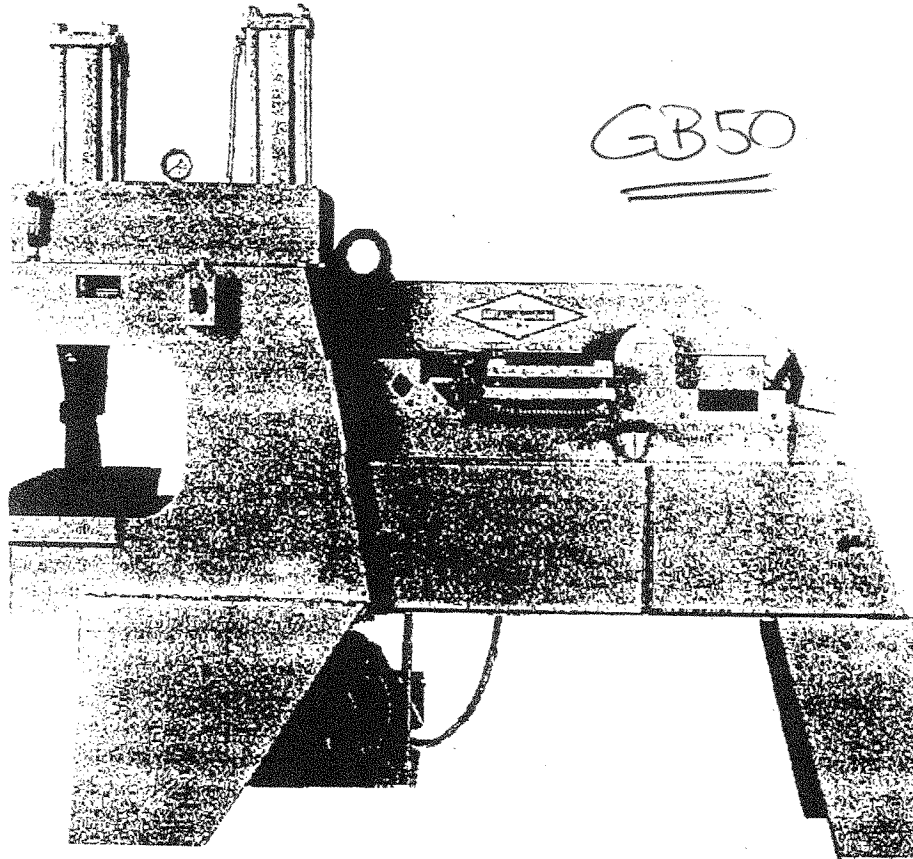


CMI METAL MUNCHER



Shear	Notch	Punch Holes	Form
Angles	Angles	Round	Channels
Flats	Channels	Square	Angles
Rounds	Beams	Oblongs	Z Bars
Squares	Plates	Rectangular	Others

CMI Model 50 Metal Muncher — virtually a complete metal fabrication center. The Metal Muncher, a hydraulically operated shear, punch press, notcher, press brake, and shop press in one unit. Shear 1 1/4" rounds, 3 x 3 x 1/4" angles, 1/2 x 8" flats, notch 1/2" steel, punch 1" holes in 3/4" plate, bend 18" of steel plate to 90 deg., use to push shafts from bearings, gears, etc.

Dual hydraulic cylinders and valves allow independent operation of press and shear. Punches can be brought precisely to a given point before punching. Punch and dies quickly changed. Press bed will take 4 1/4" diameter shaft. Throat depth 10". Shear and punch—notch or bend WITHOUT changing dies. One pump, one motor operates entire unit.

UP TO 40 CUTS PER MINUTE!! 4 MOVING PARTS excluding pump and motor.

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).

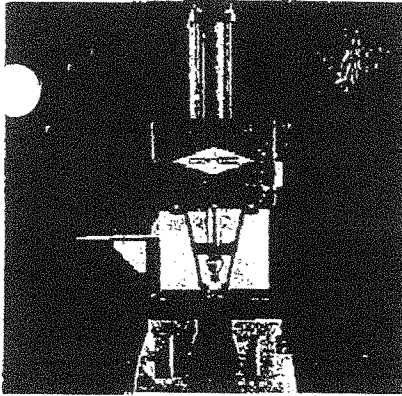
After ten hours of operation, diligently repeat the above check list. Then for continued satisfaction repeat the above every thirty days.

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

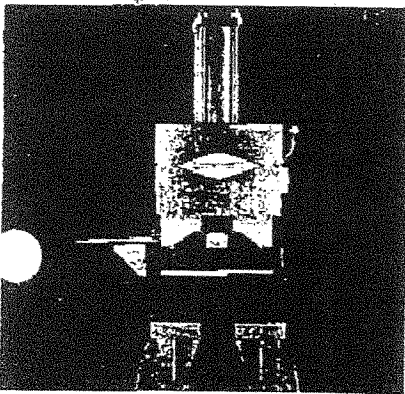
Always wear safety glasses.

KEEP HANDS OUT OF KNIFE AREAS

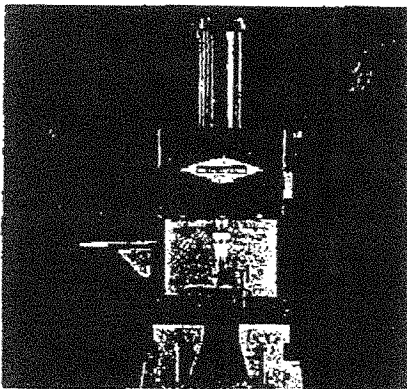
DISCONNECT POWER BEFORE WORKING ON UNIT



Shown with the punch and die is the stripper. It holds the work down while the punch is pulled out of the work piece. To keep punches in line when other rounds are used, an internal follower keeps the piston shaft from turning.



Bend 18" of 1/4" steel plate, or proportionately narrower and thicker plates. Bend Z bars, channels, angles.



Push shafts from pulleys, sprockets, gears, and bearings. Push bearings, bearing cups into hubs, onto shafts, into housings. The platen slot will accommodate a 4 1/2" shaft.

METAL MUNCHER



FIRST IN VERSATILITY

Model 50 Metal Muncher brings new ease and convenience to the metal working world. No other single piece of metal working equipment will do so many operations with equal ease. Loosening and tightening a set screw and coupling nut allows the operator to change punches and dies or to change to bending dies. Two bolts remove die holder plate, exposing bed throat, to allow pushing shafts from gears, pulleys, etc. Bar shear and notcher always available for work. Press and notcher on ends to allow any size of work to be brought to them.

Model 50 Metal Muncher press features ability to do press brake work up to 18" (36" with special dies); punch a wide variety of holes (round punches and dies available by 1/32" increments); do shop press work; plus many other jobs only limited by the ingenuity of the user. Press piston shaft has a built in aligner. This keeps shaft from turning when other than round dies are used. Set screw in platen keeps dies in position. Stripper bar holds piece down as punch is being withdrawn and is mounted in a slotted hole so it can be swung to side when changing punches and dies. Piston travel can be stopped and reversed at any point in travel.

Shear blades are of highest quality hardened tool steel. They are removable and can be resharpened. Adjustable hold downs are provided for angle and flat bar shear. Fixed hold down is provided for round and square bar shear. Make miter cuts in flat bar shear. With notcher cut 90 deg. "V" notches or cut 90 deg. square or rectangular notches in bar or angle ends, make miter cuts.

Steel hydraulic tubing with compression fittings used through out. Pump is positive displacement type with relief valves in directional valves. Pressure gauge provided to check relief valve pressure and to check tonnage required for any application.

Model 50 Metal Muncher—indispensable for machine shops, maintenance dept., structural steel shops, manufacturing, research dept's. Versatility and set up ease allows short production runs to be made economically. Allows R and D dept's. to fabricate parts when production equipment is tied up. TRULY A METAL FABRICATION CENTER—from Center Mfg. Inc.

CAPACITIES		SPECIFICATIONS	
(Based on 60,000# p. s. i. steel)		Ram tonnage @ 3500 p. s. i.	28
		@ 3750 p. s. i.	30
		@ 4000 p. s. i.	31.8
Punch	1 3/16 dia. thru 1/2"	Ram bore	4.5"
Bar cutter	1 1/2" square, 1-3/8" round	Punch stroke	11.75"
Angles	3 x 3 x 3/8"	Shear stroke	6.75"
Shear	1/2 x 6 or 3/4 x 3	Press bed area	9 x 18"
Notcher	90 deg. V, 2" deep in 1/2"	Bed slot width	4.6"
Bending (optional)	18" of 1/4" plate to 90 deg.	Length	77.5"
		Height	72.0"
		Width	27.5"
		Weight	2440.0#

Distributed by:



PUNCH PRESS

Being hydraulic and having a long stroke, the METAL MUNCHER press offers much more versatility than any other iron worker on the market. Tooling to be adapted to it is only limited by the imagination of the user.

As standard, your METAL MUNCHER is furnished with the following:

- Punch Coupler
- Punch Coupling Nut
- Die Holder Block
- Stripper
- Shaft Guide

The shaft guide can be installed by sliding the clamp bar over the press shaft and with the guide shaft to the rear, raising it up to engage with a slot in the back of the press cylinder mounting plate. The shaft guide is used to prevent rotation of the press shaft when using other than round punches and dies.

The punch coupling is clamped to the press shaft and the die holder block is clamped to the press platen. Select a mating punch and die. Affix punch to coupler with coupling nut, insert die in die holder block. Check coupling nut repeatedly. Carefully bring punch into die and center die with punch and tighten die block to press platen. Continued good alignment of punches and dies is very essential to long life of punches and dies. Check die for cutting edges. Keep punches and dies in good condition. Worn punches will increase stripping pressure and can warp material. A lubricant applied to punch will lengthened life of punch and ease stripping.

The stripper should be adjusted so that material will just slide under it. Washers provided with the stripper mounting bolts are used to vary the stripper height.

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 23" 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.

these two knives. Simply remove the two cap screws holding each round and square knife, invert knives, replace bolts.

Flat bar knives have four cutting edges and should be turned to a new edge when the used one becomes dull. The round and square knives have only one usable cutting edge for the round and square. Both flat edges can be used. Knives can be surface ground.

Maintain .005 to .010 clearance between flat bar knives. After sharpening shim knives to obtain clearance at pivot point. Adjust clearance at round and square with adjustable gib block and/or shims. Knives should be checked frequently for clearance. Dull knives increase burring and tend to give you a poor cut.

ANGLE SHEAR

The angle shear is basically for making 90° cuts in angles. Equal or unequal leg angles can be cut. To obtain a good 90° cut, it is important that the angle hold down be kept to a slip fit or tighter against the material. Make sure drop off end of angle is not higher than lower angle knives.

Where it is desirable to have a mitre cut on the end of an angle, this cut may be made in the copier.

The angle knives have only one cutting edge. After SN-2134, lower angle knives have four cutting edges. When dull, these knives can be resharpened. After sharpening, should the cut not be as good as original a correction can be made. Observe where the upper knife is first engaging the angle. Remove knife and with grinder remove metal on knife edge in this area. Remove only a small amount of material. Replace knife and check results. Continue to do this until cut is satisfactory. Grind slowly. DO NOT OVER HEAT knives. Maintain .005 to .010 clearance between upper and lower knives.

The pump may be rotated in either direction. Changing rotation will not affect controls. Pump does not have to be bled to remove air from lines or to prime it. Air will be forced from lines after several cycles.

At such time as pump may need rebuilding, it can be rebuilt in the field or returned to the factory for rebuilding and a new pump warranty.

LUBRICATION

Since your METAL MUNCHER is hydraulic, it has very few moving parts and requiring little lubrication. What it does need is important and should not be neglected. Greasing is as follows:

Bar Shear Cylinder Clevis	Every 10 Hours
Bar Shear Pivot Pin	Every 10 Hours
Bar Shear Trunion	Every 10 Hours
Bar Shear Gib	Every 5 Hours
Electric Motor	Every 2 Years

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

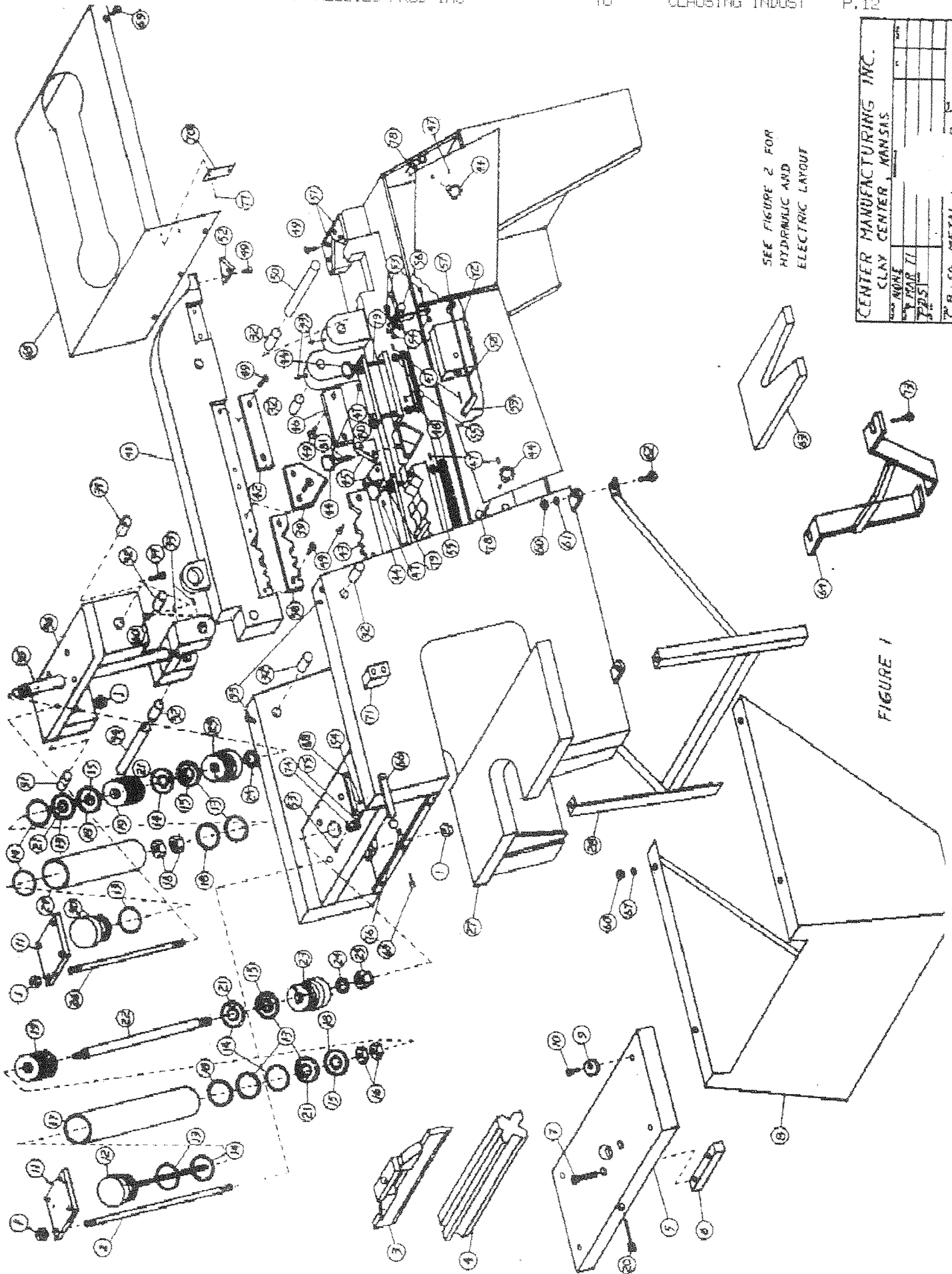
FIGURE 1

GB50 PARTS SCHEMATIC

Item	Part No.	Description	Qty.
1	M100	3/4-10NC Hex Nuts	16
2	M101	Tie Bolt, press cylinder	4
3	M102	Upper Bending Die--Optional	1
4	M103	Lower Bending Die--Optional	1
5	M104	Die Platen	1
6	M105	Hold Down Bar	1
7	M106	1/2-13NC x 4 1/2 socket HD Cap Screw	2
8	M107	Skirt	1
9	M108	Adjusting Eccentric	4
10	M109	1/2-13NC Flat Socket Head Screw	4
11	M110	Cylinder Hold Down Plate	2
12	M111	Front Cylinder Cap	1
13	M112	Back Up Ring, 4 1/2 O.D. x 4 1/8 ID	9
14	M113	"U" Ring, 4 1/2 UD x 4 1/8 ID	5
15	M114	Back Up Ring 2 3/8 UD x 2" ID	4
16	M115	1 1/8" -12 NC Hex Nut	4
17	M116	Press Cylinder Barrel 4 1/2 x 7	1
18	M117	Compression Ring	4
19	M118	Piston 4/2	2
20	M119	Die Locking Screw-3/8-16NC x 4"	1
21	M120	"D" Ring 2 3/8 UD x 2" ID	4
22	M121	Press Cylinder Shaft 2" OD x 20" L	1
23	M122	Cylinder Head 160955	2
24	M123	Wiper Seal (CR19833	2
25	M124	Punch Coupling Nut	1
26	M125	Tie Bolt, Shear Cylinder	4
27	M126	Main Frame Weldment	1
28	M127	Front Leg Assembly	1
29	M128	Shear Cylinder Barrel 4 1/2" x 7	1
30	M129	Cap, Shear Cylinder	1
31	M130	Shaft, Trunion	2
32	M131	Bronze Bearing	6
33	M132	Grease Fittings	7
34	M133	2" Shaft, Bar Cylinder Clevis	1
35	M134	Piston Shaft Assem.	1
36	M135	Trunion, Bar Shear Cylinder	1
37	M136	3/8 -16 NC x 2" Allen Head Cap Screw	2
38	M137	Sq. & Rd. Shear Knives	2
39	M138	Upper Angle Shear Knife	1
40	M139	3/8-16 NC Hex Nuts	2

FIGURE 1

<u>ITEM</u>	<u>Part No.</u>	<u>Description</u>	<u>Qty.</u>
41	M140	Upper Knife Holder	1
42	M141	Flat Bar Knife	2
43	See Item 38	Square & Rd. Shear Knives	
44	M142	Hand Knob	5
45	M143	Lower Angle Shear Knives	2
46	See Item 38	Lower Flat Bar Shear Knife	
47	M144	Roll Pins	
48	M145	35C Roller Chain x 50 pitches	1
49	M146	1/2-13 NC x 1 1/2 Flat Socket Hd.	20
50	M147	Upper Blade Holder PIVOT Pin	1
51	See Item 45	Notcher Female Knife	2
52	M148	Male Notcher Knife	1
53	M149	1/4-Zone x 1" Hex Hd. bolts	4
54	M150	1/4-Zone Hex Nuts	4
55	M151	35 RC x 8 tooth sprncket	4
56	M152	Control Lever and Knob	1
57	M153		
58	M153	Control Lever Assem.	1
59	M153		
60	M154	1/2-13NC Hex Nuts	8
61	M155	1/2 Lock Washer	4
62	M156	1/2-13NC x 1 1/2 Hex Head Bolt	4
63	M157	"V" Block optional	1
64	M158	Stripper Bar	1
65	M159	Hood	1
66	M160	Control Lever	1
67	M161	1/2" flat washer	4
68	M162	Control Arm	1
69	M163	5/16-18NC x 1" hex head bolt	5
70	M164	Directional Control Plate	1
71	M165	Start Stop Station	1
72	M166	#1 Nema Magnetic Starter	1
73	M167	1/2-13NC x 2 1/2 Hex Head Bolt	2
74	M168	Control Rod Arm	1
75	M169	Control Rod	1
76	M170	5/16-18NC hex nut	3
77	M171	1/8" Type V Drive rivet	2
78	M172	Door Latch	2
79	M173	Hold Down Screw	2
80	M174	Hold Down Screw	2
81	M175	Andle Hold Down Screw	1



SEE FIGURE 2 FOR
HYDRAULIC AND
ELECTRIC LAYOUT

FIGURE 1

CENTER MANUFACTURING INC.	
CLAY CENTER, KANSAS	
DATE	
BY	
CHKD BY	
APPROVED BY	
DATE	
P. R. CO. METAL	

FIGURE 1

ITEM	Part No.	Description	Qty.
41	M140	Upper Knife Holder	1
42	M141	Flat Bar Knife	2
43	See Item 38	Square & Rd. Shear Knives	
44	M142	Hand Knob	5
45	M143	Lower Angle Shear Knives	2
46	See Item 38	Lower Flat Bar Shear Knife	
47	M144	Roll Pins	
48	M145	35C Roller Chain x 58 pitches	1
49	M146	1/2-13 NC x 1 1/2 Flat Socket Hd.	20
50	M147	Upper Blade Holder ² Drive Pin	1
51	See Item 45	Notcher Female Knife	2
52	M148	Male Notcher Knife	1
53	M149	1/4-Zone x 1" Hex Hd. bolts	4
54	M150	1/4-Zone Hex Nuts	4
55	M151	35 RC x 8 tooth sprocket	4
56	M152	Control Lever and Knob	1
57	M153		
58	M153	Control Lever Assem.	1
59	M153		
60	M154	1/2-13NC Hex Nuts	8
61	M155	1/2 Lock Washer	4
62	M156	1/2-13NC x 1 1/2 Hex Head Bolt	4
63	M157	"V" Block optional	1
64	M158	Stripper Bar	1
65	M159	Hood	1
66	M160	Control Lever	1
67	M161	1/2" flat washer	4
68	M162	Control Arm	1
69	M163	5/16-18NC x 1" hex head bolt	5
70	M164	Directional Control Plate	1
71	M165	Start Stop Station	1
72	M166	#1 Nema Magnetic Starter	1
73	M167	1/2-13NC x 2 1/4 Hex Head Bolt	2
74	M168	Control Rod Arm	1
75	M169	Control Rod	1
76	M170	5/16-18NC hex nut	3
77	M171	1/8" Type V Drive rivet	2
78	M172	Door Latch	2
79	M173	Hold Down Screw	2
80	M174	Hold Down Screw	2
81	M175	Angle Hold Down Screw	1

Figure 2

GB-50 Metal Muncher Hyd. and Electric

<u>Item</u>	<u>Part No.</u>	<u>Description</u>	<u>Qty.</u>
1	M178	3/8 Tube x3/8 NPT Straight Ftg.	3
2	M179	3/8 Tube x3/8 NPT 90 Fitting	5
3	M180	5/8-18UNC x2 Hex Bolt	6
4	M181	4 Way Hydraulic Valve	2
5	M182	Hydraulic Fitting Nut	16
6	M183	Ferrule	16
7	M184	1/4 NPT x3/8 Tube Straight Fitting	3
8	M185	1/4 NPT Pipe Plug	1
9	M186	1/4 NPT "T" Fitting	1
10	M187	1/4 NPT x3/8 Tube 90 Fitting	3
11	M188	Front Cylinder Bottom Line x3/8OD	1
12	M189	Front Cylinder Upper Line x 3/8OD	1
13	M190	Rear Cylinder Lower Line x3/8OD	1
14	M191	Rear Cylinder Upper Line x3/8OD	1
15	M192	Pressure Line x3/8 OD	1
16	M193	Return Line-Valve To Pump	1
17	M194	Pressure Line To Rear Valve	1
18	M195	5/16" x24NF x2" Hex Cap Screw	3
19	M196	B Belt	2
20	M197	Pump Sheave 289.0	1
21	M198	SK Bushing X 1" Bore	1
22	M199	1-28NF X 2 Hex Cap Screw	5
23	M200	1/2 Lock Washer	3
24	M201	Motor Sheave 289.5	1
25	M202	SK Bushing X 1 1/8	1
26	M203	47" B Belt	2
27	M204	Hyd. Oil Fill Cap	1
28	M205	Oil Strainer	1
29	M205	5/16"-18NC 1 1/2 Hex Bolt	8
30	M207	5/16"-18NC Hex Nuts	8
31	M208	Pump & Motor Base	1
32	M209	4 Piston Hyd. Pump	1
33	M210	7 1/2 H.P. 3PH. Electric Motor	1
33A	M211	7 1/2 H.P. 1PH. Electric Motor (Optional)	1
34	M212	5/4-10NC Hex Nut	4
35	M213	3/4NC X 14" Stud Bolt	2
36	M214	Return Line From Rear Valve	1
37	M215	Cable to Start/Stop Station	1
38	M216	Power Cable Motor to Strater 3HP	1
39	M217	Power Supply Cord 10-4	1
39A	M218	Power Supply Cord 1PH 3-6	1
40	M219	4 Wire Cap, Optional	1
40A	M220	3 Wire Cap, Optional	1
41	M221	1/8 X 1 Cotter Key	2
42	M222	Motor Mount Pin	1

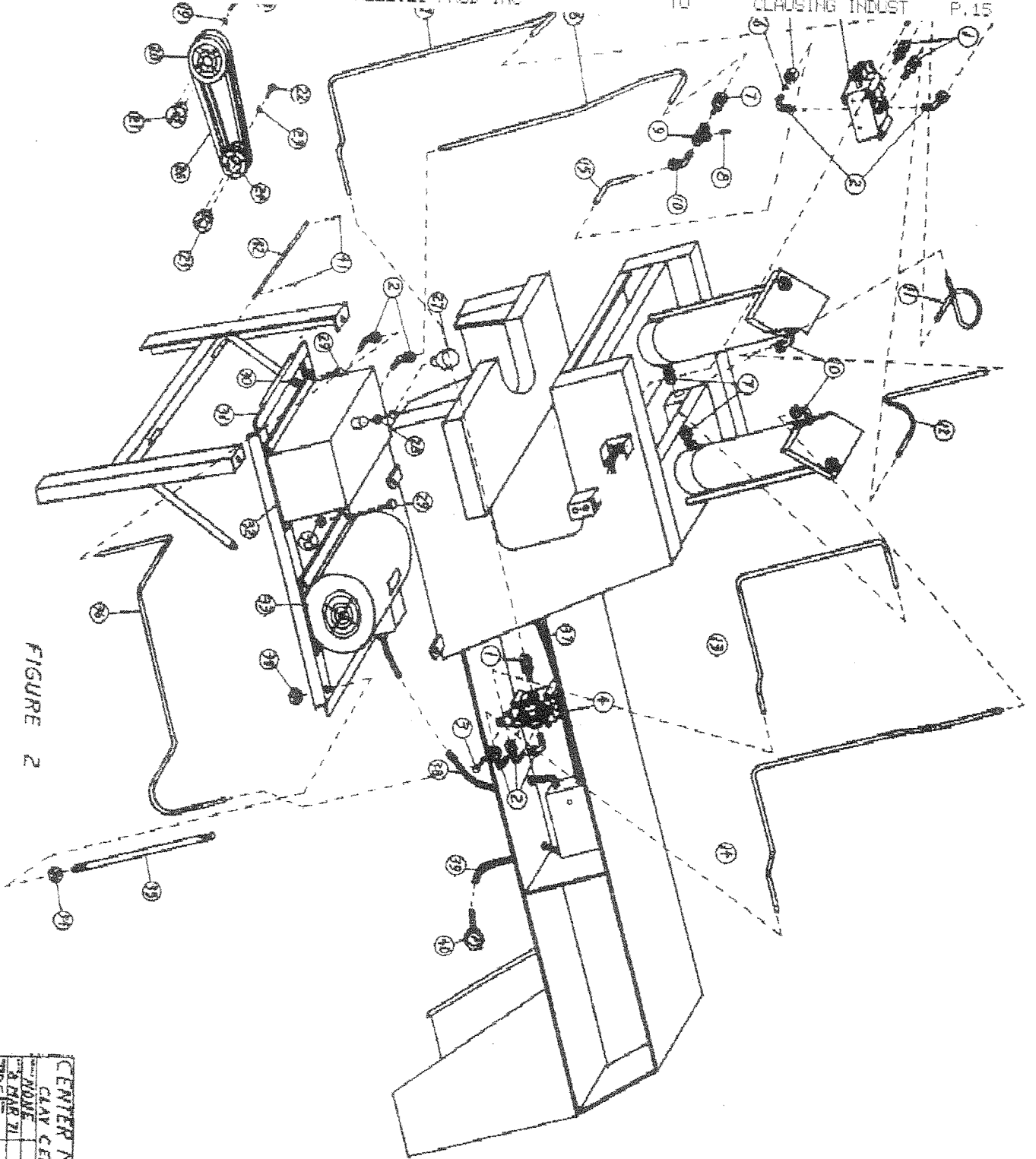


FIGURE 2

CENTER MANUFACTURING INC.	
CLAY CENTER, KANSAS	
DATE	NOV 21
BY	7/25
CB-50 METAL HD.	
HYD. & ELECT. PARTS	
NO.	M-1000-A