

MODEL MM90C

SERIAL NUMBER \_\_\_\_\_



MADE IN U.S.A.

# Operator's Manual & Parts List

[www.KALAMAZOOMETALMUNCHER.com](http://www.KALAMAZOOMETALMUNCHER.com)

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# Safety, Maintenance & Troubleshooting

You have purchased one of the most versatile and safe hydraulic iron working machines on the market today. With proper maintenance and care the METAL MUNCHER is so designed to be a long life productive machine in your plant or shop.

As with any tool, satisfactory use can best be had by a good start. With this in mind, the following check list should be gone through after receiving and installing your METAL MUNCHER.

1. Tighten all bolts, including knife and trunion bolts.
2. Tighten motor and pump mount bolts. Also check belt alignment.
3. Check pulley keys and set screws.
4. Check electrical connections.
5. Check cylinder tie bolts and hydraulic connections.
6. Check pins in valve control handles.
7. Check proper knife clearance (round & square, flat bar, angle and coper). Check knife section for proper clearance.
8. Make sure upper shear bar pivot pin nuts are "set".
9. Check set screw on shear bar clevis pin.
10. A standard machine is wired 220 three phase. Make certain unit complies with your power source. Wire in compliance with your local electric code.
11. Properly lubricate machine (see section on lubrication).

After ten hours of operation, diligently repeat the above check list. Then for continued satisfaction repeat the above every thirty days.

Always refer to your serial number when ordering parts or seeking information.

Always wear safety glasses.

KEEP HANDS OUT OF KNIFE AREAS  
DISCONNECT POWER BEFORE WORKING ON UNIT

The METAL MUNCHER press can be used as a shop press. Shafts can be pushed from gears, pulley, etc. or can be used to push bearings into housings, press fitting parts. When pushing shafts from pulleys, etc., support should be given to the parts to prevent damage. Careful not to damage end of shaft. Special coupler is recommended. A "V" block is available on the METAL MUNCHER accessory list to aid in this type of work. Always keep work centered and properly aligned with press shaft.

Tubular lugs on the side of the press frame are for the bending depth control bolts used with certain bending dies. See accessory list.

In the press platen are four bolt holes tapped 1/2"-13 thd. These are primarily for retaining guides for lower bending dies, but can be used for holding tooling. Because of the long cylinder stroke and gap, the METAL MUNCHER adapts well to special tooling, die sets, etc.

#### FLAT SHEAR BAR

In addition to square shearing flat bars, mitre cuts can be made. For mitre cuts, mark stock to angle desired, slide through hold down, align mark with blade and shear. A production plate and squaring arm can be adapted for production work.

When shearing, ALWAYS keep hold down against material to at least a slip fit. A loose hold down will allow material to be drawn or wedged between the knives, forcing them apart, putting an undue strain on the upper bar, and causing premature wear on the METAL MUNCHER. Squarer cuts are made with the hold down against the stock.

The METAL MUNCHER will cut approximately 17" of flat stock with the round and square knives in position to cut round and square bars. Up to 22" of flat stock can be cut by inverting

## COPER-NOTCHER

The coper-notcher can be one of the most used facilities of your METAL MUNCHER. For longevity it is important that it be used properly. The right hand side of the blade is thicker than the left. This is to give shear or rake to the knife to reduce shearing pressure. The right side is to be favored in shearing as this throws the side pressure into the gib.

The lower coper knives have four cutting edges and should be turned to a new edge when dull. After sharpening, the knives are shimmed out for proper clearance. The sides should have .005 to .010 and the end should not have more than .062. Maintain a wide clearance on the end if consistently shearing thicker materials--up to 3/8". Otherwise use a closer tolerance for satisfactory coping of thinner materials. DO NOT EXCEED 3/8" THICK MILD STEEL.

## HYDRAULIC SYSTEM

The METAL MUNCHER hydraulic system is a very basic and simple system and can be expected to give much satisfactory service with a minimum of attention.

As standard your METAL MUNCHER is equipped with a four piston pump with a reservoir capacity of seven quarts. To add oil to the system use a non-foaming, rust preventative, hydraulic oil or a non-detergent 10W oil. To check oil level have cylinder piston shafts retracted. The filler cap can be located under the press.

The system contains a relief valve which has been factory pre-set to operate your METAL MUNCHER to factory specifications. Breaking the seal and resetting the relief valve will void the warranty.

## LIMIT SWITCH

This switch (Fig. 5) is provided to limit travel of the hydraulic cylinder during punching operations.

NOTE: Limit control is pictured in shipping (locked) position.

### Adjustment

Release locking nuts and position tabs as necessary to allow only the cylinder movement desired.

Secure locking nuts and check carefully for proper adjustment prior to beginning work.

### Manual Cylinder Reversal

If it becomes necessary to raise the cylinder before the downstroke is completed, manually depress the button atop the limit switch (item #3, Fig. 5) to reverse cylinder motion.

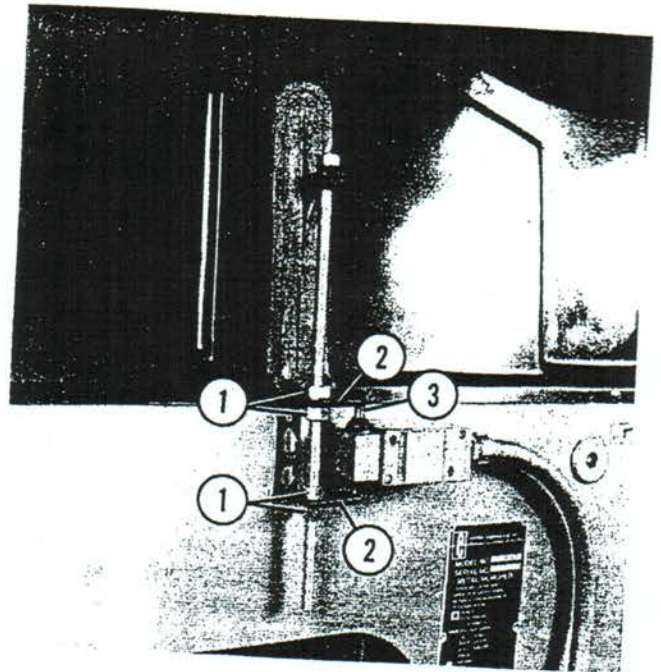


Figure 5.

1. Locking Nuts
2. Tabs
3. Top Switch Button

## OPERATION



**CAUTION: ALWAYS WEAR EYE PROTECTION WHEN OPERATING THE METAL MUNCHER.**

The Metal Muncher Iron Worker has a rated shearing capacity equal to the shearing point of mild steel (50,000 PSI). The various work stations also have material thickness limitations. These are specified at the beginning of the sections regarding the specific work stations.

### PUNCH PRESS

NOTE: Do not attempt to punch material exceeding mild steel in strength or the dimensions shown below;

Model 61..... 3/4 inch  
Model 90..... 1 inch

The Punch Press station includes the following items as standard equipment;

#### Shaft Guide

The shaft guide is necessary to prevent cylinder ram (and therefore punch) rotation.

Guide is correctly installed at the factory and should need no further adjustment.

NOTE: Be certain shaft guide is securely attached to the cylinder ram.

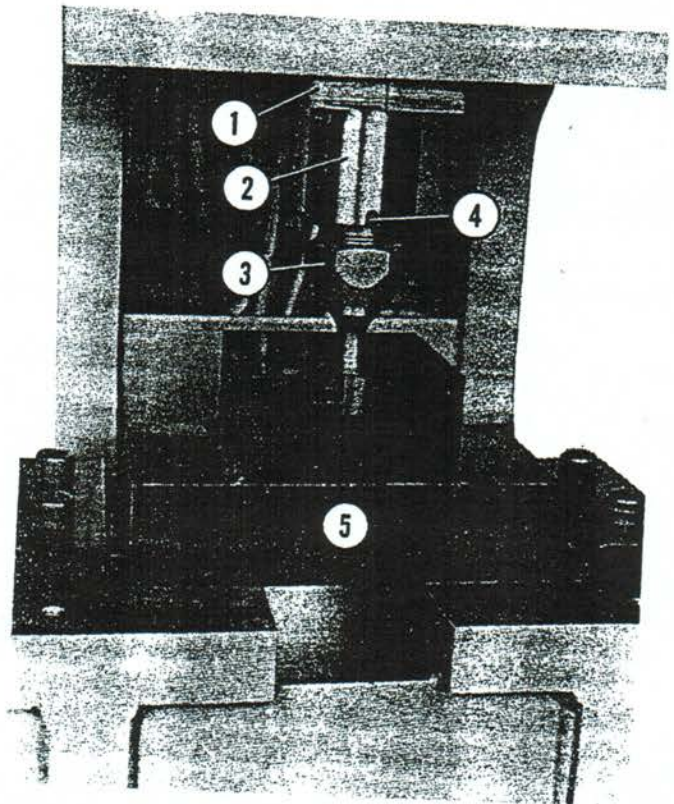


Figure 6.

1. Shaft Guide
2. Cylinder Ram
3. Coupler and Nut
4. Alignment Slot
5. Die Holder Block

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1-9	Safety Maintenance & Troubleshooting
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18-25	Parts Schematic & Parts List

TROUBLE-SHOOTING-----HYDRAULICS

Loss of power check following:

- \* Motor and pump mount belts
- \* Pulleys, keys, set screws
- \* Belt alignment, tension, condition
- \* Oil Level
- \*
- \* Malfunctioning valve
- \* Oil by passing piston

ELECTRICAL-----Motor fails to start

- \* Check starter reset button
- \* Check main disconnect for "on" position
- \* Check line voltage below fuses. A fuse can be bad, but sufficient feed back to light a neon type circuit tester
- \* Check all connections
- \* Check circuitry through start-stop switch

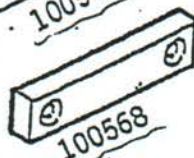
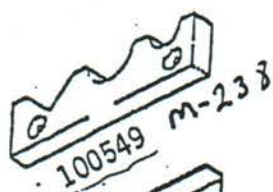
ROUND SQUARE

PLATE BLADES

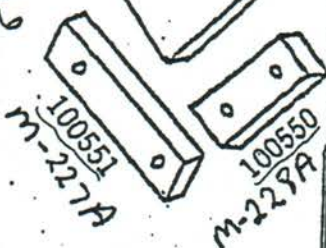
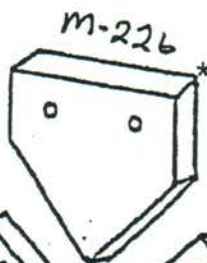
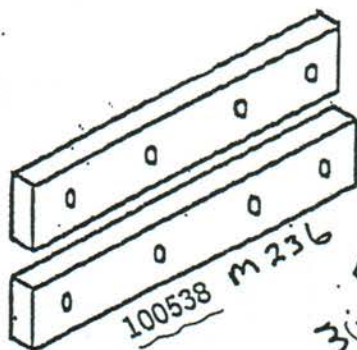
ANGLE BLADES

COPER NOTCHER

FOR ALL MODELS



MB146-1/2-13



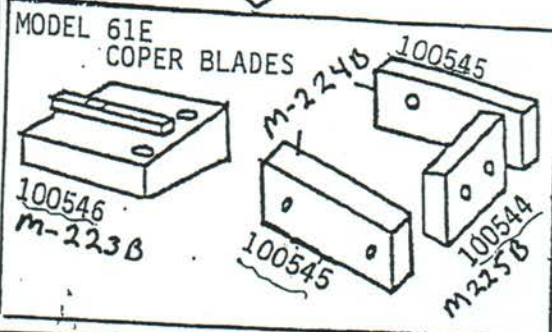
**METAL MUNCHER SHEAR BLADES**

Models 61A, 61B, 61C, 90 and 90C *M-228*

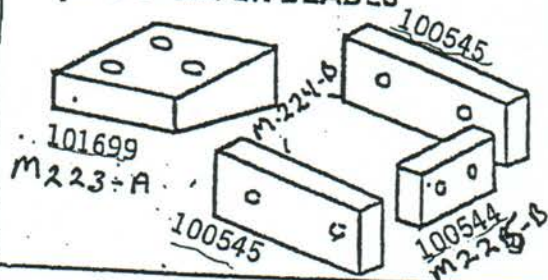
METAL MUNCHER shear blades are precision made of the finest grade tool steel and scientifically heat treated for toughness and long hard service. The blades above are for current model no. 61C. Differences in older models are shown in the oxes at the right.

Parts No.	Description	No. Req'd.
100568	Flat Bar Blade Short	2
M-238	Round and Square Blade	2
M-236	Flat Bar Blade	2
M-226	Upper Angle Blade	2
M-227	Left Lower Angle Blade Models 60 & 61	1
M-228	Right Lower Angle Blade Model 60 & 61	1
M-227-A	Verti. Lower Angle Blade (4-way)	1
M-228-A	Horiz. Lower Angle Blade (4-way)	1
M-223	Upper Coper Blade Models 60 & 61 3 1/2" x 4 1/4"	1
M-224	Lower Coper Blade (flat type Model 60)	2
M-225	Lower Center Coper Blade (flat type Model 60)	1
M-224-A	Lower Coper Blade Models 60 & 61	2
M-225-A	Lower Center Coper Blade Models 60 & 61	1
M-223-A	Upper Coper Blade (no key) 3" x 3" 61A, 61B	1
M-223-B	Upper Coper Blade (keyed top) 3" x 3" 61C	1
M-224-B	Lower Coper Blade (3" x 3" coper) 61 A, B, C	2
M-225-B	Lower Center Coper Blade (3" x 3" coper) 61 A, B, C	1
M-146	1/2" Flat Socket Head Cap Screw	28

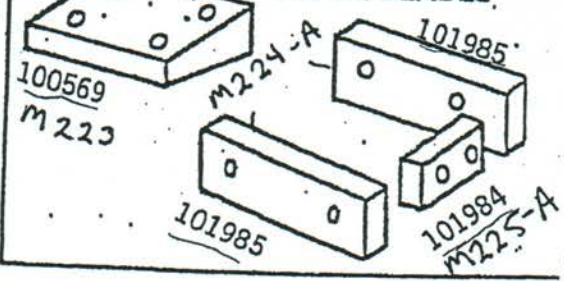
102542  
Pad.



MODELS 61A, 61B and 90  
3" x 3" COPER BLADES

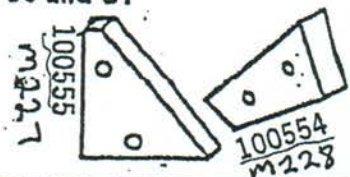


MODELS 60 and 61 3 1/2" x 4 1/4"  
COPER BLADES



MODELS 60 and 61

LOWER  
ANGLE  
BLADES



BLADES FOR OLDER MODELS

When ordering blades for Model 50 and other older models be sure to give serial number of unit and dimensions of blades.

Page has been updated with new part numbers typed in. The 6 digit numbers are the current and correct.

- Angle Blade Need Pattern and 100553 Short 6 1/8 under, 100552 Long over 6 1/8.
- Hyper. Flat Long Blades 61E, 86-110 Old Style 23" 100524
- Hyper. Flat Long Blades 60 24 1/8" 100525
- Hyper. Flat Long Blades 61 16 3/8" 101694



SERIES 90 HYDRAULIC AND ELECTRICAL PARTS

Ref. No.	Part No.	Description	Qty. Req'd.
1.	1-90	Oil Hose Upper Port Shear Cyl. to Valve	1
2.	2-90	Oil Hose Lower Port Shear Cyl. to Valve	1
3.	3-90	Oil Hose Lower Port Press Cyl. to Solenoid	1
4.	4-90	Oil Hose Upper Port Press Cyl. to Solenoid	1
5.	5-90	Oil Hose Pump Pressure Line to Shear Cyl. Valve	1
6.	6-90	Oil Hose Pressure Line from By-Pass Valve to Solenoid	1
7.	7-90	Oil Hose Return Line from Solenoid to Pump	1
8.	8-90	Oil Hose By-Pass Line from By-Pass Valve to Pump	1
	M-282H	90° Hydraulic Elbows 3/8"	
	M-283H	3/8" Tee	
	M-286	Signal Cable—Start-Stop to Starter 16/3 std.	1
	M-286A	Cable-Control Box to Starter	1
	M-197	Pump Sheave	1
	M-203	Drive Belts	1
	M-202	Sheave Bushing, Motor Pulley 1 3/8" Bore	2
	M-204H	Oil Cap Pump Reservoir	1
	M-209-90	Hyd. Pump Model 50-E-15 (less reservoir)	1
	M-210	7½ H.P. 1800 R.P.M. Motor 3-Phase	1
	M-290	Starter	1
	M-165	Start-Stop Station	1
	M-181A-90	Solenoid Valve	1
	M-181A-90	By-Pass Valve	1
	M-181	Hydraulic Control and Pressure Valve	1
	M-165A-90	Electric Start-Stop Control Box	1
	M-165B-90	Press Electric Foot Switch	1
	M-165C-90	Electric Limit Switch	1
	M-290A	Reducing Transformer (dual voltage)	2
			1

**SERVICE SUGGESTIONS**

**MOTOR FAILS TO START**

- Check Starter reset button.
- Check main disconnect for "on" position.
- Check line voltage below fuses. A fuse can be bad, but sufficient feed back to light a neon type circuit tester. Make sure there is sufficient power at machine.
- Check all connections and wire for loose connection or breakage.
- Check circuiting through Start-Stop switch.

**MOTOR KICKS OFF FROM JAR**

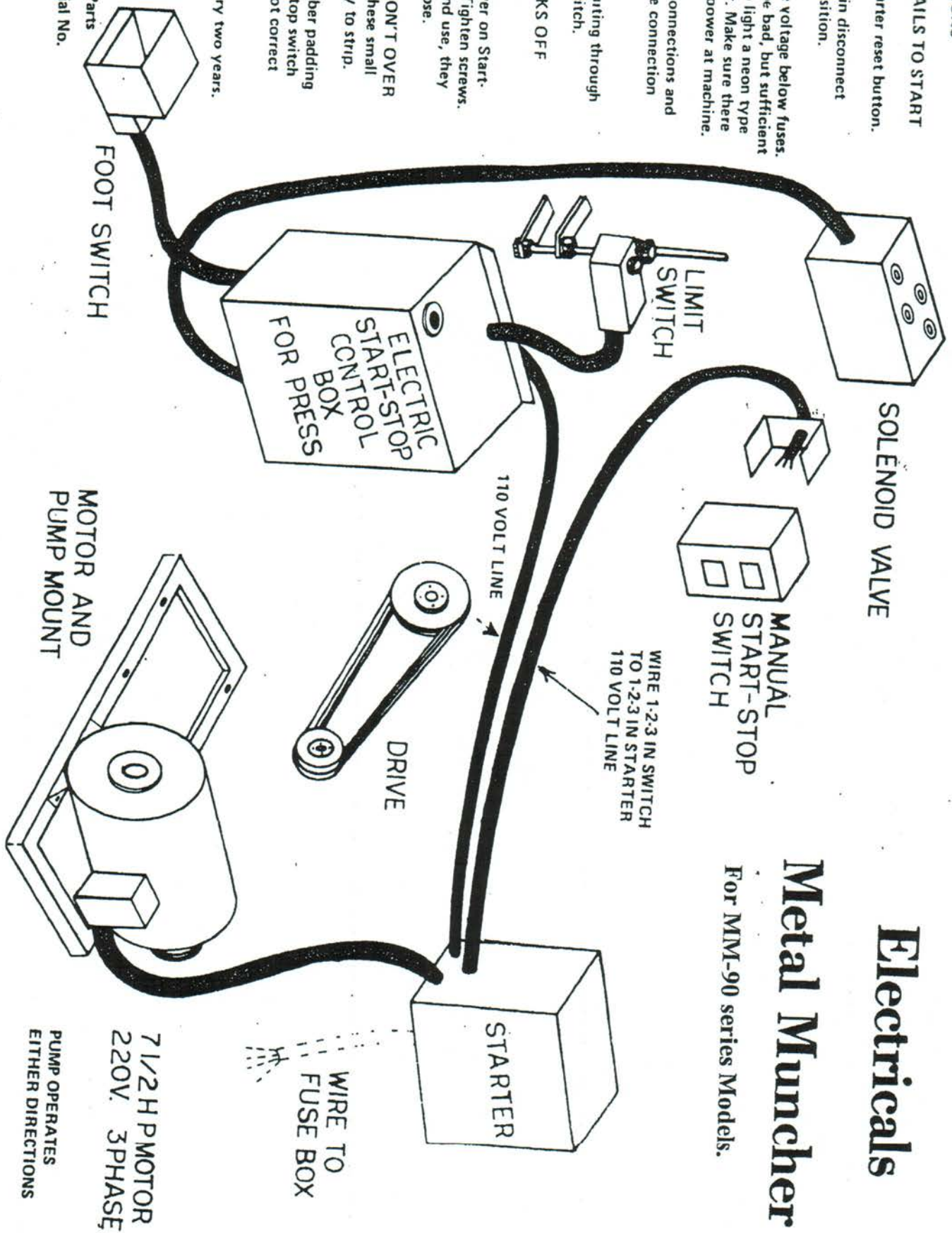
- Remove cover on Start-Stop switch. Tighten screws. In shipment and use, they can vibrate loose.

**CAUTION: DON'T OVER TIGHTEN**... these small screws are easy to strip.

- Put extra rubber padding back of Start-Stop switch if above does not correct problem.

- Oil Motor every two years.

When Ordering Parts Always Give Serial No.



**Electricals**

**Metal Muncher**

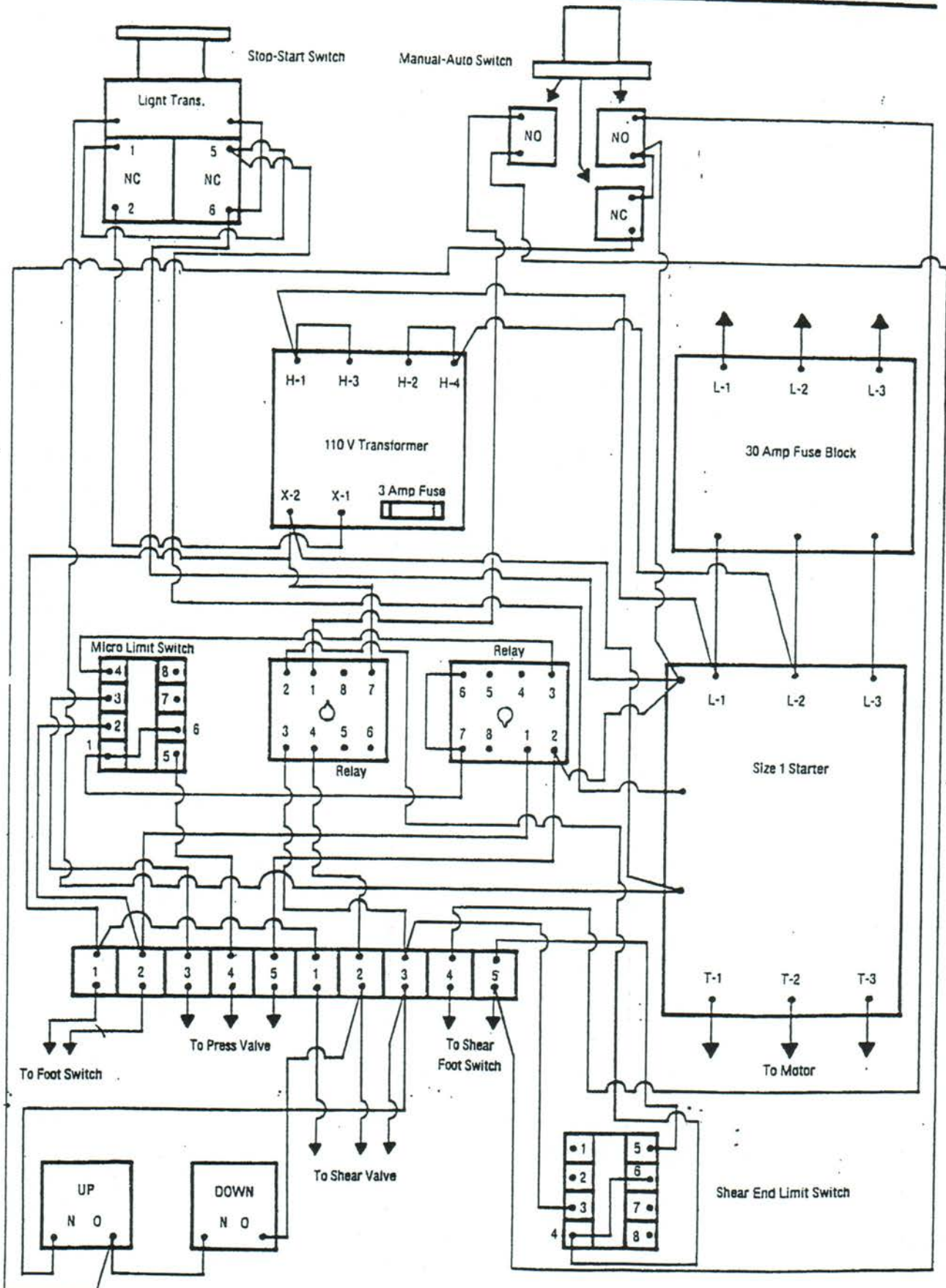
For MM-90 series Models.

7 1/2 HP MOTOR  
220V. 3PHASE

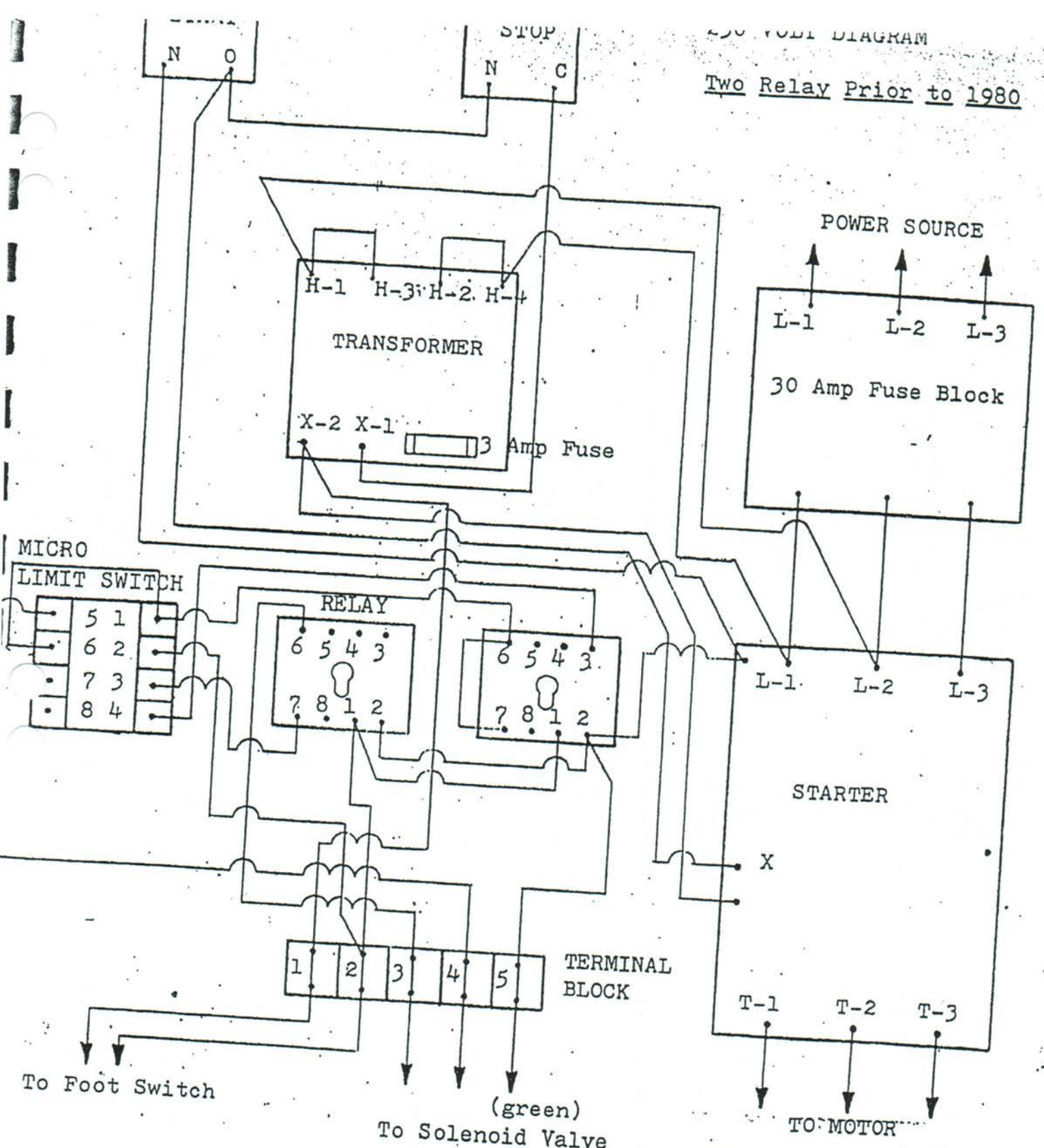
PUMP OPERATES  
EITHER DIRECTIONS

IMPORTANT INFORMATION —  
480 VOLT SYSTEMS

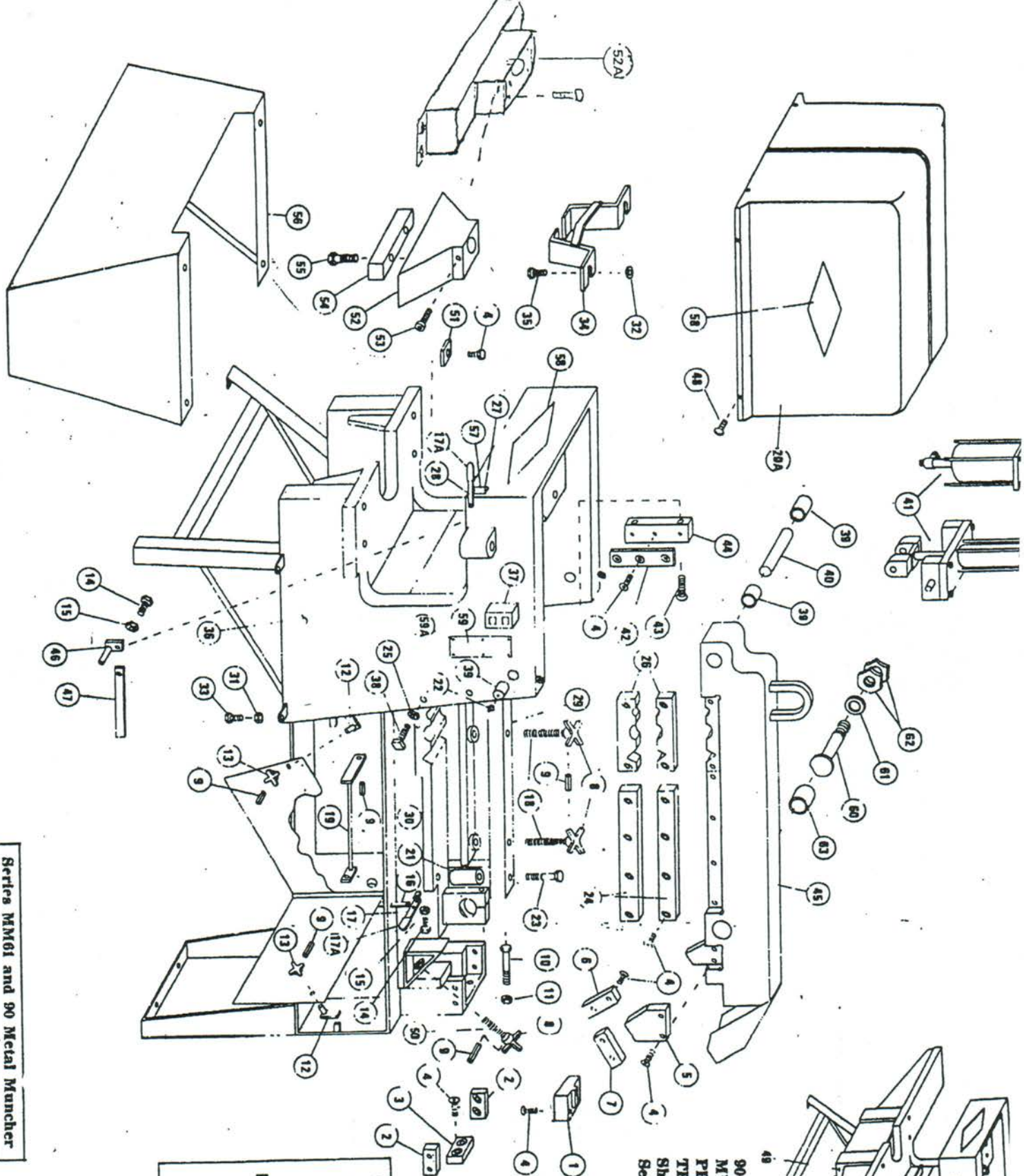
Remove 30 A fuse block. Wire directly to starter and fuse with 20A 480 fuses at power source. Change transformer and motor leads for proper voltage.



Two Relay Prior to 1980

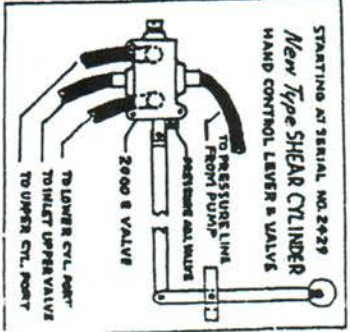
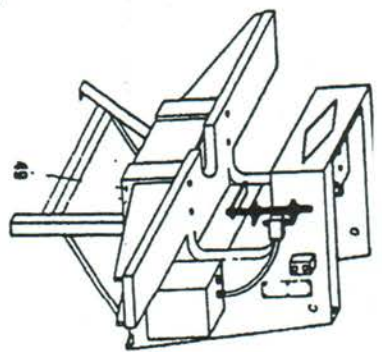


**IMPORTANT. 480 VOLT.**  
 Remove 30A Fuse Block. Wir  
 directly to starter and fus  
 with 20A 480 fuses at power  
 source. Change transformer  
 and motor leads for proper  
 voltage.



Series MM61 and 90 Metal Muncher  
Parts Schematic

90 SERIES METAL,  
MUNCHER with 48 in.  
PRESS BED and 3 1/4 in.  
THICK SIDE PLATES  
Shear Section Same as  
Series 61



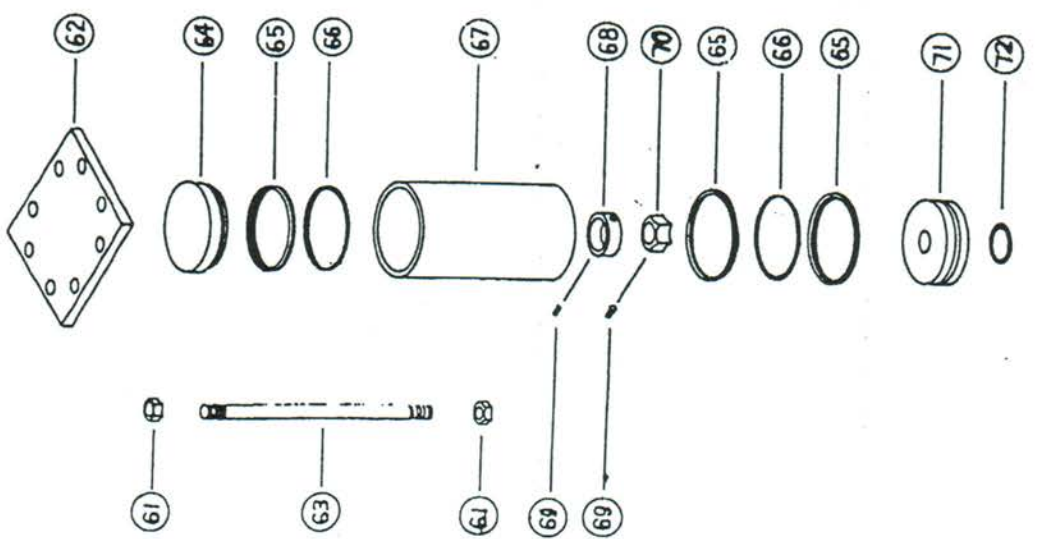
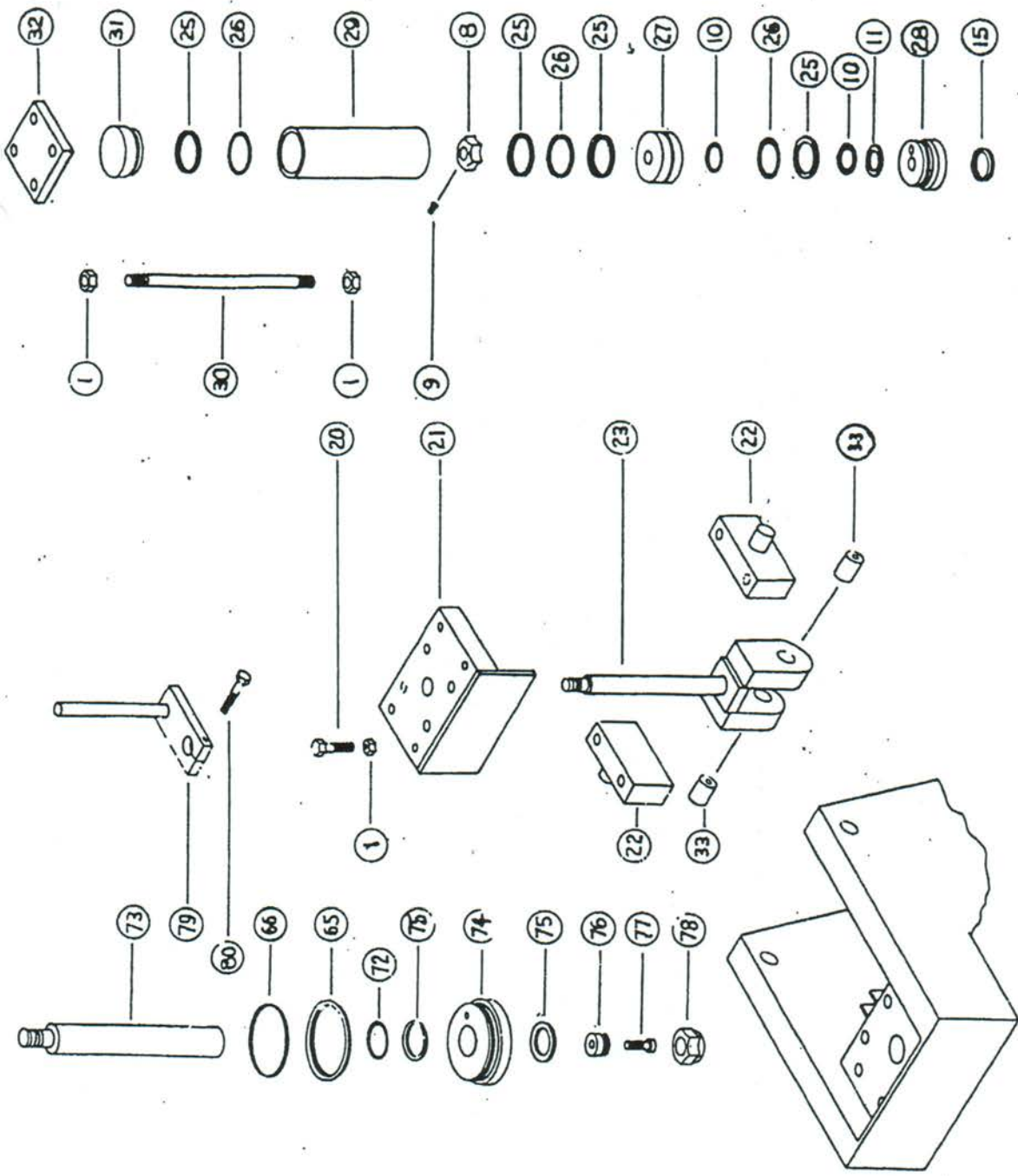
For M4-90 series Model

Parts Schematic

Part No.	Description	Qty. Req'd.
M223-B	Upper Coper Blade (keyed top)	1
M224-B	Lower Coper Blade (3"x3" coper, 4-way)	2
M225-B	Lower Center Coper Blade (3"x3", 4-way)	1
M146	1/2" Flat Socket Head Cap Screw	28
M226	Upper Angle Blade	1
M227-A	Vertical Lower Angle Blade (4-way)	1
M228-A	Horizontal Lower Angle Blade (4-way)	1
M142	Hold Down Hand Knobs	3
M144	Roll Pins 3/16 x 1 1/4	5
M147-E	7/8 x 7 Hex Cap Screw	2
M147-F	7/8 Lock Nut	2
M172	Door Latch	2
M231	Hand Knob--Cabinet Door	2
M149	1/4-20 x 1 Hex Head Cap Screw	4
M150	1/4-20 Hex Nuts	4
M232	Control Link	1
M152	Control Handle--Bar Shear (incl.17A)	1
M233	Flat Bar Hold Down Screws	2
M153	Control Linkage Assembly	1
M159-A	Plastic Hood	1
M234	Spacer--Flat Bar Hold Down	2
M132	Grease Fitting--1/4" Drive Straight	5
M235	3/4-10 x 6 Hex Cap Screw	2
M236	Flat Bar Knife (4-way)	2
M206-A	5/8 Jam Nut	4
M238	Round and Square Knife	2
M171	1/8 x 1/4 Type "U" Screw	8
M152-A	Control Handle, Press (incl.17A)	1
M239	Upper Bar--Flat Bar Hold Down	1
M240	Lower Bar--Flat Bar Hold Down	1
M154	1/2"-13 Hex Nut	8
M241	1/2" Flat Washer	24
M156	1/2"-13 x 1 1/2 Hex Bolt	4
M158	Stripper Bar	1
M167	1/2"-13 x 2 1/2 Hex Cap Screw	2
M126	Main Frame	1
M165	Start-Stop Station	1
M242-A	5/8 Set Screw	4
M243	2 1/4 O.D. x 2" I.D. x 1 3/4 L. Bronze Bushing	2
M133	Clevis Pin, Bar Shear	1
M244	See Hydraulic Cylinder Schematics	
M244	Wear Gib	2
M245	5/8-11 x 4 1/4 Bolt w/Nut	4
M246	Mounting Block, Brass Gib	2
M247	Upper Shear Bar	1
M153	Control Rod and Arm	1
M162	Control Link	1
M163	5/16-18 x 1 Hex Bolt	5
M126-90	Series 90 Main Frame with 48" Press Bed	1
M248	Screw, Angle Hold Down	1
M108-A	Adjusting Stop for Brake	4

Ref. No.	Part No.	Description	Qty. Req'd
52	M249	Die Holder Block--2 3/8" Dies	1
53	M251	Die Locking Screw	1
54	M252	Clamping Bar	1
55	M253	Clamp Bolts--1/2-13 x 4 1/2 Gr.5 Hex Hd.	2
56	M107	Skirt	1
57	M164	Directional Control Plate	1
58	M164A	METAL MUNCHER Decal (diamond shape)	1
59	M164B	Mach. Serial No. & Capacity Chart (shear--punch)	3
59A	M164C	1/8" rivets	1
60	M147A	Bar Shear Pivot Pin (threaded type)	6
61	M147B	Bar Shear Pin Pivot Spacer 1 1/2"	1
62	M147C	1 1/2" Jam Nut	1
63	M147D	4044-32 Bronze Bushing	2
			1

WHEN ORDERING PARTS ALWAYS GIVE SERIAL NUMBER.



MM 90 — MM 90C Metal Muncher  
Cylinder Parts Schematic



SERIES 90 CYLINDER PAM'S

Part No.	Description	Qty. Req'd.
M-254	7/8" - 9 Hex Nut	16
M-255-8	Tie Down Plate - 8" cyl.	1
M-256	7/8" Tie Bolt	8
M11-A-8	Press Cyl. Plug - 8"	1
M-257-8	8" Back-up Ring	4
M-258-8	8" "O" Ring	3
M-259-8	8" Cylinder Barrel	1
M-291-8	Piston Stop Spacer	1
M-260-A	5/16 Socket Set Screw	1
M-260-8	2" Hex Nut	1
M-261-8	Piston - 8" Cylinder	1
M-120-8	"O" Ring Shaft Seal for 3" shaft	2
M-262-8	Press Cylinder Shaft 3" Dia.	1
M-263-8	Head - 8" Cylinder	1
M-123-8	Wiper Seal for 3" shaft	-2
M-266-90	Coupler Nut Adapter - for #45 Nut	1
M-266-90A	5/8 x 2 Hex Head Cap Screw	1
M-271	Punch Coupling Nut - #45 (std.)	1
M-292-8	Shaft Guide for 3" Shaft	1
M-293	1/2 x 3 Hex Cap Screw	1
M-254	7/8" - 9 Hex Nut	12
M-260	1 1/2" - 6 Hex Nut	1
M-260-A	5/16 Socket Set Screw	2
M-120	"O" Ring Seal - Shaft Seal 2"	1
M-114	Back-up Ring - Shaft Seal 2"	1
M-123	Wiper Seal 2"	1
M-272	7/8" - 9 Gr. 5 x 4 Cap Screw	4
M-273	Mounting Plate, Bar Shear Cyl.	1
M-274	Pivot Block	2
M-275	Piston Shaft - Clevis	1
M-112	4 1/2" Back-up Ring	4
M-113	4 1/2" "O" Ring	3
M-118	4 1/2" Piston	1
M-122	4 1/2" Head	1
M-276	4 1/2" Cylinder Barrel - Bar Shear	1
M-277	Tie Bolts - Bar Shear Cylinder	4
M-129	Head - Bar Shear Cylinder	1
M-110	Tie Down Plate - 4 1/2" Cylinder	1
M-243-A	3236-16 Bronze Bushing - Clevis	2
M-294	8" Cylinder Repair Kit (Press)	1
M-295	4 1/2" Cylinder Repair Kit (Shear) (Kits includes all "O" rings, back-up rings, and wiper seal)	1
M-297	8" Cylinder Complete & assembled less tie bolts	1
M-298	4 1/2" Cylinder Complete & assembled less tie bolts	1

other than standard #45 Coupling Adapter specify type punch used.

SERIES 90 CYLINDER PARTS

No.	Part No.	Description	Qty. Req'd.
1	M-254	7/8" - 9 Hex Nut	1
2	M-255-8	Tie Down Plate - 8" cyl.	16
3	M-256	7/8" Tie Bolt	1
4	M11-A-8	Press Cyl. Plug - 8"	8
5	M-257-8	8" Back-up Ring	1
6	M-258-8	8" "O" Ring	4
7	M-259-8	8" Cylinder Barrel	3
8	M-291-8	Piston Stop Spacer	1
9	M-260-A	5/16 Socket Set Screw	1
10	M-260-8	2" Hex Nut	1
11	M-261-8	Piston - 8" Cylinder	1
12	M-120-8	"O" Ring Shaft Seal for 3" shaft	1
13	M-262-8	Press Cylinder Shaft 3" Dia.	2
14	M-263-8	Head - 8" Cylinder	1
15	M-123-8	Wiper Seal for 3" shaft	1
16	M-266-90	Coupler Nut Adapter - for #45 Nut	2
17	M-266-90A	5/8 x 2 Hex Head Cap Screw	1
18	M-271	Punch Coupling Nut - #45 (std.)	1
19	M-292-8	Shaft Guide for 3" Shaft	1
20	M-293	1/2 x 3 Hex Cap Screw	1
21	M-254	7/8" - 9 Hex Nut	1
22	M-260	1 1/2" - 6 Hex Nut	12
23	M-260-A	5/16 Socket Set Screw	1
24	M-120	"O" Ring Seal - Shaft Seal 2"	1
25	M-114	Back-up Ring - Shaft Seal 2"	2
26	M-123	Wiper Seal 2"	1
27	M-272	7/8" - 9 Gr. 5 x 4 Cap Screw	1
28	M-273	Mounting Plate, Bar Shear Cyl.	4
29	M-274	Pivot Block	1
30	M-275	Piston Shaft - Clevis	2
31	M-112	4 1/2" Back-up Ring	1
32	M-113	4 1/2" "O" Ring	4
33	M-118	4 1/2" Piston	3
34	M-122	4 1/2" Head	1
35	M-276	4 1/2" Cylinder Barrel - Bar Shear	1
36	M-277	Tie Bolts - Bar Shear Cylinder	1
37	M-129	Head - Bar Shear Cylinder	4
38	M-110	Tie Down Plate - 4 1/2" Cylinder	1
39	M-243-A	3236-16 Bronze Bushing - Clevis	1
40	M-294	8" Cylinder Repair Kit (Press)	2
41	M-295	4 1/2" Cylinder Repair Kit (Shear) (Kits includes all "O" rings, back-up rings, and wiper seal)	1
42	M-297	8" Cylinder Complete & assembled less tie bolts	1
43	M-298	4 1/2" Cylinder Complete & assembled less tie bolts	1

If other than standard #45 Coupling Adapter specify type punch used.

WHEN ORDERING PARTS ALWAYS GIVE SERIAL NUMBER.