

*J. Coy*

# 26550

# SULZER ESCHER WYSS

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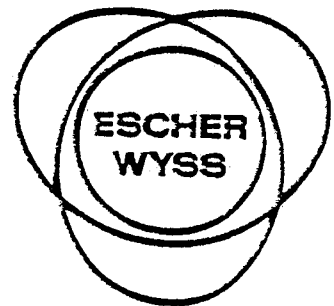
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PRESSURE VACUUM HEADBOX

START UP - 4-29-87 7-7  
# 4-28-87-11-7

OPERATING & MAINTENANCE  
MANUAL

SULZER ESCHER WYSS, INC.  
P.O. Box 509  
Middletown, Ohio 45042  
513/423-9281



# SULZER ESCHER WYSS

MIDDLETOWN, OHIO 45042

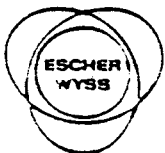
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## SPECIFICATIONS

Customer ..... CHAMPION PAPER  
HAMILTON, OHIO

Machine ..... PM 3

Champion Order Number ..... 33731

SEWM Serial Number ..... X-1141

Headbox Type (SEWM Spec) ..... X-200 Press/Vac

SEWM Order Number ..... 0205-350

### Physical Data

Slice Width ..... 146 "

Design Speed ..... 650 FPM - Flow <sup>250FPM</sup> 750FPM  
1000 FPM - Struc

Basis Weight Range ..... 33 - 1354 # <sup>47-184#</sup>  
/3300 ft<sup>2</sup>

Slice Flow Range ..... 4190 GPM max  
1335 GPM max

Inlet Flow Range ..... 4430-1455 GPM

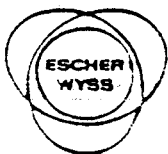
### Required Clearances

Top Lip to Pond Side Wall

@ 70 Deg F ..... 0.010" / 0.015"  
EACH SIDE

Apron Lip to Pond Side Wall

@ 70 Deg F ..... 0.012" / 0.017"  
EACH SIDE



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# SULZER ESCHER WYSS

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## GENERAL INFORMATION

### INTRODUCTION

The SULZER ESCHER WYSS Series 200 Pressure/Vacuum Headbox is a single pass, rectifier roll headbox. This headbox is capable of operating with either a pressurized air pad or a vacuum "air pad" to facilitate operation over a broad range of machine speeds.

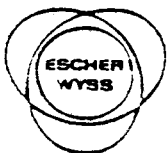
During pressure operation, the headbox utilizes a controlled air pad to replace the high pond level to achieve suitable pressure, or "head", required to achieve desired jet velocities. In open headboxes, this pressure is obtained by running with high pond levels. (approximately 52" for 1000 FPM) In such headboxes, dead pockets of flow result where flocs and dirt will accumulated, causing formation and runability problems.

By running with an air pad, it is possible to maintain relatively low pond levels (5 to 9") in which the constant and uniform flow rate is controlled to suit operating conditions and maintain cleanliness.

During vacuum operation, the headbox air supply system develops a vacuum over the pond (replacing the air pad with "negative" pressure). This makes it possible to operate at low machine speeds, where the required "head" is below the desired pond level. (Note - at 300 FPM the Total Head is 4.66")

The SEW Series 200 Pressure/Vacuum Headbox is designed to provide uniform cross machine distribution and "easy to operate" adjustments for the papermaker. These adjustments simplify the operator's task.

It must be noted that the operation of any headbox is related closely to the functioning of the approach flow system and the arrangement and condition of the Fourdrinier table elements.



PRESSURE / VACUUM HEADBOX  
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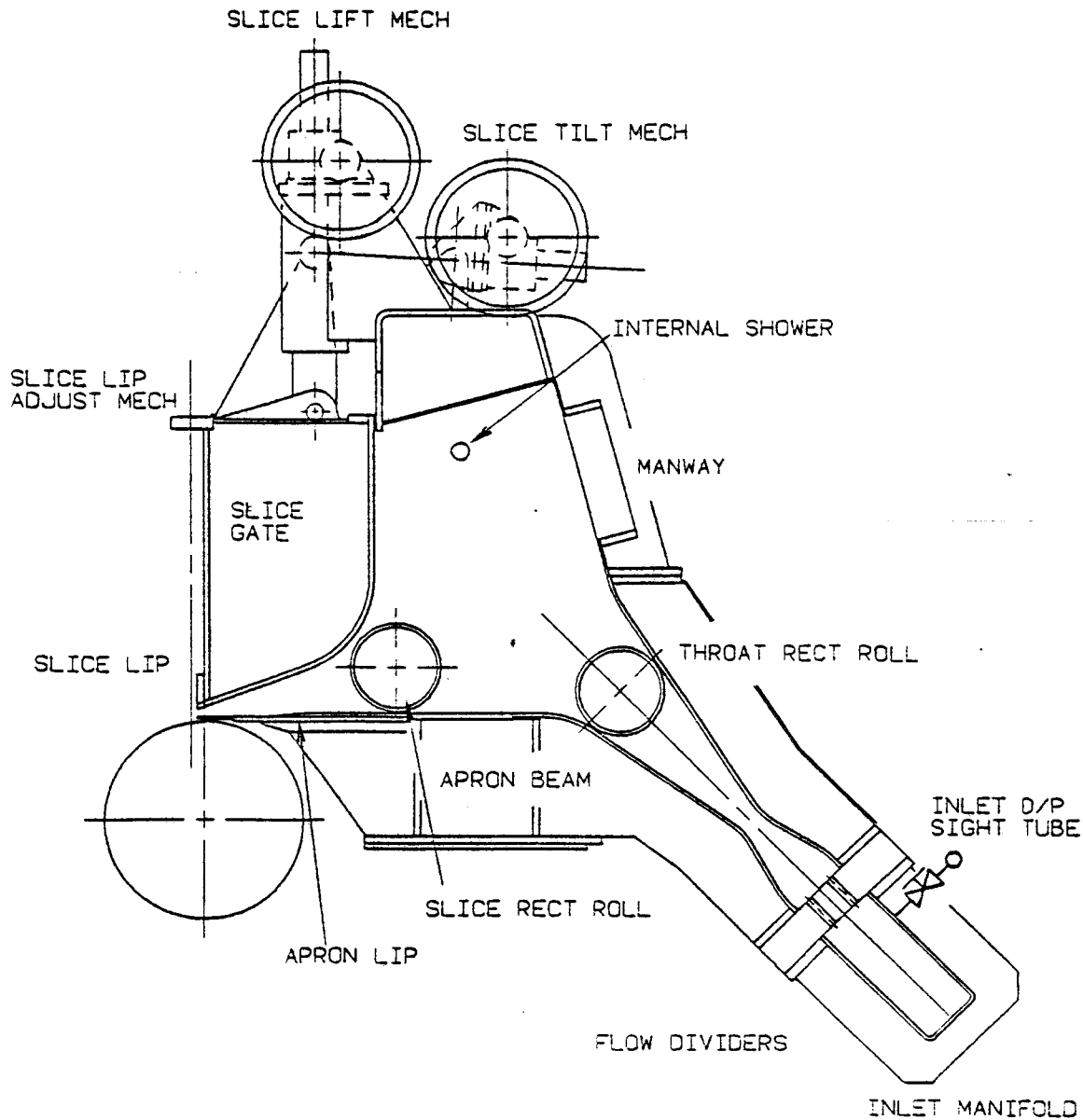
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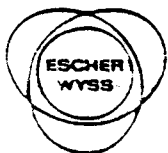
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CROSS SECTION VIEW OF HEADBOX  
FIGURE 1



PRESSURE / VACUUM HEADBOX

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## INTRODUCTION (continued)

The SEW Series 200 Pressure/Vacuum Headbox (refer to Fig. 1) utilizes a tapered Inlet Manifold and Flow Dividers to obtain cross machine distribution. Two Rectifier (holey) Rolls are mounted within the pond area to insure distribution and control flocculation. The Slice Rectifier Roll is mounted from double eccentric housings that allow a broad range of potential roll settings, for fine tuning of the headbox performance.

The Front Wall or Slice Gate is adjustable vertically (Slice Gate Lifting Mechanism) as well as in the machine direction (Slice Gate Tilting Mechanism). A Top Lip or Profile Bar is mounted to the Slice Gate, and can be readily adjusted to control basis weight profile. The Apron Lip or Bottom Lip can be repositioned to influence the slice discharge and obtain the desired results.

## INLET MANIFOLD

Refer to Figure 2.

Uniform stock distribution across the width of the machine is achieved by the use of a tapered Inlet Manifold. The Inlet Manifold incorporates a recirculation feature that makes it possible to maintain a uniform pressure throughout the inlet manifold for a wide flow range.

The recirculation control of the Inlet Manifold allows the operator to increase or decrease the pressure near the recirculation connection. The pressure in the inlet is related to the flow through the slice, a uniform pressure across the inlet Inlet Manifold results in a uniform slice flow rate and weight distribution. A wide change in flow rates will result in a change in the flow characteristics of the Inlet Manifold, resulting in the need to make recirculation valve adjustments.

The effects of this adjustment are shown on Figure 2.



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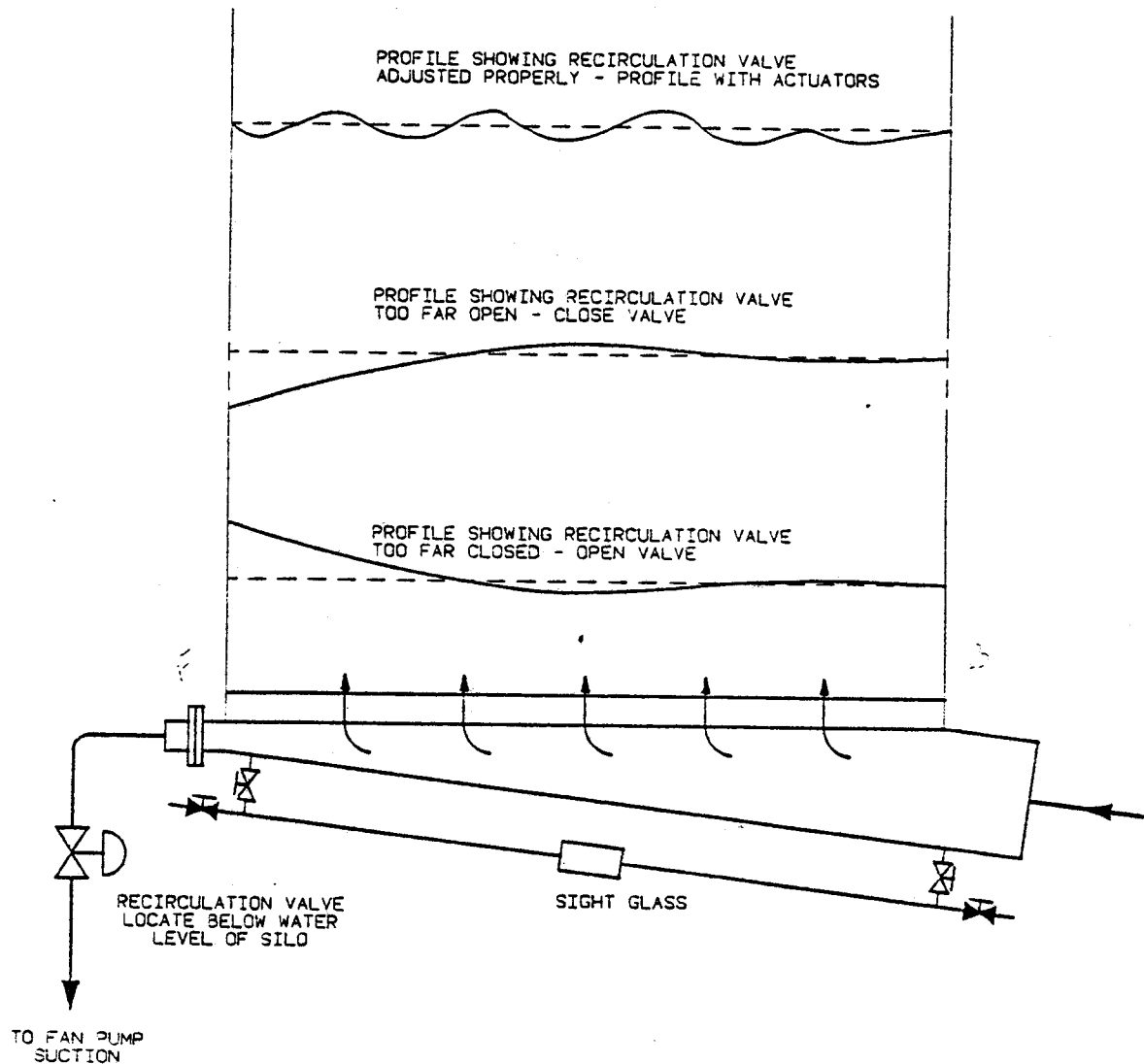
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INLET MANIFOLD D/P INDICATING SYSTEM  
& THE EFFECT OF RECIRCULATION ADJUSTMENT  
FIGURE 2



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## INLET MANIFOLD (continued)

In order to simplify the controlling of the Inlet Manifold pressure, the inlet is equipped with a differential pressure indicating system. (This is described later in this section.)

## FLOW DIVIDERS

Refer to Figure 1.

The Flow Dividers are made of plexiglas with evenly spaced and precision reamed holes. Uniform pressure in the inlet results in uniform flow through the holes.

The resulting pressure drop across the Flow Dividers, and the velocity of the stock through the holes, generates turbulence in the stock. This turbulence loosens the fiber flocs, enhancing the fiber distribution and sheet formation.

The Flow Dividers are made in segments and are press fit into their mounting atop the inlet manifold. The press fit prevents opening of the seam due to temperature changes on the block.

As with any synthetic material, plexiglas can be damaged by sudden, drastic temperature changes.

DO NOT WASH OUT THE HEADBOX WITH COLD WATER, AFTER OPERATING AT ELEVATED TEMPERATURES, WITHOUT ALLOWING A FEW MINUTES COOL DOWN PERIOD. FOR THE SAME REASONS, DO NOT CLEAN THE FLOW DIVIDERS DIRECTLY WITH LIVE STEAM.

## APRON BEAM AND APRON LIP

Refer to Figure 3 and the ASSY. OF APRON LIP ADJUSTING MECHANISM.

The Apron Beam forms the bottom of the headbox pond area.



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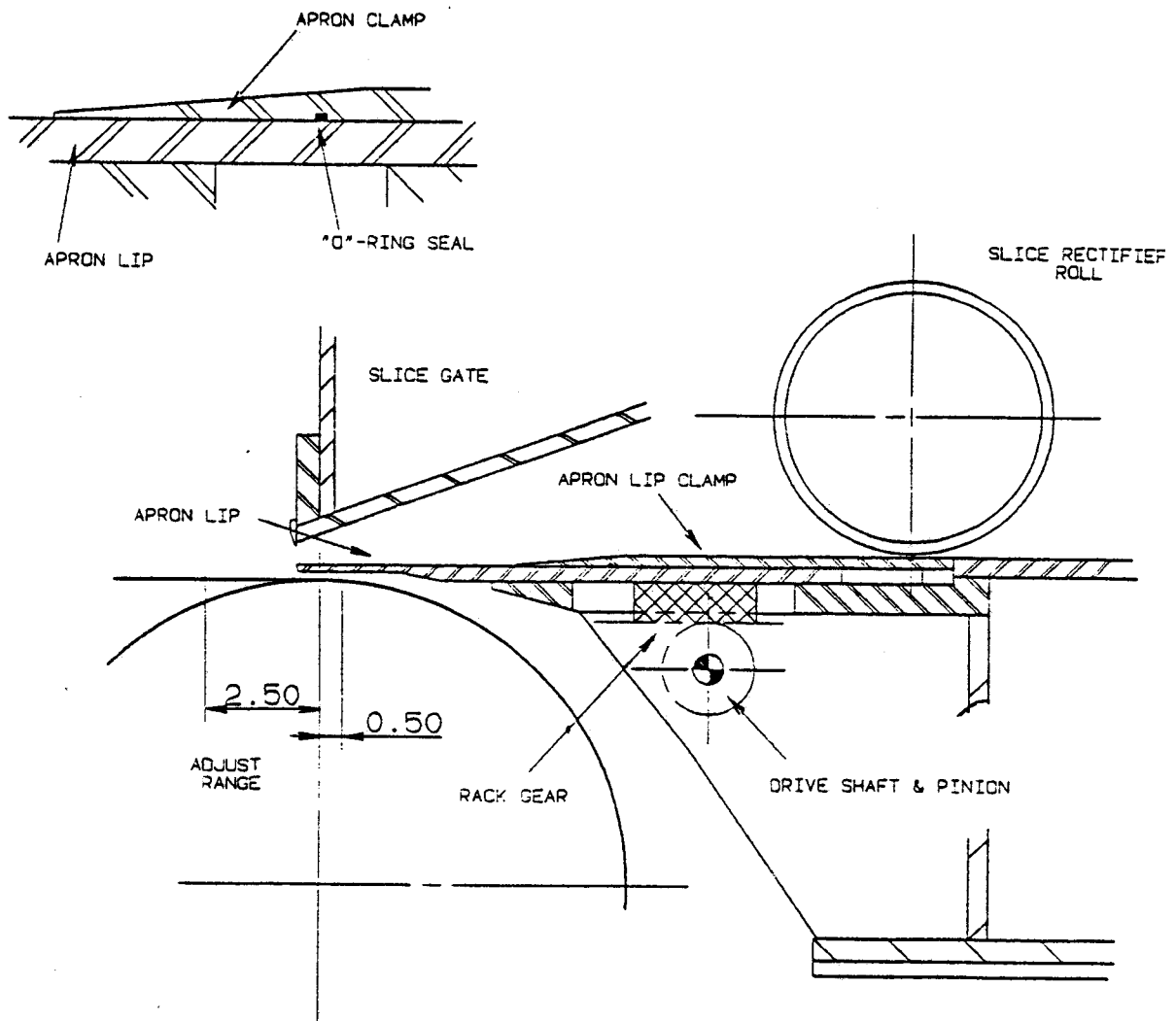
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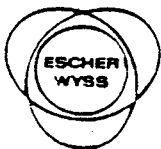
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ADJUSTABLE APRON LIP  
FIGURE 3



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## APRON BEAM AND APRON LIP (continued)

Mounted to the Apron Beam is the Apron Lip. This lip can be adjusted horizontally through the use of a rack and pinion arrangement mounted in the Apron Beam.

The setting of the Apron Lip will alter the impingement point of the jet (where the jet hits the wire). By setting this lip on the run, the operator will be able to fine tune the sheet characteristics.

Adjustment of the lip can be made directly, with the headbox operating or shut down. The setting of the Apron Lip is accomplished by simultaneously turning tending and drive side hex head ends of the drive shaft. To avoid the possibility of twisting the lip, scales are located on both sides of the headbox to assure the square setting of the lip.

## SLICE GATE

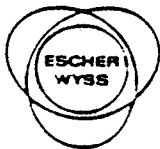
Refer to Figure 4. ASSY OF SLICE GATE LIFTING MECHANISM, and ASSY OF SLICE GATE TILTING MECHANISM.

The Slice Gate serves as the Front Wall of the headbox. It is readily possible to reposition the Slice Gate vertically and horizontally. These adjustments can be readily made during operation of the headbox.

The profiling mechanism (Refer to TOP LIP) is mounted to the Slice Gate.

The vertical positioning of the Slice Gate, while maintaining a constant Total Head, will allow the operator to increase or decrease the flow rate through the headbox. For a given basis weight, the more water, the lower consistency. Increasing the slice opening should move the dry line down the table.

Vertical positioning of the Slice Gate is accomplished through the Lifting Mechanism. To further aid in the ease of vertical positioning, the headbox is equipped with an air motor.



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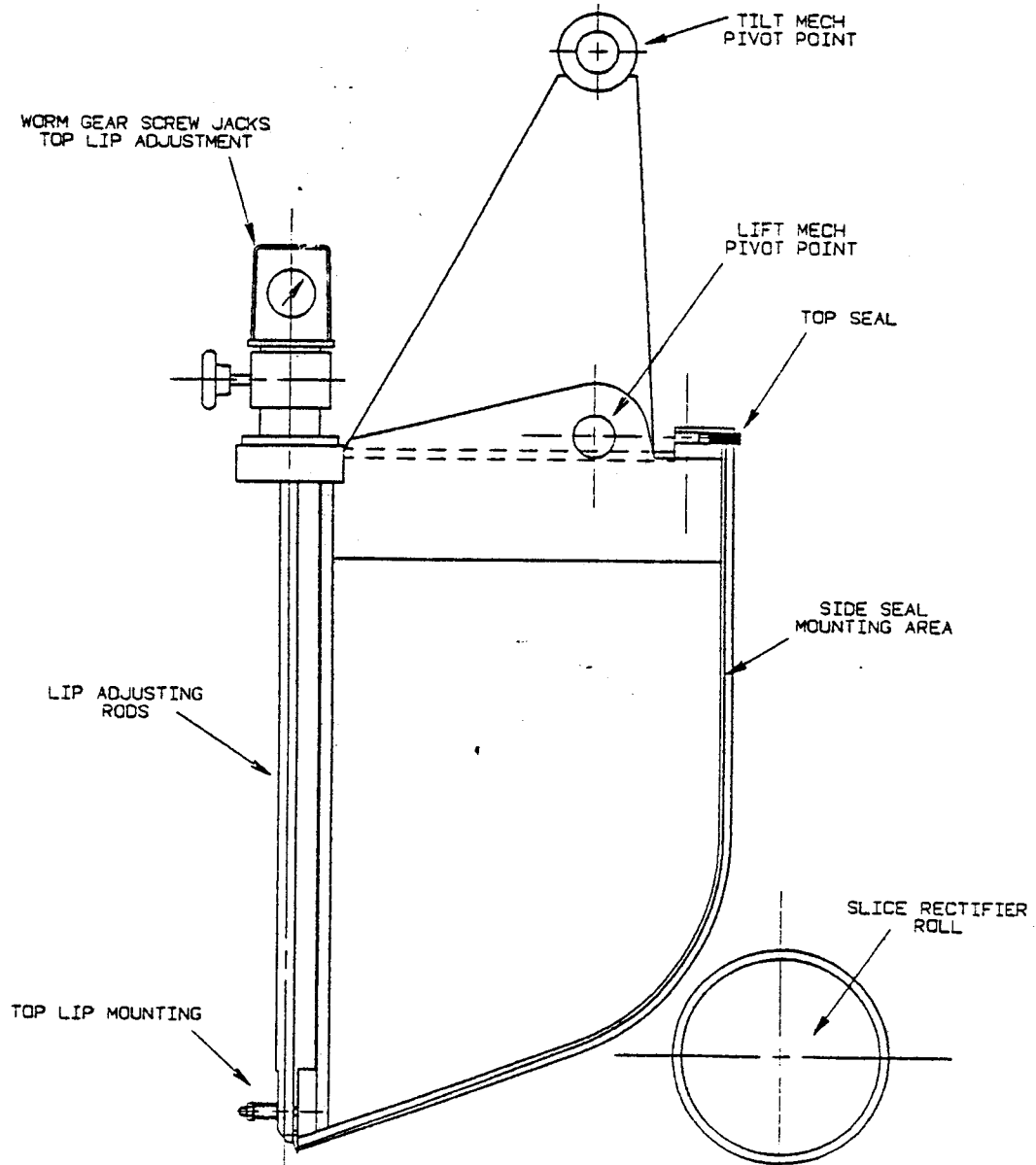
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SLICE GATE & TOP LIP  
FIGURE 4



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## SLICE GATE (continued)

The horizontal positioning of the Slice Gate will have a similar effect to positioning the Apron Lip. The further upstream (toward the rectifier roll) the Top Lip, the shallower the jet angle will be, and the further the jet will travel downstream (toward the couch).

Horizontal positioning of the Slice Gate is accomplished through the Tilting Mechanism.

Both the Lifting and Tilting Mechanisms utilize worm gear actuators (screw jacks) mounted to the top of the headbox. Handwheels are located on the tending side, and can be easily reached by standing on the tending side platform.

The actual slice opening is displayed on a tending side plaque, mounted to the Slice Gate with a pointer mounted from the walk bracket.

Adjusting either the Lifting or Tilting Mechanism will effect both the vertical and horizontal settings of the Slice Opening. The operator should watch the plaque when setting slice.

To avoid the possibility of accidentally running the slice into the apron or the Slice Rectifier Roll, adjustable stop nuts have been installed in the Lifting and Tilting jacks. Because of the adjustable position of the slice roll, these stops must be set from the position of the roll. Because of the interaction of the vertical and horizontal travel of the slice, setting of the stops may limit available positioning of the slice.

Seals are provided across the top and down the sides of the Slice Gate. Refer to SEALS.



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## SLICE LIP

Refer to Figures 4 & 5 and ASSY OF SLICE LIP & ADJUST. MECH.

A Slice Lip (Top Lip) is mounted to the tip of the Slice Gate, extending a nominal 1/8" below the edge of the gate. This lip is connected to worm gear actuators (micro-adjusting screw jacks). The purpose of this lip is to provide a method to compensate for minor deviations in sheet profile.

The worm gear actuators are equipped with integrally mounted dial indicators. The dial indicators are graduated in 0.01 mm increments (0.01 mm = 0.0004").

During operation, no single actuator should be adjusted more than 0.20 mm (0.008" - 20 hash marks) different than either of its adjoining jacks. Excessive adjustment of one jack will cause permanent damage to the Slice Lip.

Should operating conditions require adjustment of an adjuster beyond the 0.20mm/0.008" limit, then the adjoining actuators should also be adjusted to create a gentle curve of the lip. This should be done in stages, never allowing, at one time, two adjoining actuators to differ by more than 0.20mm/0.008".

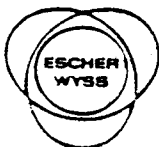
The actuators are capable of accepting "bolt-on" stepping motors and LVDT's. These can be added at any time to allow for automatic profile control of the Top Lip.

## SLICE RECTIFIER ROLL MOUNTINGS

Refer to Figures 1 & 6. ASSY OF SLICE RECTIFIER ROLL & BEARINGS.

The Slice Rectifier Roll is mounted from double eccentric housings which provide the roll with both vertical and horizontal adjustment. Roll position will effect the settings of the Vertical and Horizontal Adjusting Jacks. Refer to SLICE GATE LIFTING and SLICE GATE TILTING for further information.

Journal packings are equipped for a water purge. It is essential that this purge be maintained at approx 3-5 GPH.



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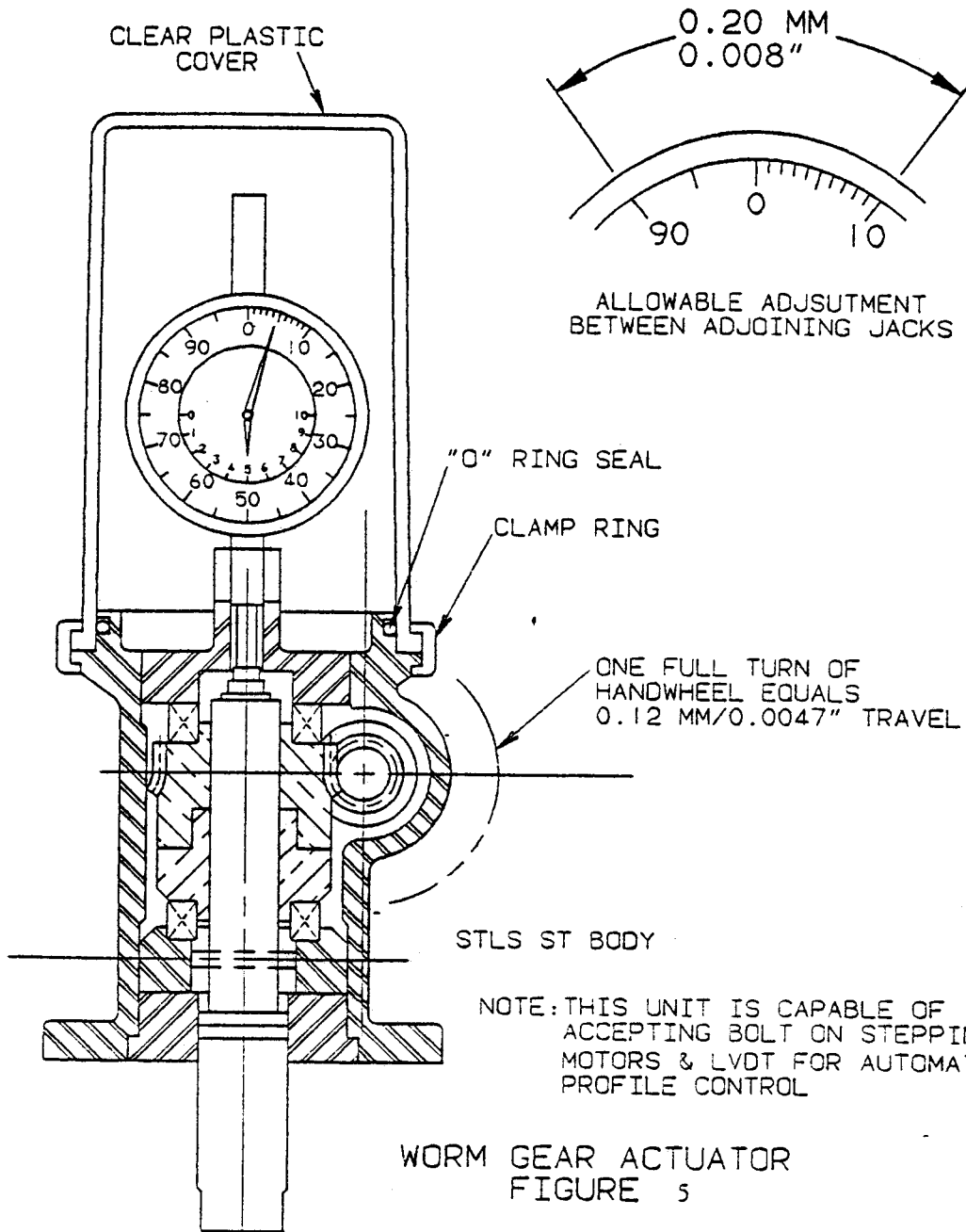
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WORM GEAR ACTUATOR  
FIGURE 5



PRESSURE VACUUM HEADBOX

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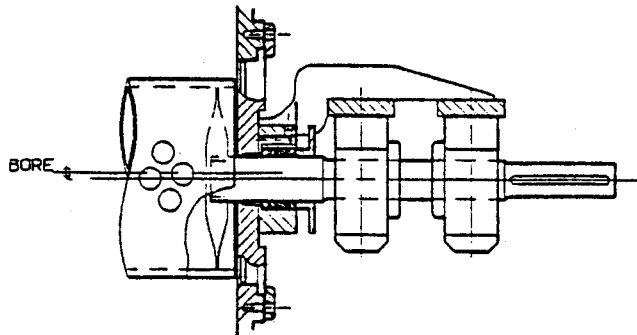
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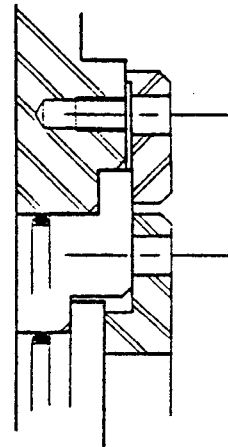
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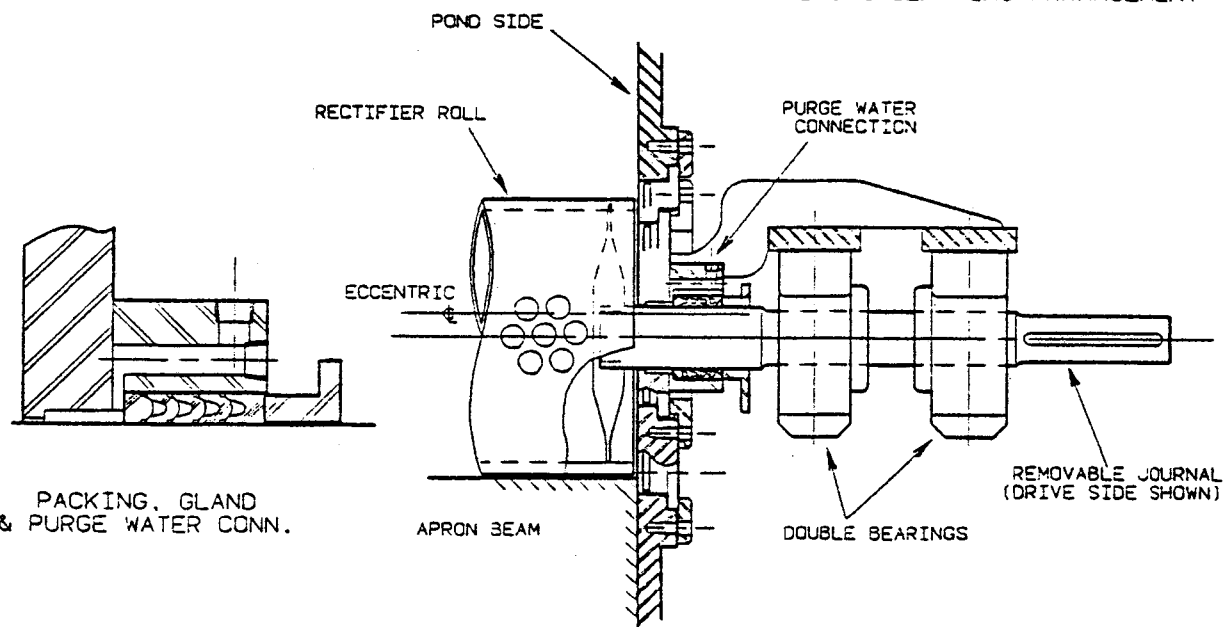
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SINGLE ECCENTRIC HOUSING  
THROAT ROLL



DOUBLE ECCENTRIC HOUSING  
O-RING & CLAMPING ARRANGEMENT



DOUBLE ECCENTRIC HOUSING

RECTIFIER ROLL MOUNTINGS  
FIGURE 6



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## SLICE RECTIFIER ROLL MOUNTINGS (continued)

The housing parts on both sides of the machine are equipped with scales which are divided into two colored zones, red and black. These scales are calibrated so that when the pointers on the eccentrics indicate the **SAME** colored zone, the roll will have moved horizontally from the zero reference point the distance indicated, while maintaining a 1/8" gap between the top of the Apron Beam and the OD of the roll.

Refer to the MAINTENANCE Section for proper adjustment and removal procedures.

## THROAT RECTIFIER ROLL MOUNTINGS

Refer to Figures 1 & 6, ASSY OF THROAT RECTIFIER ROLL & BEARINGS.

The Throat Rectifier Roll is mounted from single eccentric housings. These housings allow for proper setting of the roll position during shop erection. Once set at the factory these settings should not be altered.

Journal packings are equipped for a water purge. It is essential that this purge be maintained at approx 3-5 GPh.

Refer to the MAINTENANCE Section for proper removal procedures.

## RECTIFIER ROLL DRIVES

Refer to ASSY OF RECTIFIER ROLL DRIVES.

The Slice and Throat Rectifier Rolls are independently driven by variable speed D.C. drives.

Operating speeds and rotation are adjustments available to the operators for fine tuning. Typically, rolls are set to rotate with the bottom of the rolls turning toward the slice opening. The speed of the rolls is usually set or near the pond velocity, to avoid "chopping" in the pond area.



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## RECTIFIER ROLL DRIVES (continued)

The purpose of rotating the rolls is primarily to keep them clean, avoiding fiber deposits and stapling on the holes. Which ever speed serves these purposes, without disrupting the sheet, should suffice.

## INTERNAL SHOWER

Refer to Figure 1 and ASSY OF ROTATING SHOWER & DRIVE.

The headbox is equipped with an internal rotating shower.

This shower has been initially equipped with large orifice shower nozzles to allow the mill to use clarified white water. If desired, it is also possible to utilize "misting" nozzles. These would insure gentle cleaning action, but would require the use of fresh water.

The purpose of the shower is to keep the internal headbox surfaces free of fiber build up. The shower should not be used to eliminate foam, although it will knock down foam present in the pond area.

Presence of foam in the pond is an indication of a serious air entrainment problem. When air entrainment is severe enough to develop foam in the pond, there will likely be serious sheet quality problems.

## SEALS

Refer to Figure 7 , ASSY OF SLICE GATE TOP SEAL and ASSY OF SLICE GATE SIDE SEALS.

The Top Seal of the Slice Gate is manually clamped and mechanically adjustable.

It is retained by clamp plates which are bolted to the Slice Gate. The seals are loaded against the Roof Member by a pressure bar which is positioned by a series of square head set screws. The bar, through the set screws, exerts pressure against the seal strip.



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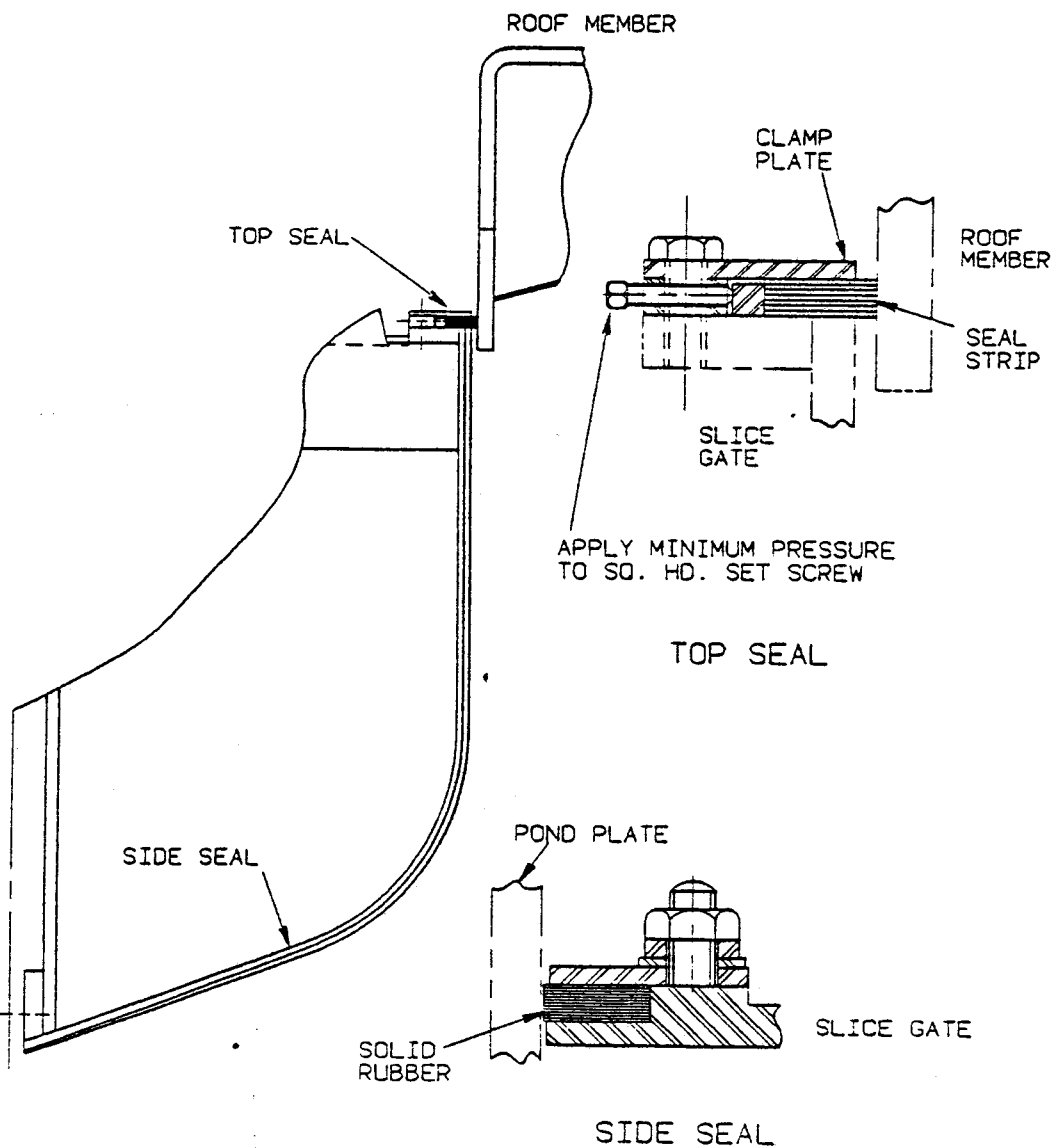
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SEAL ARRANGEMENTS



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## SEALS (continued)

It is important to adjust the Top Seal with the minimum pressure required to maintain the sealing action. This will reduce the seal friction against the Roof Member, and extend the life of the seal strip.

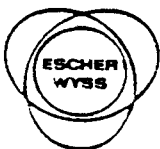
The Side Seals are made of a solid strip of rubber (neoprene). They are been mounted in holders along the sides of the Slice Gate. Experience has shown that this method of sealing is the most reliable. Should excessive leakage occur it will be necessary to shim or replace the seal strip. Refer to the MAINTENANCE Section.

## INTERIOR SURFACES

All interior surfaces of the headbox have been electropolished, after being hand polished to a smooth finish. To protect the electropolished surface, scratching of the surfaces must be avoided at all times. This includes cleaning of the surfaces with any abrasive material (ie Scotch-brite, cleanser, etc), as well as careless treatment of surfaces.

NO MATTER HOW SMOOTH THE FINISH. POLISHING WILL NOT PREVENT THE GRADUAL BUILD-UP OF DEPOSITS. POLISHING WILL ONLY RETARD BUILD-UPS AND IMPROVE THE RELEASE OF DEPOSITS.

It will be necessary to periodically chemically clean the headbox. Refer to CLEANING THE HEADBOX.



PRESSURE / VACUUM HEADBOX  
GENERAL INFORMATION

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## MAINTENANCE INSTRUCTIONS

### CLEANING THE HEADBOX

It is crucial to good headbox performance that the internal surfaces be kept clean.

Whenever shutting down, flush the headbox with clear water. This is extremely important when operating at elevated temperatures. No fibers or fines should be given a chance to dry out and stick to the internal surfaces of the headbox, Flow Divider, or Inlet Manifold.

When flushing the headbox, shut off the thick stock supply and allow the entire system to flush itself for at least 15 minutes. Prior to extended shutdowns, it is advisable that some form of chemical cleaning agent be used to flush the entire approach flow and headbox systems. (Refer to CHEMICAL CLEANING)

Following flushing of the headbox, open the slice as far as possible and thoroughly wash out the nozzle area with fresh water.

If desired a quick inspection / washout of the pond area can be accomplished by opening the tending side window or the back side manway.

Be careful not to flush a "hot" headbox with cold water.

**REMEMBER - ONCE FIBER HAS DRIED ONTO A SURFACE, NO MATTER HOW WELL POLISHED, IT WILL LIKELY NOT BE REMOVED BY WATER ALONE, CHEMICAL CLEANING WILL BE REQUIRED.**

**THIS HEADBOX HAS BEEN ELECTRO-POLISHED - DO NOT USE ABRASIVE MATERIALS OF ANY SORT (IE "SCOTCH-BRITE", SCOURING POWDER, SCRAPERS, OR EVEN COARSE CLOTH) ON THE POLISHED SURFACES. ONLY SOFT COTTON CLOTH SHOULD BE USED ON THE ELECTRO-POLISHED SURFACES. ONCE THE SURFACED HAS BEEN SCRATCHED THE ELECTRO-POLISHED SURFACE IS DESTROYED.**



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## CHEMICAL CLEANING THE HEADBOX

The Flow Dividers are made of synthetic materials. The remaining parts of the headbox flow passages are made of 316 L stainless steel.

Acceptable cleaning agents may consist of:

1. Dilute HCl

Not below 4 pH (approx 10% solution)

DO NOT EXCEED 176 DEG F (80 DEG C).

2. Dilute NaOH

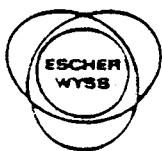
Not above a 5% solution.

DO NOT EXCEED 140 DEG F (60 DEG C).

During "boil out" of the system, it is important that the temperature be controlled. The water temperature should not exceed those temperatures indicated. Also, when flushing out the headbox, do not expose the block to sudden temperature changes (ie do not flush out a headbox with ice water immediately after boiling out at 150 Deg F).

The cleaning solution used should be selected not to affect the forming fabric. It should contain emulsifying, fungicide, and bactericidal agents as desired.

Safety precautions, as directed by the chemical supplier should be followed at all times.



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## REMOVING THE APRON LIP

Refer to Figure 3 and ASSY OF APRON LIP ADJUSTING MECHANISM.

1. Lower the Breast Roll and raise and tilt the Slice Gate as far out of the way as possible.
2. Remove the splash guard from under the Apron Beam.
3. Loosen the Apron Lip clamp, by removing the nuts from the two rows of studs under the lip mounting area.
4. Lift the Apron Lip Clamp straight up, until the studs clear their holes. Place the clamp on a support (ie wood) and remove it from the slice area. Take care to protect polished surfaces.
5. Lift the Apron Lip straight up, until the gear racks clear their holes. Place the lip on a support (ie wood) and remove it from the slice area. Take care to protect polished surfaces.

Note: THE LEADING EDGE OF THE APRON LIP IS KNIFE SHARP.  
HAND PROTECTION SHOULD BE WORN.

## INSTALLING THE APRON LIP

Refer to Figure 3 and ASSY OF APRON LIP ADJUSTING MECHANISM.

1. If a new lip is to be installed, check it first against the "old" lip for overall length. If the lip has never been "fitted", it will be oversized in length (0.010" to 0.020")

WHEN COMPARING OVERALL LENGTHS - BE CERTAIN THE TWO LIPS ARE EXACTLY THE SAME TEMPERATURE. 10 DEG F CAN MAKE A 0.010"/100" WIDTH DIFFERENCE.

If it is necessary to "fit" the new lip, use the old lip as a gauge rod. It should be necessary to remove material from both ends of the lip. Care should be taken to see that the end bolt holes line up to both lips.



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## INSTALLING THE APRON LIP (continued)

To allow for thermal expansion, the Apron Lip should be undersize of the pond width. Refer to the SPECIFICATIONS for the proper fit tolerances - TAKE NOTE OF THE DIFFERENT VALUES FOR "HOT" & "COLD" FITS.

2. Remove the gear racks from the original lip and install them on the replacement lip.

BE CERTAIN TO INSTALL THEM IN THE SAME ALIGNMENT AS THEY ORIGINALLY WERE ON THE FIRST LIP.

3. Place the properly sized lip on a suitable support, with sufficient strength to allow for handling without excessive deflection.

BE CAREFUL OF POLISHED SURFACES AND THE SHARP EDGES. PROTECT THE EDGES AT ALL TIMES.

4. Thoroughly clean the lip mounting area, it is crucial that it be free of ALL dirt and fiber.

5. Place the lip (on its support) in front of the lip mounting area.

AGAIN - PROTECT AGAINST SAGGING.

6. Place the new lip into position on the apron beam.

BE CERTAIN THE RACK TEETH ALIGN PROPERLY WITH THE GEAR TEETH. DO THIS BY CHECKING THE LIP POSITION AGAINST THAT INDICATED ON THE SCALES PROVIDED ON THE DRIVE SHAFT. IF THE DIMENSION OF THE LIP TIP TO BREAST ROLL IS NOT CORRECT, LIFT THE LIP AND REPOSITION THE LIP TO OFFSET THE RACK TEETH.

7. Replace the Lip Clamp by reversing the steps outlined above.

BE SURE THE LIP CLAMP O-RING IS IN POSITION.

8. Inspect the leading edge of the lip. It should be sharp (not rounded or broken) and free of nicks and burrs.



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## REMOVING THE SLICE LIP

Refer to Figure 8 and ASSY OF SLICE LIP & ADJUST MECHANISM

1. Raise the Slice Gate until the slice opening is approximately 2".
2. Install the handling fixture (1) under the Slice Lip (2), being careful to protect all polished surfaces, sharp edges.
3. Place wooden wedges (3) behind all but the end and 1/4 point Adjusting Rods (4). (There should be 5 rods without wedges.)

Drive the wedges in behind the spindles, causing the rods to pry away from the Slice Gate.

4. The Slice Lip (2) may come forward with the rods (4), if so, lightly tap the lip back - away from the pins.
5. When this is completed, repeat the process for the remaining rods, starting at one end of the headbox and working across the machine.

Allow the Slice Lip to rest on the handling fixture (1), being careful not to damage the edge or cause the lip to bend excessively.

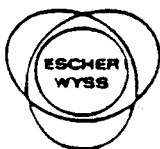
6. Remove the Slice Lip and its fixture. Do not allow the fixture to bend excessively.

## INSTALLING THE SLICE LIP

Refer to Figure 8 and ASSY OF SLICE LIP & ADJUST MECHANISM

1. If a new Slice Lip (2) is to be installed, check it first against the "old" lip for overall length. If the lip has never been "fitted", it will be oversized in length (0.010" to 0.020")

WHEN COMPARING OVERALL LENGTHS - BE CERTAIN THE TWO LIPS ARE EXACTLY THE SAME TEMPERATURE. 10 DEG F CAN MAKE A 0.010"/100" WIDTH DIFFERENCE.



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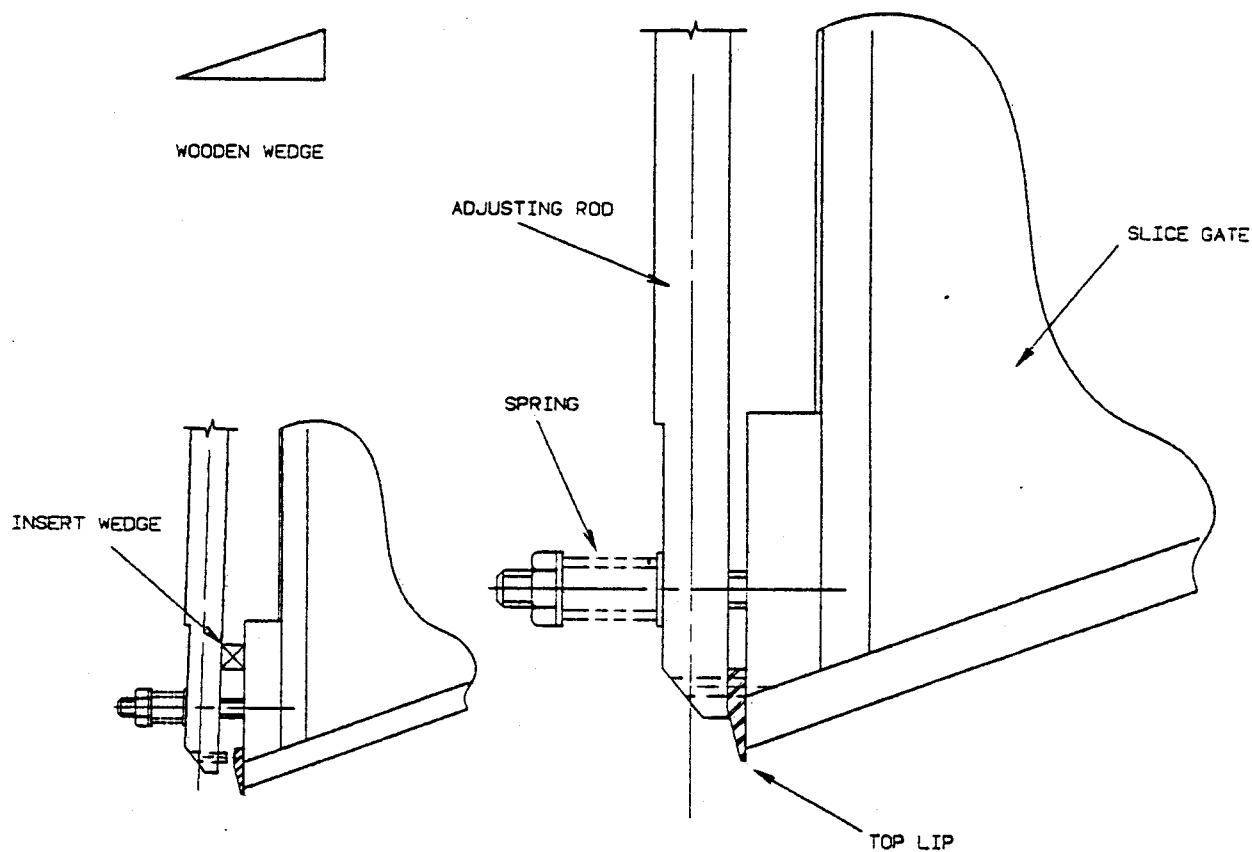
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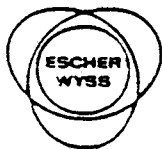
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REMOVING / INSTALLING THE TOP LIP  
FIGURE 8



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## INSTALLING THE SLICE LIP (continued)

If it is necessary to "fit" the new lip, use the old lip as a gauge rod. It should be necessary to remove material from both ends of the lip. Care should be taken to see that the end pin holes line up on both lips.

To allow for thermal expansion, the Slice Lip should be undersize of the pond width. Refer to the SPECIFICATIONS for the proper fit tolerances.

2. Place the properly sized lip on the handling fixture.

BE CAREFUL OF POLISHED SURFACES AND THE EDGES. PROTECT THE EDGES AT ALL TIMES.

3. Thoroughly clean the lip mounting area, it is crucial that it be free of ALL dirt and fiber.
4. Using the wooden handling fixture (1), position the Slice Lip (2) in front of the Slice Gate, with the pins (5) and pin holes in line.
5. Move the Slice Lip into place, and remove the wedges (3) from behind the end and 1/4 point rods (4) - allowing the pins (5) to engage the Slice Lip.
6. Repeat Step 5 for the remaining rod positions.
7. Remove the fixture.
8. Lower the Slice Gate to the inspection position.

Level the Slice Lip.

Refer to LEVELING THE SLICE LIP.



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## LEVELING THE SLICE LIP

Refer to Figures 9.

To level the Slice Lip:

1. Place the Front Wall in the inspection position.

This setting is determined by the inspection equipment used to check the slice opening. Usually .75" to 1.00" upstream and .75" to 1.25" open is a reasonable range of positions.

2. To obtain an accurate lip setting, use a dial indicator adapted for use on a critical edge (See Figure 9).

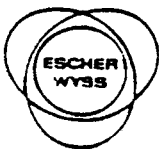
It is important that the edges and polished surfaces be protected. Any surface coming in contact with these edges and surfaces should be smooth, plastic material that will not mar the stainless steel.

When using the inspection tool shown in Figure 9 (this tool is available from SEWM) it is necessary for the inspector to obtain a "feel" for the proper positioning of the base. The two contact points of the base on the Apron Beam make it possible to "rock" the base until it is properly seated.

The base and feeler arm are made of plastic to protect the headbox surfaces from scratches. It may be occasionally necessary to replace the feeler arm and base.

3. Level the Slice Lip by adjusting the worm gear actuators.
4. It should be readily possible to obtain a level Slice Lip setting across the full width of the machine.

LOCAL DEVIATIONS BETWEEN ACTUATOR RODS IS A SIGN OF A SLICE LIP THAT HAS BEEN OVER ADJUSTED, AND IS PERMANENTLY WARPED.



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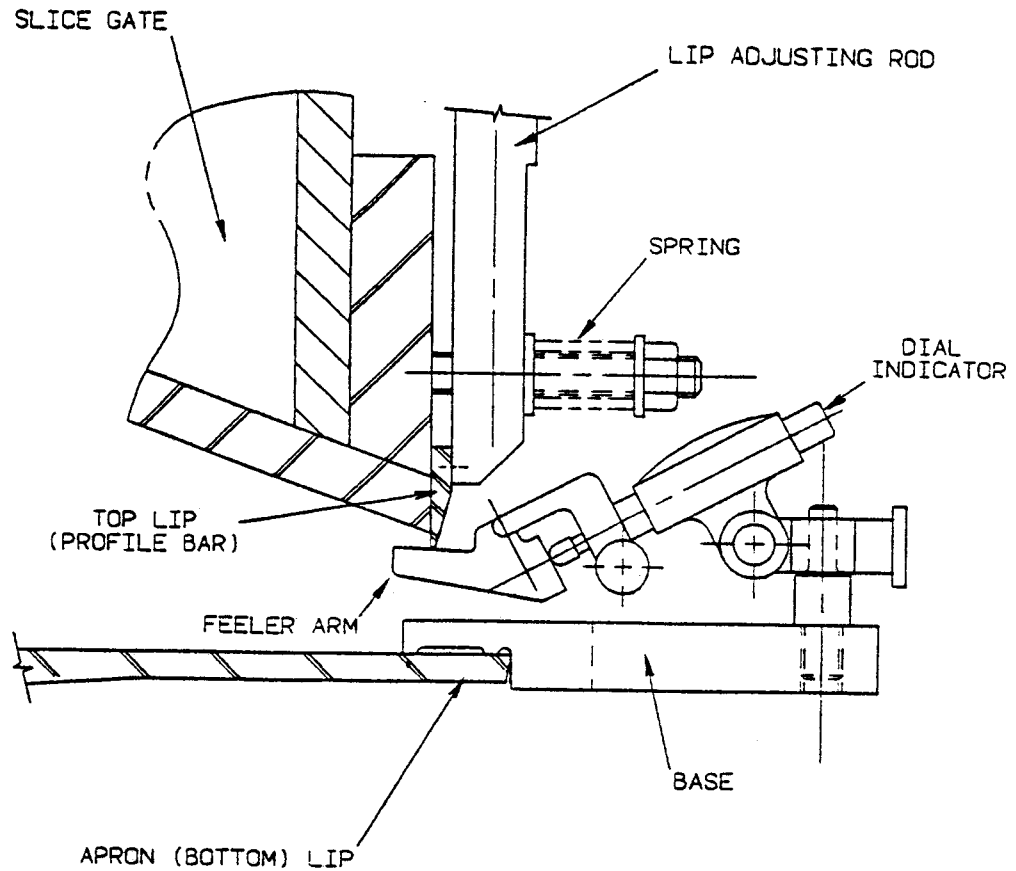
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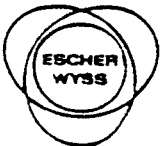
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TOP LIP INSPECTION EQUIPMENT  
FIGURE 9



PRESSURE VACUUM HEADBOX

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## LEVELING THE SLICE LIP (continued)

A WARPED OR OVER STRESSED LIP WILL NOT RESPOND TO PROFILE CORRECTIONS IN A SENSIBLE MANNER. AN ADJUSTMENT AT ONE POSITION WILL DISRUPT THE PROFILE SEVERAL POSITIONS AWAY. A SLICE LIP THAT RESPONDS IN THIS MANNER SHOULD BE REPLACED.

5. After setting the Slice Lip it will be necessary to "zero" the dial indicators on the actuators.

This is done by removing the plastic cover. Loosen the clamping screw at the base of the dial indicator. Gently position the dial indicator up or down until a zero reading is set on all indicators.

BE CERTAIN THAT ALL "SECOND" HANDS ARE ON THE SAME NUMBER. THIS WILL INSURE THAT THE INDICATORS ALWAYS SHOW THE OPERATOR THE TRUE RELATIVE POSITION BETWEEN ACTUATORS. REPLACE COVERS AND CLAMPS WHEN FINISHED.

## POSITIONING THE SLICE RECTIFIER ROLL

Refer to Figure 10 and ASSY OF SLICE RECTIFIER ROLL AND BEARING HOUSING.

The Slice Rectifier Roll bearings are mounted on a double eccentric housing. This provides the roll with the possibility of both horizontal and vertical positioning.

The housing clamps, on both sides of the machine, are equipped with scales which are divided into two colored zones, red and black. These scales are calibrated so that when the pointers on the eccentrics indicate the SAME colored zone, the roll will have moved horizontally from its zero position while maintaining a uniform 1/8" gap between the bottom of the rectifier roll and the top of the apron beam.

To position the roll:

1. Loosen the screws in the Inner OR Outer Clamp Rings several turns. Loosen only those housings being turned at any time.



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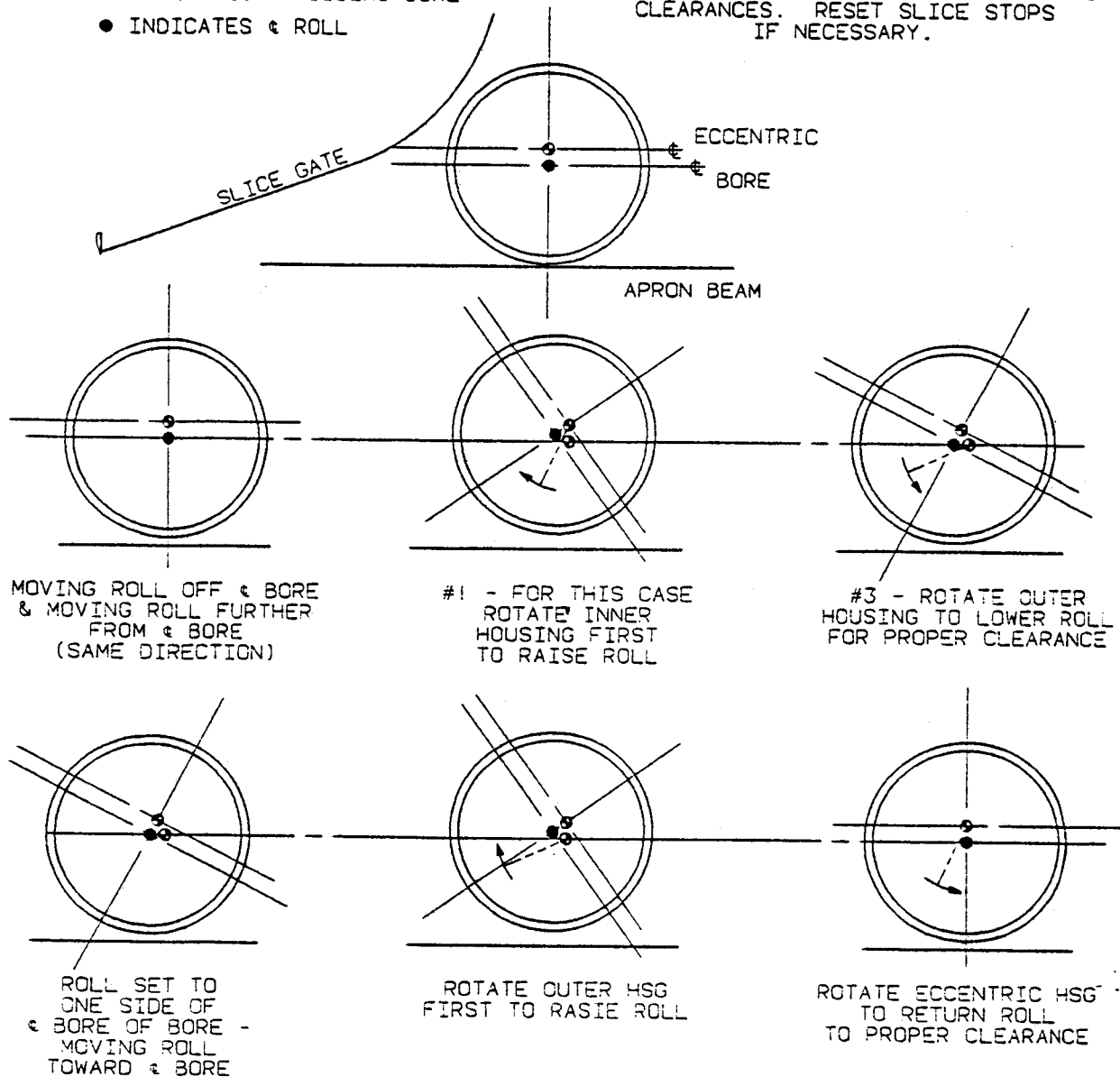
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- INDICATES  $\epsilon$  ECCENTRIC BORE
- INDICATES  $\epsilon$  HOUSING BORE
- INDICATES  $\epsilon$  ROLL

WHEN SETTING SLICE RECTIFIER ROLL, EXERCISE EXTREME CAUTION TO AVOID MISALIGNMENT AND MAINTENANCE OF PROPER CLEARANCES. RESET SLICE STOPS IF NECESSARY.



MOVING SLICE RECTIFIER ROLL  
FIGURE 10



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## POSITIONING THE SLICE RECTIFIER ROLL (continued)

2. FIRST MOVE WHICH EVER HOUSING RAISES THE ROLL AWAY FROM THE APRON BEAM.

When set on "0":

The outer housing rotation CW or CCW will lower the roll. Therefore rotate the inner housing first.

When set downstream and moving downstream:

Rotating the top outer housing toward the Slice Gate will lower the roll. Therefore rotate the inner housing first.

When set downstream and moving upstream:

Rotating the top outer housing away from the Slice Gate will raise the roll. Therefore rotate the outer housing first.

When set upstream and moving upstream:

Rotating the top outer housing away from the Slice Gate will lower the roll. Therefore rotate the inner housing first.

When set upstream and moving downstream:

Rotating the top outer housing toward the Slice Gate will raise the roll. Therefore rotate the outer housing first.

2. Rotate tending and drive side housings simultaneously.
3. DIRECTION OF ROTATION OF INNER AND OUTER HOUSINGS WILL ALWAYS BE OPPOSITE. IF THIS IS NOT DONE THE ROLL WILL BE POSITIONED VERTICALLY AS WELL AS HORIZONTALLY.
4. IT IS SUGGESTED THAT DURING ROLL POSITIONING, SOMEONE BE STATIONED INSIDE THE HEADBOX TO KEEP AN EYE ON THE ACTUAL POSITION OF THE ROLL.
5. When finished positioning the roll, check alignment. It is very easy to accidentally set the roll out of square or level. This will hasten bearing failure or may allow the roll to rub against the Apron Beam.



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## REMOVING / INSTALLING RECTIFIER ROLLS

Refer to Figure 6 and ASSY OF SLICE RECTIFIER ROLL AND BEARING HOUSING and ASSY OF THROAT RECTIFIER ROLL AND BEARING HOUSING.

Both Slice and Throat Rectifier Rolls are equipped with removable journals which are supported from double bearings.

To remove either roll:

1. Remove the handrails from the tending side platform.
2. Place several layers of paper between the roll and the Apron Beam or Back Wall of the headbox. These should be continuous across the full width of the machine.
3. Match mark the location of the tending side housing, outer housing, and/or outer clamp ring.
4. Remove the screws in the outer clamp ring and remove the ring.
5. Carefully pull off the housing or outer housing. (If removing the slice roll, leave the inner housing in place.)

There should be no need to remove the bearings or journal, unless so desired.

6. The journal will come free of the roll, allowing the roll to drop slightly, onto the paper. Carefully pull the roll through the opening.

TAKE CARE TO PROTECT THE POLISHED SURFACES OF BOTH THE ROLL AND THE HEADBOX.



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## REPLACING RECTIFIER ROLL PACKINGS

Refer to Figure 6 and ASSY OF SLICE RECTIFIER ROLL AND BEARING HOUSING and ASSY OF THROAT RECTIFIER ROLL AND BEARING HOUSING.

In order to replace the packings (seals) on the rectifier roll journals:

1. Place several layers of paper between the roll and the Apron Beam or Back Wall of the headbox. These need only be placed on the end of the roll which is having its packings replaced.
2. Remove both bearings.
3. Remove the Packing Gland.
4. Remove the old packing.
5. Install the new packing with the cup of the glands toward the headbox.
6. Replace the gland and bearings. Remove the paper.
7. To set the packing, "snug" the nuts holding the packing gland in place. Minimal pressure should be required to maintain an adequate seal.

## SETTING THE VERTICAL AND HORIZONTAL JACK STOPS

Stop collars are mounted to the spindles of the Lifting and Tilting jacks. These collars are located inside the top cover of the jacks.

These collars are set by placing the Slice Gate at the extreme position, nearest the Slice Rectifier Roll and the top of the apron.

Loosen the set screws in the locking collars enough to allow the collars to turn.



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## SETTING THE VERTICAL AND HORIZONTAL JACK STOPS (continued)

Tighten the collars against the internal bearings. Then tighten the set screws in the collars to lock the collar in place.

Due to the close clearances inside the jacks it may be necessary to open the slice after tightening the collars, to allow access for their securing.

## LUBRICATION

Grease fittings are located at the Lifting Mechanism pivot and sliding points at each jack. and at each rectifier roll bearing.

It is necessary to grease these points only once every one or two months. It is advisable to work the Lifting and Tilting adjustment mechanisms, during application to obtain a film of lubricant on sliding surfaces.

The air motor also has a grease fitting.

Refer to VENDOR INFORMATION for specific lubrication information and instructions.



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## CONTROLS

### INTRODUCTION

The control system of this headbox provides for fully automatic level control and for fine control of the total head.

In addition to the automatic adjustment to total head, an open manometer has been provide the operator with a direct reading of head and jet speed.

### JET VELOCITY

The jet velocity (speed) is established by the setting of the internal pressure (total head).

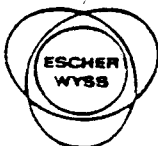
A curve has been provided, at the end of this section, that relates the total head to the jet speed.

The total head is determined by the position of the mainstream valve and the fine bypass control valve.

The total head is measured by a Pressure Transmitter, connected to the Pond Side Wall. The transmitter mounting has a purge water connection. Purging should be continuous (even during shut down), at a rate of approximately 5 GAL/HR to ensure the line between the headbox and the transmitter remains clear.

The internal pressure is displayed and recorded at the circle chart controller/recorder.

The operator should adjust the mainstream valve in order to maintain mid range operation of the fine bypass control valve.



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## SLICE FLOW CONTROL - SEWM RECOMMENDED METHOD

By operating with the control system in Automatic Head Control, it is possible for the operator to control the headbox flow rate by simply opening or closing the slice.

As long as the bypass valve is within its operating range, opening the slice will cause a drop in total head, the controls will sense this change and close the bypass valve to return the head to the target value.

This, in a sense, makes the Slice Gate the water valve. If the operator wants more or less water (lower or higher headbox consistency) all he needs to do is to adjust the slice.

A key to maintaining this operation is the manual setting of the mainstream valve to keep mid range operation of the bypass valve. If this is done the operator can easily make fine adjustments to the headbox flow rate, without having to make several adjustments to the system.

Operation in this mode will result in some variation to the Primary Cleaner dP (pressure drop).

## SLICE FLOW CONTROL - ALTERNATE METHOD

Another method of controlling slice flow uses only the mainstream valve to control the slice flow / total head.

In this system a constant pressure is maintained after the Primary Cleaners by the use of a pressure transmitter, controller, and bypass line.

With this system, every headbox change, slice opening or head adjustment, must be accompanied with a mainstream valve adjustment.

This method offers a slightly more stable cleaner dP, but is more demanding on the operator.

This method is quite successful on installations where slice positioning is limited. It is, however, less convenient when slice adjustments are readily available.



PRESSURE / VACUUM HEADBOX  
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## LEVEL CONTROL

The automatic level control system consists of the following:

### 1. Pond Level Indicator

The level indicator is mounted on the tending side of the headbox. It includes an integrally mounted D/P Cell that provides the control system with a measurement of pond level.

The D/P cell is mounted so that the low pressure side of its sensing head is equipped with a water purge. This water purge is then connected to the top of the level indicator. The water used to purge the cell, also purges the level tube. It is essential this purge water be maintained continuously. It will help keep the level indicator clean.

It is likely that eventual fiber or deposits will build up inside the level tube. Access plugs are provided to allow swabbing of the inside of the tube if necessary. This should only be done with the machine shut down.

If necessary the level tube can be readily replaced.

### 2. Air Compressor and Separator

This unit must be in operation during operation of the headbox. The compressor serves as the source for both the air pressure and vacuum.

It is essential that sealing water be maintained to the compressor. Without it the compressor will not function.

### 3. Level Controller / Recorder

The operator selects the desired pond level at the controller. As the level varies in the headbox the controller will alter its output to adjust the Level Control Valves.



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## LEVEL CONTROL (continued)

### 4. Level Control Valves

Two (2) three-way valves automatically select vacuum or pressure operation by allowing air flow from the compressor to the headbox or to the atmosphere.

When the headbox is in pressure operation (total head greater than pond level) air will be forced from the compressor to the headbox.

When the headbox is in vacuum operation (total head less than pond level) air will be drawn from the headbox to the compressor.

The compressor has a capacity greater than the requirements of the headbox. Therefore, bleed valves are installed in both lines for initial balancing of the system.

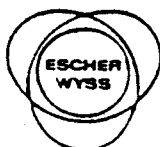
Should problems develop with maintaining the pond level, the operator/instrumentation technician should check (in this order):

1. Compressor seal water.
2. Headbox seals.
3. Bleed valve positions
4. Control valve operation.

## VERTICAL SLICE OPENING

The vertical slice opening can be adjusted by hand or through an air motor. The motor is operated by a panel mounted control valve.

It is always advisable that the operator watch the slice position as indicated on the scale and the Slice Gate itself, just to be certain no problems develop. No safety feature can replace operator attention.



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## HORIZONTAL SLICE POSITION

The horizontal position of the slice effects the angle with which the jet hits the wire, and the distance the jet will travel from the slice before hitting the wire.

The horizontal slice position is adjusted by the Tilting Mechanism, and is effected slightly by the Lifting Mechanism. The mechanism is manually adjusted from the tending side of the headbox from a handwheel.

## INLET BALANCING

This is described in detail in INLET MANIFOLD.

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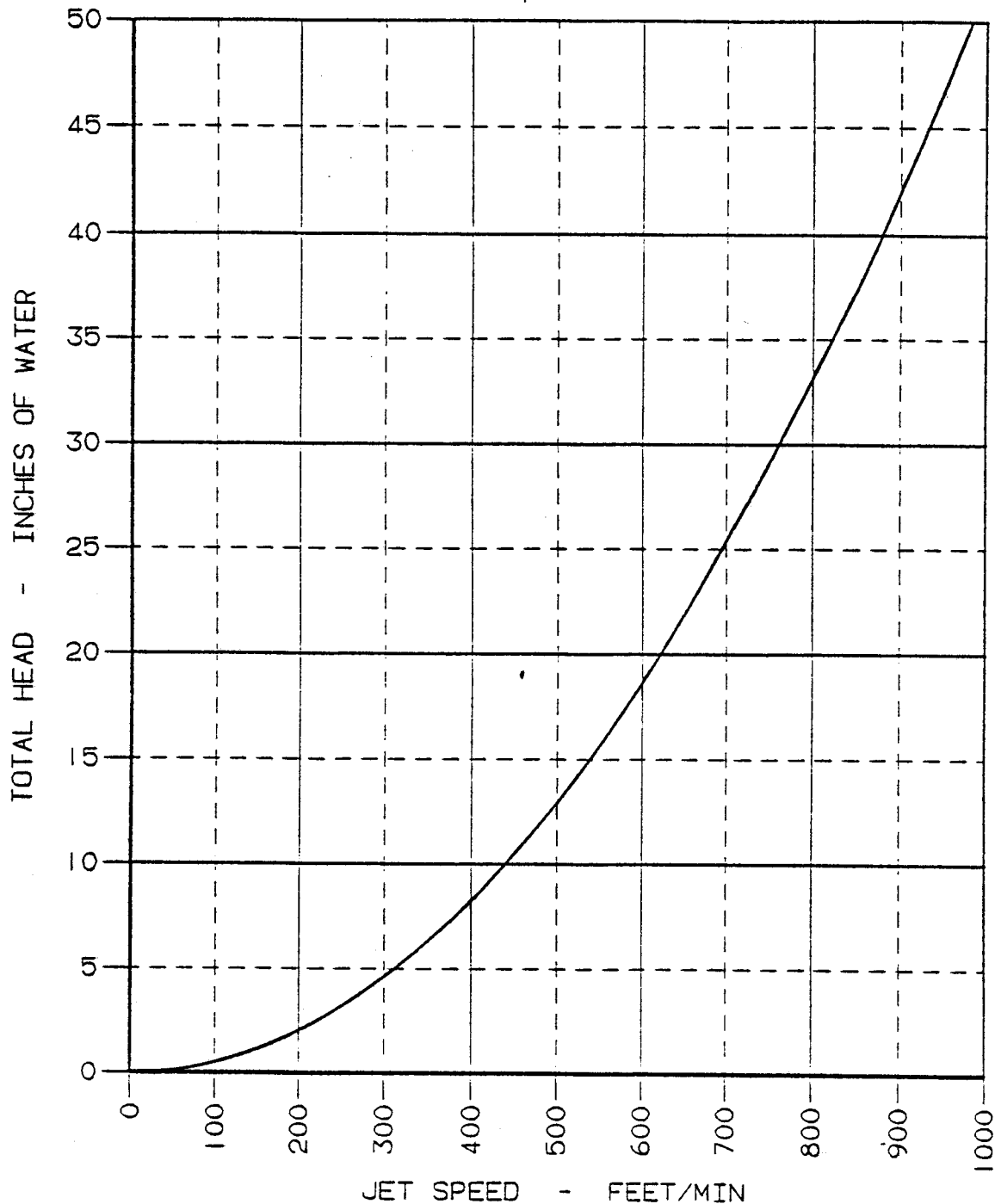
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TOTAL HEAD CHART - FIGURE 11



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## INSTALLATION INSTRUCTIONS

### INSTALLATION TOLERANCES

When installing a Pressure / Vacuum Headbox, it is essential that it be level and square with the Fourdrinier. To help ensure a successful installation, the following procedures and tolerances should be followed:

1. Determine reference points, machine and cross machine.
2. Check the Breast Roll or Couch Roll for level and square. Normally the Couch Roll is taken as the reference point, and the Breast Roll made to be square with the Couch.

Adjust level and squareness to within 0.004".

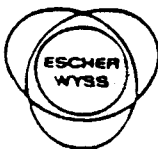
3. If new soleplates for the headbox are included with the installation, they should be set within 0.006" MD and CD.

Allowance for shimming should always be provided.

4. If a separate Support Base is included in the installation, first double check the Base and Apron Beam heights for possible variations in machining tolerances. Set the Base level and square with the reference.

Alignment of the headbox comes from the Apron Lip relationship with the Breast Roll (refer to GENERAL ASSEMBLY). This alignment is to be considered when setting the Base or soleplates.

THE TIME SPEND INSTALLING THE BASE PROPERLY WILL PAY OFF IN SIMPLIFYING THE HEADBOX INSTALLATION.



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## INSTALLATION TOLERANCES (continued)

### 4. (continued)

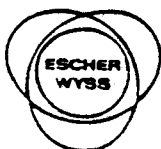
Use leveling screws provided for setting the base. Upon positioning of the Base, install stainless steel shims. After shimming, BACK OFF LEVELING SCREWS - DO NOT RELY UPON SCREWS TO MAINTAIN ALIGNMENT. RECHECK BASE ALIGNMENT FOR POSSIBLE SHIFTING - RESET IF NECESSARY BEFORE PROCEEDING.

### 5. Place the headbox on the Base or soleplates.

Shim as required between the headbox and Base to obtain level and squareness within 0.004".

### 6. After final alignment pin the Support Base to the soleplates.

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## CHECK OUT BEFORE START-UP

What to do	How to do it	Remarks
1. Remove the rubber protection straps from apron and top lips	Pull off manually (rubber straps are not glued on)	Faces to which the rubber straps were attached must be cleaned after removal of the rubber, using rags soaked with Trichlorethylene or a similar cleaning agent
2. Open the slice to approx. 3/4"	Handwheel on front side	
3. Check rotation of motor		If installed
4. Move the slice gate upstream and downstream.	Handwheel on front side	The top lip can be moved a total of 3"
5. Check the positioning and alignment of the top lip	Checking by means of a gauge	The top lip should be set as shown on the ASSEMBLY OF SLICE LIP AND ADJ. MECHANISM.
6. Check apron lip edge.		Edge to be clean, sharp and free of knicks and burrs
Check distance between bottom surface of lip and breast roll		
7. Check exact distance and level between bottom lip and forming board	Measure distance. Use a straight edge to check	
8. Check movement of bottom lip	Turn TS/DS drive shaft simultaneously	



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## What to do

## How to do it

## Remarks

9. Inspect the top lip setting - slice opening should be .625" during the inspection

Measure with measuring cone or dial indicator (see SETTING THE TOP LIP)

Use only wood or plastic cone material to prevent damage to the slice edge

Correct top lip setting

By turning the worm-gear actuators

Reset the dial indicators when finished

Check adjusting rods. Rods should not have any backlash. Inform erector if backlash is detected.

Turn the micro-adjusting handwheels for .05" to .10" mm (.002"-.004") movement. Compare against actual movement of top lip.

Note: Refer to SETTING THE TOP LIP.

Check slice lip position scale

Reset scale pointer as required.

10. Carefully clean the apron and top lips.

Use soft cloth.

DO NOT WIPE OR SCRAPE SURFACES

Leave slice gap open.

11. Open the recirculation valve.

By hand or actuator

12. Check the Inlet Manifold D/P Indicator System Piping

13. Check mounting of the pressure transmitter

14. Passivate any stainless steel areas that have come in contact with ferrous materials (i.e., tools, chains, etc.)

Refer to PASSIVATION OF STAINLESS STEEL

Use precautions noted.



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## CHECK OUT OF AIR COMPRESSOR

What to do	How to do it	Remarks
1. Check water separator, silencer, free drainage of water	Check correct installation of piping	Refer to instructions of compressor vendor
2. Check fresh water supply to the compressor	Check whether filter was provided and stop valve was installed.  Constant supply and water pressure to be insured.	Refer to instructions of compressor vendor
3. Check for correct direction of rotation		



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## CHECK OUT OF SCREENS

What to do

How to do it

Remarks

### 1. Inspection

Open pressure screen.

Check hole size and shape.

Has to be suitable for the stock being used.

Screen basket must not have any distortion or bulge.

Check function of de-aeration pipe, rejects discharge pipe, & seal water pipe.

Reject discharge and de-aeration connection should be run at all times.

### 2. Check direction of rotation of motors for pressure screen and vibrating screen



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## CHECK OUT OF THE INSTRUMENTATION

This is the responsibility of the mill instrumentation engineer.  
Refer to instrumentation drawings.

What to do	How to do it	Remarks
1. Preparation	Fill recorder pins with ink	
2. General check	Check instrument air, pneumatic air supply and indication in the panel	
3. Adjust pressure transmitter on the headbox Simulate functions, Test fan pump, vary speed range		If variable speed pump used
4. Adjust potentiometer to +/- 5%.		In a speed-controlled fan pump installed
5. Test pneumatic actuated level control system.	Turn air compressor on.  Set false level in pond level indicator.  With setpoint below level, air should flow to headbox.  With setpoint above level, air should flow from headbox.	
6. Test bypass valve functions		If installed



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## TRIAL RUN - WITH WATER

What to do	How to do it	Remarks
1. Preparation	Fill white water chest with water.	
2. Adjust slice	Set slice opening 3/4"	
	Set top lip directly over tip of apron lip ("0" position)	
3. Adjust main bypass	Adjust main bypass to the mid-position	If installed
4. Adjust regulating bypass	Adjust regulating bypass to the mid-position	If installed
5. Start compressor water and start compressor		
6. Start paper machine Fourdrinier wire		
7. Preset controls for desired total head		
8. Start fan pump	Open deaeration valve on pump.	
9. Adjust headbox	Adjust pressure.  Adjust recirculation valve.  Pressure in the inlet manifold can be balanced by using the Inlet Manifold D/P Indicator System.	Refer to INLET MANIFOLD D/P INDICATOR SYSTEM & FIGURE 2.



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What to do	How to do it	Remarks
10. Simulate headbox adjustments and test functions, through full range of speeds and flow rates	Adjust headbox flow by operating main bypass or varying fan pump speed	
	After setting set point for control, place on "automatic" control. Open and close slice opening	Observe control functions for smooth operation
	Adjust pressure set point.	Observe reactions
11. Observe water discharge and adjust	Move back top lip approx. 3/8"	Observe water jet and impingement on the forming board. Re-set forming board as required.
	Adjust slice opening to 3/4" if required.	As slice gate is moved horizontally the opening will vary slightly.
	Move slice gate upstream (approx. 3/8")	Back to "0".



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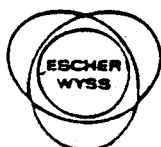
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## CHECK OUT AFTER TRIAL RUN

What to do	How to do it	Remarks
1. Preparation	Switch off fan pump	
2. Check headbox	Open slice as far as possible.  Check and clean headbox with water hose.  Inspect headbox internal surfaces.	
3. Pressure screen	Open pressure screen, remove basket and inspect.  Clean internals and reassemble.	



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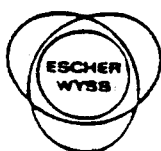
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## START-UP WITH STOCK

What to do	How to do it	Remarks
1. Preparation	Adjust slice opening to 3/4"	Final slice adjustment depends on: - Paper grade - Stock quality (furnish) - Basis weight - Mach. speed - Formation etc.
2. Start-up	Restart with water  Add stock slowly	

### Note:

Do not correct profile (by adjustment of wormgear actuators) immediately after start-up of the paper machine! As soon as stable conditions of consistency, jet speed, dry line on the Fourdrinier wire, etc., have been obtained, little or no corrections of the profile should be required! Initial corrections to the profile should be made with the recirculation valve.



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## PASSIVATION OF STAINLESS STEEL

Following installation of the headbox and prior to start up, it is recommended that stainless steel surfaces that were exposed to handling be passivated. This is necessary due to the contamination caused by the ferrous material in various tools and chains that have come in contact with the stainless steel.

If not passivated, these areas will develop rust marks within a short period of time. These rust marks indicate a loss of corrosion resistance and will spread if not treated.

Should the internal flow surfaces have been handled they too should be passivated. If they are electro-polished, they may require local repolishing.

Passivation is accomplished by cleaning the surface with an oxidizing agent (nitric acid, etc.). For safety reasons, the solutions should be kept as dilute as possible and proper precautions should be observed.

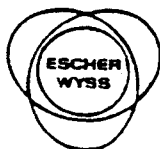
Prior to passivation, all dirt and grease should be removed from the surfaces to be treated. If NOT POLISHED, surfaces may be scrubbed or scraped, using non-metallic utensils or utensils of the same composition (i.e. stainless steel) as those areas being cleaned.

DO NOT USE UTENSILS THAT HAVE BEEN USED ON OTHER MATERIALS, THESE WILL HAVE BEEN CONTAMINATED.

Use passivating media carefully. Acid will attack mild steel and paint. Do not allow the media to stand or come into contact with surfaces not to be passivated.

Should rust contamination continue or reappear, repeat passivation. If contamination continues, contact Sulzer Escher Wyss.

Following is a list of typical passivating materials available.



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## PASSIVATING MEDIA

## METHOD OF APPLICATION

1. Nitric Acid Solution  
Nitric Acid.....6 to 15%  
(HNO<sub>3</sub>) 70% (By Vol)  
Water.....Remainder

Wipe on surfaces with clean cloth.

Let stand/keep moist for 15-20 minutes.

See notes a, b, c, d, e & f

Flush with fresh water.

2. Phosphoric Acid Solution  
Du Bois "Prepare".....25%  
By Vol.

Can be mixed with "Jel-Aid" to form jell.

(May only be available in 55 gal. drums.)

Flush with fresh water.

Water.....Remainder  
Du Bois "Jel-Add".As desired

Wipe on surfaces with clean cloth

See notes a, b, c, d, e, g, i & j

Let stand/keep moist 15-20 minutes.

3. Misc. Cleaning Agents

Oakite 33, Dilac, Texo 12,  
Texo N.Y.; Flash-Klenz, Caddy  
Cleaner, Turco Scale 4368  
Permag 57

Swab and soak with clean cloth.

See notes a, b, c, d, e, g, h & i

Rinse with fresh water.

4. Misc. Passivating Agent

Arcal "SS Passivating Agent #666"

Follow Mfg. instructions.

(Available in 55, 15 & 5 gallon drums  
and 6 - one gallon cases.)

See Notes a, b, c, d, e, g & i



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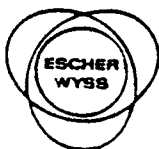
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## Notes:

- a. Always add acid to water.
- b. Personnel should wear rubber rain gear, gloves, and eye shields or goggles.
- c. Provide adequate ventilation.
- d. Dispose of properly.
- e. Use extreme care.
- f. Reference - "CLEANING AND FINISHING OF STAINLESS STEEL..."  
Metals Handbook, 8th Edition, Volume 2, American Society  
for Metals
- g. Follow manufacturer's recommendations and safety pre-  
cautions.
- h. Reference "EFFECTIVE METHODS FOR CLEANING STAINLESS  
STEEL" Republic Steel #1746 5M-966.
- i. Use of trade names is intended to provide typical pro-  
ducts. Other suitable products are available. Follow  
individual product instructions.
- j. When adding "JEL-ADD" to solution, slowly sift "JEL-ADD"  
into mixing container while gently stirring solution.  
Recommended application by hand to control passivation  
area.



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FILE X-1141

NO. 0205

## LIST OF VENDOR DATA

### JOYCE-DAYTON - WORM GEAR JACKS

#### Vertical Adjusting Jacks

Certified Drawing.....QC-1056

#### Horizontal Adjusting Jack

Certified Drawing.....QC-2881

Installation/Operation Instructions.....4 Pages

### INGERSOLL-RAND - MOTOR

Parts Bulletin.....P5798

Certified Drawing.....TPB506

### FOXBORO

Installation & Maintenance Instructions (Controllers).....2798

Installation & Maintenance Instructions (Valves).....2903

### NASH

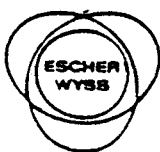
Bulletin.....742-B

Operation & Maintenance Manual.....355-T

Installation Instructions.....642-C

Installation of Headbox Compressor.....14-2305

Performance Curve (Nash Compressor).....Form 1064



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FILE X-1141

NO. 0205

## LIST OF ASSEMBLY DRAWINGS

Assy of Pressurized Headbox.....PX-1141

Assy of Apron Lip Adjusting Mechanism.....AX-1141-A

Assy of Stock Level Indicator.....AX-1141-B

Assy of Rectifier Roll Drives.....BX-1141-C

Assy of Footwalks & Ladders.....AX-1141-D

Assy of Electrical Diagram-Headbox Controls.....AX-1141-E  
Shts 1, 2, & 3

Assy of Headbox Pre-Piping.....DX-1141-F

Assy of Headbox Controls.....AX-1141-G

Assy of Slice Positioner Panel.....BX-1141-H

Assy of Instrument List.....DX-1141-J

Assy of Pneumatic Diagram-Headbox Slice.....BX-1141-K

Assy of Headbox Wiring.....AX-1141-L

Assy of Slice Rectifier Roll Brgs & Hsgs.....AX-509-H

Assy of Throat Roll Brgs & Hsgs.....AX-509-L

Assy of Hinged Window.....BX-220-W

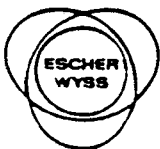
Assy of Slice Location Plaque.....DX-205-U

Assy of Slice Gate Tilting Mechanism.....BX-205-L

Assy of Slice Gate Lifting Mechanism w/Air Motor.....BX-205-A1

Assy of Slice Lip & Adjusting Mechanism.....BX-200-K

Assy of Inlet D/P Sight Tube.....DX-106-G



PRESSURE VACUUM HEADBOX

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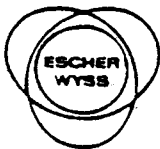
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Assy of Rotating Shower & Drive.....BX-102-M  
Assy of Slice Gate Side Seals.....BX-101-T  
Assy of Slice Gate Top Seal.....BX-101-M  
Assy of Headbox Lighting Condulet.....BX-50-Q  
Assy of Transmitter Mounting.....DX-50-A1

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PRESSURE VACUUM HEADBOX

BY \_\_\_\_\_

DATE \_\_\_\_\_

SHT. 2 OF 2



SHEET 1 OF 3

**EQUIPMENT** PRESSURE VACUUM HEADBOX

TOTAL QTY.	RECOMMENDED STOCK	DESCRIPTION	ITEM OR PART NO.	DRAWING NUMBER	M/B
2	2	SEAL STRIPS 1/4"THK x2" x4-1/2"LG	1	CX-220-21	5-4
1	1	.103" +.003"/-.003"DIA x 148"LG PARKER "O" RING CORD	13	AX-1141-A	8-1
10	0	SHAFT SIZE (1") NICKLE PLATED DODGE SOLID LUBE LT.2 BOLT FLG BRG	1	"	8-1
2	*	REF J-C DWG QC-1055 JOYCE CRIDLAND W/MODIFIED SCRS	7	REV 2 BX-205-L	12-1
2	*	REF J-C DWG QC-1056 JOYCE CRIDLAND W/MODIFIED SCRS	1	BX-205-A1	12-2
2	1	1-3/4"DIA SHAFT (EXPANSION) DODGE BRGS TYPE "K" PILLOW BLOCK	1	REV 1 AX-509-H	17-1
2	1	1-3/4"DIA SHAFT (NON-EXPANSION) DODGE BRGS TYPE "K" PILLOW BLOCK	2	"	
2	2	"HALOGEN" SEAL ASSY #C-409-FM CONSISTING OF (1) MALE ADAPTOR (2) "V" RINGS & (1) FEMALE ADAPTOR 2-3/4"OD x2"ID	10	"	
2	2	5.734"ID x6.012"OD x.139"WIDE PARKER "O" RINGS	8	"	17-1
2	2	9.984"ID x10.262"OD x.139"WIDE PARKER "O" RINGS	9	"	17-1
		*FOR RECOMMENDED SPARE PARTS SEE VENDOR'S OPERATING INSTRUCTIONS OR VENDORS CERTIFIED PRINT.			



# SULZER ESCHER WYSS

MIDDLETOWN, OHIO 45042

## SPARE PARTS LIST

EQUIPMENT NO.

X-1141

SHEET 2 OF 3

TOTAL QTY.	RECOMMENDED STOCK	DESCRIPTION	ITEM OR PART NO.	DRAWING NUMBER	M/B
2	1	1-3/4"DIA SHAFT (EXPANSION) DODGE BRGS TYPE "K" PILLOW BLOCKS	1	AX-509-L	17-3
2	1	1-3/4"DIA SHAFT (NON-EXPANSION) DODGE BRG TYPE "K" PILLOW BLOCK	2	"	17-3
2	2	9.984"ID x 10.262"OD x .139"WIDE PARKER "O" RING #2-274	6	"	17-3
2	2	"HALOGEN" SEAL ASSY #C-409-FM CONSISTING OF 1 MALE ADAPTER, (2) "V" RINGS, & (1) FEMALE ADAPTOR 2-3/4"OD x 2"ID	8	"	17-3
2	*	RELIANCE MASTER XL C-FACE RIGHT ANGLE REDUCER. CASE SIZE CM16A FOR MOTOR FRAME 140 TC /160 ATC	1	BX-1141-C	18-1
2	*	RELIANCE 1-1/2 H.P. D.C. MOTOR PERMANENT MAGNET, TOTALLY ENCLOSED NEMA "C" FACE MOUNTING, NON-VENTILATED DB 1610 ATC FRAME	2	"	18-1
2	1	1/2"THK x1-3/8" x42"LG SIDE SEAL STRIPS (CUT TO SUIT)	1	REV 1 BX-101-T	20-1
1	1	1/2"THK x1-5/16" x148"LG TOP SEAL STRIP	4	REV 2 BX-101-M	20-1
1	1	2-3/4"ID x 3"OD x1/8"WIDE PARKER O-RING	9	AX-1141-B	21-1
1	1	GASKETS 1/8"THK x5-1/8" x7-1/2"OD	5	REV 4 BX-105-10	21-2
1	1	TUBE 3.00"OD x2-3/4"ID x16-5/32"LG	11	REV 1 DX-105-9	21-2
		* FOR RECOMMENDED SPARE PARTS SEE VENDOR'S OPERATING INSTRUCTIONS OR VENDORS CERTIFIED PRINT.			



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## SPARE PARTS LIST

EQUIPMENT NO.

X-1141

SHEET 3 OF 3

TOTAL QTY.	RECOMMENDED STOCK	DESCRIPTION	ITEM OR PART NO.	DRAWING NUMBER	M/B
1	*	NASH HYTOR AIR COMPRESSOR SIZE L3 STD IRON CONST COMPLETE WITH BASE, CPLG, CPLG GUARD, MUFFLER, SEPARATOR, SPECIAL ELBOW FOR CONNECTION TO MANOMETER LOOP, GAGE GLASS & PRESSURE RELIEF VALVE (FACTORY SET FOR 5 PSI) FOR DIRECT CONNECTION TO 10 HP, 1200 RPM TOTALLY ENCLOSED FAN COOLED RELIANCE MOTOR 460V, 3 PH, 60HZ.	6	AX-1141-G	22-1
2	1	2-5/16" SHAFT FAFNIR FLANGE CARTRIDGE BRG	1	BX-102-M	23-1
1	*	RELIANCE MASTER XL COMBINATION REDUCTION GEAR MOTOR GEAR CASE CG16A 12 RPM OUTPUT 1.125" +.0000" / -.0005" DIA SHAFT W/ 1/4" WIDE x 1/8" DP KEYWAY COMPL. W/ 1/2 H.P. A.C. MOTOR, TEFC W/FC56 FRAME 230/460V, 3PH, 60HZ	2	"	
2	2	2-5/16" SHAFT SIZE x 3-1/4" OD x 7/16" THK EA JOHN-MANVILLE SEAL #9149LPD	4	"	
30	6	SPRAY NOZZLE 3/8" NPT MALE THRD #20-5020-07 SPRAYCO HOLLOW CONE FINE	57	BX-102-20	23-1
4	4	6" ID x 6-1/4" OD PARKER "O" RING #2-258		"	24-1
2	2	EP TYPE, 4-44 SERIES, MODEL NO. M15 ALWITCO MUFFLER, SINGLE CHAMBER	1	AX-1141-G	25-2
2	*	NO. 827 DF-IS-INLSA1-A FOXBORO ELECTRONIC D/P CELL	2	"	25-2
2	*	MODEL 40-PR-A4N2FE2F/ESA21AN FOXBORO CIRCLE CHART CONTROLLER WITH LPS	3	"	25-2
2	*	V5310 1-1/2" FLG'D CONNECTION FOXBORO 3-WAY VALVES			25-2
1	1	9" OD x 145-3/4" FACE SLICE RECT ROLL	1	BRS-292-1	16-1
		*FOR RECOMMENDED SPARE PARTS SEE VENDORS OPERATING INSTRUCTIONS OR VENDORS CERTIFIED PRINT			