

# PEXTO

No. 3416

No. 3418

## ROLL FORMING MACHINES

OPERATING INSTRUCTIONS AND PARTS IDENTIFICATION



**ROPER WHITNEY**

2833 HUFFMAN BLVD., ROCKFORD, IL 61103-3990 \* 815/962-3011 \* FAX 815/962-2227

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# SPECIFICATIONS

## STANDARD MACHINE

	<b>3416</b>	<b>3418</b>
Capacity Mild Steel	14-16 Ga.	16-18 Ga.
Length of Rolls	36"	48"
Diameter of Rolls	3"	3"
Roll Speed RPM	26	26
Roll Speed SFPM	20.4"	20.4"
Working Height	34"	34"
Shipping Weight	1010 lbs.	1150 lbs.

Rear roll has 3 full length longitudinal grooves. 3/8, 1/2 and 5/8 wiring grooves in the bottom and rear rolls. All three rolls drive. Welded cabinet type stand. Positive chain drive. Ball bearing drive shaft.

## STANDARD ELECTRICS

3/4 HP parallel shaft reversible motor with brake and gearhead at 420 rpm. Wired for either 230 volts or 460 volts, 3 phases, 60 hz.

Control panel with push-pull button for on-off 115 volts to control the system. Selection push buttons for forward or reverse rotation. Indicating lights of 1) red for 115 volts into control, 2) amber light when rolls are rotating (forming), and 3) white and blue lights indicating direction of the roll rotation.

Anti-trip footswitch to actuate forming roll rotation, and push button "off" will override for an emergency shutdown.

## OPTIONAL FEATURES

Plain rolls with no grooves.  
34 rpm or 45 rpm roll speed.



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**ROPER WHITNEY COMPANY**  
**SAFETY RULES**  
**3416 AND 3418**

**1. WARNING:**

**Electrical Danger:** Misuse or improper installation of machinery connected to a source of electricity may result in accidental shock that could cause injury or death. Installation must conform to National Electric Code (Article 250 - Grounding, etc.)

Electrical connections must be made by a trained and qualified electrician. Electrical characteristics shown on motor plate and control panel must match the power source; and all electrically powered equipment must be grounded.

**2. WARNING:**

**Mechanical Danger:** The power driven forming rolls will rotate in either a clockwise or counter-clockwise direction. Never place any part of the body including loose clothing near or onto the rotating rolls. (KEEP HANDS AWAY). Failure to comply will lead to personal body injury.

3. Never clean forming rolls while rolls are rotating -- turn power off to clean rolls.
4. Machine to be operated by authorized personnel who have been trained by their supervisor with the working and safety features of the machine, and by reading and understanding the Operator's Manual.
5. Do not operate power roll former without reading Operator's Manual and without proper supervisory instructions.
6. Perform all installation and setup operations before applying power for electrical start-up.
7. Never operate machine with any guard removed; i.e., all required guarding to be installed and effective. Do not override the safety features of the equipment. Do not remove, paint over, alter, or deface any machine-mounted warning and instruction plates and signs.
8. Never leave machine running unattended. When not in use, turn off electrical power.
9. Never adjust machine with power on.
10. Avoid accidental start-up.
11. Do not use machine if servicing is required.
12. Use safety glasses and required protective tools.
13. Keep work areas clean and in proper order.
14. Be alert to all potential hazards. Notify your supervisor whenever you feel there is a hazard involving the equipment or the performance of your job.

BEFORE INSTALLING THIS ROLL FORMING MACHINE, READ AND UNDERSTAND THIS MANUAL AND "SAFETY REQUIREMENTS FOR THE CONSTRUCTION, AND CARE OF USE OF THE ROLL FORMING MACHINE".

## INSTALLATION

### RECEIVING

Immediately upon receiving the roll forming machine, check it very carefully for damage or loss of parts in transit. Since all equipment is sold F.O.B., the Roper Whitney corp. plant, our responsibility for transit damage ceases when the transportation company signs the bill of lading indicating that it has received all of the items listed on the bill of lading in good condition. Report any loss or damage to the delivering carrier promptly to insure proper handling of your claim.

Question - Distributor or Roper Whitney -- Shortages not appearing on the bill of lading or discrepancies between equipment received and the order should be reported to Roper Whitney Corp. immediately.

### LEVELING

Be sure machine is solid and reasonably level on all four points so there is no camber or twist to the machine.

If machine is shipped on a pallet, be sure to remove from pallet and place directly on flooring.

Machine must be securely bolted to floor. Bolt holes are provided in base of machine.

### CLEANING

In spite of precautions taken in preparing the shear for shipment, dirt and foreign material may accumulate on machine and other parts during transit, and can cause considerable damage unless thoroughly cleaned. It is extremely important to inspect and thoroughly clean off any dirt and foreign material that may have accumulated. DO NOT attempt to blow dirt out with an air hose as this may force some foreign material into undesirable areas. Remove rust proofing compound with an acceptable solvent.

## LUBRICATION

The specially compounded lubricants or their equivalent as specified on the data plate furnished with your machine and the lubrication chart must be used. See Figure 1 for lubrication points.

### LUBRICATION CHART

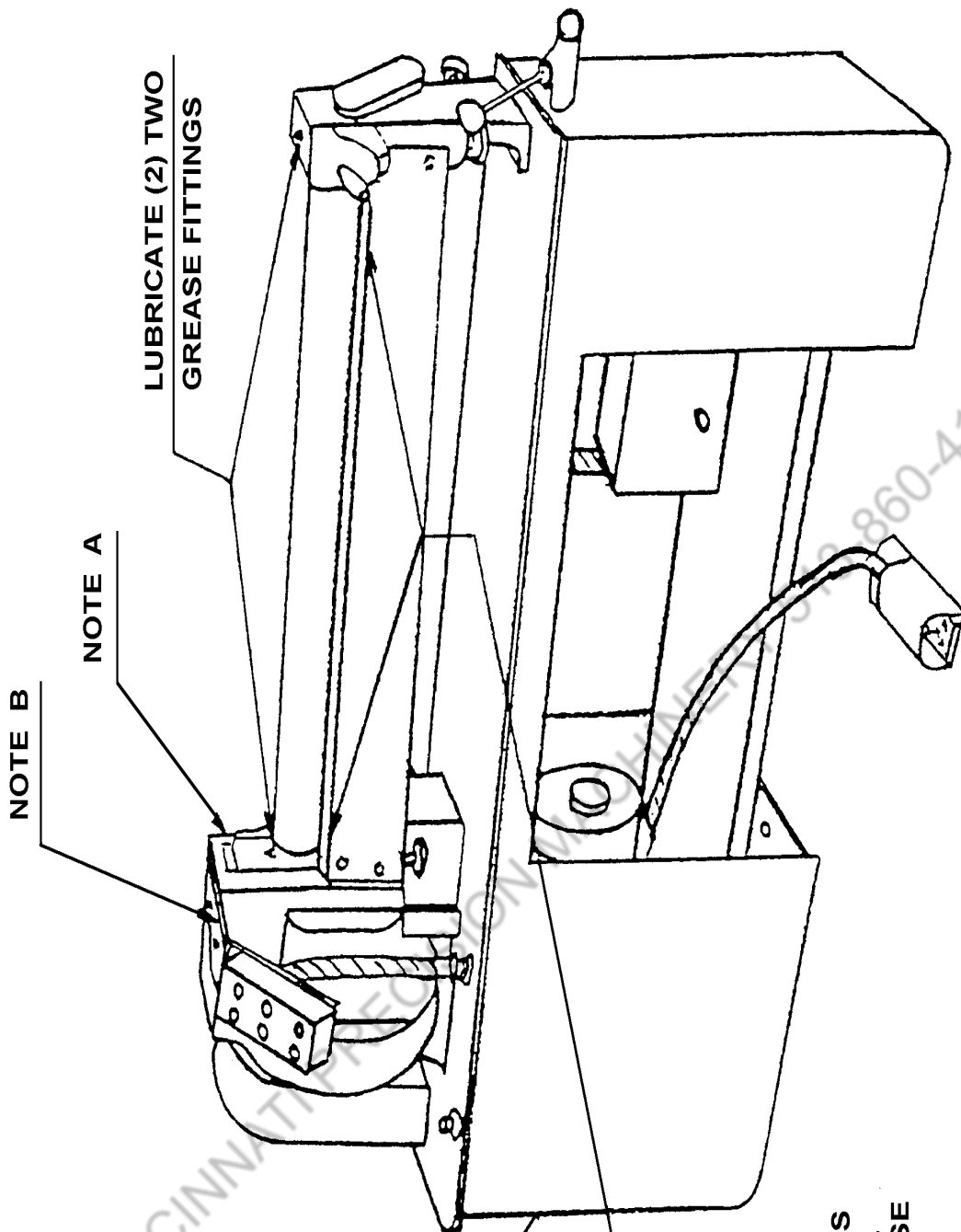
COMPONENT	LUBRICANT		INTERVAL
	Mobile	Texaco	
BEARING BLOCKS	*MOBILE GREASE SPECIAL	*TEXCLAD 2	40 HRS.
DRIVE CHAIN			MONTHLY

\* FOR REFERENCE - ANY EQUIVALENT IS ACCEPTABLE

## CONNECTING ELECTRICAL SERVICES

1. **WARNING:** Electrical Danger - Misuse or improper installation of machinery connected to a source of electricity may result in accidental shock that could cause injury or death. Installation must conform to National Electric Code (Article 250 - Grounding, etc.)
2. **WARNING:** Electrical connections must be made by a qualified electrician. Electrical characteristics shown on motor plate and control panel must match the power source; and all electrically powered equipment must be grounded.
3. **CAUTION:** Electricians checking direction of rotation should be cautioned not to operate the machine until it has been thoroughly checked, cleaned, leveled, and lubricated. For wiring diagram see Figure 7.

# LUBRICATION CHART



REMOVE INSPECTION  
PLATE TO  
LUBRICATE CHAIN

LUBRICATE  
(2) TWO GREASE  
FITTINGS BEHIND GUARD

NOTE A LUBRICATE  
REMOVE BACK SIDE ACCESS  
PLATE. LOWER BACK ROLL  
TO REACH (4) FOUR GREASE  
FITTINGS

NOTE B LUBRICATE  
REMOVE TOP ACCESS PLATE  
TO REACH (3) THREE GREASE  
FITTINGS

FIGURE - 1

**CAUTION: DO NOT OPERATE MACHINE WITHOUT PROPER INSTRUCTIONS.**

Observe all safety rules and regulations. Become familiar with controls and intended operation before using. MACHINE MUST BE SECURELY BOLTED TO FLOOR and connected to correct source of voltage, phase and cycles.

**WARNING:** Electrical danger -- misuse of improper installation of machinery connected to a source of electricity may result in accidental shock that could cause injury or death. Installation must conform to National Electric Code (Article 250 - Grounding, etc.) Ground all electrically powered equipment. Machine to be operated by qualified personnel only.

**WARNING: KEEP HANDS AND FINGERS CLEAR OF ROLLS AT ALL TIMES.**

Provide point of operation guarding as required to avoid injury. The exact guard needed will be governed by many factors and may require change when going from one cylinder to another. All required guarding to be installed and effective before using. Some of the factors involved are: Diameter of cylinder, length of cylinder, type and gauge of material, direction of feed, number of passes through rolls, etc. Do not allow clothing or any part of the body (fingers, hands, arms, hair, etc.) to come in contact with the rolls while the machine is operating. Do not use machine if servicing is required. Use safety glasses and protective tools when required. Never adjust machine with power on. Be alert to all potential hazards.

Roll Forming Machines are intended for forming a flat sheet of metal into cylinders of various diameters. Capacity ratings given are based on forming annealed mild steel the full length of the rolls. Definite capacities depend upon the diameter and length of cylinder to be formed and the number of passes through the rolls to obtain the desired diameter of cylinder. Stiffness of material and uniformity desired are factors that must also be considered. When a Roll Forming Machine is overloaded, there will be excessive deflection at the center of the rolls resulting in cylinders that are bulged in the center.

Become familiar with the location and operation of all controls before using machine. Electrical requirements (voltage, phase and frequency) are indicated on the disconnect box and connection to the correct power source should be made and checked by a qualified electrician.

**WARNING:** Electrical danger -- misuse or improper installation of machinery connected to a source of electricity may result in accidental shock that could cause injury or death. Installation must conform to National Electric Code (Article 250 - Grounding, etc.) The Roll Forming Machine electricians include a control panel, forward and reversing relays, brake, and footswitch. The control panel is located on the left hand housing as shown in Figure 3. A close-up of the control panel is shown in Figure 6.

## CONTROLS

**ON-OFF BUTTON** ----- Connects 115 vac to the control when the light goes on. The 115 vac is disconnected when this button is pushed, and the red light goes off. The electric circuit will permit the off button to override the footswitch.

**FORWARD & REVERSE BUTTONS** ----- Selects the proper relay to control motor rotation. These two buttons are mechanically and electrically interconnected so that **EITHER** forward **OR** reverse is switched. Both directions have respective white and blue lights that indicate the forming roll rotation, i.e., white denotes forward and blue is reverse.

**FORMING LIGHT** ----- The forming light has an amber color, and is on when the forming rolls rotate from the footswitch actuation. Conversely, upon switching off the footswitch, the forming light is turned off.

The forward and reversing relays are located in the reversing magnetic starter box, and will not require service nor attention by the machine operator.

The brake is part of the electric motor, and will quickly stop the forming rolls when the motor power is switched off. The motor power can be switched off by either the footswitch or the panel push button switch. Upon switching the motor power to “on” the brake will automatically release and allow forming roll rotation.

The footswitch has two anti-trip features -- 1) the foot pedal is covered to prevent someone from stepping on the switch, and --2) the operator’s foot must extend entirely to engage a “toe” clamp to release the foot pedal, allowing actuation of the electric switch. Downward foot movement, therefore, switches electrical power to the motor; and upward foot movement switches the motor power off. The “toe” clamp will reset to prevent anti-trip when the operator’s foot is removed from the switch.

The gearmotor is mounted on a pivoting bracket. The chain drive adjustment is properly set and should not be changed. This adjustment is used when removing chain or sprockets. Do not remove chain guard cover; it must be in position when operating roll forming machine.



## OPERATION OF THE ROLL BENDER

The roll bender machine is designed to initially pinch/grip the sheet material to be formed between the upper roll (not adjustable) and the lower roll (adjustable upward or downward manually by means of adjusting screws located in the housings at each end of the lower roll).

The rear (bending) roll is adjustable by means of adjusting screws located in the housings at either end of the rear roll.

Adjustment upward or downward, on an inclined plane, moves the bending roll toward or away from the material passing through the pinch (upper and lower) rolls, thus controlling the radius of the cylinder being formed.

Longitudinal grooves in the rear roll will assist in starting the curvature of the material up and over the rear roll.

Rear roll position indicators are located at each end of the roll to enable the operator to maintain parallel.

Note: The markings on the indicators are reference marks only and do not indicate any specific radius, diameter, measurement, etc. and are to be used only as an aid in determining additional adjustments from a previous position.

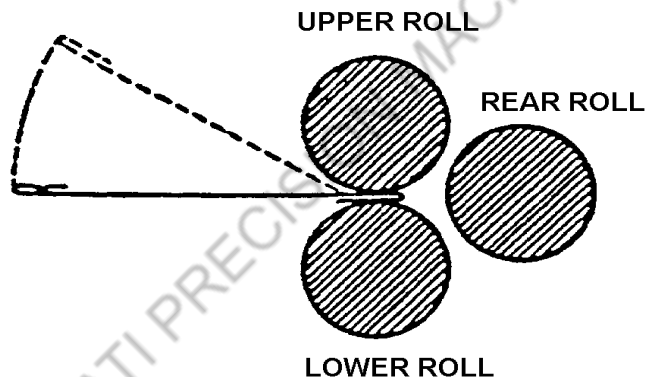
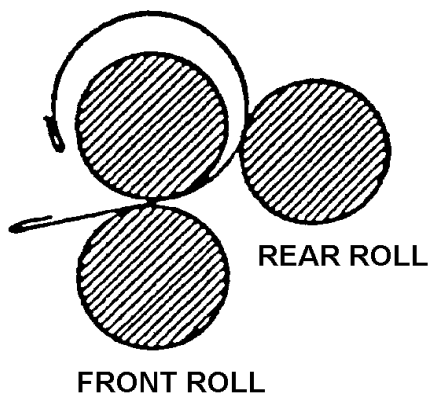


FIGURE - 2

Cylinders are formed by inserting the sheet between the gripping rolls as shown in the above illustration.



Grooves are provided in the right hand end of the lower and rear rolls for forming cylinders with a wired edge.

Lubrication and visual inspection at regular intervals are required for good maintenance. Use machine for its intended purpose only and always within rated capacity. Do not operate with guards removed nor when inspection indicates possibility of malfunction. Correct operation is a necessary safety precaution and is required to avoid operator injury. Gears, chain drive and motor are fully guarded for operator safety. Never leave machine running unattended. Keep work area clear and in proper order. Parts list, drawings, and wiring diagrams are included with these instructions. For repair parts, when needed, give complete Model No. and Serial No. as listed on the machine nameplate. Identify parts wanted by description and reference to parts list and drawings.

CINCINNATI PRECISION MACHINERY 513-860-4133

## OPERATING PROCEDURE

1. Select forward rotation by depressing “Forward” button on control panel (see Fig. 6). White light will be illuminated! NOTE: This only determines the direction of rotation the rolls will turn when rotation is actuated by the footswitch. Always select direction of rotation when rolls are not rotating.
2. Insert the sheet material to be formed between the upper and lower rolls. Sheet material should protrude through the upper and lower rolls until it is in contact with the rear (bending) roll. NOTE: The amount of material from the gripping point between the upper and lower rolls to the contact point with the rear roll will usually result in a flat area on the leading edge of the cylinder. To minimize this flat area (see paragraph #6).
3. Adjust the lower roll upward to slightly pinch the sheet material, making sure the pressure is approximately the same at both ends. Uneven pressure may cause the material to feed through at an angle rather than straight through.
4. Adjust the rear (bending) roll upward until the material is curved upward forming an arc. NOTE: It is advisable to use scrap material of the same gauge thickness as the intended cylinder to experiment with until the proper cylinder diameter has been achieved. Several adjustments of the rear roll position may be required to complete a cylinder of acceptable dimensions.
5. To initiate rotation of the rolls, depress the footswitch. (Amber light will be illuminated). This will cause the material to be fed through the rolls. Before activating rotation be sure the sheet material is aligned properly.
6. Preforming of the sheet material by inserting the leading edge of the material between the upper and lower rolls (keep edge of material perpendicular to the rolls) then bending the sheet by hand upward and slightly around the upper roll will greatly reduce the flat area mentioned in (paragraph #2). (see Figure - 2).
7. To stop roll rotation, release the footswitch with an upward movement of the operators foot. A very quick stop will occur, because the engaging brake (nearly simultaneously with the motor power being switched off) will stop all rotating components. NOTE: For any Emergency Stop -- (roll forming problem, parts of body or clothing become entangled in the rolls). The rotating rolls will immediately stop, either from an upward movement at the footswitch - or depressing the “OFF” mushroom button having a red light.

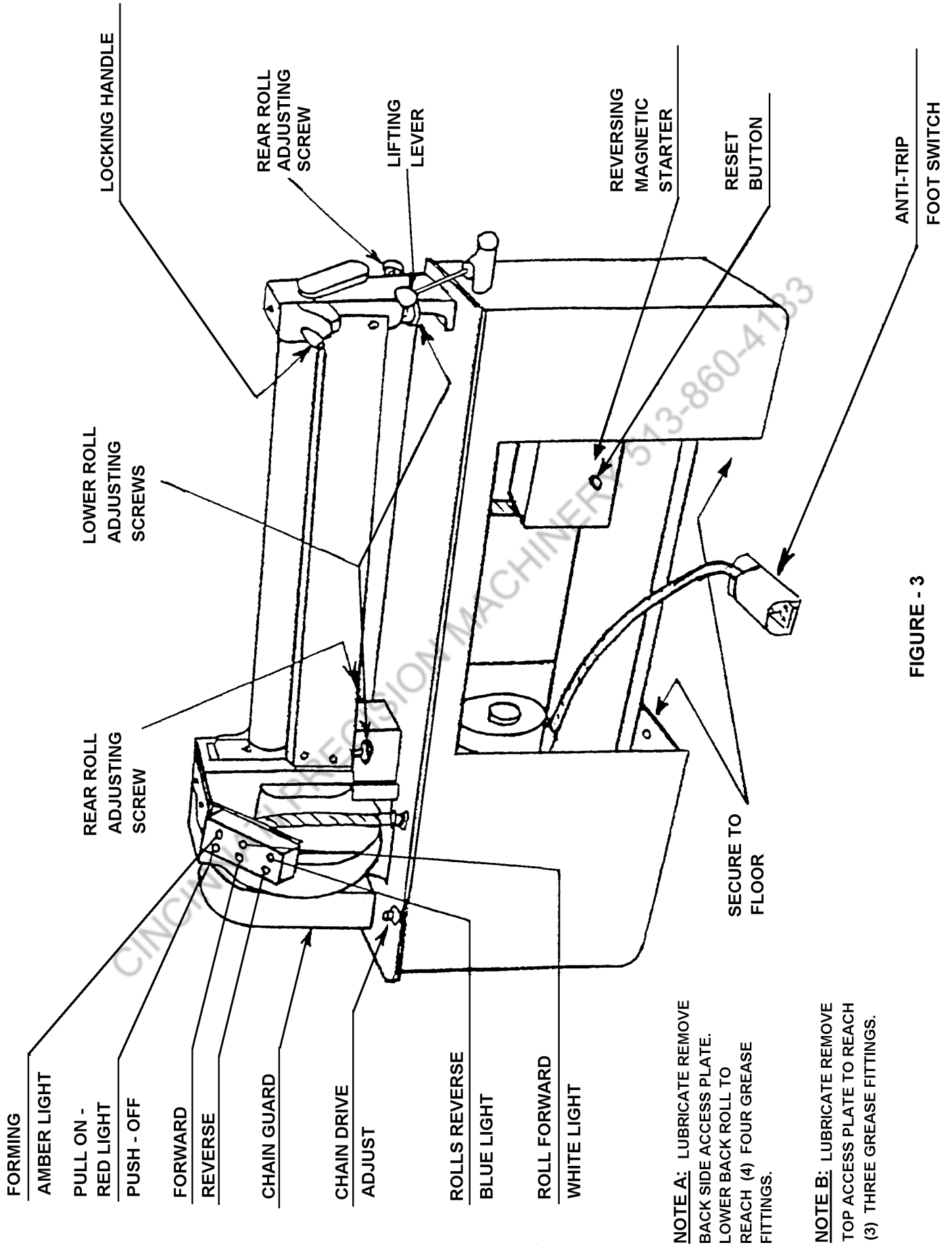


FIGURE - 3

## 3416-3418 FORMING MACHINE PARTS LIST

### REFER TO PARTS IDENTIFICATION CHARTS

INDEX	PART #	DESCRIPTION	INDEX	PART #	DESCRIPTION
1	767490180	L.H. Housing	26	767630044	Spacer
2	267940025	R.H. Housing Assy	27	767650045	Pivot Screw
3	767220178	Housing Cover	28	(see below)	Upper Roll
4	767170022	Rocking Box	29	(see below)	Lower Roll
5	767170023	Roll Box	30	(see below)	Rear Roll
6	767380024	Large Gear	31	(see below)	Cam Shaft
7	767240025	Links	32	767680171	Drive Shaft
8	767200182	Pendent Bracket	33	767060015	Floor Stand
9	767210027	Lifting Cam	34	767220056	Cover
10	767220028	Cover	35	767440187	Chain Guard
11	767210029	Handle Socket	36	767160058	Hinge Pin
12	767380031	Comp. Gears	37	767300059	Pointer
13	767380062	Drive Pinion Gear	38	767030060	Adj. Rod
14	767380032	Conn. Gears	39	767160063	Hinge Pins
15	767380033	Idler Gear	40	687204710	Ball Bearings
16	767680034	Upper Gear Shaft	41	767260064	Collar
17	767680035	Lower Gear Shaft	42	767300065	L.H. Scale
18	767030036	Lifting Lever		767300066	R.H. Scale
19	767220037	Cover	43	767460020	Locking Handle
20	767650173	Rear Adj. Screws	44	767160019	Hinge Pin
21	767650175	Front Adj. Screws	45	625012369	Handle Screw
22	767460040	Lifting Handle	46	660011147	Gearbrake Motor
23	767160041	Pin-Rocking Box	47	767200068	Motor Bracket
24	767680042	Idler Shaft	48	687285524	Sprocket
25	767160043	Lever Pin	49	767980183	Chain
			50	687285501	Large Sprocket

3416 STD.

3418 STD.

28	767630007		767630008	Upper Roll
29	767630009		767630010	Lower Roll
30	767630011		767630012	Rear Roll
31	767680005		767680006	Cam Shaft

When ordering Replacement Parts always give Model Number, Letter and Serial Number.

# 3416 - 3418 FORMING MACHINE PARTS IDENTIFICATION CHART

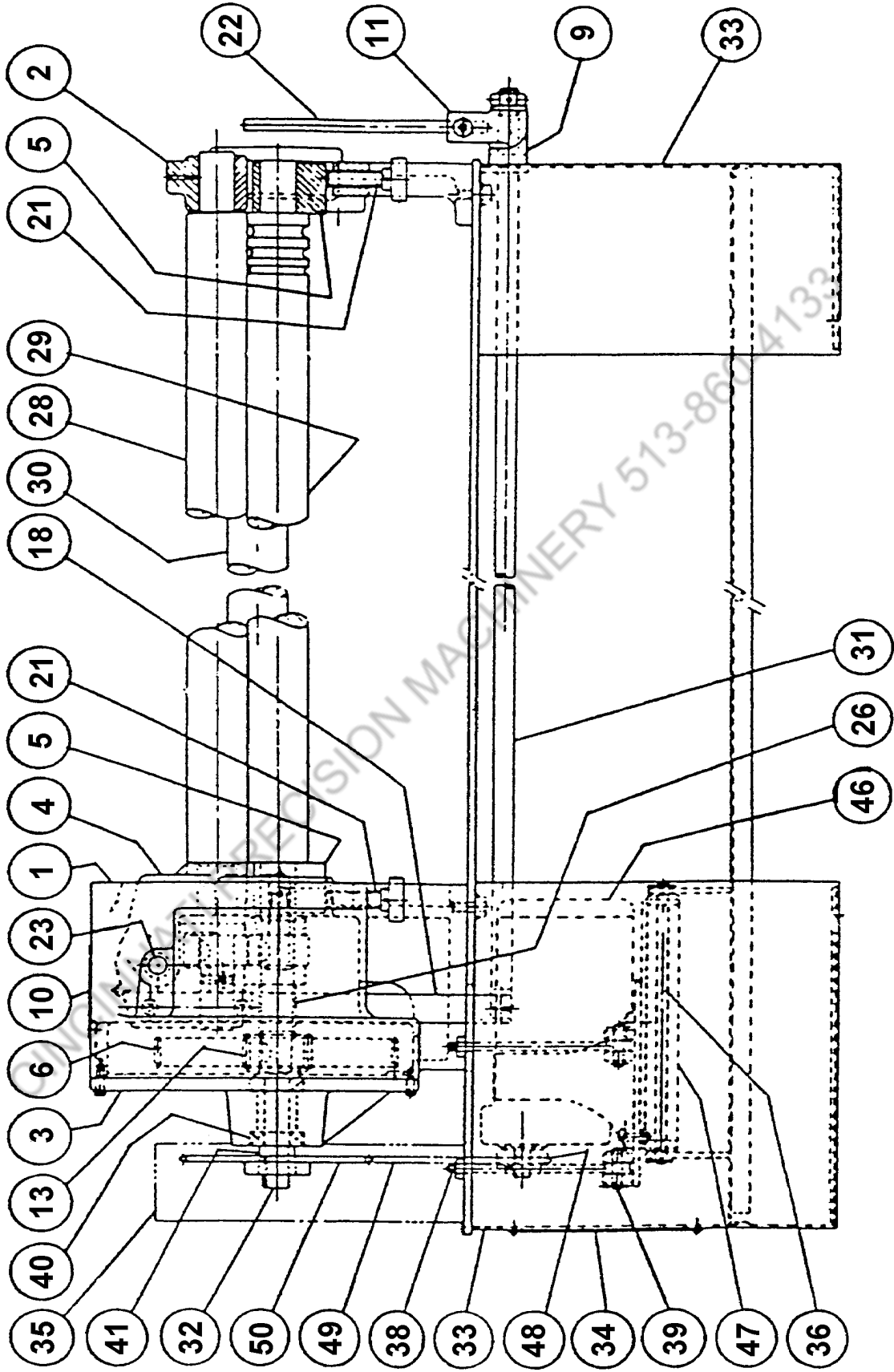


FIGURE - 4

# 3416 - 3418 FORMING MACHINE PARTS IDENTIFICATION CHART

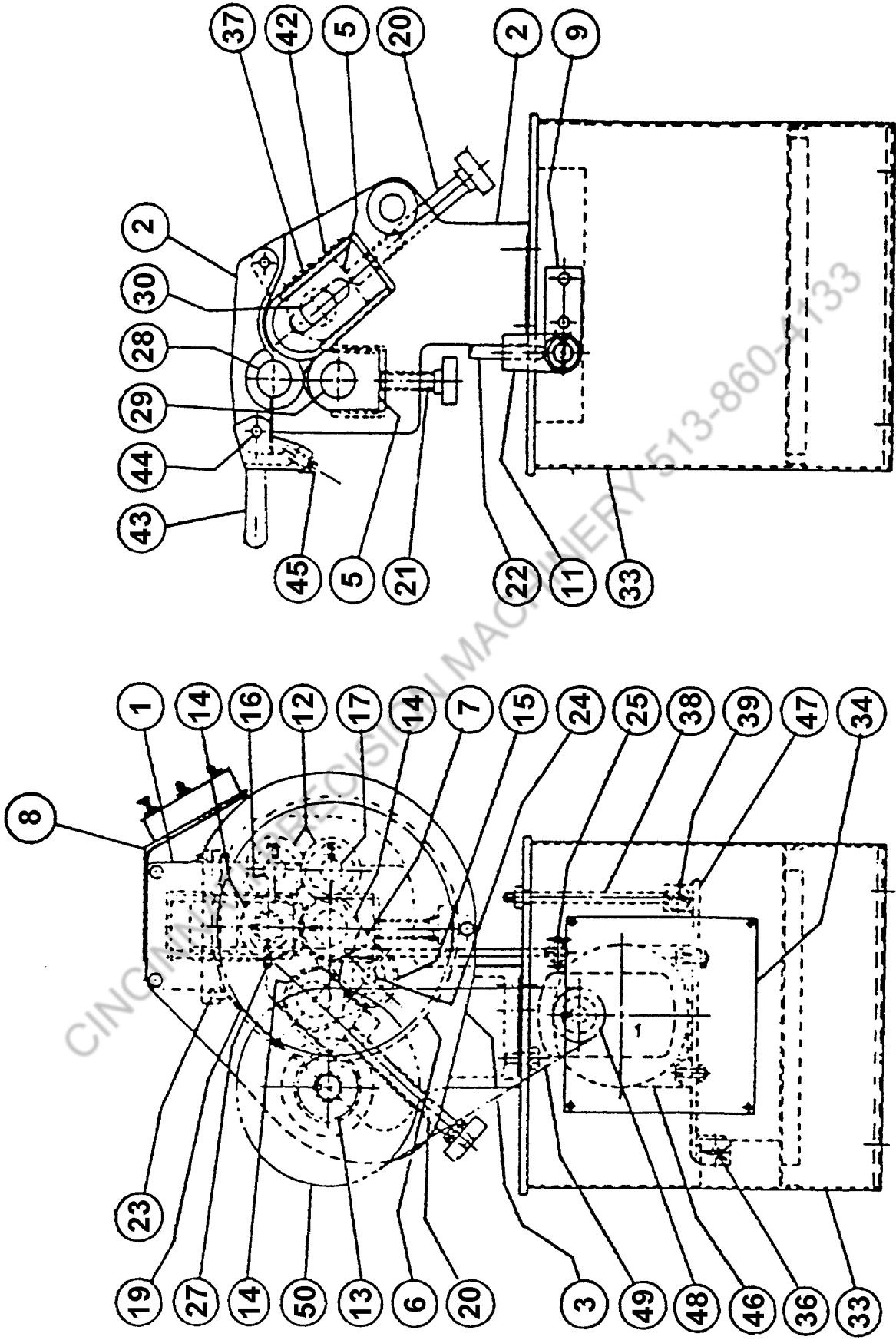


FIGURE - 5

# POWER ROLL BENDER CONTROL

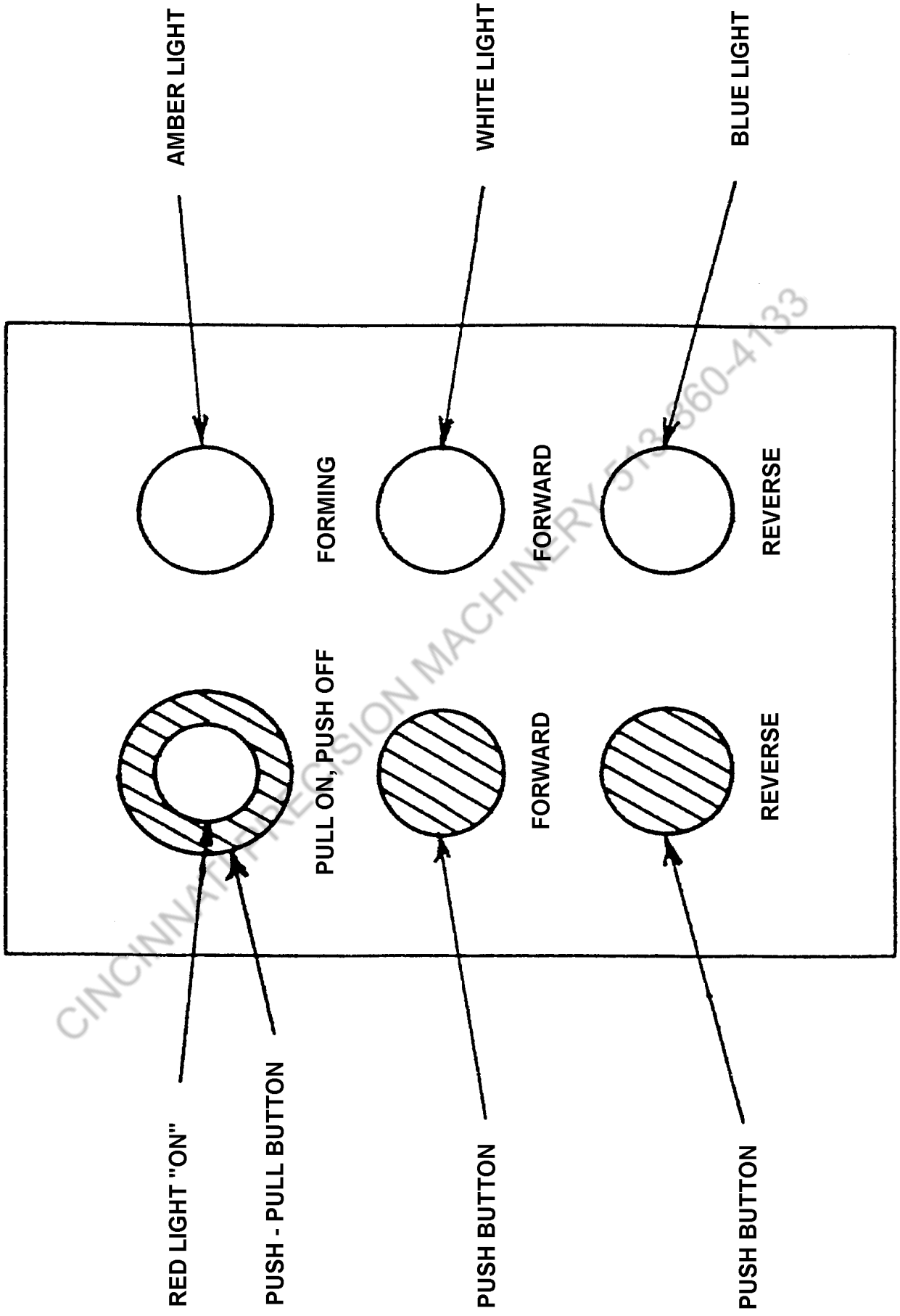
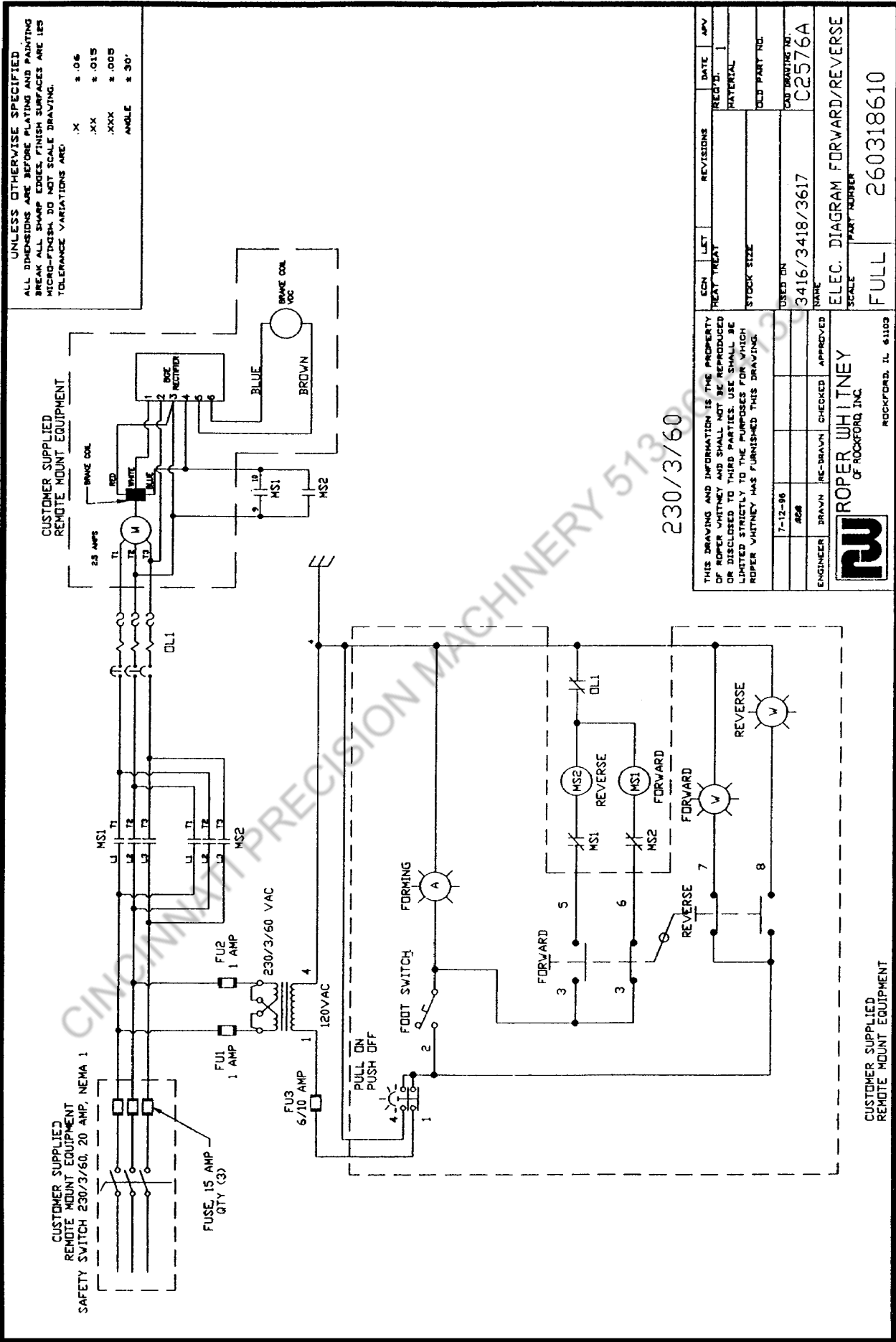


FIGURE - 6



# NO. 3416 & 3418 ELECTRICAL DIAGRAM 230/3/60



UNLESS OTHERWISE SPECIFIED  
 ALL DIMENSIONS ARE BEFORE PLATING AND PAINTING  
 BREAK ALL SHARP EDGES, FINISH SURFACES ARE LBS  
 MICRO-FINISH, DO NOT SCALE DRAWING.  
 TOLERANCE VARIATIONS ARE:

.X	± .06
.XX	± .015
.XXX	± .005
ANGLE	± 30'

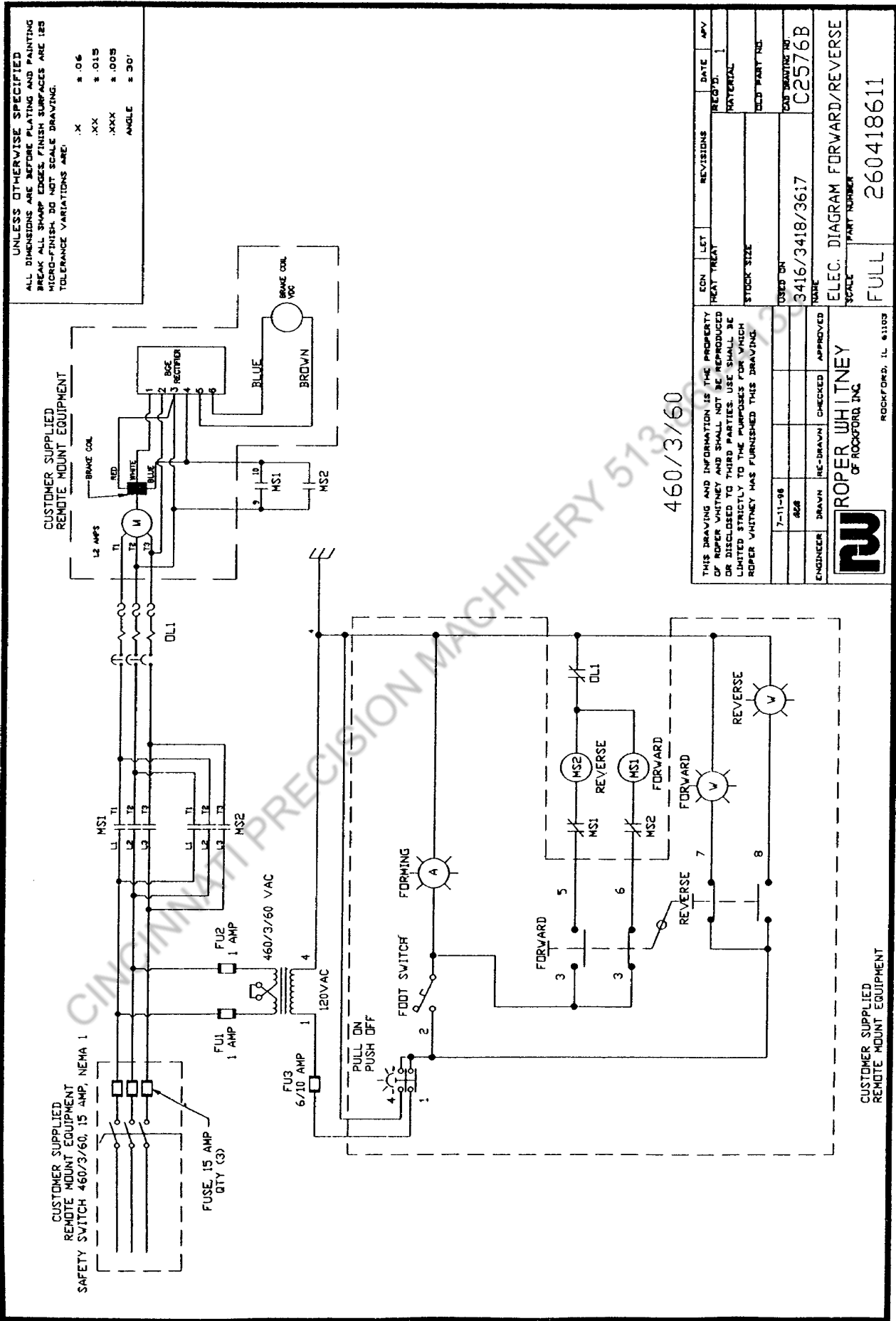
230/3/60

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		RECYTREAT				
		STOCK SIZE		MATERIAL		
		USED ON		OLD PART NO.		
		3416/3418/3617		CART DRAWING NO.		
		NAME		C2576A		
		RE-DRAWN		ELEC. DIAGRAM FORWARD/REVERSE		
		CHECKED		SCALE PART NUMBER		
		APPROVED		FULL 260318610		
		ENGINEER		ROPER WHITNEY		
		DRAWN		OF ROCKFORD, INC.		
		7-12-96		ROCKFORD, IL 61103		
		828				

CUSTOMER SUPPLIED  
 REMOTE MOUNT EQUIPMENT

FIGURE - 7

# NO. 3416 & 3418 ELECTRICAL DIAGRAM 460/3/60

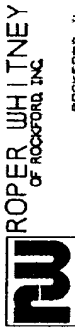


UNLESS OTHERWISE SPECIFIED  
 ALL DIMENSIONS ARE BEFORE PLATING AND PAINTING  
 BREAK ALL SHARP EDGES. FINISH SURFACES ARE 125  
 MICRO-FINISH. DO NOT SCALE DRAWING.  
 TOLERANCE VARIATIONS ARE:

.X	± .06
.XX	± .015
.XXX	± .005
ANGLE	± 30'

460/3/60

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7-11-98	8628	DRAWN	RE-DRAWN	CHECKED	APPROVED	REC'D.
ENGINEER	DRAWN	RE-DRAWN	CHECKED	APPROVED	APPROVED	MATERIAL
STOCK SIZE						DOC PART NO.
USED ON						JOB DRAWING NO.
3416/3418/3617						C2576B
ELEC. DIAGRAM FORWARD/REVERSE						SCALE
FULL						PART NUMBER
FULL						260418611



ROCKFORD, IL 61109

CUSTOMER SUPPLIED  
 REMOTE MOUNT EQUIPMENT

FIGURE - 7A