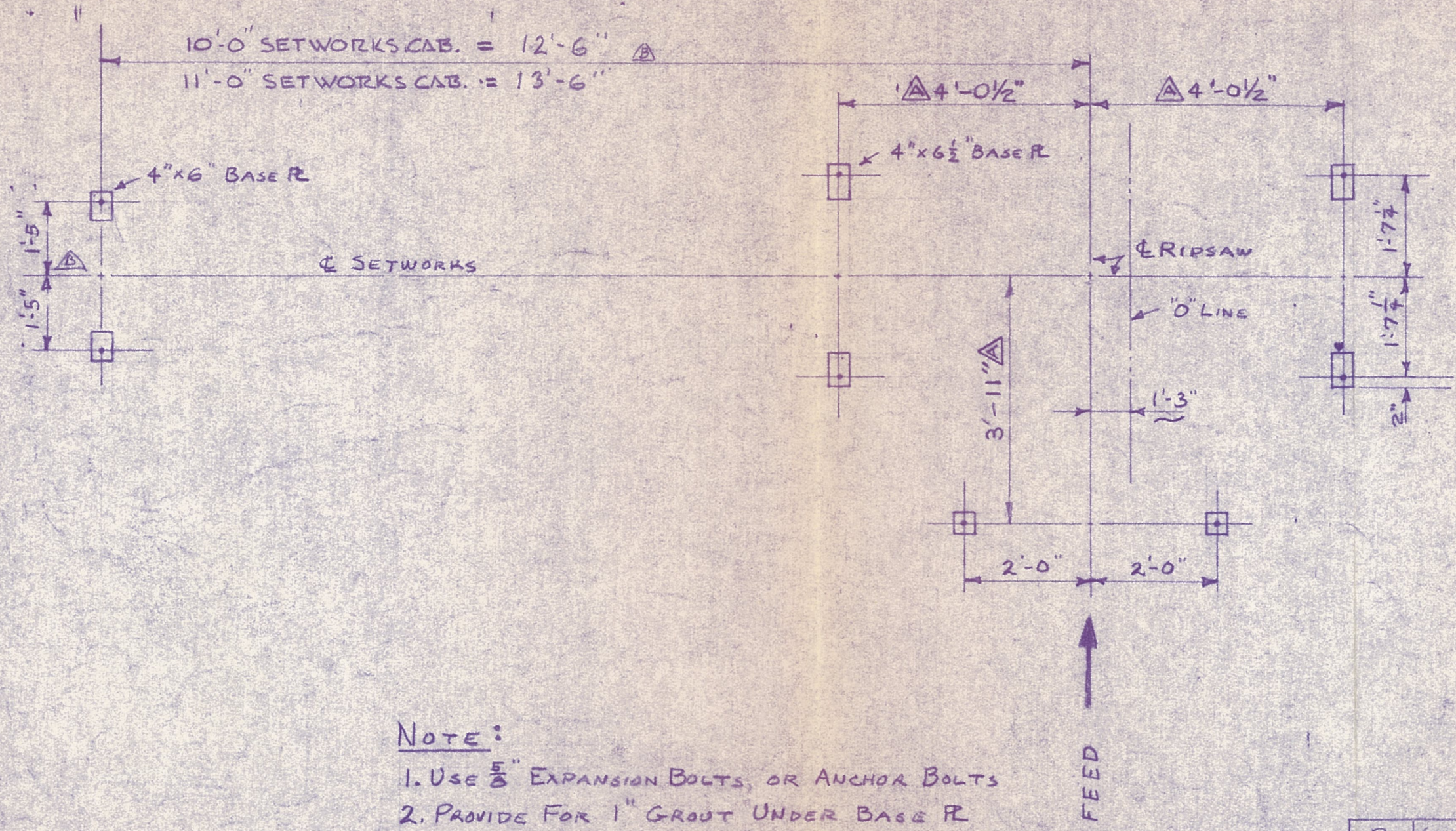


SHOP ORDER		PORTLAND IRON WORKS			PARTS LIST 24509-D		
S.O. 6942					TITLE		
CUSTOMER		RIPSAW - R.H. ZERO MASTER SETTING PLAN			SHEET 1 OF 1		
Harris of Pendleton					CODE 206-1		
K DED.	PULL	ITEM NO.	TOTAL QTY	PART NO.	DESCRIPTION	REV.	DATE
			1	24509-D	Setting Plan S.O. 6942		
				24516-D	Preselect Feed Conveyor W/O 12979		
				24381-D	Preselect Line-Up Conv. W/O 12980		
				24522-D	Shadowline W/O 12981		
				24362-D	Ripsaw - 5 Saw W/O 12982		
				24417-D	Setworks W/O 12984		
				24553-D	Electrical Controls (Panel) W/O 12983		
				24511-D	Keyboard " "		
				24500-B	Memory Lites " "		
				24555-B	Interpanel Wiring " "		
			1		Cable 18 GA 15 Cond 38' Mem Lite w/o 12983		
			1		" " " 9 " 35' Ripsaw		
			1		" " " 15 " 28' Preselect		
			2		" " (2) 48 " 38' (76') Keyboard		
			1		" " GA 60 " 28' Shadowline		
			1		" " " 60 " 30' Setworks		
			1	8239-B	Diode Card Chart - 1/8 nominal		
			1	8585-B	" " " - 7/8 nominal		
				24562-D	Suggested Motor Control Wiring		
				22364-B	Ripsaw Motor Wiring Details		
				9024-B	Ripsaw Dust Hood Connections		
				9518-B	Ripsaw Anchor Bolt Plan		
				7929-A	Ripsaw Side Head Setting		
				24596-Form	Recommended Spare Parts		
				24581-Form	Operating Instructions		
				6720-A	Pushbutton Keyboard		
				24557-B	MEMORY LITE WIRING		
				24564-B	TYPICAL TERMINAL CONNECTION		

B

SYM.	NO. REQD.	DESCRIPTION	DWG. NO.



NOTE:

1. USE $\frac{5}{8}$ " EXPANSION BOLTS, OR ANCHOR BOLTS
2. PROVIDE FOR 1" GROUT UNDER BASE PL
3. MACHINE MUST BE LEVEL BEFORE PLACING GROUT
4. RIPSAW WT. APPROX. 8000 LB.

B	6-13-80	12'-6" WAS 16'-0", 13'-6" WAS 17'-0"	AK
A	5-2-79	3'-11" WAS 4'-0", 4'-0 1/2" WAS 4'-0"	GG
SYM.	DATE	REVISION	BY

PORTLAND IRON WORKS
PORTLAND, OREGON

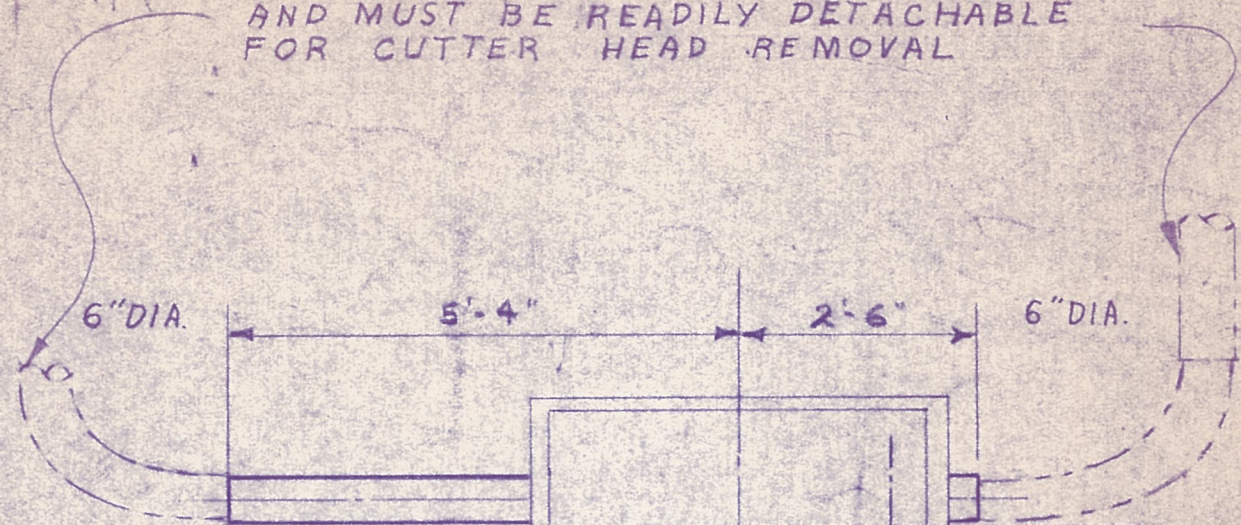
RIPSAW
ANCHOR BOLT PLAN
STRUCT. TYPE BASE RH Z

DATE	10-6-66	DR	AK	206	DRAWING NUMBER	9518 B
SCALE	1/2" = 1'-0"	CK		2		

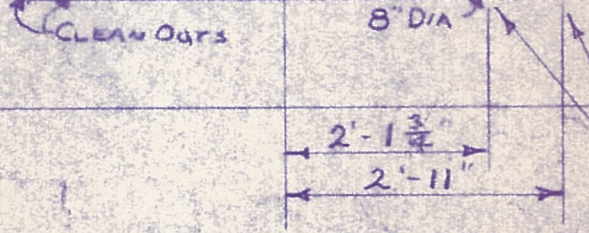
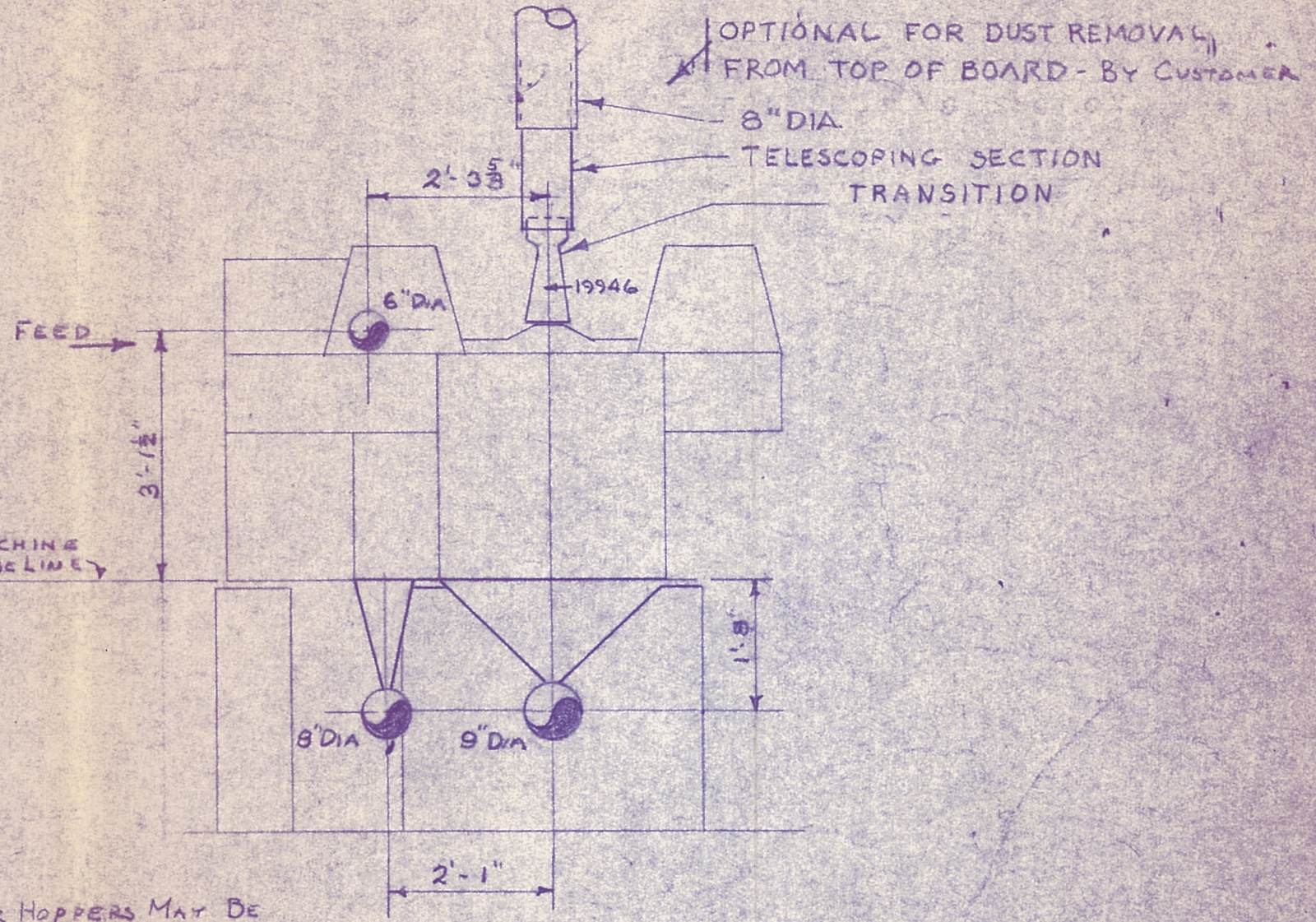
B

SYM.	NO. REQD.	DESCRIPTION	DWG. NO.

LONG SWEEP ELBOWS REQ'D
AND MUST BE READILY DETACHABLE
FOR CUTTER HEAD REMOVAL



OPTIONAL FOR DUST REMOVAL
FROM TOP OF BOARD - BY CUSTOMER



LOWER HOPPERS MAY BE
REVERSED END FOR END

RECOMMEND AIR VELOCITY - 5500 FPM

SYM.	DATE	REVISION	BY

PORTLAND IRON WORKS
PORTLAND, OREGON

RIPSAW
DUST HOOD CONN.
R.H. ZERO

DATE	5-2-66	DR/CK	206	DRAWING NUMBER 9024-B
SCALE	1/2" = 1'-0"	CK	1	

A

MAX. TRAVEL

ZERO LINE

EDGING SAVE TO

SAWS 2-3-4-5
STANDARD $\frac{3}{8}$ - $\frac{1}{2}$ - $\frac{3}{8}$

2" SAWS

FIXED CUTTER

SETTING CUTTER

EDGE REMOVAL TO
SAWS 2-3-4-5
MAX. $\frac{3}{4}$

6 RIPS

$\frac{7}{8}$ TO $\frac{8\frac{13}{16}}$

SP-30 PAGE 7

PORTLAND IRON WORKS
PORTLAND, OREGON

RIP SAW
SETTING SIDE HEAD
EDGING SAVE + EDGE REMOVAL

DATE 3-1-46

DR. DR

DRAWING NUMBER

SCALE

CK.

7929 A

INSTRUCTIONS

for the

OPERATION and MAINTENANCE

of the

PORTLAND IRON WORKS "MULTI-MATIC" RIPSAW

U.S. Patent No. 3,202,189

INTRODUCTION

The Portland Iron Works "Multi-Matic" Ripsaw is a heavy duty machine designed for precision cutting of lumber. With regularly applied maintenance and a few special rules to observe in operation, the machine should give long and satisfactory service.

The following paragraphs have been written to assist the owner of this equipment in setting up schedules to assure proper care of the equipment. Also included is a trouble shooting guide which will prove helpful in locating malfunctioning controls.

A summary page is located following the trouble shooting guide which lists, by time intervals, maintenance operations which should be provided. May we suggest that copies of this summary be posted near the machinery to serve as a check list to your operators and maintenance personnel.

GENERAL

The machine and saw chamber should be cleaned of sawdust residue, chips and knots at least twice a shift. This procedure will assure proper disposal of waste, will allow the spray lubrication system to reach moving parts, and minimize fire hazard. The position of the top feed rolls is adjustable, vertically, and should be set so that a board of the thickness being cut lifts the rolls approximately 1/8", measured at the adjusting nut.

★ Two electrical interlocks are located on the ripsaw, one ahead of the saws, and the second behind the saws. These are safety devices used to prevent the saws from setting when there is a board in the machine. Operation of these devices must be maintained in order to prevent potential damage to saws and to signal the memory to set for the next board.

CHANGING SAWS

Under normal operating conditions a set of saws should cut one (1) million board feet of lumber (approximately 20, 8 hr. shifts) between sharpenings. More or less footage may be experienced, depending upon the hardness and the quality of lumber cut. Upon start-up of a new plant, saws should be examined often to determine what saw changing schedule should be established. CAUTION: Blades should not be allowed to operate in a dull condition, as overheating and loss of teeth may be experienced. Rotating the placement of saws will increase the saw life since the outside saws are not always in the cut.

CHANGING SAWS (continued)

Page 2 of 8

Prior to changing saw blades, the machine should be blown down to prevent entrance of sawdust into the arbor bearing lubrication system. Upon reassembly of the bridgetrees, care should be taken to clean mating surfaces and prevent entrance of foreign matter into the lubricating ports. Care should be taken not to loosen or damage the "O" Ring around the lubrication port, as this forms the seal between the bridgetree parts.

In addition to spare saws, some mills maintain spare saw collars. These collars consist of two types; a plain collar and a spool collar. A dual cutter, 5-saw machine contains 4 plain collars and 1 spool collar. A single cutter, 6-saw machine contains 4 plain collars and 2 spool collars. For ease in changing saws, spare plain collars can be used, interchangeably, on the arbor without dismounting saws. However, spare spool collars should be used only in case of damage, since their use requires dismantling of bearing housing.

★ Whenever the saws are changed, or the bridgetrees are separated, lubricating oil is lost from the lubricating ports in the bridgetrees. Therefore, after re-assembly of the bridgetrees, the lubricating oil should be hand pumped by turning the hand crank provided on the lubricator or the support shafts should be allowed to operate until oil can be seen seeping out of all of the bearing seals.

SIDE HEAD CUTTERS

Machines are normally furnished with one or two cutterheads. One is designed to remove edgings from the zero or fence side of the boards and is referred to as the fixed side head cutter. The second, if furnished, is designed to remove edgings from the side of the board opposite the fence and is referred to as the moving or setting side head cutter. Both sideheads are limited to a 3/4" maximum cut. The fixed head is limited by the line-up fence position. The setting side head is limited by a physical stop which prevents the board from feeding into the machine if more than 3/4" is called for to be removed. The operator should avoid improper narrow programming of board rips since this practice will result in eventual failure of the stop and subsequent damage to the cutterhead blower head and knives.

Maintenance of the cutterhead knives is the same as any other knives used on planer or moulder heads. Generally, the knives should be sharpened and jointed once or twice a week. Dull knives will retard lumber feed, increase break-up of material, may cause the board to move away from the fence, and will give poor quality cuts. Break-up of material also usually causes jam-ups in the machine which interferes with production rates. Jointing should be used with moderation-- too much is as bad as dull knives. (typically 3 times)

SAW SPACING

When saws are changed, it may be necessary to reset the saw spacing. This is accomplished by adjusting the turnbuckles located on the shifting rods between the Ripsaw and Setworks.

Normally, only one or two saws will need adjustment. However, if all saws need adjustment, the procedure is as follows:

1. Set the Keyboard for minimum set, say 7/8", and activate set buttons.

SAW SPACING (continued)

Page 3 of 8

2. With the support shaft motor running and all other motors off, back all saws away from zero or fence, starting with the turnbuckle nearest the front of the machine. Approximately $1/4$ (.0357 inch per $1/4$ turn) turn of each turnbuckle should, normally, be sufficient.
3. Using a piece of keystick the thickness of the set chosen, have an assistant gauge between the fence and first saw. By rotating the rear turnbuckle, move the saw until it just touches the gauge block. Tighten turnbuckle locknuts.
4. Repeat gauging procedure by moving second from rear turnbuckle which moves the second saw from the fence. Gauging block is now used between first and second saw.
5. Repeat procedure for all saws (and setting cutter if machine has one).
6. A final check may be made by running a board through the machine and checking the width of cut. Final adjustments may be made by re-adjusting turnbuckles.

NOTE: Any adjustment made on a turnbuckle other than the front turnbuckle will require the same adjustment on all other turnbuckles located towards the front of the machine.

SETWORKS CYLINDERS

The Ripsaw Setworks cylinders have adjustable strokes of about plus or minus $1/8$ ". This is to allow exact setting of each increment cylinder. Each increment cylinder should be checked for stroke approximately twice a year to assure accuracy of cut. Checking can be accomplished by attaching a scale to a push rod and a fixed pointer adjacent thereto, or mounting a magnetic base and dial indicator, depending upon the accuracy desired. Operation of each cylinder can be accomplished by jumping Setwork wiring terminals in the Control Panel or in the Setworks junction box or by manual over-rides on the valve pilots. Adjustment of stroke length is obtained by releasing the packing gland lock and rotating the packing gland at the rod end of the cylinder. Final adjustment of the gland must be inward. (one flat = .005")

If it should become necessary to replace parts within the cylinders, it should be noted that it usually is not necessary to remove the entire cylinder or its bank from the cabinet. Cylinder tie-bolts can be loosened and the cylinder opened in place. To replace the cylinder cup on the rod end of the piston, it is not necessary to remove the piston from the rod. The cup can be distorted enough to slip sideways over the piston and then set in place on the piston.

AIR PRESSURE REQUIREMENTS

Air pressure for operating the Ripsaw Setworks should be set at about 15 PSI over the minimum pressure it takes to activate the cylinders. Generally, this resulting pressure is around 60 PSIG when the equipment is new, and lower as moving surfaces become worn in. The Shadowline or Laser Line Setworks should be set on the same basis and will result in approximately 40 PSIG pressure. Excessive operating pressure will cause shock loading of machine parts which can result in shortened machine life. Higher operating pressures will not necessarily decrease shifting time, since more air must be exhausted from the cylinder before it can shift.

PARTS REPLACEMENT

To maintain cutting accuracy, certain parts within the saw shifting mechanism should be replaced as they become worn. The special set screws (Part #7310-B), which are removed from the Arbor bearings to allow saw changes, are the most susceptible part subject to wear and should be examined each time they are removed from the machine. The shifter bars (Part #8580-1 & 2), located in the arbor slots which connect the plain collars with the special set screws, should also be examined for hole enlargement and replaced when worn. The bridgetree bushings which ride on the support shafts should be replaced when they are about .050 inches loose on the shaft.

All machinery should be inspected at least twice a year. Parts showing damage or excessive wear should be repaired or replaced. Mid-Oregon Industries generally keeps a supply of replacement parts in stock for immediate shipment. When ordering parts, please list part number and original order number. Both numbers can be obtained from the parts lists in the following pages of your manual.

LUBRICATION

Grease fittings should be serviced at least once a week with your normal plant grease-gun lubrication.

Setworks cylinder lubricators should be filled once a shift. The 2" Setworks should be set to use a filling every 2 to 3 shifts. The 4" Setworks should use a little less than a filling per shift. Lubricants used should be Mobile Velocite "E", Veedol Artisan #10, or their equivalent. NOTE: Do not use detergent base oil.

The Arbor spray lubrication system should be set to use one tankful of lubricant per shift. Lubricant should consist of an inexpensive light weight lube oil mixed half and half with fuel oil. Spray nozzle valves should be set for equal flow and the timer operated with a two or three second "ON" time. Note that it is NOT necessary to use more than one tank of lubricant per shift.

When using a board count spray activator, set the control to spray every 9 to 10 boards, or more often if shifting becomes sluggish or to reduce pitch build-up. This is adjustable by changing the lube spray counter in the software.

The Arbor bearing lubricator should be filled with an inexpensive light weight lube oil each shift. This equipment should be adjusted to flow between 1 and 2 drops of oil to each bearing each cycle of the lubricator.

IMPORTANT: Failing to fill this lubricator can cause the Arbor bearings to seize.

Gear reducer cases should be checked weekly for oil level and maintained on a regular schedule with similar equipment in the plant.

ELECTRICAL CONTROL

All Electrical Cabinets should be kept closed in order to keep electrical contacts clean. All controls associated with operation of the Ripsaw System, furnished by Mid-Oregon Industries, are operated on 24 Volt D.C. current.

ELECTRICAL CONTROL (continued)

Trouble shooting 24 Volt controls can, in most cases, be accomplished simply with a volt meter and a jumper wire. A light, or sound emitter may be used instead of the volt meter.

Cabinet doors and junction boxes should be kept closed to keep parts clean, avoid damage, and prevent short circuits. Multi-conductor cables should be hung, or otherwise protected from mechanical damage, which would cause malfunction of controls.

The keys on the keyboard can be set-up (programmed) for any desired rip-width. This is done by depressing the desired keys to be programmed (multiple rows can be done at a time), then going to the control panel and flipping the desired toggle switches. By pushing the "select" pushbutton that's located on the toggle switch box, the programming is complete for those depressed keys. For a 7/8" nominal Ripsaw, if you desire the 3rd key to rip a 2" board, you would push the 3rd key on the keyboard for saws A,B,C,D,E, F. At the control panel, flip the toggle switch up (on) with the rest of the switches down (off). By pushing the "select" push button, the 3rd key for saws A,B,C,D,E,F will be set up to always rip a 2" wide board when depressed. To rip a 2" wide board on a ripsaw having a 7/8" nominal rip width (collapsed distance between saw blades), the 1" and 1/8" cylinders will be opened. This normally refers to saws B,C,D, and E. For the A and F banks, the 2" and 1/8" cylinders would be opened to rip a 2" wide board. This is due to their original position of a minus 1/8" nominal.

SAFETY PRECAUTIONS

Many safety devices have been incorporated on the machine to insure the safety of plant personnel working on, and in, the vicinity of the equipment. However, some of these devices may become ineffective, due to unusual or freak operating conditions, or by someone failing to replace a safety device after a "jam-up", maintenance or repair procedure.

Circular saw machinery, including ripsaws, have a dangerous operating characteristic of kicking boards and splinters back out of the machine opposite to the direction of feed and at very high speeds. For this reason, anti-kickback fingers have been installed on the infeed of the machine. Since this equipment cannot be 100% effective, plant personnel should not be allowed to pass, or work, in the area ahead of the machine. It is also recommended that a sturdy back stop be placed at the end of the roll case which feeds lumber to the machine. This will act as a back-up safety stop should the anti-kickback device become inoperative.

TROUBLE SHOOTING

The selection box located in the control panel can be used to aid in locating faulty valves or cylinders. This can easily be done by programming one key for one particular cylinder stroke using the keyboard programming procedure earlier mentioned.

To operate the corresponding Ripsaw Setworks valve and cylinder:

- a) Depress the manual "input" button to enter data into the Memory.
- b) Depress the manual "output" button to transfer Memory data out to the Setworks valve.

The manual reset button is used to clear the Memory of all previous sets. Also, clear the Memory after any power interruption. The three manual override buttons are located in the control panel on the pre-set box.

TROUBLE SHOOTING GUIDE

<u>MALFUNCTION</u>	<u>POSSIBLE CAUSES</u>	<u>PROCEDURE</u>
Shadowline or Laserline set shy by some fixed increment. Error not reflected in Ripsaw Setworks.	Cylinder faulty. Solenoid valve faulty.	Replace cylinder cup. Interchange with valve known to be operating.
Desired set shy by some fixed increment. Error not reflected in Shadowline.	Solenoid valve faulty. Cylinder cup failure. Output module fault for Setworks	Interchange solenoid pilot with one of known quality. Loosen hose on exhausting side of cylinder. If air flow is present, dismantle cylinder and replace cups. "Replace output module"

TROUBLE SHOOTING GUIDE

<u>MALFUNCTION</u>	<u>POSSIBLE CAUSES</u>	<u>PROCEDURE</u>
Sets cutting erratically wide or narrow.	Moving cutterhead duct choked up. (on 5-Saw Machines only).	Blow Pipe System must open and must be started before Ripsaw.
	Nuts on setworks cylinders or 1" shifting rods loose.	Tighten nuts - 1½" Open End Wrench required.
	Setworks piston nut loose.	Activate cylinders one at a time and Check stroke to locate trouble.
Saws moving in cut.	Broken lumber or knots jammed in the machine.	
Setworks straining and shifting slowly.	Shifting Rod or Cylinder nuts loose. Bridgetree Tie Bolt/Nut loose. Special Set Screws (Part #7310-B) are not properly engaging hole of shifter bars (Part #8580-1 & 2) in Arbor slots. Telescoping dust tube or moving cutter-head out of alignment (on 5-saw machine only). Spray lubrication system inoperative. Saw and setworks not level with each other.	While shifting the saws back and forth watch various points in the system and try to determine where binding occurs. If necessary, disconnect parts (one at a time) farthest away from setworks to isolate problem. Check for settlement of foundation and re-level.

SUMMARY:

The following schedule of operating and maintenance procedures should be observed:

ONCE EACH SHIFT

1. Cycle all networks cylinders at start-up.
2. Blow down machine and remove knots and scrap from screens.
3. Clean and check safety switch devices and any other optical operators.
4. Check cutterhead (s) for sharpness.
5. Fill Arbor spray system.
6. Fill Arbor bearing lubricator.
7. Fill Networks cylinder lubricators.

ONCE EACH WEEK

1. Check saws for sharpness.
2. Service all grease gun fittings.
3. Check lube oil levels in gearmotors.

TWICE EACH YEAR

1. Check Ripsaw networks cylinders for stroke length.
2. Check all moving parts. Replace damaged or worn parts.
3. Check anti-kickback fingers for sharpness and alignment.

GENERAL

1. Clean machine before saw changes.
2. Pump-up oil to Arbor bearings after saw changes.



MID-OREGON INDUSTRIES

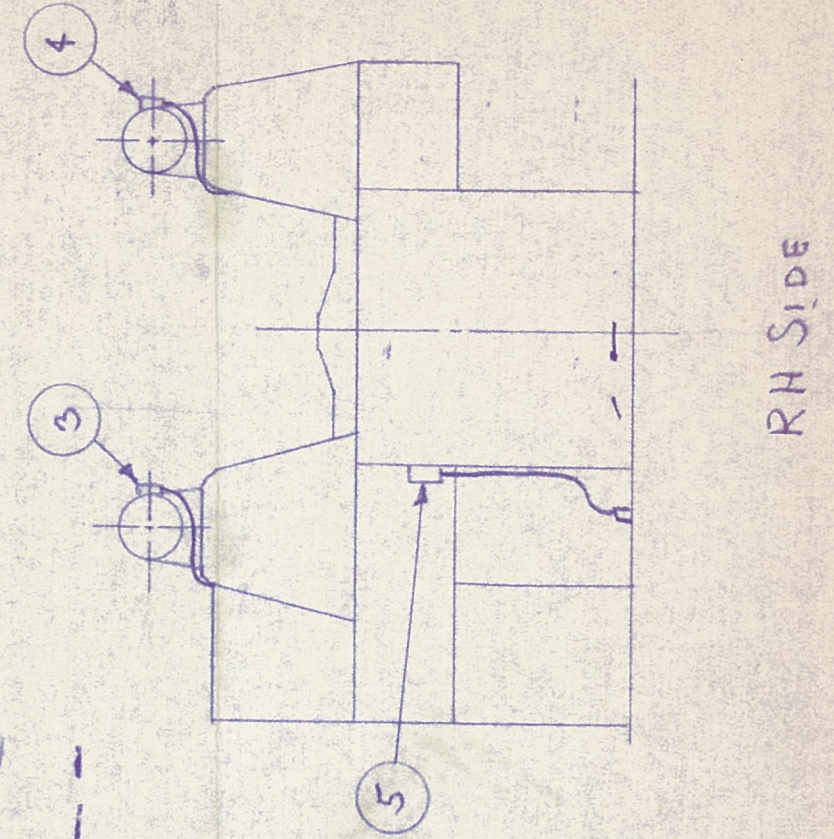
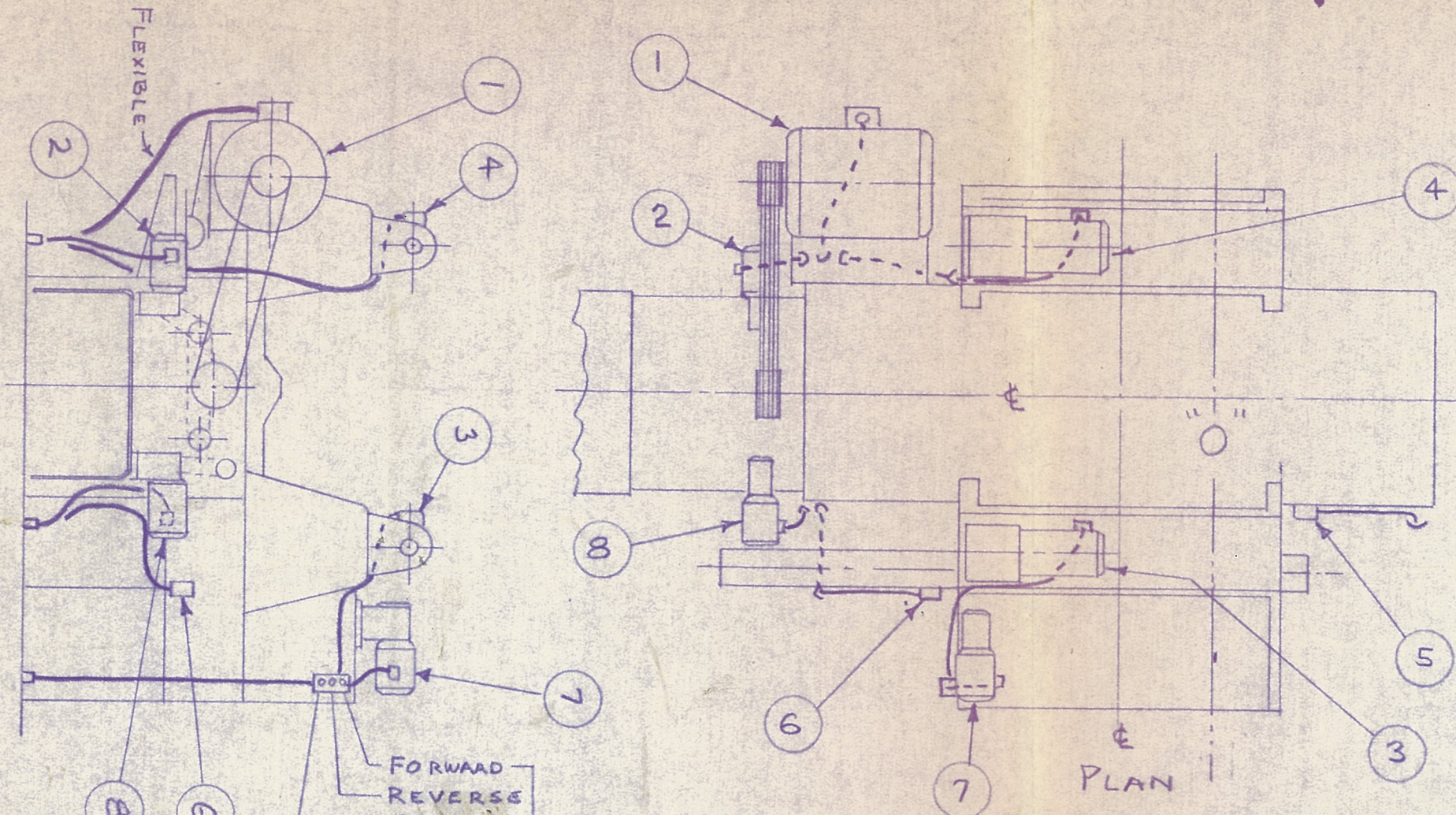
P.O. BOX 807 ■ 300 S.E. SCOTT STREET
BEND, OREGON 97709 ■ (503) 382-6762

January 31, 1986

Portland Iron Works Multimatic Ripsaw
5 Saw: 2 cutterhead machine
Recommended Spare Parts List

<u>Qty.</u>	<u>Part #</u>	
<u>SETWORKS</u>		
1		Valve Repair Kit, BV K352-150
4	P/N 23-1	Piston Packing, 4" diameter
2	P/N 13-17	"O" Ring, Piston Rod, 1½" ID x 1-7/8" OD
1	P/N 16-1	Lock Washer, SKF #W05
1	P/N 10-3	Lock Nut, SKF #NO5
4	P/N 7896	Piston Packing, 2" diameter
1		Valve Repair Kit, Shadow/Laser Line
<u>KEYBOARD</u>		
2	P/N 6720-7	Micro Switch #V-3L-111-D8
2	P/N 6720-2	Rods with Spring
1	P/N 6720-3	Spring only
1	P/N 6720-11	Latch Spring
<u>RIPSAW</u>		
3	#H-134-66	"O" Ring Seals BV
2	P/N 7310	Special Cap Screw, Allen Head
5	P/N 16152	No-bind Saws 12"
1	P/N 9597	Saw Collar with Spool
4	P/N 9598	Saw Collar without Spool
5	P/N 9046	Clamp Ring with screws ss ½" long, 5/16"
1	P/N 15167	14" covered Press Roll with Shaft
1	P/N 15171	28" covered Press Roll with Shaft
4	8580-1	Shifter Bars
2	8580-2	Shifter Bars
2	8580-7	Shifter Bars
<u>MEMORY (PROGRAMABLE CONTROLLER)</u>		
2		Input Modules
2		Output Modules
<u>OPTIONAL SPARE PARTS</u>		
1		Laser Light
1		Cutterhead Set, 1 LH & RH
1		Set Saws with Collars

SYM.	NO. REQ'D.	DESCRIPTION	DWG. NO.

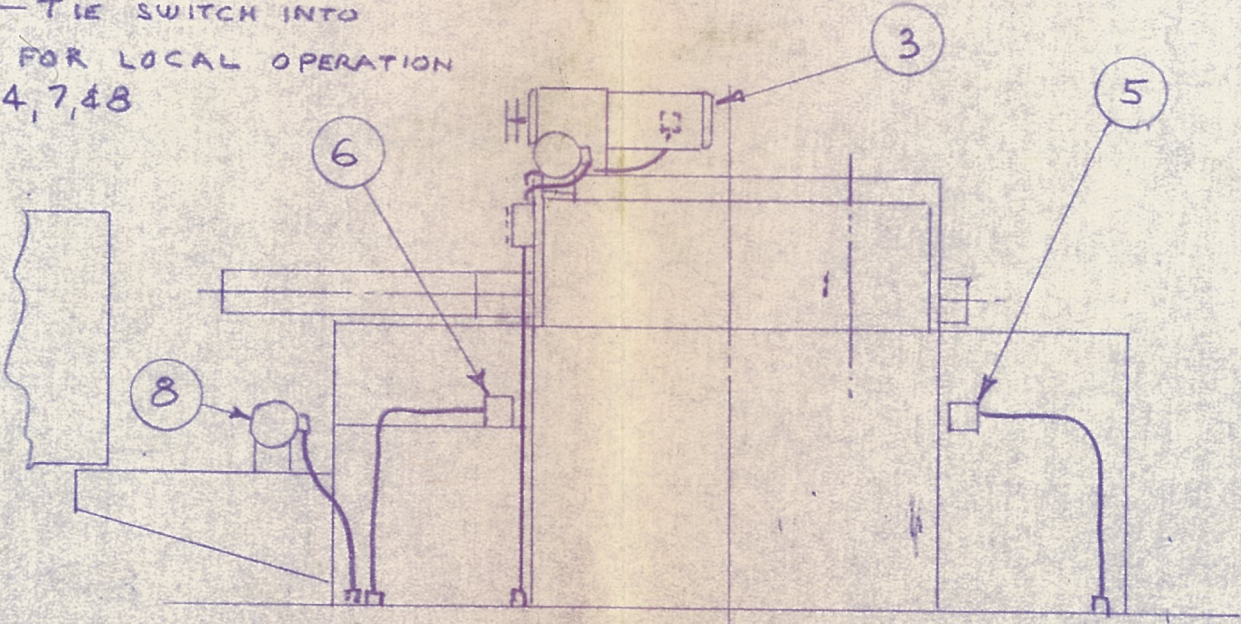


FORWARD
REVERSE
STOP

TIE SWITCH INTO
MOTOR CONTROLS FOR LOCAL OPERATION
OF MOTORS #3, 4, 7, 8

NOTES
HEAVY LINES INDICATE SUGGESTED
LOCATION FOR CONDUIT ROWS BY PURCHASER

LEGEND			
SYM	HP	RPM	DRIVES
F 1	75	3600	ARBOR
R 2	3/4	58.4	SUPPORT SHAFT
R 3	3	155	INFEED ROLLS
R 4	3	155	OUTFEED ROLLS
F 5	10	3600	FIXED CUTTER
F 6	10	3600	MOVING CUTTER
R 7	3/4	175	1ST BED ROLL
R 8	3/4	350	2ND BED ROLL



FRONT

SYM.	DATE	REVISION	BY

MANUFACTURING TOLERANCES, UNLESS OTHERWISE STATED

INCHES	UNDER 25'-0"	25'-0" & OVER
+1	+1	+1
-64	-8	-4

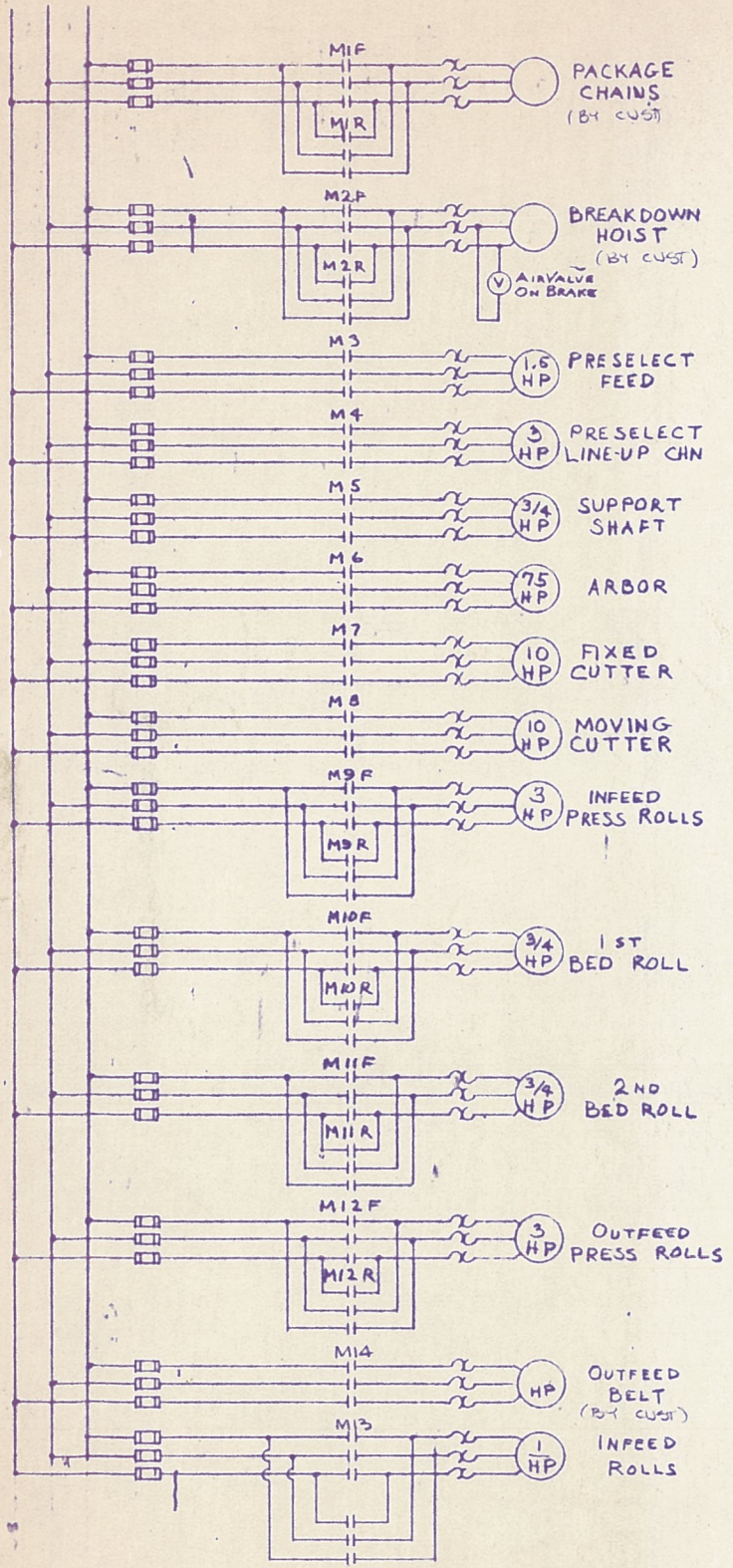
PORTLAND IRON WORKS
PORTLAND, OREGON

RIPSAW
MOTOR WIRING DETAIL
RH ZERO 5 SAW

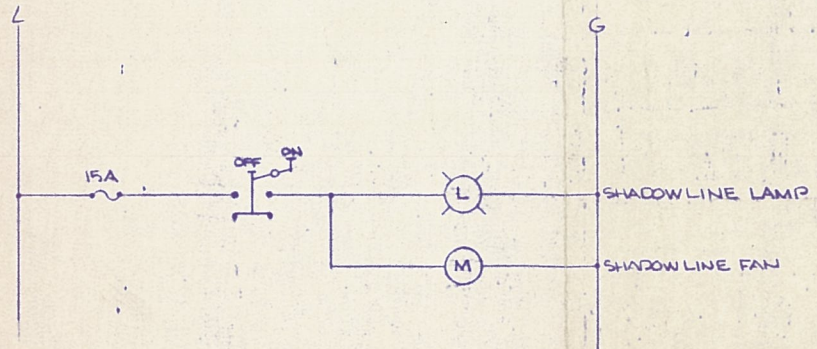
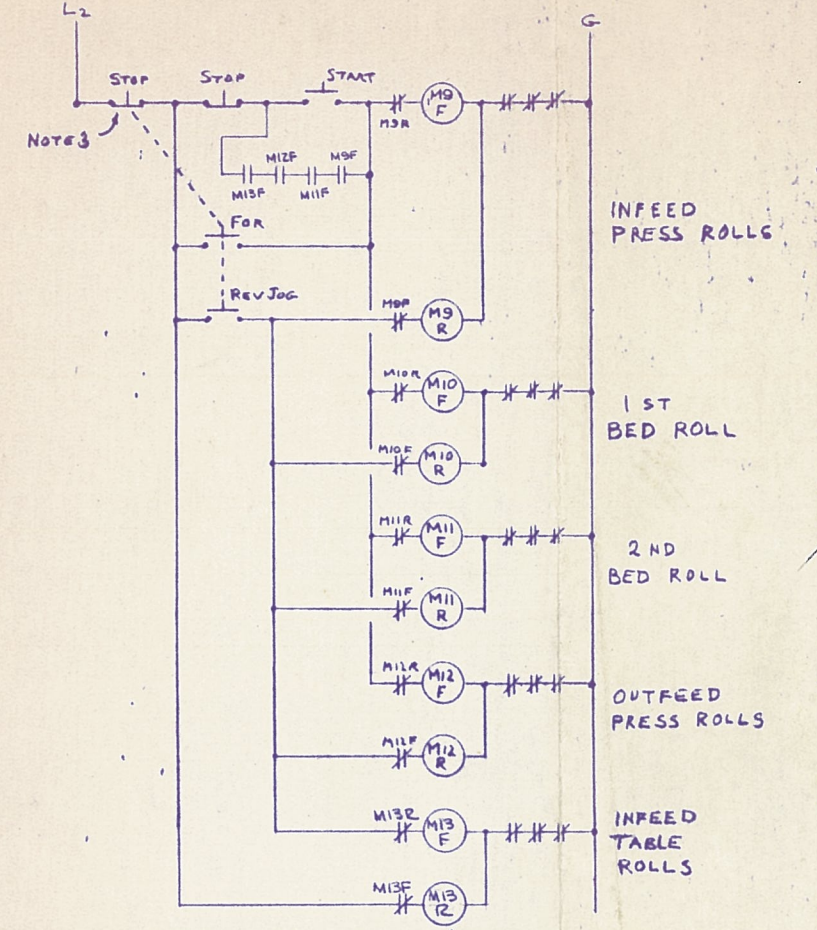
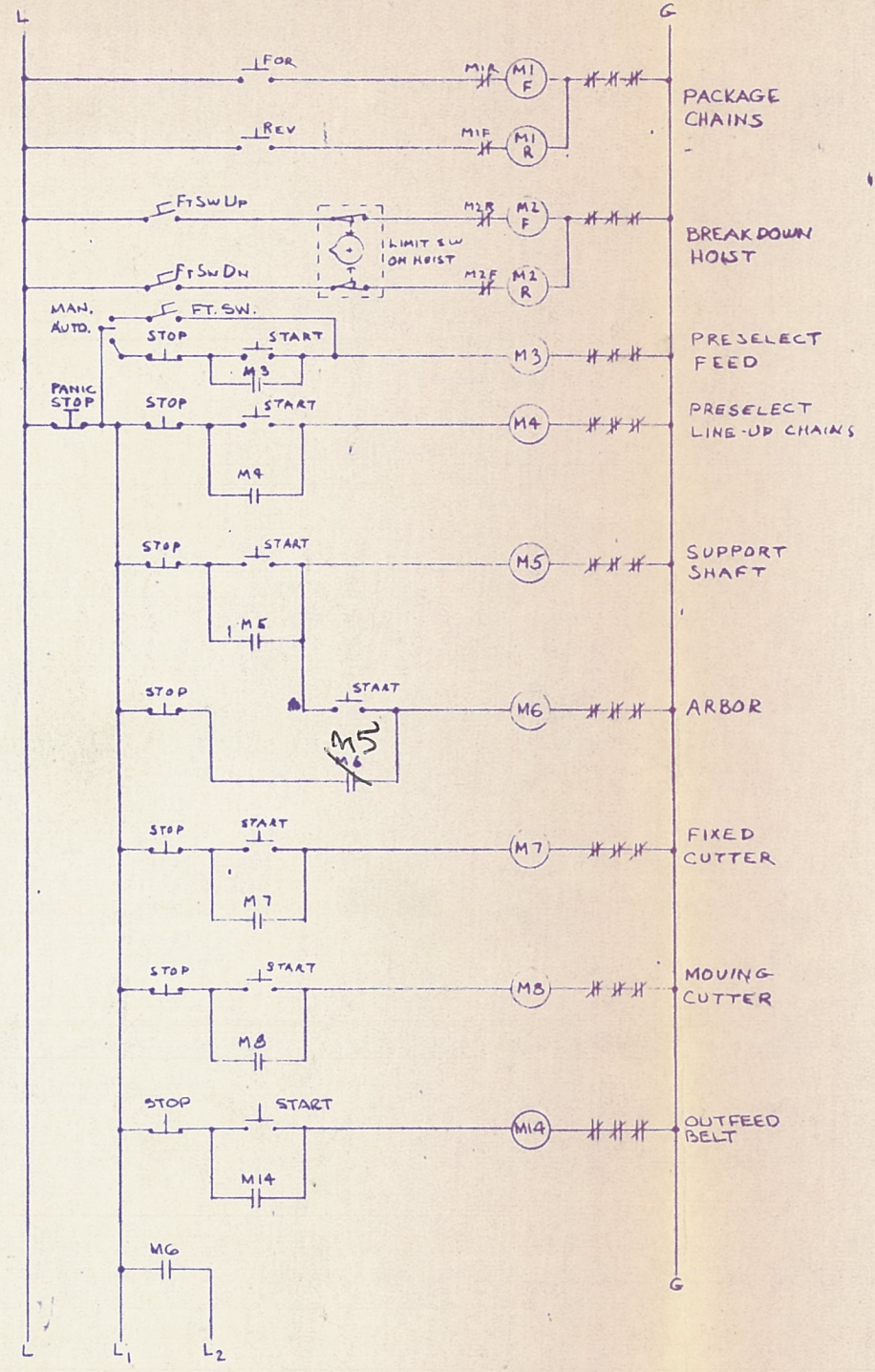
DATE 11-12-80	DR AK 206	DRAWING NUMBER
SCALE 1/2" = 1'-0"	CK. 14	22364-B

220/44-0
3PH 60HZ

120 V AC



NOTE M1, 2, 9, 10, 11 & 12 ARE REVERSING
13



SYL.	NO.	DESCRIPTION	DATE

- STARTING SEQUENCE**
1. START SUPPORT SHAFT (M5)
 2. START ARBOR (M6)
 3. START ALL FEED ROLLS (M9, 10, 11, 12 & 13)
 4. START ALL OTHERS ANY TIME

- CONTROL AT RIPSAW**
1. STOP A. ALL RIPSAW FEED ROLLS OFF (M9, 10, 11, 12)
 - B. INFEEDE TABLE FEED ROLLS OFF (M13)
 2. REV - JOG RIPSAW ROLLS REV (M9, 10, 11, 12 & 13)
 3. FOR - RESTART RIPSAW ROLLS (M9, 10, 11, 12 & 13)

- PANIC STOP**
1. STOPS WHOLE SYSTEM

- NOTE**
1. MOTOR STARTERS, OVERLOAD PROTECTION, DISCONNECTS & WIRING BY CUSTOMER AND MUST CONFORM TO LOCAL CODES
 2. PUSH BUTTONS, P.D. STATION, & FOOT SWITCHES BY CUSTOMER UNLESS NOTED
 3. MOTORS BY MOI, EXCEPT UNLESS NOTED

SYL.	DATE	REVISION

MANUFACTURING TOLERANCES, UNLESS OTHERWISE SPECIFIED:
 INCHES: UNDER .001" .001" & OVER .001" & OVER .001"
 MILLIMETERS: .0125" .0125" & OVER .0125" & OVER .0125"

PORTLAND IRON WORKS
 PORTLAND, OREGON

RIPSAW SYSTEM
 SUGGESTED
 WIRING DIAGRAM

DATE 14 MAR 66 BY AL 206
 24568