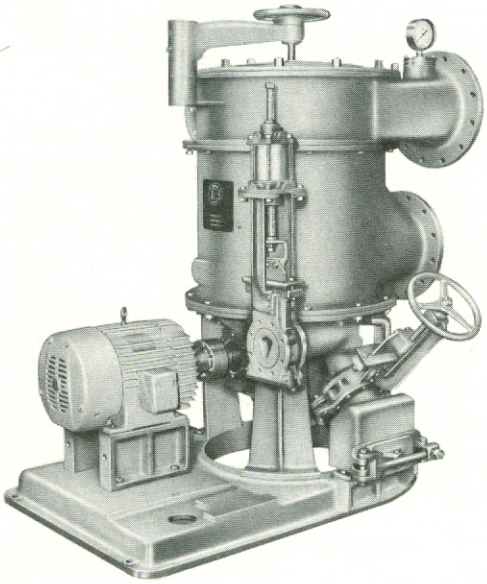
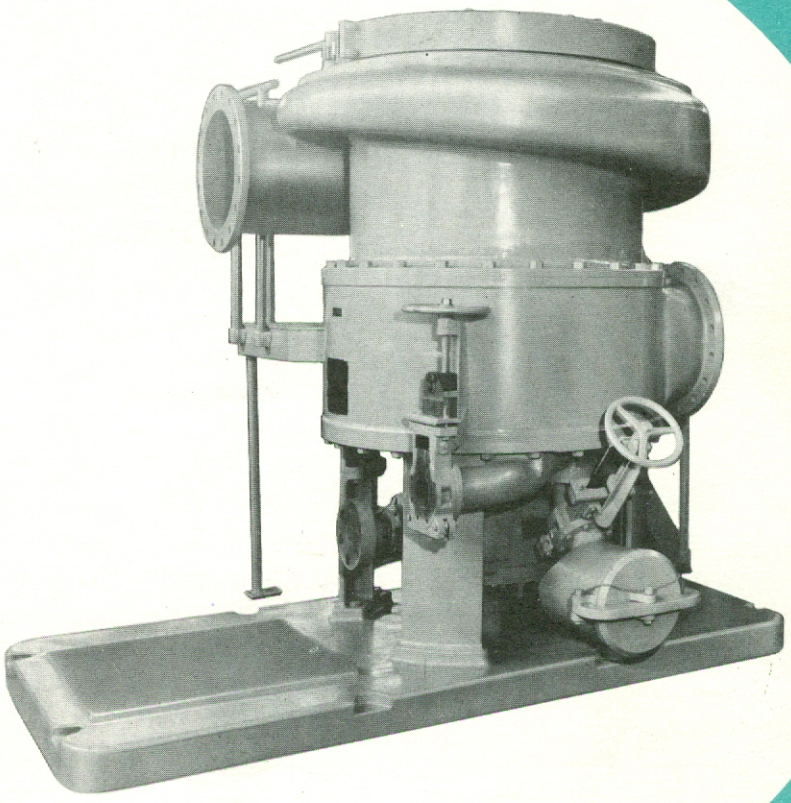
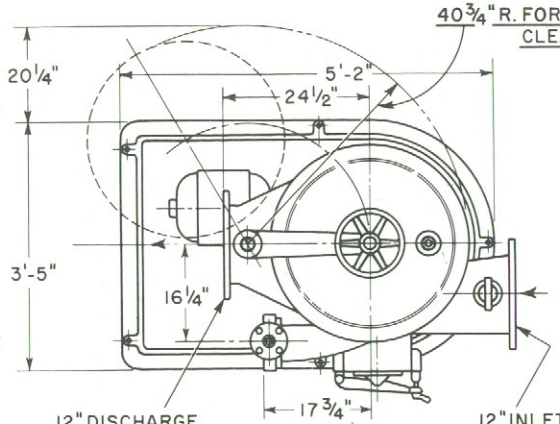




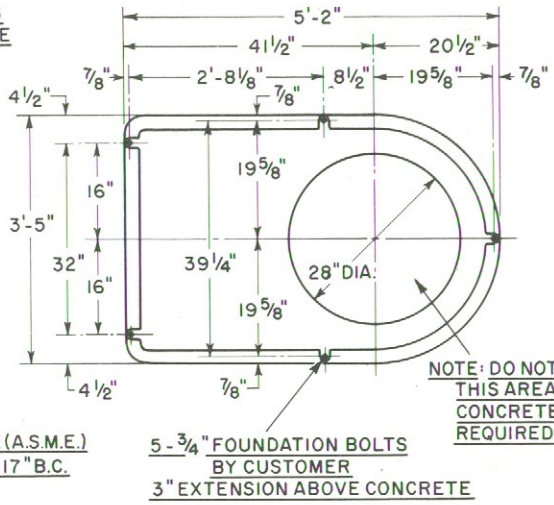
BLACK-CLAWSON SELECTIFIER® SCREENS FOR PAPER MILL AND PULP MILL APPLICATION

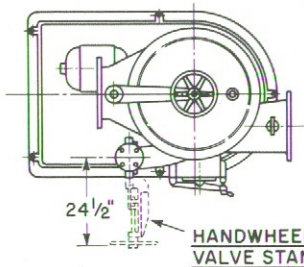
THE SCREEN
THAT PROVED
THE PRINCIPLE OF
PRESSURIZED
SCREENING

— NO. 24 P SELECTIFIER SCREEN, LAYOUT TEMPLATES —

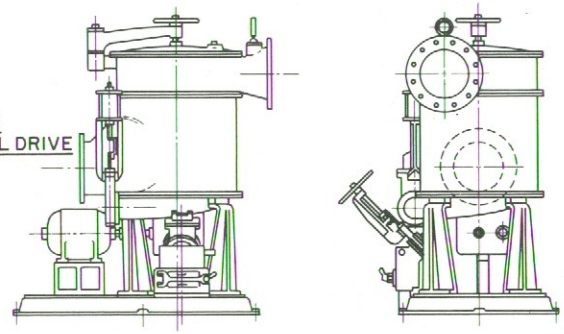


PLAN

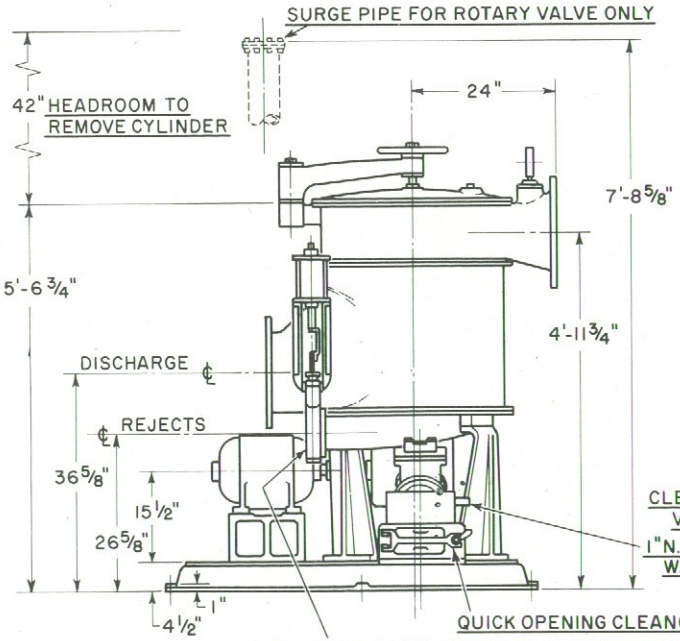




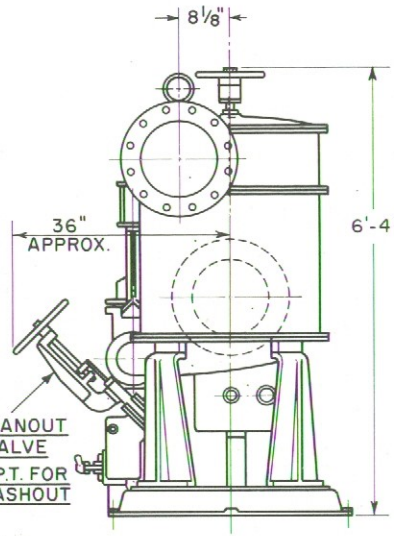
WEIGHT - SELECTIFIER SCREEN
NET WEIGHT = 4,812 LB.
GROSS " = 5,700 LB.

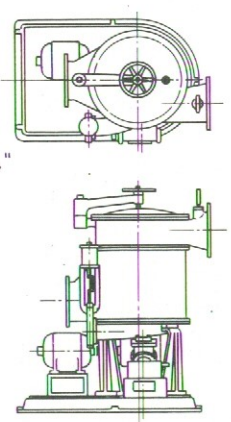


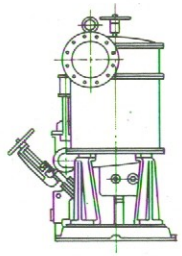
SCALE ¼" = 1'-0"



ELEVATION SCALE ⅜" = 1'-0"

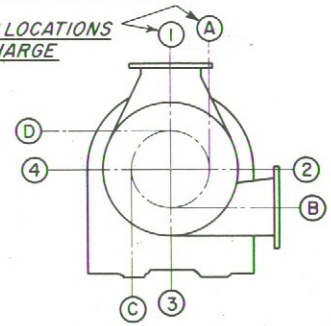






SCALE ³⁄₁₆" = 1'-0"

SEE NOTE "A" FOR LOCATIONS OF INLET & DISCHARGE



NOTE "A" - INLET & DISCHARGE CAN BE MOUNTED IN ANY 30° POSITION EXCEPT FOR INTERFERENCE WITH REJECT VALVE & MOTOR OVER 15 H.P.
CONSULT SHARTLE ENGINEERING FOR LOCATIONS IN AREA BETWEEN POSITIONS 2 AND 3.

7½ TO 25 H.P. DRIVE MOTOR

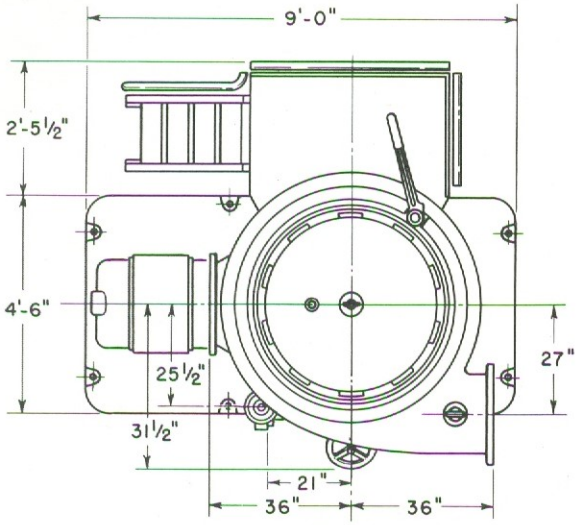
THE BLACK-CLAWSON COMPANY
SHARTLE DIVISION
MIDDLETOWN, OHIO

"NO. 24 P" SELECTIFIER SCREEN
LAYOUT TEMPLATES

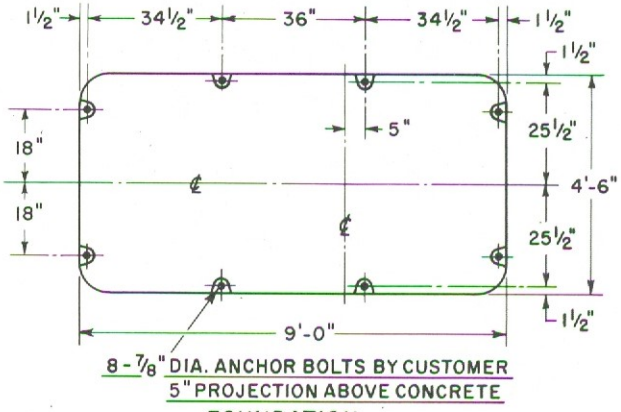
E-67-C

10

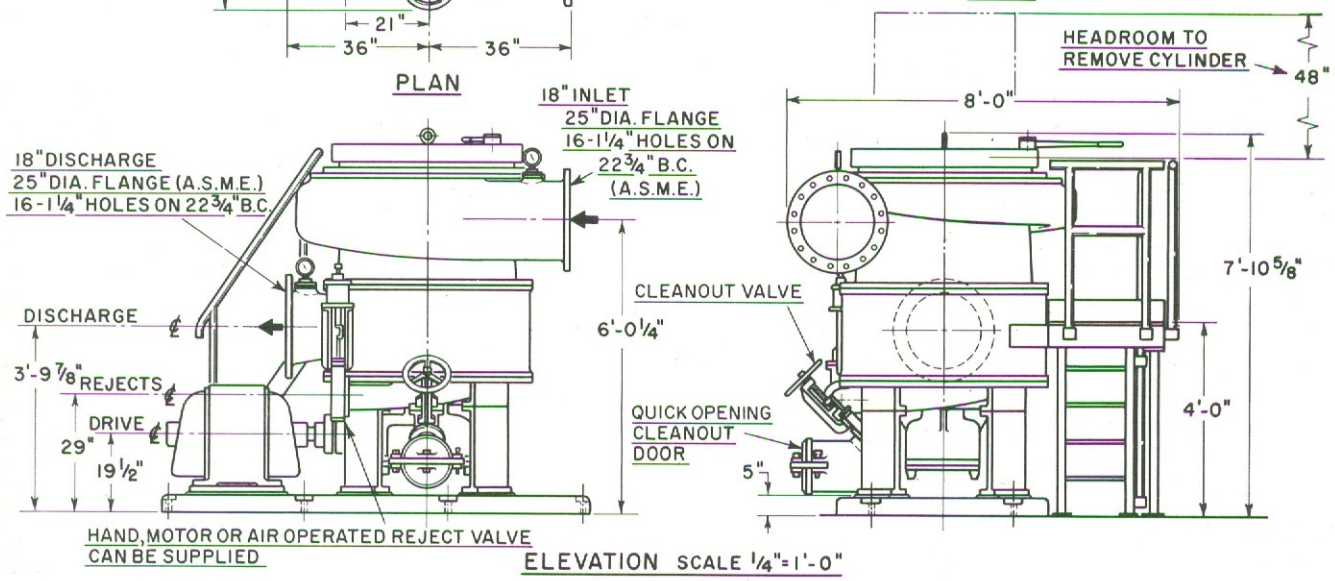
NO. 36 P SELECTIFIER SCREEN, LAYOUT TEMPLATES



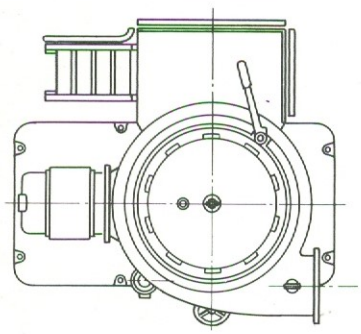
PLAN

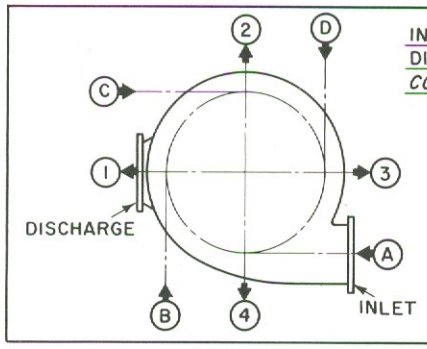


FOUNDATION PLAN

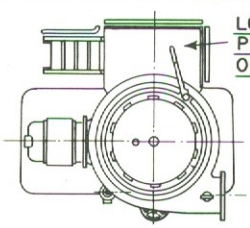


ELEVATION SCALE ¼"=1'-0"

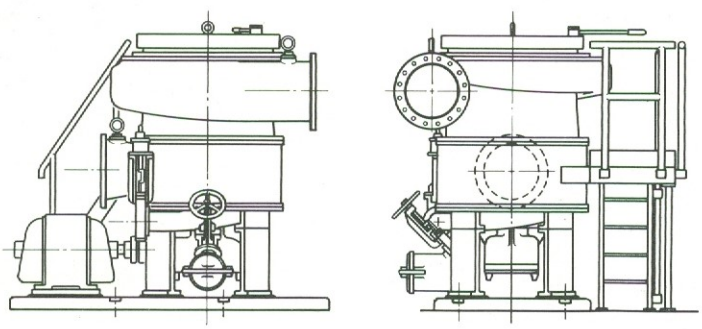




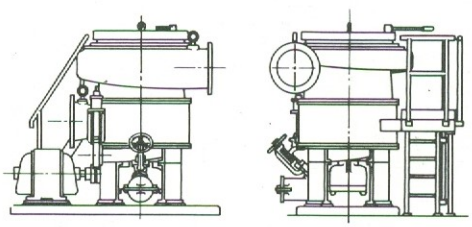
INLET CAN BE ASSEMBLED AT 15° POSITIONS FROM ℄.
DISCHARGE CAN BE ASSEMBLED AT 15° EXCEPT POS. 2 & POS. 3
CONSULT SHARTLE DIV. ENGINEERING FOR CORRECT POSITIONS



LOCATION OF ACCESS PLATFORM WILL DEPEND ON POSITION OF INLET AND DISCHARGE.



SCALE 3/16"=1'-0"



SCALE ⅛"=1'-0"

75 H.P. DRIVE MOTOR

WEIGHT OF SELECTIFIER SCREEN -- NET WEIGHT=12,500 LB.
GROSS WEIGHT=14,550 LB.

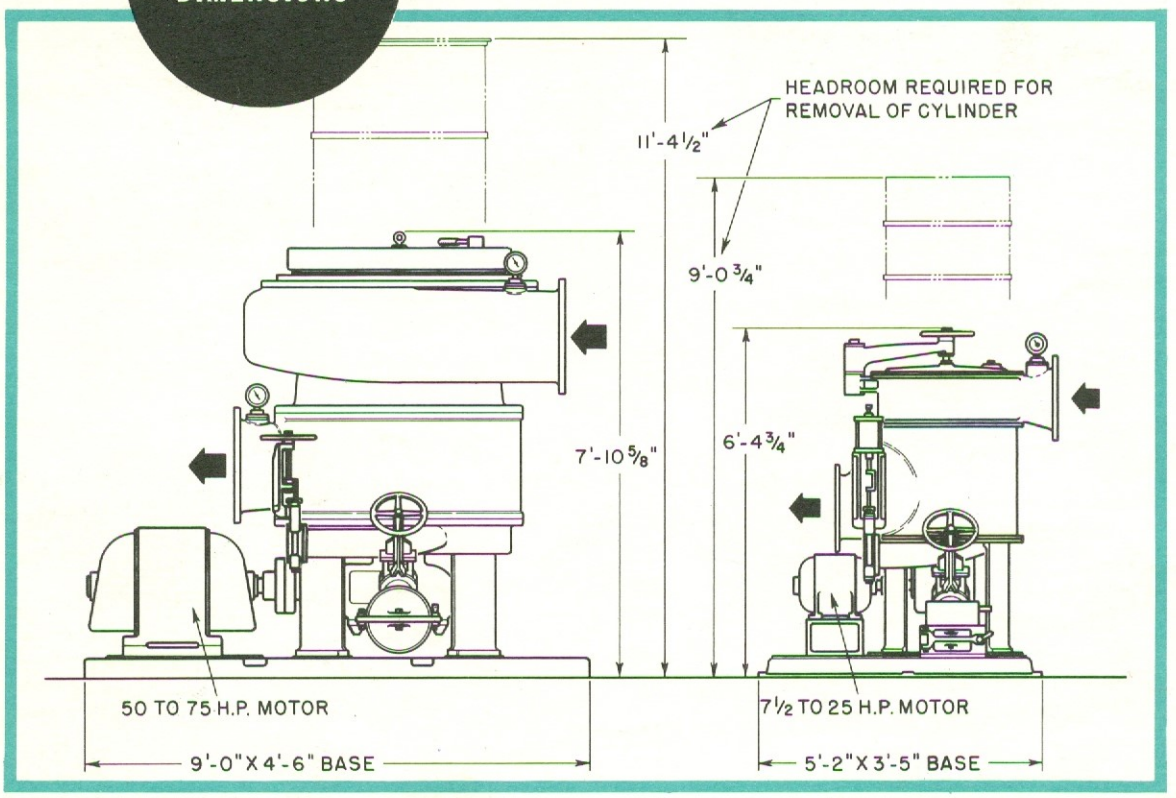
WEIGHT OF CONTROL PANEL (NOT SHOWN) 400 LB.

THE BLACK-CLAWSON COMPANY
SHARTLE DIVISION
MIDDLETOWN, OHIO

NO. 36 P SELECTIFIER SCREEN
LAYOUT TEMPLATES

E-36

COMPARATIVE DIMENSIONS



Black-Clawson Selectifier Screens

FOR PAPER MACHINE APPLICATIONS
A PRODUCT OF THE
SHARTLE DIVISION
MIDDLETOWN, OHIO

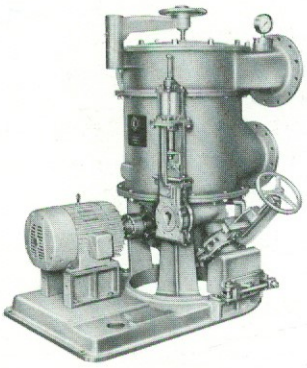
FOR PULP MILL APPLICATIONS
A PRODUCT OF THE
PANDIA DIVISION
HAMILTON, OHIO

PANDIA DIVISION PULP MILL EQUIPMENT
SHARTLE DIVISION STOCK PREPARATION EQUIPMENT
PAPER MACHINE DIVISION PAPER & BOARD MACHINES
DILTS DIVISION CONVERTING MACHINERY

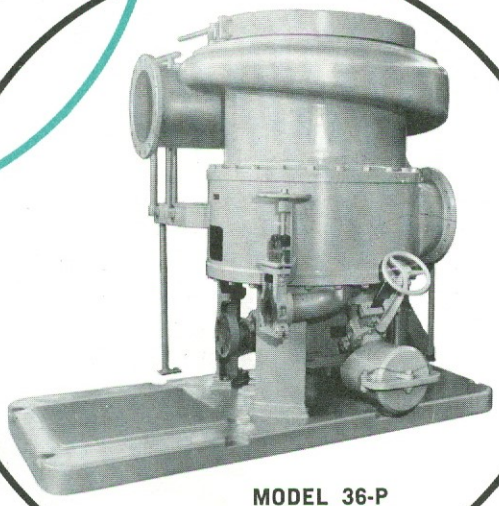
THE BLACK-CLAWSON COMPANY

Executive Offices: 250 Park Ave., New York, N. Y.
Plants: Middletown, Ohio, Hamilton, Ohio, Watertown, N.Y., Fulton, N.Y.
Black-Clawson (Canada) Ltd., Montreal, P.Q.
Black-Clawson International Ltd., London, England

Printed in U.S.A.



MODEL 24-P



MODEL 36-P

Over 1300 Selectifier Screens

in Operation Prove Outstanding Performance on Any Grade

The development of the first successful pressurized screen for use in the paper mill was pioneered by The Black-Clawson Company over eighteen years ago. The original pilot model was built at the Shartle Division out of standard steel pipe.

Today, the Selectifier Screen is universally accepted on the basis of its outstanding record of performance.

During the years when much experimentation, both in the laboratory and in the mills, was being carried on, a wealth of experience in the application of pressure screening was gained by Black-Clawson engineers.

Various design changes were made in the Selectifier, the most significant being the *patented* non-contacting air-foil bar used in the rotating element. When this was introduced efficiency was improved to such an extent that mill after mill, impressed with the performance of an initial installation, placed repeat orders and fully equipped their paper machines with Selectifier Screens.

The larger size 36-P which has 2½ to 3 times more capacity was introduced to meet the requirements of wide, high-speed paper machines and modern pulp mills. The experience gained with the 24-P model has been applied to the 36-P and it has been proved on many applications.

Just what does a Selectifier do that makes it such a successful product?

Ahead of the Paper Machine:

1. It does an excellent job of final stock clean-up, removing pins, scale, shives and other unwanted material from the stock.
2. Deflocculates fiber bundles in the stock—improves formation on the wire.
3. Increases production—there are fewer breaks because stock lumps and slime slugs are eliminated.
4. Protects against felt and wire damage caused by foreign objects.
5. Relieves foaming conditions.

In the Pulp Mill:

1. As it operates under pressure it can be located ahead of the washers. Stock requires less redilution than is presently used—deckering requirements and other related equipment can be reduced—or oftentimes eliminated.
2. Performs efficiently on higher consistency stocks due to the intimate action between the *patented* air-foil bars and the screen cylinder—makes possible high thru-put rate at low horsepower per ton.
3. It does not require internal shower water.
4. More efficient and uniform washing through improved formation of the mat.
5. Provides a neater, more compact installation, with low installation and maintenance costs.

COMPLETE DESCRIPTION

What it is

and how it works . . .

The Selectifier Screen is built in two sizes, the 24-P and the larger 36-P. All functional features are the same.

A vertical, totally enclosed rotary screen which operates completely full of stock and under pressure, the Selectifier Screen is connected directly into a pipe line so that the stock can be transmitted from the pump, through the screen to the machine headbox, vat or pulp mill washers. Pressure drop cleaners can be installed in series with the screen if desired.

The screen plate consists of a perforated cylinder disposed vertically inside of a cylindrical housing.

The screen cylinder is stationary and the stock flow is downward and outward through perforations in the cylinder.

The stock enters tangentially at the top, passes downward and outward through the perforations in the screen plate and discharges through a nozzle on the outside of the cylindrical housing.

Heavy material which will not pass through the perforations of the cylinder is continuously forced downward into a reject trough and is removed from a heavy reject box connected to the bottom of the volute trough. Between the volute trough opening and the box is a valve, which maintains pressure within the screen body while the reject box is being cleaned through a quick-opening door.

The lighter reject materials such as shives, chips or fiber bundles, collected in the volute trough at the bottom of the screen, are ejected through a special V-notch slide valve which may be equipped with either automatic or handwheel control.

The automatic V-notch slide valve permits close control of the flow of rejects.

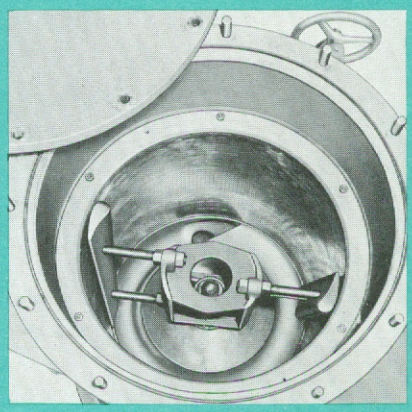
Non-contacting *patented* air-foil bars continuously sweep the inner-surface of the screen pattern. These bars are slightly skewed from the vertical axis to aid downward flow of rejects. The contour of the bars and the clearance between the rotating bars and the screen cylinder is such to induce alternately positive pressure followed by a negative pressure as the bar sweeps past the screen hole. This pulsating action, a result of Black-Clawson research, provides efficient cleaning and prevents plugging.

The agitating effect of the rotor—mixing of water and fiber—makes for uniform fiber dispersion, thus a more evenly formed sheet. There is no opportunity for accumulations of stock and drop-offs that so often cause trouble on the paper machine.

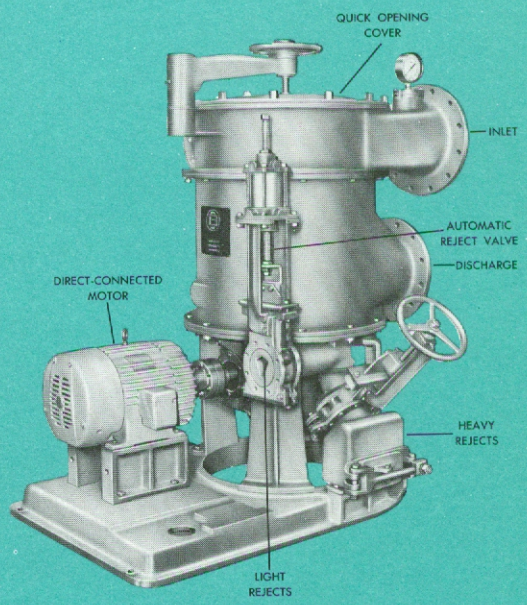
Since the screen plate cylinder is disposed vertically and the stock flow is vertically downward, there is far less tendency for high specific gravity material to pass through the screen plate holes.

The Selectifier Screen will operate for long periods without washdown and can be adequately cleaned with-

New design of the screen cylinder and proper use of materials assure longer life.



Rotating element of 24-P model with patented non-contacting air-foil bars provides proper agitation and keeps screen holes open.



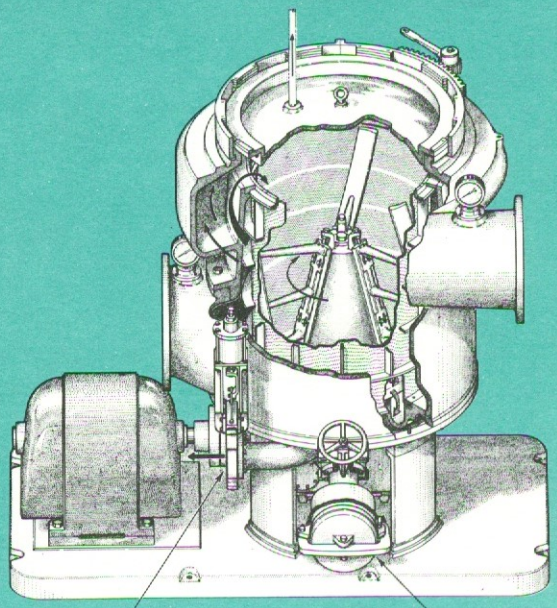
MODEL 24-P

out opening the unit by flushing out with water. By swinging the cover to one side, the unit can be inspected or thoroughly cleaned. The single screen cylinder is easily removed for replacement.

The Selectifier Screen normally operates with a maximum pressure differential across the screen of 2 psig. Inlet pressures may vary from a minimum of one or two pounds to a maximum of 75 pounds depending upon the capacity, the kind of stock, the consistency, location in system, and the size of the holes.

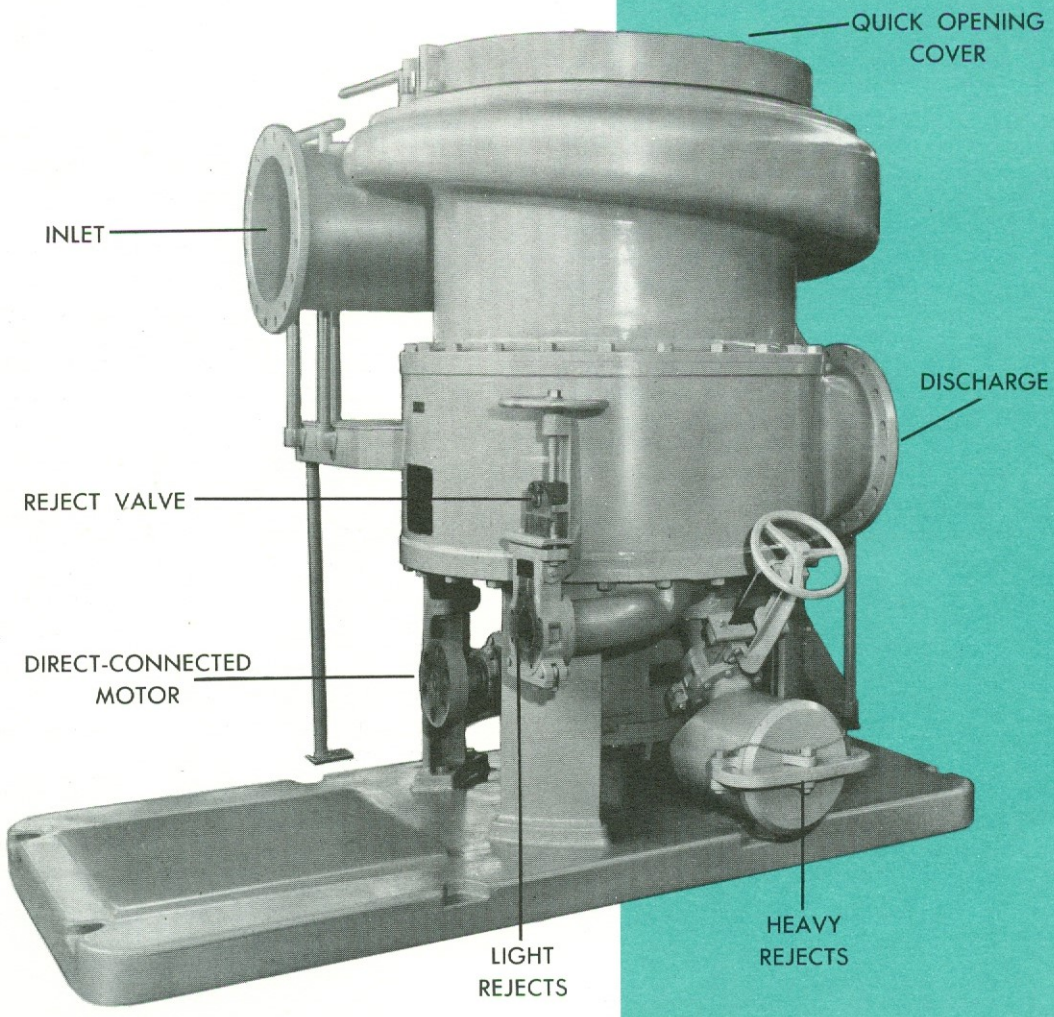
Selectifiers are made of cast iron, bronze or stainless steel. All parts that come into contact with the stock are of corrosion-resistant materials or coated with baked epoxy resin formulation.

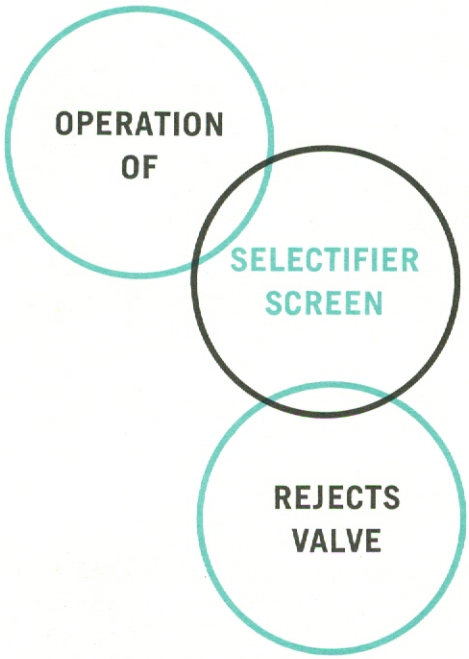
Selectifiers can be used without mix box for vat application, and they can discharge under pressure directly into the headbox and slice of Fourdrinier machines.



MODEL 36-P

This larger size Selectifier Screen, which was developed for wide fast paper machines and modern pulp mills, is functionally the same as the 24-P model. The cut-away drawing shows the patented non-contacting air foil bars on the rotating element and screen plate cylinder in the cylindrical housing.





The reject handling system consists of a standard V-notch slide valve connected to the special volute type reject discharge elbow provided in the bottom casing of the Selectifier Screen. This valve is operated in one of two ways:

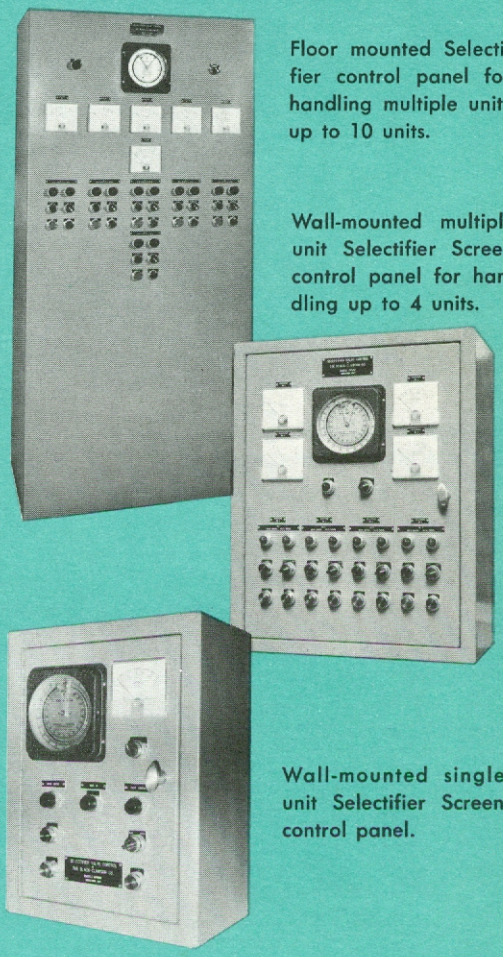
1. Continuous bleed with periodic purge—automatically or manually
2. Periodic Purge—automatically or manually

Selectifier Screens equipped with automatic purge systems, in which the V-notch valve is pneumatically actuated, are provided with a control panel consisting of automatic control of the complete Selectifier at this point. The control panel is operated on 110 volts and contains a pneumatic timing relay which controls the opening and closing of the valve to definite time cycles. Normal time is 1 to 2 seconds. The relay is adjustable for other settings. The control panel is also equipped with a timer switch, timer, ammeter, valve control switch, a manual button for operating this system. The system may also be set for continuous bleed operation.

Frequency of operation of the reject valve depends upon the amount of rejects being handled. The automatic timer equipment provided in the Selectifier control panel can be set to discharge rejects at any pre-determined interval; from once every 20 minutes to as many as four times every 5 minutes.

Selectifier control panels are available to centrally control multiple screen units up to 10 screens through one panel.

Air pressure required for the pneumatic valve is 60 psi, but may vary from 50 lb. minimum to 90 lb. maximum.



Floor mounted Selectifier control panel for handling multiple units up to 10 units.

Wall-mounted multiple unit Selectifier Screen control panel for handling up to 4 units.

Wall-mounted single unit Selectifier Screen control panel.

SPECIFICATIONS

There are two basic Selectifier Screen Specifications which are briefly as follows:

1. Selectifier Screen, complete with reject system and control panel for purge operation which can be set for continuous bleed operation.
2. Selectifier Screen equipped with a manually operated V-notch slide valve for continuous bleed or manual purge.

The above two arrangements are standard and can be furnished in cast iron, baked phenolic coated, solid anti-acid bronze, Type #316 stainless steel and No. 2 Ni-Resist.

TWO TYPES OF DRIVES

Depending upon horsepower

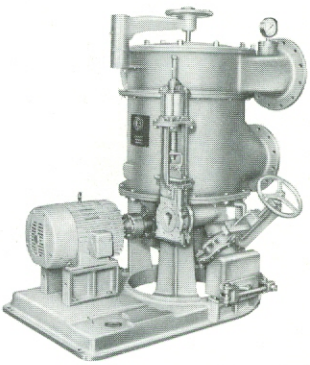
24-P Up to 20 HP—with water cooling—Black-Clawson cone gear drive.

24-P Up to 25 HP—with no cooling—Black-Clawson spiral bevel gear drive.

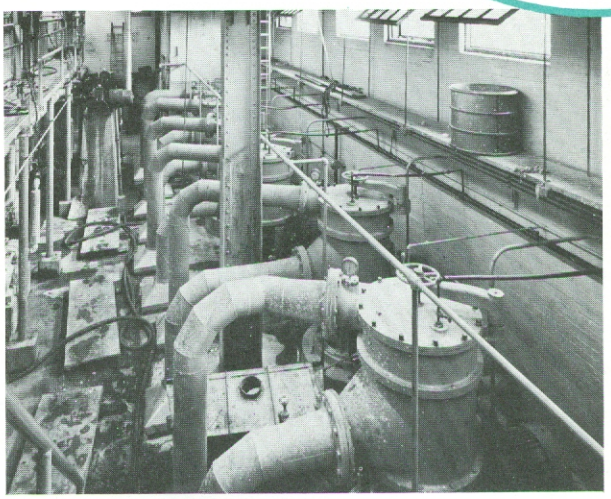
36-P Up to 75 HP—with no cooling—Black-Clawson spiral bevel gear drive.

Over 1300 Selectifier Screens Have Gone Into Operation Ahead of Paper Machines on Every Grade of Paper and Board During the Past 18 Years.

- Tissue
- Specialties
- Calender
- Boxboard filler
- Blotting
- Foodboard
- Catalog
- Boxboard liner
- Straw
- Crepe wadding
- Toweling
- Groundwood
- Index
- Greaseproof
- Facial
- Newsprint
- Jute liner
- Glassine
- Butcher wrap
- Nine point
- Chip
- Water filter
- Bonds
- Writing
- Printing
- Test liner
- Semi-Chem
- Bag
- Rag content papers

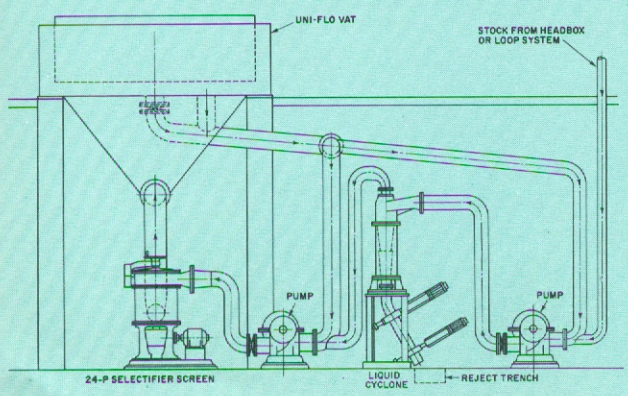


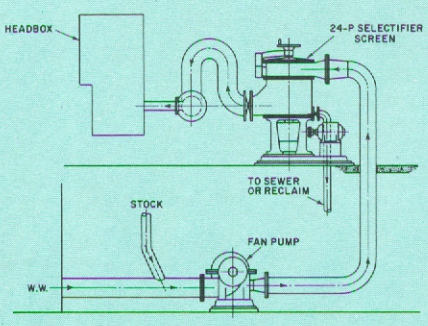
Cylinder machine employing seven No. 24-P Selectifier Screens produces high quality paperboard.



Typical Selectifier

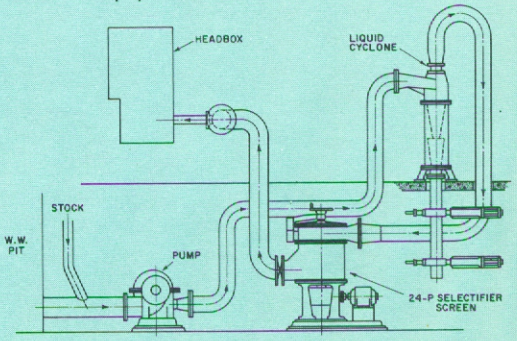
24-P Selectifier Screen Installation on Uni-Flo Vat.

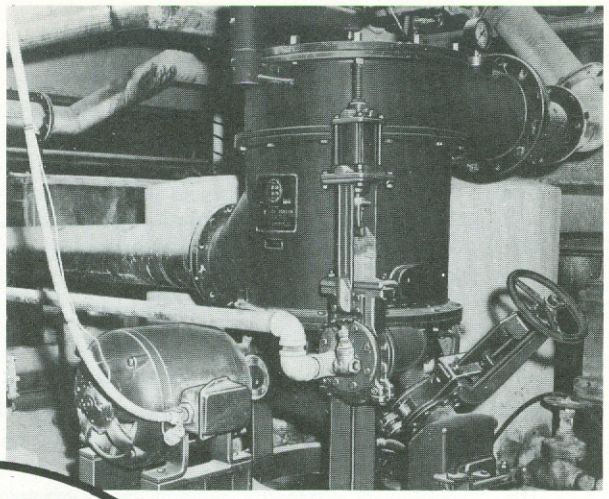




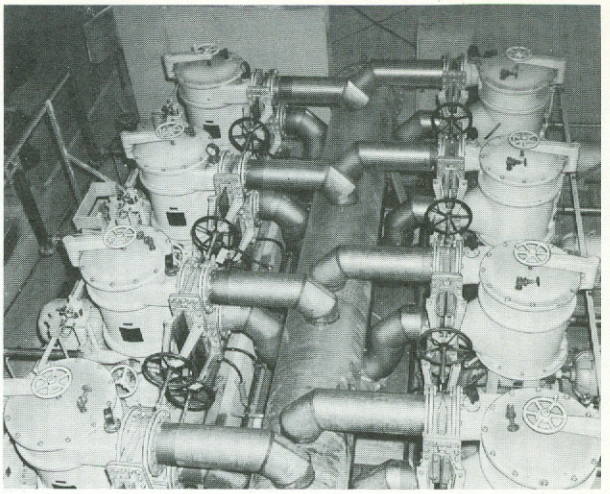
24-P Selectifier Screen installation on Fourdrinier machine.

24-P Selectifier Screen for Fourdrinier headbox application. Screening equipment located in basement.

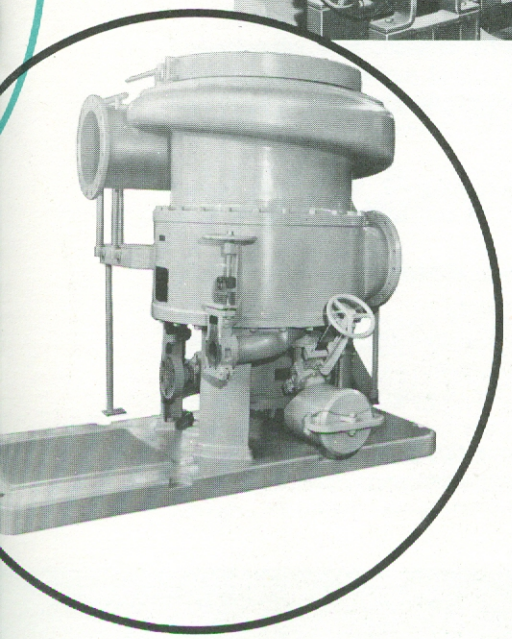


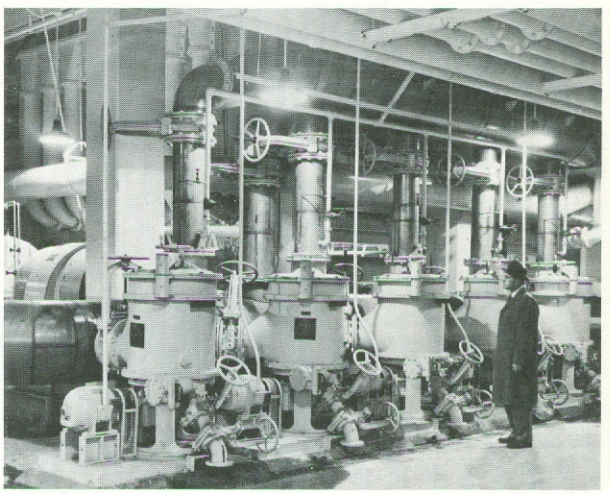


Writing, Bonds, Covers, Offset, Envelope, Papeteries, Opaque, Text and Specialties.



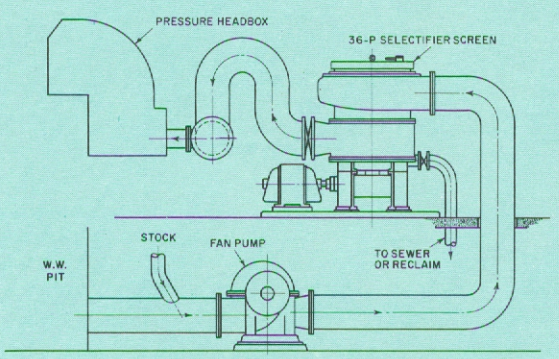
Eight Selectifier Screens ahead of a high-speed newsprint machine.





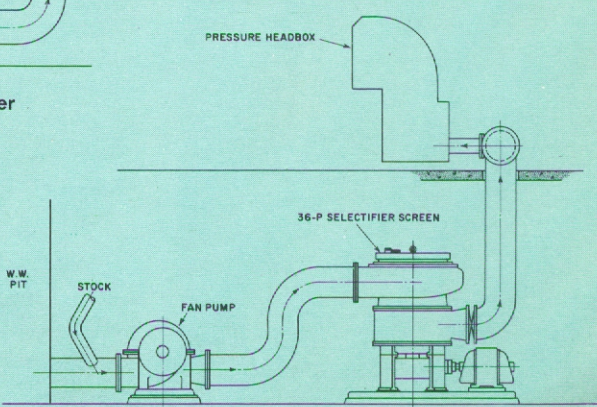
To date the Scott Paper Company has installed a total of 66 Black-Clawson Selectifier Screens for paper machine service on fine grades of tissue, toweling, etc. These five totally enclosed machine screens are in operation at their big Everett, Washington, mill.

Screen Installations

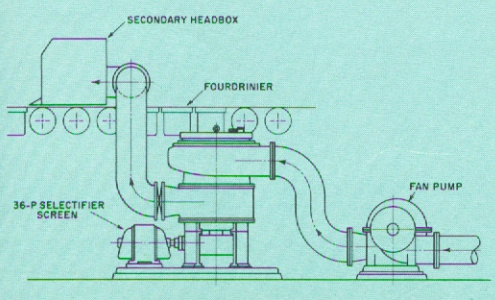


36-P Selectifier Screen on Fourdrinier Machine pressure headbox.

36-P Selectifier Screen on Fourdrinier Machine pressure headbox. Screen located in basement.



36-P Selectifier Screen for secondary headbox application.



Selectifier Screen Proved Highly Efficient for Pulp Mill Applications

Mills already using Selectifiers on their paper machines first recognized the advantages to be gained by applying a pressure screen in the pulp mill and with their co-operation many of the problems in this field were solved.

In the pulp mill, the real function of a screen is to clean by separating and removing unwanted shives, knots, uncooked chips and other foreign material.

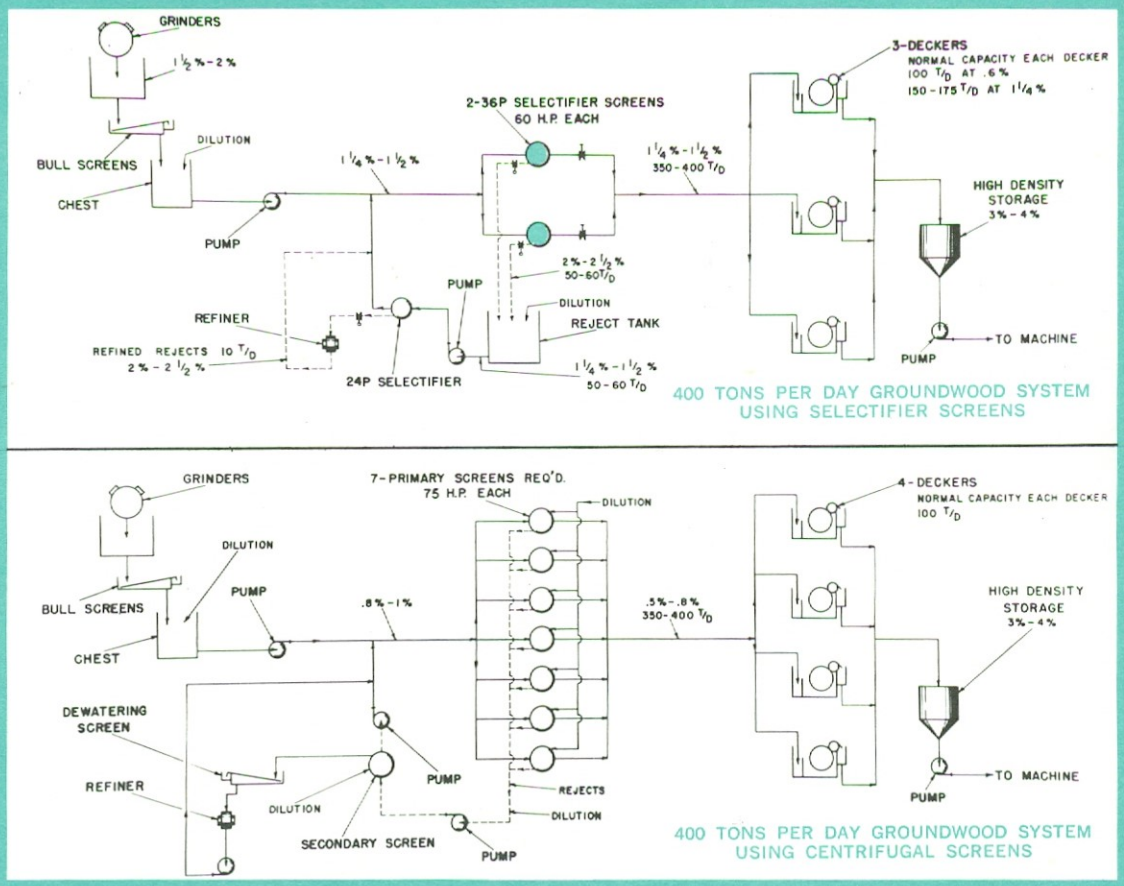
Research and experimental work testing the usage of the Selectifier Screen in various pulp mills has shown it to be the best pressure screen ever developed for pulp mill application. Successful mill experience has been gained on kraft, neutral sulphite and groundwood.

Groundwood

The Selectifier is especially efficient in a groundwood system. For example, a typical newsprint groundwood system application using Selectifiers instead of centrifugal screens (see diagram below) revealed the following operating benefits.

- *Higher Consistency Screening*—2 to 3 times higher than normal groundwood consistencies possible with conventional screens
- *Less Horsepower per ton*
- *No Shower Water Required*
- *Space-Saving—Easy to Locate*—the Selectifier is compact and comparatively small and can be located a distance away from the washers since it operates under pressure
- *Less Maintenance*—since the Selectifier is totally enclosed there is no screen room mess caused by foaming or overflow of accepted stock chambers

Typical Pulp Mill System Comparisons Showi

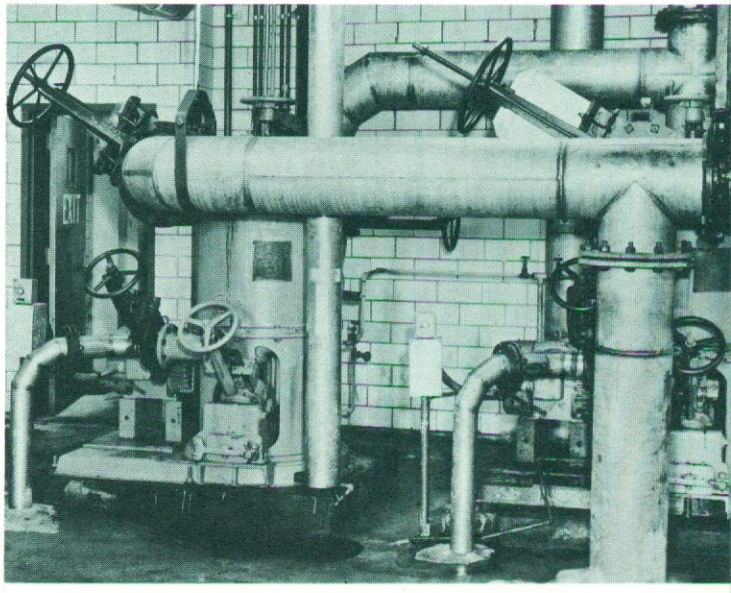


Hot Stock Screening

The Selectifier Screen has made it possible to clean chemical pulp ahead of the washers. The advantages of this hot stock screening can be seen by studying the diagram below which compares a system using Selectifier Screens with a conventional post-washing system in a kraft mill producing linerboard.

Specific advantages are:

1. Lower installation costs
2. Elimination of the need for deckers and other subsequent equipment such as storage chests, pumps and piping.
3. Smaller, more compact installation
4. Flexibility of location
5. Better dispersion of stock to the washers and better washing
6. Less horsepower required
7. No internal shower water needed

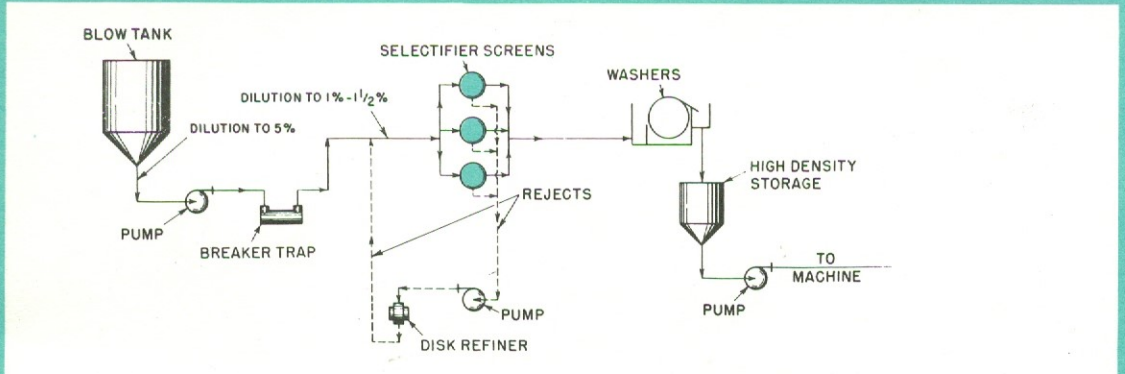


Two Black-Clawson Selectifier Screens remove coarse dirt, shives and fiber bundles from brown stock as it goes from the refiners to the vacuum washers at a bleached hardwood neutral sulphite pulp mill.

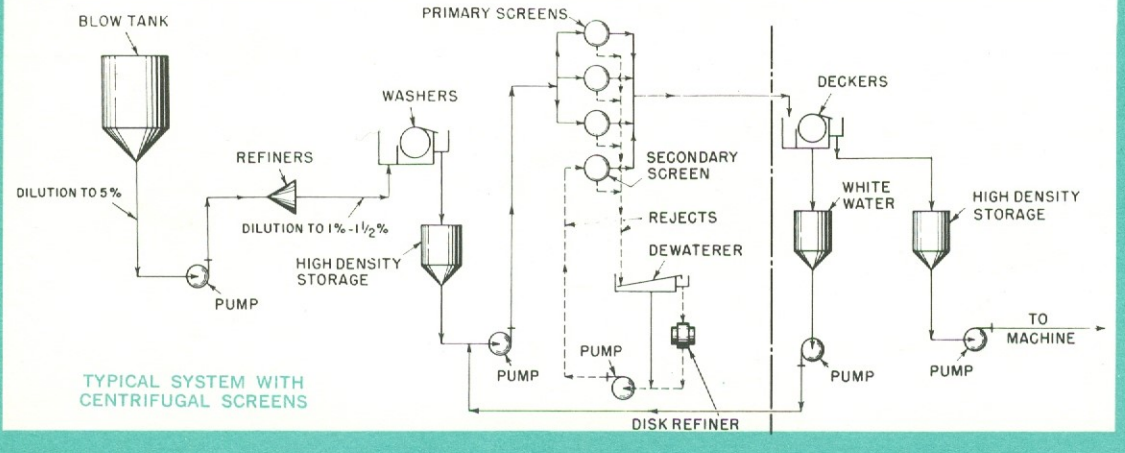
Chemical-Mechanical Systems

Selectifier Screens obtain a high degree of cleaning efficiency at high capacity when used ahead of the washers in combined chemical mechanical process where the wood is given a quick impregnating cook before further reduction by grinders and refiners. The foaming conditions usually encountered in this type of process are eliminated by the totally-enclosed pressurized Selectifier Screen.

the Advantages of Using Selectifier Screens



TYPICAL SYSTEM WITH SELECTIFIER SCREENS



TYPICAL SYSTEM WITH CENTRIFUGAL SCREENS