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Questions - mary Ellen Fish

INSTRUCTION MANUAL

MODELS 1, 3, 7, 15, 35 & 65

AXIGUARD

Const up to 1% MAX
Wydraulic 400-500gpm
25% Reject Rate

Engineering Bulletin

Dated: 4/20/89

Sheet 1 of 1

AXIGUARD - ABSTRACT

Customer: NORFOLK PAPER CO.
NORFOLK, NEW YORK

Order Date: 4/12/89 S.O. No. C091-2

C.O. No. 1143 Serial: CS-203

Model 1 ☐ 3 ☒ 7 ☐ 15 ☐
35 ☐ 65 ☐

Mat'l of Construction:

Stnls ☒ 316SS

Hand of Assembly: EAST

Screen Specs: _____ ~~Perf~~ _____ ~~% Open Area~~

.010 Cut LFC ~~SPI~~

Foil Speed: 720 RPM

Foil Clr: .096

Motor Supplied: Yes ☐ No ☒

Motor Specs: HP 30 RPM 1200 Frame 326T

Location in System: _____

Tagging: _____

Application: _____

Remarks: _____

Certified By: SAM CERDA Date: 6/7/89

Section.I.Safety

Safety Procedures

In this section and elsewhere in this manual there are Cautions, Notices, and Notes. The use of each of these headings is as follows:

CAUTION

Cautions are used to indicate conditions or actions that can result in bodily injury or property damage if proper procedures and precautions are not observed.

Notice

Notices are used to warn of potential conditions or actions that can result in damage to the pressure screen if proper procedures and precautions are not observed.

NOTE

Notes are used to point out information that is important for the proper care, performance or operation of the pressure screen.

All Federal, state, local, and company regulations should be observed while installing, operating, and maintaining this pressure screen. As an additional precaution, we recommend that the following practices be followed at all times.

CAUTION

1. Observe good safety habits to avoid personal injury or damage to the equipment.

2. Be familiar with the equipment and read instruction manual thoroughly before installing, operating or maintaining this equipment.

3. Use safety glasses to protect eyes while operating or working near or on this pressure screen.

4. Always disconnect, lock out, and tag electrical power at the motor starter, fuse box, or circuit breaker before touching electrical connections or working on this equipment. Double check to be sure the power source is turned off for this machine. This precaution is essential to prevent accidental start up of the equipment.

5. Equipment which is automatically activated or remotely controlled should be posted with warnings that the machine may start automatically, if automatic starting will create a hazard to personnel.

6. Use approved wiring and controls consistent with local and national electrical codes. Refer to current "National Electrical Code Handbook." Employ qualified electricians. Be sure the pressure screen is electrically grounded.

7. Keep hands, clothing and all objects such as tools away from rotating or moving parts while equipment is running.

8. Never remove guards while the machine is in operation. Doing so may cause injury. Replace all guards after servicing. Keep them in good repair.

9. Do not lift pressure screen by the eye bolt on the case top. The eye bolt will only sustain the weight of the case cover.

10. Cranes, lifting rigs, chains, cables, etc., to be used for lifting the unit should be carefully checked before use to be sure they are sound and have ample safety factor beyond the maximum weight to be handled.

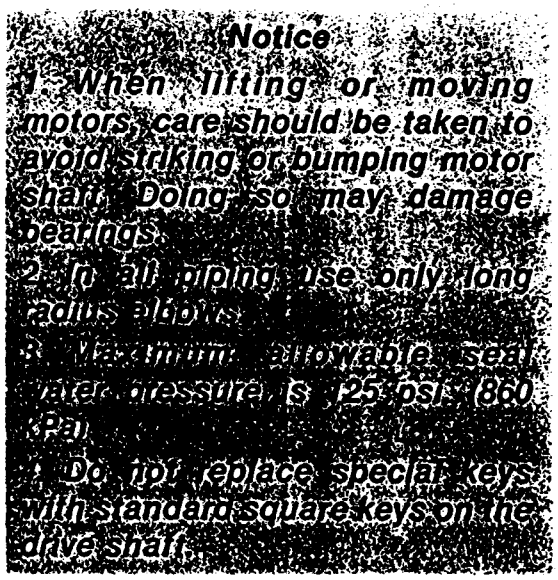
11. Slings, cables or chains should be located to avoid the possibility of the unit tipping or slipping while being lifted. Test for balance cautiously before raising unit or large parts clear of supporting bases, frames or floor. Stand clear as heavy parts are being lifted.

12. Be sure lifting equipment cannot come in contact with electrical wiring or overhead electrical cables located in or around work area. Turn off power in such wiring or cables if there is any possibility of contact, however remote, before lifting is attempted.

13. Be careful to avoid catching fingers or feet under machine when setting it down.

14. Care must be taken to prevent scalding or burns on case and cover which reach temperatures above 120°F (49°C).

15. Support sheaves while removing so they will not suddenly fall off their tapered fits with shafts and possibly injure someone.



EIM 17-0-1
1/16/84
Revised 2/20/85

INSTRUCTIONS

FOR

INSTALLATION, OPERATION, AND MAINTENANCE

OF THE

BIRD AXIGUARD PRESSURE SCREEN

TABLE OF CONTENTS

INSTALLATION

Shipping:

The screen is shipped vertical on skids.

Installation of Machine:

Refer to Assembly, Outline & Foundation and Installation drawings for location of anchor bolts.

The Screen and Motor Foundation can be made of a concrete pad or structural steel.

Refer to Installation drawing for static weight of machine.

The screen is to be lifted with 4 lifting eye bolts, equally spaced, on top inlet to case flange. Eye bolts provided by customer. After screen is permanently installed, these lifting eyes should be removed and replaced with the standard bolts.

Caution: Do not use fork lift under base as sheave may be damaged.

Vibrations are not present during operation of the screen except where these may be transmitted from fan pumps or other

equipment in the vicinity of the screen. A solid and adequate anchoring must be provided.

Level the screen using a machined surface as the reference surface. Good leveling of the screen will also permit total drainage of water during shutdowns. In order to insure proper alignment of anchor bolts provide pipe sleeves in the concrete motor base and screen pedestals. Refer to Outline & Foundation drawing for size.

When motor is supplied by either BMCo. or the customer, the belts and drive pulley will be shipped in a separate box for assembly by the customer. Motor bracket and slide rails will also be shipped separately. The motor bracket, which is mounted on motor slide rails, is slotted and provided with adjusting screws to allow for belt installation, removal, and take up.

After the first week or two of operation, check the belts and take up any looseness that may have been created by the running in of the belts. No futher adjustment normally will be necessary. See nameplate on motor bracket for belt tensioning information.

Installation of Piping and Valves

The screen will be connected to the system according to the approved installation drawing.

The inlet and the discharge pipes should be provided with wafer type stock valves, these valves being used primarily as isolation valves. The discharge valve may be used for throttling, with no throttling being done with the inlet valve. The inlet valve must be installed upstream from the inlet elbow. Blanks can be used against pipe face rings to isolate machine instead of valves.

Provide diaphragm type gauges or pressure transmitters on the inlet and discharge piping. Inlet and discharge piping should be properly designed to avoid air entrainment. Also, sample valves of a type that will not plug, installed on inlet, accepts, and rejects are desirable.

The tailings line will be connected to the tailings opening on the bottom of the screen, and a regulating valve of the non-plugging "V" type should be suitably located.

Where resetting of the tailings valve opening is undesirable, a gate valve can be included for shutoff purposes.

Refer to installation drawing for line pipe size.

The vent opening, on the top elbow (provided by customer) can be connected to a flexible hose where venting may be considered necessary. A shutoff valve on the vent connection will permit the use of this vent line occasionally, chiefly on startups and shutdowns.

A 3" pipe line for a fill water and drain connection to be provided by customer under the screen in the reject line for draining, back flushing, and for filling the screen before start up. The drain line should be extended to the floor to prevent splashing in the vicinity of the drive belts. The machine is drained through the reject line.

Installation of Rails and Chain Falls:

Refer to installation drawing for information required to establish size and location of trolley and chainfall for servicing machine.

OPERATION

CAUTION: This machine is provided with a seal which does not require seal water. The machine must always be full of liquid before starting motor or seal damage will result. Optional water injected mechanical seal can be provided.

Start Up:

1. On start up of new installation flush out system with fresh water or lean whitewater with screen cylinder out of machine. In order to obtain a successful start up, the screen has to be flooded with fresh water or lean whitewater before the stock reaches the screen cylinder.

Use the following start up procedure.

2. Valves open on inlet and discharge.
3. Valves set on reject for desired flow.
4. Fill machine with water.
5. Start fan pump with white water.
6. Start motor when certain machine is full.
7. Feed stock to machine circuit.

The discharge valve will be used to adjust the flow if other regulating valves downstream from the screen are not available.

In order to insure that the screen is operating full at all times, the pressure gauge on the downstream side of the screen should read a positive pressure of 5 PSIG minimum.

MAINTENANCE

Cleanup:

1. Shut off feed pump.
2. Close discharge valve.
3. Close inlet and reject valves.
4. Shut off motor.
5. Open drain and inlet vent and drain machine.
6. Close drain.
7. Fill machine until water discharges from vent.
8. Start machine motor for short duration and shut off.
9. Open drain and drain machine.

CAUTION: Anytime screen is to be worked on, tag and lock off screen motor switch.

SAFETY HAZARD: Compressed air should never be used to clean out any pipe lines attached to the machine.

In mills where the slime condition is very high, the screen should be opened and the basket removed (see paragraph on disassembly of screen), and the inner chambers thoroughly washed with high pressure hoses.

Where arrangements exist to recirculate a hot caustic solution through the feed pump and piping, it will not be necessary to open the screen. The solution of hot caustic will be recirculated with the screen motor running and the tailings line closed. After the recirculation of hot caustic, thoroughly rinse the screen with water.

In mills where thorough cleaning is not done within a reasonable period of time, it is good practice to fill the screen with water to prevent hardening of fillers, slime, or other additives during shutdowns.

Disassembly of Screen for Cleanup Purposes:

Refer to the assembly and parts catalog drawing.

CAUTION: Shut off motor and tag and lock out power to screen motor. Open drain and vent and drain machine.

1. Remove bolts and nuts on top transition piece and elbow. Remove top transition inlet and elbow assembly utilizing lifting eye installed on elbow. (See installation drawing)

2. Remove socket head cap screws holding cap to spider and remove cap and gasket.

3. Loosen and remove locknut and lockwasher from end of shaft.

4. Threaded holes are provided on top of hydrofoil drive hub. Using a strong back, jack the drive hub loose from the shaft. Lift drive hub and hydrofoil assembly from screen with eye bolts or sling.

5. Remove screen cylinder utilizing mounting fixture bar provided.

6. The screen chambers will now be free for washing and inspection.

When reinstalling screen cylinder, utilize the mounting fixture bar provided. Refer to Engineering Bulletin No. 17-01.

Mechanical Inspection and Maintenance:

The screen, if maintained according to instructions, will require very little attention from the operating personnel except for regular lubrication and occassional bearing and seal inspection.

Seal Inspection and Maintenance:

Refer to Assembly and Parts Catalog drawing and Seal Assembly drawing.

CAUTION: Shut off motor and tag and lock out power to screen motor. Open drain and vent and drain machine.

1. Steps 1 through 4 under disassembly for cleanup purposes above.
2. Remove ring and gasket from shaft.
3. Loosen set screws in rotary portion of seal and carefully remove.
4. Seal faces are now exposed and can be inspected. If seal is to be changed, go on to step 5. Refer to seal assembly drawing.
5. Remove cap screws holding seal housing to column.
6. Using tapped jack screw holes, free seal housing from pedestal and carefully lift seal housing up and off of shaft.
7. Stationary seal member can now be removed from seal housing.
8. Refer to seal assembly drawing when reassembling.
9. Reassemble in reverse order from disassembly.

NOTE: Old seal can be factory repaired.

Tighten locknut on end of shaft securely.

Hydrofoils:

The hydrofoils are statically balanced in sets and should be replaced in sets.

to the bearing are provided in the support leg of the screen. Bearings are greased by Bird Machine Company with Mobilux No. 2.

The following is a list of equivalent greases: -

Esso Standard Oil Co.	Nebula EPI
Gulf Oil Co.	Gulfcrown No. 2
Keystone Lubrication Co.	Keystone No. 3 Velox
The Texas Co.	Multifab No. 2
Tide Water Assoc. Oil Co.	Alitho No. 20
Alemite Co.	Cup Grease No. 33

Once a month, use 1/2 oz. of grease.

For a once a year inspection purpose, remove seal housing as described in the "Seal Inspection" paragraph. Use a stethoscope, or similar device, to listen to bearing with motor running.

If removal and replacement of bearings becomes necessary, follow procedure under section " Seal Inspection and Maintenance" for removal of seals and seal housing. Support driven pulley from floor, loosen hub and guard from bottom bearing housing. In addition, disconnect grease connections. Disconnect grease hoses at manifold on support leg. Remove hex head cap screws holding column to case.

The entire column and bearing assembly can then be pulled from top of screen and disassembled on a bench.

Refer to pages 12 and 13 for recommended method of removing botto bearing and housing.

AXIGUARD PRESSURE SCREEN TROUBLESHOOTING

In general, the screen when operating in a properly sized installation, will require little maintenance and will give stable operation throughout a relatively wide range of operating conditions.

However, should difficulties be encountered, a review of the following possible trouble areas may prove beneficial.

Plugging and/or Stringing (Increase in pressure drop indication of possible plugging or stringing condition.)

Causes:

1. Too low reject flow or purge rate.
2. Loose belts.
3. Incorrect choice of screen plate open area or hole size.
4. Excessive flow through the screen.
5. Operating inlet consistency too high.

Solutions:

1. If system is designed for continuous reject flow, increase flow rate. If system is designed with reject purge system increase purge time and frequency, refer to timer drawing.

2. Check belt tension and compare with Belt Tensioning information given on nameplate on motor bracket. Adjust if necessary.

3. Increasing the hole size will also help a plugging situation but should only be tried when the above solutions have been unsuccessful. If long fibers are being handled, there is the possibility of utilizing a lower "open area" screen plate. This reduces the possibility of a staple type of plugging or stringing.

4. In some cases, throughput may have increased over the initial capacity figures for the installation. If this is the case, this excess capacity requirement may be met by spacing the hydrofoils closer to increase the cleaning effect.

5. Check to determine if system design consistencies are not being exceeded. When operating at high consistencies, there is a possibility of some plugging or stringing. Once again, hydrofoil adjustment and increased reject flow is helpful.

6. If problem persists call Bird Machine Co.

Excessive Power Consumption

Causes:

1. Air in furnish.
2. Incorrect rotation.
3. Foreign material.
4. High consistency in the reject area.

Solutions:

1. If excessive entrained air is found in the furnish, it can cause increased power consumption. This air should be bled from the system ahead of the screen. The entire screening system should be checked for excessive quantities of air.

2. Rotation of the screen should be clockwise when viewed from the top of the rotating assembly. If the screen is rotating backwards, power consumption can increase as much as 50%.

3. Foreign material wedged between the hydrofoils or dragging in the reject area will also increase power. The screen top should be removed and the machine drained so the screening compartment may be checked for any material dragging on the rotating components.

4. When the screen inlet consistency become too high, especially with long fibered furnish, there is a possibility that the consistency in the reject area will become a problem. If this gets too high, there is an excessive drag on the hydrofoils and a corresponding increase in power consumption. This can be reduced by increasing in the reject flow or decreasing the inlet consistency.

Noise or Vibration

Causes:

1. Excessive entrained air in the stock.
2. Foreign material caught in the rotating assembly.
3. Hydrofoils set too close to the screen plates.

Solutions:

1. Excessive air in the screen can cause vibration and poor hydrofoil operation. The entire screening system should be checked for excessive air entrainment.

2. The screen should be checked for foreign material caught between the hydrofoils and screen plates. Remove the top inlet elbow assembly of the screen and drain the screening compartment for a visual check.

3. The rotating assembly should be checked to determine whether not the hydrofoils are actually contacting the screen plates in some area. Visual inspection of this and also a check of the hydrofoil clearances will remedy this situation.

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JACK

RECOMMENDED
BOTTOM BEARING

RECOMMENDED SPARE PARTS LIST FOR MODEL 3 AXIGUARD PRESSURE SCREEN (WITH WATERLESS SEAL) (WITHOUT ADDED SEAL WATER)

Qty.	EDP NUMBER	NAME & MATERIAL	ITEM	UNIT	TOTAL
1	H330-027-00011-719	2 3/4 Mechanical Seal*	25		
1	H330-021-00004-025	Seal(Bottom Brg. Hsg.) (#17794 LUP)	26		
2	H012-216-00001-998	Roller Bearing (SKF 22311)+	31		
3	H030-140-00003-998	Belt Drive (5V-1400)	24		
1	H280-190-00324-YQC	O-Ring(Inlet to Case) (Neoprene 70)	30		
2	H280-023-00355-YQC	O-Ring(For Seal Sleeve & Top Flinger to Shaft (Neoprene 70 2-138)	27		
2	TCS3-161-00070-YKN	Gasket(Bottom Spider & Bottom Sleeve) (Blue Guard`3000)	20		
1	WCS3-381-00020-GNA	Seal Sleeve (316 SS)	12		

* Shown on Seal Assembly Drawing
\+ Principle Vendor Part Number

NOTE: WHEN ORDERING PARTS, REFER TO SERIAL NUMBER OF MACHINE AND ITEM NUMBER ON ASSEMBLY AND PARTS DRAWING.

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