VOITH SULZER
PAPER TECHNOLOGY

OPERATING INSTRUCTIONS

EcoCell
ECC4/38

Serial No.: 21817

Codeword: Bowater Pulp & Paper - Thunder Bay, Ontario

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Table of contents

1 Introduction 1-1

1.1 Explanation of warnings and symbols 1-1
1.2 Numbering of pages, figures and tables 1-2
1.3 Abbreviations 1-3
1.4 Dimensions 1-3

2 Safety Instructions 2-1

2.1 General safety instructions 2-1
2.2 Designated use of the machine 2-2
2.3 Organizational measures 2-2
2.4 Selection and qualification of personnel 2-4
2.5 Noise protection 2-4
2.6 Additional hazards 2-5

3 Technical Data 3-1

3.1 Machine data 3-1
3.2 Weights and dimensions 3-1
3.3 Operating data 3-1

4 Technical Description 4-1

4.1 Use 4-1
4.2 Principle of operation 4-1
4.3 Design 4-3

5 Installation 5-1

5.1 Unpacking the machine 5-1
5.2 Transporting the machine 5-1
5.3 Disposing of packing materials 5-2
5.4 Foundations 5-2
5.5 Setting up and aligning 5-3
5.6 Connecting the machine 5-4
5.7 Removal 5-5

6 Operation 6-1

6.1 Safety instructions for operation 6-1
6.2 Conditions for optimal operation 6-2
6.3 Preparations for initial start-up 6-5
6.4 Start-up 6-6
6.5 Shutdown 6-7
6.6 Prolonged shutdown 6-7

7 Troubleshooting 7-1

8 Spare Parts 8-1

8.1 Replacement parts 8-1

9 Appendix 9-1

Figures

Fig. 4-1	Schematic control diagram	4-2
Fig. 4-2	Primary cell design	4-3
Fig. 4-3	Secondary cell design	4-4
Fig. 5-1	Correct transportation of the machine	5-1
Fig. 5-2	Setting the EcoCell up	5-3
Fig. 6-1	Nozzle position of primary cells	6-2
Fig. 6-2	Nozzle position of secondary cell(s)	6-3
Fig. 6-3	Removal of cleaning nozzle	6-4
Fig. 6-4	Diffuser	6-4

Tables

Tab. 7-1 Troubleshooting 7-1
Tab. 8-1 Replacement parts 8-1

1 Introduction

These operating instructions are to familiarize the user with the machine. They contain a description of the machine's design and its principle of operation. Following these operating instructions ensures rapid and safe start-up and maintenance of the machine.

1.1 Explanation of warnings and symbols

This symbol indicates an **imminent hazard**. If this hazard is not avoided, it will lead to **death or serious injuries**.

This symbol indicates a **potentially hazardous situation**. If it is not avoided, it **could result in death or serious injuries**.

This symbol indicates a **potentially hazardous situation**. If it is not avoided, it **could result in minor or moderate injuries**.

This symbol indicates a **potentially damaging situation**. If it is not avoided, it **could result in damage to the product** or surrounding equipment.

This symbol indicates special hints for the user and other particularly useful information. It is **not** a signal word for a hazardous or damaging situation.

– denotes listings

⇨ denotes cross-references to other pages, sections, figures, and tables

→ denotes „task to be performed"

❑ denotes „monitoring task"

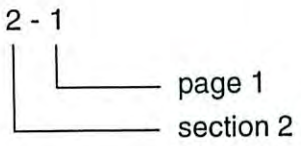
✓ denotes „task completed"

↳ denotes „result of a completed task"

1.2 Numbering of pages, figures and tables

Pages

The pages are numbered consecutively throughout each individual section.



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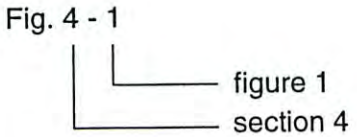

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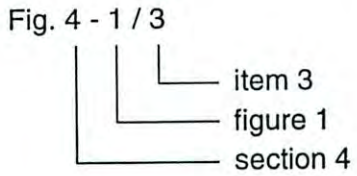

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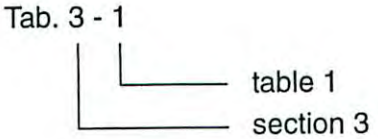

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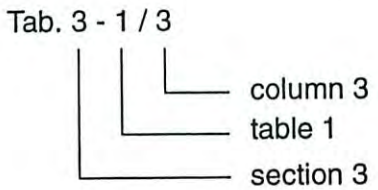


1.3 Abbreviations

Sec.	Section
Fig.	Figure
Tab.	Table
Approx.	Approximately

1.4 Dimensions

Unless specified otherwise, all dimensions are in/mm.

2 Safety

2.1 General safety instructions

For operation of the machine, the OSHA and other local safety and accident prevention rules and regulations are in any case binding.

State of the art

This VOITH SULZER stock preparation machine has been built in accordance with state-of-the-art standards and the recognized safety rules. Nevertheless, its use may constitute a risk to life and limb of the user or of third parties, or cause damage to the machine and to other material property, if:

- the machine is not used as designated,
- the machine is operated by untrained personnel,
- the machine is modified or converted improperly and/or
- the safety instructions are not observed.

Therefore, every person involved in erecting, operating, inspecting, maintaining, servicing and repairing the machine must read, understand and observe the complete operating instructions, particularly the Safety Instructions.

Preconditions for using the machine:

The machine may only be used:

- in perfect technical condition,
- as designated,
- according to the instructions set out in the operating manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine,
- if all safety devices and emergency shut-off components are fitted and operative.

Any functional disorders, especially those affecting the safety of the machine, must therefore be rectified immediately.

2.2 Designated use of the machine

Use

The EcoCell is designed for removing all floatable contaminants such as, for example, printing inks from pulp suspensions. These contaminants must be separated and hydrophobic.

The particle size must be in the range 5...500 µm.

Liability for non-designated use

Using the machine for purposes other than those mentioned above is considered contrary to its designated use. VOITH SULZER Paper Technology cannot be held liable for any resulting damage. The risk of such misuse lies entirely with the user.

2.3 Organizational measures

Availability of operating instructions

The operating instructions must be available wherever the machine is in use.

Additional regulations

In addition to the operating instructions, observe all other generally applicable legal and other mandatory regulations relevant to accident prevention and environmental protection and instruct the personnel to comply with them.

Additional instructions

Supplement the operating manual by instructions covering the duties involved in supervising and notifying special organizational features, such as job organisation, working sequence or the personnel entrusted with the work.

Checks

Check regularly whether the personnel carries out the work in compliance with the operating instructions and whether they pay attention to risks and safety factors.

Protective equipment

Use protective equipment wherever and whenever required.

Safety instructions and warnings

Observe all safety instructions and warnings attached to the machine. Make sure that these signs are legible and replace damaged and illegible plates.

Modifications or changes in operating conditions

In the event of safety-relevant machine modifications or changes in operating conditions, stop the machine immediately and report the malfunction to the person responsible for the machine.

Rebuilds or modifications

Never make any unauthorized rebuilds and modifications which might impair safety. Any verbal agreements with the manufacturer or the design engineer require written confirmation.

Replacing damaged parts

Parts of the machine that are not in perfect working order must be replaced immediately with original spare parts (⇨ Sec. 9, Spare parts on page 9-1).

Use only original spare and wearing parts from VOITH SULZER Paper Technology! Unauthorized parts provide no guarantee that they have been designed and manufactured according to the application. **Danger of accidents!**

Checks and maintenance

Adhere to prescribed intervals or intervals specified in the operating instructions for routine checks and maintenance work.

Before starting work at the machine for the purpose of inspection, maintenance and repair, the drives and the supplementary equipment must be secured against inadvertent starting. A lockable disconnect switch on site must be used (not included in the scope of supply). Furthermore, all system components preceding or following the machine as well as the operating media (stock, water, steam, compressed air, etc.) must be secured against starting.

Working with hazardous substances

Make sure that dangers to the environment caused by hazardous substances are precluded when working on lubricating systems and devices and when cleaning the machine with solvent-containing detergents.

Lifting gears

Make sure that the lifting capacity of the lifting gears to be properly installed is at least equal to the weight of the machine or of the parts to be lifted (⇨ Sec. 3.2, Weights on page 3-1).

Guards

Guards must be removed only after the machine has been shut down and secured against restart.

Ensure that all guards have been fitted again before starting or restarting the machine.

2.4 Selection and qualification of personnel

Qualification of personnel

Any work on the machine must be executed only by trained and instructed personnel authorized by the owner.

Responsibilities

Responsibilities in the operation of the machine must be clearly established and observed, so that no unclear competences might impair safety.

Instructions contrary to safety

Give the operator the authority to refuse instructions by third parties that are contrary to safety.

Maintenance and repair

Maintenance and repair demand special knowledge and may only be carried out by trained technical specialists.

2.5 Noise protection

Depending on the operating conditions, place of installation, pipe runs, and other unit parts, the machine may produce a noise level which exceeds 80 dB (A).

Therefore, wear appropriate ear protection when working in the immediate vicinity of the machine in operation.

In general, the machine is operated/controlled from a sound-proof operating room.

2.6 Additional hazards

Entanglement, crushing and cut/sever hazards due to:

- moving machine parts left exposed by removing covers for inspection, sampling, etc.,
- running and exposed shafts, cylinders, drums, or belts,
- automatically operated discharge valve traps.

Burning or scalding hazards when

Opening or keeping open function-check and/or sampling openings on equipment operating at high temperatures (above 40°C).

Harmful gases and vapors

Open covers may allow harmful gases or vapors to escape into the atmosphere.

Hazard of bursting sight glasses due to:

- pressure pulses (caused, for example, by rapidly opening or closing shut-off elements),
- external blows.

3 Technical data

3.1 Machine data

Serial No.	21817
Year of construction	1999

3.2 Weights and dimensions

Cell, filled, with piping section and walkway (exact foundation load layout plan	Primary cell	kg	2,834	lbs.	6,250
	Secondary cell	kg	3,628	lbs.	8,000
	Mixing	kg	1,927	lbs.	4,250
Length of mixing cell		m	3.0	in	118.12
Length of primary cell		m	4.0	in	157.5
Length of secondary cell		m	4.0	in	157.4
Largest elliptical diameter		m	3.8	in	149.62
Number of aeration elements per primary/secondary cell		–		4	

3.3 Operating data

			Primary	Secondary
Volumetric inlet flow rate of cell		LPM/GPM	21,300/5,630	16,000/4230
Inlet pressure of cell at aeration element		bar/psi	0.9/13.06	0.9/13.06
Stock consistency		%B.D.	1.0 - 1.4	0.6 - 1.0
Stock temperature		°C/°F	35 -75/95 - 167	
Foam overflow rate at retaining		LPM per m cell length	1088.3	108.5
Cleaning unit	Flushing interval	h	2 - 6	
	Flushing period	s	60	

4 Technical Description

4.1 Use

The EcoCell is designed for removing all floatable contaminants such as, for example, printing inks from pulp suspensions. These contaminants must be separated and hydrophobic.

The particle size must be in the range 5...500 µm.

4.2 Principle of operation

The primary stage of the EcoCell flotation machine consists of a mixing cell followed by several flotation cells connected in series. In the mixing cell the grey stock is blended with the internally returned stock from the flotation cells and - depending on the system arrangement - part of the secondary accepts (see Fig. 4-1, Schematic control diagram on page 4-2).

The stock suspension to be deinked is discharged at the mixing cell bottom and fed to the first flotation cell passing through the aeration unit. Then the stock is pumped off at the bottom of the first cell and conveyed to the second cell via another aeration unit. This is repeated until the stock has reached the last cell. The accepts of the last primary cell is pumped to the next process step. The foam of the separate cells flows over a retaining weir to be adjusted during start-up into the joint foam collecting pan integrated into the cell body.

The pumps of the EcoCell flotation machine operate with constant volumetric flow and pressure.

The partition walls between the single cells have openings at the bottom of the cell. The top edge of these openings is below the surface of the suspension. Thus, the flotation machine consists of interconnected cells. A certain portion of the suspension returns through the openings into the preceding cell thus equalizing the cell levels. The control loop for level adjustment (LIC) is a foam quantity control system, which means that the discharged foam quantity and thus the suspension level is controlled by means of the level measured in the joint foam collecting pan.

The foams are collected separately for primary and secondary stage in the corresponding collecting pans where they are broken down with shower water. The primary foam passes a foam retaining weir to be adjusted during start-up and the foam outlet pipe until it reaches the foam collecting tank. As an option, a deaeration cyclone can be arranged between them. The deaerated primary foam is then pumped from the foam collecting tank to the secondary stage.

In the secondary stage, most of the fibres in the primary foam are recovered and fed back to the primary stage.

The suspension level of the secondary stage is also controlled by means of the accumulated foam quantity. The foam of the secondary stage is fed to the next process step (e.g. rejects treatment).

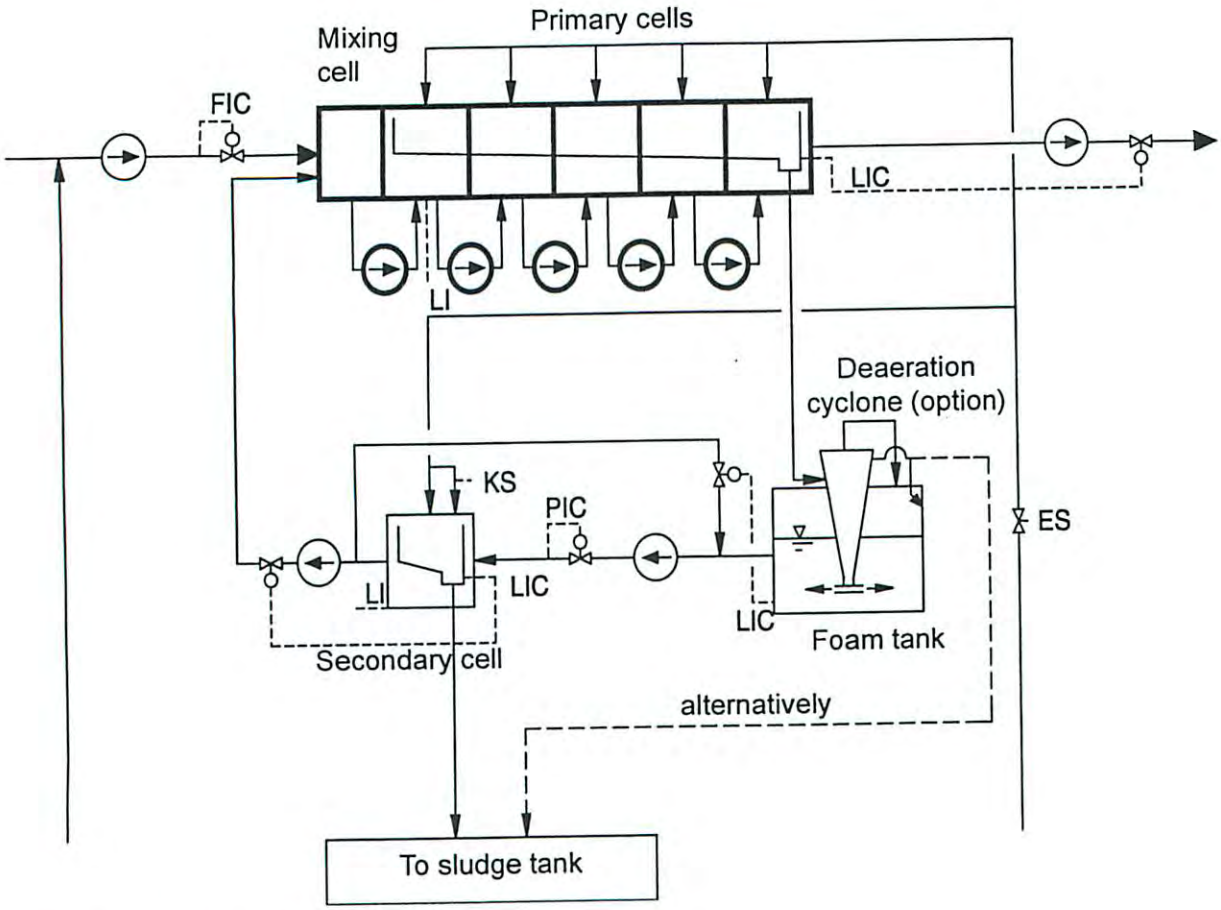
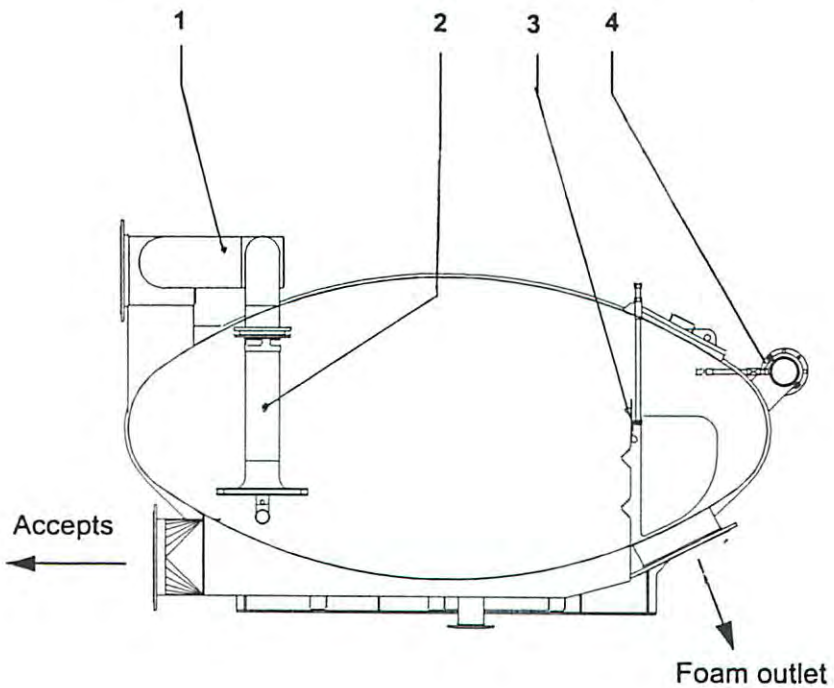


Fig. 4-1 Schematic control diagram

For the individual plant, the control diagram specific for this order is to be applied.

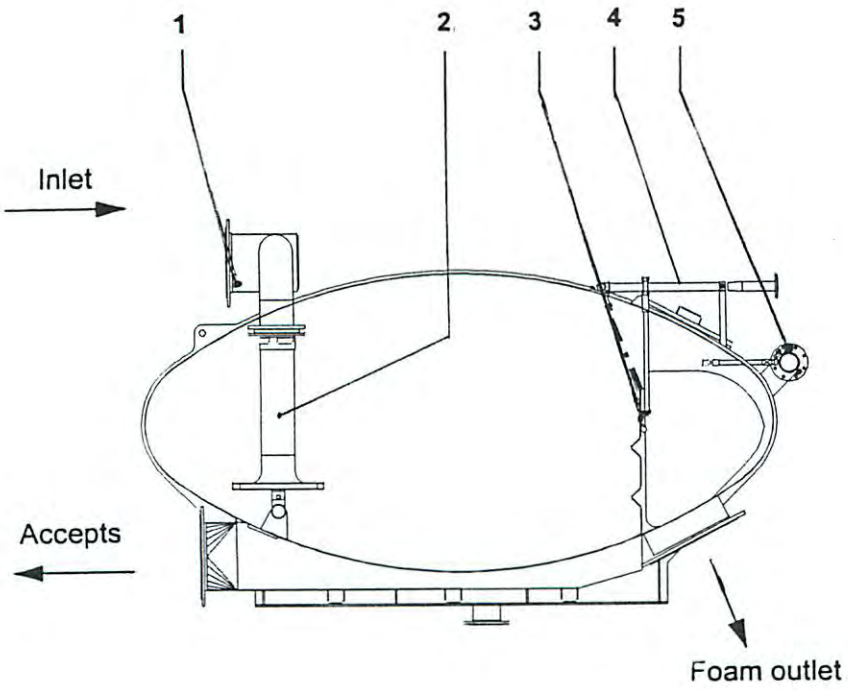
4.3 Design

The EcoCell flotation machine generally consists of a primary and a secondary stage each with one foam outlet. The primary stage is made up of one mixing cell and several single cells equipped with deaeration units and connected in series. The secondary stage is usually without mixing cell and comprises - depending on the specific requirements - one cell or several cells equipped with deaeration units. The number of cells required in both stages depends on the furnish and the specified production capacity.



1 Header
2 Diffuser
3 Retaining weir
4 Shower unit

Fig. 4-2 Primary cell design



1 Header
2 Diffuser
3 Retaining weir
4 Cleaning unit
5 Shower unit

Fig. 4-3 Secondary cell design

The mixing cell as well as the single primary and secondary cells of the same size have identical cross sections.

The partition plates between mixing cell and first primary cell and between the following primary cells have openings permitting the recirculation of the fibre stock suspension. The plates between the single primary cells also have foam channel openings on collecting-pan side. If several secondary cells are connected in series, their partition plates also have openings for stock recirculation and foam passage.

A pan plate between the partition plates separates the flotation chamber from the foam collecting pan. The adjustable retaining weir (Fig. 4-2/**3** and Fig. 4-3/**3**) is located in the upper pan section. The foam is discharged over an adjustable foam retaining weir (Fig. 4-2/**7** and Fig. 4-3/**7**). This weir is located in the collecting pan directly above the foam outlet.

Depending on the cell size, the flotation chamber is fitted with one or more vertically arranged diffusers (Fig. 4-2/**2** and Fig. 4-3/**2**). If there are two or more diffusers, the suspension is supplied through a header (Fig. 4-2/**1** and Fig. 4-3/**1**). The outlet box and the accepts outlet are positioned in the lower section of the flotation chamber.

The shower unit (Fig. 4-2/**5** and Fig. 4-3/**5**) and the cleaning unit (Fig. 4-2/**4** and Fig. 4-3/**4**) are arranged in the upper area. The shower unit is used to break down the deinking foam in the foam collecting pan. The shower unit and the flushing device for the transmitter flange (Fig. 4-2/**6** and Fig. 4-3/**6**) operate continuously and can be adjusted individually with hand valves. The secondary-cell cleaning unit ensures the periodical cleaning of the retaining-weir overflow edge and the air throttles (Fig. 4-3/**8**) of the secondary diffusers. The optional primary-cell cleaning unit is exclusively used for periodical cleaning of the retaining-weir overflow edge. During periodic cleaning, a pneumatic valve opens every 2 to 8 hours for a period of approx. 60 to 120 seconds depending on the specific operating conditions.

The primary diffusers have an annular intake cross section thus providing a sufficiently large air intake opening to ensure that the optimum percentage of 60% air (% by volume flow rate) is added at all times.

5 Installation

5.1 Unpacking the machine

→ Loosen machine fixing.

→ Check consignment against delivery note for completeness.

→ Check consignment for transport damage.

→ Report any transport damage immediately to the VOITH SULZER Paper Technology

5.2 Transporting the machine

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

Only use undamaged ropes and lifting equipment.

Only attach the ropes to the intended and marked positions.

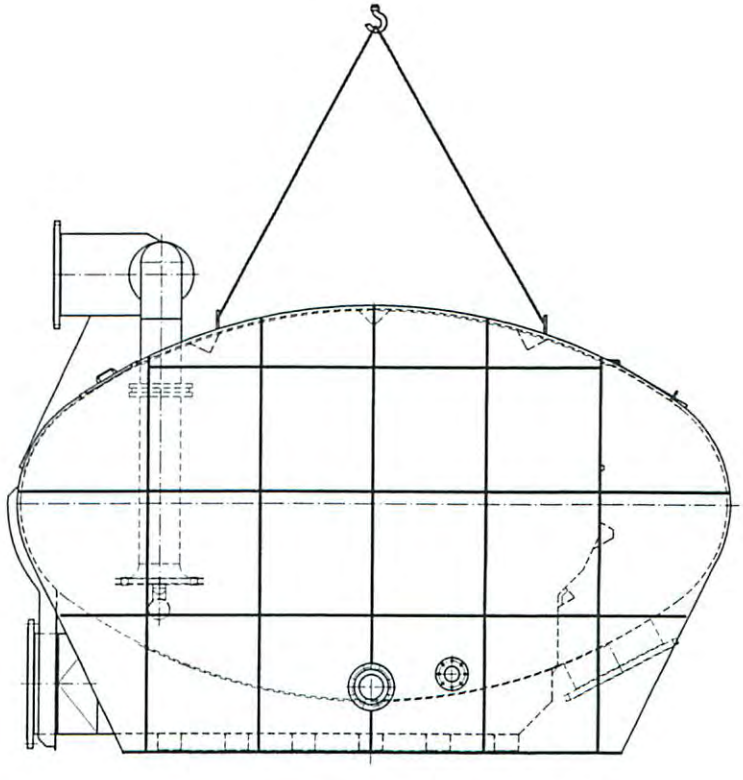


Fig. 5-1 Correct transportation of the machine

5.3 Disposing of packing materials

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

→ Recycle packing materials.

❑ Observe the applicable regulations.

5.4 Foundations

General

The foundations are to be laid by the customer.

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

Preconditions

Location known and accessible.

Load capacity of the substructure is sufficient.

The reinforcement plan is available.

Preparations

→ Set up boarding as shown in the foundation plan.

→ Make and lay reinforcements.

Concreting

→ Mix and pour concrete, allow to set.

Finishing work

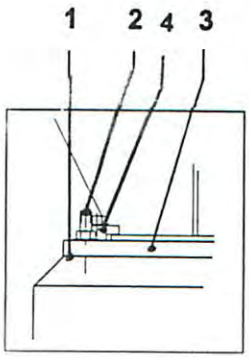
→ Remove boarding.

NOTICE

Do not use thinners otherwise the grout will not harden.

5.5 Setting up and aligning

Baseplates



1	Shim	**3**	Baseplate
2	Stud	**4**	Hold down

Fig. 5-2 Setting the EcoCell up

→ Insert baseplates (Fig. 5-2/**3**) and level roughly.

→ Align baseplates (Fig. 5-2/**3**) with machine centreline and rectangular to each other.

→ Adjust exact height and/or level off.

→ Grout baseplates (Fig. 5-2/**3**) with concrete.

→ After concrete has set, install machine.

Machine

The cell blocks are supplied completely welded or in components and must be screwed together or welded and screwed together on site.

The form of transport to the place of installation must be adapted to the local conditions.

Always take all relevant safety precautions (⇨ Sec. 5.2, Transporting the machine on page 5-1

→ Grease the sliding surfaces between the unwelded feet and the corresponding baseplates.

→ Position cell block on baseplates and align.

→ Weld the tank foot next to the cell row centreline to the baseplates.

5.6 Connecting the machine

Preconditions

Machine is fixed on foundations.

Pipework and pumps

→ Align pumps according to layout plan.

❑ Suction nozzles must be in line with cell outlets.

→ Fasten pumps on foundations.

→ Adjust and mount all suction pipes according to pipe layout.

→ Adjust and mount all delivery pipes according to pipe layout.

→ Install pipe supports.

→ Fill cells with warm water (40°C) up to approx. 10 cm below the retaining weir edge.

→ Loosen all flange connections between suction piping and pumps one after the other to relieve the tension for a short time and then tighten them again.

→ Grout pump foundations in.

The inlet and outlet circuits can be positioned more or less as required. In order to avoid disturbing deposits, for example in dead corners, the single pieces of the pipework should be flanged exactly centric.

All pipework must be connected completely free of tension.

Do not join with force using the fastening screws.

Support and suspend pipework so that it does not swing or affect the machine during operation, for example through pipework expansion caused by heat.

Sample extraction fittings

The customer is responsible for on-site installation of sample extraction fittings in all circuits carrying stock.

5.7 Removal

→ Shut machine down (⇨ Sec. 6.5, Shutdown on page 6-6).

→ Prepare machine for long-term shutdown (⇨ Sec. 6.6, Prolonged shutdown on page 6-6).

→ Dismount all pipework.

→ Dismount all walkways, platforms and stairs.

→ Loosen fastenings.

The machine is now ready for transport.

6 Operation

6.1 Safety instructions for operation

Safety devices

Make sure that all maintenance and inspection hatches are closed after completion of any maintenance and repair work.

Protection of persons

Unplanned incidents may result in personal injury.

It is prohibited to enter the cells during operation. This applies to the diffuser side as well as the foam-collecting pan side.

Ensure that the main switches of the machine and all upstream and downstream equipment are switched off and secured against unintentional restart prior to any maintenance and repair work.

Make sure that the machine and all stock pipes to the machine have been emptied and depressurised.

When working inside the cells, take appropriate safety precautions to prevent slipping on the curved tank floor. Wear suitable safety clothing as protection against chemicals. Make also sure that the cells are supplied with enough air.

Chemicals or decomposing stock residues in the EcoCell may produce harmful gases or harmful gases may settle at the bottom. These gases may be heavier than air so that they displace the air at the tank bottoms.
Thus these gases may cause injuries to the health of the person entering the cells. Danger of poisoning or suffocation!
Harmful gases may also escape when opening the maintenance and inspection hatches.

The EcoCell may only be entered with a confined space permit.

Do not climb or walk on the EcoCell with the exception of the walkways, platforms, stairs and ladders provided for access. Danger of falling down!

6.2 Conditions for optimal operation

To ensure an optimal operation, it is recommended to perform inspections every week and thorough cleaning twice a year.

Checks during operation

→ Check suspension level (foam overflow rate) and adjust as necessary.

- ❑ Primary: 150...250 l/min per m cell length
- ❑ Secondary: 80...150 l/min per m cell length

→ Check air intake openings on diffuser for clogging and, if necessary, clean with water from outside through the hatches.

→ Check spray nozzles for function and clean if necessary.

→ Check cell interiors for deposits above suspension level and, if necessary, clean with water from outside through the hatches.

→ Check flushing interval and period of cleaning unit(s).

- ❑ Flushing interval: 2...6 h
- ❑ Flushing period: 60 s

→ Check nozzle position of cleaning unit(s).

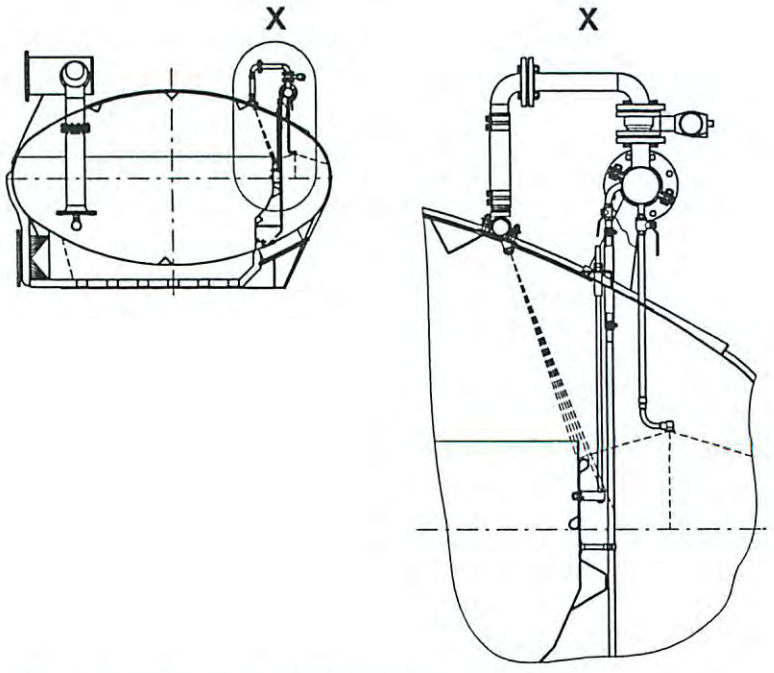


Fig. 6-1 Nozzle position of primary cells

Cleaning

→ Operate cells with water until stock suspension has completely been replaced with water.

→ Empty cells.

Danger of slipping!

Provide sufficient slipping protection on the curved tank floor and wear suitable safety clothing as protection against chemicals.

→ Remove dirt and deposits from cell interiors and foam collecting pipe with high-pressure cleaner from outside through the hatches.

→ Check spray nozzles and cleaning nozzles for function, and clean or replace as necessary.

→ To permit spray nozzle replacement and/or cleaning, unscrew nozzle with shower right below the ball valve and pull them out (see detail X in Fig. 6-1, Nozzle position of primary cells).

→ To permit replacement and/or cleaning of the cleaning nozzles for the retaining-weir overflow edge, unscrew the two supporting plates to remove the water shower from outside.

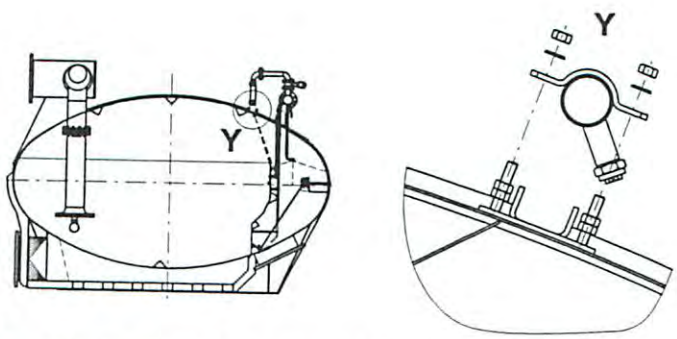


Fig. 6-2 Removal of cleaning nozzle

→ Check air intake openings on diffuser for clogging.

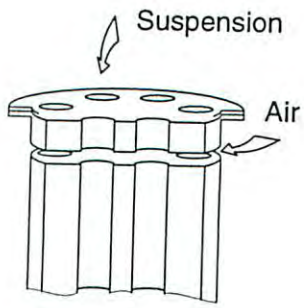


Fig. 6-3 Diffuser

6.3 Preparations for initial start-up

Preadjusting the retaining weirs

→ Set retaining weirs to same level using the adjusting gear (central position)

→ Fill cells with water up to the top edge of the pan plate.

→ Measure and adjust retaining weir edges parallel to the water level.

Readjusting the retaining weirs

→ At nominal throughput, readjust the retaining weirs so that the overflow rates of the individual cells show a falling downstream tendency within the ranges specified above.

→ Adjust the nozzles of the cleaning units (see Fig. 6-1, Nozzle position of primary cells on page 6-2 and Fig. 6-2, Nozzle position of secondary cell(s) on page 6-3).

6.4 Start-up

Preconditions

✓ The preparations for initial start-up must have been completed (⇨ Sec. 6.3, Preparations for initial start-up on page 6-4).

Start-up

See the logic diagram for the START/STOP procedures in the flotation plant.

→ Fill primary and secondary cells with water up to approx. 10 cm below the weir overflow edge.

→ Fill approx. 50% of foam collecting tank or cyclone tank, if any, with water.

→ Successively switch on secondary line pumps starting with the accept pump and the deaeration cyclone, if any.

→ Switch on shower water supply for foam breaking.

↯ All ball cocks ahead of the spray nozzles are open.

→ Successively switch on primary pumps in opposite stock flow direction starting with the last cell.

→ Open suspension supply to the mixing cell of the primary stage.

→ Set stock consistency and chemicals formulation.

→ Adjust the throughput of the primary cells by adapting the flow rate control (FIC) ahead of the inlet and the level control (LIC) for the accepts outlet as a function of the foam pan level.

→ Adjust the throughput of the secondary cell(s) by adapting the PI/PIC ahead of the inlet and the LIC for the accepts outlet as a function of the foam pan level.

6.5 Shutdown

See the logic diagram for the START/STOP procedures in the flotation plant.

→ Close stock supply and dilution water supply to system.

→ Close shower water for foam breaking.

→ Switch off primary pumps in direction of stock flow.

→ Shut down deaeration cyclone, if any.

→ Switch off secondary pump(s) in direction of stock flow.

During short-term shutdowns, the machine is not emptied but remains filled with suspension.

6.6 Prolonged shutdown

Prior to prolonged shutdown, the machine must be thoroughly cleaned.

Cleaning

→ Close stock supply and dilution water supply to system.

→ Operate cells with water until the stock suspension has completely been replaced with water.

→ Close shower water for foam breaking.

→ Switch off primary pumps in direction of stock flow.

→ Shut down deaeration cyclone, if any.

→ Switch off secondary pump(s) in direction of stock flow.

→ Empty the system.

→ Remove dirt and deposits from cell interiors, diffusers and foam collecting pipe from outside through the hatches.

→ Clean foam collecting tank or cyclone tank, if any, from dirt and deposits.

Make sure that no large-surface dirt particles are flushed into the stock pipes.
Danger of clogging on diffusers during restart!

7 Troubleshooting

Fault	Possible cause	Fault clearance	Remarks
Efficiency drop	Insufficient collecting effect of deinking additives	→ Check quantity added. → Avoid mutual reactions with other chemicals in water circuit.	
	Insufficient foam overflow	→ Correct foam level setpoint.	
	Clogged air intake opening on diffuser	→ Clean with water jet from outside through the hatches.	
	Suspension openings on the diffuser clogged due to contaminants	→ Shut system down. → Empty the corresponding line. → Clean diffusers.	⇨ Sec. 6.5, Shutdown on page 6-6
Insufficient foam overflow	Suspension level too low	→ Correct foam level setpoint.	
	Insufficient cleaning of retaining weir edge	→ Readjust cleaning unit. → Clean fan-jet nozzles. → Check flushing interval and period and adapt as necessary.	⇨ Section "Checks during operation" on page 6-2
Excessive foam overflow (high fibre loss)	Suspension level too high	→ Correct foam level setpoint.	
	Fatty acid not completely saponified	→ Check saponification station.	⇨ Operating instructions "saponification station"
	Sodium soap not entirely converted into calcium soap	→ Increase water hardness.	Desired water hardness: > 5° dH

Tab. 7-1 Troubleshooting

Fault	Possible cause	Fault clearance	Remarks
Insufficient foaming	Excessive soap addition	→ Check soap addition and/or saponification station.	⇨ Check soap consignment ⇨ Operating instructions "Saponification Station"
	Excessive stock consistency	→ Measure and readjust stock consistency.	⇨ Observe maximum cell production capacity.
	Furnish composition	→ Check waste paper composition.	
	Clogged air intake opening on diffuser	→ Clean with water jet from outside through the hatches.	Section "Checks during operation" on page 6-2
	Mutual reactions in the suspension due to different chemicals	→ Check deinking chemicals, e.g. remove defoamer	⇨ Examine manufacturer's specifications.
Deposits on the retaining weir edge in primary stage	Insufficient cleaning of retaining weir edge	→ Clean retaining weir edge with water jet from outside through the hatches.	⇨ Section "Checks during operation" on page 6-2
Deposits on the retaining weir edge in secondary stage	Insufficient cleaning of retaining weir edge	→ Readjust cleaning unit. → Clean fan-jet nozzles. → Check flushing interval and period and adapt as necessary	⇨ Section "Checks during operation" on page 6-2

Tab. 7-1 Troubleshooting (Cont'd)

8 Spare Parts

We recommend storing spare parts in good time because long delivery times cannot always be avoided.

Use the preprinted order form for spare parts
(Sec. 9, Appendix on page 9-1).

The recommended quantities correspond to the number of parts to be stored for each line.

Spare parts for pumps see separate operating instructions.

8.1 Replacement parts

Pos. No.	Qty.	Designation	Dimensions	Part No.
Fig. 4-2/**5** and Fig. 4-3/**6**	4	Ball cock for shower unit	3/4" NPT	727068
Fig. 4-2/**5** and Fig. 4-3/**6**	4	Hollow-cone nozzle for shower unit	3/8" NPT	201690
Fig. 4-2/**4** and Fig. 4-3/**5**	3	Fan-jet nozzle for cleaning unit	12.4 GPM 3/4" NPT Base	201711 201710
Fig. 4-2/**4** and Fig. 4-3/**5**	3	Union nut for cleaning unit		201712

Tab. 8-1 Replacement parts

9 Appendix

The appendix includes:

- 3 Order Forms for Spare Parts

Voith Sulzer Paper Technology
After Market Business Unit
25 Constitution Dr.
Taunton, MA 02780-1071
Telephone: (508) 823-8100
Fax No.: (508) 823-8188
Hotline (After hours) (800) 443-0003

Order Form for Spare Parts

Customer: _____

Address: _____

_____

Sender

Prepared by: _____

Dept. / Tel.: _____

Order No.: _____

Job No.: _____

Machine designation: _____

Type / Size _____

Serial No.: _____

Data from operating instructions

Part No.	Quantity	Designation

Requested delivery date: _____

Requested shipment: _____

Date, signature: _____

Voith Sulzer Paper Technology
After Market Business Unit
25 Constitution Dr.
Taunton, MA 02780-1071
Telephone: (508) 823-8100
Fax No.: (508) 823-8188
Hotline (After hours) (800) 443-0003

Order Form for Spare Parts

Customer: _____

Address: _____

_____

Sender

Prepared by: _____

Dept. / Tel.: _____

Order No.: _____

Job No.: _____

Machine designation: _____

Type / Size _____

Serial No.: _____

Data from operating instructions

Part No.	Quantity	Designation

Requested delivery date: _____

Requested shipment: _____

Date, signature: _____

Voith Sulzer Paper Technology
After Market Business Unit
25 Constitution Dr.
Taunton, MA 02780-1071
Telephone: (508) 823-8100
Fax No.: (508) 823-8188
Hotline (After hours) (800) 443-0003

Order Form for Spare Parts

Customer: _____

Address: _____

_____

Sender

Prepared by: _____

Dept. / Tel.: _____

Order No.: _____

Job No.: _____

Machine designation: _____

Type / Size _____

Serial No.: _____

Data from operating instructions

Part No.	Quantity	Designation

Requested delivery date: _____

Requested shipment: _____

Date, signature: _____

FLOTATION CELL
Certification Sheet

VOITH SULZER
PAPER TECHNOLOGY
2620 E. Glendale Ave.
Appleton, WI 54915
Telephone (920) 731-7724
Telefax (920) 731-0240

IDENTIFICATION

CUSTOMER Bowater Pulp & Paper
ADDRESS (ORDER) Thunder Bay, Ontario
ADDRESS (INSTALL) same
CUST. ORDER NO. 777008
CUST. EQUIP. NO. _____
VOITH SULZER JOB NO. 47483
ORDER DATE 3/16/99
CUST. DESIGNATION _____
SERIAL NO. (S)* 21817
CERTIFIED BY Michael Wiedemeier
MICHAEL WIEDEMEIER

CONTROLS SERIAL NO.* _____
MIXING CELL(S): SIZE: 2.0M
NO. RH 1 NO. LH _____ TOTAL NO. 1
CAPACITY: _____
PRIMARY CELL(S): SIZE 4.0M
NO. RH 6 NO. LH _____ TOTAL NO. 6
CAPACITY: _____
SECONDARY CELL(S): SIZE 3.0M
NO. RH 2 NO. LH _____ TOTAL NO. 2
CAPACITY: _____
TITLE PRODUCT ENGINEER

APPLICATION

INSTALLATION DWG. D54-130006 TYPE OF STOCK _____
THROUGHPUT 283TPD AT 1.18% BD TEMP _____°F PH _____
WATER HARDNESS _____ WATER IMPURITIES _____
ACCEPTS DISCH TO _____ REJECTS DISCH TO _____
DEFOAMING WHITE WATER 240GPM
_____ % MAX _____ PSI

MATL

MIXING CELL 316L PRIMARY CELL 316L
SECONDARY CELL 316L PIPING 316L

PUMPS

PRIMARY: PUMPS BY Customer NO. _____ MFG _____ MODEL _____ GPM _____
SECONDARY: PUMPS BY Customer NO. _____ MFG _____ MODEL _____ GPM _____
RECIRC: PUMPS BY Customer NO. _____ MFG _____ MODEL _____ GPM _____

MOTOR

PRIMARY: MOTORS BY Customer NO. _____ HP _____ RPM _____ VOLTS _____
PH _____ HZ _____ FRAME _____ SHAFT DIA. _____
SECONDARY: MOTORS BY Customer NO. _____ HP _____ RPM _____ VOLTS _____
PH _____ HZ _____ FRAME _____ SHAFT DIA. _____
RECIRC: MOTORS BY Customer NO. _____ HP _____ RPM _____ VOLTS _____
PH _____ HZ _____ FRAME _____ SHAFT DIA. _____

REMARKS

*ALWAYS SPECIFY UNIT SERIAL NO. WHEN ORDERING SPARE PARTS.