



DURATECH

**EC-900
INDUSTRIAL
GRINDER**

**OPERATORS
MANUAL
&
PARTS BOOK**

05-79

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SAFETY INSTRUCTIONS

THE SAFETY OF THE OPERATOR IS OF GREAT IMPORTANCE TO DURATECH INDUSTRIES INTERNATIONAL, INC. WE HAVE PROVIDED DECALS, SHIELDS, AND OTHER SAFETY FEATURES FOR YOUR PROTECTION. IN ADDITION, WE ASK YOU TO BE A CAREFUL OPERATOR WHO WILL PROPERLY USE AND SERVICE YOUR DURATECH EQUIPMENT.

WARNING: BEFORE ATTEMPTING TO OPERATE YOUR GRINDER, CAREFULLY READ AND FOLLOW INSTRUCTIONS GIVEN BELOW AND CONTAINED ELSEWHERE IN THIS MANUAL.

1. Read and follow all instructions contained in:
 - a. This grinder Operators Manual.
 - b. Decals placed on the grinder.
2. Be sure all safety shields and covers are securely in place when machine is running.
3. Allow only responsible, properly instructed individuals to operate this machine. Carefully supervise inexperienced operators.
4. Make no modifications to this equipment unless specifically requested or recommended by DuraTech Industries International, Inc.
5. Tighten or replace any loose or cracked bolts, chains, hoses or connections.
6. Make sure the machine is in good operating condition and that all protective shields are in place and in good working order. Replace any damaged shields before operating.
7. Check periodically for breaks or unusual wear and make any necessary repairs.
8. ALLOW NO ONE TO CLIMB ON THE GRINDER AT ANY TIME WHEN IT IS IN OPERATION.
9. REMEMBER: Loose clothing, necklaces and similar items are more easily caught in moving parts. Avoid wearing these items if possible and keep long hair confined.
10. Watch out for and avoid any objects that might interfere with proper operation of the machine.
11. Keep hands, feet and clothing away from power driven parts.
12. OBJECTS MAY BE THROWN BY MACHINE: Do not operate without wearing safety glasses and a hard hat. Keep unauthorized personnel out of the grinding area.

SAFETY INSTRUCTIONS

DURING SERVICE AND MAINTENANCE.

1. Before working on or near grinder for any reason, including servicing, inspecting or unclogging machine:
 - a. turn power off to grinder and grinder hydraulics
 - b. wait for all movement to stop
 - c. turn off main breaker and lock in OFF position
2. When replacing any part on your grinder, be sure to use only DuraTech Industries authorized parts.
3. Relieve all pressure in the hydraulic system before disconnecting any lines or performing any hydraulic service on the system. Make sure all connections are tight and the hoses and lines are in good condition before repressurizing the system.
4. Hydraulic fluid escaping under pressure can be invisible and have enough force to penetrate the skin. When searching for a suspecting leak, use a piece of wood or cardboard rather than your hands. If injured, seek medical attention immediately to prevent serious infection or reaction.

2. Replace any damaged or missing decals. When attaching decals, surface temperature of the metal must be at least 40° Fahrenheit. The metal must also be clean and dry.
3. When replacing a machine component to which a decal is attached, be sure to also replace the decal.
4. Replacement decals can be purchased from DuraTech Industries or form your DuraTech Dealer.

WARNING: FAILURE TO COMPLY WITH ANY OF THE PRECEDING SAFETY INSTRUCTIONS OR THOSE THAT FOLLOW WITHIN THIS MANUAL MAY RESULT IN SEVERE INJURY OR DEATH.

THIS GRINDER IS NOT INTENDED TO BE USED FOR ANY PURPOSE OTHER THAN THAT WHICH IS EXPLAINED IN THE OPERATOR'S MANUAL, ADVERTISING MATERIALS OR OTHER PERTINENT WRITTEN MATERIAL PREPARED BY DURATECH INDUSTRIES INTERNATIONAL, INC..

SAFETY DECALS

Safety decals located on your machine contain important and useful information that will help you to operate your equipment safely.

To assure that all decals remain in place and remain in good condition, follow the instructions given below:

1. Keep decals clean, Use soap and water - - not mineral spirits, adhesive cleaners, and other similar cleaners that will damage the decal.

BEFORE OPERATING

CAUTION: Lack of proper hydraulic oil level in the reservoir tank will cause system to heat under continuous running.

PRE-OPERATING CHECKS

Before operating the grinder follow these instructions:

1. Read and have a thorough understanding the operator's manual, especially the sections pertaining to machine operation and safety.
2. Be sure anyone who will assist you in operation of this machine knows how the machine operates.
3. Know the machine's safety features and understand the safety precautions.
4. Be sure all lubrication points have been lubricated.
5. Give the machine a "once-over" for any loose bolts.
6. Check all motors to insure proper functions.
7. Check hydraulic oil level.
8. Check hydraulic components for leaks.
9. Visually examine the cylinder to see if any parts show excessive wear. These parts include the shaft, plates, rods, hammers and the moveable plate.
10. Check screens and screen hold downs for wear and tightness.
11. Visually examine the cylinder bearings and mounting bolts.
12. Check all bearings for wear.
13. Watch out for the unusual or excessive vibration. If any occur, immediately shut off the power. Check to see what is wrong and correct it before starting the grinder again.
14. Make sure all shields and guards are in place.
15. Start the hydraulic motor and check the tub rotation and speed for proper operation.
16. Check the slug bar operation by raising and lowering. If the slug bar does not properly respond, shut off the machine to identify the problem and correct before starting the machine again. The slug bar should be in the up position before the grinder motor is started.
17. Proceed to the daily operating procedure.

NOTE: A fire extinguisher should be handy at all times due to the possibility of combustion of the grinder material.

OPERATION

- Put tub flow control valve lever in "FORWARD" position. It may be necessary to adjust the tub speed on the flow control valve so the slug bar lifts occasionally (i.e., every 5-10 seconds) from grinding paper slugs.

INTRODUCTION

The hydraulic system used an amperage sensing unit that automatically controls the tub and slug bar. The amperage sensing device is normally set, when using 440/460V 150HP electric motor, to stop tub rotation at

125-140 amps and raise the hydraulic slug bar at 150-160 amps. When using a 440/365-V 200HP electric motor, tub rotation is stopped at 165-185 amps while the slug bar raises at 210-220 amps. This will prevent overload on the electric motor.

TO START

When starting the grinder for the first time or when the tub is empty, place a piece of cardboard over the slug bar; then fill the tub approximately half full of grinding material. The cardboard will allow the motor to reach full speed before the actual grinding takes place. The grinding material directly over the cylinder slug bar acts as a barrier preventing the cylinder from "kicking" the material out of the tub. It is therefore important to keep the tub at least half full when in operation.

- Push "START" on the hydraulic pump.
- Raise and lower slug bar to check for proper operation.
- Turn slug bar switch in "up" or "raise" position and leave.
- Push "start" on grinder motor.
- Push "start" on transfer blower, or be certain discharge conveyor is on.
- Turn slug bar switch to "DOWN" or "LOWER" position.

TO STOP GRINDING:

- Put flow control valve lever in the "NEUTRAL" position.
- Turn the slug bar switch to "UP" or "RAISE" position.
- Wait for the cylinder to clear out.
- Push "STOP" on grinding motor.
- Push "STOP" on transfer blower or discharge conveyor.
- Push "STOP" on the hydraulic pump.

WET MATERIAL

This is the toughest material for any grinder to handle. When filling the tub with wet material, deposit small quantities on a more frequent basis rather than filling the tub with one load.

IF LODGING OCCURS

Occasionally materials may lodge against the side of the tub and not feed down to the mill. If this occurs, reverse the tub direction for about one half tub rotation and then start the tub in its forward rotation again. This practice normally dislodges any material.

CAUTION: Never attempt to dislodge material inside the mill when the

machine is in operation. WHEN THE MACHINE IS IN OPERATION, STAY OUT OF THE TUB!

STOPPING THE MACHINE

CAUTION: The stored up energy in the cylinder causes it to rotate long after the motor has been shut down. Before performing any maintenance on the machine or getting into the tub, be sure the cylinder and all moving parts have come to a complete stop. Turn OFF main breaker and padlock in OFF position.

LUBRICATION

CAUTION: Always shut OFF machine before adjusting or lubricating. Turn OFF main breaker and padlock in OFF position.

BEARING LUBRICATION

When the grinder is operated during cold weather, all lubrication should be performed after bearings are at operating temperatures.

Bearing operating in the presence of dust and water should contain as much grease as speed will permit, since a full bearing with a slight leakage is the best protection against entrance of foreign material. IN the higher speed ranges, too much grease will cause overheating.

For high speed operation, high bearing temperature may indicate improper lubrication. Normal temperature may range from "cool to warm to the touch" up a point. Unusually high temperatures "too hot to touch for more than a few seconds" accompanied by excessive leakage of grease indicates too much grease. High temperature with no grease showing at the seals, particularly if the bearing seems noisy, usually indicates too little grease. Normal temperature and a slight showing of grease at the seals indicate proper lubrication.

The following chart is a general guide for relubrication. Certain conditions may require a change of lubrication periods as dictated by experience.

LUBRICATION CHART

<u>REF. NO.</u>	<u>LOCATION</u>	<u>NO. OF ZERKS</u>	<u>FREQUENCY</u>
1	Tub Chain Idler	2	10 Hrs.
2	Slug Bar Torque Tube	4	10 Hrs.
3	Tub Drive Shaft Bearing	1	40 Hrs.
4	Tub Roller Bearings	8	40 Hrs.
5	Cylinder Bearings	2	10 Hrs.
6	Grinding Motor	2	Annually
7	Hydraulic Motor	2	Annually
8	Tub Drive Gearbox		Annually(Gear Lubricant)
9	Pressure Rollers		6 Months
10	Tub Chain		Oil Every 40 Hrs.

WARNING: Before servicing machine, read the Service and Maintenance section of the Safety Instructions.

CAUTION: If for any reason arc welding is to be done, always ground cylinder to frame of machine to prevent arcing in bearings.

TUB DRIVE

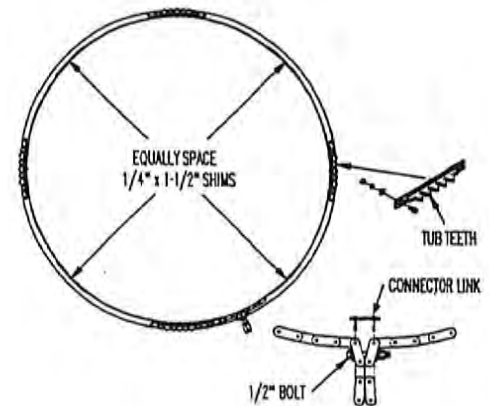
1. Check for loose drive chain, sprocket loose on shaft or badly worn chain.
2. Inspect the machine for foreign objects wrapped around rotating parts.
3. Tub drive chain is equipped with a spring tensioned idler.
4. Due to normal wear, the drive chain may tend to climb on knobs of tub. It this should occur, the chain should be sized to fit the tub, and the knobs adjusted for proper spacing in the chain

Step 1. (sizing the chain).

Loosen tub knobs and rap the chain around the tub. (Do not run the chain around tightener rollers or drive gear.) Using a 1/2" bolt, pull chain together so center to center link pins matches pins on connector link. If the distance is less or greater than the connector link, shims must be added. Equally space shims of equal thickness and length under chain until proper distance is obtained. Do not add shims under the tub knobs (See illustration).

Step 2.

Adjust tub knobs so all three knobs contact chain link on the same side of the knobs. tighten bolts holding knobs in place and return chain to working position.



TUB DRIVE GEARBOX

To change lubricant, remove the drain plug to allow the gearbox to drain. Install the drain plug and remove the filler plug and oil level plug. Fill gearbox with a recommended lubricant until the lubricant starts coming out the oil level plug hole. Install all plugs.

A heavy duty industrial gear lubricant such as Pennzoil SAE 80W-140 or similar lubricant is recommended. This lubrication assures long gear life with proper maintenance.

PRESSURE ROLLER

The grinder has a pressure roller with tapered roller bearing. The bearings should be checked for lubrication and adjustments semi-annually.

If a generous amount of grease is on the bearing and in the housing, and if the grease is soft, the grease will not need changing.

If lubricant is caked and the bearing seems dry, the bearing should be washed to remove old grease. Repack the bearings.

MAINTENANCE

GRINDER CYLINDER

CAUTION: Keep all foreign objects out of the tub and away from the mill. Foreign objects may result in personal injury or damage to the machine.

Visually examine mill to see if any internal parts show excessive wear. Repair or replace worn parts. Check holes in the cylinder plates. Enlarged holes can cause hammer rods to break. Also check rods, retainer plate, hammers, screens, screen channels and hold downs, main shaft, or anything else that could wear and perhaps fail if not properly maintained, and cause damage to the hammermill and/or personnel. Screen hold down bolts must remain tight to hold down the screen. Bearings and motor alignment should also be checked along with mounting bolts to insure a firm foundation and reduced vibration.

When installing or changing hammers, be sure to follow directions on the installation spacers diagram carefully. Misplacement could cause excessive vibration. We recommend that hammers be balanced in sets according to the rod on which they are to be installed. Sets of equal weight should be installed 180° away from the first (See illustration B). When Starting the hammermill after installing a new set of hammers or turning corners, watch for unusual or excessive vibration. If any occurs, immediately shut off the mill. Check to see what is wrong and correct it before starting the mill again.

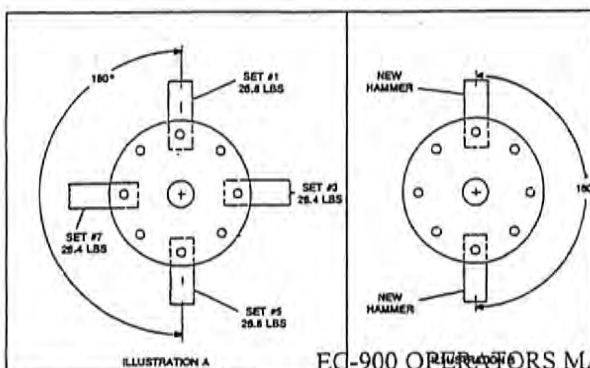
JACOBS HAMMERS are designed to grind the normal ingredients used in the manufacture of feed and related products, and other products such as paper or wood residue, chips, sawdust, shavings, or hogged materials that may be reduced in size on a hammermill. They are not designed to grind or crush, on a primary basis, hard material such as coal, or minerals, metals rock, or similar materials, which could cause parts to fail, should be allowed to enter a hammer mill.

JACOBS HAMMERS have been designed and manufactured to provide the best compromise between hardness and good wearing qualities and strength of reproductibility and resistance to breakage. Any alteration of the hammer by heating, grinding, resurfacing or any other process can change the mechanical properties of the hammer and make it unsuitable or dangerous to use.

HAMMER AND SCREENS

Cylinder hammers and screens are the heart of the grinder. Because of the high capacity of the machine, the hammers will wear and must be considered expendable. Each hammer has four cutting corners. If the cutting edges of the hammer become rounded, the hammer should be replaced or turned to expose a new cutting edge. If the end of the hammer is allowed to wear too long, one cutting edge is lost. For maximum life, it is also suggested that the hammers be rotated periodically to even out the wear the wear over the entire cylinder.

Screens have two cutting edges. When the cutting edges become rounded, the screens can be turned end for end exposing new cutting edges.



The results of badly worn hammers and screens is a loss of capacity, and added horsepower requirements.

HAMMER RODS

The hammer rods can be turned end for end exposing a new surface area to wear. This will extend the life although the hammer rods must be considered expendable.

NOTE: Hammer and hammer rod life can be extended by keeping the tub rotating at an even speed, i.e., not starting and stopping rotation continuously due to motor overload. Overfeeding the cylinder will cause the hammers to lay back resulting in excessive wear on both hammers and rods!

HAMMER REPLACEMENT

CAUTION: Always shut Off grinder and wait for all movement to stop before entering the tub. Turn OFF main breaker and padlock in OFF position.

To install new hammers or change the cutting edge on existing hammers, the tub floor should be free of all material for easy access to cylinder and rear cylinder bearing cover.

1. Remove rear cylinder bearing cover. Item A in illustration.
2. Loosen four bolts at rear of cylinder which holds the hammer rod retainer plate in place. Item B in illustration.
3. Rotate retainer plate counterclockwise to align holes allowing hammer rods to be removed through rear of cylinder. Item C in illustration.
4. Remove one row of hammers and replace, taking note as to where spacers are located. (The following page shows proper spacer location.)
5. After all hammers have been replaced, reassemble retainer plate and rear cylinder bearing cover.

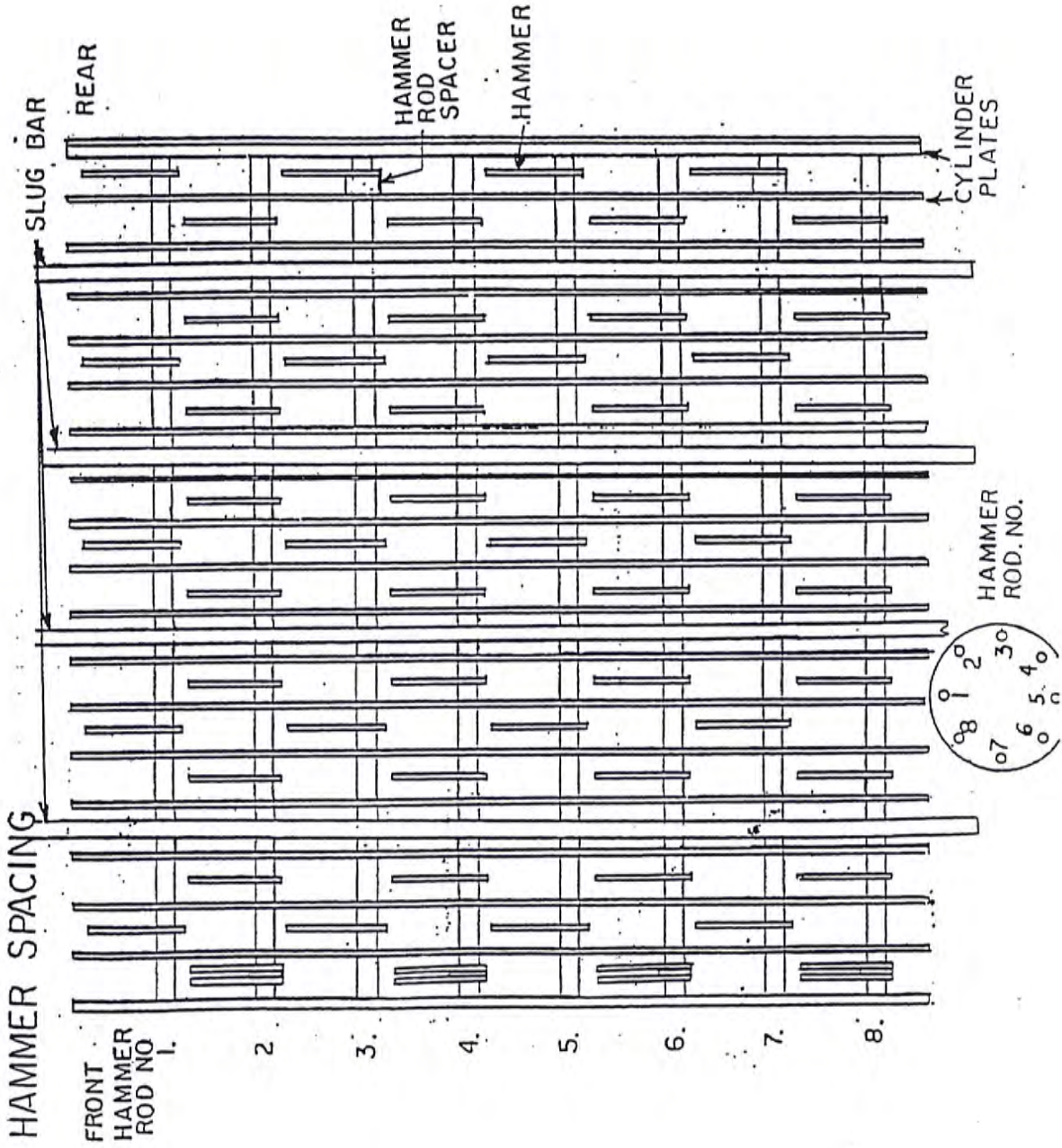
IMPORTANT

Care should be exercised when replacing only a few hammers and not the whole set. If one or more new hammers are inserted on a rod, the same number of new hammers should be inserted on the rod directly across the cylinder. This will maintain a balanced cylinder for vibration free operation.

MAGNET CLEANUP

The magnet should be wiped free of any metal particles on a daily basis. This prevents any metal debris from wearing machinery downstream from the grinder.

MAINTENANCE



MAINTENANCE

HYDRAULIC SYSTEM

CAUTION: Lack of proper hydraulic oil level in the reservoir tank will cause system to heat under continuous running.

WARNING: Before disconnecting lines or performing other work on the system, relieve all pressure in the hydraulic system.

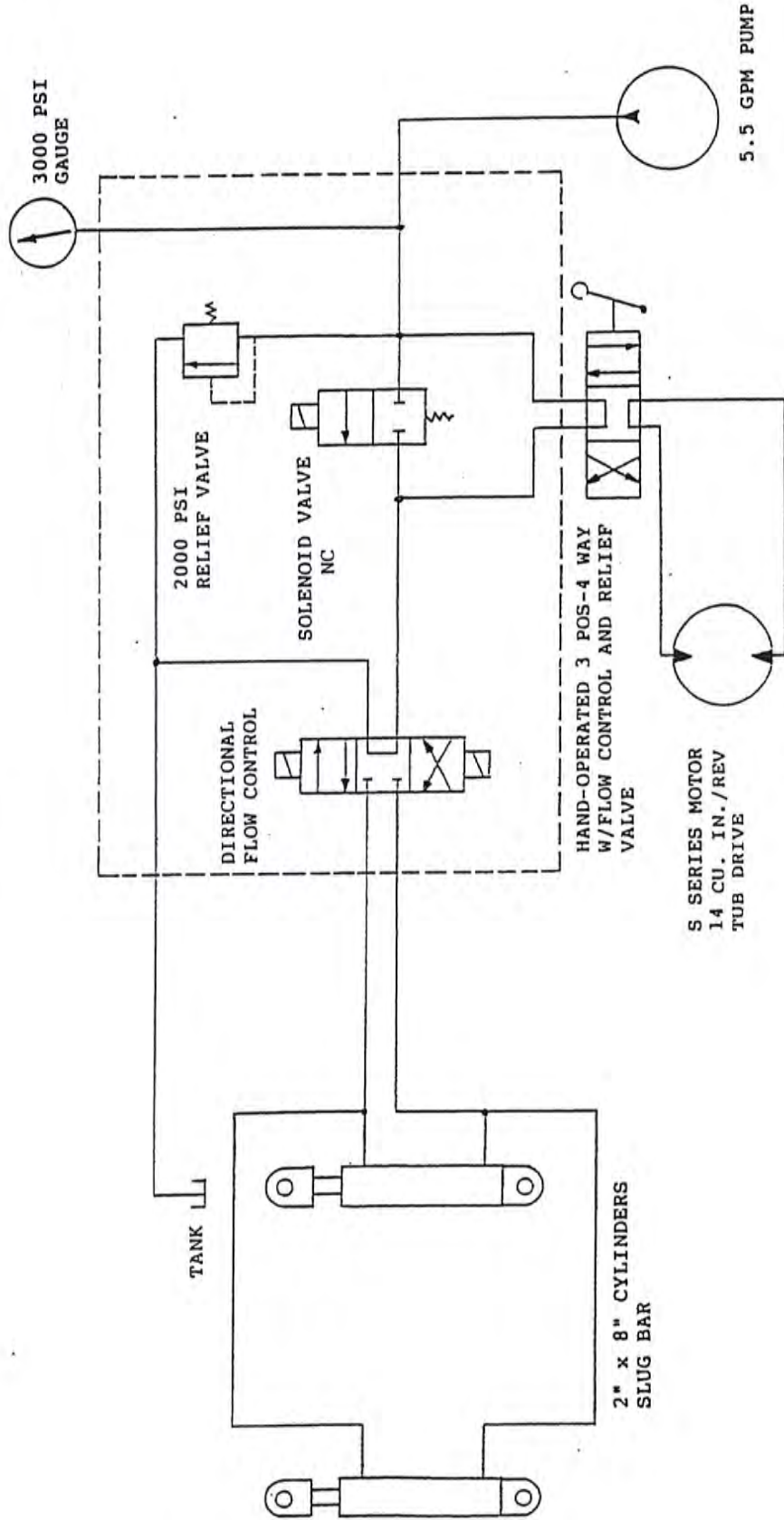
Hydraulic oil reservoir: Change hydraulic oil at least on a annual basis. The level of the hydraulic oil should be maintained at approximately 2" below the top of the tank. (Recommended Mobil 423, Co-op Super HTB or similar oil).

Hydraulic oil filter: Change filter after first 40 hours of operation. Then change after every 1000 hours of operation.

Contamination can cause electrohydraulic valves to stick. Carefully clean all connections before replacing hoses or working on the system.

HYDRAULIC SCHEMATIC

115 VAC



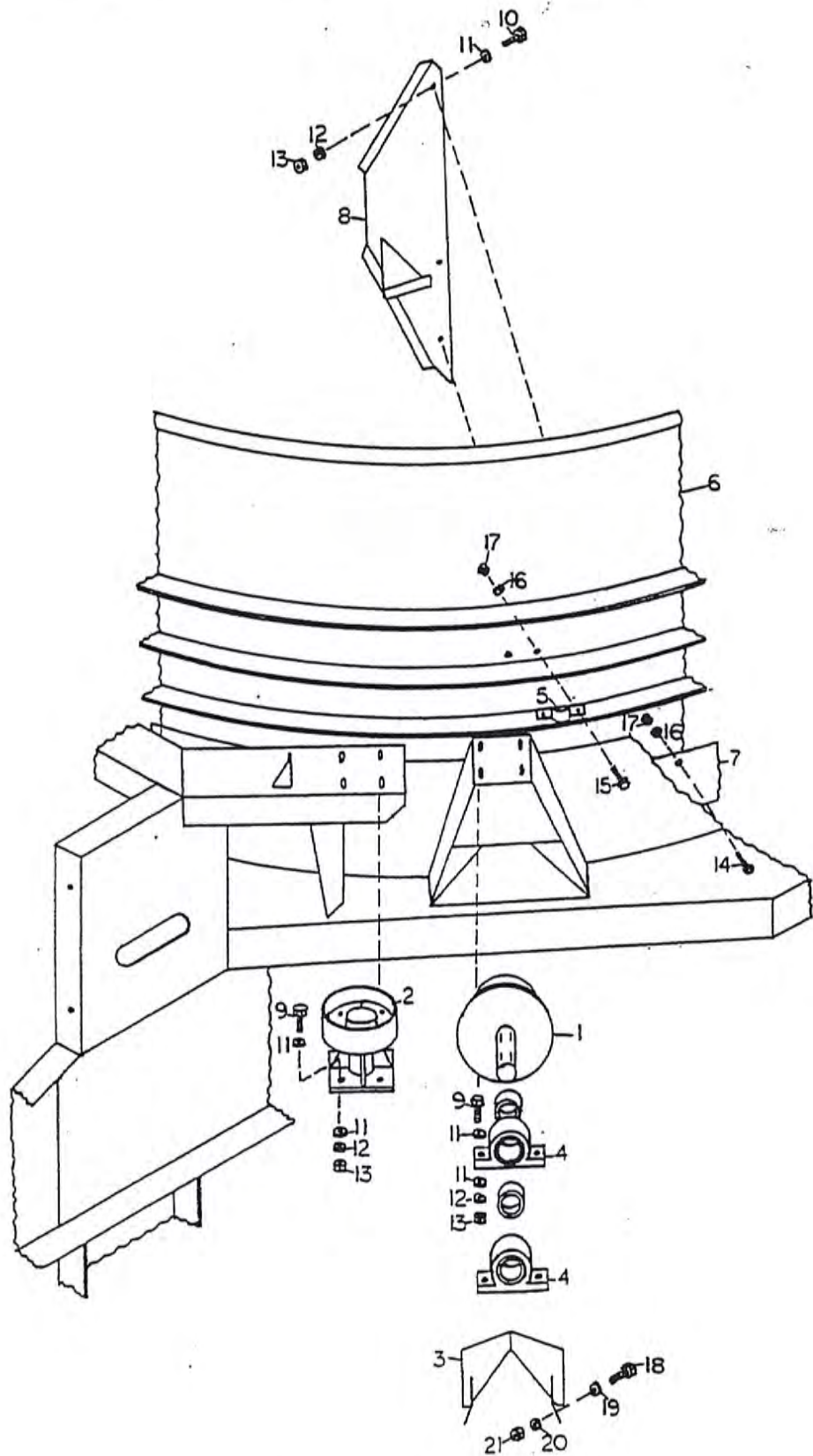
MAINTENANCE

ELECTRICAL SYSTEM

WARNING: Before performing any electrical work, shut OFF all power to the grinder, turn OFF main breaker and padlock in OFF position.

Periodically check electrical hookups for loose connections and tighten if needed. Check wiring for frayed spots or signs of being rubbed by moving or vibrating parts.

When replacing electrical equipment consult with DuraTech Industrial International Inc. for replacement parts on the grinder. All electrical repairs and maintenance should be performed by a qualified electrician.



EC-900 INDUSTRIAL GRINDER

<u>ITEM NO</u>	<u>PART NO</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	6500142	1	Tub Rotation and Speed
2	6500116	2	Recycle
3	6500146	2	Manufactures by Haybuster
4	6500082	4	Danger - Rotating Parts Within
5	6500056	2	Rotation
6	6500040	4	Warning - Protectin Shield
7	6500120	2	Danger - High Voltage
8	6500052	1	Oil Level
9	6500056	2	Rotation
10	6500118	2	Danger - Objects Thrown by Machine
11	6500110	2	Warning - Wait for movement to Stop
12	6500124	1	Hydraulic Oil
13	6500044	2	Big Bite

DECALS

13



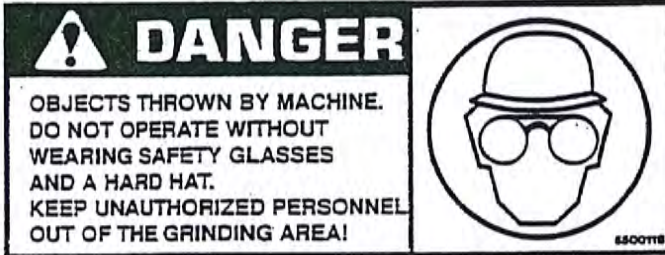
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4



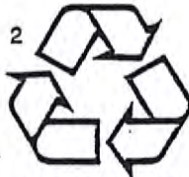
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11



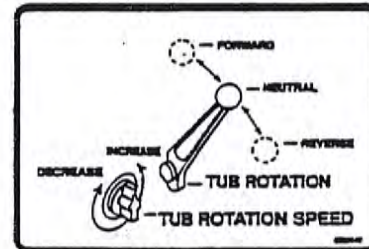
7



RECYCLE

12

HYDRAULIC OIL



5



8

OIL LEVEL

3

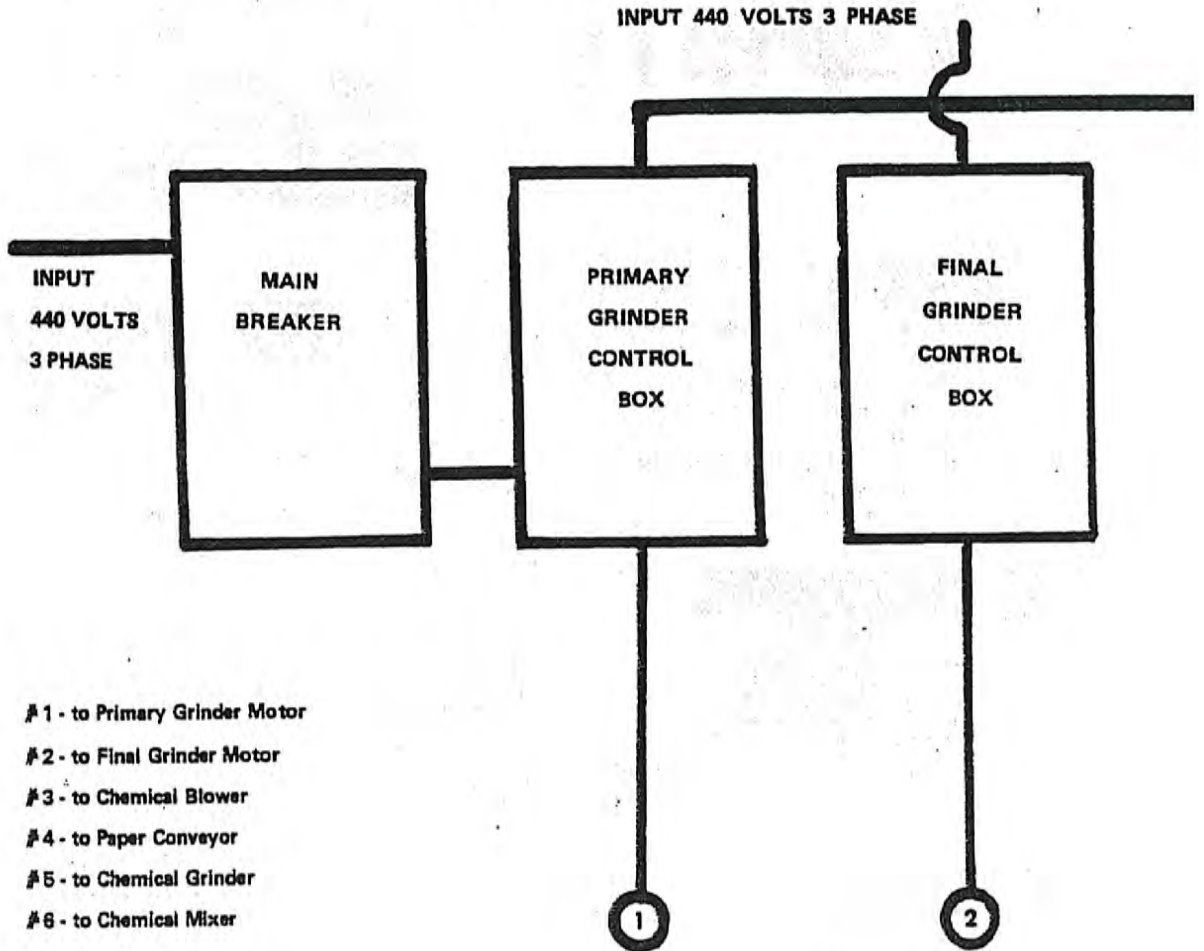
Manufactured by



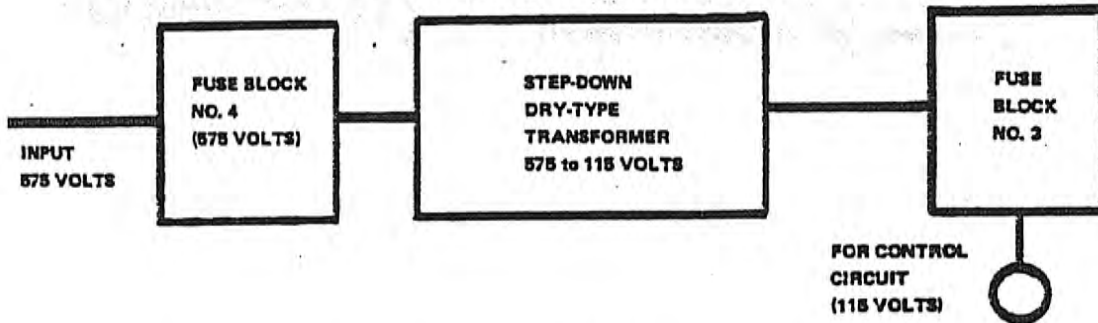
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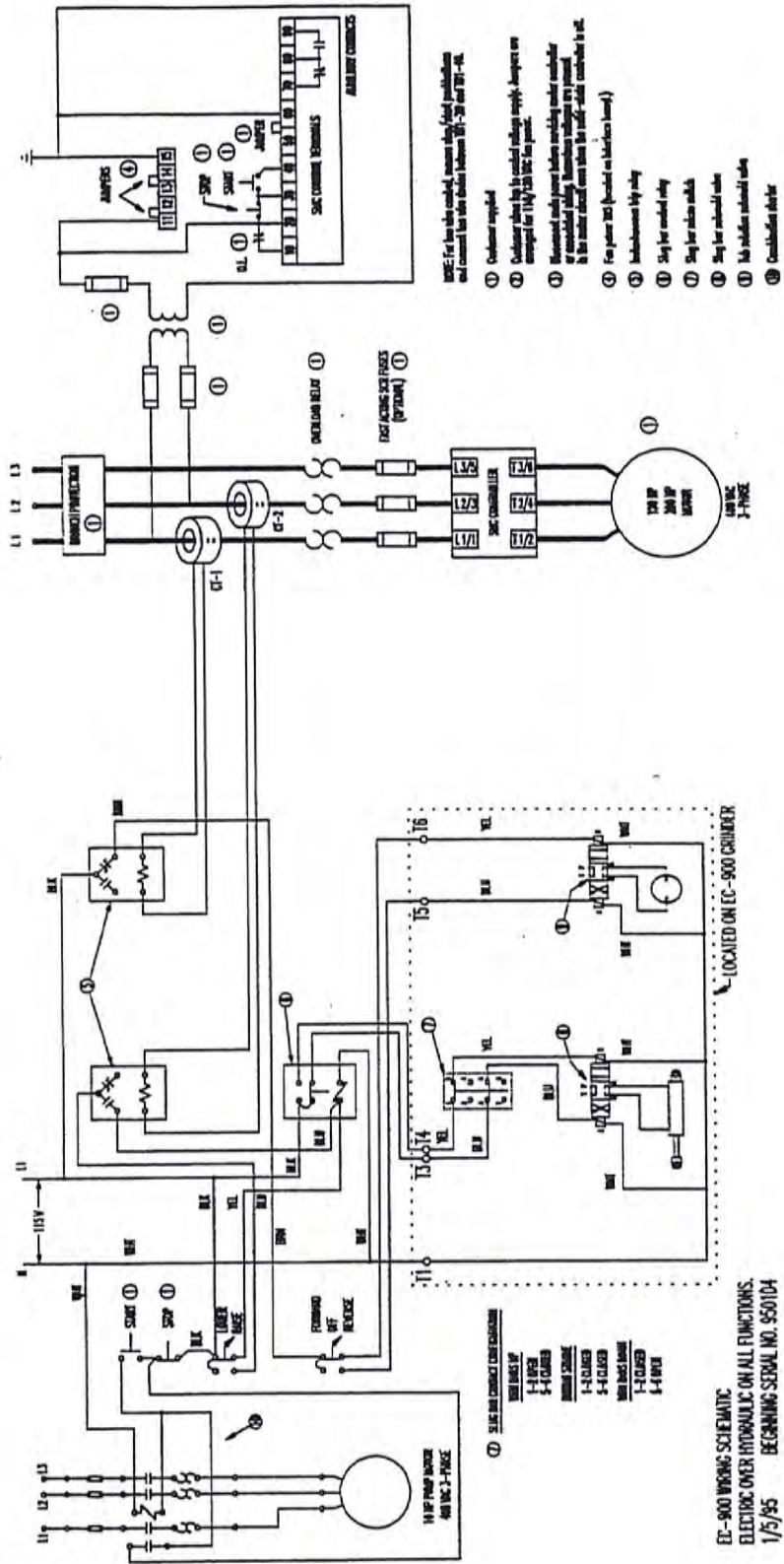
Electrical Distribution 440/Volts 3 Phase Paper Grinder



Canadian Applications



EC-900 WIRING SCHEMATIC

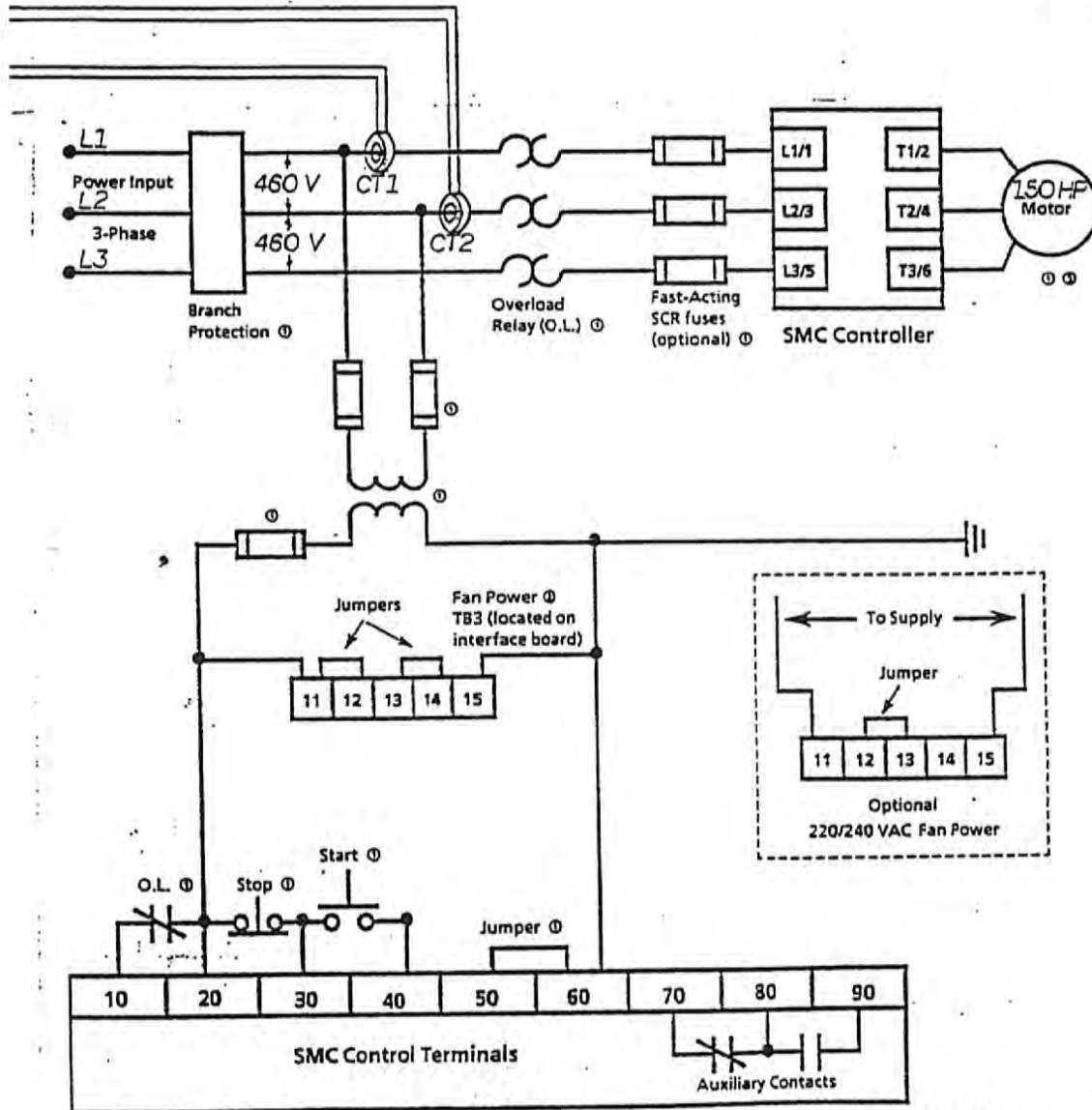


EC-900 INDUSTRIAL GRINDER

WIRING SCHEMATIC

SLUG BAR MICRO SWITCH CONTACT CONFIGURATION

WITH BARS UP	BETWEEN STATES	WITH BARS DOWN
1-2 OPEN	1-2 CLOSED	1-2 CLOSED
5-6 CLOSED	5-6 CLOSED	5-6 OPEN



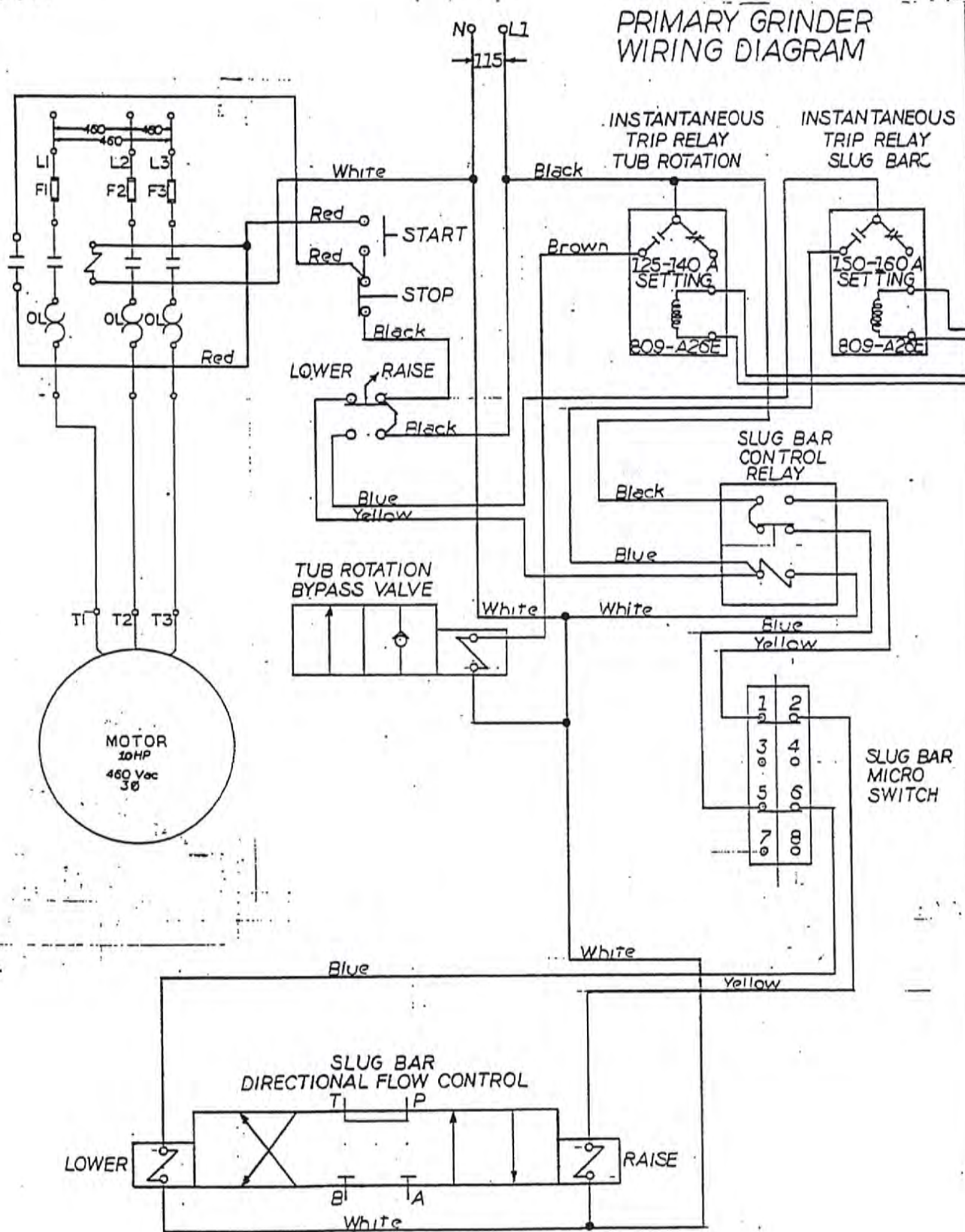
NOTE: For two wire control, remove stop/start pushbuttons and connect two wire device between TB1-20 and TB1-40.

⊕ Customer Supplied

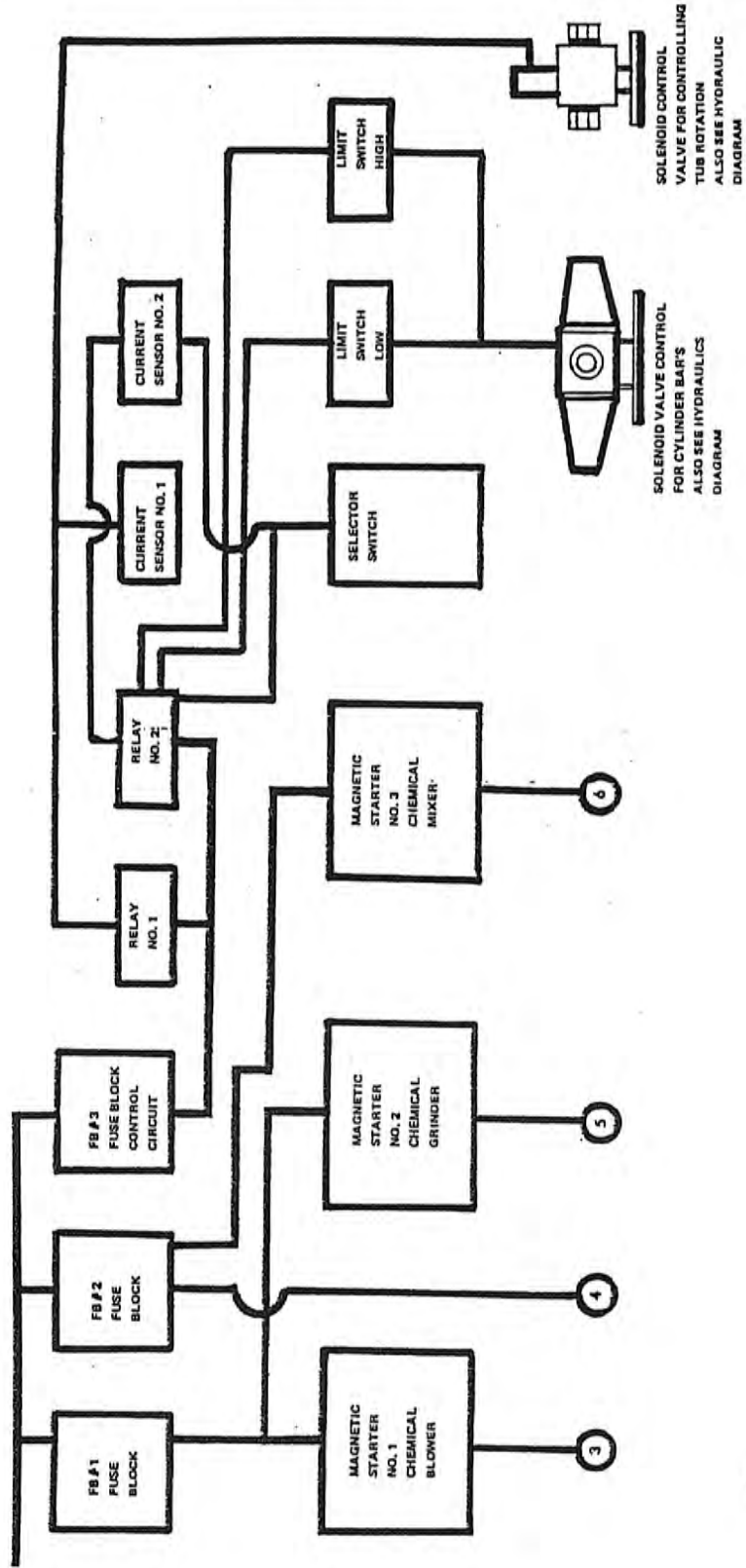
⊙ Customer wires fan to control voltage supply. Jumpers are arranged for 110/120 VAC fan power.

⊕ Disconnect main power before servicing motor controller or associated wiring. Hazardous voltages are present in the motor circuit even when the solid-state controller is off.

WIRING SCHEMATIC



HYDRAULIC SCHEMATIC

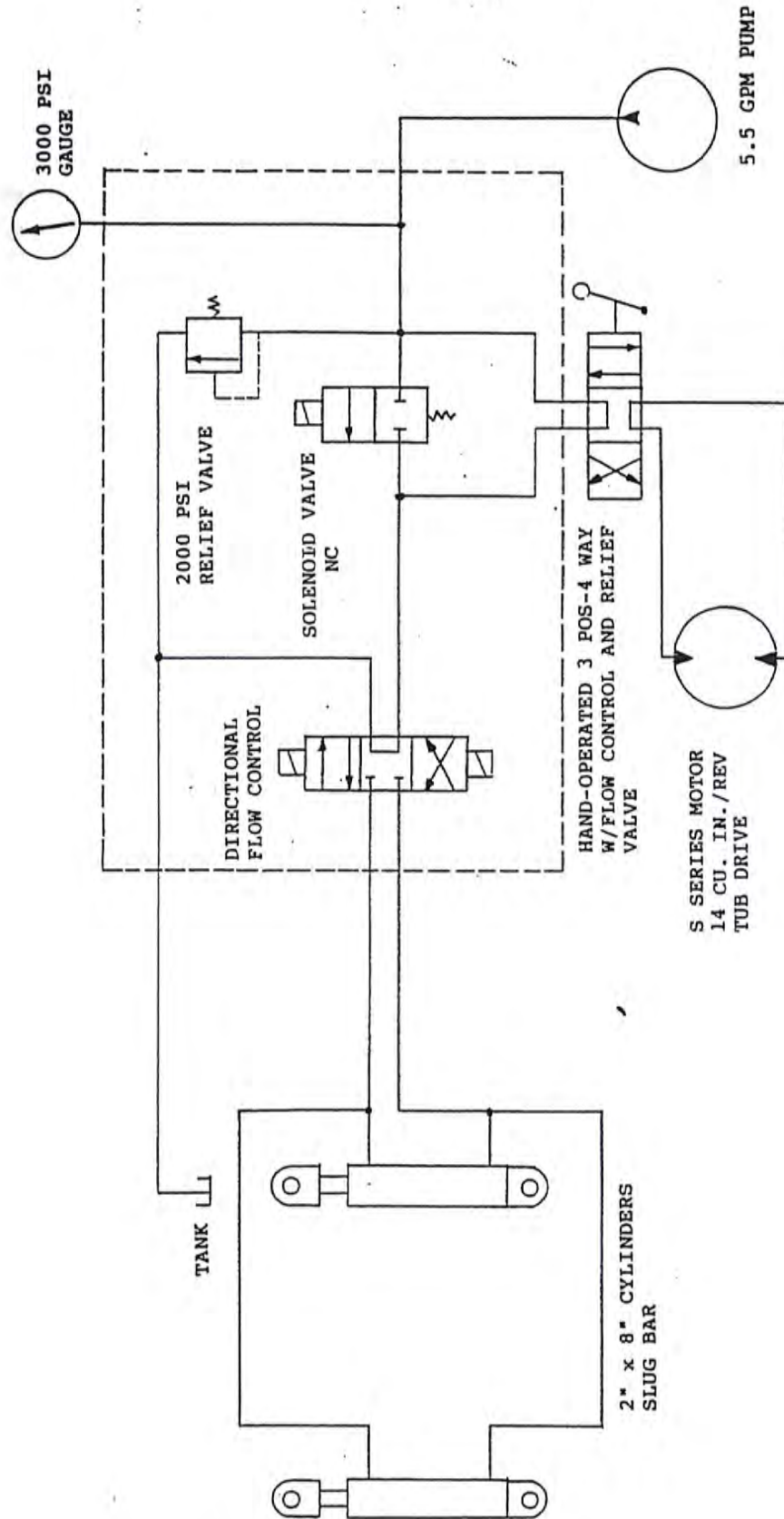


THINK SAFETY

All electrical repairs and maintenance should be performed by a qualified electrician.

HYDRAULIC SCHEMATIC

HYDRAULIC SCHEMATIC

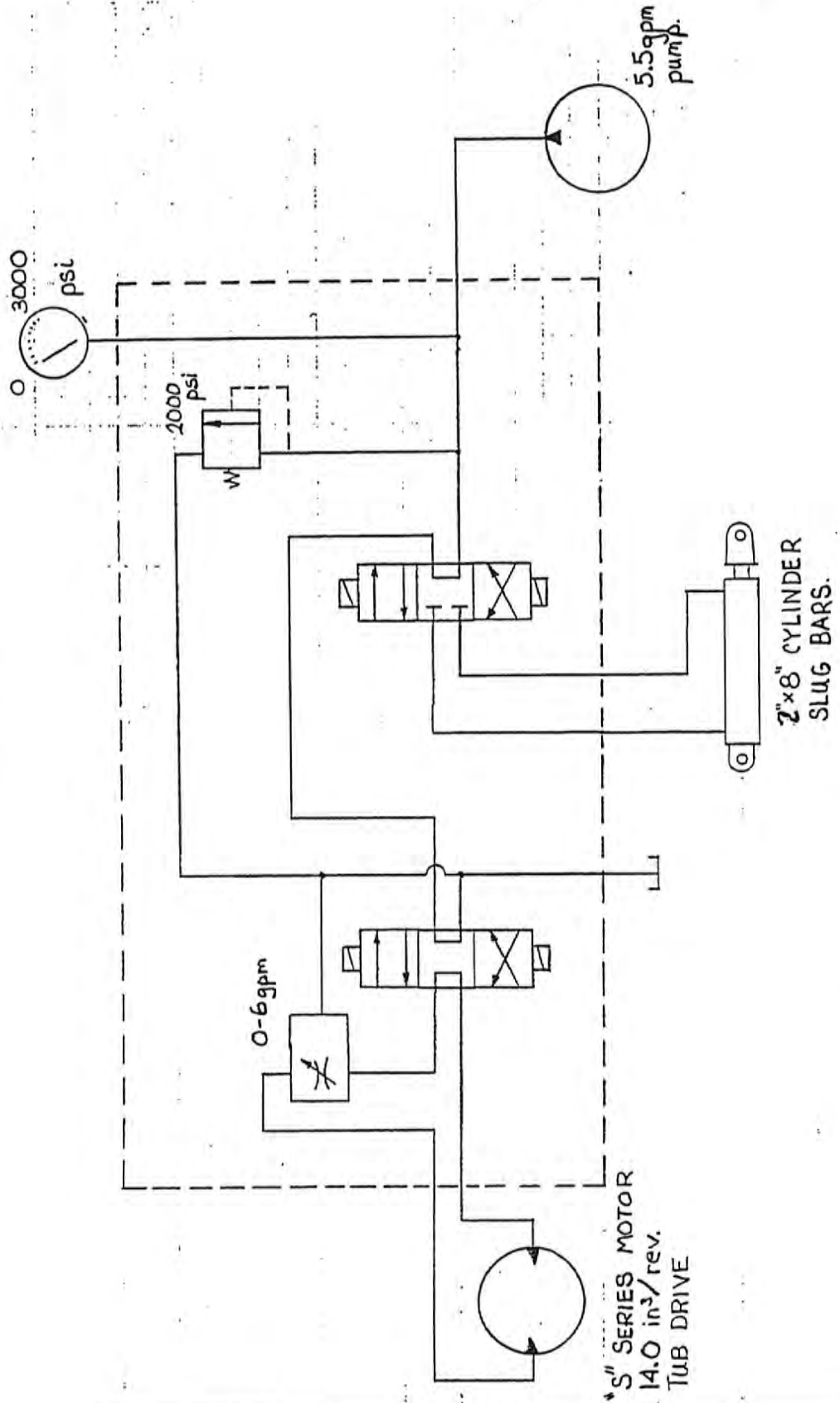


EC-900 INDUSTRIAL GRINDER

HYDRAULIC SCHEMATIC : OPTION 2

PRIMARY INSULATION MILL OPTION II

115 VAC

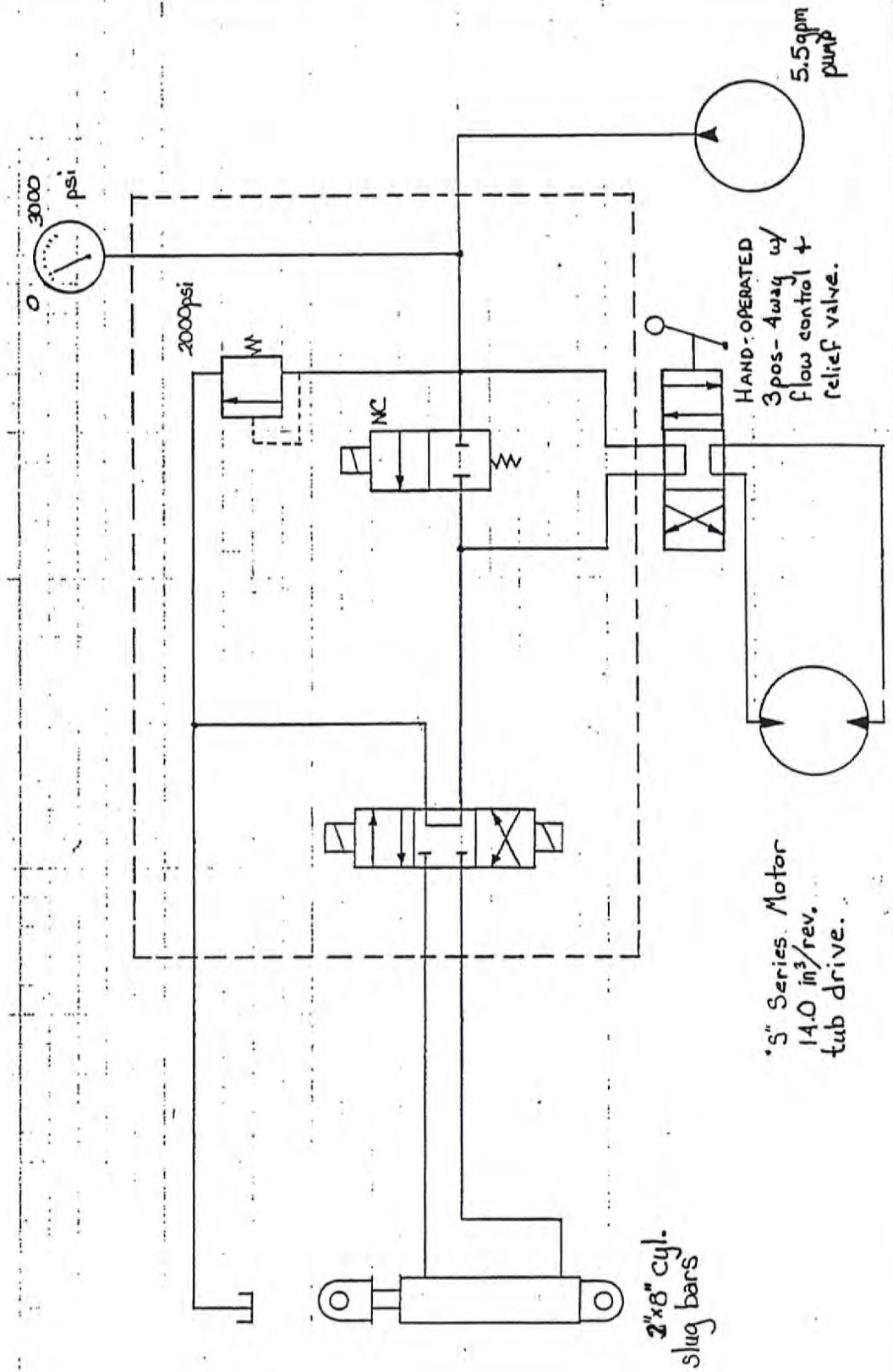


HYDRAULICS SCHEMATIC : OPTION 1

PRIMARY INSULATION MILL

OPTION 1

115 VAC



MAIN FRAME CONT.

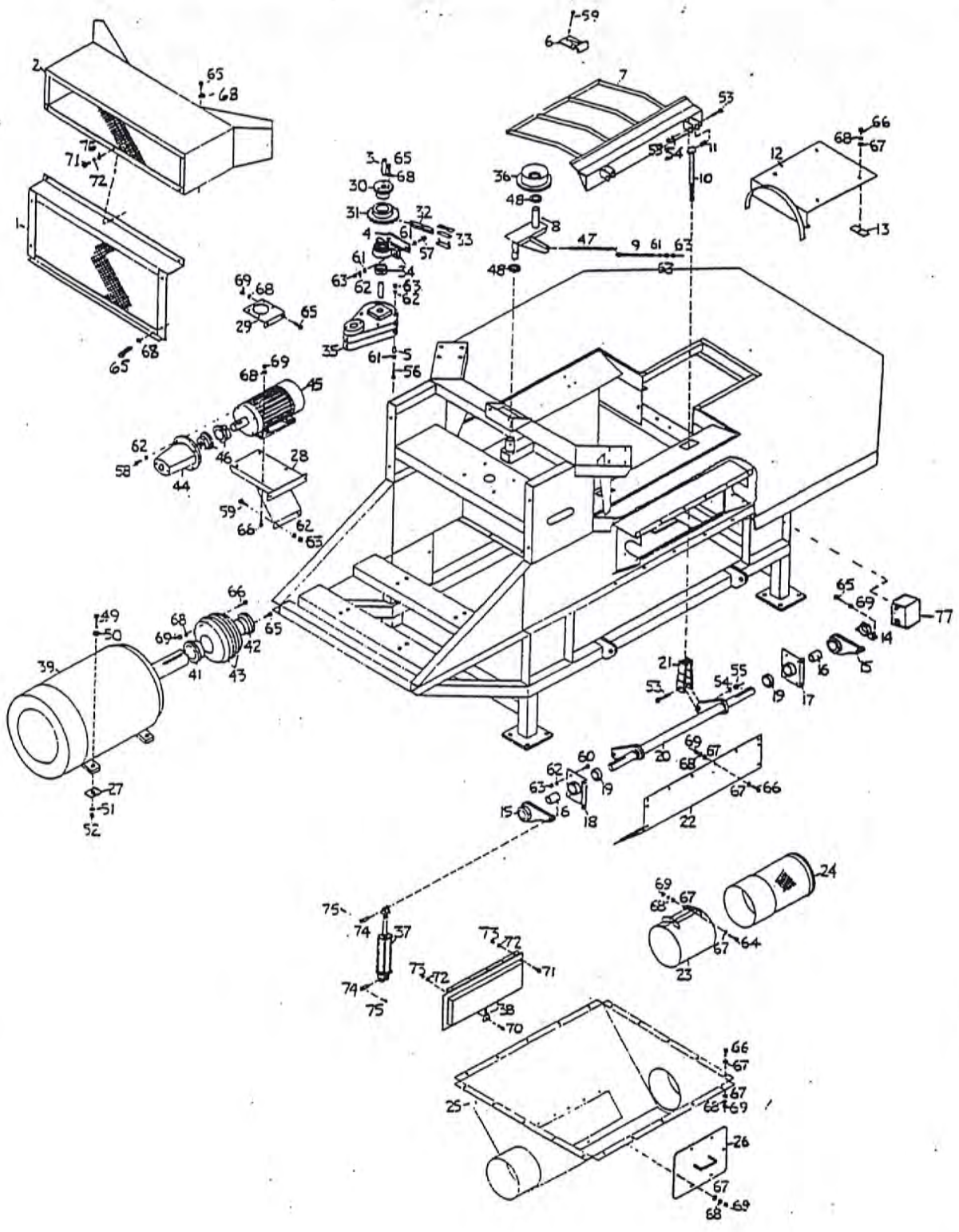
46	7500362	1	Hydraulic Motor Coupler, 7/8x1-3/8
47	6100001	1	Pull Spring
48	5000008	2	1-1/2 " Narrow Rim Bushing
49	4800033	4	3\4x2 Hex Bolt
50	5000005	4	3/4 Flat Washer
51	5000012	4	3/4 Lock Washer
52	4900004	4	3/4 Hex Nut
53	3800054	4	5/8x3-1/2 Hex Bolt
54	5000003	4	5/8 Lock Washer
55	4900005	4	5/8 Hex Nut
56	4800077	4	1/2c5-1/2 Hex Bolt
57	4800079	2	1/2x2-1/2 Hex Bolt
58	4800082	4	1/2c1-1/2 Hex Bolt
59	4800048	10	1/2x1-1/4 Hex Bolt
60	4800085	8	1/2x1 Hex Bolt
61	5000004	9	1/2 Flat Washer
62	5000006	22	1/2 Lock Washer
63	4900001	20	1/2 Hex Nut
64	4800156	2	3/8c3 Hex Bolt
65	4800098	19	3/8c1-1/4 Hex Bolt
66	4800003	54	3/8x1 Hex Bolt
67	5000001	82	3/8 Flat Washer
68	5000019	73	3/8 Lock Washer
69	4900002	62	3/8 Hex Nut
70	4800084	1	5/16x1-1/2 Hex Bolt
71	4800071	8	5/16x1-1/4 Hex Bolt
72	5000023	9	5/16 Lock Washer
73	4900003	6	5/16 Hex Nut
74	4100087	4	1x3 Cylinder Pin
75	4800123	4	1/8x2 Cotter Key
76	5000023	3	5/16 Flat Wasehr
77	5700056	1	Limit Switch

EC-900 INDUSTRIAL GRINDER

MAIN FRAME

<u>ITEM NO.</u>	<u>PART NO.</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	7000010	1	Lower Tub Drive Shield
2	7000011	1	Upper Tub Drive Shield
3	7000012	1	Tub Drive Shaft, 1-1/2x21-1/2
4	4700332	1	Shim
5	7000013	4	Gearbox Shims
6	7000014	2	Slug Bar Bearing Clip
6	7000015	1	Slug Bar
8	4700324	1	Swing Idler Arm
9	7000016	1	Spring Tension Bolt
10	7000017	2	Lift Rod
11	7000018	1	Hardened Bushing
12	7000019	1	Platform Cover
13	4500094	4	Platform Cover Latch
14	7000020	1	Limit Set Mount
15	7000021	2	Hrdraulic Cylinder Kidney
16	7000035	2	Brass liner
17	7000022	1	Torque Tube Bushing Plate Right Hand
18	7000023	1	Torque Tube Bushing Plate Left Hand
19	7000024	2	Flange
20	7000025	1	Torque Tube
21	7000026	1	Lift Rod End
22	7000027	1	Torque Tube Cover
23	7000028	1	10" Clamp
24	7000029	1	Blower Intake Screen
25	7000030	1	Belly Pan
26	7000031	1	Belly Pan Access Cover
27	7000032		Motor Shims (As Needed)
28	7000033	1	Hydraulic Motor Mount
29	7000034	1	Directional Valve Mount
30	1500024	1	Hub, 1-1/2 Taper-Lok
31	1000053	1	Sprocket, Taper Lok
32	1100046	1	2080 Chain 145 Links
33	1100070	1	2080 Chain Connector Link
34	1800001	1	Bearing, 1-1/2 Pillow Block
35	3100062	1	Gear Box
36	1200004 1200007	1	No 6 Roller
37	4100073	2	Cylinder
38	7500361	1	Magnet Kit
39	5700026	1	150 HP Motor, TEFC
40	5700027	1	200 HP Motor. TEFC (not shown)
41	1400514	1	Hub, 3-3/8
42	1400513	1	Hub, 2-7/16
43	7500171	2	Motor Coupler, 12"
44	4200011	1	Hydraulic Pump Mount
45	5700025	1	10 HP Motor

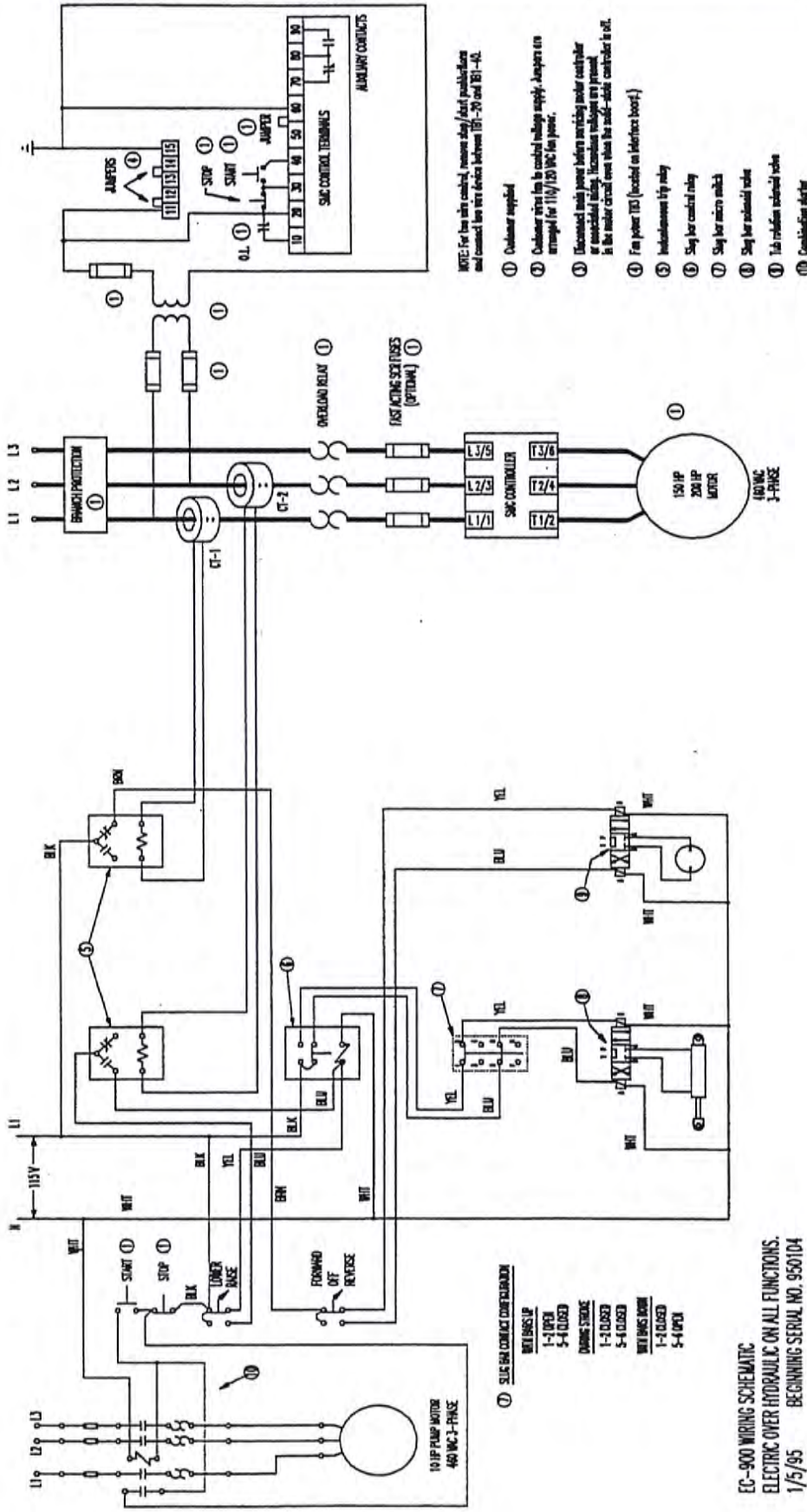
MAIN FRAME





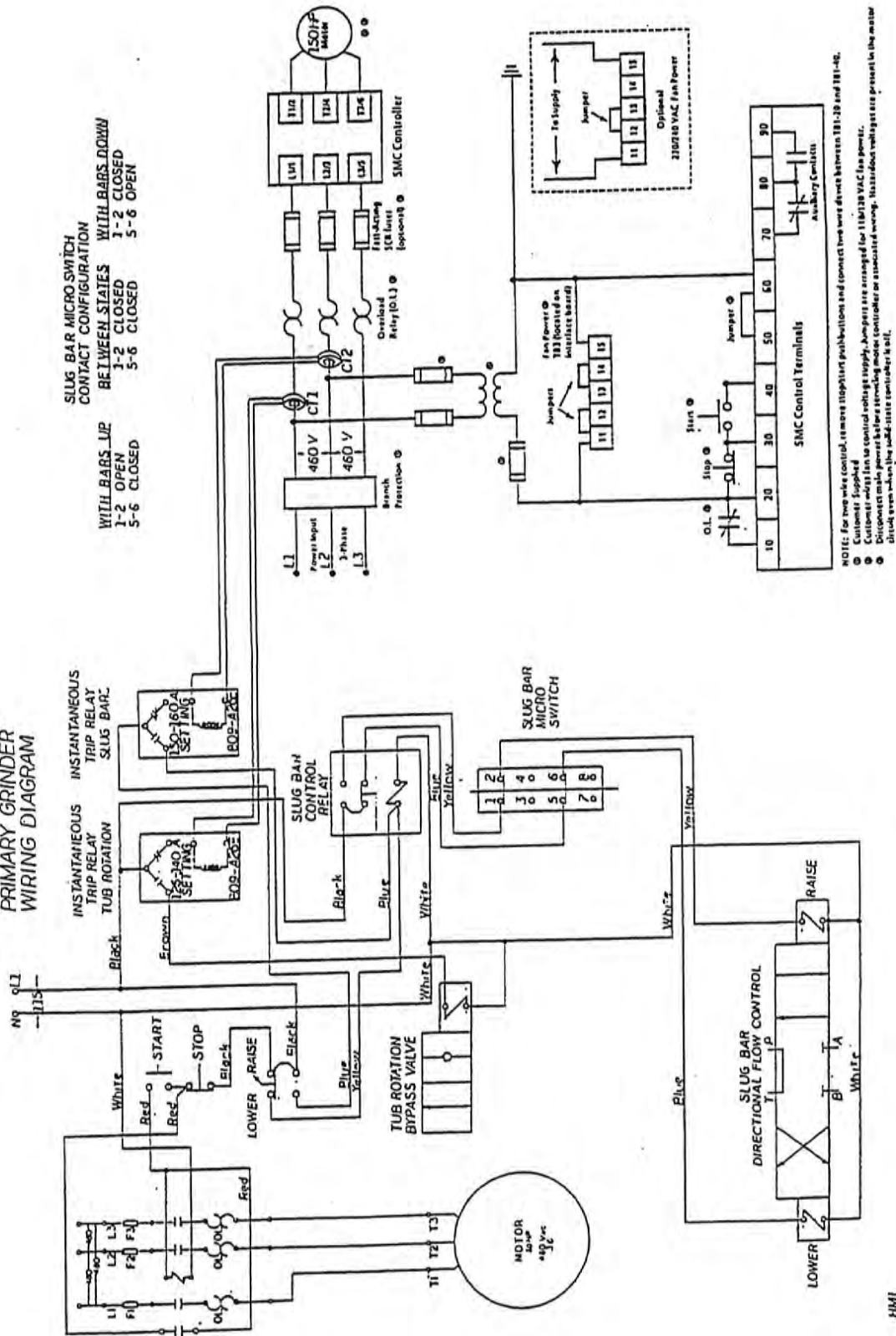
**EC-900
INDUSTRIAL
GRINDER**

PARTS BOOK



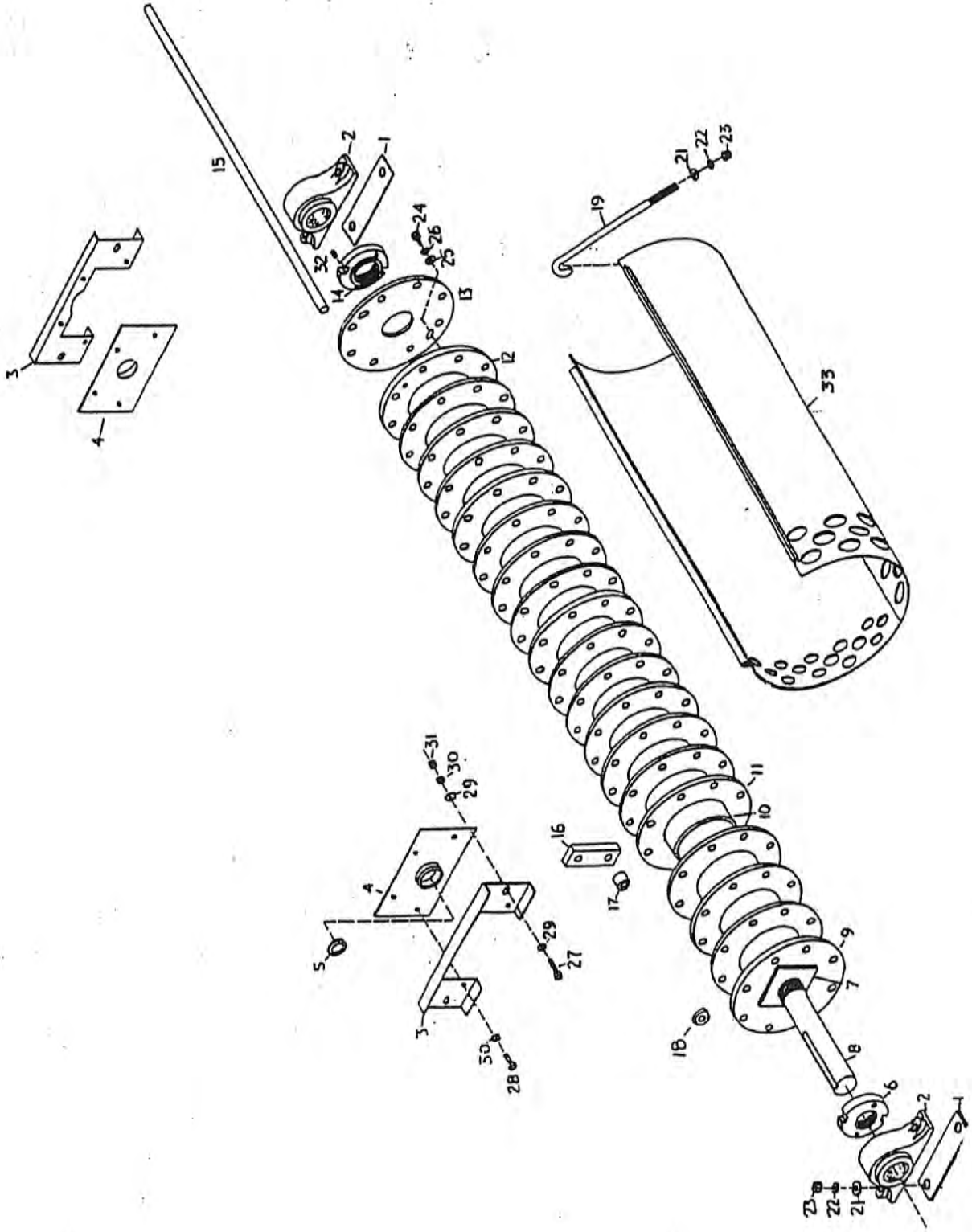
EC-900 WIRING SCHEMATIC
ELECTRIC OVER HYDRAULIC ON ALL FUNCTIONS.
1/5/95 BEGINNING SERIAL NO. 950104

PRIMARY GRINDER WIRING DIAGRAM



<u>ITEM NO</u>	<u>PART NO.</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	120002	4	No. 2 Roller
2	1200010	2	Pressure Roler
3	7000002	4	Roller Shield
4	1800001	8	Bearing, 1-1/2 Pillow Block
5	4500137	4	Tub Knob
6	7000001	1	Tub
7	4500124	1	6" Belting
8	4500086	1	Tub Fin 10"
9	4800114	24	Bolt\Hex\1/2x2
10	4800018	3	Bolt\Hex\1/2x1-1/4
11	5000004	51	Wask\Flat\1/2
12	5000006	27	Wash\Lock\1/2
13	4900001	27	Nut\Hex\1/2
14	4800012	18	Bolt\Crg\3/8x1-1/4
15	4800053	8	Bolt\Crg\3/8x1
16	5000019	26	Wash\Lock\3/8
17	4900002	26	Nut\Hex\3/8
18	4800013	16	Bolt\Hex\5/16x1
19	5000023	16	Wash\Flat\5/16
20	5000022	16	Wash\Lock\5/16
21	4900003	16	Nut\Hex\5/16

CYLINDER

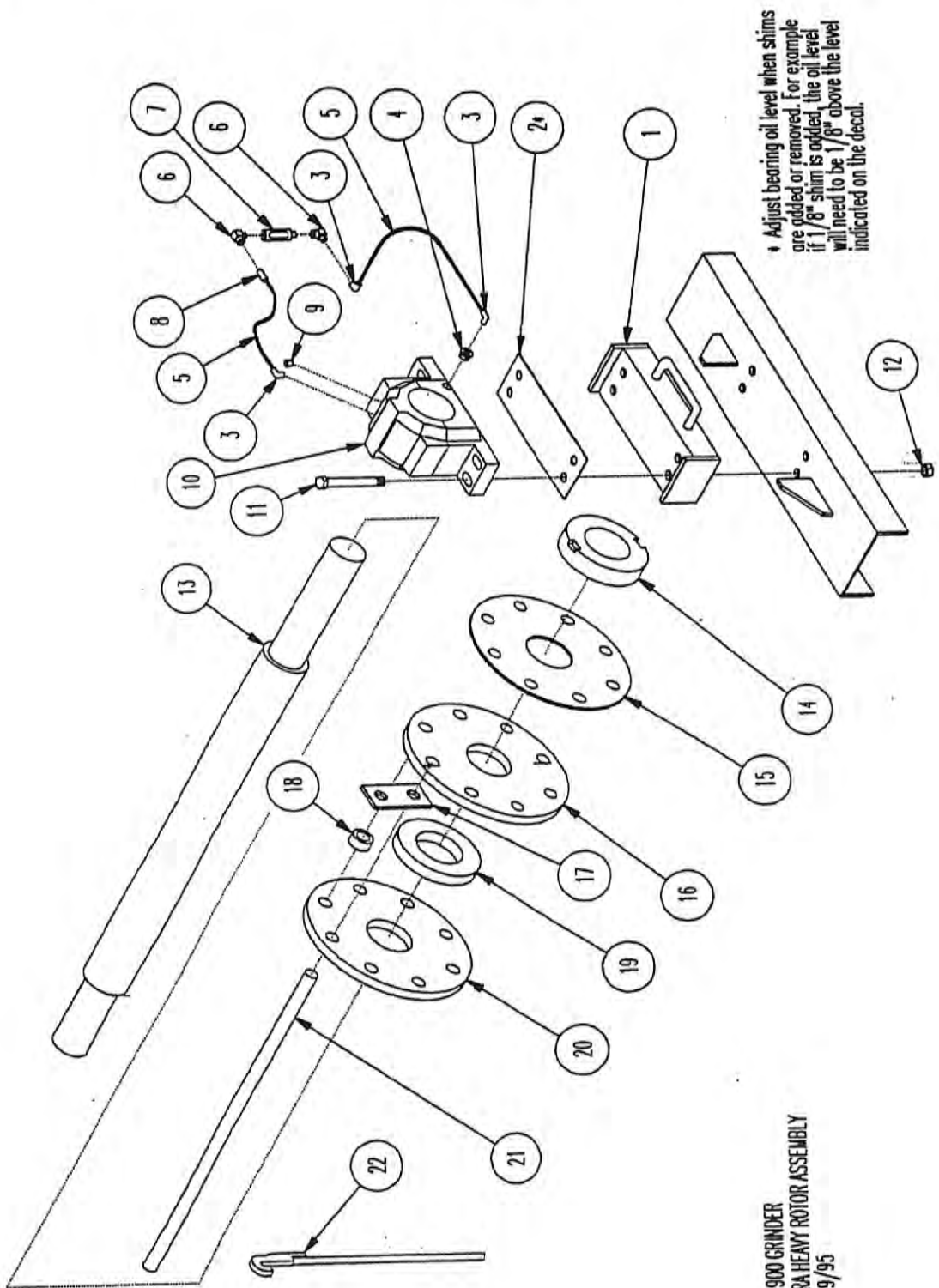


EC-900 INDUSTRIAL GRINDER

CYLINDER

<u>ITEM</u>	<u>PART NO.</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	7000009		Bearing Shims (AS Needed)
2	1800008	2	Bearing, 2-7/16" Pillow Block
3	7000007	2	Cylinder Cover
4	7000008	2	Cylinder Seal Plate
5	3500012	2	Seal
6	4500022	1	Cylinder Nut
7	4700033	2	Thrust Washer
8	7000003	1	Cylinder Shaft
9	4700034	1	Cylinder End Plate
10	7000004	18	Spacer
11	7000006	17	Cylinder Plate
12	4700040	1	Cylinder End Plate, W/Tapped holes
13	4700041	1	Retainer Plate
14	4500026	1	Cylinder Nut With Shoulder
15	5300001	8	Hammer Rod. 15/16x40
16	5200001	60	Hammer
17	4700169	2	Hammer Rod Spacer
18	4700268	4	Hammer Rod Spacer (3/8")
19	7000006	2	Screen Hold Down Bar
20	4800054	4	Bolt\Hex\5/8x3-1.2
21	5000002	10	Wash\Flat\5/8
22	5000003	6	Wash\Lock\5/8
23	4900005	6	Nut\Hex\5/8
24	4800085	1	Bolt\hex\1/2x1
25	5000004	1	Wash\Flat\1/2
26	5000006	1	Wash\lock\1.2
27	4800098	4	Bolt\Hex\3/8x1-1.4
28	4800164	8	Bolt\Hex\3/8x3/4
29	5000001	8	Wash\Flat\3/8
30	5000019	12	Wash\Lock\3/8
31	4900002	4	Nut\Hex\3/8
32	4800272	4	Screw\Set\1/2-13x2
33	7000046		Screen\1-1/2

EXTRA HEAVY ROTOR ASSEMBLY

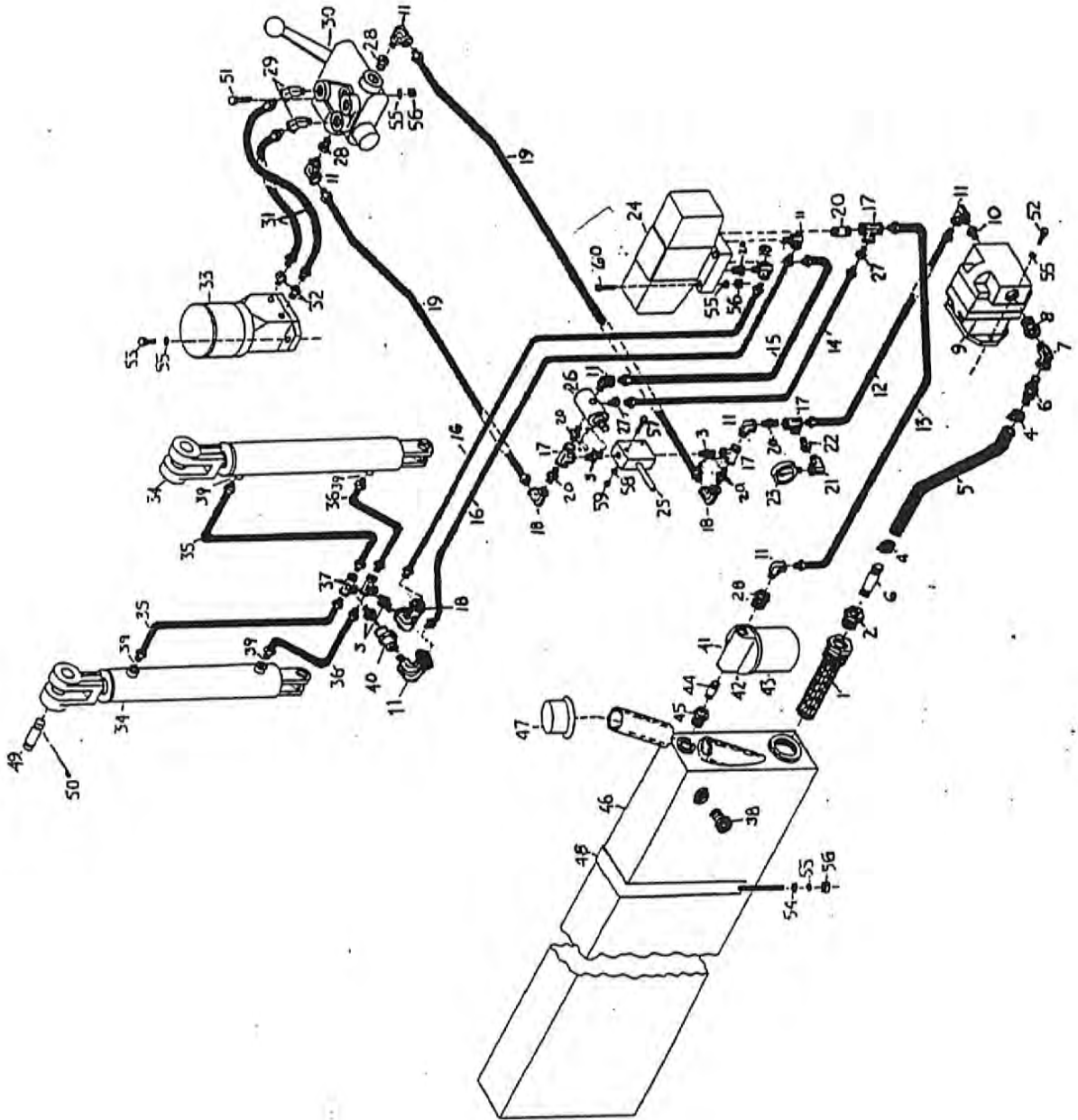


EC-900 GRINDER
 EXTRA HEAVY ROTOR ASSEMBLY
 1/19/95

EXTRA HEAVY ROTOR ASSEMBLY

<u>ITEM</u>	<u>PART NO.</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	7000055	2	Bearing Spacer Block
2	7000056	As Needed	1/8" Shim
3	3800062	6	1/8" Pipe 90° Compress
4	3800242	2	3/8" to 1/8" NPT Bushing
5	3700142	Per Ft.	1/4" OD Nylon Tubing
6	3800111	4	1/8" NPT 90°
7	3800225	2	Vented Oil Sight Glass
8	3800095	2	1/8" NPT to 1/4" Tube Complete
9	3800243	2	1/8" NPT Sintered Vent
10	1800022	2	PB Bearing 3-1/2" 4-Bolt
11	4800382	8	3/4" x 6-1/2" GR5 Bolt
12	4900013	8	3/4" Crimp Lock Nut
13	7000057	1	Cylinder Shaft 4-1/2 x 68"
14	4700598	2	Cylinder Nut 4-1.2" ID x 2"
15	4700519	2	Movable Plate
16	4700668	2	End Plate With Tapped Hole
17	5200115	60	3/8" x 3" Hammer
18	7000064	60	Hammer Rod Shock Spacer 1"
19	7000058	18	Spacer 8.65 OD x 1.205" T
20	4700667	17	1" Cylinder Plate
21	5300109	8	1-1/4 x 40" Case Hard Rod Screen Hook

HYDRAULICS

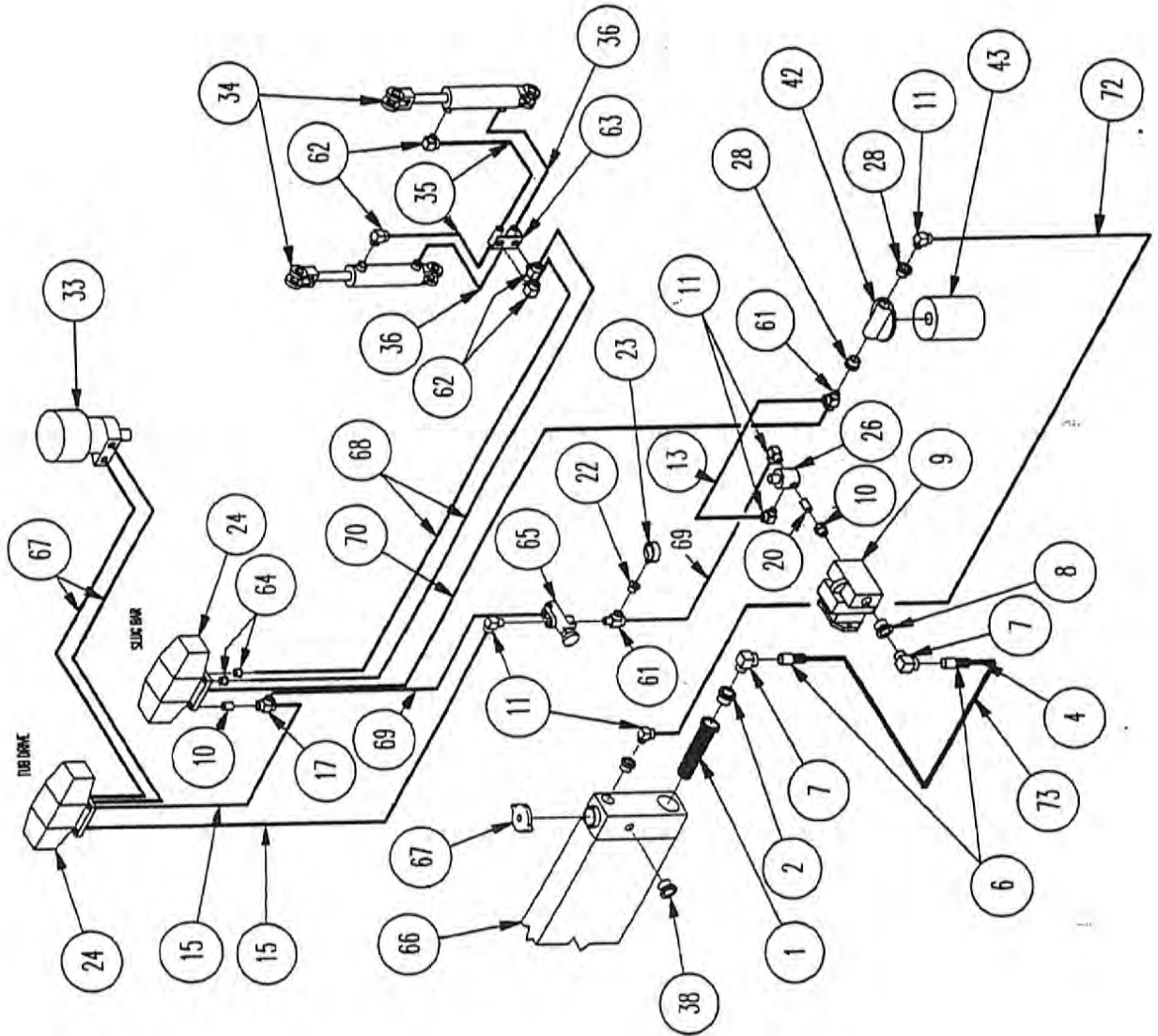


EC-900 INDUSTRIAL GRINDER

HYDRAULICS CONT.

<u>ITEM</u>	<u>PART NO.</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	4400007	1	Strainer
2	3800022	1	1-1/4" to 1" Bushing
3	3800127	4	1/2" to 3/8" Nipple
4	3800143	2	1" Hose Clamp T-Bolt
5	3700185	1	1" x 28" Suction Hose
6	3800056	2	1" King Nipple
7	3800021	1	1" 90° Street Elbow
8	3800046	1	1-1/4" Straight to 1" Pipe w/O-Ring
9	4200010	1	Hydraulic Pump
10	3800047	1	1" Straight to 1/2" Pipe W/O-Ring
11	3800088	8	1/2" 90° Street Elbow
12	3700028	1	1/2" x 48" Hose
13	3700215	1	1/2" x 17" Hose
14	3700196	1	3/8" x 20" Hose
15	3700064	1	1/2" x 26" Hose
16	3700024	2	1/2" x 120" Hose
17	3800009	4	1/2" Tee
18	3800088	4	1/2" 90° Elbow
19	3700034	2	1/2" x 60" Hose
20	3800045	6	1/2" x 2" Nipple
21	3800116	1	1/4" 90° Street Elbow
22	3800049	1	1/2" to 1/4" Bushing
23	3800059	1	Pressure Gage
24	6800068	1	Directional Valve
25	4300023	1	Solenoid Valve
26	4000017	1	Relief Valve
27	3800007	2	1/2" to 3/8" Bushing
28	3800010	3	3/4" to 1/2" Bushing
29	3800004	2	1/2" 45° Street Elbow
30	4000016	1	Flow Control Valve
31	3700202	2	1/2" x 27" Hose
32	3800087	2	7/8" Straight to 1/2" Pipe W/O-Ring
33	3900016	1	Orbit Motor
34	4100073	2	Hydraulic Cylinder 2" x 8"
35	3700015	2	3/8" x 27" Hose
36	3700201	2	3/8" x 19" Hose
37	3800100	2	3/8" Tee
38	3800137	1	3/4" Sight Glass
39	3800013	4	3/8" 45° Street Elbow
40	3800051	1	1/2" Coupler

HYDRAULICS CONT.



EC-900 INDUSTRIAL GRINDER

HYDRAULICS CONT.

<u>ITEM</u>	<u>PART NO.</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
41	4400006	1	Filter Assembly Complete
42	4400004	1	Filter Base
43	4400005	1	Filter Element
44	3800015	1	3/4" x 2" Nipple
45	3800131	1	1" to 3/4" Bushing
46	4500255	1	Tank
47	3800027	1	Cap
48	4500082	2	Oil Tank Strap
49	4100087	4	1" x 3" Cylinder Pin
50	4800123	1	1/8" x 1-1/2" Cotter Key
51	4800146	3	3/8" x 2" GR5 Bolt
52	4800098	2	3/8" x 1-1/4" GR5 Bolt
53	4800003	2	3/8" x 1" GR5 Bolt
54	5000001	4	3/8" Flat Washer
55	5000019	15	3/8" Lock Washer
56	4900002	11	3/8" Nut
57	4800101	2	1/4" x 2-1/2" GR5 Bolt
58	5000024	2	1/4" Lock Washer
59	4900009	2	1/4" Nut
60	4800029	4	3/8" x 2-1/2" Gr5 Bolt
61	3800161	3	1/2" Street Tee
62	3800031	2	3/8" 90° Street Elbow
63	4700725	2	Hydraulic Manifold
64	3800007	2	1/2" to 3/8" NPT Bushing
65	4000075	1	0-10 GPM Flow Control
66	4500548	1	Oil Tank #4500433 W/Mod.
67	3700285	2	1/2" x 60" Hose SW, 7/8" O-Ring
68	3700069	2	3/8" x 138" Hose SW, SW
69	3700111	2	1/2" x 14" Hose SW, SO
70	3700079	1	1/2" x 34" Hose SW, SO
71			
72	3700078	1	1/2" x 67" Hose SW, SO
73	3700314	1	1" x 45" Suction Hose

EC-900 INDUSTRIAL GRINDER

