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MANCHESTER MACHINE DIVISION

SUCTION ROLL MANUAL  
INSTRUCTIONS FOR OPERATIONS & SERVICE

SERIAL NO. C-1104

When ordering spare parts refer to serial number above.  
You will find this number three places on the front  
end of your Manchester suction roll. (See Fig. 1)

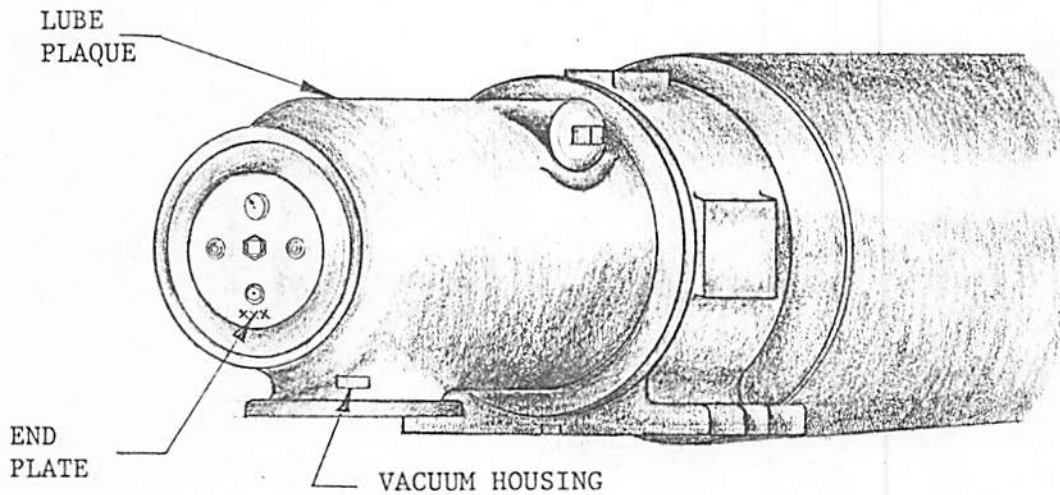


FIG. 1

MANCHESTER MACHINE DIVISION

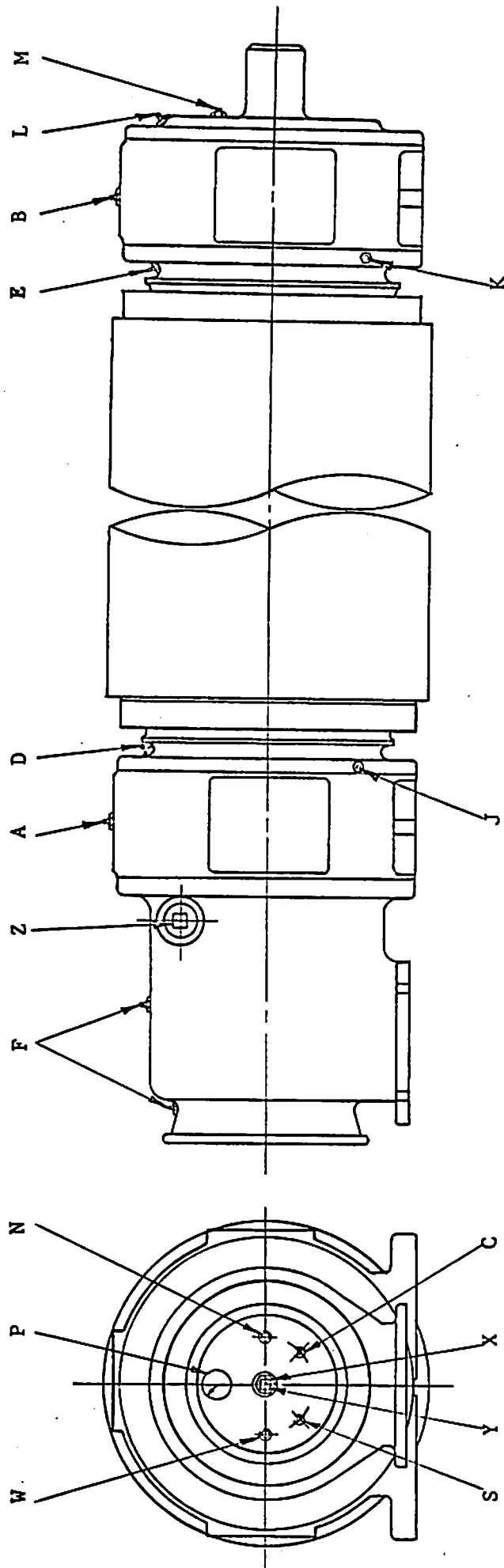


FIG. 2

- |                                            |                                     |
|--------------------------------------------|-------------------------------------|
| A - GREASE FITTING-FRONT MAIN BEARING      | M - RELIEF FITTING-INTERNAL BEARING |
| B - GREASE FITTING-REAR MAIN BEARING       | N - SEAL WATER CONNECTION           |
| C - GREASE FITTING-INTERNAL BEARING        | P - VACUUM GAUGE                    |
| D - GREASE FITTING-FRONT INNER CAP SEAL    | S - SEALING STRIP AIR LOADING       |
| E - GREASE FITTING-REAR INNER CAP SEAL     | T -                                 |
| F - GREASE FITTING-FRONT BOX SUPPORT BUSH. | W - SHOWER WATER CONNECTION         |
| J - RELIEF FITTING-FRONT MAIN BEARING      | X - FRONT DECKLE ADJUSTMENT (HEX)   |
| K - RELIEF FITTING-REAR MAIN BEARING       | Y - REAR DECKLE ADJUSTMENT (SQUARE) |
| L - GREASE FITTING-REAR OUTER CAP SEAL     | Z - SUCTION BOX ADJUSTMENT          |
- } ONE ROTATION OF ADJUSTMENT  
= 1/8" DECKLE TRAVEL

## SHIPPING BOX

Manchester suction rolls are shipped from our plant in a custom built shipping box to protect roll against damage during shipment. When removing wooden cover from shipping skid, pry loose along bottom edge of cover and lift complete cover from skid. Suction roll will be mounted to shipping skid with mounting bolts through bearing foot. Shipping , box and skid can be reused for service & storage.

## LIFTING ROLL

After uncrating, check the roll weight shown on general assembly drawing of roll, (you will find this assembly drawing following Page (12) in this manual). Provide a crane of adequate capacity and a suitable sling. A wide flat sling must be used. (See chart below for recommended sling size.) (Do not use a rope sling with a pad because of possible damage to the cover.)

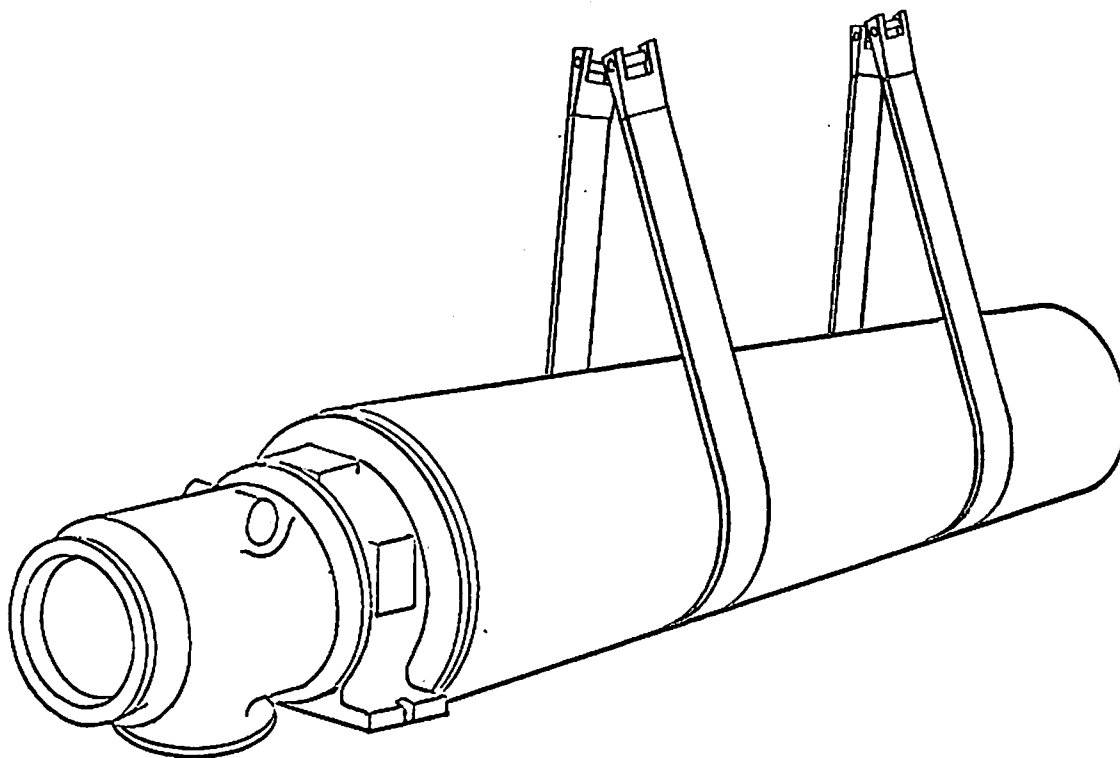


FIG. 3

In order not to submit rubber covers to excessive localized loading, the following handling recommendations are to be followed:

WEIGHT OF ROLL IN POUNDS	NUMBER OF SLINGS & WIDTH OF EACH SLING [IN INCHES]							
	0-5 P&J	25 P&J	32 P&J	50 P&J				
10,000-20,000	2 x 6"	2 x 10"	2 x 10"	2 x 12"		2 x 16"	2 x 18"	
20,000-40,000	2 x 12"	2 x 16"	2 x 16"	2 x 20"	2 x 22"	2 x 24"	2 x 28"	
40,000-60,000	2 x 16"	2 x 24"	2 x 24"	2 x 28"	2 x 32"	2 x 32"	2 x 40"	

## WATER SUPPLY

### SEALING WATER:

A sealing water system is included in every Manchester suction roll. This system provides lubrication to the sealing strips and prevents stock from building up between sealing strips and sealing strip holders. This system requires fresh water supplied continuously while roll is operating at a pressure of 5 to 10 PSI. Water usage for sealing water will range from 1.5 to 5 GPM.

### CLEANING SHOWER:

Your Manchester suction roll is equipped with a cleaning shower. Use this shower only as needed to clean roll and wash out drilled holes in shell. This shower uses fresh water at an operating pressure of 40 PSI. Water usage for this shower can range from 5 to 20 GPM depending on operating pressure and drilled face of suction roll.

All water and air connections come through the front journal end plate and are designated by name plates. (See Fig. 4) All connections are of the quick disconnect type (supplied with suction roll) mill to provided suitable flexible hose and shutoff valves as required.

## AIR SUPPLY

### AIR LOADED SEALING STRIPS:

Manchester suction rolls equipped with air loaded sealing strips require an operating air pressure of 5 to 20 PSI using the minimum to seal the vacuum. Starting with the higher pressure, reduce until a vacuum drop is noticed and raise pressure sufficiently to again seal vacuum. If there is no drop, set the pressure at a minimum of 5 PSI. It may be necessary at start-up to operate at a higher air pressure [30 PSI] until the seal strips wear in. This pressure should be reduced as soon as possible.

### AIR JET BLOW-OFF FEATURE:

Manchester suction couch rolls are equipped with an air jet blow-off feature which enables operator to lift tail of sheet from roll. An air supply of 30 to 40 PSI is adequate for operation.

NOTE: FOR PART NUMBERS REFER TO SPARE PARTS LIST  
AND ASSEMBLY DRAWINGS INCLUDED IN THIS MANUAL.  
(SEE PAGE 1 FOR LIST OF ASS'Y. DWGS.)

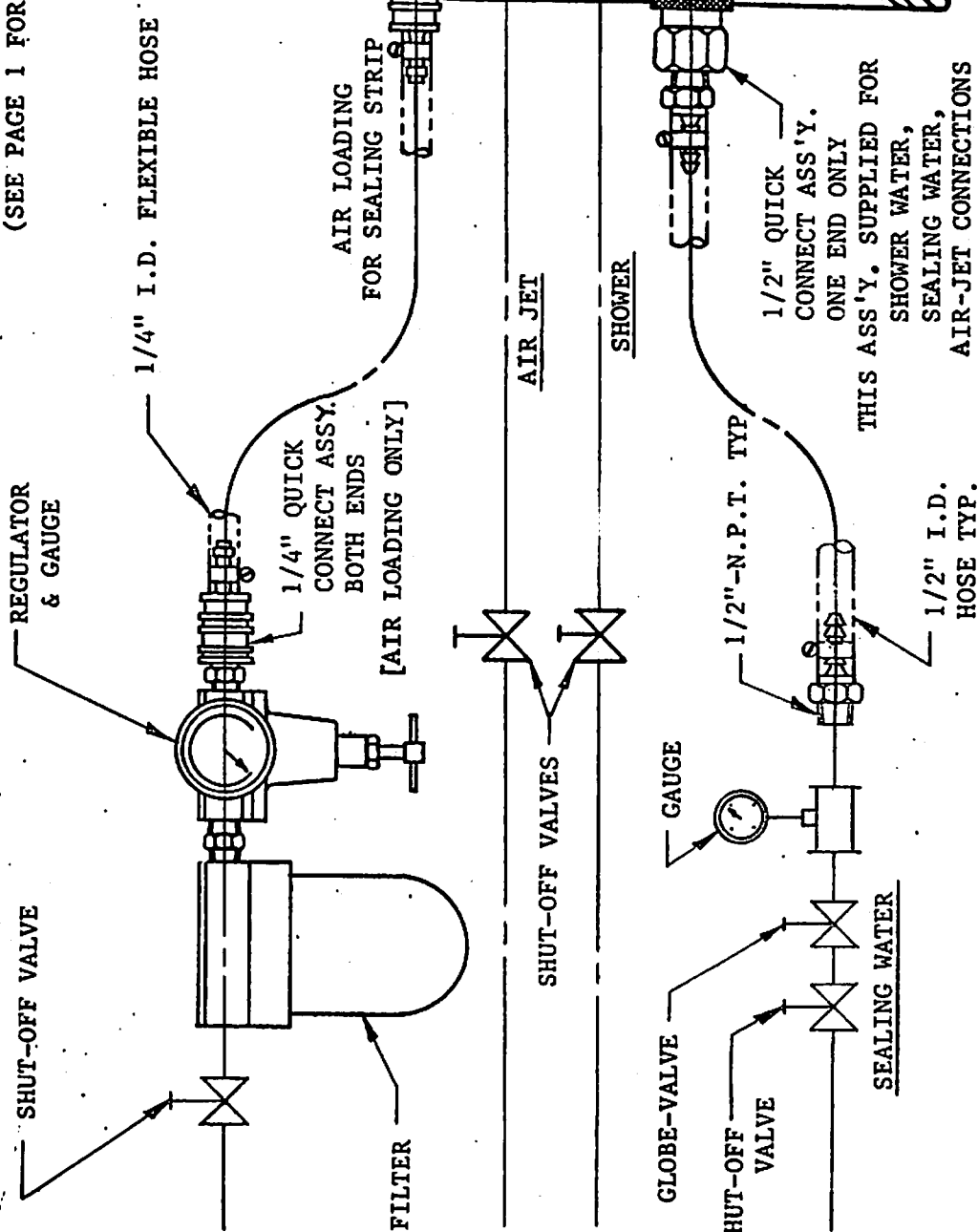


FIG. 4

TYPICAL PIPING DIAGRAM FOR AIR & WATER SUPPLY

(SHADED PARTS ONLY SUPPLIED BY MANCHESTER MACHINE. ALL OTHER  
PIPING & HOSE FURNISHED BY CUSTOMER.)

## INSTALLATION OF SUCTION ROLL

### INITIAL INSTALLATION

Since all Manchester suction rolls are equipped with self-aligning bearings, it is important to align the bearing housings properly with the centerline of the roll. This will avoid rubbing at the labyrinth seals and will keep the front suction box support in its correct position for necessary adjustments.

### FRONT BEARING

After the roll is located on the machine, and prior to bolting the roll in place, the front bearing housing assembly should be moved, if necessary, so that surfaces "B" and "C" (Fig. 5) line up. This positions the front bearing with the proper float and eliminates any possibility of end thrust due to improper positioning.

Gap "A" (Fig. 5) should be checked with a feeler gauge so that when measuring the gap in four places - 90° apart - there is a uniform clearance. If necessary, the bearing base should be shimmed to arrive at the uniform clearance.

### REAR BEARING

The same procedure for obtaining a uniform Gap "A" (Fig. 5) as outlined for the front bearing.

### SUBSEQUENT INSPECTION

Having established a uniform Gap "A" (Fig. 5) when making the original installation, a possible bearing failure can usually be determined by checking the gap. If, on a normally loaded bottom press roll, the gap at the bottom has decreased compared to the gap 180° away, the bearing should be replaced. A periodic inspection of the clearances should be made to insure continuity of operation.

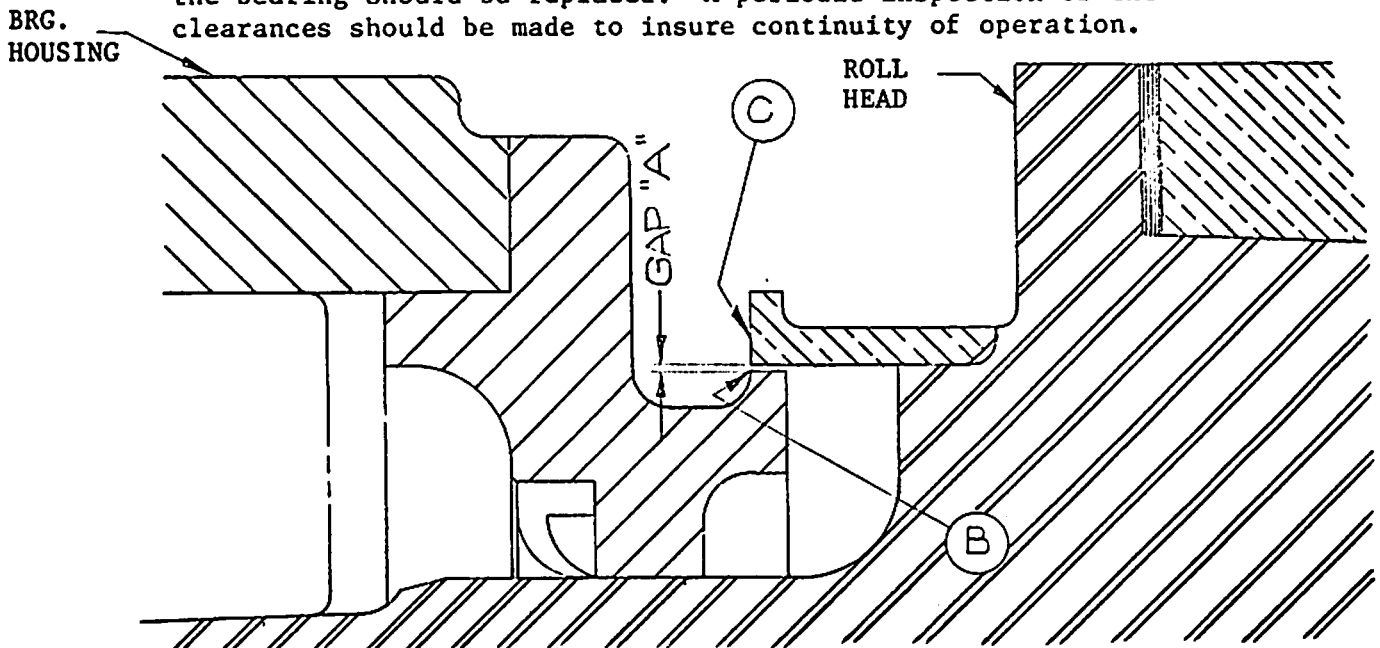


FIG. 5

## PREPARATION FOR USE

After the suction roll is installed, prepare for start-up as follows:

1. Remove all shipping brackets that are provided on your suction roll. (See General Assembly following Page 12 for location of these brackets.)
2. Connect all water and air supply lines as previously indicated on Pages 4 & 5.
3. Lubricate roll assembly in accordance with lubrication instructions on Page 9.
4. Connect flexible vacuum hose or vacuum pipe depending on your choice of hook-up (we do not recommend a solid connection at this point) we recommend a length of flexible hose with a suitable I.D. and 2" long soft cuffs each end to be secured by heavy duty hose clamps supplied with suction roll. For hose specifications and sizes see general assembly drawing following Page 11.

## OPERATION & ADJUSTMENT

### STARTING PROCEDURE

1. After suction roll mounting bolts are tightened, start roll in motion without air pressure in the sealing strip loading system.
2. Open water supply to the sealing strip holders (see Page 4).
3. Start the vacuum pump.
4. After starting the sheet over the roll adjust the end deckles to the width of the sheet. Both ends are controlled by turning the deckle adjusting screws on the front end plate. (See Figure 6) Clockwise rotation moves deckles out. Counterclockwise rotation moves deckles in. One revolution equals 1/8" deckle travel each end.
5. Open the air supply to sealing strip loading tubes, following the instructions on Page 4.



## POSITION OF SUCTION AREA

Before making any final adjustment of the position of the suction area, be sure that the locking screw on the front journal housing has been loosened to permit rotation of the suction box. When final adjustment has been completed, it is advisable to tighten the locking screw to reduce any strain on the worm gear mechanism.

Typical procedure for adjusting suction area is as follows (this can be done with the machine running):

1. Start with the indicated suction area ahead of the nip, on the entering side.
2. Rotate the suction area toward the nip until maximum vacuum is reached.
3. Continue in the same direction until between 1 and 2 inches of vacuum is lost.
4. Reverse rotation until vacuum is between 1/2 and 1 inch below maximum vacuum.

The position of the suction area ordinarily depends on whether safest run or dryest sheet is desired.

## SHUTTING DOWN PROCEDURE

1. Relieve all air pressure in sealing strip loading tubes.
2. Shutdown vacuum pump.
3. With the roll turning and without any sheet passing over the roll, open the cleaning shower water supply. Operate this shower per instructions on Page 4.

## LUBRICATION

### GREASE LUBRICATION

**BEARINGS:** All bearings should be lubricated weekly with Sun Oil Company's "Sunaplex 992 EP" or equivalent.

Before adding new grease, make sure that the grease fitting is clean. Clean out any grease which may have caked in the relief area so that the old grease may be easily expelled.

When added grease to bearings, force in new grease through the grease fittings [Figure 2], while the roll is rotating. Continue forcing new grease until it starts to come out of relief areas [Figure 2]. The roll should then be allowed to rotate for about ten minutes to assure a fresh supply of lubricant has been applied to bearings. Then wipe off excess grease from relief area.

In all cases of grease lubrication, it is good practice to remove all of the old grease about once every six months, regardless of whether or not grease has been added in meantime.

Observe cleanliness at all times, whatever method is used, and be sure the new lubricant is clean. Contaminated lubricant will reduce the life of the movable parts.

### TYPICAL SPECIFICATIONS

Aluminum complex base	
Base oil viscosity sus/100° F., approx.....	1,450
Base oil viscosity sus/210° F., min.....	100
Viscosity index, approx.....	90
Dropping Point ° F.....	475

### OIL LUBRICATION

Suction roll installation exceeding bearing manufacturer's RPM speed limits for grease lubrication will be manufactured with provisions for a continuous type oil lubrication system.

General assembly of suction roll will indicate whether roll will require grease or oil lube.

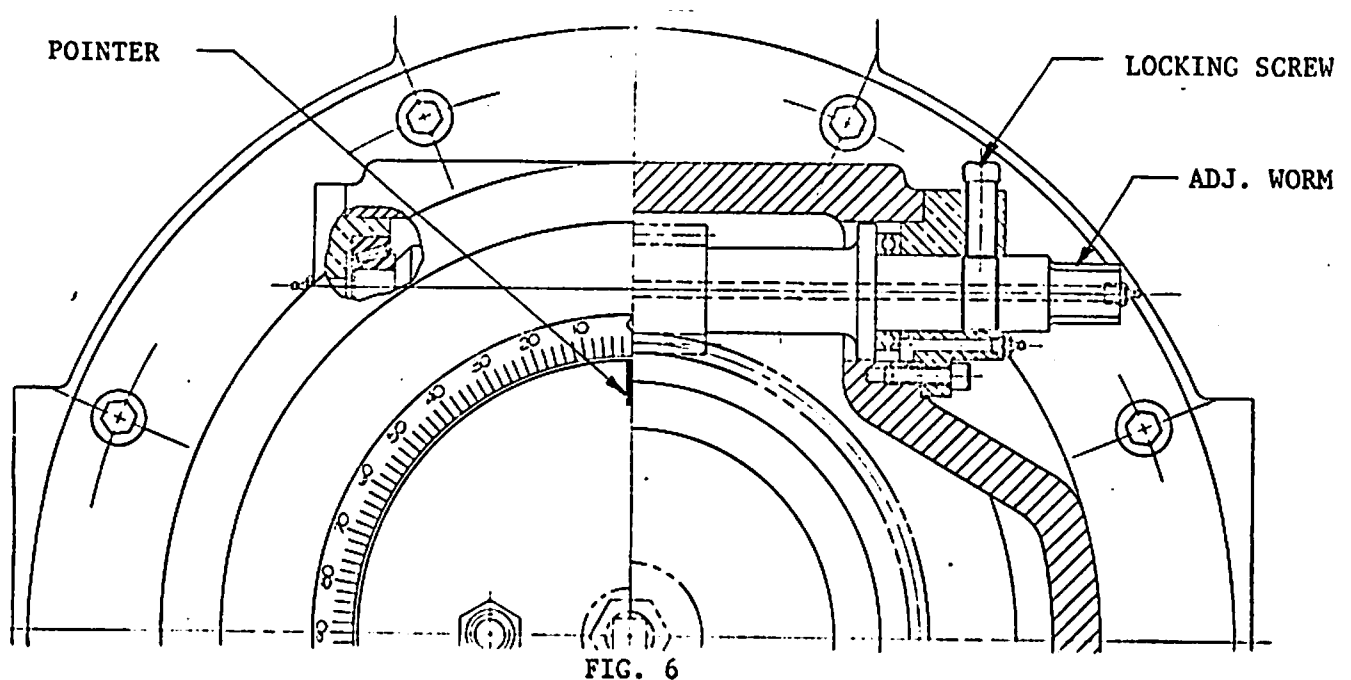


FIG. 6

### SUCTION BOX REMOVAL AND REPLACEMENT

Suction box should be removed and cleaned approximately every six months.

Wash out thoroughly, clean sealing strips and deckle head packing and insure that they are free to move in their holders.

Check interference fit between front roll head and shell. See Page 13.

To remove suction box from roll, the procedure is as follows:

1. Disconnect all external air water and vacuum hook-ups.
2. From the standpoint of safety and convenience, disengage drive coupling and move complete roll from machine to convenient location for servicing.
3. Loosen adjusting worm locking screw. (See Fig. 6)
4. Turn box adjusting worm (Fig. 6) until pointer lines up with "0" on plaque. This places skids used to support suction box on inside of shell, in down position ready for removal.
5. Suspend shell free from front head and bearing. Place rubber covered shells on soft pads. Plain shells can be placed on lined saddles. Support shell front and rear.
6. Remove bolt guard ring from front roll head.
7. Remove six (6) socket head set screws in front head and replace with six (6) square head set screws - 3/4" UNC x 4" long. Alternately tighten these set screws so as to give uniform pressure to releasing front head.
8. When front head is free from shell attach lifting cable around front housing and pull suction box from shell. Use utmost care in removing box that interior of shell is not damaged.

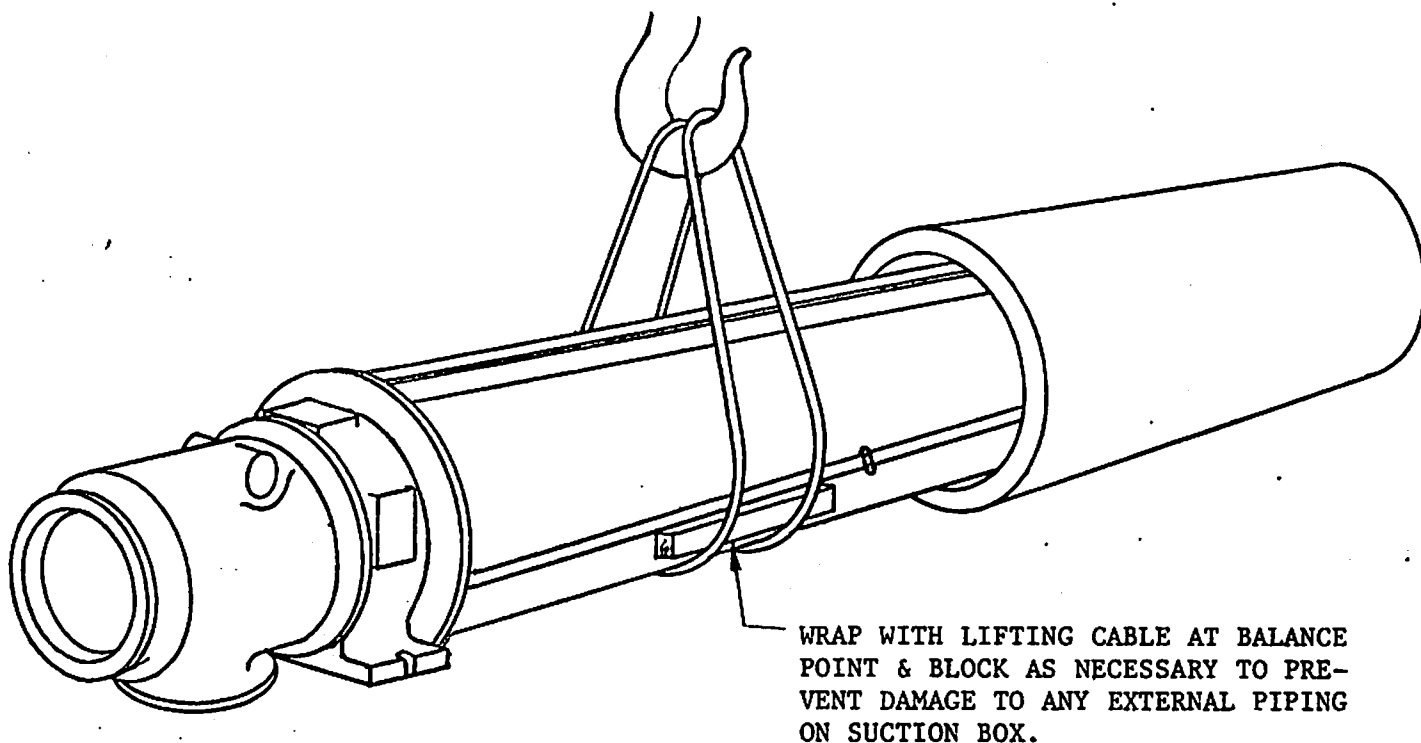
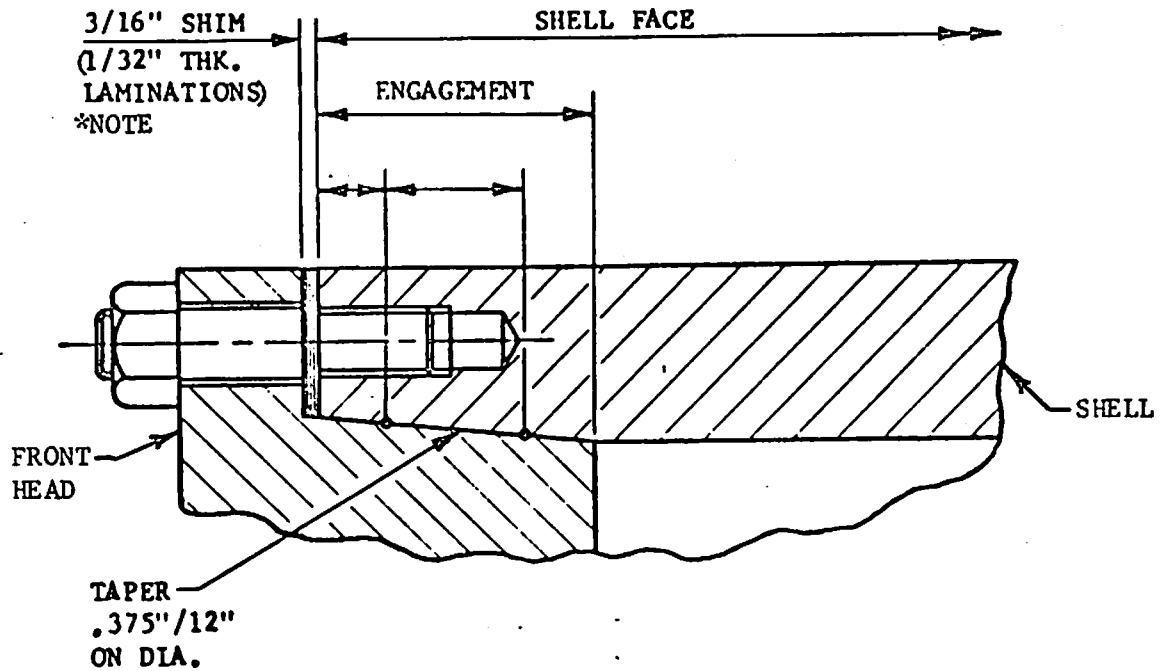


FIG. 7

To place suction box in roll, the procedure is as follows:

1. Remove 4" jack screws.
2. With suction box skids in bottom position, enter box in shell and push slowly to rear. Use care when internal journal starts to enter gudgeon sleeve (reference: - SECTIONAL ASS'Y. OF ROLL) continue to push box until front head starts to enter shell.
3. Remove four (4) existing head studs, equally spaced, and replace with 5" studs. Use these studs to pull head into shell. When existing studs protrude far enough to start nuts, then finish pulling head into place by alternately tightening nuts. It is important that the nuts are tightened uniformly to the torque specifications on the following page. Remove 5" studs and replace with regular head studs. Studs must be installed with identified end (Ident. Red or Letter "T") in shell. Use Locktite No. 35 (green) on identified end.



### INTERFERENCE TABLES [SUCTION ROLL HEADS]

BRONZE SHELL			STAINLESS SHELL		
SHELL I.D.	INTF. RANGE		SHELL I.D.	INTF. RANGE	
	MIN.	MAX.		MIN.	MAX.
12" to 16"	.005"	.007"	12" to 16"	.005"	.007"
16" to 20"	.006"	.009"	16" to 20"	.005"	.008"
20" to 24"	.008"	.011"	20" to 24"	.006"	.009"
24" to 32"	.009"	.012"	24" to 32"	.007"	.010"
32" to 40"	.010"	.014"	32" to 40"	.007"	.011"
40" to 50"	.011"	.015"	40" to 50"	.008"	.012"

### TORQUE RANGES FOR [SAE GRADE 5] HEAD STUD NUTS

THREAD SIZE	TORQUE RANGE
1/2" - UNC.....	60 - 75 FT. LBS.
5/8" - UNC.....	120 -140 FT. LBS.
3/4" - UNC.....	215 -240 FT. LBS.
7/8" - UNC.....	320 -350 FT. LBS.

\*NOTE: EACH 1/32" LAMINATION REMOVED, INCREASES THE INTERFERENCE FIT BETWEEN THE SHELL & HEAD BY .001"



SPARE PARTS LIST

ENG. FILE: C-1104

SHEET 1 OF 3

EQUIPMENT: R.C. SUCTION PRESS ROLL

CUSTOMER: CRANE &amp; COMPANY DALTON, MASS

MAT'L BILL NO. & SHEET	DESCRIPTION	CATALOG OR PART NO.	QTY. FOR COMPLETE SECTION	RECOMMEND STOCK	SIZE	DRAWING NO.	ITEM NO.
	ASSY. OF FRONT MAIN BEARING					B C-1104-B	
2-1	"TORRINGTON" BRG. [OR EQUIV]	280SD30K	1	1		"	4
2-1	"GARLOCK" KLOZURE [OR EQUIV]	64-4612	2	2		"	8
2-1	"SKF" BALL THRUST BRG. [OR EQUIV]	51108/CO8	1	1		"	12
2-1	"TIMKEN" BRG. TYPE TSS [OR EQUIV]	CONE 21075 CUP 21212	1	1		"	13
	ASSY. OF REAR MAIN BEARING					B C-010-B	
3-1	"GARLOCK" KLOZURE [OR EQUIV]	64-4612	2	2		"	3
3-1	"TORRINGTON" BRG. [OR EQUIV]	280SD30K	1	1		"	5
	ASSY. OF INTERNAL BEARING					D C-400-M1	
6-1	"SKF" BRG. [OR EQUIV]	22226 CYW33	1	1		"	1
6-1	"GARLOCK" KLOZURE [OR EQUIV]	53 x 3355	1	1		"	4
6-1	LOCKWASHER	W-26	1	1		"	2
6-1	LOCKNUT	AN-26	1	1		"	3
6-1	GUDGEON SLEEVE	BC-400-8	1	1		"	6
	SECTIONAL ASSY. OF ROLL					A C-1104-A	
9-2	SEALING STRIPS	SHT 3 REV7 BC-1000-4	2	2		"	47
9-3	DECKLE HEAD PACKING	SHT 1 BC-400-181	2	2		"	9
9-3	DECKLE HEAD PACKING SPRING	CC-100-17B REV 2				"	10
9-5	SPRING-INT. JOURNAL	CC-400-92	1	1		"	24
9-5	SPRING PIN-INT. JOURNAL	CC-400-91	1	1		"	25



SHEET 2 OF 3

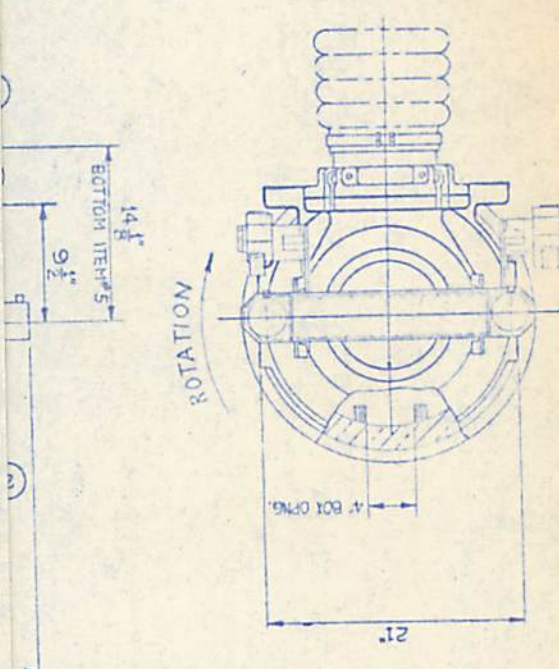
**THE MANCHESTER MACHINE COMPANY**







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MANCHESTER MACHINE CO. DALTON, MASS.			
GENERAL ASSEMBLY			
MOTORIZED DECKLES			
24" DIA. x 112" D.F.R.C. SUCTION PRESS ROLL			
DIAMOND INTERNATIONAL CORPORATION			
MANCHESTER MACHINE DIVISION			
MODEL: 1104			
0364-301 C-1104 1 1-1			



ITEM	DESCRIPTION
1	SECTIONAL ASSY. OF ROLL
2	AC-1104-D
3	BC-010-29
4	CI-1003-47
5	PIPE-8" STD. x 4 LG. THD. ONE END
6	HOSE CLAMPS-LE HI SERIES 750-M
7	PART NO. 988 FOR 3/4" O.D. HOSE
8	DOGE SIZE & RIGID HALF COUPLING
9	WITH TAPER LOCK BUSHINGS & OIL ROSE
10	WITH 1" WIDE x 1/2" DEEP KEYSWAY