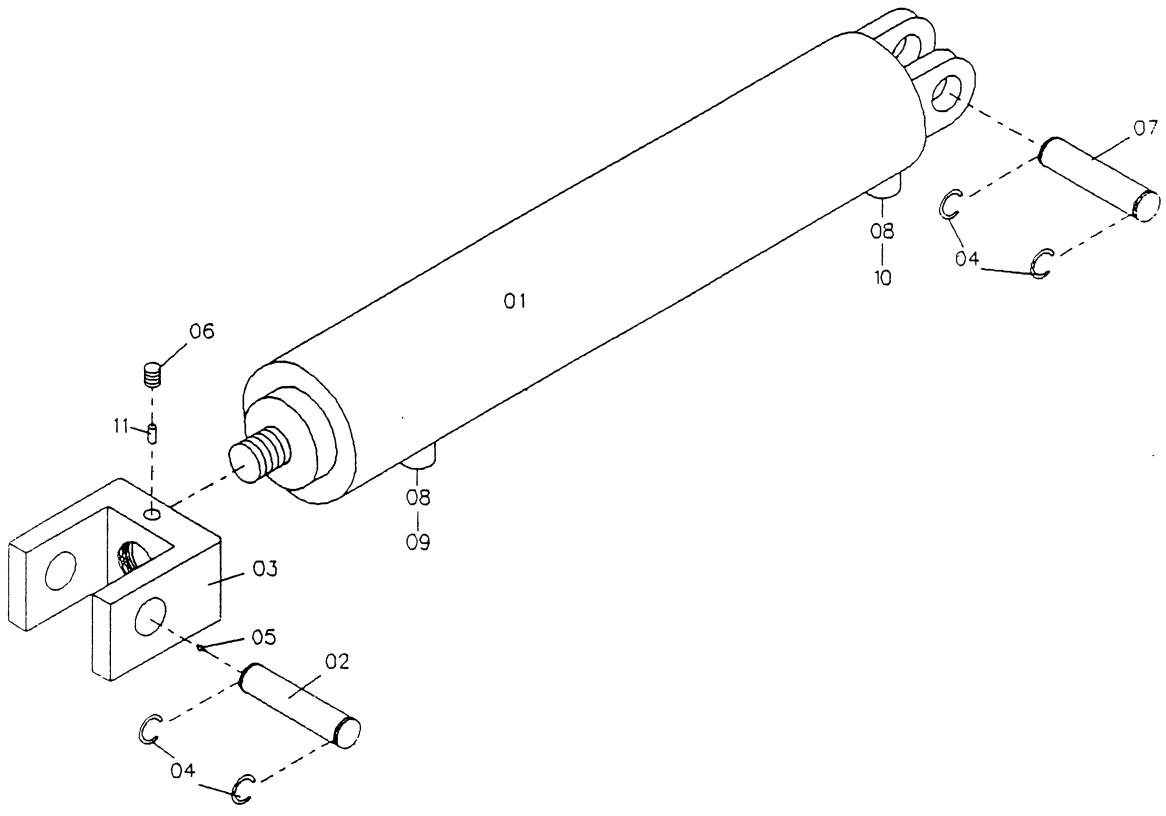


RP-12 When ordering, include Serial Number and Parts Number

P36 CYLINDER ASSEMBLY

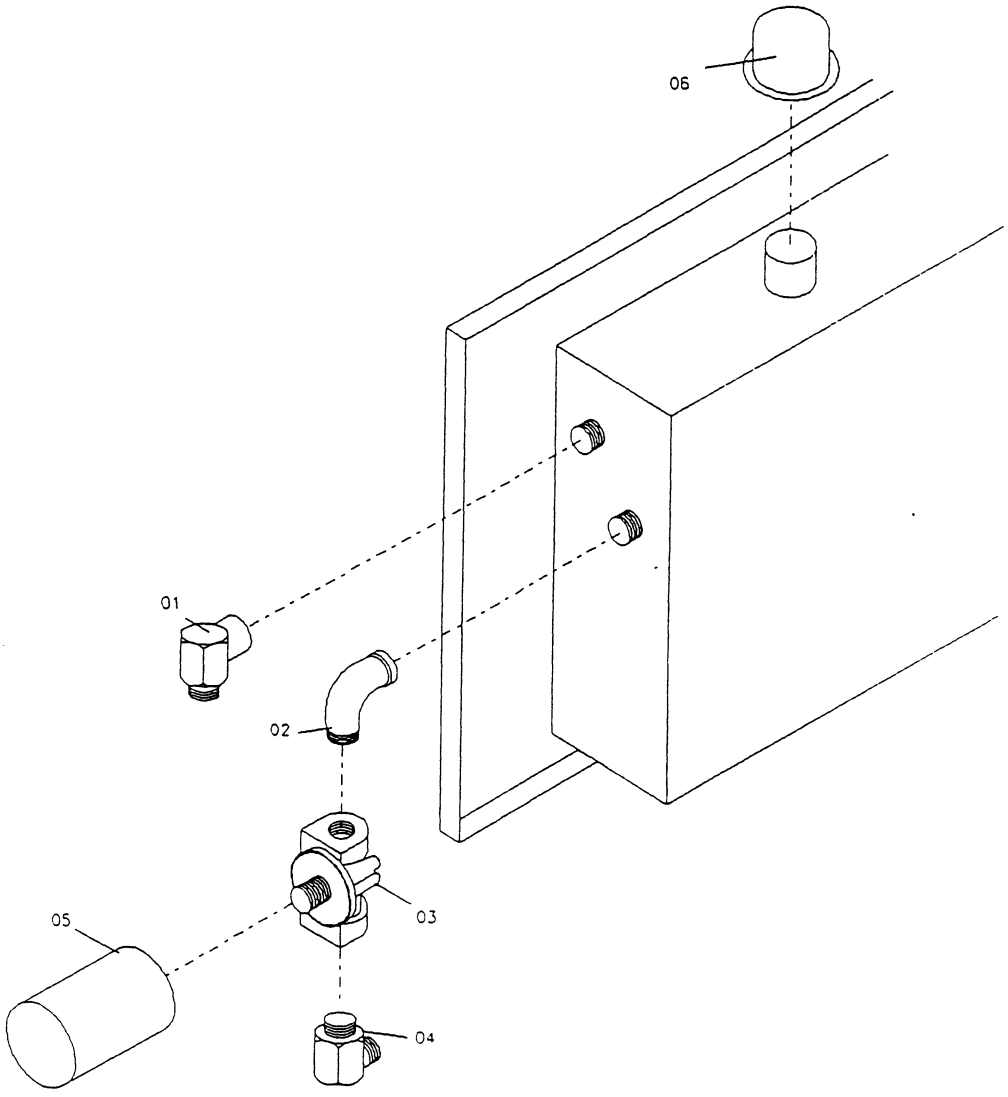
Figure And Index No.	Part Number	Description	Qty.
RP - 1	0521503	Cylinder GBI#12018	1
- 2	0230171	Clevis Pin	1
- 3	02201521	Clevis	1
- 4	0531340	5103-125 Snap Ring	4
- 5	0531362	1652B Zerk Str 1/4-28	1
- 6	0531085	1/2 x 1/2 SSS	1
- 7	0220172	Cylinder Pin	1
- 8	0531509	6802-10 Hyd Fitting	2
- 9	0581502	24" Hose To Valve Body	1
-10	0581502	24" Hose To Valve Body	1
-11	N/A	Nylock Plug	1

NOTE: Prior to serial number P2-736 Clevis Pin number was (0220171), and Clevis number was (0220152).



HYDRAULIC FILTER AND COMPONENTS

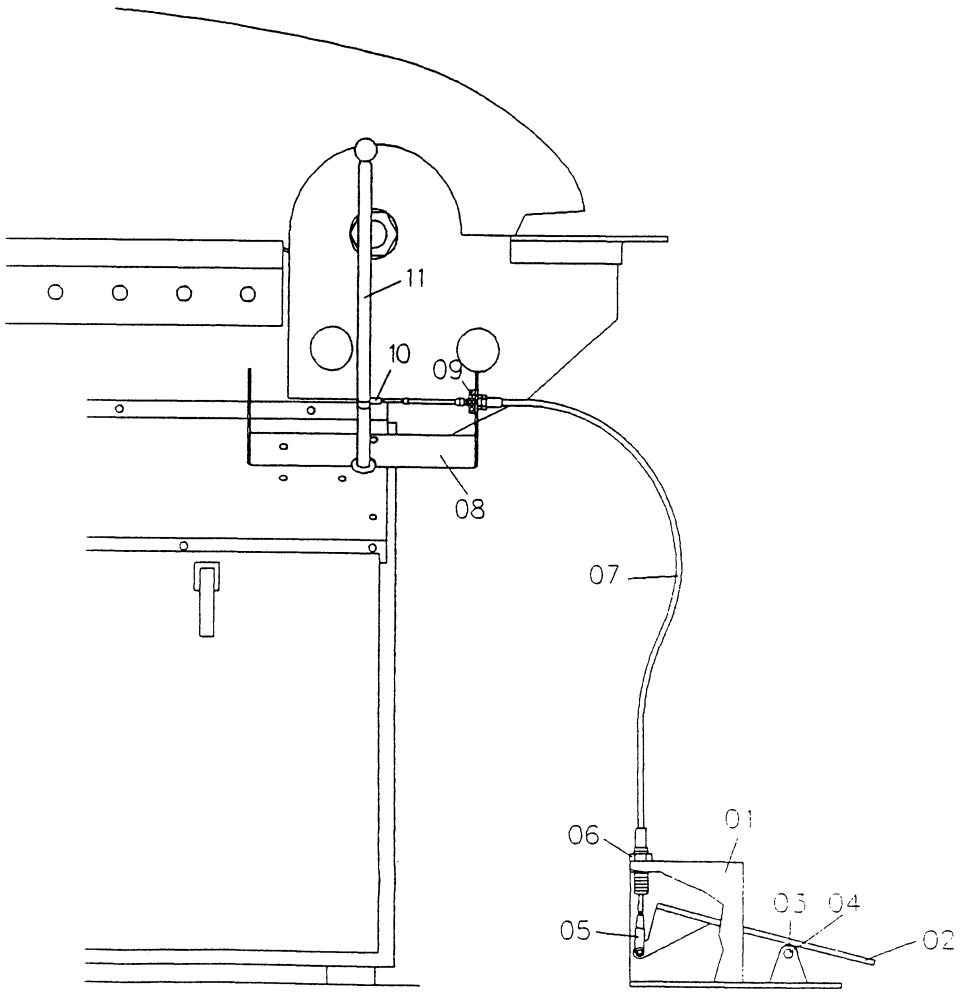
FIGURE AND INDEX NO.	PART NUMBER	DESCRIPTION	QTY.
RP - 1	0531510	2502-12 Hyd Fitting	1
- 2	0521106	3/4 Block Street El	1
- 3	0533514	Filter Assy	1
- 4	0541557	2501-12 Hyd Fitting	1
- 5	0533513	25 Micron Element	1
- 6	0521104	Stant 10061 Fill Cap	1



P36 MECHANICAL FOOT SWITCH ASSEMBLY
OPTIONAL
PART # 4421500

Figure And Index No.	Part Number	Description	Qty.
-1	0376315	Foot Pedal Shield	1
-2	0376312	Foot Pedal	1
-3	0531212	3/8 Nylock HN	1
-4	0541112	1/2 x 3 1/4 SB	1
-5	0541711	Cable Clevis	1
-6	0531263	3/4 JN	1
-7	0541710	Control Cable	1
-8	0476318	Bracket	1
-9	0376311	5/8 Knurled Nut	1
-10	0541712	Cable Ball Joint	1
-11	0272800	Control Handle	1
	0521074	Plastic Handle (ball)	2
	0571005	8mm x 25mm X 1.25mm HH Bolt	2
	0571006	8mm Nut	2

NOTE: Foot Control Assy is optional on serial number P2-599 and up. Prior to this serial number the foot control can not be used.



KNIVES

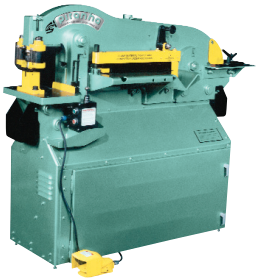
Index Number	Part Number	Description	Qty.
	0220250	Flat Shear Knives x 10"	2
	0220251	Flat Shear Knives x 13"	2
	0220252	1/4" Round Bar Knife	2
	0220253	3/8" Round Bar Knife	2
	0220254	1/2" Round Bar Knife	2
	0220255	5/8" Round Bar Knife	2
	0220256	3/4" Round Bar Knife	2
	0220257	7/8" Round Bar Knife	2
	0220258	1" Round Bar Knife	2
	0220259	1 1/8" Round Bar Knife	2
	0220260	1 1/4" Round Bar Knife	2
	0220261	1 3/8" Round Bar Knife	2
	0220262	1/2" Square Bar Knife	2
	0220263	5/8" Square Bar Knife	2
	0220264	3/4" Square Bar Knife	2
	0220265	7/8" Square Bar Knife	2
	0220266	1" Square Bar Knife	2
	0220270	Round Bar Knife Blank	2
	0220274	Lower Angle Knife	2
	0220275	Upper Angle Knife	1
	0220276	Lower Coper End Knife	1
	0220277	Upper Coper Knife	1
	0220278	Lower Coper Side Knife	2
	0531050	3/8" x 1" SHCS - Upper Coper	4
	0531069	7/16" x 1 1/2" SHCS - Lower Coper Side	2
	0531069	7/16" x 1 1/2" SHCS - Upper Shear	4
	0531069	7/16" x 1 1/2" SHCS - Upper Round Bar	2
	0531071	7/16" x 2" SHCS - Lower Coper End	2
	0531071	7/16" x 2" SHCS - Lower Shear	4
	0531071	7/16" x 2" SHCS - Lower Round Bar	2
	0531071	7/16" x 2" SHCS - Lower Angle	4
	0531330	Woodruff Key - Upper Coper Knife	1

Date
Lubrication
Knife And Table Bolts
Machine And Cabinet Bolts
Hydraulic Connections
Oil Level And/Or Change
Oil Filter
Knife Edges
Remarks

Additional Fabricating Equipment

piranha

Dual Operator Ironworkers
35 to 140 tons



Single Operator Ironworkers
36 to 120 tons

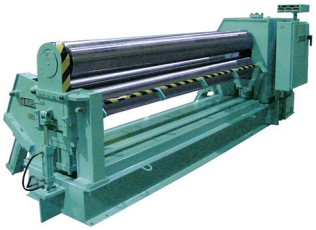
Punch Presses
35 to 140 tons

Press Brakes
25 to 500 tons

Precision Press Brakes
25 to 500 tons

Hydro-Mechanical Shears
1/4˝ to 1/2˝

BERTSCH

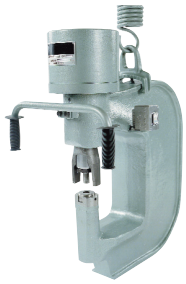


3 & 4 Roll
Manual/Hydraulic

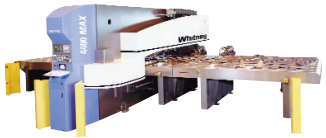
Section Bending Rolls

Whitney

The Leader in Plate Technology



Portable Presses



Punch Plasmas

Plasma Tables

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