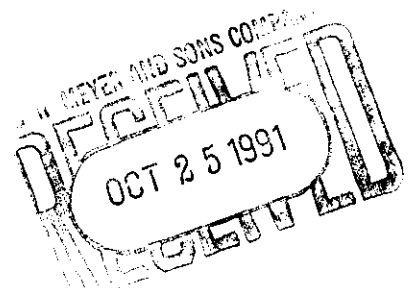


INSTRUCTION MANUAL

BIRD CORECLEAN® CLEANER

BEW



INTRODUCTION

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CORECLEAN

PREFERRED OPERATING CONDITIONS

FEED CONSISTENCY	.7%
INLET PRESSURE (PSI)	20
ACCEPT PRESSURE (PSI)	5
REJECT PRESSURE (PSI)	3
PRESSURE DROP (PSI)	15
FEED FLOW (GPM)	108
ACCEPT FLOW (GPM)	98
REJECT FLOW (GPM)	10
TEMPERATURE (°F)	70-135
THICKENING FACTOR (INLET TO ACCEPT)	1-1.08

OPERATING RANGES

MAX. EFFECTIVE FEED CONSISTENCY	Up to 0.9%
INLET PRESSURE (PSI)	35 Max.
PRESSURE DROP RANGE (PSI)	10-25
FEED FLOW RANGE (GPM)	90-140
REJECT FLOW	5-20

GLOSSARY OF TERMS

Coreclean Module, Cleaner Module or Module consists of:

- (1) narrow vertical feed chamber,
- (1) narrow vertical accepts and rejects chamber,
- (1) base and all coreclean cleaners or blanks completely assembled as shown on the assembly and installation drawings.

Coreclean Cleaner or Cleaner consist of:

All high wear urethane parts which perform the actual Centrifical separation. The cleaner is made up of (4) parts which are the inlet head, tube body, outlet and reject head window. And (5) seals.

Coreclean System consist of:

The primary and secondary stages all piped together.

BIRD MACHINE COMPANY INC.
BIRD CORECLEAN CLEANER

I. INSTALLATION

A. Shipping

The Bird Coreclean Modules are shipped from Bird Machine Company completely assembled, as shown on Installation and Assembly drawings, for ease of transportation and to minimize possible damage. Other small parts necessary for installation and assembly are packaged separately.

B. Lifting the Cleaner Modules

Lifting lugs are provided on the top most section the cleaner module to aid in installation. If these lifting lugs cannot be used, extreme caution must be used when lifting and handling. Do not use wires or chains since there is a risk that this hard material may damage the elastomer parts. Nylon webbing or rope is recommended for lifting purposes. Lift from top lifting eyes or slings on base. Never lift by slings on cleaner body.

C. Installation Drawings

It is recommended that the following drawings be available for installation.

1. Physical layout drawings which show the building design and location of the Coreclean Modules.
2. Piping installation drawings to show the feed, accept and reject piping for the Coreclean Modules.
3. Bird Machine Company installation and assembly drawings of the Coreclean Modules.
4. This Instruction Manual.

D. Pipe Connections

The feed, accept and reject pipes are clearly marked with the letters F, A & R (Feed, Accepts and Rejects). The pipe fitter should inspect the Modules to be sure that the letters are present and that they show the flow in the proper direction. Also see the Assembly and Installation drawing. This relationship may also be determined in the following manner:

1. Feed Pipe: Located on the end with the single connection.
2. Accept Pipe: Both accepts and rejects connections are located on the same end of the Coreclean Module. The larger connection is the accepts.

E. Cleaner Blanks

In some instances, depending on the system design, there will be two or more blank inserts installed in the Module.

Note: For each cleaner, two blanks are required; one for the feed chamber and one for the accept and rejects chamber.

When required, blank inserts are installed into the Module. If additional capacity is required due to changes in production rates for example, these blank inserts may be replaced with Coreclean Cleaners.

F. Foundation

The Coreclean Modules should be secured to the foundation with foundation bolts as shown on the installation drawing.

G. Drain Connections

(3) Drain connections are located at the bottom of each Coreclean Module. These connections are installed with pipe caps from the factory. It is recommended that the customer install drain valves at these locations so the feed, accept and rejects compartments may be completely drained during long shutdowns.

OPERATION:

A. Operation Principal

The Coreclean Cleaners are installed in (2) narrow vertical chambers containing the feed on one end and the accepts and rejects on the other end. The accepts and rejects chamber has an internal wall which separates the accepts from the rejects. As rejected material is discharged from the cleaner, it can be viewed through the transparent end window.

B. System Installation

1. Valves

Process control valves are required for the feed accepts and rejects connections. These valves will be installed by the customer, however, Bird Machine Company should be consulted for the proper selection and sizing of these valves. In addition, drain valves for the feed, accept and rejects zones should be installed.

2. Pressure Indicators

All Coreclean Modules must be equipped with pressure gauges for proper operation. These pressure gauges must be of the diaphragm type.

OPERATION con't

3. Sample Taps

Sample valves should be located in all feed, accepts and rejects lines of each stage. The best location is on vertical lines or on the sides of horizontal lines and away from any fittings. Sample valves should be 1 1/4" minimum.

C. Start-Up Check

Before start-up for the first time check that:

1. All cleaners are installed correctly which would mean that that all windows are on the rejects end of the Module.
2. All locking clamps are in the correct position. The locking clamps will not contact the cleaners on both ends but will keep them properly centered, in the Module, as they increase in length due to thermal expansion.
3. Inspect all seals to be sure that they did not roll out of position when the Module was assembled.
4. All piping is properly installed with regard to direction of flow.
5. All welding slag, rod and other contaminates have been flushed from the piping.
6. All valves on the suction side of the feed pumps are wide open.
7. All valves on the feed pump discharge are open no more than 10% to minimize the initial pump pressure during start-up.
8. All valves on the accept and reject side of the Coreclean units be completely open during the first start-up.
9. The dilution water tank is full.

D. Start-Up

The Bird Coreclean system should be started with dilution water only whenever possible. The last stage feed pump should be started first, and then the previous stage and so on.

The feed pressure should be adjusted by the feed control valve to a pressure of about 20 PSI.

The accept pressure should be adjusted to obtain a pressure difference between the feed and accept of about 15 PSI. The accept pressure will therefore be 5 PSI.

The reject pressure should be adjusted initially to 4-5 PSI. The reject pressure may vary from this value without problem to maintain the desired reject rate.

Start-Up Con't

The feed pressure may be increased if a higher system pressure is required. However, in all cases the design pressure drop of 15 PSI should be maintained for best cleaning efficiency.

When a steady operation has been reached with dilution water and entrapped air has been removed, the stock can then be introduced into the system feed.

Check to see that all cleaners are rejecting properly by looking through the transparent end windows. In normal operation the reject stock flow can be seen flowing past the end window. In some cases, due to an incorrect valve setting, the rejects may be seen to flow back into the cleaner. If this should occur, increase the accept pressure and adjust the reject pressure once again.

E. Normal Operation

Periodically during the operators shift, the Bird Coreclean system should be checked for the following items:

1. Feed, accept and reject pressures are properly set.
2. All the Corecleaners are operating properly. If the feed openings or reject openings are plugged, it can be seen through the end window as a change in the reject flow.
3. The consistencies in each stage are set per the system design.
4. The amount of rejects in the last stage are set per the system design.

F. Shut Down

To shut down the Coreclean system, first shut off the stock flow to the system inlet. Then continue to operate the system with dilution water until the rejects are fiber free. This method will prevent the possibility of stock dewatering in the pipes or cleaners which could cause problems upon start-up.

G. System Balancing

To insure effective operation of the Bird Coreclean system, it is important that the system be balanced after continuous operation has been achieved.

The pressure drop, feed consistency and reject rates all influence cleaning efficiency.

The feed consistencies should decrease to each stage from the first stage to the last stage.

System Balancing con't

The total amount of system rejects is determined by the amount of impurities in the feed stock and the amount of cleaning required by the system accept. This means that a certain amount of rejects must be constantly discharged from the last stage to avoid recirculation of debris in the entire system.

System balancing is intended to optimize the system efficiency with the lowest amount of fiber loss. The best cleaning efficiency is achieved by proper adjustment of the primary stage reject rate. It is important to know the reject rates in all stages to maintain optimum operation.

The reject rates can be calculated with adequate accuracy by measuring the consistencies in each stage.

The reject rate percentage can be calculated using the following formula:

$$\text{REJ. \%} = \frac{\text{Cr} (\text{Ci} - \text{Ca})}{\text{Ci} (\text{Cr} - \text{Ca})} \times 100$$

where: Cr= Reject Consistency
Ci= Feed Consistency
Ca= Accept Consistency

H. Maintenance

1. Coreclean Cleaners

A plugged cleaner can be identified by observing the reject flow through the transparent end window. During normal operation, the rejects can be seen flowing past the end window.

If a cleaner does plug, the system must be shut down prior to removing the reject material through the end window.

- A. A 1 1/4" allen wrench is all that is required to remove the end window. The 1 1/4" size is not to torque the window shut but is only due to the 1 1/4" socket viewport which is molded into the window. Tighten window only until the O-Ring in the window is compressed slightly against its mating face. Do not overtighten or window may crack. Bird will supply (1) wrench which should be kept with system.

- B. If a cleaners feed or accepts openings become plugged, it must be removed or partially removed from Module after shutting down the system.

A cleaner can be removed by first turning the clamps out of the locking position. Then strike either end of Corecleaner with a rubber mallet to break the seal contact and push or pull through the seals.

A Coreclean Cleaner consists of (4) parts which are the inlet head, tube body, outlet head and window. All parts are threaded together. They can be separated for inspection or part replacement by using (2) strap wrenches.

Maintenance con't

The strap wrenches must have nylon or canvas straps to prevent any scoring or scratching of the sealing surfaces which could cause leaks around the seals after re starting system.

(2 Strap wrenches will be provided,by Bird with each system.

When assembling the inlet or outlet head to the tube body, the internal faces will meet which will leave no radial groove on the I.D. of the cleaner but will leave 1/16" radial gap on the O.D. of the cleaner.

2. Coreclean Seals

During normal use the Coreclean seals will not require any attention. If replacement of these seals is required for any reason, the following guidelines may be used.

Put your hand on the inside of the lip seal and press the seal lips together with your fingers so that the groove on the outside diameter of the seal opens. Then, place the seal into the hole of the feed ,accepts or rejects chambers and install the edge of the seal groove that is open into the hole. Work the edge of the seal into the hole by pressing the seal lips with your fingers as you move around the diameter.

3. Installing the Coreclean Cleaner

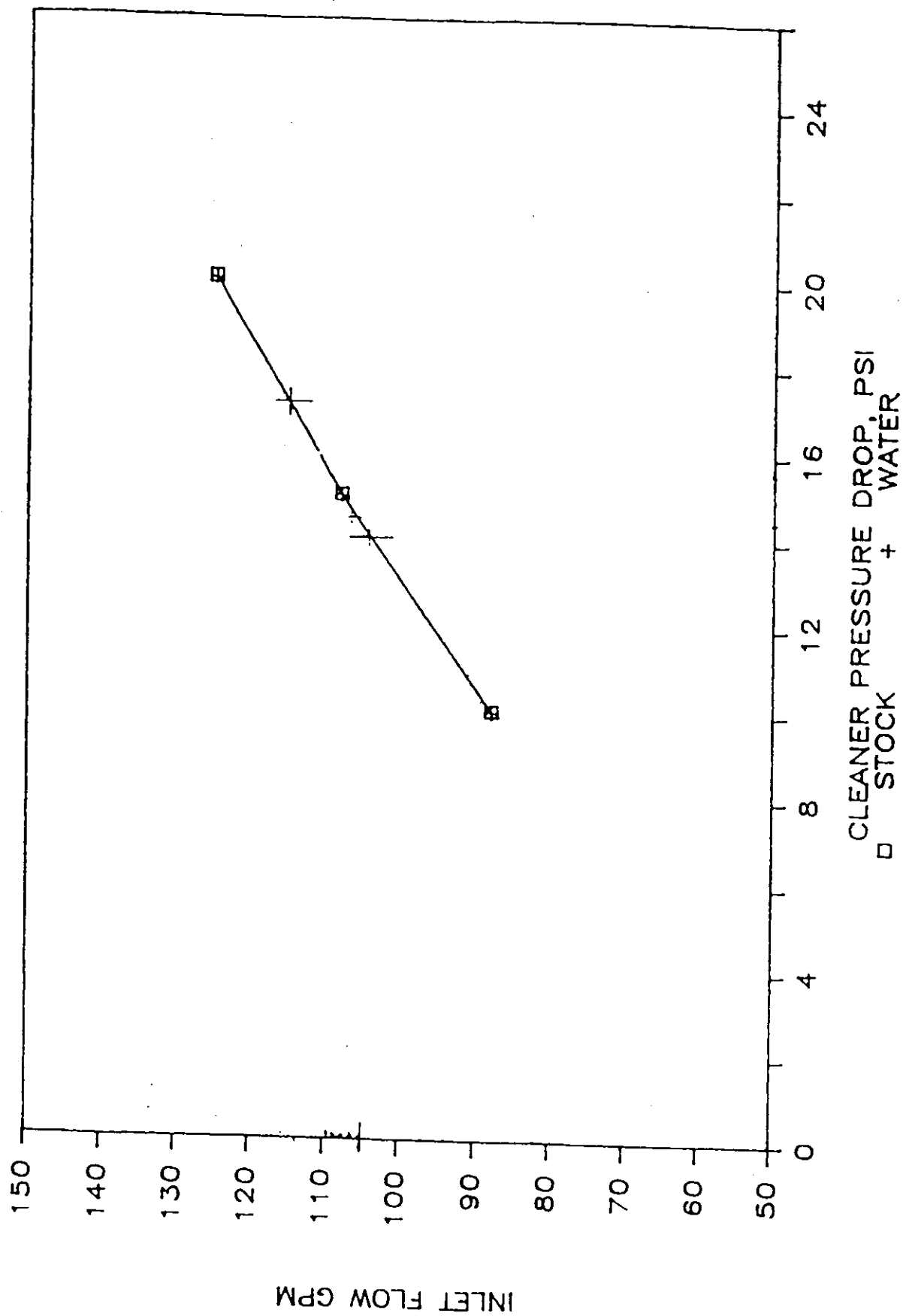
Since the Coreclean Modules are shipped with the cleaners installed in the feed and accept chambers, installation will not be required during initial assembly. If Cleaners are to be added to a Module due to an increase in production rates or some other maintenance problem, the following guidelines may be followed.

- a) Lubricate the seals and the cleaner with a soap and water solution. Install the cleaner by pushing it through the respective chambers. Note that the window is always at the rejects end of the Module. USE EXTREME CAUTION when sliding a cleaner through the seals to be sure the lip of the seal does not fold over. Inspect both sides of each seal before sliding the cleaner through the next seal. Failure to check each seal could result in injuries or short circuiting of the accepts and rejects.

I. Inspection

It is suggested that the operator of the Coreclean system make regular inspections of the system to locate any first signs of leaking so that the cleaners may be marked for maintenance during the next shutdown. It should be noted that wear is at a minimum when the Coreclean Cleaners are rejecting normally. Proper operation of the complete system will minimize plugging and therefore wear and maintenance

BIRD CORECLEAN INLET FLOW





RECOMMENDED SPARE PARTS LIST

This information is the property of Bird
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or disclosed except as required for the
purpose for which it was furnished.

EQUIPMENT: BEW CORECLEAN CLEANER
CUSTOMER: Fox River Fiber
SERIAL NO.: 00-0107

LIST NO.: EP-240-001
DATED: 5/11/90
REVISED: 10/4/91

ITEM	QTY	PART NO.	PART NAME	NOTES*	ASS'Y ITEM#	UNIT PRICE	EXTENDED PRICE
001		XCYS-908-00610-YAX	COMPLETE CLEANER	1			
002		WCYS-471-00080-XXM	WINDOW	1			
* 003		H280-016-00280-YAC	O-RING	1			
* 004		TCYS-368-00010-YVL	SEAL	1			
TOTAL PRICE:							

WHEN ORDERING PARTS, REFER TO ABOVE PART NO., SERIAL NO., DRAWING NO., AND ASS'Y ITEM NO.
*NOTES: 1 - SHOWN ON PARTS LIST ASSEMBLY DRAWING XCYS 908 00610