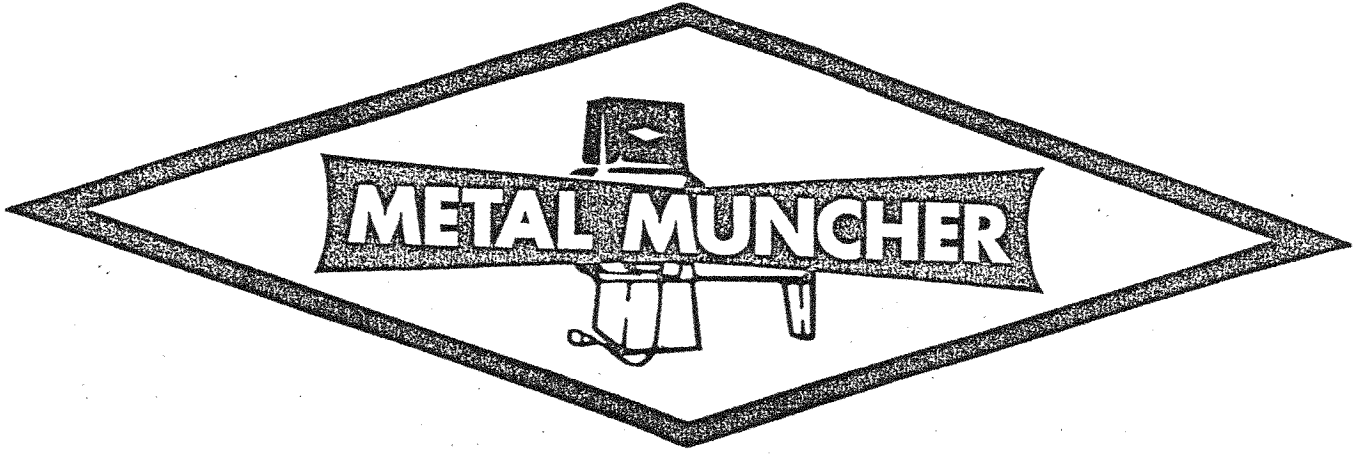


MODEL MM49

SERIAL NUMBER _____



MADE IN U.S.A.

Operator's Manual & Parts List



1

Web Site: www.kalamazoo-industrial.com

3428 East B Avenue Plainwell, MI 49080

1866

145

www.kalamazoo-industrial.com

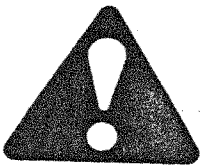
The Metal Muncher Hydraulic Iron Worker is the result of many years experience and engineering development. With proper care and regular maintenance, the advanced design and rugged construction assures you of trouble-free operation for many years.

SAFETY

As with any piece of equipment, operator safety is of primary importance.

Although every attempt has been made to provide safe operation and machine control, operators should stay constantly alert when working with the Metal Muncher Hydraulic Iron Worker.

The following symbol is used throughout this manual to bring attention to information regarding potential hazards.



CAUTION: FAILURE TO UNDERSTAND AND OBEY A SAFETY WARNING COULD RESULT IN PERSONAL INJURY TO THE OPERATOR OR OTHERS.

If any portion of the instructions or safety information presented in this manual is not clearly understood, contact your Metal Muncher dealer for clarification before beginning operation.



CAUTION: ALWAYS WEAR EYE PROTECTION WHEN OPERATING THE IRON WORKER.

STOP-START SWITCHES

A stop switch is located in the starter box at the side of the machine. Depress switch to halt all machine functions immediately. Depress start switch to re-start.



CAUTION: BE CERTAIN TO TEST SWITCHES PRIOR TO EACH DAY'S OPERATION.



CAUTION: MAKE CERTAIN COPER /NOTCHER SAFETY COVER IS IN PLACE BEFORE OPERATING SHEAR STATIONS.

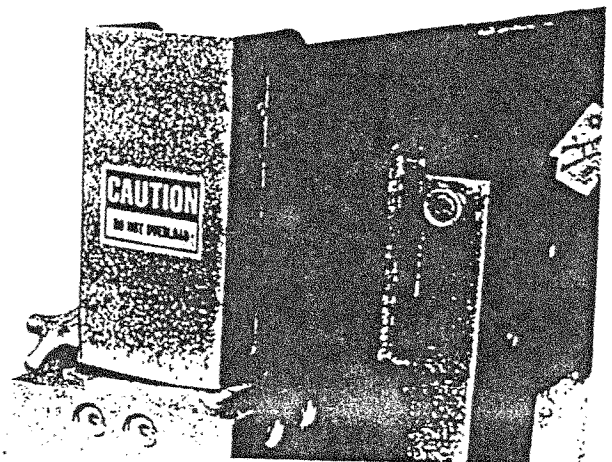


Figure 2. Guard in place

METAL MUNCHER INSTALLATION

Your Iron Worker has been completely adjusted and assembled at the factory and should require only electrical connection and an initial check-out prior to use.

Electrical Connection

The standard Metal Muncher unit is wired for 220 volt 3-phase operation. An optional 480 volt model is available on special order.



CAUTION: MAKE CERTAIN YOUR WIRING IS IN COMPLIANCE WITH THE ABOVE SPECIFICATIONS AND LOCAL ELECTRICAL CODES.

Instruct your electrician to familiarize himself with the wiring diagrams provided in this manual and to check all electrical connections on the machine itself before applying power.

Pre-Operation Check

In addition to the electrical connections discussed above, the following areas must be checked before the initial period of operation.



CAUTION: DISCONNECT POWER SUPPLY BEFORE PERFORMING ANY MAINTENANCE OR MAKING ADJUSTMENTS.

Check pump direction (see pg. 7). Rewire to obtain correct operation if necessary.

1. Check all hardware and tighten if necessary, including:
 - knife and trunion bolts
 - motor and pump mounting bolts
 - cylinder tie bolts
 - upper shear bar pivot nuts
 - set screw on shear bar clevis pin
2. Check pins in valve control handle and linkage
3. Check for correct knife clearance (see Knife Maintenance section)
4. Check all hydraulic lines and connections



CAUTION: NEVER USE HANDS TO CHECK FOR SUSPECTED HYDRAULIC LEAKS. IF HYDRAULIC FLUID PENETRATES THE SKIN, SEEK IMMEDIATE MEDICAL HELP.

NOTE: Repeat all steps above after first 10 hrs. of operation, then after each 30 days use.

5. Properly lubricate machine (see lubrication section)
6. Release limit switch tabs from shipping position (see fig. 5).

CONTROL IDENTIFICATION

STOP-START SWITCHES

Refer to Fig. 1, SAFETY section.

HAND CONTROL

The hand control is moved (as shown in Fig. 4) to raise or lower the blades at the shear stations and at the coper/notcher.

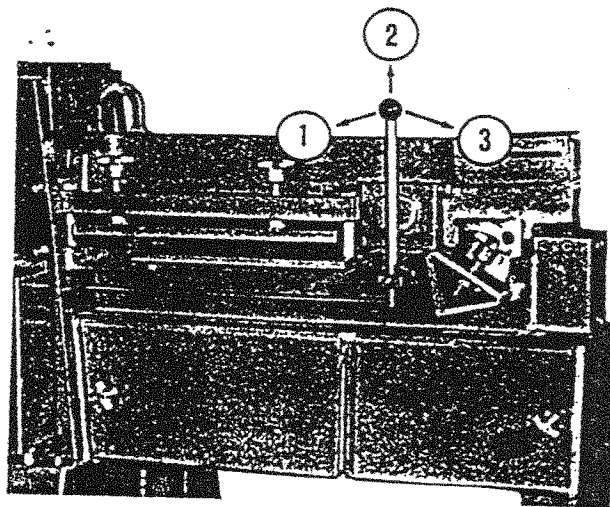
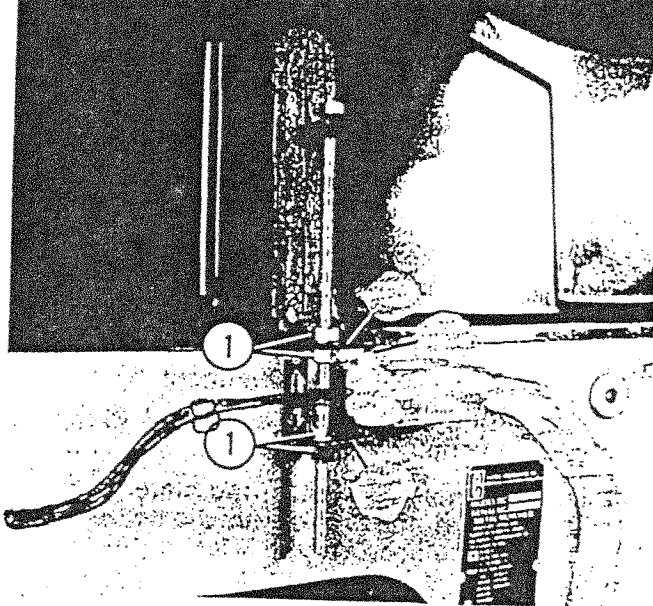


Figure 4.

1. Lower Shear
2. Neutral
3. Lower Coper/Notcher

STROKE CONTROL



MANUAL HAND CONTROL

Figure 5.

1. New Quick Set Stroke Control Knobs

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-49..... 3/4 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.

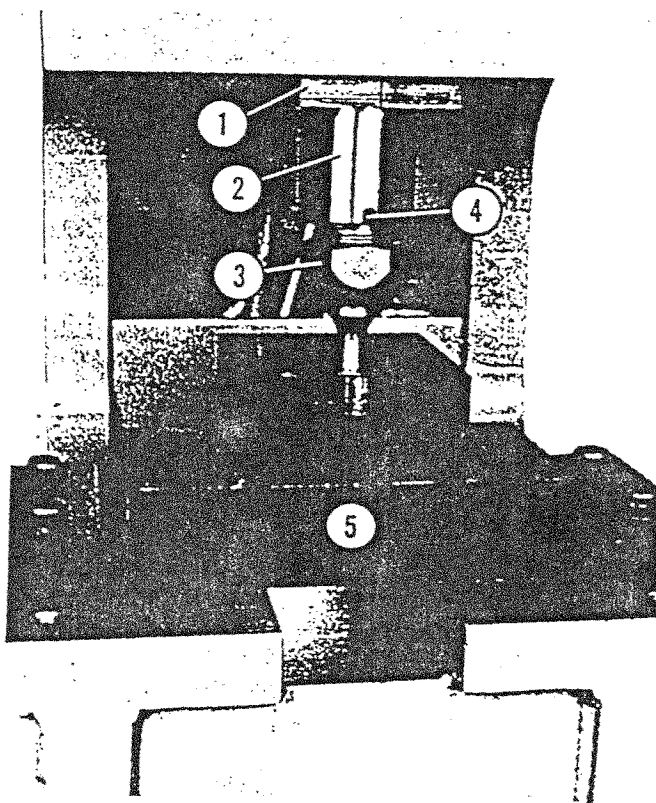


Figure 6.

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

Punch Coupler

The punch coupler simply provides a method of attaching the punch to the hydraulic shaft. The punch coupler nut secures the punch itself to the punch coupler (See Fig. 6).

Die Holder Block

The function of the die holder block is explained in the name.

The Die Holder Block is provided with clamps and hardware (see Fig. 6) to secure it to the platen.

Punch Installation and Die Alignment

Select a mating punch and die. Affix punch to coupler with coupler nut.

Clamp the die holder block to the platen. Do not fasten securely at this time so that die holder block may be moved as necessary to assist proper alignment.

Insert die into holder block. Check to be sure coupler nut is secure and punch is squarely installed in coupler.

Slowly bring the punch down into die and make sure it is correctly centered. Securely tighten die holder block to platen. When punch reaches desired depth, adjust limit switch to prevent further downward movement.

NOTE: Be certain punch does not travel far enough into die to cause shank portion to bind against die.

Stripper

The stripper serves to remove punched material from the punch as the press cylinder moves upward.

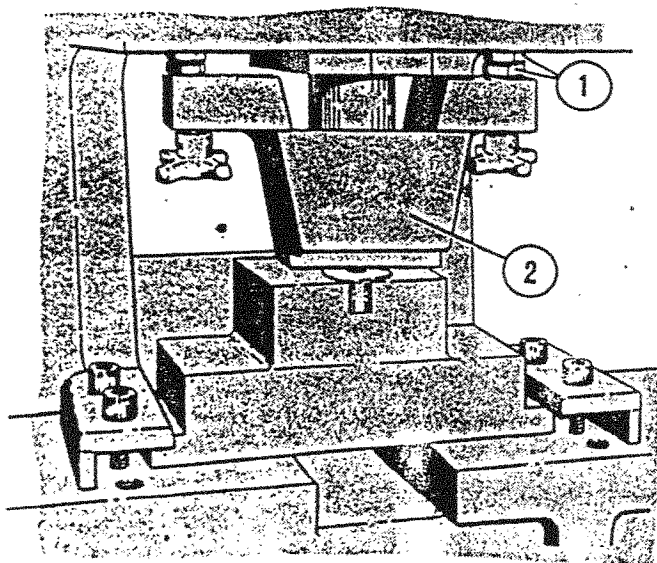


Figure 7.

1. Locknuts 2. Stripper

Adjustment

Loosen locknuts on both sides; adjust stripper to allow material to pass freely beneath stripper base. Secure locknuts against underside of stripper after desired adjustment is reached.

NOTE: Be certain stripper base is parallel with surface of die holder block.

Punch Operation



CAUTION: THICKNESS OF MATERIAL TO BE PUNCHED MUST NEVER EXCEED PUNCH DIAMETER. IF THIS CONDITION EXISTS, PUNCH MAY SHATTER, CAUSING OPERATOR INJURY.

Proper alignment of punches and dies is essential to good results and long equipment life. Assure that punches and dies are in good condition.

NOTE: Worn punches will increase stripping pressure and can warp material. Apply lubricant to punch periodically to ease stripping and lengthen punch life.

The Metal Muncher Iron Worker is easily adapted for use as a shop press to install or remove bearings, gears, etc.

When doing this type work, adequate support must be provided for the various items in order to prevent damage to them or to the machine. $\frac{3}{4}$ " X 13 threaded holes are provided in the platen. Their primary use is to retain guides for lower bending dies but they may also be used to retain various tooling if desired.

Special care must be taken to prevent damage to the cylinder shaft end. A special coupling is recommended (PN M-266-SC).



CAUTION: ALWAYS KEEP ANY WORK CENTERED ON PLATEN OR OTHER SUPPORT AND PROPERLY ALIGNED WITH PRESS SHAFT.

FLAT SHEAR BAR

NOTE: Do not attempt to shear material exceeding 1" mild steel in strength or dimension.



CAUTION: MAKE CERTAIN COPER /NOTCHER SAFETY COVER IS IN PLACE BEFORE OPERATING SHEAR STATIONS.

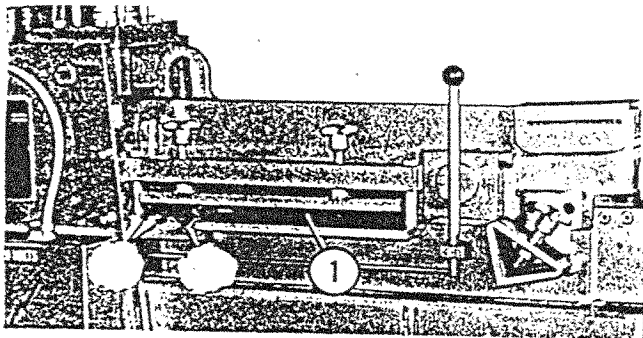


Figure 8.

1. Flat Shear Bar

NOTE: Shearing materials thicker or harder than advised can result in chipped or broken blades and machine system damage.

The flat shear bar has a 22" capacity for sheet stock.

NOTE: Always keep hold-down against material to at least a slip fit or tighter. A loose hold-down will allow material to be drawn or wedged between knives, forcing them apart and causing premature wear.

Clamp the hold-down securely against the material when desiring the most precise, cleanest cut possible.

To make mitre cuts on bar stock, etc., just mark the desired angle on the material, slide through the hold-down and align your mark with the blade.

For production work, adapt a guide plate or the squaring arm as necessary.

ROUND & SQUARE BLADES are available.

ANGLE SHEAR

NOTE: Do not attempt to shear stock heavier than 3/8" or with angle legs longer than 4".

The angle shear is designed to cut angle stock to specific lengths. Angle legs may be of unequal length.

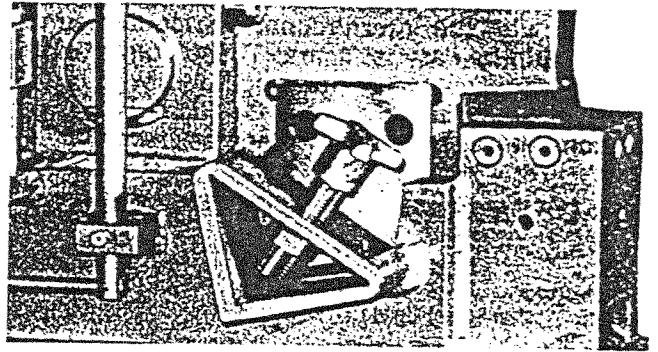


Figure 9. Angle Shear

NOTE: To obtain a precise 90 degree cut, the angle hold-down should be adjusted to a slip fit or tighter.

COPER/NOTCHER

NOTE: Do not attempt to work material exceeding 3/8" mild steel in strength or dimension.

The Coper-Notcher is one of the most versatile stations on the Metal Muncher. Good cutting results and longevity depend on proper use and adjustment.

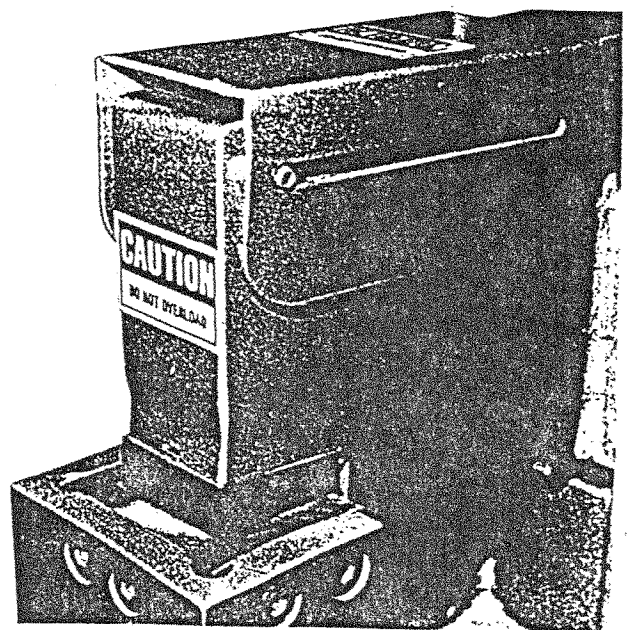


Figure 10. Coper/Notcher

Notice that as you face the front, the upper knife is angled from left to right. This angle or "rake" greatly reduces the necessary shearing pressure. Cuts should be made as close to the left (thick) side as possible. This will give best results and allow gib to take up side pressure.

LUBRICATION AND MAINTENANCE

LUBRICATION

Your Metal Muncher has been designed to incorporate the fewest possible moving parts to enhance reliability and keep necessary maintenance to a minimum. All general lubrication points are marked with the international lubrication symbol and should be easy to locate. These points should be lubricated every 10 operating hours with a good grade of automotive grease. Of course, this may be done more frequently if deemed necessary.

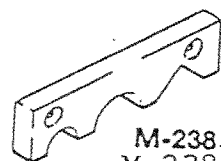
The areas listed below are of special importance and should be lubricated as shown, without fail:

Bar Shear Cylinder Clevis	every 10 hrs.
Bar Shear Pivot Pin	every 10 hrs.
Bar Shear Trunion	every 10 hrs.
Bar Shear Gib	every 5 hrs.
Electric Motor	every 2 years

BLADES

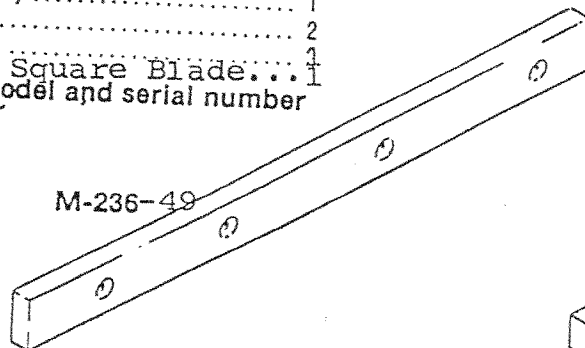
Part Number	Description	No. Req'd.
M-146	Flat Socket Head Cap Screw, 1/2"	as required
M-223B	Coper Blade, Upper	1
M-224B	Coper Blade, Lower (long)	2
M-225B	Coper Blade, Lower (short)	1
M-226-49	Angle Blade, Upper	1
M-227A-49	Angle Blade, Lower (long)	1
M-228A-49	Angle Blade, Lower (short)	1
M-236-49	Flat Bar Blade	2
M-238A-49	Round and Square Blade	1
M-238B-49	Round & Square Blade	1

Always give Iron Worker model and serial number when ordering parts.



M-238A-49
M-238B-49

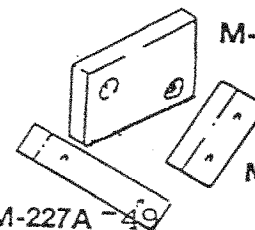
Available



M-236-49



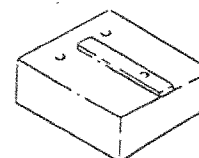
M-146



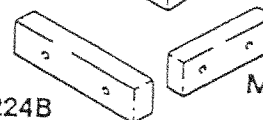
M-226-49

M-227A-49

M-228A-49



M-223B



M-224B

M-225B

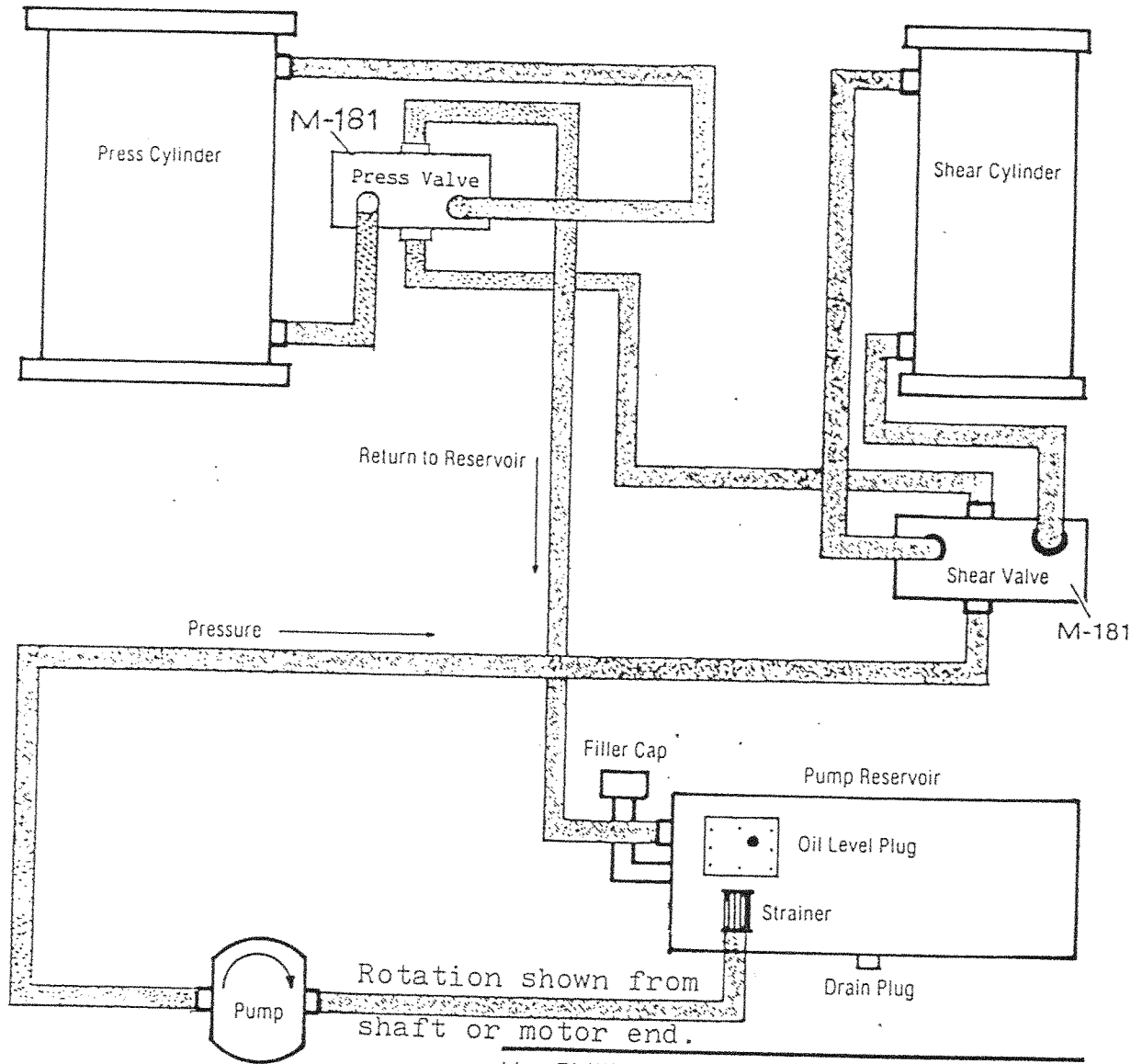
KNIFE MAINTENANCE

All Knives should be surface-ground for sharpening.

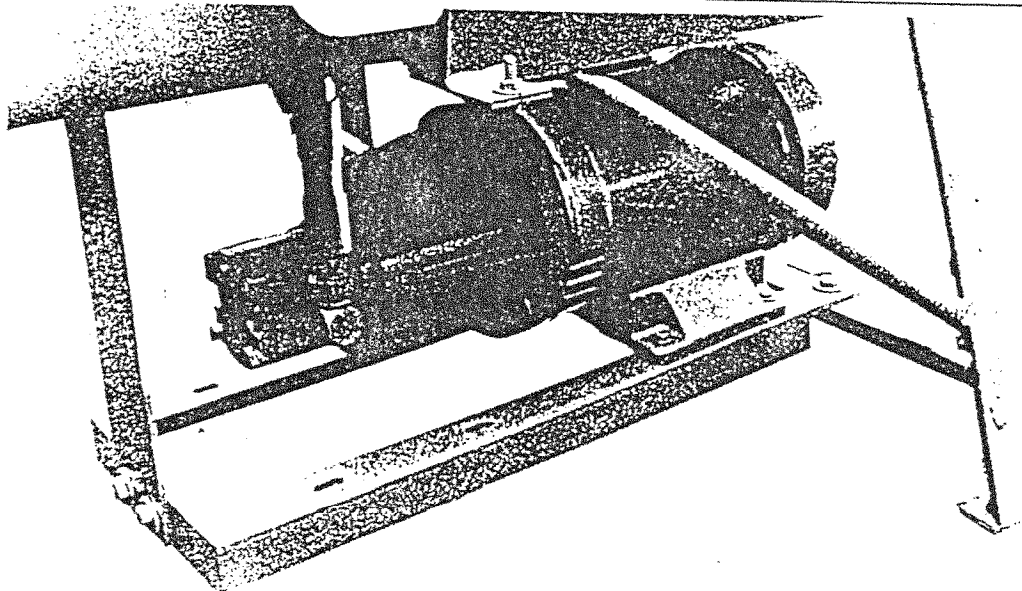
NOTE: Grind Knives on broad sides only.

Knife	Available Edges	Side Clearance	End Clearance
Flat Bar	4	.005-.010"	---
Round (inverted)*	1	.005-.010"	---
	2	.005-.010"	---
Square (inverted)	1	.005-.010"	---
	2	.005-.010"	---
Angle (upper)	1	.005-.010"	---
(lower)	4	.005-.010"	---
Coper (upper)	1	.005-.010"	---
(lower-long)	4	.005-.010"	---
(lower-short)	4	.005-.010"	Less than .062" Less than .062"

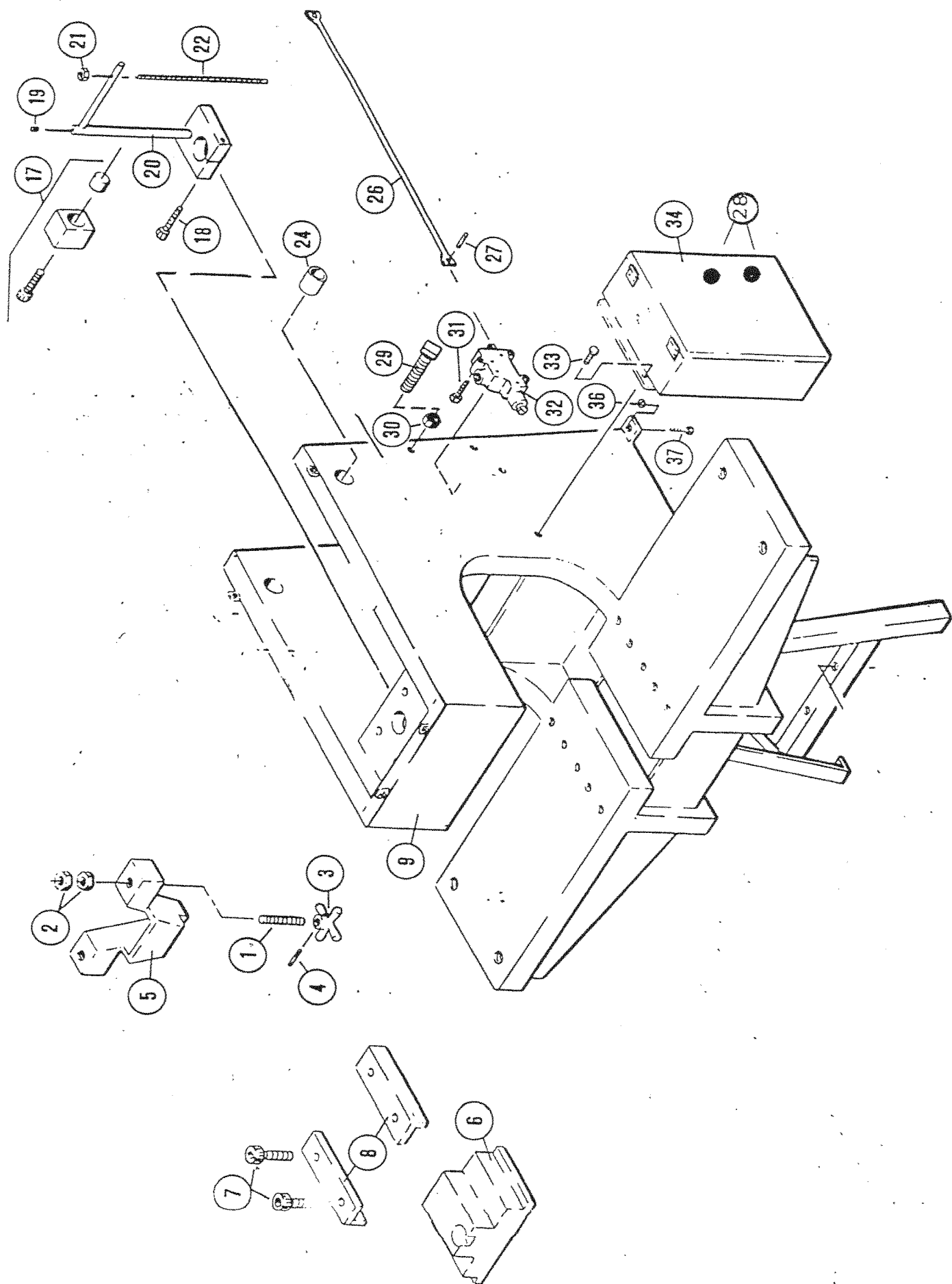
M M-49 HYDRAULIC SYSTEM

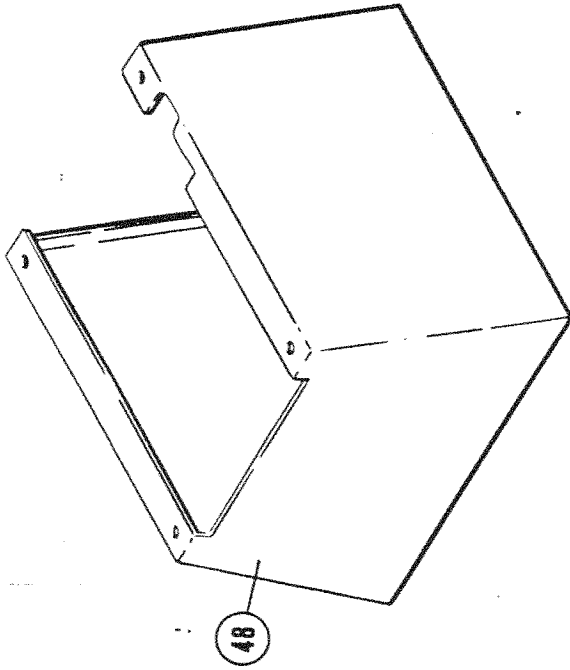
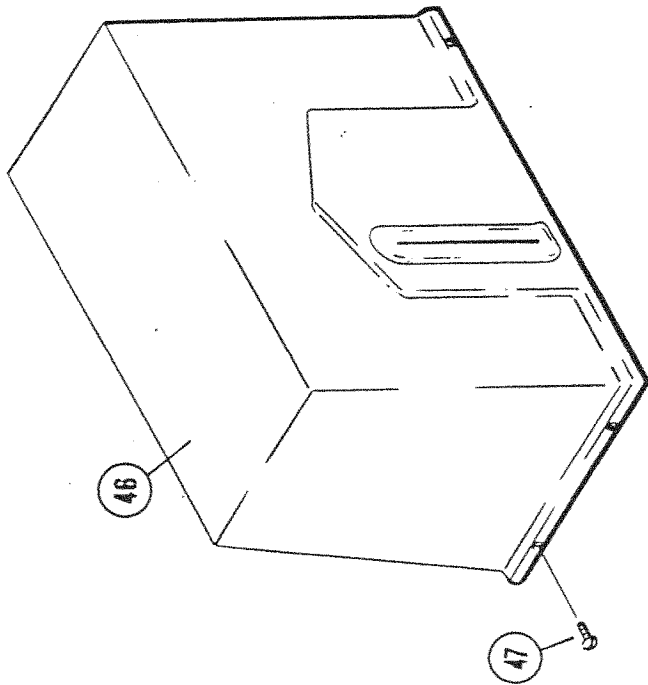


Use Phillips 66 Magnus 315 20-W or equivalent.



Parts Ordering Information — Motor, and Pump
These components vary from model to model. Contact the factory for ordering.

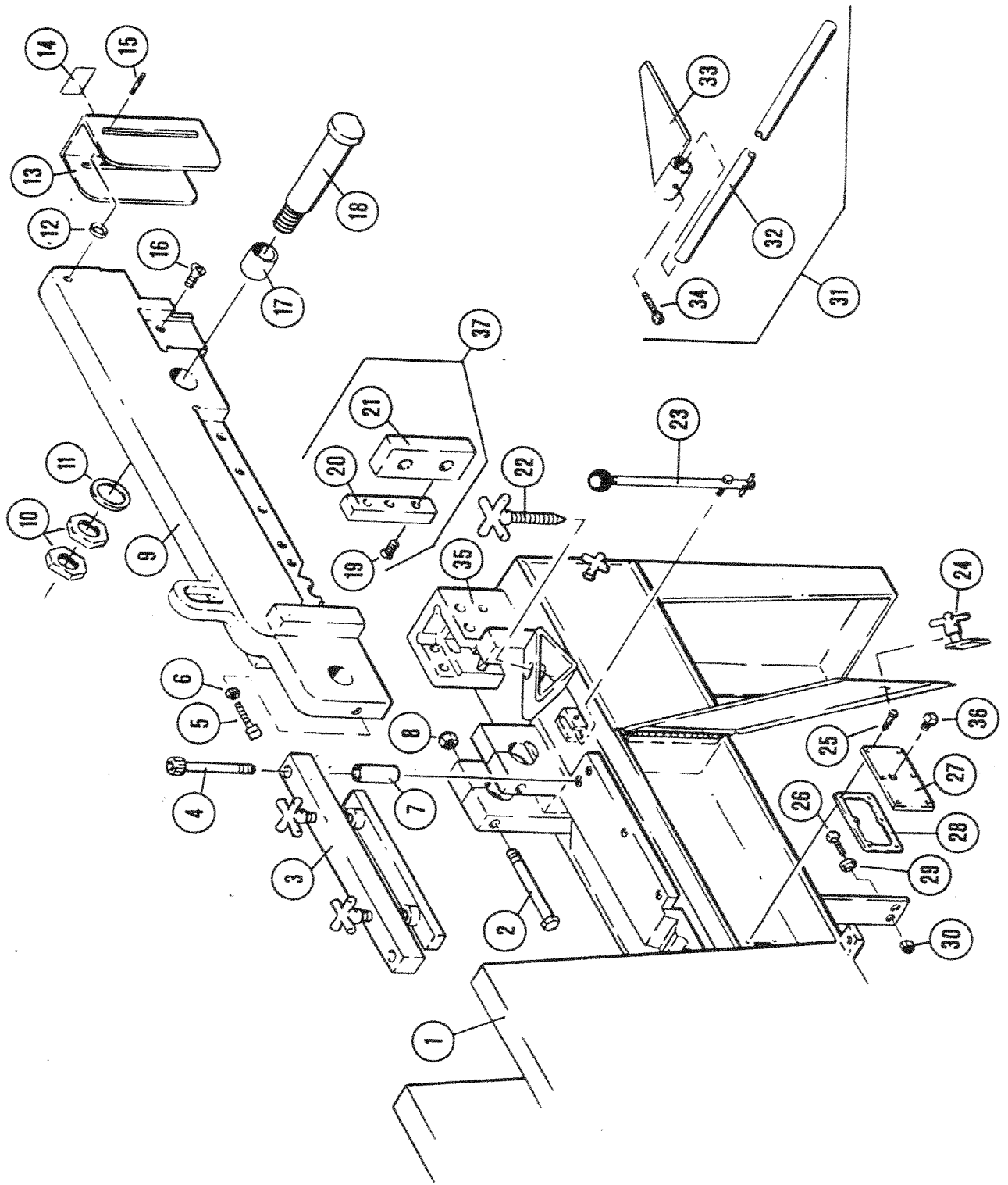




MAINFRAME (HEAD)

Ref. No.	Part No.	Description	Qty. Req'd.	Ref. No.	Part No.	Description	Qty. Req'd.
1	M-167	Stripper Attaching Bolt	2	25	M-165G	Conduit, Limit Switch	1
2	M-241	Nut, Hex	2	26	M-153A	Control Rod	1
3	M-142	Hand Knob	2	27	M-153B	Roll Pin	1
4		Roll Pin	2	28	M-165	Start-Stop Switch	1
5	M-158	Stripper	1	29	M-246B	Gib Adj. Bolt	4
6	M-249	Die Holder Block	1	30	M-246A	Lock Nut, Gib Adj. Bolt	4
7	M-253	Clamp Bolts	4	31	M-181G	Mounting Bolt, Manual Valve	2
8	M-252	Clamping Bar	2	32	M-181	Hydraulic Control & Pressure Valve (Manual)	1
9	M-126	Main Frame	1	33	M-165F	Mounting Bolt, Electric Panel	4
10	M-163	Bolt, Hex	2	34	M-165A	Electric Control Box	1
11	M-163A	Nut, 5/16"	2	35	M-210A	Conduit, Motor Lead	1
12	M-181E	Valve Mounting Bracket	1	36	M-107B	Nut	4
13	M-181D	Nut	2	37	M-107A	Mounting Bolt, Lower Shield	4
14	M-181A	Solenoid Valve	1	38	M-210D	Motor Mount Nut	4
15	M-181B	Sub Plate, Solenoid Valve	1	39	M-165B	Electric Foot Pedal	1
16	M-181C	Mounting Bolt, Sub-Plate	2	40	M-210C	Motor Mount Bolt	4
17*	M-292C	Adjusting Block Assy., Shaft Guide	1	41	M-210B	Motor Mount	1
18	M-293	Cap Screw	1	42	M-165E	Complete Limit Switch Assy.	1
19	M-292D	Set Screw	1	43	M-165D	Limit Switch Head	1
20	M-292	Shaft Guide	1	44	M-165C	Limit Switch Body	1
21	M-202E	Nut, 3/4" Hex	2	45	M-181F	Mounting Bolt, Bracket	4
22	M-292A	Threaded Rod, Shaft Guide	1	46	M-159A	Hood	1
23	M-292B	Flap	1	47	M-163	Bolt	4
24	M-243	Bushing, Bronze	2	48	M-107	Shield, Lower Front	1

* Part of mainframe weldment on later models.

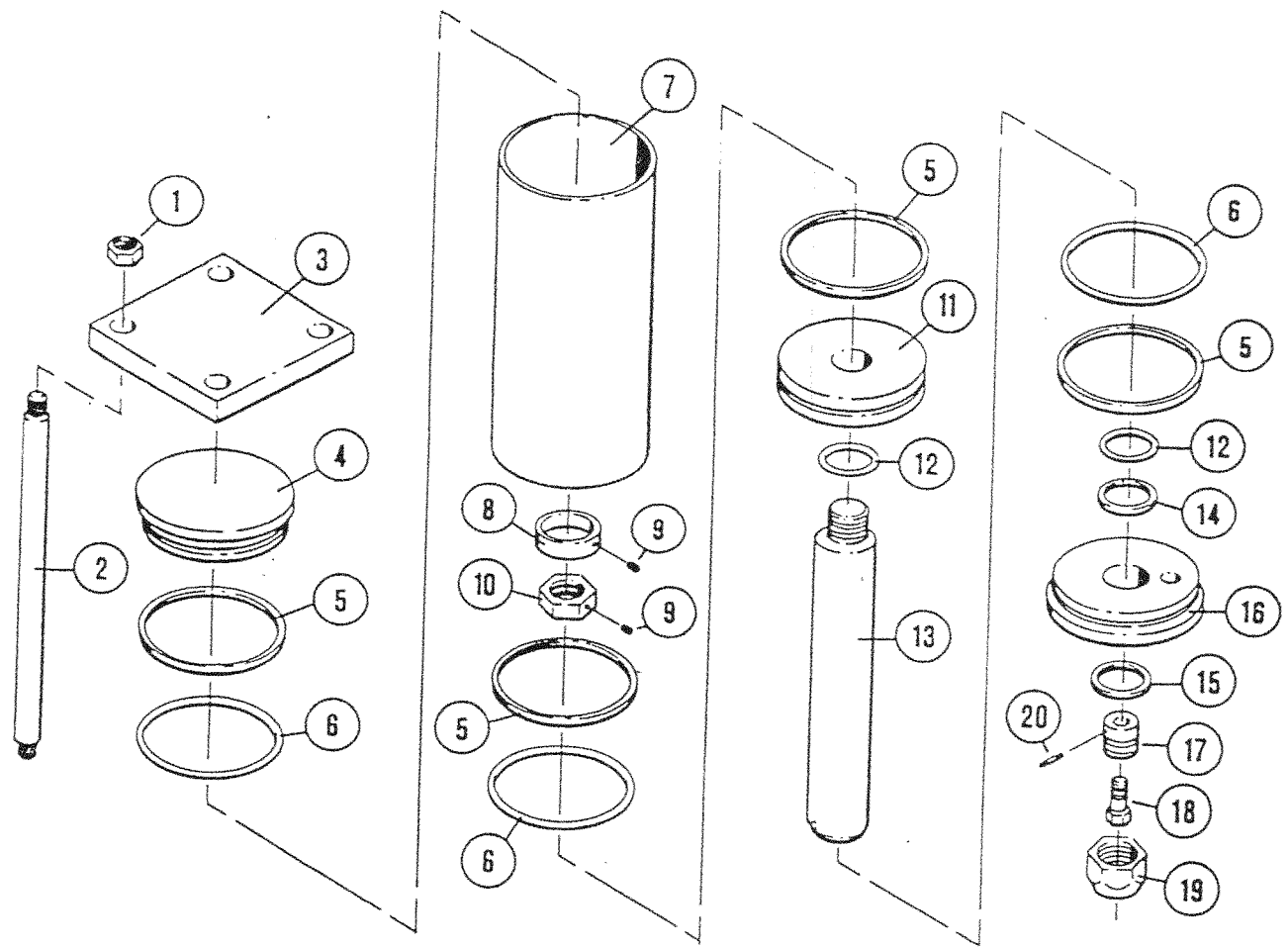


MAINFRAME (REAR)

Ref. No.	Part No.	Description	Qty. Req'd.	Ref. No.	Part No.	Description	Qty. Req'd.
1	M-126	Main Frame	1	20	M-244A	Ryertex Strip	as reqd.
2	M-147E	7/8" X 7" Hex Cap Screw	1	21	M-246	Gib Mounting Block	as reqd.
3	M-240	Flat Bar Holddown Assembly	1	22	M-248	Angle Holddown Screw Assembly	as reqd.
4	M-235	3/4-10 X 6 Hex Cap Screw	1	23	M-152	Rear Control Handle Assembly	1
5	M-247A	Yoke Pin Set Screw	2	35	M-303	Coper Block	1
6	M-247B	Yoke Pin Set Screw Lock Nut	1	37	M-244	Complete Gib Assembly	1
7	M-235A	Holddown Spacer	1	*	M-164A	Decal Kit	1
8	M-147F	7/8" Lock Nut	2				
9	M-247	Upper Shear Bar	1				
10	M-147C	Jam Nut	1				
11	M-147B	Bar Shear Pivot Pin Washer	2				
12	M-302A	Coper Shield Washer	1				
13	M-302	Coper Shield	as reqd.				
14	M-302B	Decal	1				
15	M-302C	Coper Shield Roll Pin	1				
16	M-146	Blade Bolt	2				
17	M-147D	Bronze Bushing	1				
18	M-147A	Bar Shear Pivot Pin (Threaded Type)	1				
19	M-244B	Wear Gib Bolt	as reqd.				

* Not shown.

Always give Iron Worker model and serial number when ordering parts.



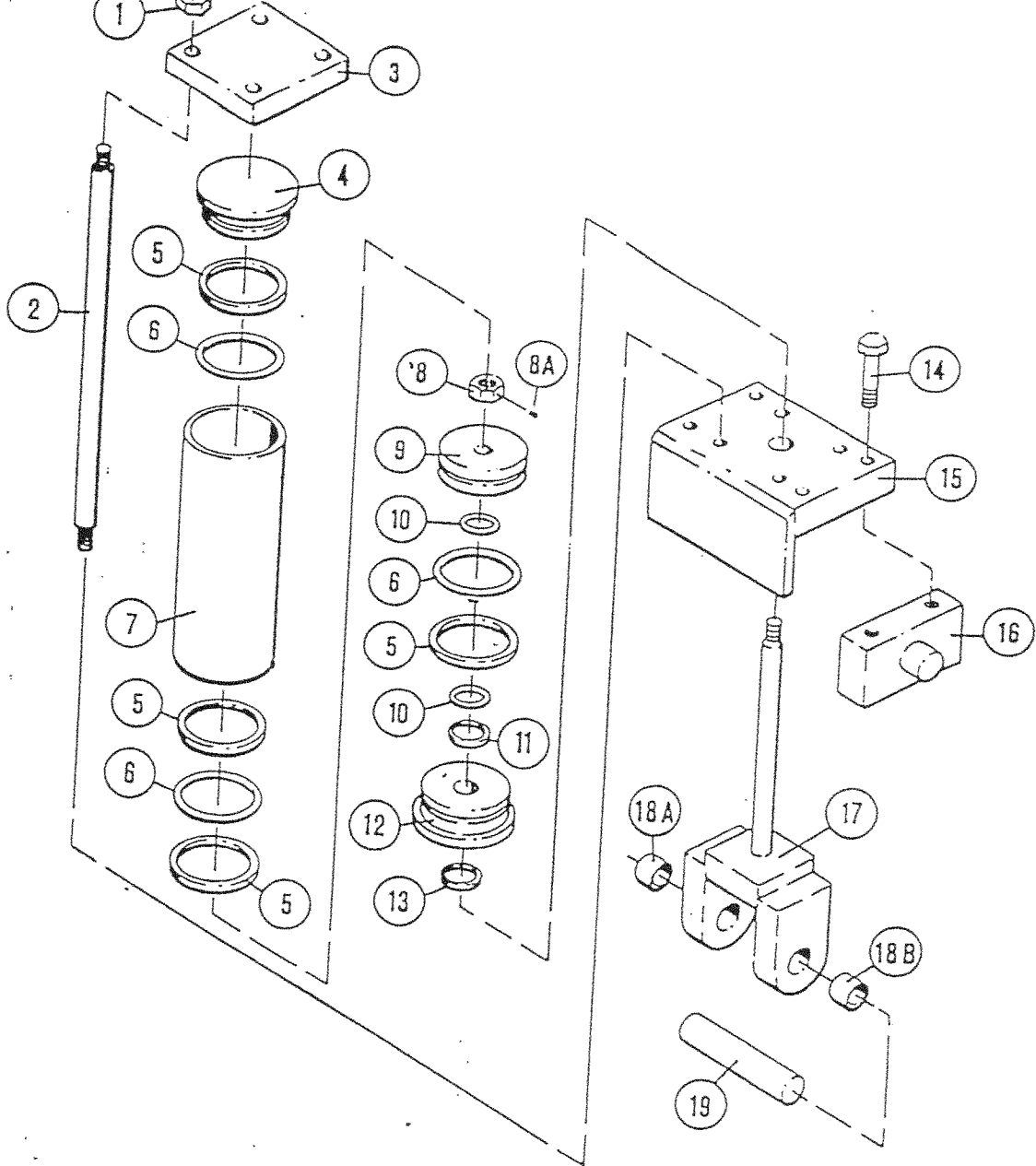
Press Cylinder

Ref. No.	Part No.	Description	Qty. Req'd.	Ref. No.	Part No.	Description	Qty. Req'd.
1	M-254	Hex Nut, 7/8" - 9	4	15	M-123	Wiper Seal, 3" Shaft	1
2	M-256	Tie Bolt, 7/8"	4	16	M-263	Head	1
3	M-255	Tie Down Plate	1	17	M-266	Adapter, Threaded Punch Coupling	1
4	M-111A	Press Cylinder Plug	1	18	M-266A	Cap Screw, 5/8 X 2 1/2, Hex Head	1
5	M-257	Back-up Ring	4	19**	M-271	Punch Coupling Nut	1
6	M-258	"O" Ring	3	20	M-266-P	Roll Pin	1
7	M-259	Cylinder Barrel	1	*	M-296	6" Cylinder Repair Kit (press)	1
8	M-291	Piston Stop Spacer	1	*	M-294	8" Cylinder Repair Kit (press)	1
9	M-260A	Set Screw, 5/16, Socket Head	2	*	M-300	10" Cylinder Repair Kit (press)	1
10	M-260	Hex Nut, 1 1/2" - 6	1	*	M-299	6" Cylinder Complete; assembled less tie bolts	1
11	M-261	Piston	1	*	M-297	8" Cylinder Complete; assembled less tie bolts	1
12	M-120	"O" Ring Seal, Shaft Seal 3"	2	*	M-301	10" Cylinder Complete; assembled less tie bolts	1
13	M-262	Press Cylinder: Shaft, 3" Dia.	1	*	M-266SP	Stem Punch Coupling Adapter with bolt	1
14	M-114	Back-up Ring, Shaft Seal 3"	1				

* Not shown. Specify 6", 8" or 10" cylinder size when ordering parts.

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

Always give Iron Worker model and serial number when ordering parts.



Shear Cylinder

Ref. No.	Part No.	Description	Qty. Req'd.	Ref. No.	Part No.	Description	Qty. Req'd.
1	M-254	Hex Nut, 7/8" - 9	4	12	M-122	Head, 4 1/2"	1
2	M-277	Tie Bolt, Bar Shear Cylinder	4	13	M-123	Wiper Seal, 2" Shaft	1
3	M-110	Tie Down Plate, 4 1/2" Cylinder	1	14	M-272	Cap Screw, 7/8 - 9 Gr. 5 X 4	4
4	M-129	Head, Bar Shear Cylinder	1	15	M-273	Mounting Plate, Bar Shear Cylinder	1
5	M-112	Back-up Ring, 4 1/2"	4	16	M-274	Pivot Block	2
6	M-113	"O" Ring, 4 1/2"	3	17	M-275	Piston Shaft, Clevis	1
7	M-276	4 1/2" Cylinder Barrel, Bar Shear	1	18A	M-243A	Bronze Bushing, 2 1/4 O.D. X 2" I.D. X 1-3/4 L.	1
8	M-260	Hex Nut, 1 1/2" - 6	1	18B	M-243B	Bronze Bushing, 2 1/4 O.D. X 2" I.D. X 2 L.	1
8A	M-260A	Socket Set Screw, 5/16	1	19	M-133	Clevis Pin, Bar Shear	1
9	M-118	Piston, 4 1/2"	1	*	M-295	Cylinder Repair Kit (Shear), 4 1/2" (Kits include all "O" Rings, Back-up Rings and Wiper Seal.)	1
10	M-120	"O" Ring Seal, Shaft Seal 2"	2	*	M-298	4 1/2" Cylinder complete; assembled less tie bolts	1
11	M-114	Back-up Ring, Shaft Seal 2"	1				

* Not shown.

Always give Iron Worker model and serial number when ordering parts.

WIRING DIAGRAM

230 Volt

