3 Technical data

3.1 Machine data

Serial No.	21345
Year of construction	1999

3.2 Weights

Empty weight	kg	3100	lbs.	6820
Flanged shaft	kg	930	lbs.	2050
Drum	kg	510	lbs.	1120
Transport frame	kg	230	lbs.	500

3.3 Operating data

Drum diameter	mm	1600	in	63.00
Drum speed	rpm		16	
Effective screen area, gross	m^2	1.75	ft^2	18.84
Oopen screen area related to screen surface gross	m^2	0.385	ft^2	4.14
Screen perforation, approx.	mm	10	in	0.38
Throughput, max.	mt/d	650	st/d	716
Inlet consistency, BD	%		≤ 4	

3.4 Drive data

Motor ratiing	HP	7.5
Motor speed at 50 Hz	rpm	980
Motor speed at 60 Hz	rpm	1200

4 Technical description

4.1 Use

The drum screen is primarily used in wastepaper preparation systems to separate flat wastepaper contaminants from the usable fibers. A prerequisite for a good screening effect is a high pulping degree of the waste paper at which plastic and film particle area remain as large as possible in relation to the screen perforations selected. Furthermore, the ingoing stock must be sufficiently diluted.

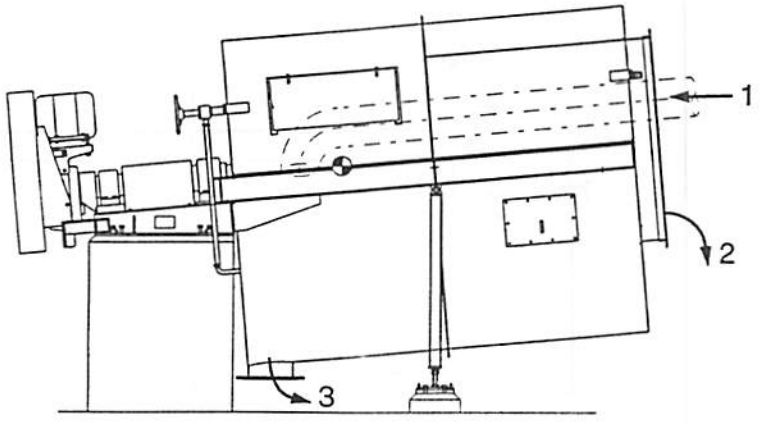
4.2 Principle of operation

The drum screen houses a shaft supported on rolling bearings. THe drum is screwed to this shaft driven by a three-phase a.c. motor via V-belt drive and flange-mounted gear unit. The accepts collecting tank, i.e. the vat, is located below the drum.

The accepts/contaminents seperation takes place in the following way:

- The drive motor rotates the screen drum.
- The drum components produce the scooping effect needed for the separation while simultaneously conveying and discharging the rejects. The rejects leave the drum at the open side where they are discharged into a chute.
- The accepts fall through the screen drum into the vat situated below. Then they are fed to the next process step.

The drum screen is preferably fed in cycles with the stock mixture to be screened coming from a pulper usually passing through a CONTAMINEX CM or a Fiberizer. Throughput, screen perforation, etc. depend on specific application.



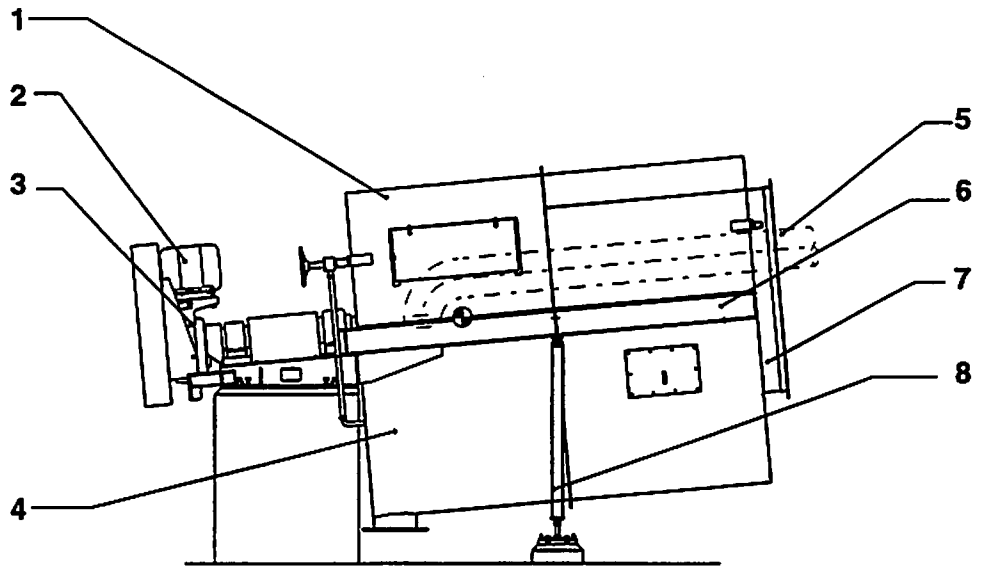
1 Stock Mixture

2 Contaminants

3 Accepts

Fig. 4-1 Principle of operation

4.3 Design



1	Hood	5	Feed pipe 1)
2	Motor	6	Frame
3	Shaft-mounted gear unit	7	Screen drum
4	Vat	8	Pendulum support

Fig. 4-2 Drum screen design

1) Not included in scope of supply

The drum screen is supplied ready for use, contained in a transport frame.

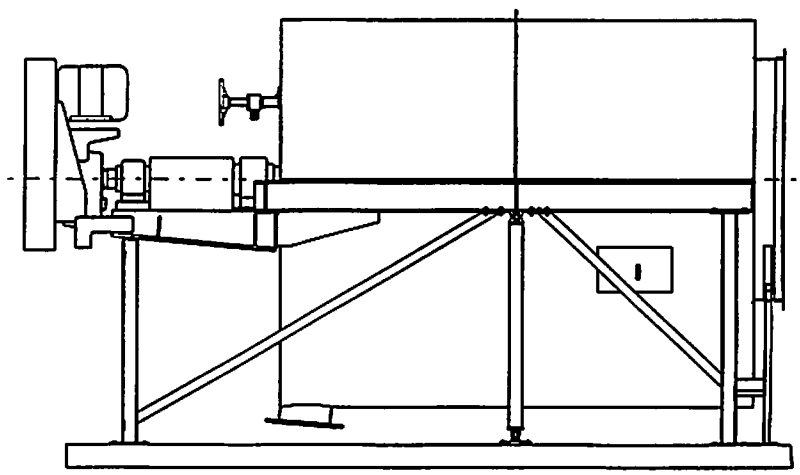


Fig. 4-3 Transport frame with drum screen

5 Installation

5.1 Unpacking the machine

→ Loosen the machine fixing.

→ Check consignment against delivery note for completeness.

→ Check consignment for transport damage.

→ Report any transport damage immediately to Voith Sulzer Paper Technology.

5.2 Transporting the machine

The transport weight of the empty machine without the transport frame is approx. 6820 lbs (3100 kg).

The transport weight of the transport frame is approx. 500 lbs (228 kg).

Ensure that the chains and the lifting equipment are suitable for the empty weight of the machine.

Only use undamaged chains and lifting equipment.

Only attach the chains to the intended and marked positions.

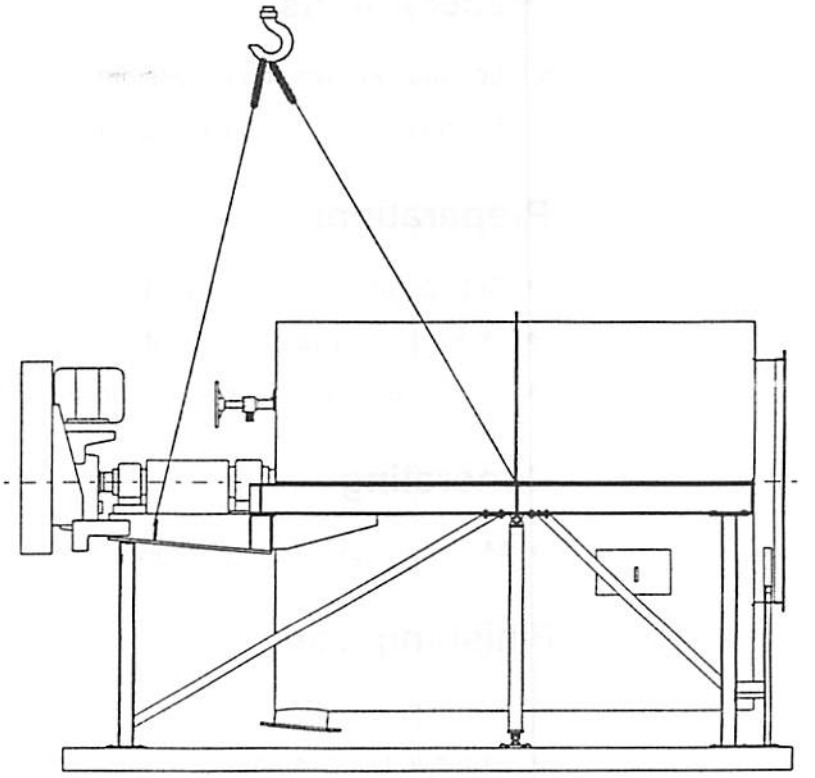


Fig. 5-1 Correct transportation of the machine

5.3 Disposing of the packing materials

→ Dispose of the packing materials in an environmentally sound manner.

→ Recycle packing materials.

❑ Observe the applicable regulations.

5.4 Foundations

General

It is necessary to erect the Drum Screen on solid concrete foundations.

Without solid foundations, extreme vibrations may occur when the machine is operated in the limit range.

The customer is responsible for laying the foundations.

The foundation plan contains all dimensions necessary to lay the foundations.

All foundation materials are by customer unless otherwise specified.

Preconditions

✓ Location known and accessible

✓ Load capacity of the substructure is sufficient.

Preparations

→ Set up forms as shown in the foundation plan.

→ Make and lay reinforcements.

→ Locate and fix anchor bolts with sleeves.

Concreting

→ Mix and pour concrete, allow to set.

Finishing work

→ Remove forms.

→ Remove filling materials.

→ Clean recesses.

5.5 Setting and aligning

Preconditions

✓ Concrete has set in.

WARNING

Pay attention to the distance between the centers of gravity during erection (⇨ Fig. 5-2, Distance between centers of gravity and load during operation on page 5-3). Handle the drum screen only with the lifting equipment attached at those spots provided for this purpose. The transport equipment may be removed only after the screen has been set up and aligned.

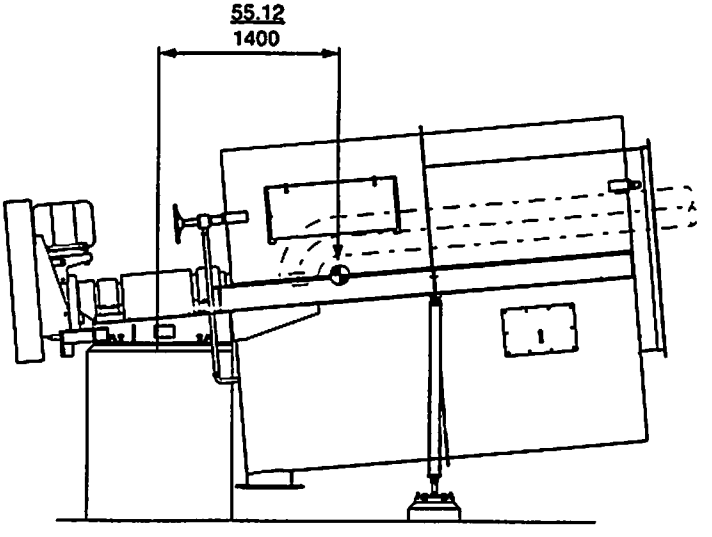


Fig. 5-2 Distance between centers of gravity and load during operation

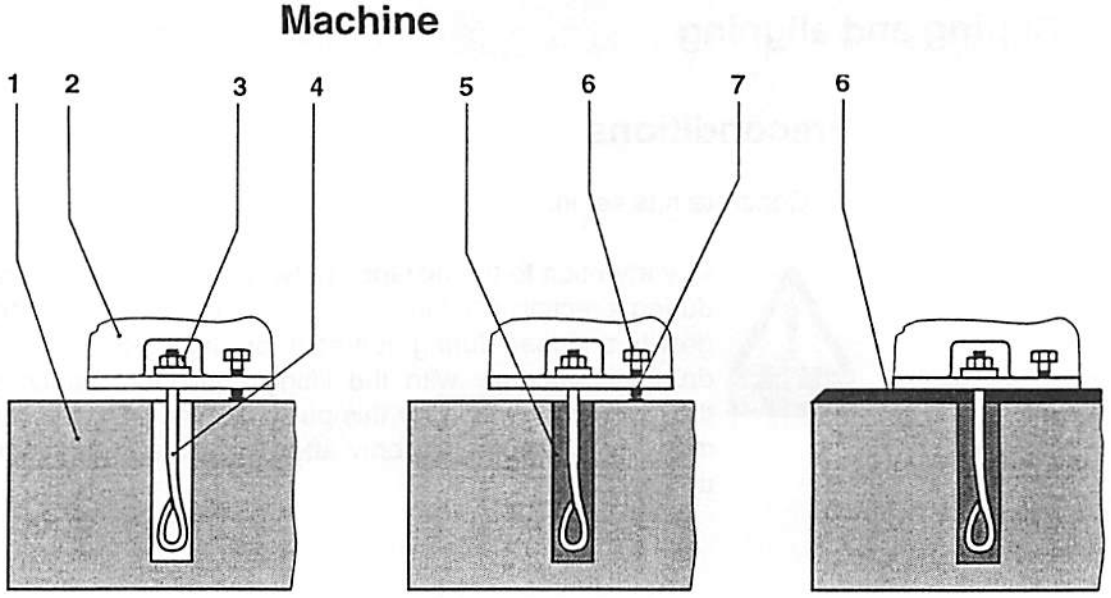
Load during operation P

P = 37 kN (164.7 Kips)

Mass moment of inertia J_{red}

J_{red} = 0.19 kgm^2 (4.51 lbft^2)

The value of the mass moment of inertia J_{red} is reduced to the motor journal.



1 Concrete foundation
2 Base frame
3 Hex. nut
4 Stonebolt
5 Sealing mortar
6 Hex. screw
7 Shim
8 Finishing mortar

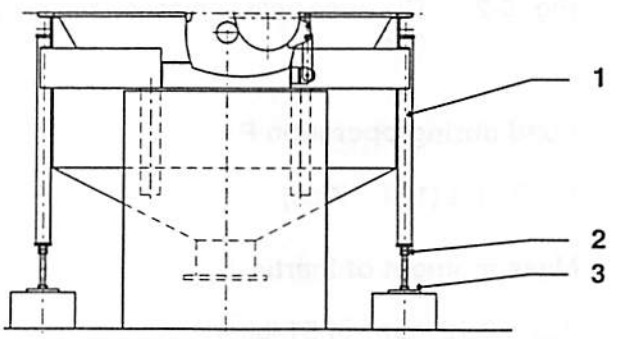
Fig. 5-3 Setting the drum screen up

→ Hook drum screen on a crane (⇨ Fig. 5-1, Correct transportation of the machine on page 5-1).

→ Use hex nuts (Fig. 5-3/**3**) to fasten stonebolts (Fig. 5-3/**4**) to the base frame (Fig. 5-3/**2**).

→ Lower drum screen onto concrete foundation (Fig. 5-3/**1**).

→ Horizontally align base frame with shims (Fig. 5-3/**7**), hex screws (Fig. 5-3/**6**) and pendulum supports (Fig. 5-4/**1**). Carry out vertical alignment.



1 Pendulum support
2 Hex. nut
3 Hex. screw with washer

Fig. 5-4 Attaching the pendulum supports to the foundation

NOTICE

Make sure they pendulum supports are vertical when marking the holes.

→ Mark holes for the pendulum supports (Fig. 5-4/**1**).

→ Remove drum screen from the concrete foundation (Fig. 5-3/**1**).

→ Drill the holes for the pendulum supports and insert HKD compact dowels.

→ Put the drum screen back into place.

→ Use hex screws (Fig. 5-4/**3**) and washers to fasten pendulum supports.

☐ Check alignment of the base frame (Fig. 5-3/**2**). Insert hex nuts (Fig. 5-4/**2**) at the pendulum supports without tightening them.

→ Mix and pour in the sealing mortar (Fig. 5-3/**5**) and allow to set in.

→ Slightly tighten the hex nuts (Fig. 5-3/**3**).

→ Set up forms for the finishing mortar.

→ Mix and pour in the finishing mortar (Fig. 5-3/**8**) and allow to set in.

→ Remove boarding.

→ Tighten hex nuts (Fig. 5-3/**3**) and secure them with a center punch.

→ Lock hex nuts (Fig. 5-4/**2**) on pendulum supports.

5.6 Connecting

Machine

Pipework

When installing the pipes, observe the following:

- Suction head should be as high as possible
- The inlet pipe should be installed at a 5° angle.
- Pipelines should be as short and straight as possible
- Provide centered flange connections to avoid disturbing deposits in dead corners.

WARNING

Connect all pipes completely free of stress. Do not join them with force using fastening screws.

Fasten all pipework in such a way that it does not put any static or dynamic load on the machine, especially during operation.

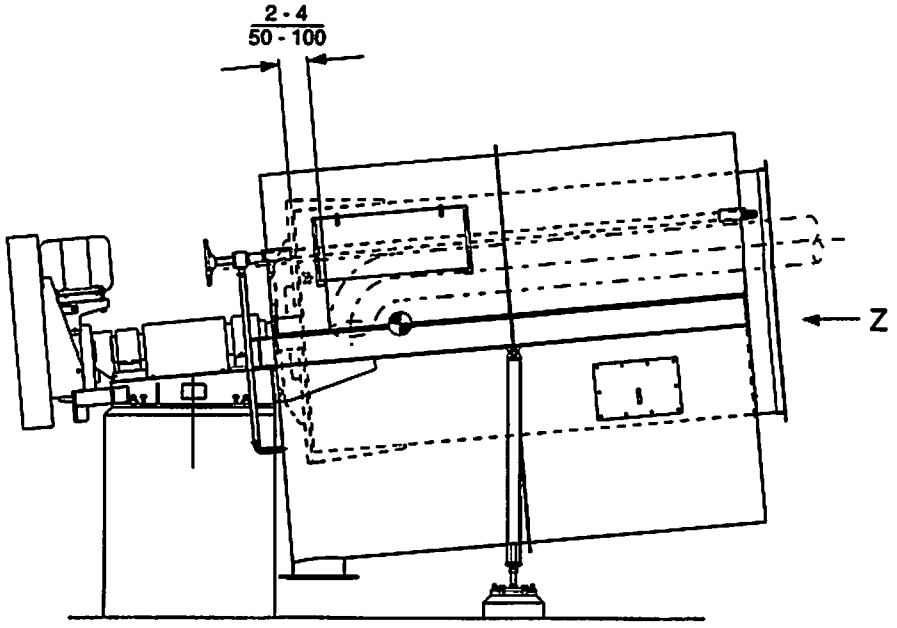


Fig. 5-5 Side view with installed feed pipe

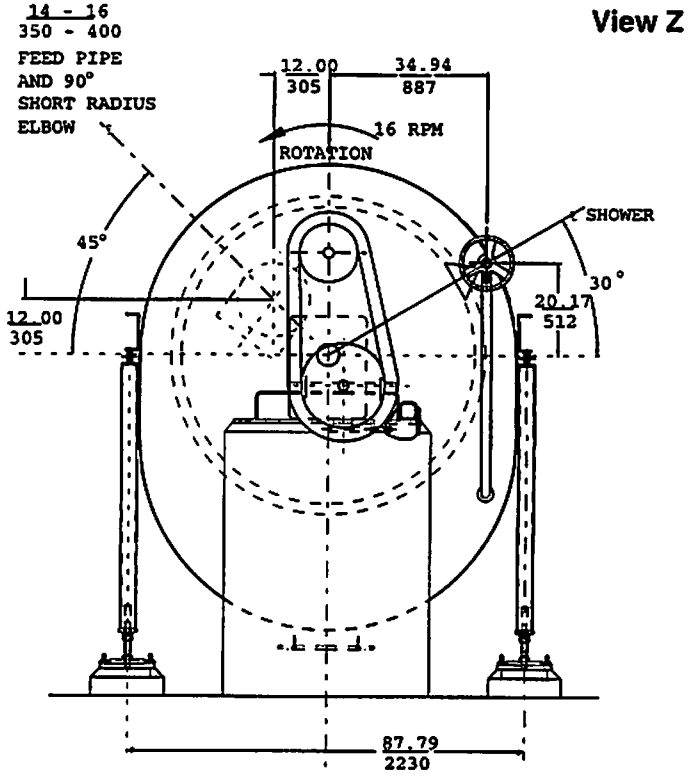


Fig. 5-6 Rear view with installed feed pipe

Shower water connection

Shower water may be

- fresh water or
- clarified process water.

Observe water consumption specified in Sec. 12, Subcontractor Documentation, Dimension Sheet for nozzle Showers for Drum Screen Type F.

When installing showers, we recommend the use of a solenoid shut-off valve and a flowmeter.

Motor

Preconditions

✓ Motor is mounted.

Connecting the motor

→ Connect motor according to locally applicable rules and regulations.

For safety reasons, we recommend to install a lockable 3-pole safety main switch with padlock.

The power supply circuits are to be routed in such a way that the entire slide base adjusting range of the motor can be covered without disconnecting the lines.

→ Connect motor electrically.

❑ Check connections (⇨ terminal diagram of motor supplier).

Emergency stop switch

→ Install emergency stop switch in the vicinity of the machine.

Electric interlocks

In the event of drum screen standstills, the stock flow must be shut off.

5.7 Checking the direction of rotation

Preconditions

✓ Motor is connected.

✓ Main switches of machine and pump are switched off and secured against unintentional restart.

Checking the direction of rotation

Danger of injury due to dismounted guards.

→ Switch main switch on for a short time.

→ Check the direction of rotation.

❑ Required direction of rotation of the drum screen: counterclockwise when viewed towards the drum screen drive.

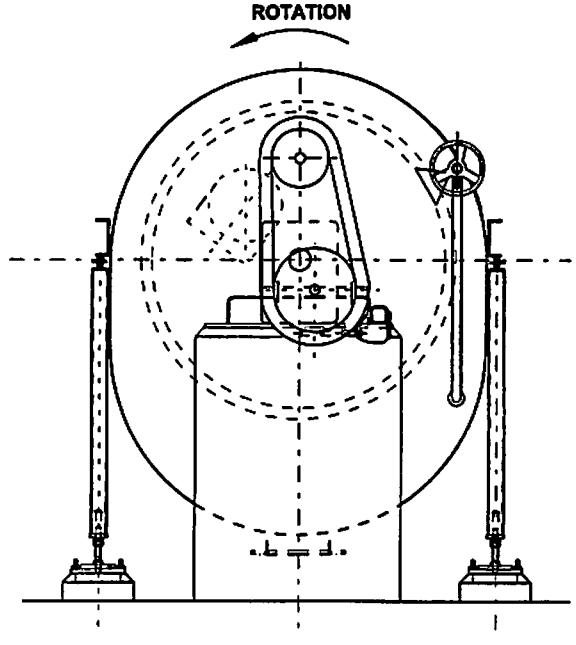


Fig. 5-7 Direction of rotation

5.8 Preparation for initial start-up

Preconditions

- ✓ Main switch is switched off and secured against unintentional restart.
- ✓ V-belts are tensioned correctly.

Checklist

Component	Target	Checked
Connections	allocation correct	
	fit tight	
Drum screen and stock feed	electrically interlocked	
Drum screen	required direction of rotation of the drum screen: couterclock-wise when viewed towards the screen drum opening	
Initial lubrication	completed (⇨ Sec. 8.2, Lubrication on page 8-2)	
Guard	all of them correctly mounted	
Emergency switch	Position known	

Tab. 5-1 Checklist for initial start-up

The drum screen is ready for operation when all items in the checklist have been checked OK.

5.9 Dismantling

→ Shut machine down (⇨ Sec. 6.4, Checks during operation on page 6-2)

→ Prepare machine for long-term shutdown (⇨ Sec. 6.5, Shutdown on page 6-3).

→ Remove feed pipe.

Observe all safety rules and regulations for electrical equipment.

→ Disconnect motor.

→ Remove drum screen (reverse sequence described in Sec. 5.5, Setting and aligning on page 5-3.

↳ The machine is now ready for transport.