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SAFETY GUIDELINES

Your 10 GAUGE NOTCHER has been constructed to assure safe operation. The cutting surfaces and other moving parts are shrouded, yet serviceable through removable guards and access doors.

To protect personnel against injury and the machine from possible damage, make sure there is sufficient area around the machine for handling of materials, operation, inspection and maintenance. See that the area is well lit.

Be sure the operator reads, understands and follows this Operator's Manual BEFORE operating the Notcher. The foreman and/or supervisors should also familiarize themselves with the operating details of this machine.

FOR YOUR OWN PERSONAL SAFETY AND TO PREVENT ACCIDENTS:

NEVER wear loose clothing while operating this machine.

NEVER permit untrained personnel to operate this machine.

NEVER clutter the table with tools or materials.

NEVER place any part of your body in the blade area or between the workpiece and table while this machine is on.

NEVER attempt to notch materials above the machine's rated capacity.

NEVER attempt to notch more than one material thickness or other than sheet stock within the machine's rated capacity.

ALWAYS wear ANSI approved safety glasses while operating this machine.

ALWAYS have all guards in place and all access doors closed while operating this machine.

ALWAYS keep all operators and foremen thoroughly trained in the construction and operation of this machine.

ALWAYS shut OFF the main power disconnect switch before servicing or adjusting this machine.

ALWAYS provide regular, frequent and thorough preventative maintenance.

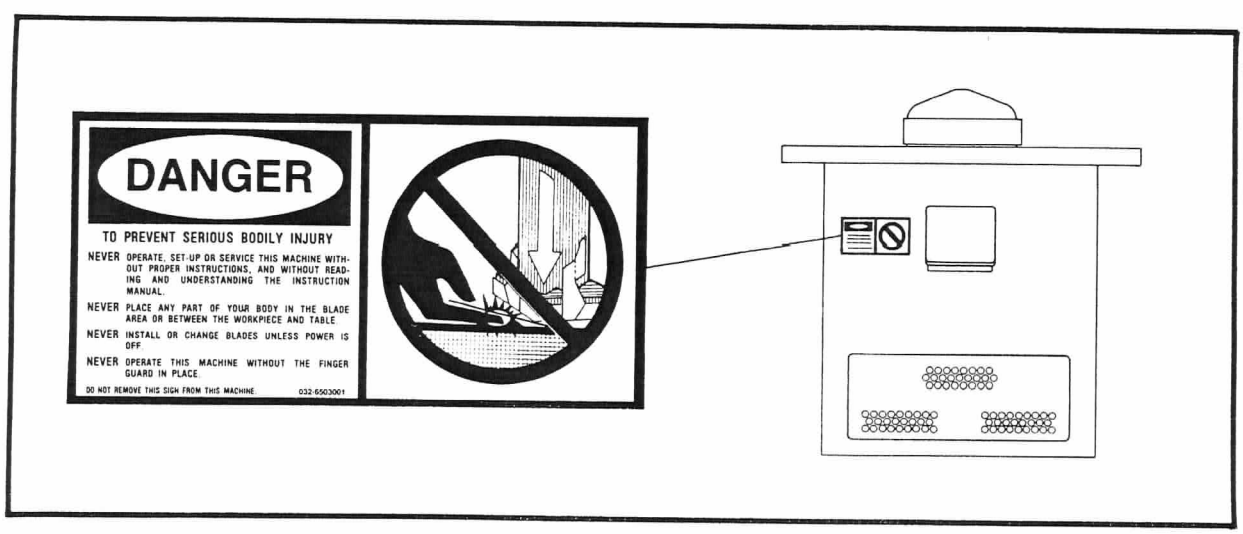
ALWAYS shut OFF the main power when leaving this machine unattended.

Develop a sense of personal safety awareness.

Observe all safety regulations.

Be on the lookout for hazardous conditions and discuss the control of them with your supervisor.

DANGER DECAL

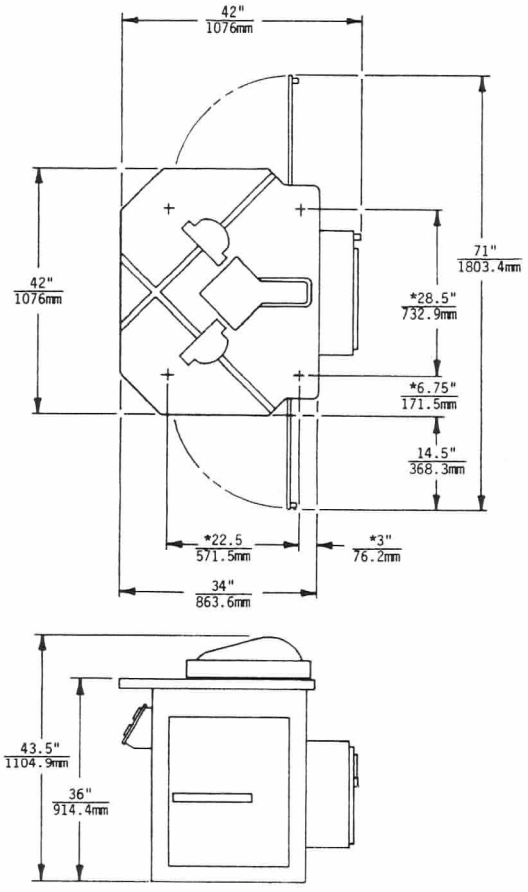


TECHNICAL DATA · FLOOR PLAN

TECHNICAL DATA

10 GAUGE NOTCHER	U.S.	METRIC
MAXIMUM SHEARING FORCE	8 Tons	71 kn
MAXIMUM MATERIAL THICKNESS	10 Ga. M.S.	3.4 mm
MAXIMUM CUTTING LENGTH	8-3/4"	220 mm
MAXIMUM STROKES PER MINUTE	36	36
RAM STROKE LENGTH	7/8"	22 mm
MOTOR	3 HP · 1200 RPM	3 HP · 1200 RPM
OIL PRESSURE	1000 PSI	70.3 kg/cm²
PUMP CAPACITY	5 GPM	19 1/min
WEIGHT	2000 lbs.	907 kg
SHIPPING WEIGHT	2100 lbs.	945 kg

FLOOR PLAN



*Indicates machine floor mounting dimensions.

INSTALLATION

LOCATION

A special foundation is not required for the Notcher. Any floor is suitable, provided it is strong enough to support the weight of the machine.

The floor should be flat and reasonably level. Sufficient space should be provided around the machine to permit the handling of material and also for inspection and maintenance operations.

LIFTING

After the machine location has been selected the Notcher is ready to be lifted into place. Place two eyebolts in the holes provided in the table T-slots. Lift the Notcher with a sling similar to the one illustrated in FIG. 1. Any lifting equipment used should have a capacity of not less than 3000 pounds (1360 kg).

CAUTION: Angular lifts should be avoided due to the fact that the load rating of eyebolts is then significantly reduced.

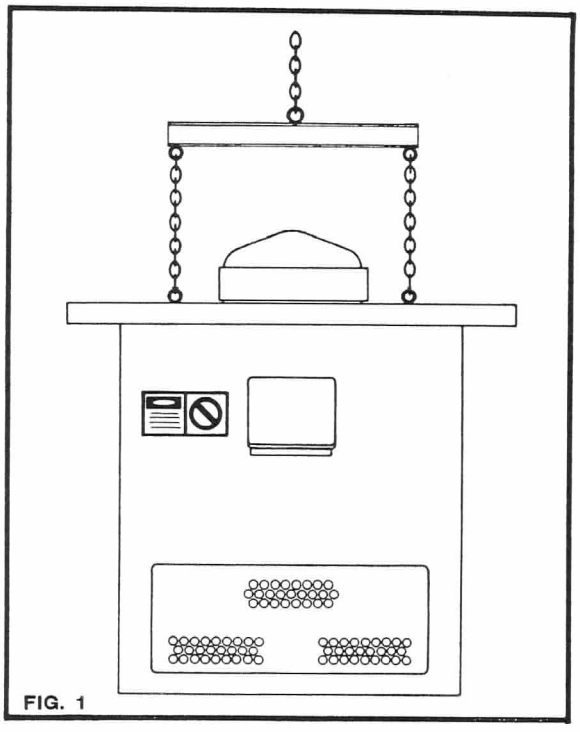


FIG. 1

LUBRICATION

The sliding area of the cutting head moves on self lubricating bearing surfaces and requires no additional lubrication.

ANCHORING

After the machine has been set into position it may be necessary to place shims under a foot pad to eliminate any twist caused by an uneven floor. The Notcher should now be fastened to the floor with 3/8" (M 10) anchor bolts.

HYDRAULIC OIL SUPPLY

Fill the oil reservoir with hydraulic oil to approximately 1-1/2 inches (38 mm) from the top of the fill plug. Mobil DTE 26 is recommended. Acceptable equivalents are: Shell-Tellus 33, Texaco-Rando Oil HD-C and Gulf-Harmony 54 AW.

WARNING: Oil should be in a clean container and strained through a clean wire mesh screen. DO NOT USE CLOTH. Foreign matter in the hydraulic system may cause loss of power and possible pump damage.

ELECTRICAL CONNECTION

The Notcher is shipped completely wired, and is equipped with a magnetic starter and a transformer for 115 volts to the push buttons. After the machine is anchored into position, connect the lead-in wires to the disconnect box. Start the Notcher momentarily to determine if the pump is rotating in the proper direction. This is indicated by the arrow on the shaft end of the pump. DO NOT RUN THE PUMP BACKWARD. This may damage the pump vanes. To change the rotation of the motor, interchange any two wire connections of the incoming service.

INITIAL START-UP

Start the Notcher and move the cutting head up and down several times to bleed air from the hydraulic system. Stop the cutting head at the bottom of stroke and refill the oil reservoir to approximately 1-1/2 inches (38 mm) from the top of the fill plug.

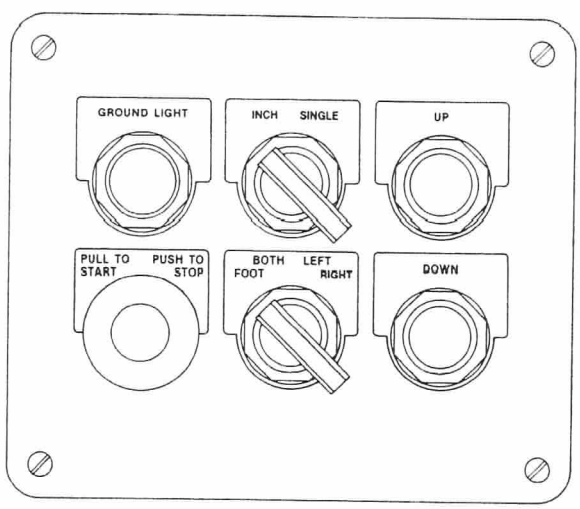
OPERATING PROCEDURES

At the start of each day's operation:

1. Check the oil level in the hydraulic reservoir. Fill to 1-1/2" (38 mm) from the top of the fill plug.
2. Inspect the blades for damage or wear, regrind or replace if necessary. (see page 11)
3. Check the blade clearance, adjust if necessary. (see page 9)
4. Ensure that all guards are in place and all access doors are closed.
5. Start and cycle the machine to be sure that it is operating properly.

OPERATOR CONTROLS

Below is an illustration of the operator's control panel and a description of the control functions. Familiarize yourself with the control panel BEFORE operating the Notcher.



GROUND LIGHT

This green light should be lit whenever the disconnect switch is in the ON position. DO NOT OPERATE THE MACHINE IF THE LIGHT IS OFF. (see TROUBLE SHOOTING, Pg. 13)

PULL TO START - PUSH TO STOP

START energizes the motor starter, starts the motor and energizes the control circuit.

STOP de-energizes the motor starter, stops the motor and de-energizes the control circuit.

STROKE SELECTOR SWITCH

INCH allows the ram to be activated by the UP and DOWN push buttons.

UP - Allows the ram to be jogged up when in the INCH mode. Release of the push button causes the ram to stop.

DOWN - Allows the ram to be jogged down when in the INCH mode. Release of the push button causes the ram to stop.

SINGLE allows the ram to be activated by the foot pedal or gauge limit switches. By de-activating the foot switch or gauge limit switches on the down stroke, the ram will stop. When the bottom of stroke is reached, the ram will automatically return to the top of stroke and stop. The method used to activate the machine must be released and re-activated to re-start the cycle.

OPERATION MODE SELECTOR SWITCH

FOOT - Ram movement is activated by the foot switch only.

BOTH - Ram movement is activated by contacting both gauge limit switches.

LEFT - Ram movement is activated by contacting the left gauge limit switch only.

RIGHT - Ram movement is activated by contacting the right gauge limit switch only.

MACHINE ADJUSTMENTS

HYDRAULIC PRESSURE ADJUSTMENT

The relief valve is pre-set at 1000 PSI (70.3 kg/cm²) for normal operation. Should greater power be required, the relief valve may be adjusted up to 1500 PSI (105.5 kg/cm²). When higher power is no longer required, be sure to re-set the relief valve to 1000 PSI (70.3 kg/cm²). Continued operation at any pressure over 1000 PSI (70.3 kg/cm²) will result in excessive wear to the pump, cylinder and ram guide bearings.

TO ADJUST THE RELIEF VALVE:

1. Attach a hydraulic pressure gauge to one of the pressure ports in the manifold.
2. Remove the cam that activated the bottom of stroke limit switch. (FIG. 5)
3. Pull the PULL TO START button.
4. Rotate the stroke selector switch to the INCH position.
5. Press the DOWN button until the ram stops at the bottom of stroke.
6. Read the pressure while pressing the DOWN button.
7. Turn the socket set screw in the relief valve clockwise to increase pressure and counterclockwise to decrease pressure.

NOTE: There is an additional relief valve built into the hydraulic pump which will not allow the pressure to exceed 1500 PSI (105.5 kg/cm²).

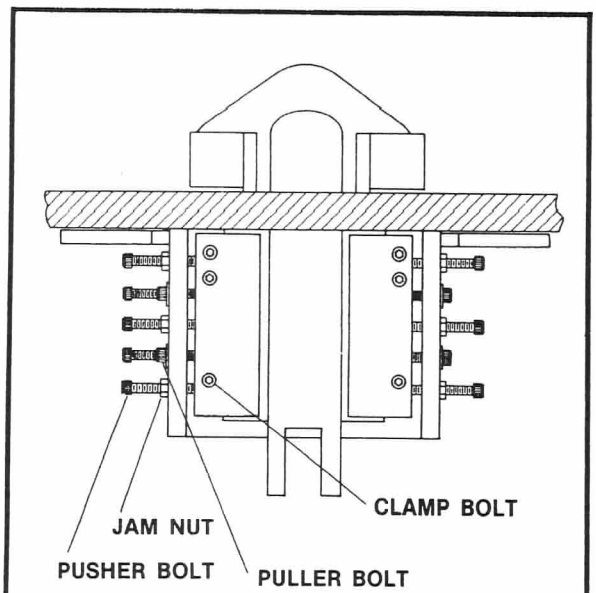
RAM GUIDE ADJUSTMENT

The clearance between the ram and ram guides should be adjusted to .001" (.025 mm). All the adjusting should be done on the left side when viewed from the rear of the machine.

TO ADJUST THE RAM GUIDE CLEARANCE

1. Turn the main disconnect switch to the OFF position.
2. Loosen the three clamp bolts that fasten the ram guides to the frame. (FIG. 2)
3. Loosen the two puller bolts and the five jam nuts. (FIG. 2)
4. Tighten the five pusher bolts and check the clearance, at both the upper and lower ends of the ram guides, until the proper clearance is obtained.
5. Tighten the two puller bolts and the five jam nuts. (FIG. 2)
6. Tighten the three clamp bolts. (FIG. 2)
7. Re-check the clearance at both the upper and lower ends of the ram guides.
8. Check the blade clearance, adjust if necessary. (See BLADE CLEARANCE ADJUSTMENT, Pg. 9)

NOTE: If too little clearance is present, loosen the pusher bolts, tighten the puller bolts and perform steps 1 thru 8 above.



VIEW FROM REAR OF MACHINE, INSIDE CABINET
FIG. 2

MACHINE ADJUSTMENTS

ADJUSTING THE TABLE

To ensure accuracy in the gauges, the table T-slots must be parallel to the upper blades. This should be checked if the angle notched is not at the same angle that is set on the gauge.

TO ADJUST THE TABLE:

1. Loosen the six bolts that fasten the table to the frame. (FIG. 3)
2. Turn the left-to-right adjusting bolt (FIG. 3) until the T-slots are parallel to the upper blades.
3. Tighten the six bolts that fasten the table to the frame.
4. Check the blade clearance, adjust if necessary. (See BLADE CLEARANCE ADJUSTMENT)

BLADE CLEARANCE ADJUSTMENT

Before operating the Notcher, make sure that the clearance between the upper and lower blades is within the recommended .003" to .006" (.076 mm to .152 mm) range. For proper clearance see the RECOMMENDED CLEARANCE FOR MATERIAL THICKNESS chart.

TO ADJUST THE CLEARANCE:

1. Pull the PULL TO START button.
2. Rotate the stroke selector switch to the INCH position.
3. Depress the DOWN pushbutton until the upper and lower blades overlap their entire length.
4. Press the PUSH TO STOP button.
5. Remove the finger guard.
6. Loosen the six bolts that fasten the table to the frame. (FIG. 3)
7. Turn the front-to-back adjusting bolt (FIG. 3) to obtain the desired clearance between the blades. Turn clockwise for more clearance, counterclockwise for less.
8. Tighten the six bolts that fasten the table to the frame. (FIG. 3)
9. Recheck the clearance to be sure the specified clearance exists between the entire length of the blades.*
10. Re-install the finger guard with the front no more than 1/4" (6.4 mm) above the table.
11. Pull the PULL TO START button.
12. Press UP to return the ram to the top of stroke.

*If the clearance is not equal the entire length of the blades, the lower blades must be adjusted. Loosen the bolts that fasten the lower blades to the table. Turn the blade back-up bolts (FIG. 4) until equal clearance is obtained and tighten the blade fastening bolts. Adjust the blade clearance as outlined above.

RECOMMENDED CLEARANCE FOR MATERIAL THICKNESS

MATERIAL THICKNESS	inch (mm)	.030 (.763)	.048 (1.22)	.090 (2.29)	.135 (3.43)
RECOMMENDED CLEARANCE	inch (mm)	.003 (.076)	.004 (.102)	.005 (.127)	.006 (.152)

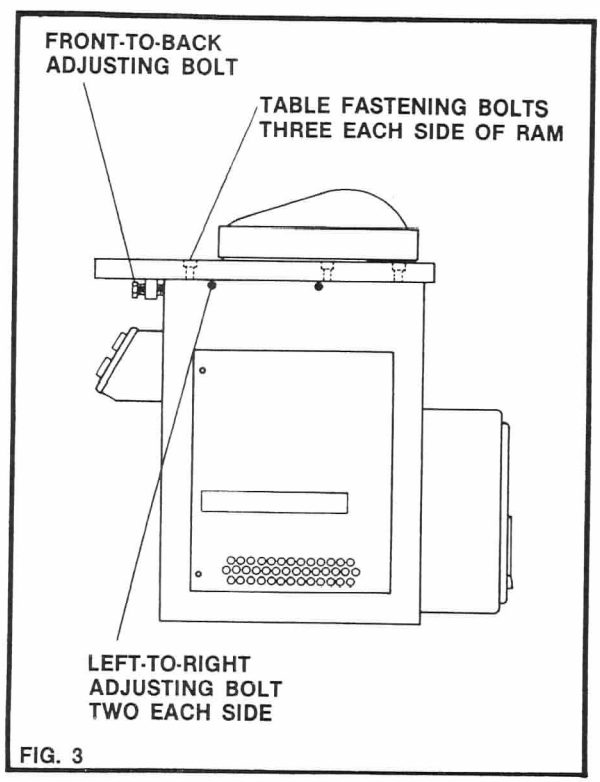


FIG. 3

MACHINE ADJUSTMENTS

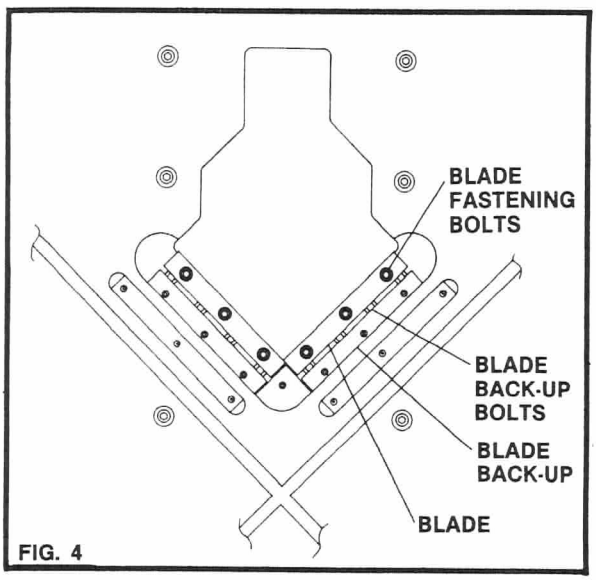


FIG. 4

STROKE LENGTH ADJUSTMENT

The ram stroke length is adjusted by two cams located on the rear of the ram (FIG. 5). The cam with the beveled edge facing up, controls the top of stroke limit switch, the cam with the beveled edge facing down, controls the bottom of stroke limit switch. The bottom of stroke cam should always be adjusted so that the point of the upper blades and lower blades overlap approximately 1/16" to 1/8" (1.6 mm to 3.2 mm). The top of stroke cam should normally be adjusted so there is approximately a 3/16" (5 mm) opening between the rear of the upper and lower blades. The top of stroke cam can be adjusted to shorten the stroke when notching thin material or when making small notches.

TO ADJUST A STROKE LIMIT SWITCH CAM

1. Pull the PULL TO START button.
2. Rotate the stroke selector switch to the INCH position.
3. Press UP or DOWN until the ram is at the desired top or bottom of stroke position.
4. Press the PUSH TO STOP button.
5. Loosen the two screws and remove the guard over the limit switch cams. (FIG. 5)
6. Loosen the two screws that fasten the cam you wish to adjust to the rear of the ram. (FIG. 5)
7. Slide the beveled edge of the cam toward the limit switch roller until you hear the limit switch "click".
8. Tighten the two screws that fasten the cam to the ram. (FIG. 5) Be sure the cam does not move when tightening the screws.
9. Replace the guard and tighten the two screws that fasten it to the rear of the machine.

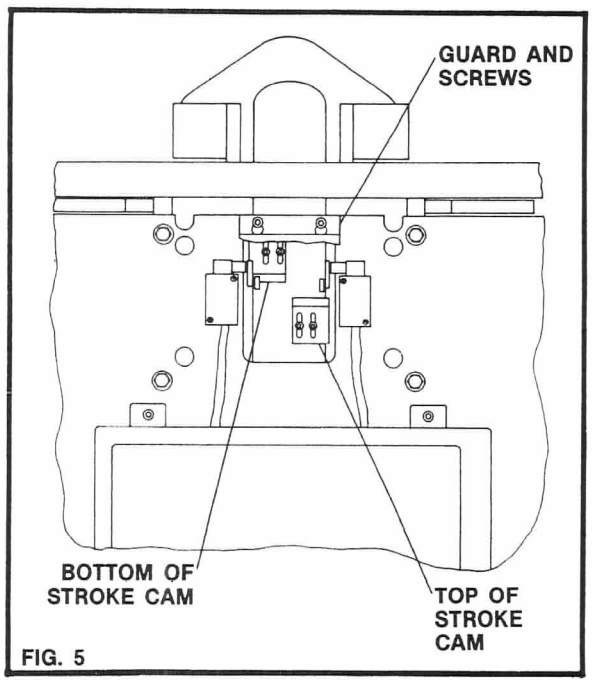


FIG. 5

MATERIAL GAUGE ADJUSTMENT

The 10 GAUGE NOTCHER is equipped with left and right material gauges. These gauges are used as stops for both the depth and the angle of the notch. There is a "ANGLE LOCKING PIN" (FIG. 6) for quick, positive settings at 45°, 90°, 135°. Angles other than those listed must be set with a protractor, then locked into place with the "PIVOT CLAMP" (FIG. 6). The "GAUGE HOLDER CLAMP" secures the gauge in position.

MACHINE ADJUSTMENTS

MATERIAL GAUGE LIMIT SWITCH ADJUSTMENT

The "TRAVEL ADJUSTMENT SCREW" (FIG. 6) should be adjusted so there is .015" (.38 mm) travel at the end of the "SWITCH ACTUATOR ARM" (FIG. 6). The "SWITCH ACTUATING SCREW" (FIG. 6) must then be adjusted to actuate the limit switch when the "SWITCH ACTUATOR ARM" is fully depressed.

The locked position of the "PIVOT CLAMP" or the "GAUGE HOLDER CLAMP" can be changed by lifting on the handle and rotating it.

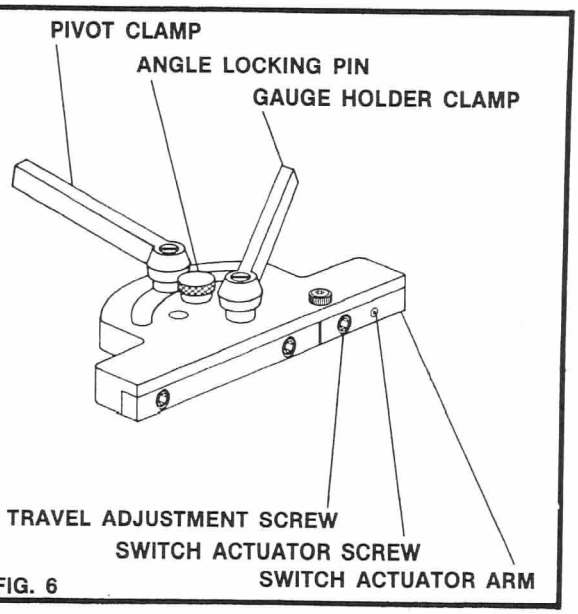


FIG. 6

BLADE SHARPENING

Sharp cutting edges must be maintained to ensure satisfactory performance. The Notcher blades are made of hardened tool steel and must be sharpened by grinding. The surfaces to be sharpened are indicated in FIG. 7. The blades should be sharpened in pairs (upper blades together and the lower blades together) to ensure that they are ground to exactly the same dimension. When the blades are re-installed onto the machine, care must be exercised to ensure that the leading edge of the upper left blade is flush with the outer face of the upper right blade and that there is no gap where the lower blades meet.

BLADE REPLACEMENT

REMOVAL:

1. Move the ram to the bottom of stroke position.
2. Turn the disconnect switch to the OFF position.
3. Remove the finger guard.
4. Adjust the clearance out approximately 1/8" (3 mm).
5. Remove the six bolts that fasten the lower blades to the table and remove the lower blades.
6. Remove the eight bolts that fasten the upper blades to the ram and remove the upper blades.

INSTALLATION:

1. Replace the upper blades and bolt them into position. Be sure the leading edge of the left blade is flush with the outer face of the right blade.
2. Replace the lower blades and bolt them into position. Be sure there is no gap where the lower blades meet.
3. Replace the finger guard with the front no more than 1/4" (6 mm) above the table.
4. Adjust the blade clearance. (See BLADE CLEARANCE ADJUSTMENT, Pg. 9)

CAUTION: Whenever blades are removed from the Notcher, the blade clearance should be adjusted out approximately 1/8" (3 mm). When reground or new blades are installed, adjust the blade clearance according to the BLADE CLEARANCE ADJUSTMENT section.

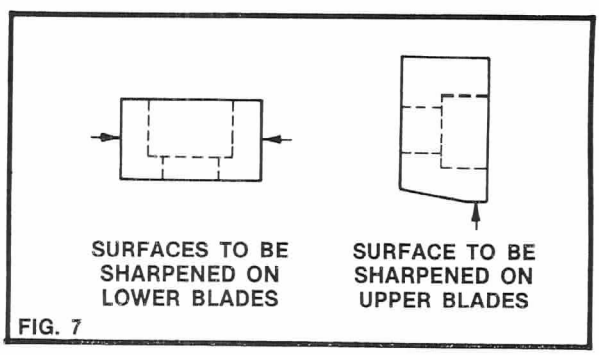


FIG. 7

EXTENDED NOTCHING GUIDE

The 10 Gauge Notcher is equipped with an "extended notching guide" (FIG. 8). Corner notches with one leg longer than 8-3/4" (220 mm) can be made with the use of the left material gauge and this guide by making two or more consecutive notches. Set the left material gauge, parallel to the right blades, to the depth required. The first notch is made using the left material gauge alone. All subsequent notches are made with the left edge of the material remaining on the left material gauge and the edge that was previously cut on the extended notching guide. Be sure the extended notching guide is tangent to a line extending from the cutting edge of the right blades (FIG. 8)

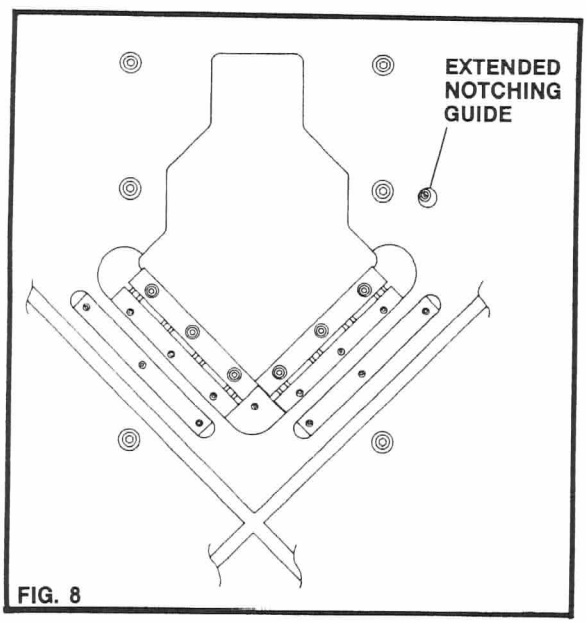


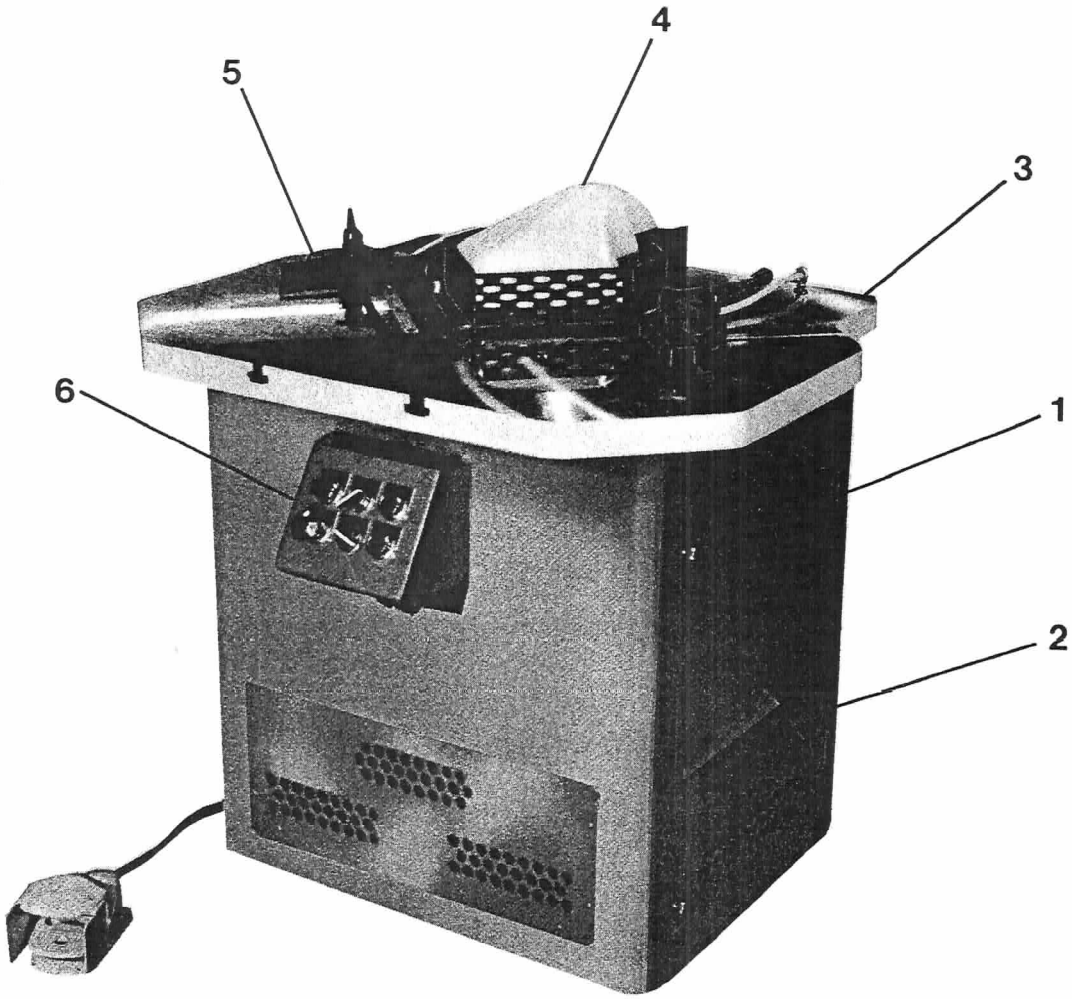
FIG. 8

TROUBLE SHOOTING

PROBLEM	CAUSE	REMEDY
GROUND LAMP DOES NOT LIGHT		
	1. Burned out bulb.*	1. Replace bulb.
	2. Transformer not grounded.	2. Call an electrician.
	3. Disconnect open.	3. Close disconnect.
MOTOR DOES NOT RUN		
	1. Blown fuse.	1. Replace fuse.
	2. Overloads open.	2. Push reset button.
	3. Bad motor.	3. Repair/replace motor.
RAM DOES NOT MOVE WHEN ACTIVATED		
	1. Operation mode selector in wrong setting.	1. Turn selector switch to proper setting. (see Pg. 7)
	2. Pump turning in the wrong direction.	2. Interchange any two wires of incoming service. (see Pg. 6)
	3. Low oil level in the tank.	3. Fill to 1-1/2" (38 mm) from top of the fill plug.
	4. Dirt wedged in the relief valve.	4. Remove relief valve, flush, clean and replace.
RAM STALLS DURING CUT		
	1. Sludge and dirt in the pump unit.	1. Disassemble, flush, clean and reassemble the pump.
	2. Valving surface scored by dirt.	2. Replace all scored or worn parts.
	3. Partially clogged filter.	3. Remove and clean the filter.
	4. Improper setting of relief valve.	4. Set relief valve at 1000 PSI (70.3 kg/cm^2). (see Pg. 8)
OPERATING VALVE STICKY OR SLUGGISH		
	1. Dirt between operating plunger and body.	1. Disassemble, flush, clean and reassemble.
	2. Scored plunger.	2. Clean and polish or replace plunger.
	3. Broken spring.	3. Replace broken spring.
INSUFFICIENT OPENING OF BLADES		
	1. Improper setting of top of stroke switch.	1. Adjust switch. (see Pg. 10)
POOR EDGE ON CUT SURFACE		
	1. Damaged or worn blades.	1. Regrind/Replace blades. (see Pg. 11)
	2. Improper blade clearance.	2. Adjust clearance. (see Pg. 9)
	3. Improper ram guide clearance.	3. Adjust clearance. (see Pg. 8)

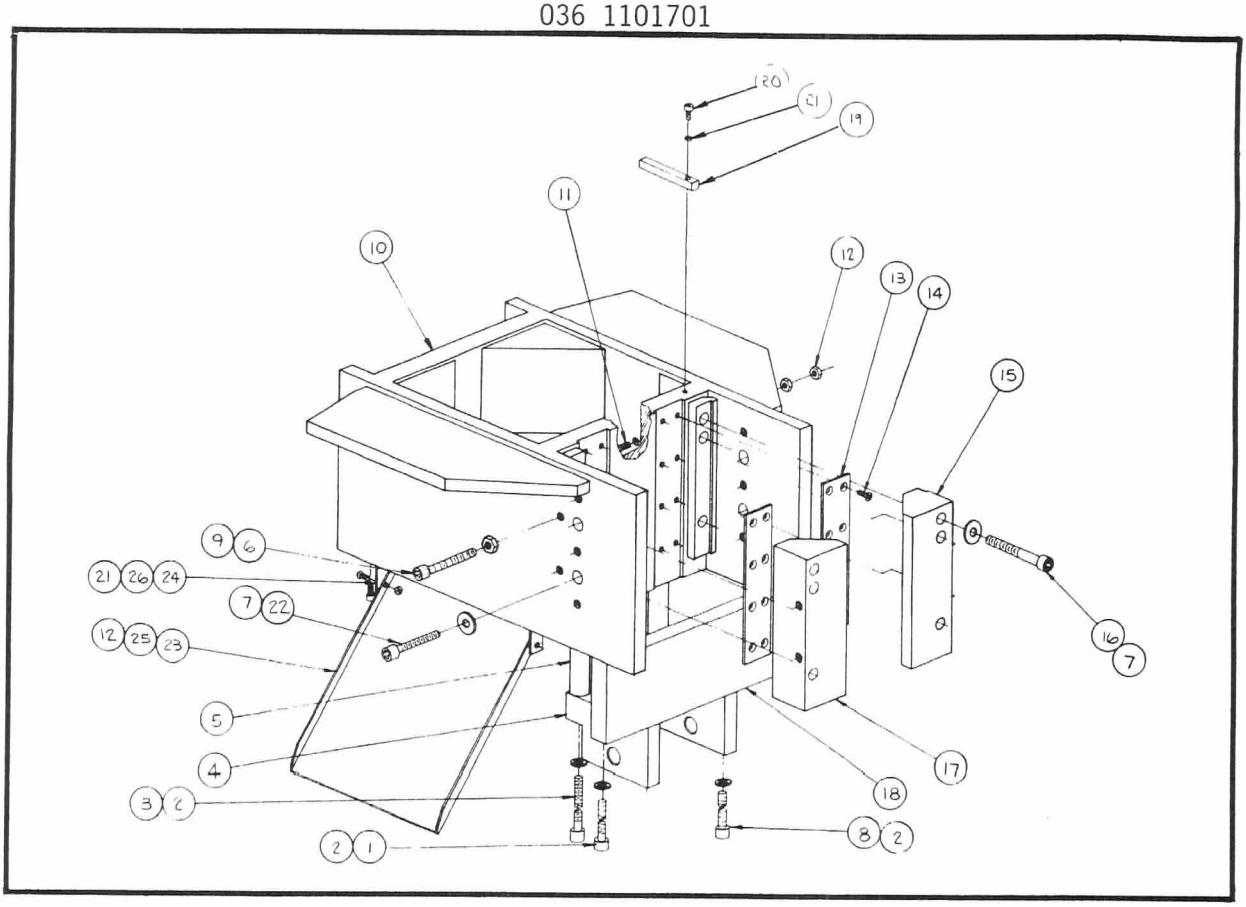
*To test for a burned out bulb, push lens in. If the light remains out, replace bulb, if the light comes on, the transformer ground has been lost. A qualified electrician must correct this condition before the machine is returned to service.

PARTS LIST INDEX

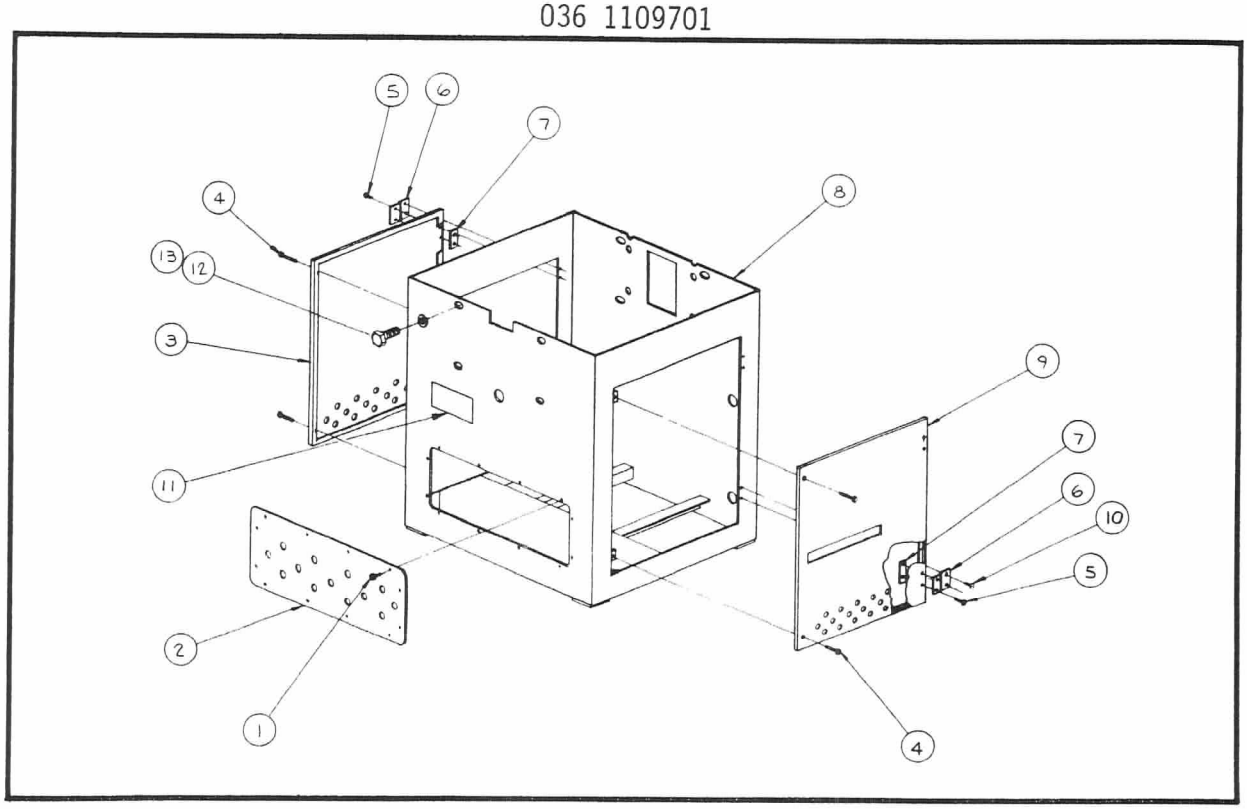


FRAME ASSEMBLY - CABINET ASSEMBLY

036 1101701



036 1109701



FRAME ASSEMBLY - CABINET ASSEMBLY

036 1101701

ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY USED ON ASSEMBLY
1	20A 0102C6000	SOCKET HEAD CAP SCREW	2
2	4902010	LOCKWASHER 1/2 HC	6
3	21A 0102C7102	SOCKET HEAD CAP SCREW	2
4	036 1117004	TRUNION BLOCK	2
5	036 1110004	TRUNION POST	2
6	20A 0102C3102	SOCKET HEAD CAP SCREW	8
7	4901104	WASHER 1/2	10
8	20A 0102C4000	SOCKET HEAD CAP SCREW	2
9	31X 0102C	JAM NUT	8
10	036 1101001	FRAME WELDMENT	1
11	22D 0104C2102	TRUSS HEAD MACHINE SCREW	1
12	31X 0104C	JAM NUT	4
13	036 1423003	SLIDE	2
14	20C 0104C0102	FLAT HEAD SOCKET CAP SCREW	16
15	036 1108004	GIB LEFT	1
16	20A 0102C5000	SOCKET HEAD CAP SCREW	6
17	036 1108003	GIB RIGHT	1
18	036 1110005	SUPPORT	1
19	036 1110014	THROW BAR	1
20	20A 0104C0508	SOCKET HEAD CAP SCREW	1
21	4902012	LOCKWASHER 1/4 HC	3
22	20A 0102C2104	SOCKET HEAD CAP SCREW	4
23	036 1109001	CHUTE	1
24	036 1110006	CHUTE HANGER	2
25	22D 0104C0508	TRUSS HEAD MACHINE SCREW	2
26	20A 0104C0102	SOCKET HEAD CAP SCREW	2

036 1109701

ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY USED ON ASSEMBLY
1	20B XX10C0308	BUTTON HEAD SOCKET CAP SCREW ..	10
2	036 1109009	COVER	1
3	036 1109008	DOOR - LEFT	1
4	4701148	PANEL SCREW	4
5	22A XX10F0104	ROUND HEAD MACHINE SCREW	8
6	4501001	BUTT HINGE	4
7	150 1110223	BACK-UP BLOCK	4
8	036 1109006	CABINET WELDMENT	1
9	036 1109007	DOOR - RIGHT	1
10	22A XX10C0104	ROUND HEAD MACHINE SCREW	8
11	032 6503001	DANGER SIGN	1
12	21A 0102C1000	HEX HEAD CAP SCREW	8
13	4902007	LOCKWASHER 1/2 M	8

TABLE ASSEMBLY

036 1105701

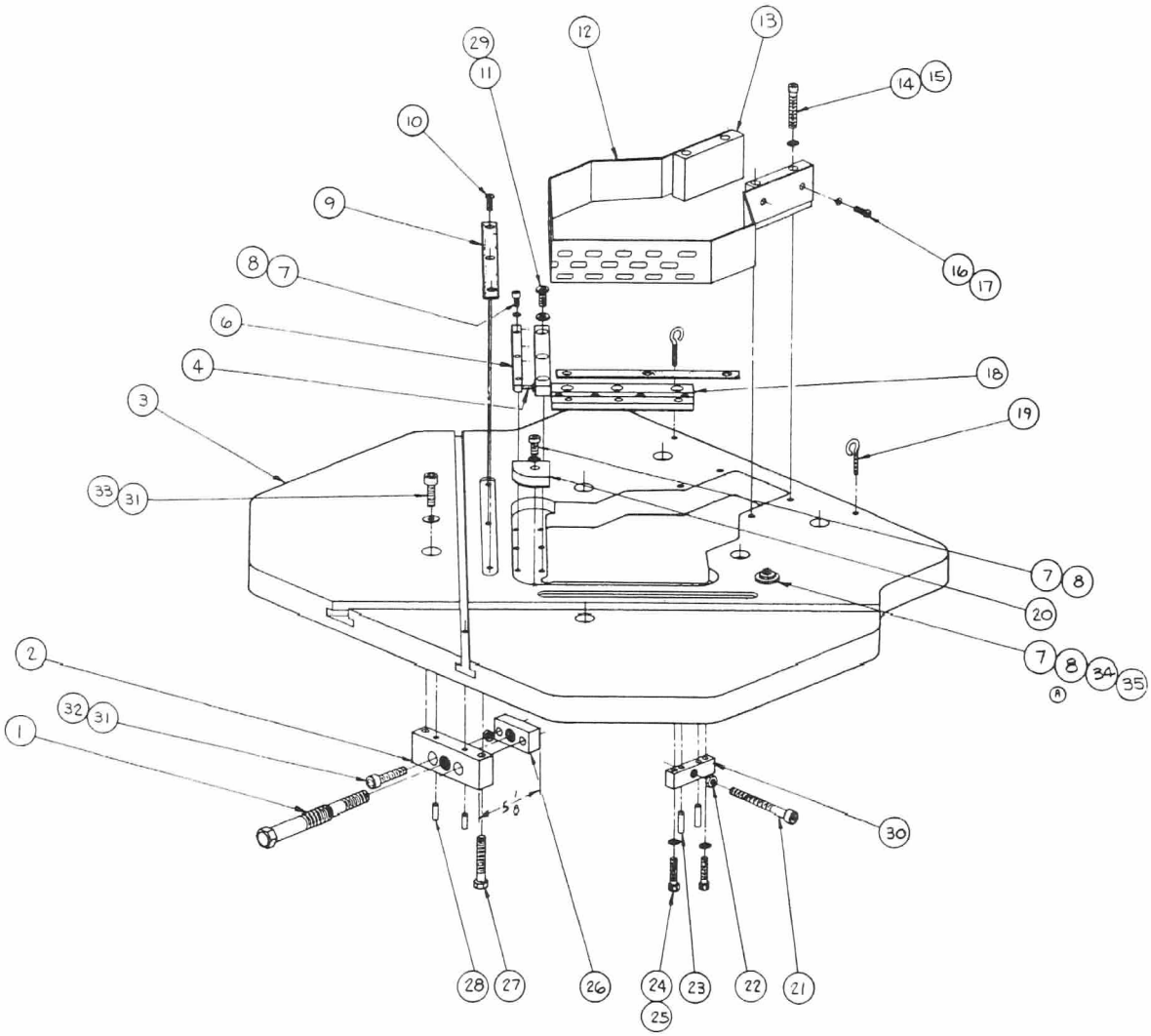


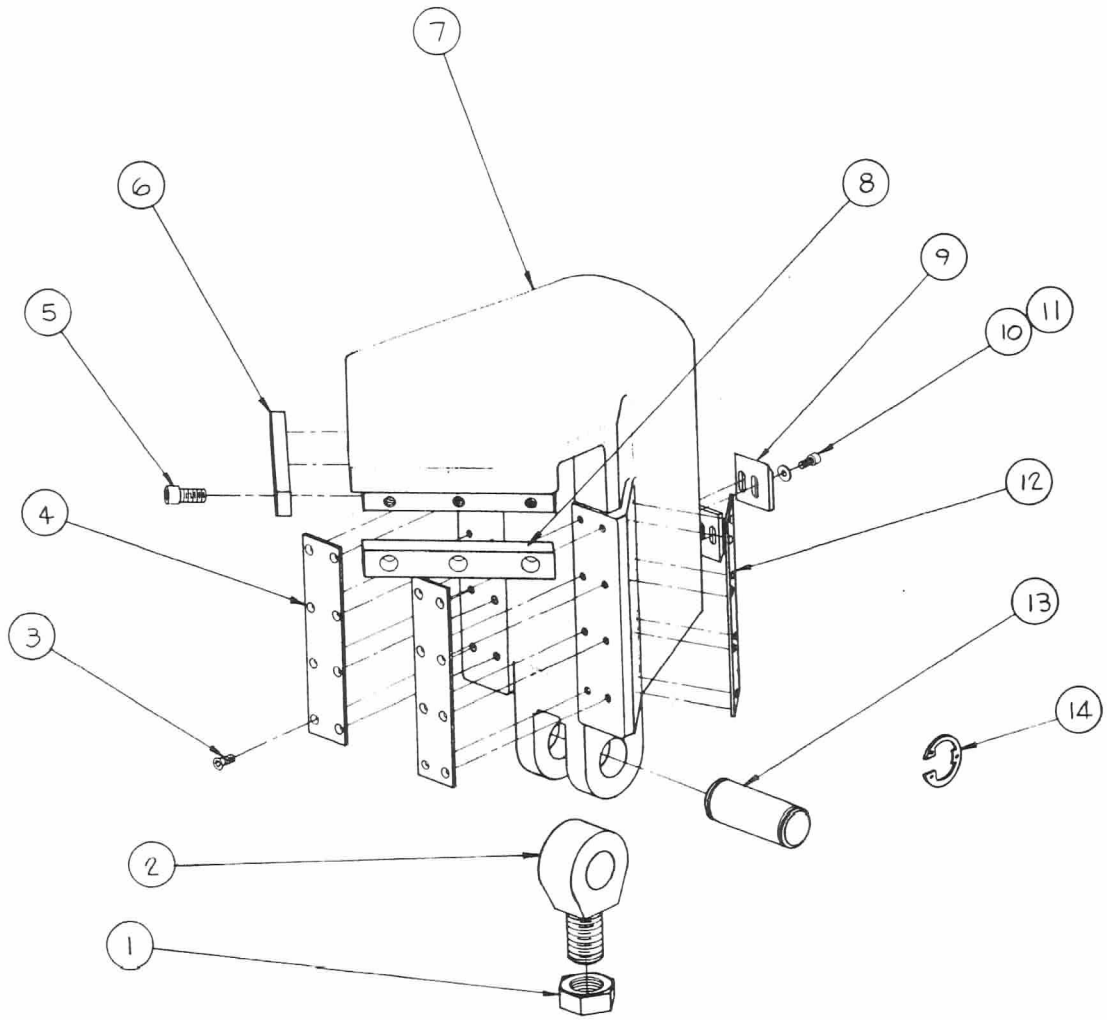
TABLE ASSEMBLY

036 1105701

ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY USED ON ASSEMBLY
1	036 1323001	ADJUSTMENT SCREW, TABLE	1
2	036 1117003	FRONT ADJUSTMENT BLOCK	1
3	036 1105001	TABLE	1
4	21A 0308C1000	HEX HEAD CAP SCREW	8
6	036 1110001	BLADE BACKUP	2
7	20A 0104C0304	SOCKET HEAD CAP SCREW	8
8	4902012	LOCKWASHER 1/4 HC	8
9	036 1601001	SCALE	2
10	20B XX10C0104	BUTTON HEAD SOCKET CAP SCREW ..	6
11	20A 0308C0708	SOCKET HEAD CAP SCREW	6
12	036 1106001	GUARD	1
13	036 1110002	GUARD MOUNT	2
14	20A 0308C3000	SOCKET HEAD CAP SCREW	4
15	4902019	LOCKWASHER 3/8 HC	4
16	20B 0516C0102	BUTTON HEAD SOCKET CAP SCREW ..	4
17	4902021	LOCKWASHER 5/16 HC	4
18	036 1209001	LOWER BLADE	2
19	4702004	EYE BOLT	2
20	036 1108002	SPACER	1
21	20A 0102C3102	SOCKET HEAD CAP SCREW	4
22	31X 0102C	JAM NUT	4
23	1203249	DOWEL PIN, PULL OUT	8
24	21A 0308C1102	HEX HEAD CAP SCREW	8
25	4902008	LOCKWASHER 3/8 M	8
26	036 1117002	ADJUSTMENT BLOCK	1
27	21A 0102C2304	HEX HEAD CAP SCREW	2
28	1203177	DOWEL PIN	2
29	036 4901002	WASHER 3/8 X 5/8 X 1/8	6
30	036 1117001	SIDE ADJUSTMENT BLOCK	4
31	20A 0102C0304	SOCKET HEAD CAP SCREW	8
32	4902007	LOCKWASHER 1/2 M	2
33	4901110	WASHER 1/2	6
34	100 1420018	EXTENDED NOTCHING GUIDE	1
35	4901149	WASHER 1/4	1

RAM ASSEMBLY

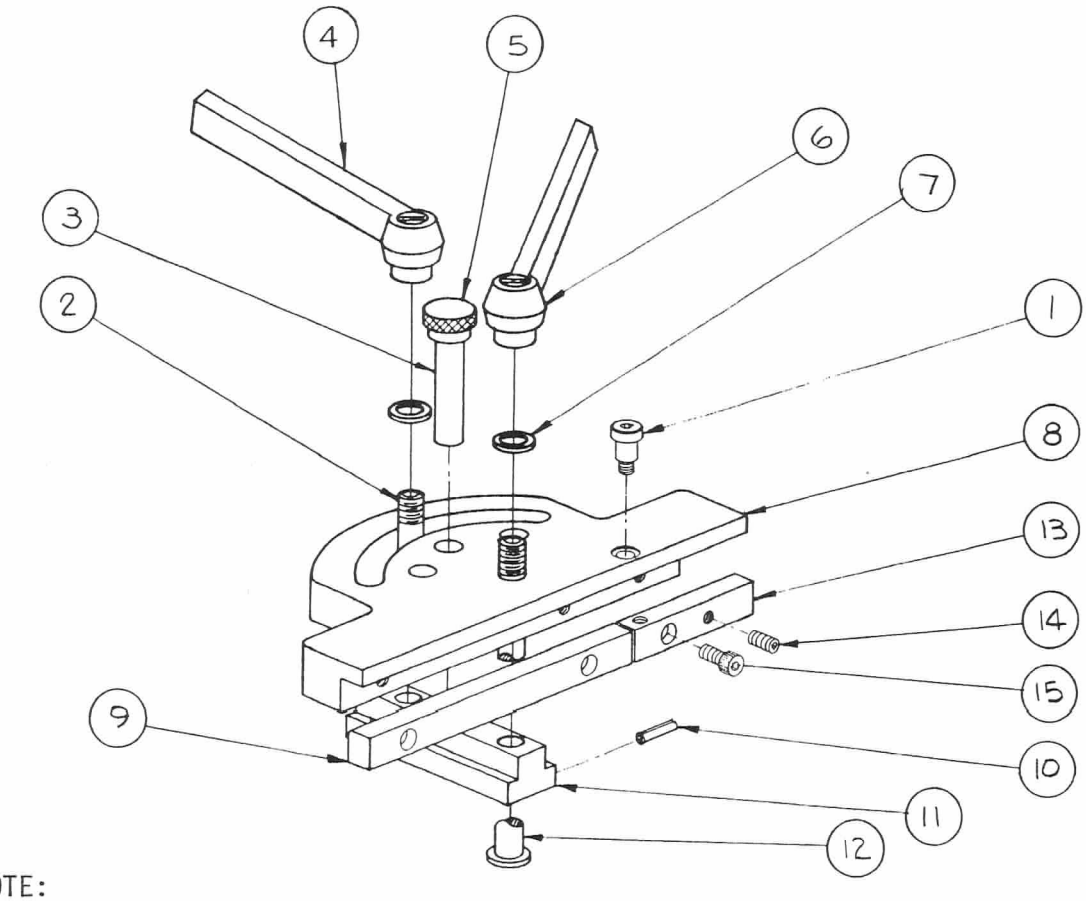
036 1213701



ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY USED ON ASSEMBLY
1	31X 1102F	JAM NUT 1-1/2	1
2	036 1212001	CONNECTOR	1
3	20C XX08C0308	FLAT HEAD SOCKET CAP SCREW	32
4	036 1423001	BEARING - FRONT	2
5	20A 0308C0708	SOCKET HEAD CAP SCREW	8
6	036 1209003	BLADE - LEFT	1
7	036 1213003	RAM	1
8	036 1209002	BLADE - RIGHT	1
9	036 1202001	CAM	2
10	20B 0104C0508	BUTTON HEAD SOCKET CAP SCREW ..	4
11	4901149	WASHER 9/32 X 5/8 X 1/16	4
12	036 1423002	BEARING - REAR	2
13	036 1114001	PIN	1
14	4705106	RETAINING RING	2

GAUGE ASSEMBLY

036 1400701(RIGHT) 036 1400702(LEFT)

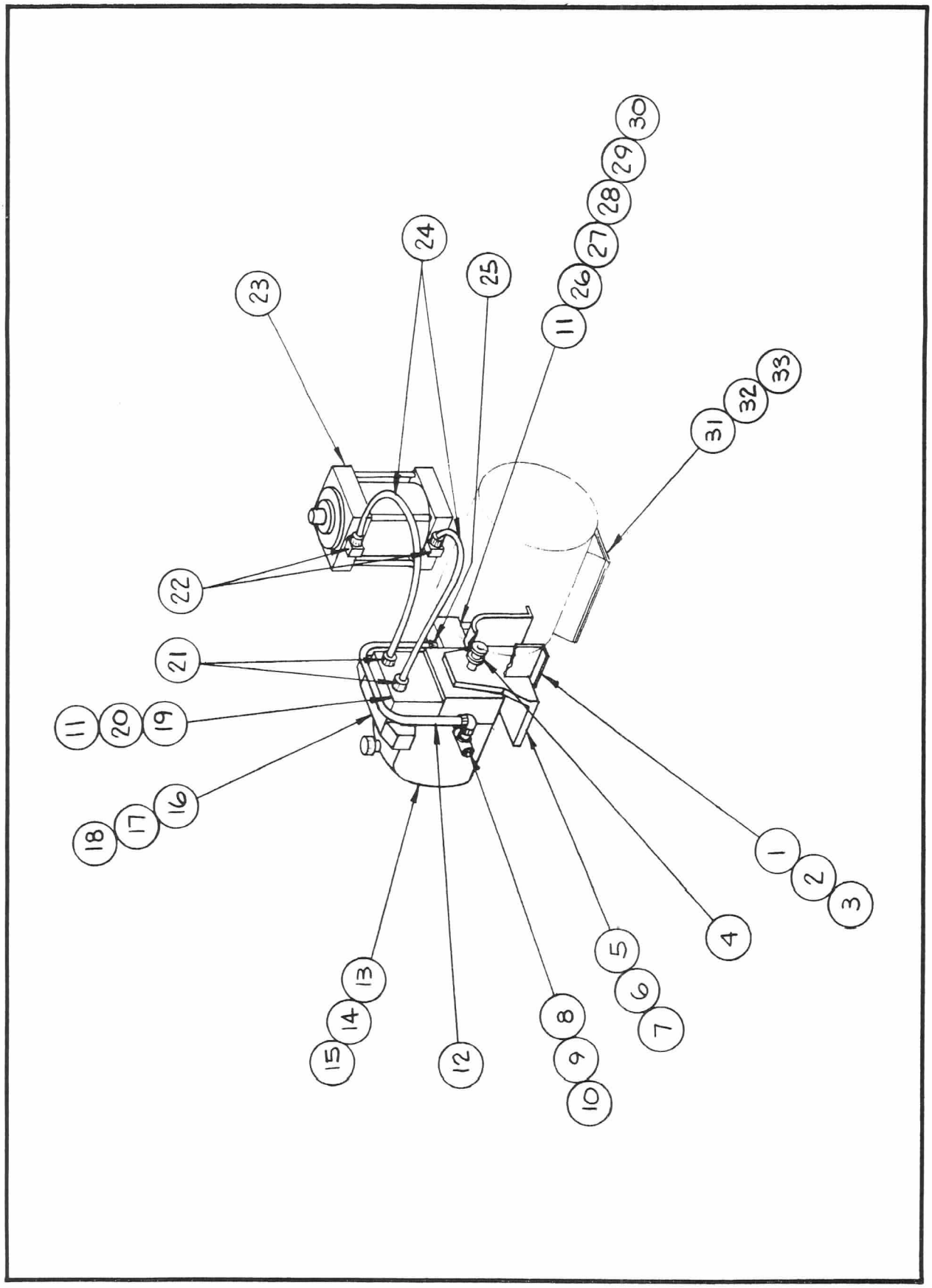


NOTE:
1. DRILL AND PIN ITEM 12 TO 11 WITH ITEM 10 AT ASSEMBLY.

ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY USED ON ASSEMBLY	
			RIGHT	LEFT
1	25X 0516X0308	SHOULDER SCREW	1	1
2	036 1413002	PIVOT PIN	1	1
3	1203112	DOWEL PIN	1	1
4	1208174	PIVOT HANDLE	1	1
5	036 1413001	KNOB	1	1
6	1208175	GAUGE HOLDER HANDLE	1	1
7	4901174	WASHER 1/2	2	2
8	036 1401001	GAUGE BASE - RIGHT	1	0
	036 1401002	GAUGE BASE - LEFT	0	1
9	036 1422001	GAUGE BAR	1	1
10	1203136	SPRING PIN	1	1
11	036 1407001	GAUGE SLIDE NUT	1	1
12	036 1413003	GAUGE HOLDER PIN	1	1
13	036 1422002	SWITCH ACTUATOR ARM	1	1
14	23A 0104C0708N	SOCKET SET SCREW	1	1
15	20A 0104C0508	SOCKET HEAD CAP SCREW	3	3

HYDRAULIC ASSEMBLY

036 3700601



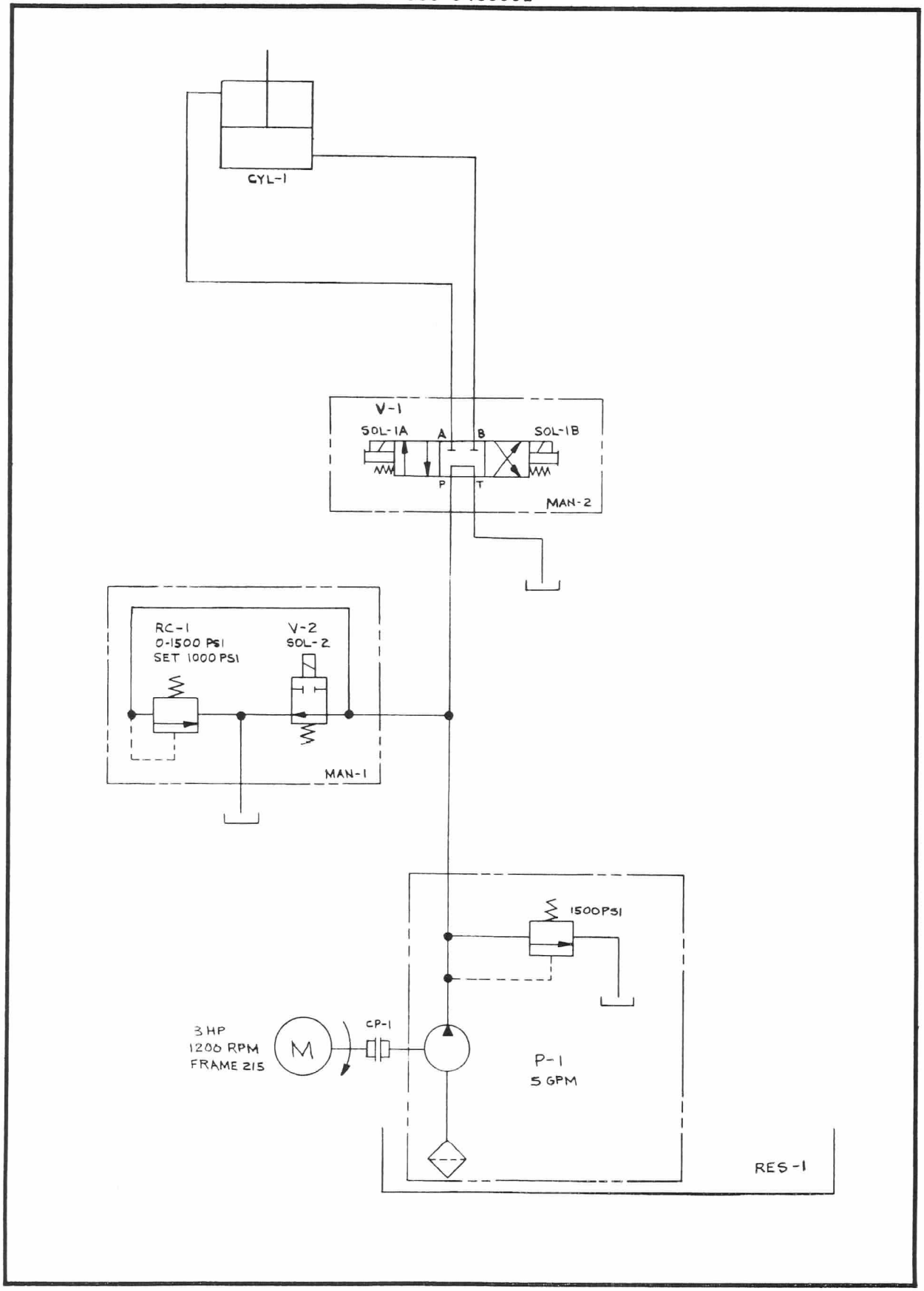
HYDRAULIC ASSEMBLY

036 3700601

ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY USED ON ASSENBLY
1	150 1105082	GUARD	1
2	21A 0516C0102	HEX HEAD CAP SCREW	4
3	4902004	LOCKWASHER 5/16 M	4
4	1210101	COUPLING	1
5	651 1110007	PUMP MOUNT	1
6	21A 0516C1104	HEX HEAD CAP SCREW	4
7	4901157	WASHER 11/32 X 11/16 X 1/16	4
8	3315088	NIPPLE	1
9	3705066	MALE ELBOW 1/2P - 1/2T	1
10	3705071	TEE 1/2T	1
11	3705111	PIPE PLUG 3/8P	3
12	682 3704002	TUBE	1
13	3702002	PUMP	1
14	21A 0102C1102	HEX HEAD CAP SCREW	4
15	4902012	LOCKWASHER 1/2 M	4
16	3703164	CONTROL VALVE 1/4	1
17	20A 0104C0304	SOCKET HEAD CAP SCREW	4
18	4902007	LOCKWASHER 1/4 HC	4
19	682 3705001	MANIFOLD	1
20	3702140	GASKET	1
21	3705374	MALE CONN 5/8T -3/8P	2
22	3705375	MALE ELBOW 5/8T - 1/2P	2
23	3711130	CYLINDER	1
24	3706916	HOSE ASSEMBLY	2
25	3705005	MALE CONN 1/2P - 3/8P	1
26	650 3713004	MANIFOLD	1
27	3703183	VALVE N.O.	1
28	3703182	RELIEF CARTRIGDE	1
29	3705079	PIPE PLUG 1/4P	2
30	3705106	PIPE NIPPLE	1
31	150 5703064	SHIM	2
32	150 5703063	SHIM	2
33	150 5703062	SHIM	4

HYDRAULIC DIAGRAM

036 9400001



HYDRAULIC DIAGRAM

036 9400001

SYMBOL	PART NUMBER	DESCRIPTION	QTY
M		MOTOR - 3 HP - 1200 RPM	1
P-1	3702002	POWER PACK - VICKERS #PK1-7200-F12	1
CP-1	1210101	COUPLING - DIAMOND #D-4016	1
MAN-1	650 3713004	MANIFOLD	1
MAN-2	682 3705001	MANIFOLD	1
RC-1	3703182	RELIEF CARTRIDGE - DELTA POWER #85002109	1
V-1	3703164	VALVE - RIVETT #65501-02-115/60-41	1
V-2	3703183	VALVE - DELTA POWER #85003009	1
CYL-1	3711130	CYLINDER - HYDRO-LINE SERIES N-2	1

SEQUENCE OF OPERATION

1. The cycle is started, with the motor (M) running and the ram at the top of its stroke, by activating the inch down push button, when in inch, or tripping the foot pedal or gauge limit switches when in single. Solenoid 1B (of valve V1) and the solenoid of valve V2 are energized allowing oil to flow to the upper portion of the cylinder.

2. At the bottom of stroke solenoid 1A (of valve V1) is energized and solenoid 1B (of valve V1) is de-energized. Oil flow is now to the lower portion of the cylinder.

3. At the end of the cycle, valves V1 and V2 are de-energized allowing no oil to flow to the cylinder.

FUNCTIONAL DESCRIPTION

VALVE V1 controls up or down movement of the cylinder.

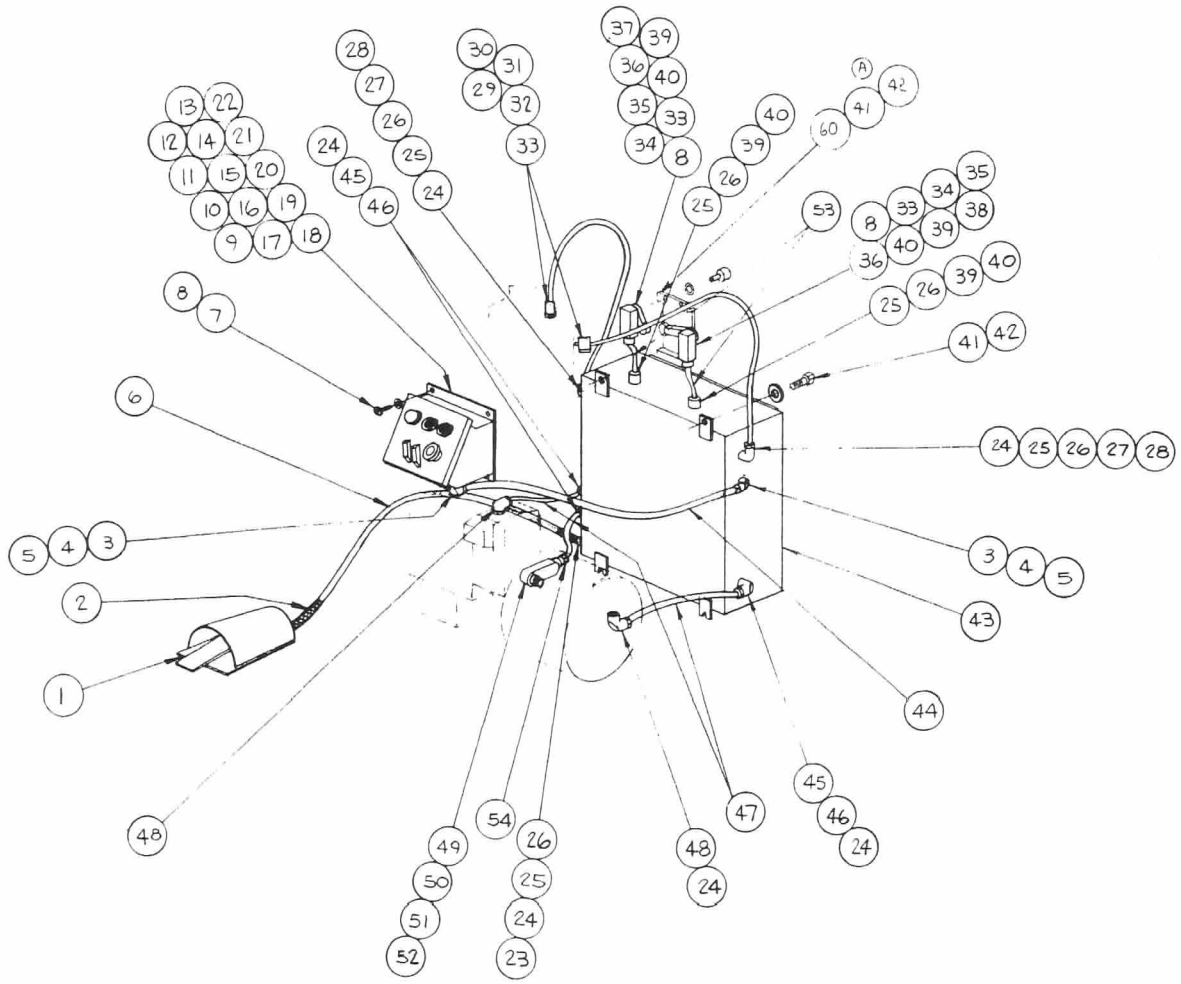
VALVE V2 allows oil to return to the reservoir.

RELIEF CARTRIDGE RC-1 sets maximum pressure for the work stroke.

NOTE: THE DIAGRAM IS SHOWN WITH THE SYSTEM OFF OR IN THE IDLE POSITION WITH THE MOTOR (M) RUNNING.

ELECTRICAL ASSEMBLY

036 3300601



ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY USED ON ASSEMBLY
1	3303002	FOOTSWITCH	1
2	3315112	CORD GRIP	1
3	3315139	ST ELBOW 3/4	2
4	3315157	SEAL RING	2
5	3315067	CHASE NIPPLE 3/4	2
6	3316903	FLEX CORD 16/3	8
7	20B XX10C0102	BUTTON HEAD SOCKET CAP SCREW ..	4
8	4902006	LOCKWASHER #10 HC	8
9	036 3307002	PUSH BUTTON ENCLOSURE	1
10	3303079	2 POSITION SELECTOR SWITCH	1
11	3303122	4 POSITION SELECTOR SWITCH	1
12	036 3332001	2 POSITION SELECTOR PLATE	1
13	036 3332002	4 POSITION SELECTOR PLATE	1
14	3302030	PILOT LIGHT	1
15	655 3332012	LEGEND PLATE	1

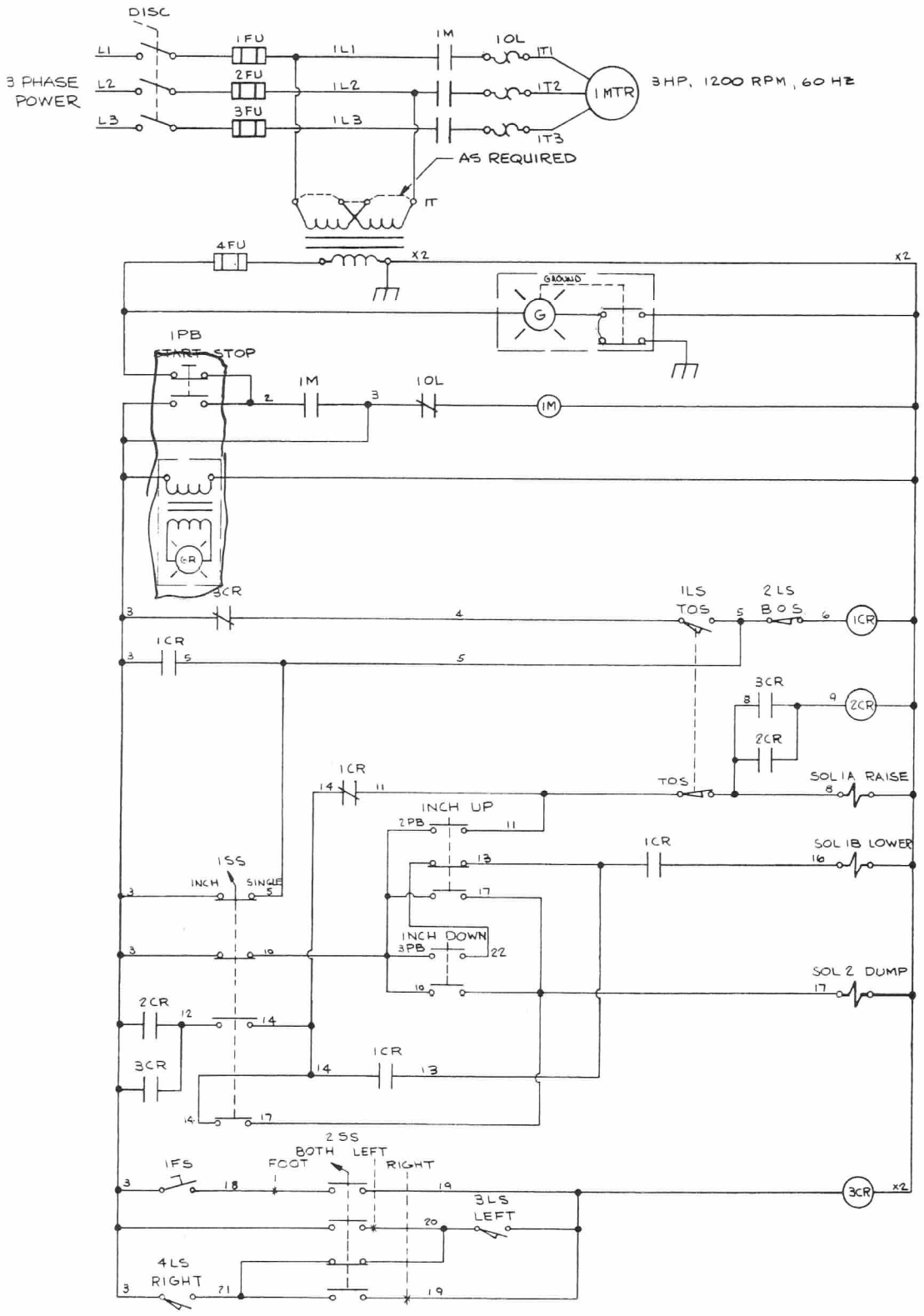
ELECTRICAL ASSEMBLY

036 3300601

ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY USED ON ASSEMBLY
16	3303058	PUSH BUTTON OPERATOR - BLACK ..	2
17	3303040	PUSH-PULL OPERATOR	1
18	6503121	LEGEND PLATE	1
19	3332019	LEGEND PLATE - UP	1
20	3332020	LEGEND PLATE - DOWN	1
21	3303075	CONTACT BLOCK NO/NC	4
22	3303088	CONTACT BLOCK NO	4
23	3315210	CORD GRIP	1
24	3315101	SEAL RING 1/2	9
25	3315205	LOCKNUT	5
26	3315073	INSULATING BUSHING	5
27	3315114	CORD GRIP	2
28	3315118	BUSHING	2
29	3305081	LIMIT SWITCH	2
30	20B XX10C0508	BUTTON HEAD SOCKET CAP SCREW ..	4
31	067 3340003	LIMIT SWITCH TAG - 3	1
32	067 3340004	LIMIT SWITCH TAG - 4	1
33	29A XXXOX0108C	DRIVE SCREW	8
34	3305038	LIMIT SWITCH	2
35	3305050	ACTUATOR	1
36	22A XX10C1102	ROUND HEAD MACHINE SCREW	4
37	067 3340001	LIMIT SWITCH TAG - 1	1
38	067 3340002	LIMIT SWITCH TAG - 2	1
39	3315111	CORD GRIP	4
40	3315116	BUSHING	4
41	20B 0516C0508	BUTTON HEAD SOCKET CAP SCREW ..	4
42	4902021	LOCKWASHER 5/16 HC	4
43	036 3307701	DISCONNECT BOX ASSEMBLY	1
44	3314914	ST CONDUIT 3/4	3
45	3315128	ST PULLING ELBOW 1/2	3
46	3315008	CHASE NIPPLE	3
47	3314907	ST CONDUIT 1/2	5
48	3315080	ST INSULATING ELBOW 1/2	2
49	3315057	UNILET	1
50	3315043	COVER	1
51	3315155	GASKET	1
52	3315088	CLOSE NIPPLE 1/2	1
53	3316901	FLEX CORD 16/4	2
54	3315224	ST INSULATING CONNECTOR 1/2 ...	1
55	3316928	RED 16 AWG WIRE*.....	110
56	3316943	BLACK 12 AWG WIRE*.....	15
57	3316946	WHITE 16 AWG WIRE*.....	20
58	3316930	GREEN 14 AWG WIRE*.....	10
59	3305067	ACTUATOR	1
60	036 1106002	LIMIT SWITCH COVER	1

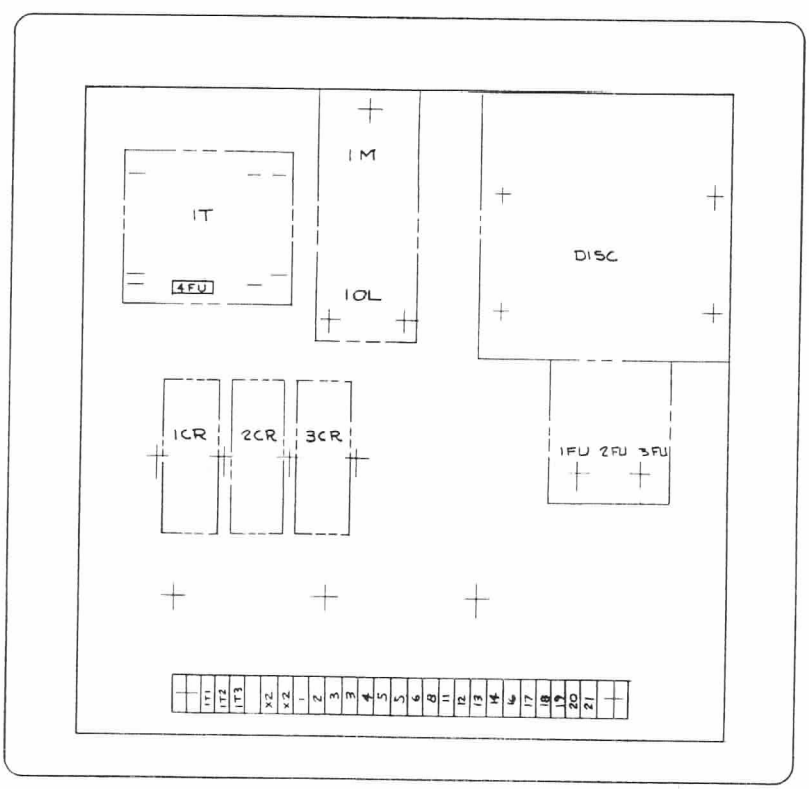
(*Incicates part not shown on drawing)

ELECTRICAL DIAGRAM



ELECTRICAL DIAGRAM

SYM	PART NUMBER	DESCRIPTION	QTY.
DISC	3331008	DOOR LATCH - SQUARE D #9422 (M4 kit)	1
DISC	3331004	OPERATING MECHANISM - SQUARE D #9422	1
DISC	3331010	DISCONNECT SWITCH - SQUARE D #9422-RC3	1
1M	3304013	MOTOR STARTER - FURNAS #14CF32AA	1
10L	3323017	HEATER ELEMENT - FURNAS #H-26	3
10L	3323011	HEATER ELEMENT - FURNAS #H-33	3
4FU	3318019	FUSE - FNM-16/10	1
1,2,3FU	3318010	FUSE - FUSETRON 600V FRS-15A	3
1T	3311042	TRANSFORMER 230/460V - IMPERVITRAN #B150BTZ13-JK	1
1T	3311047	TRANSFORMER 208V - IMPERVITRAN #B150MZ13-JK	1
1T	3311048	TRANSFORMER 575V - IMPERVITRAN #B150WZ13-JK	1
1T	3311049	TRANSFORMER 380V - IMPERVITRAN #B150RZ13-JK	1
1T	3311050	TRANSFORMER 415V - IMPERVITRAN #B150DZ13-JK	1
1,2,3CR	3312018	RELAY - POTTER & BRUMFIELD #KUP14A15 120V	3
1,2,3CR	3333003	BASE - POTTER & BRUMFIELD #27E121 RELAY SOCKET	3
	068 3308003	TRACK	1
	3308115	TERMINAL BLOCK - CURTIS #2PSWTC	14
1,2LS	3305038	LIMIT SWITCH - MICRO SWITCH #1LS9	2
3,4LS	3305081	LIMIT SWITCH - GOULD #MS01503-02	2
1FS	3303002	FOOT SWITCH - SQUARE D #9002-AW-17	1
1PB	3303040	START-STOP PUSH BUTTON - FURNAS #52PA3G2WJU	1
2PB	3303058	PUSH BUTTON - FURNAS #52PA8A1	1
2PB	3303075	CONTACT BLOCK - FURNAS #52BAA	1
2PB	3303088	CONTACT BLOCK - FURNAS #52BAK	1
3PB	3303058	PUSH BUTTON - FURNAS #52PA8A1	1
3PB	3303088	CONTACT BLOCK - FURNAS #52BAK	2
1SS	3303079	SELECTOR SWITCH - FURNAS #52SB2AAB	1
1SS	3303075	CONTACT BLOCK - FURNAS #52BAA	2
2SS	3303122	SELECTOR SWITCH - FURNAS #52SB2HAB	1
2SS	3303075	CONTACT BLOCK - FURNAS #52BAA	2
1MTR	3301065	MOTOR - 3HP, 1200 RPM, 230/460/3/60	1
1MTR	3301089	MOTOR - 3HP, 1200 RPM, 208/3/60	1
1MTR	3301062	MOTOR - 3HP, 1200 RPM, 575/3/60	1
1MTR	3303077	MOTOR - 3HP, 1200 RPM, 380/3/50	1
1MTR	3303130	MOTOR - 3HP, 1200 RPM, 415/3/50	1



ELECTRICAL DIAGRAM

PULL TO START - PUSH TO STOP

START - Motor starter (1M) is energized, hydraulic pump motor starts.

STOP - Motor starter (1M) is de-energized, hydraulic pump stops and control circuit is de-activated.

STROKE SELECTOR SWITCH (1SS)

INCH - Allows ram activation by push buttons 2PB (up) and 3PB (down). Ram stops when push buttons are released.

SINGLE - Allows ram activation by foot switch (1FS) or gauge switches 3LS and 4LS. Ram stops when foot switch is released on down stroke. Ram automatically returns to top of stroke when bottom of stroke switch (2LS) has been actuated.

OPERATION MODE SELECTOR SWITCH (2SS)

FOOT - Foot switch (1FS) actuates ram travel. Release foot switch (1FS) on down travel to stop ram movement. Actuation of bottom of stroke switch (2LS) automatically returns ram to top of stroke. Actuation of top of stroke switch (1LS) stops ram travel. Foot switch (1FS) must be released and re-activated to start next cycle.

BOTH - Left gauge switch (3LS) and right gauge switch (4LS) must both be activated to actuate ram travel. Cycle control is same as with foot switch (1FS).

LEFT - Left gauge switch (3LS) alone actuates ram travel. Cycle control is same as with foot switch (1FS).

RIGHT - Right gauge switch (4LS) alone actuates ram travel. Cycle control is same as with foot switch (1FS).

"UP" PUSH BUTTON (2PB)

Allows ram to be jogged up until top of stroke switch (1LS) disengages control circuit.

"DOWN" PUSH BUTTON (3LS)

Allows ram to be jogged down until bottom of stroke switch (2LS) disengages control circuit.

Activation of both up (2PB) and down (3PB) simultaneously will cause ram to raise.