

Operation and Parts Manual for Hydraulic Shears PH52

SAFETY RULES

- 1 Do not operate machine without proper instructions.
- 2 Perform all installation and set up operations before applying power for electrical start up.
- 3 Machine to be operated by qualified authorized personnel.
- 4 All required guarding to be installed and effective before using.
- 5 Do not use machine if servicing is required.
- 6 Ground all electrically powered equipment.
- 7 Never leave machine running unattended.
- 8 Keep work area clear and in proper order.
- 9 Avoid accidental start-up.
- 10 Use safety glasses and protective tools when required.
- 11 Never adjust machine with power on.
- 12 Be alert to all potential hazards.
- 13 **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.).

OPERATING INSTRUCTIONS: This shear has been tested to capacity at the factory. Do not exceed maximum rated capacity of 16 gauge in mild steel.

WARNING: TO PREVENT SERIOUS INJURY: Never place any part of the body under the cross head or within the blade area unless the motor is turned off.

Never operate, install blades, or perform maintenance work on this shear without proper instruction and without first reading and understanding this manual.

Also, provide all proper protective devices that may be necessary or advisable for any particular use, operation, set-up or service.

INSTALLATION & SET UP FOR CUTTING: To set up shear, remove from skid and place on level foundation. Remove front and rear panels. Loosen all leg-to-bed bolts, items (37) & (38). Loosen two upper bed adjusting screws, item (39) by two complete turns. Then tighten two lower adjusting screws, item (40) only one complete turn. This adjustment will move the bed and lower shear blade away from the cross head blade. Check underneath the bed with feeler gauges to be sure bed is seated on the machined ledges on right and left hand leg at all four corners. If necessary, shim legs at the floor, to level bed on ledges. Bed must be level from end to end and front to back. With bed level in both directions, shear must be securely bolted to foundation. Re-check bed to be sure it is correctly seated on both legs. Now remove upper cylinder hinge pins. Snug down on leg-to-bed bolts, finger tight, to allow take up on adjusting screws, items (39) & (40). Insert a 1/2" diameter rod, approximately 18" long into the hole in the "welded on block" at the lower left side of the lever assembly, item (11). Using this bar as a lever, the cross head can be lowered and raised easily to set the shear blades to the proper clearance. Using feeler gauges, carefully move the bed towards cross head blade by adjusting screws, items (39) & (40), constantly raising and lowering cross head with the help of the 1/2" diameter lever bar. Check clearance along entire length as cross head moves up and down, but do not allow blades to rub together or overlap. Position blades within .0015 to .002 inch. Place a sheet of heavy paper (approx. .005") full length of cut between blades. Move cross head down with lever bar. If shear does not cut paper, move bed blade toward upper blade as necessary by carefully readjusting screws (39) & (40) at either or both sides. If shear cuts paper on ends, but not in the center, it will be necessary to turn cross head tie rod adjusting nut clockwise until paper cuts full length of blades. If shear cuts in center but not on ends, reverse direction of turn on cross head tie rod adjusting nut.

NOTE: This adjustment of cross head tie rod adjusting nut is carefully made at the factory and should not be necessary on a new shear.

When blades are properly adjusted, tighten leg to bed bolts (37) & (38) securely. With cross head blade in upper position, replace cylinders, cylinder hinge pins, and cotter pins.

The above set up is necessary to check for blade clearance or to adjust for cutting at installation, or when changing blades.

ELECTRICAL CONNECTIONS: Must be made by a qualified electrician. When wiring, check to see that the electrical characteristics shown on the motor plate and control panel match the supply source. Decal on the panel indicates voltage, phase, and frequency required. On-Off push buttons to operate the motor are mounted on the control panel. The selector switch for single cycle or continuous cycle is located directly below the start-stop buttons, followed by a ground fault detector "push-to-test" light. The Quick Disconnect is located on top of the control panel. The electrical supply source should come in to the Quick Disconnect, and proper ground connection should be made here.

Motor must rotate counter clockwise when facing the shaft end of the motor indicated by arrow decal on motor housing. Jog motor on and off to determine correct rotation. If motor is running in wrong direction, reverse any 2 incoming lead connections at the Disconnect Box, **CAUTION:** Disconnect power on incoming source before making this change. Motor should now run in proper rotation.

CAUTION: Be sure available electric supply conforms to requirements as noted in the Control Box before applying power.

HYDRAULICS: Rando HD-A hydraulic oil is supplied in the tank. The filler breather cap (70) is removed for shipping and replaced with a pipe plug to avoid oil spillage.

CAUTION: Install breather before operating. Keep tank filled to proper level with a clean hydraulic oil as specified (or equal). Air in hydraulics can prevent correct operation of shear. The lines are bled of air at the factory before shipment and all units have been tested thoroughly. However, it may be necessary at times to bleed the air from the lines. Instructions for this are covered under "Preventative Maintenance."

A flanged pump / motor mount(64) and a flexible coupling (65)connect the pump (66) to the motor (62). A relief valve is provided in the hydraulic circuit and is set at the factory for ample pressure to shear a maximum 16 gauge mild steel sheet. When this pressure is exceeded, the hydraulic oil is directed back to the tank and the cross head will stop at that point, returning to the top of the stroke when the foot switch is released. The hydraulic pressure for the PH37B shear is set at approximately 800 to 850 P.S.I. and the PH52A shear at approximately 1100 to 1150 P.S.I. Adjusting the pressure on the shears should be done by qualified personnel, using a pressure gauge. Before adjusting the pressure, it is advisable to check all installation and mechanical adjustments to be sure that the shear is in proper operating condition. Do not set above recommended working pressure, as serious, irreparable damage may occur. Such action may also result in a loss of warranty. Contact Roper Whitney for information if necessary.

OPERATION OF SHEAR: Maximum capacity is 16 gauge mild steel. Do not exceed rated capacity. Before using check for: proper foundation installation, correct setting of blades, correct electrical connections, correct direction of rotation of motor, remove pipe plug and install filler breather cap on top of tank, check level of hydraulic fluid in sight gauge, and note location and use of all controls. The control panel is located on the left leg, with Start-Stop motor control push buttons. Here also is the selector switch for a single cycle or continuous cycle cutting operation.

Single Cycle-With motor on, depress the foot switch. The cross head will go down, shear the stock, and actuate upper limit switch, sending the cross head back up where the lower limit switch is actuated and the cycle stops. If the operator does not remove pressure on the footswitch, the cross head will still stop. To recycle, the operator must remove his foot and again press the footswitch. If the foot is removed while the cross head is descending, it will return immediately to top of stroke and stop.

Continuous Cycle-Depress footswitch. As long as footswitch is held, the cross head will descend, return and repeat the cycle until footswitch is released. Releasing footswitch during any part of the stroke will automatically return cross head to top of stroke. The limit switches are factory set for full stroke, stopping the cross head before it physically reaches the top of the stroke and before the cross head contacts the stop bracket, item (36), at the bottom of the stroke.

The upper limit switch controls the length of stroke, and when actuated, automatically returns the cross head to the top of the stroke. The length of the stroke may be varied for shearing stock of various widths, by lowering and raising the adjusting screw, item (20). The upper limit switch operating lever may also be adjusted for this purpose if necessary.

Setback gauge for desired cut. For accuracy, trim cut before shearing to gauge, Use care to locate sheet metal positively against back gauge and side gauge. During long cutting runs, an occasional wiping of the blades with an oil soaked cloth will serve to reduce wear and prevent slag or chip buildup. **CAUTION:** Shut off power before oiling blades. Avoid oil or grease on bed or hold down contact points for better holding of sheet during cut.

PREVENTIVE MAINTENANCE: Periodic lubrication is required where indicated (X) on drawing. The hydraulic oil level must be maintained-add Rando HD-A hydraulic oil, or equivalent, when required and make complete oil change approximately every 2000 hours.

NOTE: When tank is drained and refilled, the oil filter, breather filler and tank should be cleaned. When cleaning the tank, use lint free rags.

Hold down adjustment should be maintained so the hold down clamps the material before the blades start to cut.

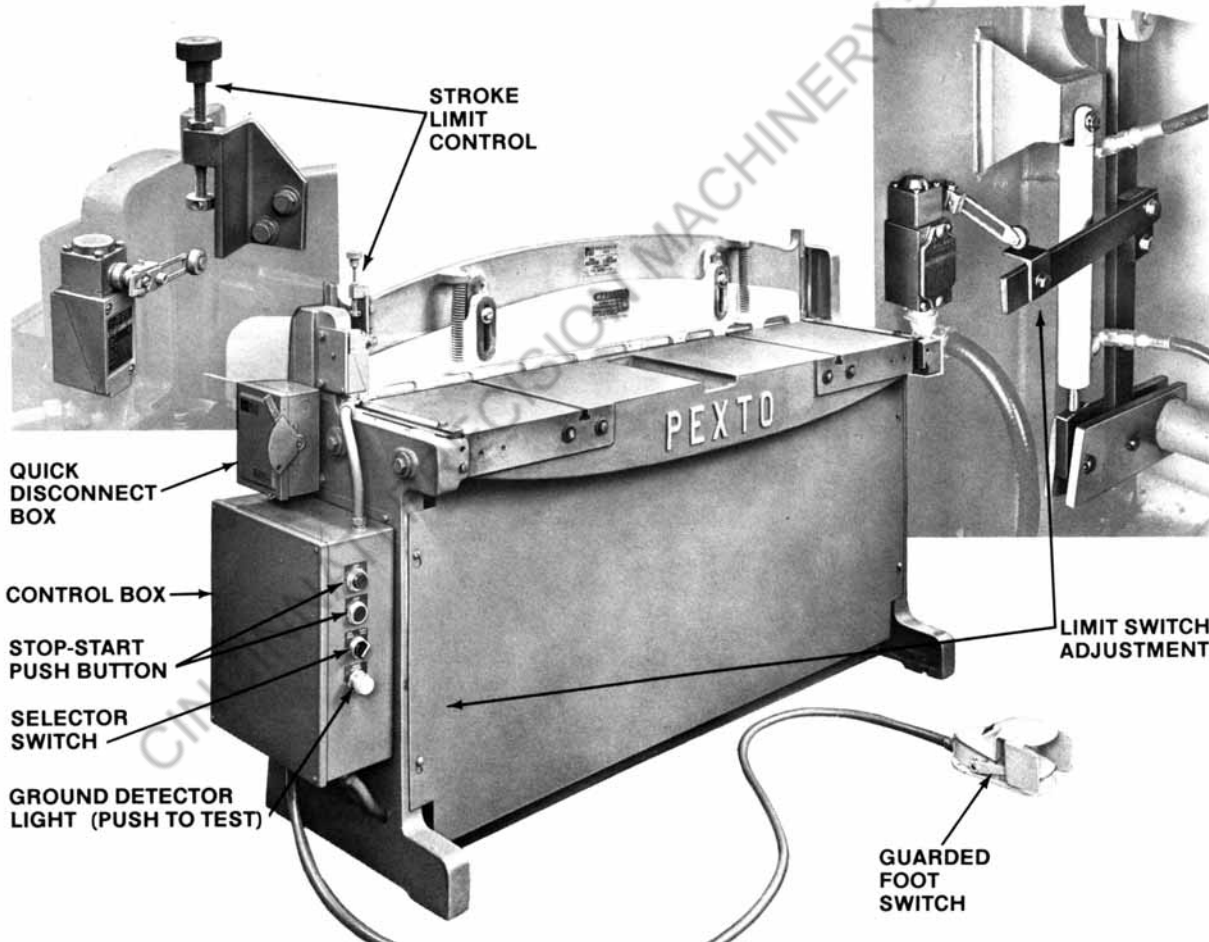
Bleeding Air From Hydraulic Lines-Air in the hydraulic circuit causes a slow, spongy, erratic action in the hydraulic cylinder, with a similar action at the cross head. When one cylinder, because of air in the lines, travels faster than the other, the gibs of the cross head may bind, resulting in a loss of shearing power and costly damage.

Air in the hydraulic lines is caused by low oil level in the reservoir, loose hydraulic connections, or a failure to bleed the lines properly after adding or changing component parts of the circuit. Cavitation of the pump is another cause. When a pump cavitates (starves for oil) because of low oil level, plugged air breather or oil filter, it may

pump some air from the reservoir into the lines. In all cases, this air must be removed. If oil level is low, fill reservoir to proper level with hydraulic oil (Rando HD-A) and bleed the system.

To bleed the hydraulic system of air, follow this procedure. Push START button. If ram is not at the top of stroke, it should automatically go to that position and stop. Raise the upper limit switch adjusting screw, items (20) & (22), as far as it will go. Remove front panel, item (34). Loosen swivel hose fitting, item (56), approximately 1 to 1/2 revolutions at one (1) of the top cylinder ports. Then turn selector switch to SINGLE CYCLE. Insert a 1/4" to 1" thick X 3" wide hardwood board between the blades, from the back side, with the blades across the grain. Force the block tightly between the blades in order to keep the upper blade from lowering. Then depress the footswitch in short bursts until a solid stream of oil comes from the open fitting. There should be no air or bubbles. Tighten fitting and repeat the process on other top cylinder port. Be sure to tighten that fitting. This should be done with the loss of only 1 to 2 cups of oil. Next, loosen two (2) lower hose fittings approximately 1/2 turns each. Remove the wood block and depress footswitch sending ram to bottom of stroke. Do not remove foot from switch. As the ram lowers, air and air filled oil should spurt out of lower cylinder fittings, which should now be tightened. Then release footswitch allowing ram to return to top of stroke and stop. Reset upper limit switch. Any remaining air in circuit should soon purge itself from the system. If, however, the ram lowers in a jerky manner, or tends to drift downward when unit is turned off, it may be necessary to repeat the entire bleeding operation.

BLADES: To insure precision cutting, return dull blades to factory in Rockford, Illinois, via prepaid transportation.



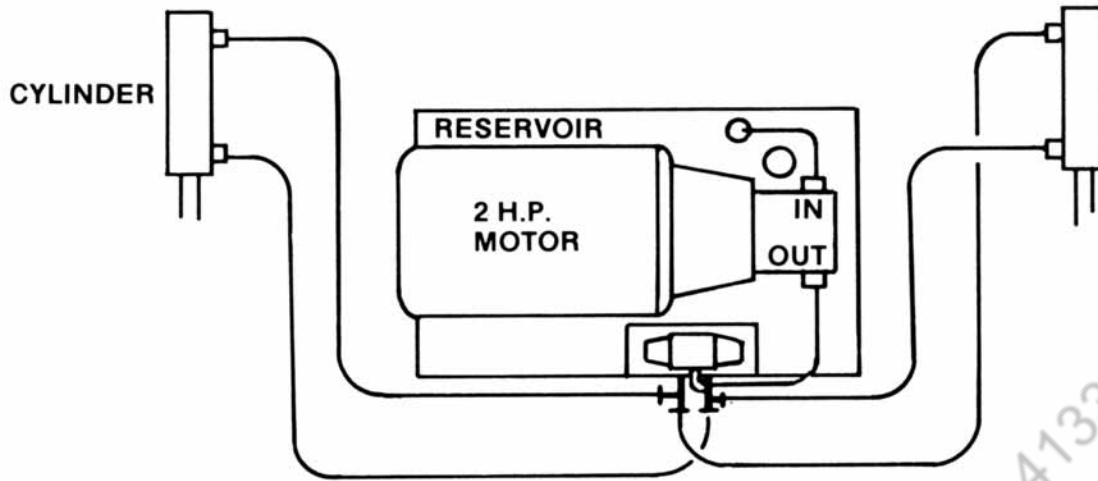
PARTS LIST

Item No.	Description	PH52A Only	PH52A & PH37B	PH37B Only	Req'd.
1	Bed	D-11369		D-11411	1
2	Cross head	B-7864		B-7865	1
3	Hold down	B-15083		C-10468	1
4	R.H. Leg		D-7834		1
5	L.H. Leg		D-7818		1
6	Upper Blade	B-11381		A-1 0484	1
7	Lower Blade	B-11381		A-1 0485	1
8	Gib		A-10478		2
9	Hold down Spring	A-15086		A-14966	2
10	Hold down Stud	A-15087		A-15720	2
11	Lever Ass'y.	Spec #2634		Spec #2635	1
12	Hinge Pin		A- 11819		2
13	R.H. Link	A-6862		A-7033	1
14	L.H. Link	A-6863		A-7034	1
15	Pin, Cross head		A-63176		2
16	Pin, Link & Tang		A-7024		4
17	Actuator Arm		B-7811		1
18	Limit Switch Mt'g. Plate		B-7810		1
19	Stroke Control Brk't.		B-7812		1
20	Stroke Adj. Screw.		A-7813		
21	Split Collar		710801		
22	Knurled Knob		A-7814		
23	Finger Guard	B-6611		B-669	
24	Tie Brace	C-7816		C-7844	
25	Front Arm		B-10489		2
26	R.H. Side Gauge		B-15294		1
27	L.H. Side Gauge		B-15295		1
28	Bevel Gauge		B-10479		1
29	Front Gauge	A-11389		A-10493	1
30	Tee Bolt		A-10475		3
31	Warning Plate		A-7022		1
32	Nameplate		A-7701		1
33	Regrind Plate		A-55115		1
34	Front Panel	B-6842		B-7014	1
35	Rear Panel	B-6843		B-7015	1
36	Positive Stop Brk't.		A-7817		1
37	Bed To Leg Bolt		WS-102		4
38	Special Washer		711524		4
39	"Bed In" Adj. Screw		A-643		2
40	"Bed Out" Adj. Screw		WS-37		2
41	Front Arm Bolt Washers		10473		13,16
42	Front Arm Bolt		WS-49		4
43	Hold down Bolt	WS-67		WS-66	2
44	Hold down Bolt Washer		WS-1706		9
45	Hold down Lock Screw		WS-870		2
46	1/2-13 Wing Nut		A-10491		3
47	Lower Blade Adj. Screw		WS-848		9,6
48	Gib Adj. Screw.		WS-633		6
49	Hold down Adj. Screw.	WS-634		WS-633	2
50	Roll Pin		WS-1600A		2
51	Bed To Leg Nut		WS-1386		4
52	Upper Limit Switch (L.S. #1)		WS-3106		1
53	Operating Lever		WS-3106-1		2
54	Lower Limit Switch (L.S. #2)		WS-3109		1

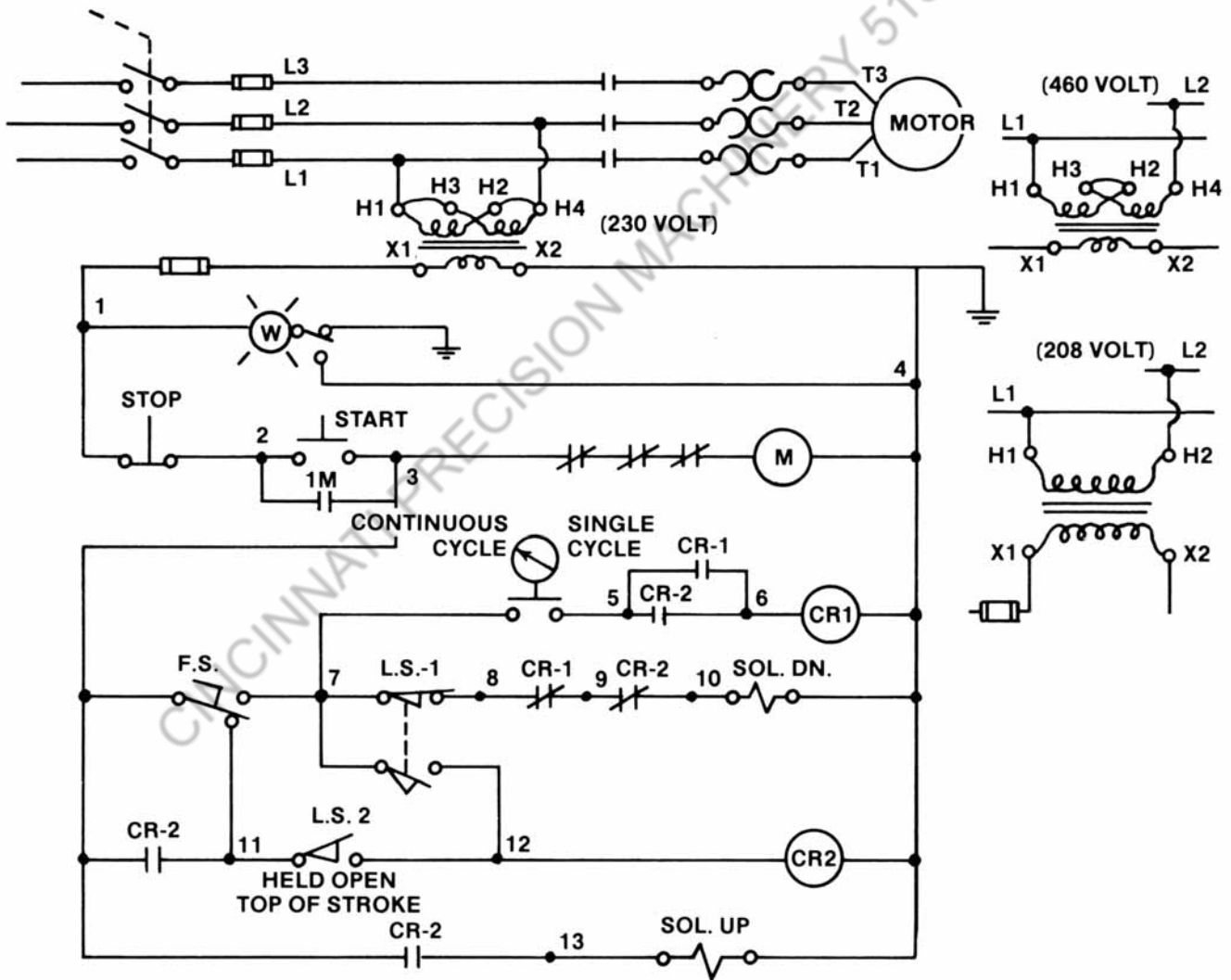
Item No.	Description	PH52A Only	PH52A & PH37B	PH37B Only	Req'd.
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55	Cylinder		710570		2
56	Hose Fitting		710048		6
57	Cylinder Tang		A-7823		2
58	Hose	710093		710100	4
59	Clamp		WS-3437		2
60	Reservoir		718903		1
61	Hydraulic Oil-Rando "A" or Rando "B"				5 Gal
62	Motor, 2 H.P., 208, 220, 440 Volt		718904		1
63	4 Way Solenoid Control Valve		718905		1
64	Pump Mount		718906		1
65	Coupling		718907		1
66	Pump		718908		1
67	Relief Valve, External		718909		1
68	Manifold Block		718910		1
69	P.O. Check Valve Cartridge		718913		1
70	Filler-Breather Cap		718911		1
71	Sight Gauge		718912		1
72	Filter		718914		1
73	Back Gauge Rods		B-10480		2
74	Pointer		A-10492		2
75	Balcrank Hand wheel		A-7134		2
76	Hand Knob		710786		2
77	Connecting Shaft	A-56104		A-7494	1
78	Pinion (RH & LH)		A-17003		2
79	Back Gauge Holder		B-5655		2
	Right Hand Link (Back Gauge)		A-10499		1
81	Left Hand Link (Back Gauge)		A-10500		1
80					
82	Pivot Stud		A-5330		3
83	Back Gauge Bar	A-11394		A-14777	1
84	Footswitch w/Side Guard		714655		1
85	Enclosure w/Panel		WS-3188		1
86	Stop Push Button (Red)		WS-3287		1
87	Start Push Button (Green)		WS-3286		1
88	Selector Switch		WS-3288		1
89	Push-To-Test Ground Detector		WS-3289		1
90	Magnetic Starter		WS-3105		1
91	Heater Coils				
	For 208 & 230 Volt Units		WS-3520		3
	For 460 Volt Units		WS-3521		3
92	Transformer				
	For 230, 460 Volt Units		WS-3062		1
	For 208 Units		WS-3061		1
93	Safety Switch				
	For 208 & 230 Volt Units		WS-3226		1
	For 460 Volt Units		WS-3227		1
94	Safety Switch Fuses				
	For 208 & 230 Volt Units		WS-3576		3
	For 460 Volt Units		WS-3579		3
95	Fuse JF-1)		WS-3583		1
96	Relay CR-1		WS-3131		1
97	Relay CR-2		WS-3132		1
98	Terminal Block		WS-3855		15
99	Fuse Block		WS-3062-1		1
100	Adjustment Clip		A7858		1

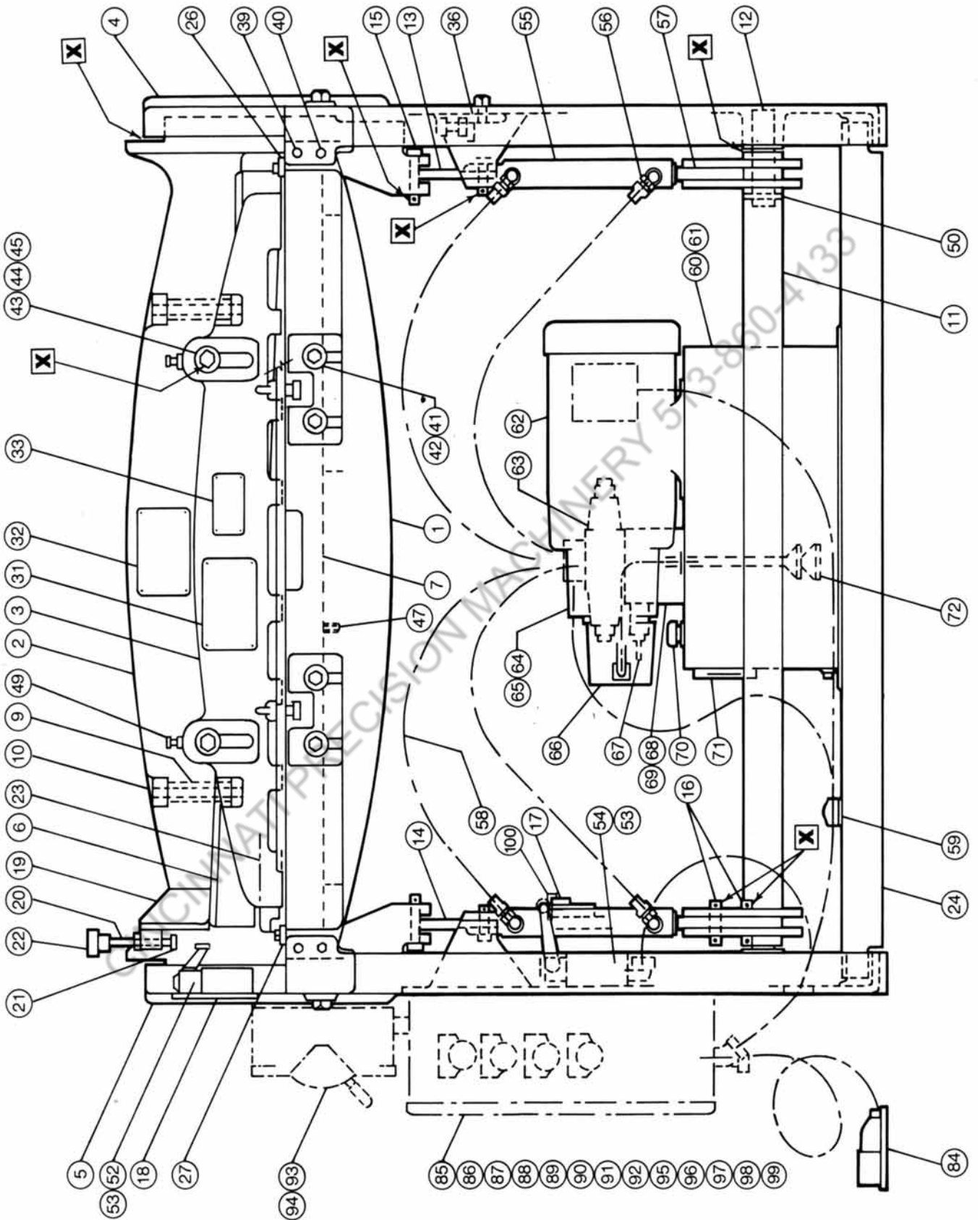
Identify Replacement Parts by Index No., Name and Part No. Include Machine No., Letter and Serial No.

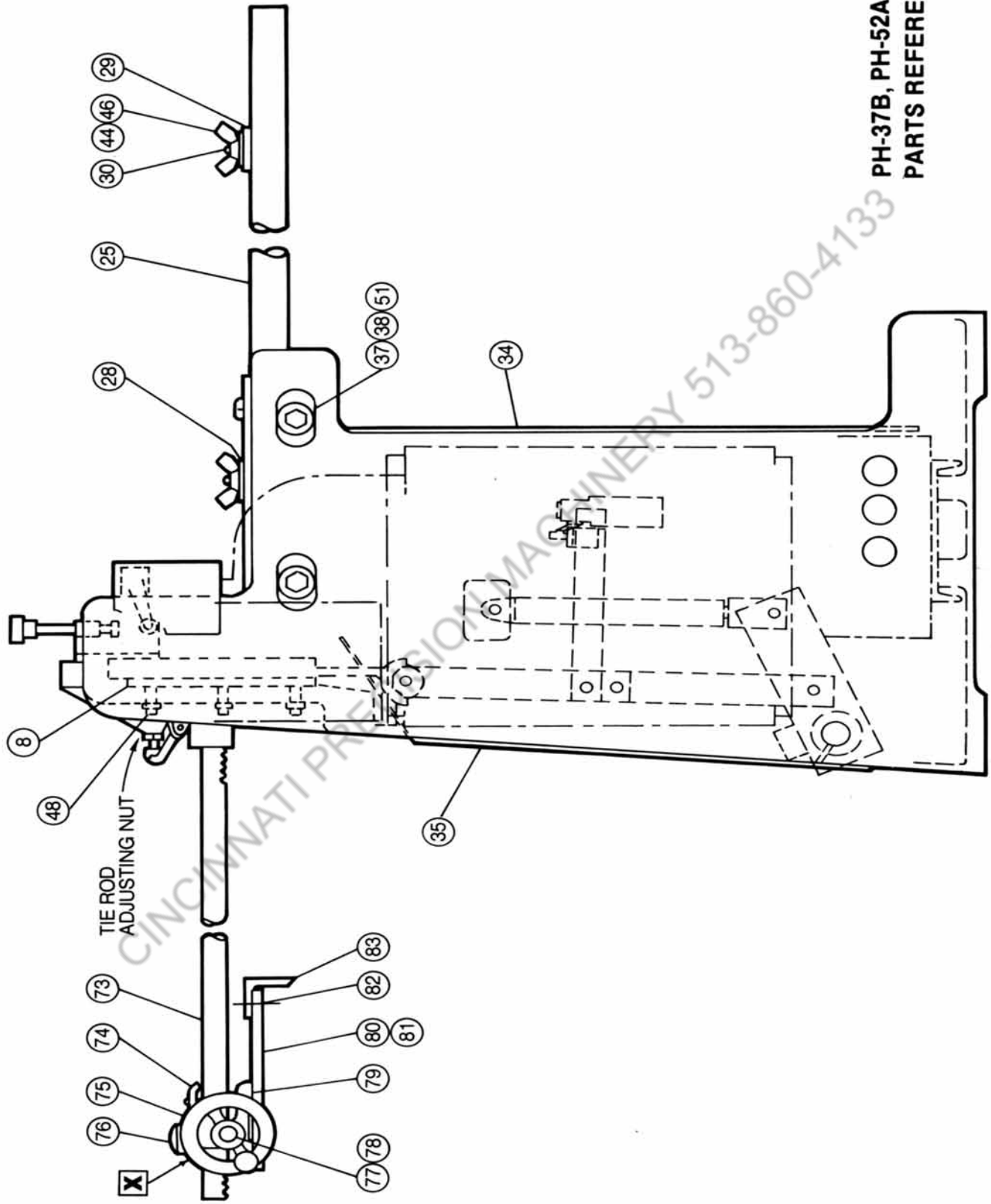


PICTORIAL HYDRAULIC DIAGRAM
PH37B & PH52A SHEAR



ELECTRICAL DIAGRAM PH37B & PH52A





PH-37B, PH-52A
PARTS REFERENCES