Voith Paper

VOITH

Operating Instructions

Screw Press
SP70-SL

Revision Date: 02/14

Customer: Buckeye Florida

Location: Perry, FL

Serial No.: 034272

Contract Specification No.: 176392

Original Operating Instructions
Keep for future use!

Revision sheet

Change date	Pages modified	Person responsible	Replacement pages inserted by (initial)
2014-02-13	Titlepage, Revision sheet, 9-2, 10-5, 10-9, 10-13, 10-19, 10-21	MEW / DMW	

Introduction

This operating manual is intended for operating, maintenance, and supervisory personnel.

This operating manual also describes components, equipment, and ancillary units that are not or included in the scope of supply or only partially included.

The scope of supply always refers to the delivery specification according to Chapter 3, “Technical Data”.

Before doing any work with the machine, operating personnel must have read and understood this operating manual. They must comply with its requirements. We wish to emphasize that we do not accept any liability for damage, downtime, or both because of non-compliance with the operating manual.

We reserve the right to make any technical changes to representations and data given in this operating manual that may become necessary to improve the machine/plant.

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Manufacturer’s name and address

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2200 N. Roemer Rd.
Appleton, WI 54912-2337

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Fax: (920) 731-2848

CERTIFIED

SIGNED: _____

DATE: _____

VOITH Paper Inc.

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1 Preliminary Remarks

These operating instructions are meant to familiarize the user with the machine. They contain a description of the machine‘s design and principle of its operation. Following these operating instructions ensures safe and efficient operation 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, **may the product** or nearly equipment **be damaged**.

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 listing.

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

→ Means “task to be performed”

❑ Means “monitoring task”.

✓ Means “task completed”.

↳ Means “result of a completed task”.

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1.2 Numbering of pages, figures and tables

Pages

The pages are numbered consecutively throughout each individual section.

2 - 1
- 1. page
- section 2

Figures

The figures are numbered consecutively throughout each individual section.

Fig. 4 - 1
- 1. figure
- section 4

Cross-references to figures

Fig. 4 - 1 / 3
- 3. Position
- figure 1
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Tables

The tables are numbered consecutively throughout each individual section.

Tab. 3 - 1
- 1. table
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Cross-references to tables

Tab. 3 - 1 / 3
- 3. column
- table 1
- section 3

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1.3 Abbreviations

Fig.	Figure
Cont'd	Continued
Sec.	Section
Tab.	Table

1.4 Dimensions

Unless specified otherwise, all dimensions are in mm.

The pipe threads are specified in accordance with DIN EN ISO228.

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2 Safety

2.1 General safety instructions

For operation of the machine, the local safety and accident prevention rules and regulations are binding and must be observed.

State of the art

This Voith Paper stock preparation machine has been built in accordance with the latest technical 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 installed, modified or converted improperly and/or

– the safety instructions are not observed.

Therefore, every person involved in installation, operation, inspection, maintenance, service and repair of 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 in the operating manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine,

– if all guards and emergency stop components are fitted and operational.

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

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2.2 Designated use

Use

The screw press type "SP" is used for dewatering of paper stock suspensions with stock consistency. The outlet consistency depends on the feed consistency, the flow ratio, the used screens and the press screw. Keep to the operating specifications for reaching an optimal operating result (⇨ Sec. 3.3, Operating specifications on page 3-2).

Liability for non-designated use

Using the machine for other purposes than those mentioned above is considered contrary to its designated use. Voith Paper Fiber & Environmental Solutions cannot be held liable for any damage resulting from such use. The risk of such misuse lies entirely with the user.

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2.3 Organizational measures

Availability of operating instructions

The operating instructions must be available wherever and whenever the machine is in operation or being installed or maintained.

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

Provide the personnel with additional instructions such as reporting and supervision requirements to take account of special organizational features, such as job organization, working procedures and personnel entrusted with the work.

Checks

Regularly check that the personnel carry out the work in compliance with the operating instructions and that they pay attention to risks and safety factors.

In the case of installation of the machine by the customer

Check if the machine is installed properly. Produce a written document certifying that all information given in the installation and operating instructions has been observed and send it to Voith Paper Fiber & Environmental Solutions.

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Personal protective equipment

Use personal protective equipment wherever and whenever required.

Safety instructions and warning signs

Observe all safety instructions and warning signs attached to the machine. Make sure these signs are legible and replace damaged or illegible signs immediately.

Modifications or changes in operating conditions

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

Rebuilds or modifications to the machine

Never make any unauthorized rebuilds and modifications which could impair safety.

Replacing damaged parts

Machine parts that are not in perfect condition 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 Paper Fiber & Environmental Solutions! Unauthorized parts provide no guarantee that they have been designed and manufactured according to the application. **Danger of accidents!**

Checks and maintenance

Comply with the intervals specified in the operating instructions for routine checks and maintenance work.

Working with hazardous substances

Observe the data safety sheets and the safety instructions of the manufacturer or the supplier!

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

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Load suspension device

Make sure that the load suspension device is properly installed and its capacity 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).
Do not stay or work under suspended loads!

Safety devices

Guards must be removed only after the machine has been switched off and locked to prevent unintentional start-up.

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

Below the inspection opening there is yet another protective grid.

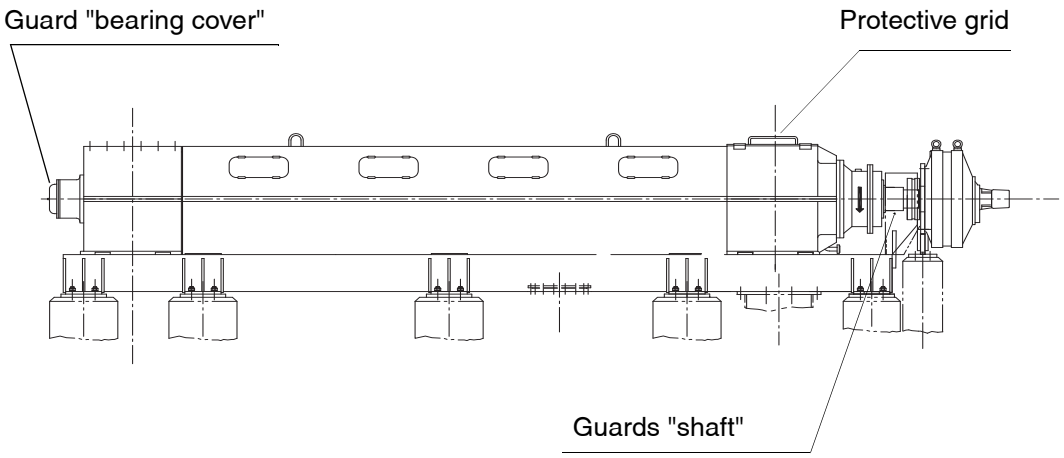

Fig. 2-1 Guards on the machine

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2.4 Selection and qualification of personnel

Qualification of personnel

Any work done on the machine must be performed by trained and instructed personnel authorized by the owner.

Responsibilities

Clearly establish and observe the responsibilities involved in the operation of the machine. Any unclear responsibilities could 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 require 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.

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2.6 Residual hazards

Risk of being drawn in, crushing and severing due to:

– moving parts left exposed by removing covers or guards. , during normal operation and/or sampling events (⇨ Fig. 2-1, Guards on the machine).

→ operating, exposed shafts, cylinders, drums and belts.

→ automatically operated discharge valve traps.

Burning or scalding hazards due to:

– opening or leaving open inspection and/or sampling openings on equipment operating at high temperatures (above 40°C).

– touching high-temperature system components.
Since the screw is heated by steam, the personnel is exposed to surface temperatures that correspond to the steam pressure.

Wait until machine has cooled down before starting any maintenance and/or repair work.

2.7 Protective equipotential bonding

The machine must be connected to a grounding equipment conductor as required by the type of grounding connection (TN or IT system) of each system. Equipment that can be touched at the same time must be connected to the same grounding system.

The location of the connection is shown on the foundation plan (⇨ Sec. 11, Appendix on page 11-1).

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3 Technical Specifications

3.1 Machine specifications

Manuf. no.	034272
Year of construction	2012

3.2 Weights

Press, empty	kg	11,300
Press, filled	kg	13,300
Press screw	kg	2,430
Press screw with inlet bearing, outlet bearing and cylinder	kg	3,240
Upper section outlet chamber	kg	700
Hydraulic drive	kg	Sec. 12, Supplier Documentation on page 12-1

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3.3 Operating specifications

Max. adm. operating overpressure	bar	1,0
Max. adm. operating temperature	°C	70
Speed press screw	rpm	34
Solids flow ratio (inlet)	t/d	170
Inlet stock consistency	%	3%
Outlet consistency	%	25
Ash content (inlet) about	%	13 - 15
Inlet temperature	°C	45 - 50
pH range	pH	6.8 - 7.1
Freeness	CSF	700 mc
Seal water flow	l/min	3 ... 5
Seal water quality		Fresh water or process water with maximum solid matter content of 30 mg/l and free of particles > 75 µm
Flushing water	sec per h	20
Flushing water quality	mg/l	< 200, fiber-free
Compressed air supply (counterpressure cylinder)	bar	6

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3.4 Drive specifications

Hydraulic motor specifications

Power unit model	—	PAC 402-355-300 -21
Motor model	—	CB 400-280
Motor rating	hp	300
Motor speed	rpm	0 - 34
Mains frequency	Hz	60
Voltage	V	460

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4 Description

4.1 Use

The screw press type "SP" is used for dewatering of paper stock suspensions with stock consistency. The outlet consistency depends on the feed consistency, the flow ratio, the used screens and the press screw. Keep to the operating specifications for reaching an optimal operating result (⇨ Sec. 3.3, Operating specifications on page 3-2).

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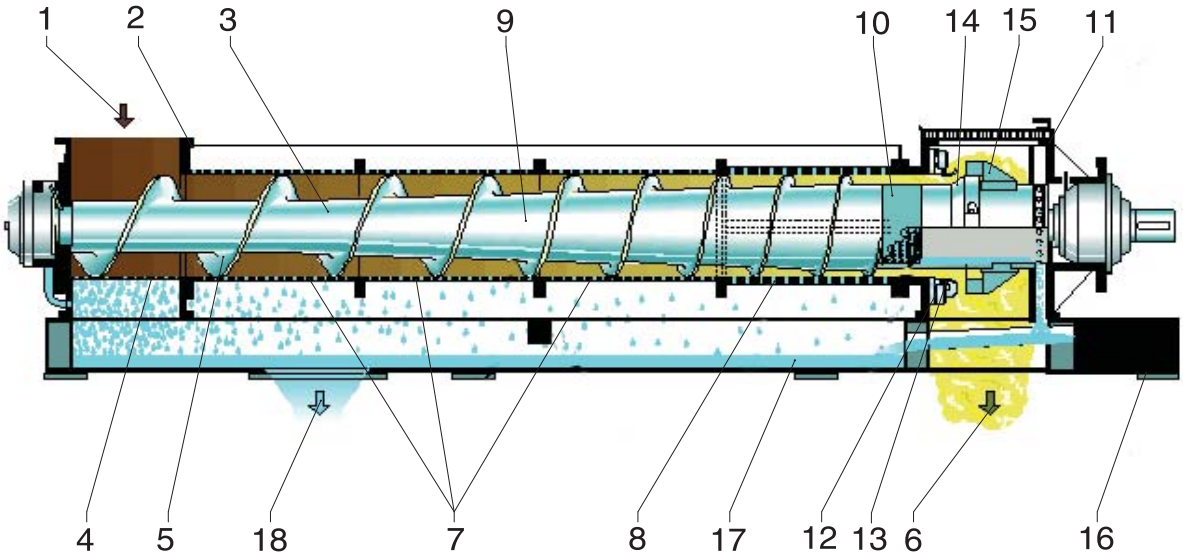
4.2 Principle of operation



1	Inlet	**7**	Screen unit	**13**	Counterpressure flap
2	Inlet housing	**8**	Screen unit (divided)	**14**	Cone
3	Press screw	**9**	Base body	**15**	Shredding teeth
4	Screen unit	**10**	Screen unit	**16**	Support frame
5	Spiral	**11**	Outlet housing	**17**	Tray
6	Outlet	**12**	Counterpressure cylinder and pistons	**18**	Filtrate discharge

Fig. 4-1 Principle of operation

The screw press type "SP" is a screw conveyer which dewaters the paper stock suspension during transport. The paper stock suspension is fed into the inlet housing (Fig. 4-1/**2**) of the screw press via the inlet (Fig. 4-1/**1**). There it flows around the axially positioned press screw (Fig. 4-1/**3**). The first screen unit (Fig. 4-1/**4**) is placed in the lower area of the inlet housing. Through the holes in this screen unit the water contained in the paper stock suspension can drain off and the fiber stock is retained by the screen. The press screw turns slowly during operation and thus the spiral (Fig. 4-1/**5**) on the press screw as well. Due to the rotation of the spiral, the paper stock suspension is pushed (conveyed) axially in the direction of the outlet (Fig. 4-1/**6**). On the way to the outlet the stock passes several cylindrical screen units (Fig. 4-1/**7** and **8**). The paper stock suspension is further dewatered over the holes in the screen unit.

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The base body (Fig. 4-1/**9**) of the press screw is conical. Therefore there is increasingly less place for the paper stock suspension between the base body of the press screw and the screen units on the way to the outlet. The area in the last screen unit (Fig. 4-1/**8**) (divided screen unit) is the compression section. Here the paper stock suspension is especially strongly compressed. Hence the dewatering effect is increased strongly.

There is an additional screen unit (Fig. 4-1/**10**) in the last area of the press screw in the press screw body. The liquid that had gathered in the base body of the press screw is drained off via this screen unit.

A highly consistent paper stock cake is formed around the press screw up to the outlet housing (Fig. 4-1/**11**). The counterpressure flaps (Fig. 4-1/**13**) on the counterpressure system are pressed over the pistons (Fig. 4-1/**12**) towards the press screw. This increases the flow resistance and as a consequence of this the dry content of this paper stock cake. With the aid of the cone (Fig. 4-1/**14**) and shredding teeth (Fig. 4-1/**15**) this cake is further broken up. Finally, the highly dewatered pulp falls out of the screw press via the outlet (Fig. 4-1/**6**).

There is a support frame (Fig. 4-1/**16**) in the lower area of the screw press. On this support frame there is a tray (Fig. 4-1/**17**) where the filtrate is collected. The filtrate flows via the filtrate discharge (Fig. 4-1/**18**) out of the machine.

For an optimal operation it is important that the paper stock suspension has a as constant stock consistency and pressure as possible in the inlet (Fig. 4-1/**1**) of the screw press. The spiral must have as sharp edges as possible at the outer area as well (⇨ Sec. 8.4, Checking the outer edges of the press screw spiral for wear on page 8-6).

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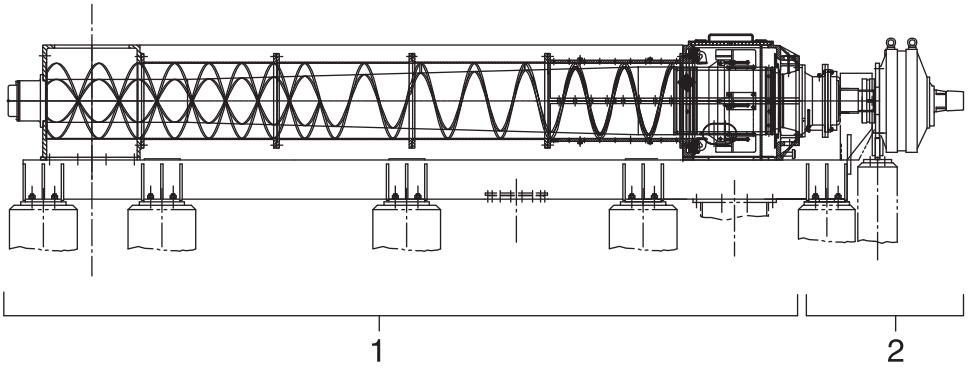
4.3 Design



1 Screw press base unit

2 Drive

Fig. 4-2 Design

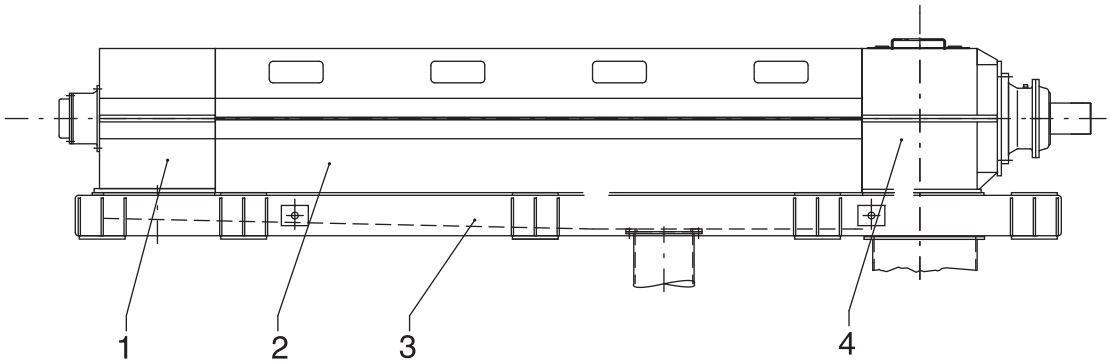
General

The design of the screw press is described below. The machine consists of the main subassemblies:

– Base unit (Sec. , Base unit on page 4-4)

– Drive (Sec. , Drive on page 4-6)

Base unit



1 Inlet housing

2 Cover

3 Support frame with base tray

4 Outlet housing

— Several screen units (not visible)
(⇨ Fig. 4-4, Screen units on page 4-5)

— Press screw (not visible)
(⇨ Fig. 4-5, Press screw on page 4-5)

Fig. 4-3 Base unit

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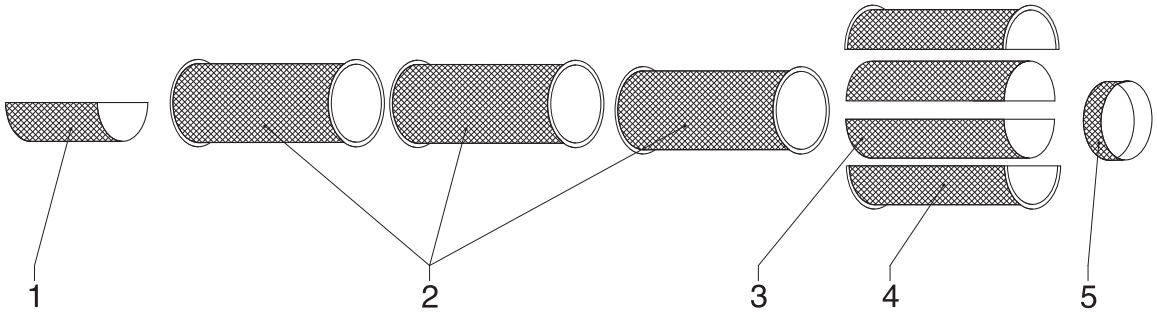
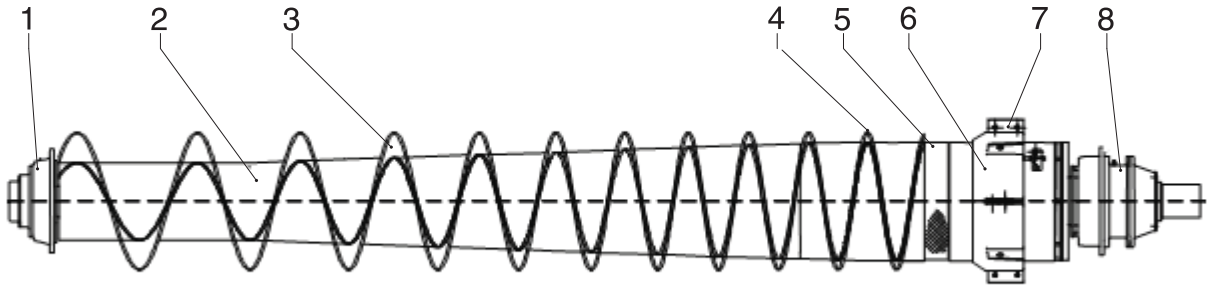
Screen units



1 Screen halves welded into inlet housing
2 Depending on machine two or three screen baskets
3 Two screen halves welded into divided screen unit (**4**)
4 Divided screen unit
5 Screen unit welded into the press screw

Fig. 4-4 Screen units

Press screw



1 Inlet bearing
2 Press screw base body
3 Welded-on spiral
4 Screwed-on wear segments
5 Screen unit
6 Counterpressure cone
7 Shredding teeth
8 Outlet bearing

Fig. 4-5 Press screw

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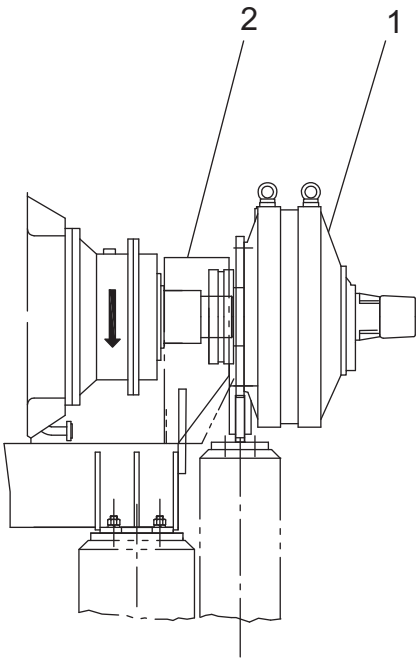
Drive



1 Rexroth hydraulic drive **2** Guard

Fig. 4-6 Drive

In most cases, the motors are provided by the customer. In this case, no documentation is provided by VOITH.

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5 Assembly

5.1 Unpacking the machine

→ Loosen the machine fastening devices.

→ Check delivery against delivery note for completeness.

→ Check delivery for transport damage.

→ Report any transport damage immediately to Voith Paper Fiber & Environmental Solutions.

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5.2 Transporting the machine

Transport weights of machine (⇨ Sec. 3.2, Weights on page 3-1.

Ensure that the ropes and the load suspension devices are suitable for the empty weight of the machine.

Only use undamaged ropes and load suspension devices.

Attach the ropes only at the intended, marked positions.

The transport of the machine is divided in three main groups:

– Transport of the screw press/base unit
(⇨ Sec. , Transporting the screw press/base unit on page 5-3)
– Transport of drive
(⇨ Sec. 12, Supplier Documentation on page 12-1)
– Transport of motor
(⇨ Sec. 12, Supplier Documentation on page 12-1)
– Transport of accessories
(no specific transport information necessary)

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Transporting the screw press/base unit

NOTICE

Disassemble all **cover plates** and transport separately to the place of installation of the machine.

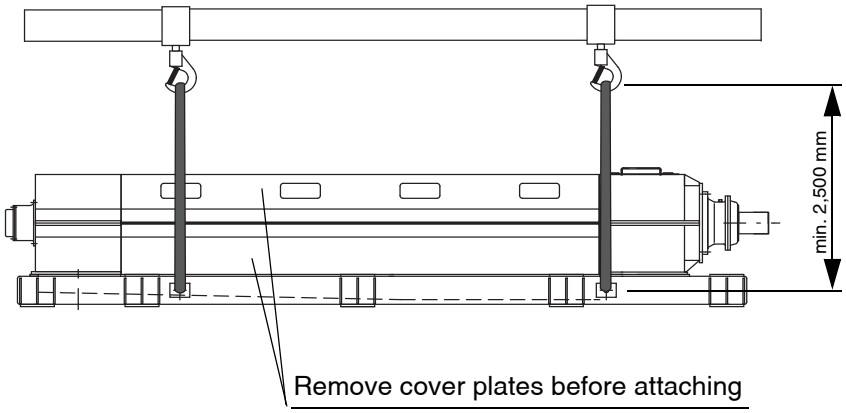

Fig. 5-1 Attaching screw press/base unit correctly

WARNING

Crushing hazard!

The lifted components might fall down.

Do **not** perform any work below the lifted components.

Transport the cover plates separately to the specified location of the screw press.

5.3 Disposing of the packing materials

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

→ Recycle packing materials.

❑ Observe the applicable regulations.

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5.4 Foundations

General

The foundation is to be produced by the customer.

The foundation plan contains all dimensions necessary to install the chemical anchors (⇨ Sec. 11, Appendix on page 11-1).

NOTICE

VOITH is not responsible for the design of supports, foundations, structures and other equipment which are not part of the VOITH scope of delivery.

Preconditions

- ✓ Location is known and accessible.
- ✓ The load capacity of the substructure is sufficient.
- ✓ The reinforcement diagram is available.

Respect the given loads (⇨ table in foundation plan) in the foundation plan (⇨ Sec. 11, Appendix on page 11-1).

Preparations

→ Set up formwork as shown in the foundation plan.

→ Make and lay reinforcements.

→ Fill foundation recesses with filling materials.

Concreting

→ Mix and pour concrete and allow to set.

Finishing work

→ Remove formwork.

→ Remove filling materials.

→ Clean recesses.

NOTICE

Do not use thinners, otherwise the grout will not harden.

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5.5 Setting up and aligning

General

See also Sec. 8.5, Disassembling the screw press on page 8-7 and the component drawings in Sec. 10, Component Parts List on page 10-1.

It is important that there is no contact between the screw and the screen. Therefore it is important to carefully align the screw press in both directions on the foundation.

Use the 10 control points (machine surfaces) located on top of the frame, directly above each foot, as fixed point for aligning.

Installing the machine

Preconditions

- ✓ See foundation plan in Sec. 11, Appendix on page 11-1 for the required space, the height of the walkways, the position of the respective local panel, etc.
- ✓ Platforms or walkways are to be provided at all four sides of the foundation bottom.
- ✓ The foundation is ready.
- ✓ The crane or the special hitching equipment with sufficient load capacity is available above the press foundation.

Assembly

Crushing hazard!

The lifted machine may fall down.

Do **not** perform any work below the lifted machine.

→ Attach the machine (⇨ Fig. 5-1, Attaching screw press/base unit correctly on page 5-3) and lift.

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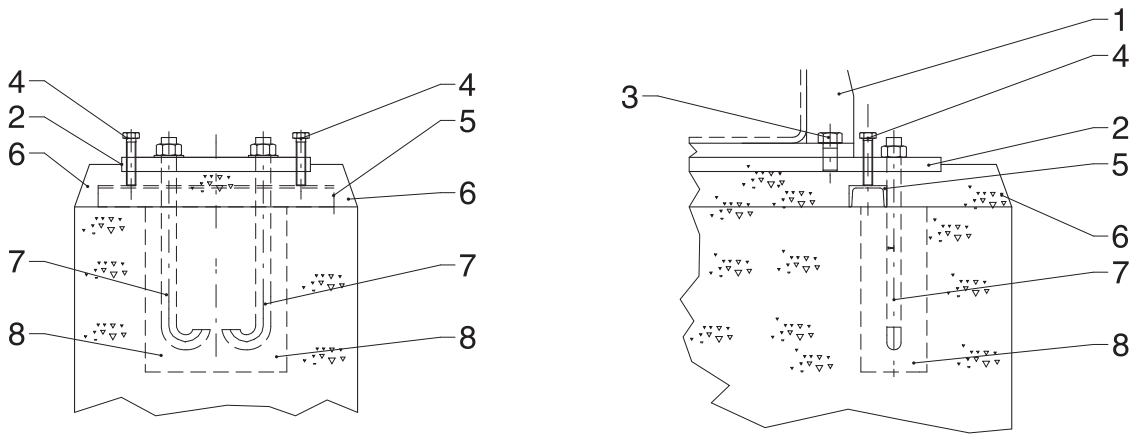

1 Support frame
2 Foundation plate
3 Hex. bolt
4 Adjusting bolt
5 Support for adjusting bolt
6 Grout
7 Stone anchor
8 Grout

Fig. 5-2 Installing the machine

→ Position stone anchor (Fig. 5-2/**7**) accordingly in the foundation recesses.

→ Attach the machine (⇨ Fig. 5-1, Attaching screw press/base unit correctly on page 5-3) and lift.

→ Carefully lower machine over foundation (Fig. 5-2/**2**).

→ Fasten stone anchors (Fig. 5-2/**7**) to the foundation plates (Fig. 5-2/**2**) with hexagon bolts.

→ Screw greased adjusting bolts (Fig. 5-2/**4**) into the foundation plates (Fig. 5-2/**2**).

→ Position the support for the adjusting bolt (Fig. 5-2/**5**).

→ Position the machine according to the foundation plan.

→ Lower machine (Fig. 5-2/**1**) onto the support for the adjusting bolt.

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Aligning the machine

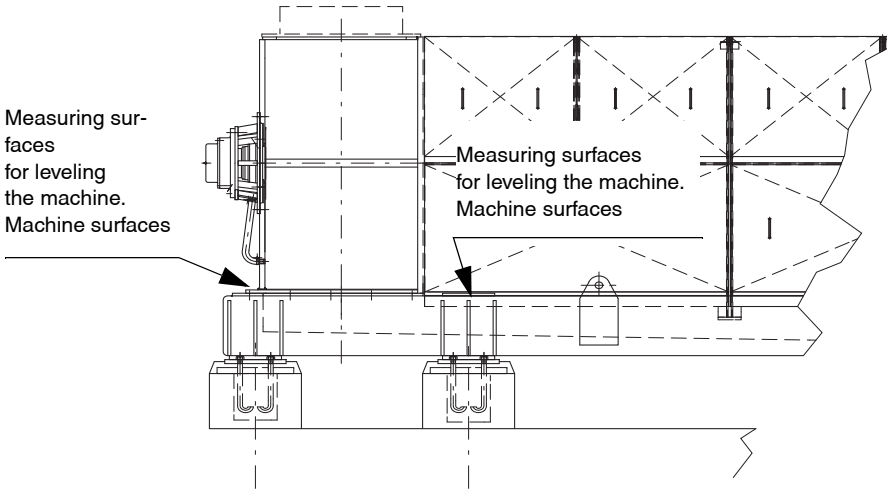

Fig. 5-3 Aligning the machine

- ❑ Check the alignment of the machine.
- → Determine which of the control points (⇨Fig. 5-3, Aligning the machine) is the highest. Use this as the starting point (fixed point).
- → Perform the height adjustment so that the deviation from the point of origin to the other control points is max. 0.2 mm, but preferably between 0.1 and 0.15 mm.
- → Place grout (Fig. 5-2/**8**) and allow to set.
- → Loosen the hexagon nuts of the stone anchors (Fig. 5-2/**7**).
- ❑ Check the alignment of the machine once more.
- → Align machine exactly with adjusting bolts (Fig. 5-2/**4**) if necessary.
- → Slightly tighten hexagon nuts of the stone anchors (Fig. 5-2/**7**).
- → Position formwork for grout (Fig. 5-2/**6**).
- → Mix and pour grout (Fig. 5-2/**6**) and allow to set.
- → Remove formwork.
- → Tighten hexagon nuts of the stone anchors (Fig. 5-2/**7**).

NOTICE

If the leveling is not carried out by a Voith representative, the customer/contractor must fill in a leveling report to be submitted to and accepted by Voith. Failure to do so will result in a loss of the mechanical and process guarantees.

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5.6 Screen adjustment

Preconditions

✓ The press stands on the foundation.

✓ Machine is aligned.

Screen adjustment

→ Turn the screw shaft manually (at least one whole turn, to make sure that there is no contact between screw and screen).

NOTICE

If there is a contact between screw and screen, the following procedure should be followed:

→ Rotate the screw slowly until there is contact between the screw and the screen.

→ Loosen basket fasteners and move baskets until there is no contact. Tighten fasteners.

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- ❑ It is important that all screws are tightened with the correct tightening torque (see ⇨Tab. 8-4, Recommended tightening torques for bolts (Nm) on page 8-8 as well).
- ❑ If the press screw can be turned several revolutions by hand, the adjustment is done.

If the alignment of the press causes unforeseen problems, please contact the supplier.

If the leveling is not carried out by a Voith representative, the customer/contractor must fill in a leveling report to be submitted to and accepted by Voith. Failure to do so will result in a loss of the mechanical and process guarantees.

5.7 Setting up and mounting the drive unit

Install the drive unit in accordance with the assembly and operating instructions of the gear and motor supplier and attach these to each other (⇨ Sec. 12, Supplier Documentation on page 12-1).

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5.8 Connecting

The foundation plan (⇨ Sec. 11, Appendix on page 11-1) contains all necessary connecting dimensions of the screw press.

Also observe the control and automation documentation for the connections. These describe the connections of the measuring and control units and their integration in a PLC or a PCS.

Preconditions

✓ The press is set up and aligned (⇨ Sec. 5.5, Setting up and aligning on page 5-5).

✓ The screen units of the screw press are adjusted (⇨ Sec. 5.6, Screen adjustment on page 5-8).

Inlet housing

The inlet housing has to be freely movable in the longitudinal direction on the frame to facilitate a thermal extension of the press.

Tighten the fastening screws well at the frame and then loosen them carefully until they are almost unfastened. Carry out a visual inspection of the screws after 2-3 days of operation.
Consider the movability as well when planning for the inlet and seal water pipeworks.

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Pipework

Seal water connection

Seal water has to be available for the bearing at the inlet side.
(⇨ Fig. 5-4, Seal water connection for inlet side bearings).

NOTICE

A flow meter should be installed to check the seal water quantity. The measuring rang should be 0 to 15 l/min.

During initial commissioning of the screw press, there is a reduced water flow on the seals of the bearing on the inlet side. This increases after a certain time.

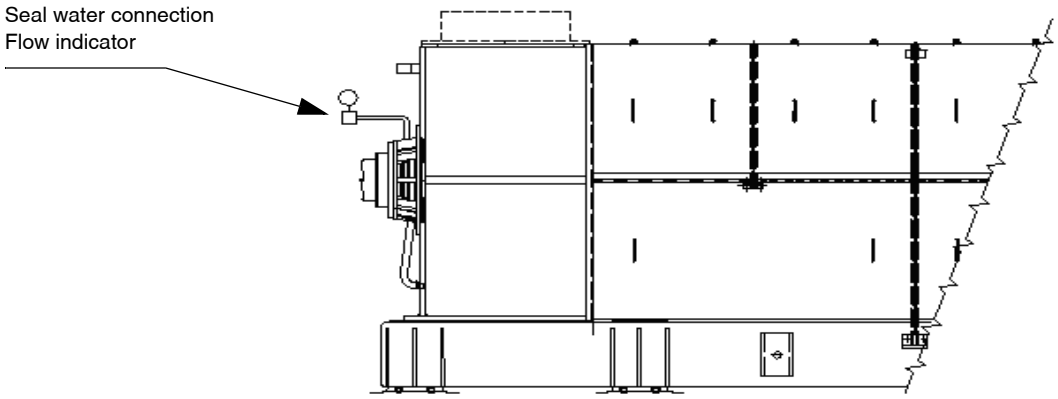

Fig. 5-4 Seal water connection for inlet side bearings

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Flushing water connections

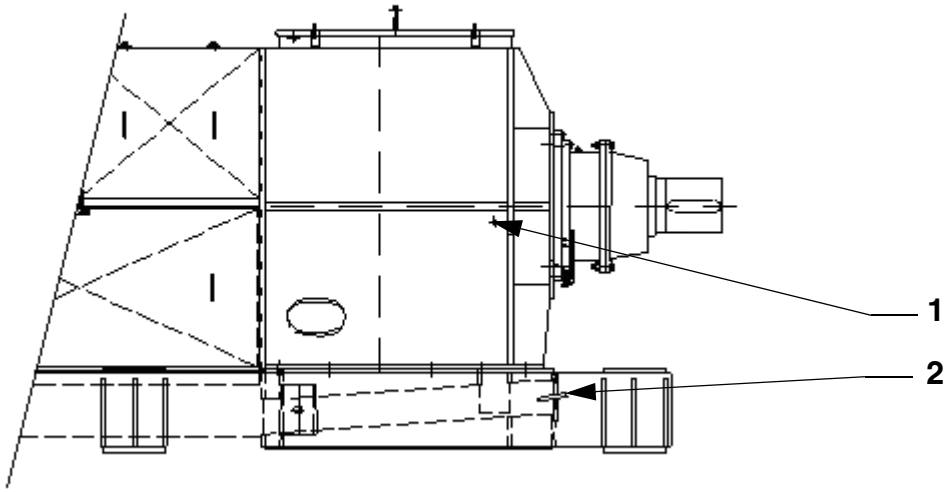
There is one water connection (⇨ Fig. 5-5, Flushing water connections) each at the outlet side.

– For flushing the filtrate ring chamber in the outlet housing (Fig. 5-5/**1**)

– For flushing the filtrate outlet pipework for the filtrate collecting tray (Fig. 5-5/**2**).

The shut-off elements of the lines can be connected to a PLC or a PCS system to flush the channels at regular intervals.

Flushing of the filtrate ring chamber in the outlet housing and the filtrate drain line to the filtrate collecting tray should be carried out at regular intervals. The flushing interval depends on several operating factors: Permeability of the screen units, used stock, volume and solid stock flow as etc. Typical is 20 s for each operating hour. However, these values have to be adapted to the relevant application.



1 Double-sided water connection for flushing of the filtrate ring chamber

2 Water connection for flushing the filtrate outlet pipework for the filtrate collecting tray

Fig. 5-5 Flushing water connections

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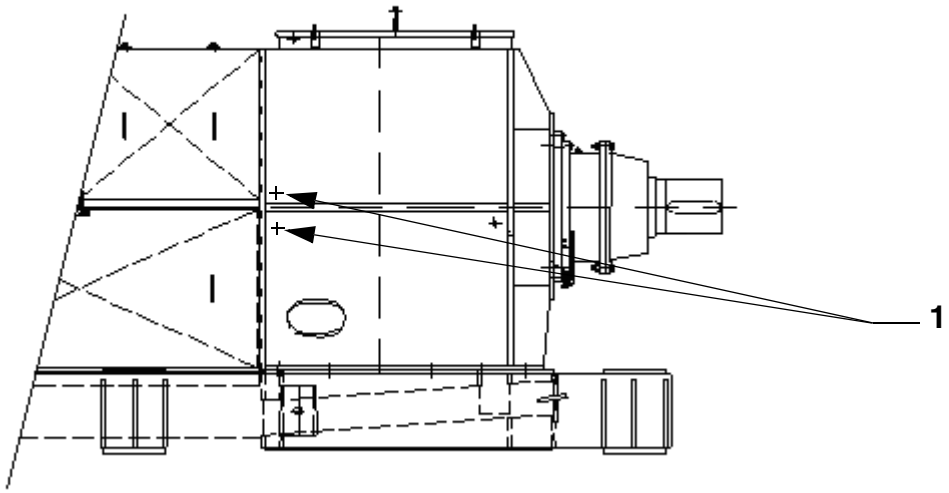
Compressed air supply (counterpressure cylinder)

On the outlet side there are two compressed air connections (⇨ Fig. 5-6, Compressed air supply (counterpressure cylinder)) on each side.

It is sufficient to connect the connections on one side.



1 Compressed air connection on both sides / G 1/4" in accord. with DIN ISO 228 (BSP)

Fig. 5-6 Compressed air supply (counterpressure cylinder)

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Measuring instruments and operating panel

For controlled operation of the screw press we recommend using the following instrumentation.

Pressure gauge for the inlet stock flow

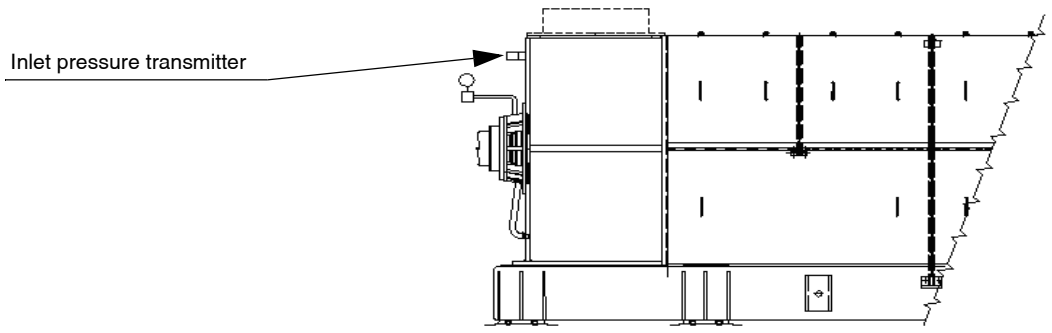

Fig. 5-7 Installation location for inlet pressure gauge.

We recommend installing a pressure gauge for the inlet stock flow (⇨ Fig. 5-7, Installation location for inlet pressure gauge.). The pressure has to be shown in the PCS. It it beneficial to have an extra in situ display of the pressure values.

The pressure gauge are mounted at the specified positions at the inlet chamber of the screw press. (⇨ Fig. 5-7, Installation location for inlet pressure gauge.).

The pressure of the inlet stock flow is within 0 to 1 bar. To obtain the best possible measuring valves, the measuring range of the pressure gauge should not vary to much from the given values.

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Speed monitor

We recommend installing a speed monitor on the drive shaft of the screw press. It should show if the press screw is not rotating even though the motor and gear are running.

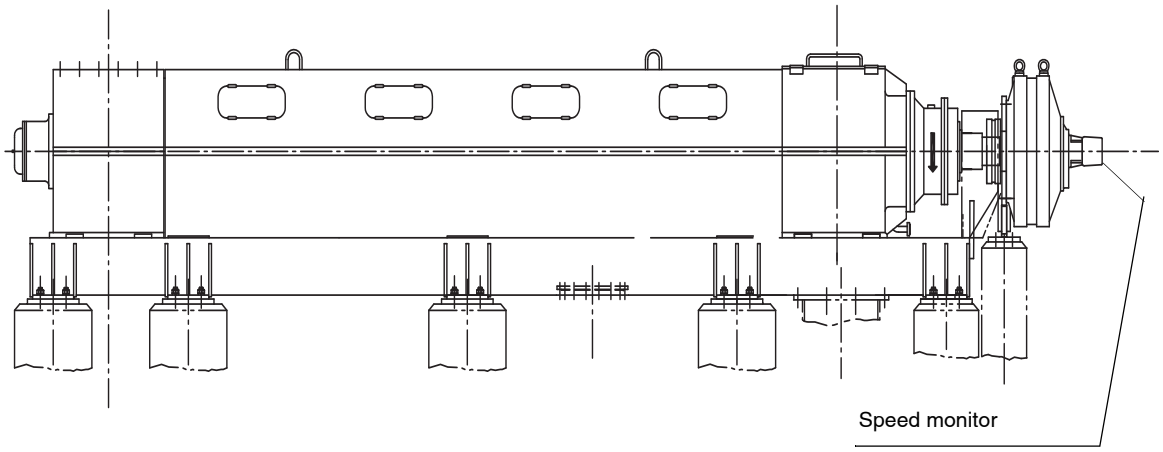

Fig. 5-8 Speed monitor

Torque control

Optimum operation with constant outlet stock consistency can be achieved with a constant torque of the press screw. On speed-regulated motors, the torque of the motor is measured and regulated via the speed of the motor. On hydraulic drives, the pressure of the hydraulic oil is used to determine the operation of the screw press.

Local control panel

Normally a local control box is also supplied for better control and adjustment of the screw press. This should be installed close to the screw press in order to be able to quickly react to operational problems.

Protective equipotential bonding

The machine must be connected to a grounding equipment conductor as required by the type of grounding connection (TN or IT system) of each system. Equipment that can be touched at the same time must be connected to the same grounding system (also see the foundation plan Sec. 11, Appendix on page 11-1).

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5.9 Lubrication

Preconditions

✓ Press and drive unit are installed.

Machine

The press is supplied lightly greased and oiled to protect the bearing.

→ Lubricate the inlet and outlet bearings in accordance with Sec. 8.3, Lubrication on page 8-4 and Fig. 5-9, Lubrication points screw press.

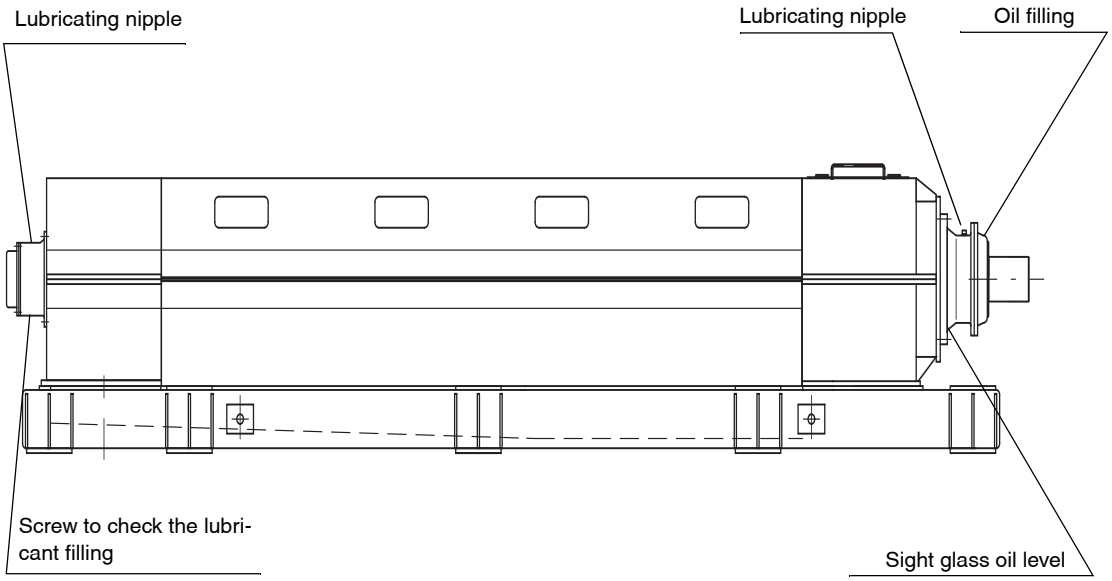

Fig. 5-9 Lubrication points screw press

→ Lubricate the drive unit (⇨ Sec. 12, Supplier Documentation on page 12-1).

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5.10 Sampling points

Three sampling points have to be set up to be able to evaluate the operation of the screw press.

WARNING

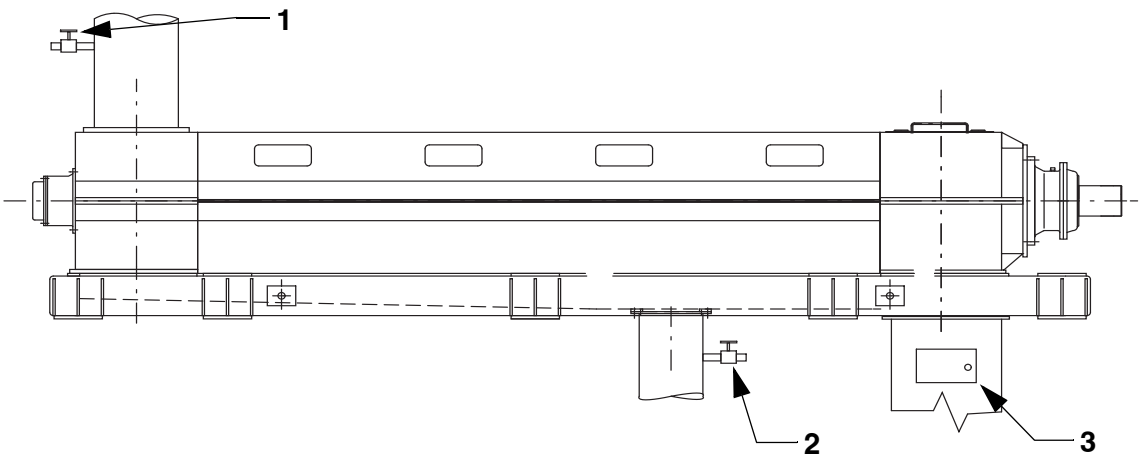
During operation, the press screw rotates in the outlet housing. The cover of the outlet housing may only be used for inspection purposes during operation and service when the screw press is shut off and secured against restart. You can be drawn in and killed if you reach into it or take a sample through the cover of the outlet housing. Never reach through the cover of the outlet housing in the machine during operation.
Do not take the continuous samples through the cover of the outlet chamber.

WARNING

Hot samples can squirt out of the sample container when taking samples. An at least 1 m long hose should be connected to the sampling valves in the inlet pipe and filtrate outlet pipe from which the sample can then flow more slowly into the sample container.

NOTICE

The safety regulations of the relevant country must be observed when setting up the sample device (⇨ Sec. 2.3, Organizational measures on page 2-3). In particular, setting up a sampling point (Fig. 5-10/**3**) below the outlet housing has to be carried out very carefully.



1 Ball valve in the inlet pipes

2 Ball valve in the filtrate outlet pipework

3 Sampling opening in discharge chute (below outlet housing)

Fig. 5-10 Sampling points

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5.11 Preparing for initial commissioning

NOTICE

Normally we recommend that specialist staff authorized by Voith monitor initial commissioning.

NOTICE

Disconnect the press from the pipelines before flushing to avoid damaging the screens.

→ Flush out all residues from the conducting pipeworks (inlet, seal water etc.).

→ Tighten all fastening screws and assemblies firmly.

✓ The fastening screws of the inlet housing to the frame are not fastened (⇨ Sec. , Inlet housing on page 5-10).

✓ The screen adjustment is done (⇨ Sec. , Screen adjustment on page 5-8); the press screw has no contact to the screen unit during rotation.

❑ If the press screw can be turned several revolutions by hand, the adjustment is done.

→ Lubricate bearing with oil and grease in specified quantities (⇨ Sec. 8.3, Lubrication on page 8-4).

❑ Check oil level indicator on the outlet bearing that the needed oil level actually is present.

See Sec. 12, Supplier Documentation on page 12-1 for the lubrication of drive, couplings, hydraulic drives etc, that are included in the Voith scope of supply.

❑ Check the lubrication of components of the drive (drive, motor etc.) and relubricate when necessary.

→ Open seal water valve.

→ Check if seal water circulates.

❑ Check for leakage at machine.

→ Close seal water valve again.

❑ The compressed air pipings for the counterpressure cylinder are connected and tight.

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→ Reduce compressed air to 0 bar.

The counterpressure cone should be placed as far as possible in direction drive (⇨ Sec. , Counterpressure cone on page 6-14) for the commissioning to relocate it in small steps in direction inlet.

- ❑ Check the direction of rotation of the electric motors.
- ❑ Check if the inlet pressure gauge and the speed detector are mounted and calibrated.
- ❑ Check if the control of the screw press in the process control system have been carried out in accordance with the VPR foundation plans.
- ❑ Check if the emergency button to the screw press is working.
- ❑ Check that all guards are correctly mounted.
- ❑ Check if all sampling devices and covers are firmly locked.

5.12 Disassembling the machine

→ Switch machine off (⇨ Sec. 6.5, Switching the machine off on page 6-16).

→ Decommission machine (⇨ Sec. 6.6, Decommissioning on page 6-17).

→ Disconnect all connections.

→ Disconnect supply piping flanges.

→ Loosen connection between support frame (foundation) and machine.

↳ The machine is ready for transport.

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6 Operation

6.1 Safety instructions for operation

Before you start the screw press, make sure that all upstream and downstream machine and system components are operational.

Make sure that starting up the system will not disrupt any other processes and that both the dewatered paper stock and the filtrate flow only into the appropriate containers and channels.

Guards

Rotating parts, such as V-belts, couplings, shafts, rotors, etc. may catch loose clothes, long hair, jewelry or limbs.

You may be seriously injured or killed.

The machine must never be used without the required guards. The safety guards must be operational.

Protection of persons

Unforeseeable incidents may result in personal injury.

To ensure rapid reaction, always check where the EMERGENCY-STOP switches are installed and whether they work properly before putting the machine into operation.

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Safe operation

This machine is operated under pressure. Therefore, it must be checked whether all fasteners are properly tightened.

Covers bursting open and opening stock valves and sampling devices can lead to serious injuries and scalding.

The machine must never be used at pressures exceeding the maximum admissible operating pressure (⇨ Sec. 3.3, Operating specifications on page 3-2). Therefore, do not close the shut-off and regulating valves too abruptly so that pressure surges are avoided.

The Voith screw press is a self-contained unit. Operator intervention is not normally required during operation. However, the following points should be observed:

– The dewatering process can be monitored via the inspection windows in the cover plates above the cylindrical screen units (if fitted) as well as above the opened covers on the outlet housing.

Death or serious injuries!

Due to the risk of injuries, no maintenance should be performed on the inside of the press while it is in operation.

The inspection openings must be shut during normal operation.

Use the corresponding personal protective equipment (PPE) such as safety goggles and protective clothing.

Danger of burning!

The surface of the screw press can become very hot during operation.

The high surface temperature remains for a long time after shutting down the machine.

Any contact with the surface that can cause burns should be avoided.

You may be burned if you touch the press or pipeline surfaces.

Use suitable PPE (e.g. safety gloves) when working at the hot machine.

Provide access barriers or special guards where necessary.

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– Before carrying out mechanical inspection and maintenance work, the drive is to be switched off (i.e. the main safety switch must be locked). This switch is not included in the Voith Paper scope of supply.

The screw press must never be operated without a main safety switch.

For safety reasons, we recommend installing a lockable main safety switch with a padlock.

Death or serious injuries!

Never reach through the cover of the outlet housing when operating the screw press. You may be seriously injured or even killed.

Danger of entanglement!

Never use any tools to remove objects from the screw press during operation. The tools can be drawn in by the moving parts and seriously damage the machine. You might instinctively try to hold onto the tool and therefore be drawn in.

Scalding hazards!

Hot samples can squirt out of the sample container when taking samples. An at least 1 m long hose should be connected to the sampling valves in the inlet pipe and filtrate outlet pipe from which the sample can then flow more slowly into the sample container.
The continuous sampling always has to be carried out from well protected sampling points, not from the valves or covers, which are reserved for maintenance purposes only.

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6.2 Commissioning

Preconditions

Before switching the system on, check whether:

- ✓ all electrical and mechanical connections have been made.
- ✓ all motors have been checked for correct operation.
- ✓ all parts that require lubrication have been lubricated.
- ✓ all pipelines have been cleaned and flushed.
- ✓ the seal water inlet is open and the seal water flows.
- ✓ the compressed air for the counterpressure cylinder and the counterpressure system as well as the compressed air pipings are tight.

Starting the screw press

→ Start the press and let it run for about five minutes without paper stock suspension.

❑ Check that the seal water at the inlet end is flowing during this period to avoid damage to the seals.

❑ Check for unusual and suspicious noises (contact between the press screw and the screen units).

❑ Check whether the bearings are working properly. They must not overheat.

If faultless operation is observed:

→ Open the shut-off valve in the inlet of the screw press slowly and wait until a normal "plug of the dewatered paper stock" has been formed in the outlet part.

It may take ten to fifteen minutes until stable operating conditions have been achieved.

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→ Activate the torque control system and adjust the control parameters until the press is capable of operating stably.

→ Increase the volumetric feed flow gradually by opening the shut-off element in the inlet until the required flow quantity is reached and the conditions have stabilize.

→ Adjust the air pressure on the counterpressure cylinder to optimize the outlet consistency on the press.

❑ Check adjusted cone for optimal outlet consistency (⇨ Sec. , Counterpressure cone on page 6-14).

❑ Check if the filtrate from the screen unit in the press screw body can flow freely.

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6.3 Checks during operation

The Voith Paper screw press does not normally require adjustment during operation since it will allow for some variations in inlet pressure (flow rate) and consistency without affecting the overall capacity and the outlet consistency significantly.

It may take ten to fifteen minutes for the operating conditions to stabilize.

The inspection and maintenance work in the following table is necessary to ensure trouble-free, stable operation.

Entity	Measure	Interval	
Dewatering function	Check for normal operation	Daily	⇨ Sec. , Dewatering function on page 6-7
Screen units	Check and flush from outside if necessary	Monthly	⇨ Sec. , Screen system on page 6-7
Screw shaft screen	Check for normal operation	Monthly	⇨ Sec. , Screen unit in press screw body on page 6-8
Seal water	Check for free flow	Daily	⇨ Sec. , Seal water on page 6-7
Wear of the spiral on the press screw and wear segments	Check spec. power requirements	Monthly	⇨ Sec. , Press screw spiral wear on page 6-9 and Sec. , Wear segments on page 6-9

Tab. 6-1 Checks during operation

Checking once per day

Dewatering function

Danger of burning!

Hot steam may escape when opening the cover on the outlet housing.

→ Open the cover carefully.

→ Use the required PPE.

❑ Check visually the outlet stock for consistency and quantity through the opened cover on the outlet housing.

Seal water

The flow rate should be over 0.5 l/min.,
but should not exceed 10 l/min.

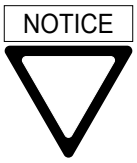
A typical value is 3 l/min. If the seal water contains fibers or dirt particles, more frequent checking is required.

❑ Check the seal water quantity to the inlet side bearing.

Checking once per month

Screen system

❑ Check the cylindrical screen units through the inspection windows in the cover plates of the cylindrical screen units (if fitted).



The screen surfaces must be free of large accumulations of fibers and the screen holes must not be obstructed by deposits.

→ Switch the machine off if there are large amounts of fibers and blockages in the screen holes, remove the cover plates and flush the screens with a high-pressure cleaner if necessary.

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Screen unit in press screw body

→ Open the inspection openings (with integrated flushing water nozzle) in the base frame below the drive shaft of the press screw (⇨ Fig. 5-5, Flushing water connections on page 5-12).

❑ Check the water flow.

↳ It may be that no water is flowing here and the filtrate ring chamber may be blocked. It should then be flushed.

There are injection points for the flushing water on each side of the outlet chamber as well as in the base frame. The filtrate collecting tray in the support frame and the filtrate collecting ring chamber in the outlet housing can be flushed using this flushing water.
If flushing is not successful, the screen in the press screw or the outlet openings at the end of the press screw may be blocked. If this is case, the covers of the inspection openings at the end of the press screw can be opened. Then it can be attempted to eliminate these blockages using a jet from a high pressure cleaner applied from the outside. When the blockages have been eliminated, the inside of the press screw should be flushed with plenty of water through the inspection openings until no fiber material remains.

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Editor: VPAW, Watson, 2132
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Press screw spiral wear

The press screw spiral is subject to continuous wear. The wear is mainly related to the content of abrasive components in the paper stock suspension in the inlet.

The edges on the outer circumference of the spiral wear fastest; the edges become more and more rounded. Fiber lumps can become stuck in this rounding and slow down the press screw. This increases power consumption of the drive motor and the risk of blockages of the screen units. (⇨Sec. 8.4, Checking the outer edges of the press screw spiral for wear on page 8-6)

An early sign of excessive wear is increasing current (e.g. higher power consumption) and/or a deteriorated dewatering effect. In this case the press screw spiral at the outlet has to be checked. See Sec. 8.4, Checking the outer edges of the press screw spiral for wear on page 8-6 for procedure.

Wear segments

The high pressure zone is located at the back of the press screw (towards the outlet housing). In this zone the fiber stock suspension is especially strong to obtain the best possible dewatering effect. The wear of the spiral is also higher in this zone due to the high compression. Therefore replaceable wear segments are screwed onto the outer circumference of the press screw spiral.

These have to be checked regularly during the first few months after commissioning. It is recommended to repeat this check monthly at first and then gradually increase the checking period depending on wear conditions.

(⇨Sec. 8.4, Checking the outer edges of the press screw spiral for wear on page 8-6)

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6.4 Adjustment of the operating parameters

Several parameters have an impact on the operation of the screw press. This includes the speed of the press screw as well as some properties of the paper stock suspension in the inlet of the screw press, such as:

- Pressure
- Volumetric flow (flow rate)
- Stock consistency
- Temperature
- Freeness
- Fiber fine fraction
- Ash content
- pH value

The following table shows what effect an increase in these parameters has on the stock throughput (production) and the outlet stock consistency of the screw press.

			affects	
			Throughput (production)	**Outlet consistency**
Speed of the press screw speed		↑	↑	↓
Inlet pressure		↑	↑	↗
Inlet stock consistency		↑	↑	↗
Inlet stock temperature		↑	↗	↑
Freeness	**CSF**	↑	↑	↗
	°SR	↑	↓	↘
Fiber fine fraction		↑	↓	↘
Ash content		↑	↓	↘
pH value		↑	↘	↓

Tab. 6-2 Adjusting the operating parameters

The indicated effect is generalized and only shows tendencies. Note that a change in one of the above-mentioned parameters also has effects on other important parameters and not only on the throughput or the outlet stock consistency. The whole procedure of dewatering using a screw press is therefore more complex than indicated in the table.

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The preprocessing of the paper stock suspension has a high influence of the dewatering effect of the screw press. Therefore a targeted optimization of the operating conditions of the preceding processes is important for the optimal operation of the screw press. The sufficient high inlet pressure and its consistency plays an important part here.

Speed/torque

The most important parameter via which the throughput and the outlet stock consistency of the screw press can be influenced by the operating personnel is the speed of the press screw. This is often adjusted via the setpoint value of the motor torque. Regulating the torque also readjusts the speed. For example, the torque may change when the inlet stock consistency or the inlet pressure is changed.

If, for example, the inlet stock consistency increases, the consistency of the stock within the whole machine also increases. The torque of the electric motor therefore increases (diverges from the setpoint value). The torque regulation then increases the speed. The stock is therefore transported faster through the machine and has less time to dewater. Due to the reduced consistency of the stock in the machine, the torque of the motor decreases again.

If, for example, the inlet pressure decreases, the stock is dewatered to a lesser degree; the consistency of the stock at the outlet decreases. The torque of the electric motor therefore decreases (diverges from the setpoint value). The torque regulation then decreases the speed. The stock is therefore transported more slowly through the machine and has more time to dewater. Due to the higher consistency of the stock in the machine, the torque of the motor increases again.

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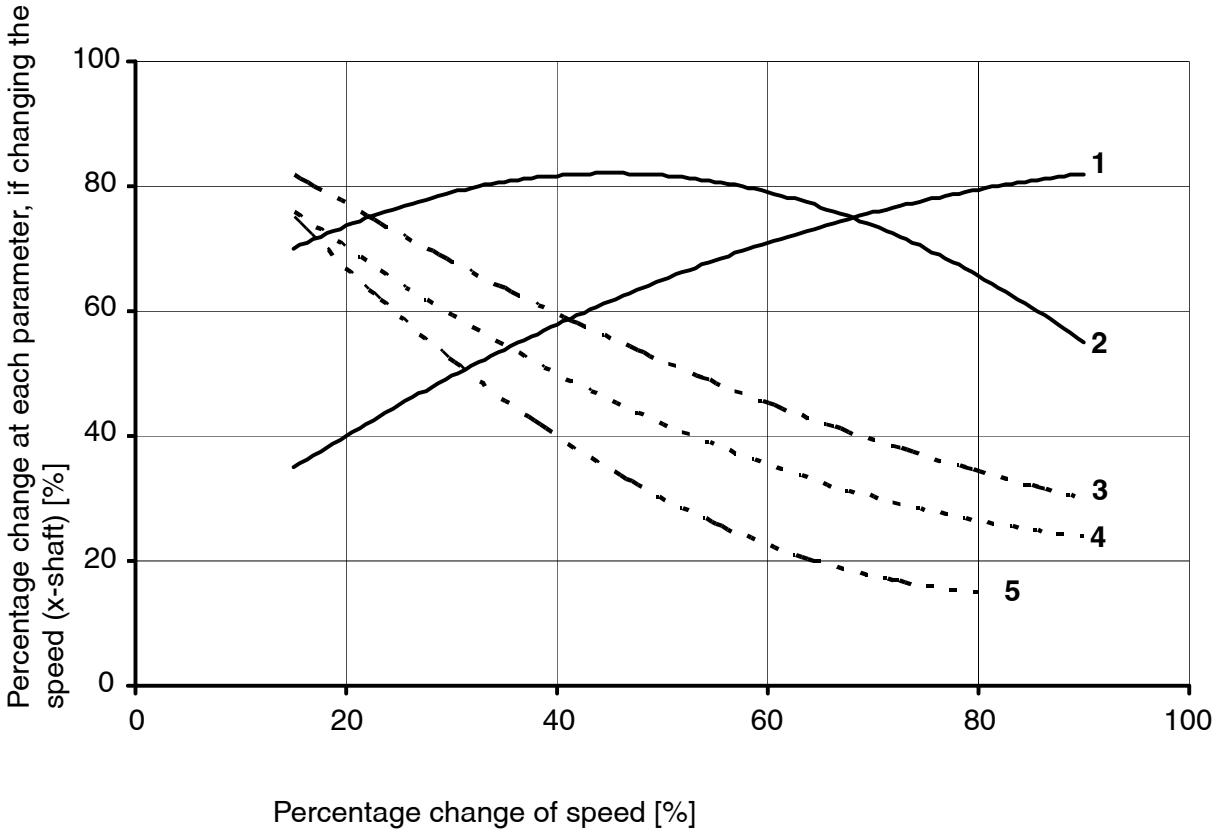
The following figure shows the typical reaction of the screw press performance parameters to a change in speed. Note that specific applications may differ in their response depending on pulp characteristics and the operating goals.



1 Production dewatered paper stock (e.g. t/d)
2 Power consumption (e.g. A)
3 (press screw torque - e.g. kNm)
4 Specific power demand (e.g. kWh/t)
5 Outlet consistency (e.g. %)

Fig. 6-1 Speed parameter, % of range

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Inlet pressure

If the outlet stock consistency is too low, this is a sign that the inlet pressure is too high (or the volumetric feed flow rate is too high). In this case, no fiber plug can be formed towards the outlet housing. Therefore a lower counterpressure than possible is formed on the paper stock suspension; the water is then not pressed as strongly through the holes of the screen units. In this case, reduce the inlet pressure (or the volumetric feed flow) by closing the shut-off valve in the inlet line of the screw press further.

Too high an inlet pressure may also cause too much solid matter and short-fibers to be pressed through the holes of the screen units. This causes a higher fiber loss than necessary. The inlet pressure should be as low as possible.

Inlet stock consistency

If the inlet stock consistency is higher, then the outlet stock consistency is also generally higher. Too low an inlet consistency may mean that no optimum stock plug is formed in the screw press and that the outlet stock consistency is too low. Too high an inlet consistency can lead to excessive dewatering of the stock plug and therefore to blockage.

Temperature of the paper stock suspension at inlet

The stock temperature in the inlet of the screw press affects the throughput of the machine. Stock with a higher temperature is normally better dewatered. The throughput of the screw press and the outlet stock consistency can thus be increased.

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Counterpressure cone

The counterpressure cone of the press screw affects the clearance between the press screw and the outlet housing. The outlet consistency of the screw press can be optimized over this clearance.

If the counterpressure cone is pushed further towards the inlet housing the clearance between the press screw and the outlet housing is reduced. Thereby the counterpressure of the paper stock plug is increased. The paper stock suspension is better dewatered, the outlet consistency rises.

However, if the counterpressure cone is pushed further in direction drive the clearance between the press screw and the outlet housing is increased. Thereby the counterpressure of the paper stock plug is lowered. The paper stock suspension is less dewatered, the outlet consistency is lowered (⇨ Sec. , Disassembling and adjusting the counterpressure cone with shredding teeth on page 8-20).
The outlet consistency can be additionally adjusted over the air pressure on the counterpressure system and thus over the position of the counterpressure flaps. Reducing the air pressure the outlet consistency is reduced as well; increasing the air pressure the outlet consistency also increases.

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Operating specifications log

The most important operating parameters can be recorded in the form "Data log" contained in Sec. 11, Appendix on page 11-1. This should be done especially in the first few months. By comparing the data, a change in the operating parameters can be recognized and operating conditions optimized at an early stage.

The screw press is designed for trouble-free continuous operation. The life-time of the screw press and its components depends on proper operation (see also designated use) and regular maintenance. The following situations are to be avoided:

– Frequent blockages and subsequent reversing of the press screw.
  Adjustment to the operating procedure should be considered if blockages are frequent.

– Constantly operating the press with too high an outlet stock consistency may lead to excessive stress on the press and in certain circumstances may lead to a reduced life-time or mechanical damage (see table ⇨ Sec. 3.3, Operating specifications on page 3-2 for maximum outlet stock consistency).

– Operation of the screw press with worn or damaged parts.
  Worn or damaged parts should be replaced or repaired immediately. Failing to do so may lead to consequential damage to the screw press or damage to parts of the drive units.

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6.5 Switching the machine off

If the machine is only switched off shortly, the paper stock plug at the press screw in the machine can be left in the high pressure zone.

The screw press should never be operated without paper stock suspension for a longer time. This can lead to that the paper stock plug in the high pressure zone of the press screw dries up and sets. By a new start-up this plug can block the paper stock. On the other hand it may also be pressed out and cause damage to downstream system parts.

If the press is switched off for a longer time, the paper stock suspension plug has to be flushed out of the press screw and the outlet chamber. The screw press then has to be flushed with sufficient water via the inlet line. The screen units are thus flushed from the inside. The best way to clean outer surfaces of the screen is to use a high pressure cleaner.

→ Reduce the air pressure on the counterpressure cylinders to 0 bar.

→ Disconnect the feeding stock pump.

→ Close the shut-off element at the inlet of the screw press.

→ Reduce the setpoint value of the torque at the drive motor (thereby the press screw speed is increased).

→ Let the press screw run between 5 and 10 minutes (machine runs empty).

→ Disconnect the screw press.

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6.6 Decommissioning

Preconditions

✓ Screw press has been switched off (⇨ Sec. 6.5, Switching the machine off on page 6-16).

Decommissioning

→ Close and depressurize flushing water connections/seal water pipework.

→ Depressurize compressed air piping (if fitted).

→ Completely empty the screw press.

→ Secure screw press against restart.

Cleaning

Danger of injuries!

Wear the required protective equipment (PPE) during high-pressure cleaning.

Damage to the machine!

Never use gasoline or other easily flammable substances to clean the screw presses.

Cover all sealing components and electric lines prior to high-pressure cleaning. Do not expose these parts directly to the jet.

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7 Troubleshooting

Technological faults

Faults	Possible cause	Remedy	Remarks
Overload of the drive Rapid increase in the current of the electric motor with danger of motor overload	Variations in – inlet consistency – inlet volumetric feed flow – characteristics of the paper stock suspension (⇨ Sec. 6.4, Adjustment of the operating parameters on page 6-10)	→ Reduce the feed flow to the press throttling the shut-off element in the inlet more → If possible, increase the speed of the press screw (by lowering the set-point value of the torque). → Reduce the counterpressure for the paper stock suspension by pushing the counterpressure cone of the press screw towards the drive (⇨ Sec. , Counterpressure cone on page 6-14) or reduce the compressed air to the counterpressure cylinders.	– A torque controller will normally provide an even load on the screw press. Also when the conditions are unstable.

Tab. 7-1 Troubleshooting for technological faults

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Faults	Possible cause	Remedy	Remarks
Overload of the drive The press screw has stopped. The high pressure screen units are filled with paper stock.	Variations in the inlet consistency, feed flow, or changes in the dewatering characteristics of the paper stock.	→ Switch the drive motor of the screw press off → Close the shut-off valves in the inlet → Try to loosen the plug by reversing the press screw over the local service switch 1-2 revolutions and then operate the press alternatively in the forward and backward direction.	The shut-off element in the inlet has to be closed automatically over the distributed control system by standstill of the press screw. Avoid pressure build up in the inlet chamber. If the "plug" does not release after two or three attempts, it is necessary to dismantle the divided screen unit ahead of the outlet chamber and clean the press screw. **Further repeated attempts may damage the press .** ⇨ Sec. 8.5, Disassembling the screw press on page 8-7
Rotation of the **paper stock suspension** in the press screw.	Changes in the paper stock suspension characteristics. (a higher pH e.g. results in low friction between the screen units, the paper stock suspension and the plug and the screen basket; the plug rotates with the press screw).	→ Install breaker bars into the divided screen unit if there are none.	For this contact VP service.
Channel formation in the outlet housing of the screw press. Low consistency paper stock suspension flows out at certain points ahead of the press screw into the outlet housing and flows away forming channels there.	Generally, paper stock channels at the outlet housing only forms during start-up, and when the speed of the press screw is too high.	→ Reduce the speed of the press screw until a paper stock plug is formed over the total press screw.	

Tab. 7-1 Troubleshooting for technological faults (Cont'd)

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Faults	Possible cause	Remedy	Remarks
Excessive loss of fines in filtrate	The press works with too high an inlet pressure and/or too low an inlet stock consistency	→ Reduce the inlet pressure or increase the inlet stock consistency	If these parameters cannot be changed, it may be necessary to use screens with smaller holes and/or bigger hole spacing. In this case, contact Voith Service.
Insufficient outlet consistency	Blocked drainage of the press screw filtrate in the outlet housing; the filtrate cannot flow out and overflows into the outlet area instead.	→ Remove the amounts of solids out of the collecting ring range for the press screw filtrate; flush filtrate outlet. → Remove the cover of the outlet housing if necessary to be able to reach into the press screw	
Excessive inlet pressure	Inlet consistency insufficient	→ Increase inlet stock consistency	
	Excessive inlet volumetric flow into the screw press	→ Reduce volumetric feed flow	
	Speed of press screw too low	→ Increase press screw speed	

Tab. 7-1 Troubleshooting for technological faults (Cont'd)

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Mechanical faults

Faults	Possible cause	Remedy	Remarks
Gradually increasing speed and/or **vibrations**	Increased co-rotation of paper stock suspension due to worn or polished press screw body.	→ Recoat affected surfaces of the press screw body	Can cause lower outlet stock consistency. As a temporary solution, the surface of the press screw body may be ground. Please contact Voith Service for this.
Gradually increasing speed (result of decreasing outlet consistency)	Rounded or worn edges at the outer area of the press screw spiral.	→ Resurface and sharpen the outer edges of the press screw spiral.	(⇨ Sec. , Resurfacing worn edges of the press screw spiral on page 8-24)
	Worn or rounded screw edges on the wearing segments	→ Replace worn wear segments	(⇨ Sec. , Replacing worn wear elements on the spiral on the press screw on page 8-26)
Poor dewatering in the low-pressure zone	Rounded or worn edges at the outer area of the press screw spiral.	→ Resurface and sharpen the outer edges of the press screw spiral over the Voith Service.	(⇨ Sec. 8.4, Checking the outer edges of the press screw spiral for wear on page 8-6)
	Worn screen units	→ Replace worn screen units with new ones	
Gradually increasing inlet pressure	Rounded or worn edges on the outer circumference of the press screw spiral	→ Resurface and sharpen the outer edges of the press screw spiral.	(⇨ Sec. , Resurfacing worn edges of the press screw spiral on page 8-24)
	Worn screen units	→ Replace worn screen units with new ones	(⇨ Sec. , Replacing worn wear elements on the spiral on the press screw on page 8-26)

Tab. 7-2 Troubleshooting for mechanical faults

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8 Maintenance

8.1 Safety instructions for maintenance work

Guards

Ensure that all required safety guards have been refitted after completion of all maintenance work.

Protection of persons

Ensure that the main switches of the machine and of all upstream or downstream equipment are turned off and locked to prevent unintentional restart prior to any maintenance work.

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

Safe operation

To ensure safe operation after completion of maintenance and repair work, only use new and undamaged fastening equipment (screws, bolts, washers, locking parts, nuts etc.) and new seals for reassembly.

Handling heavy machine parts or components

There is increased risk of crushing when handling heavy machine parts or components!

Use personal protective equipment!

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8.2 Checks

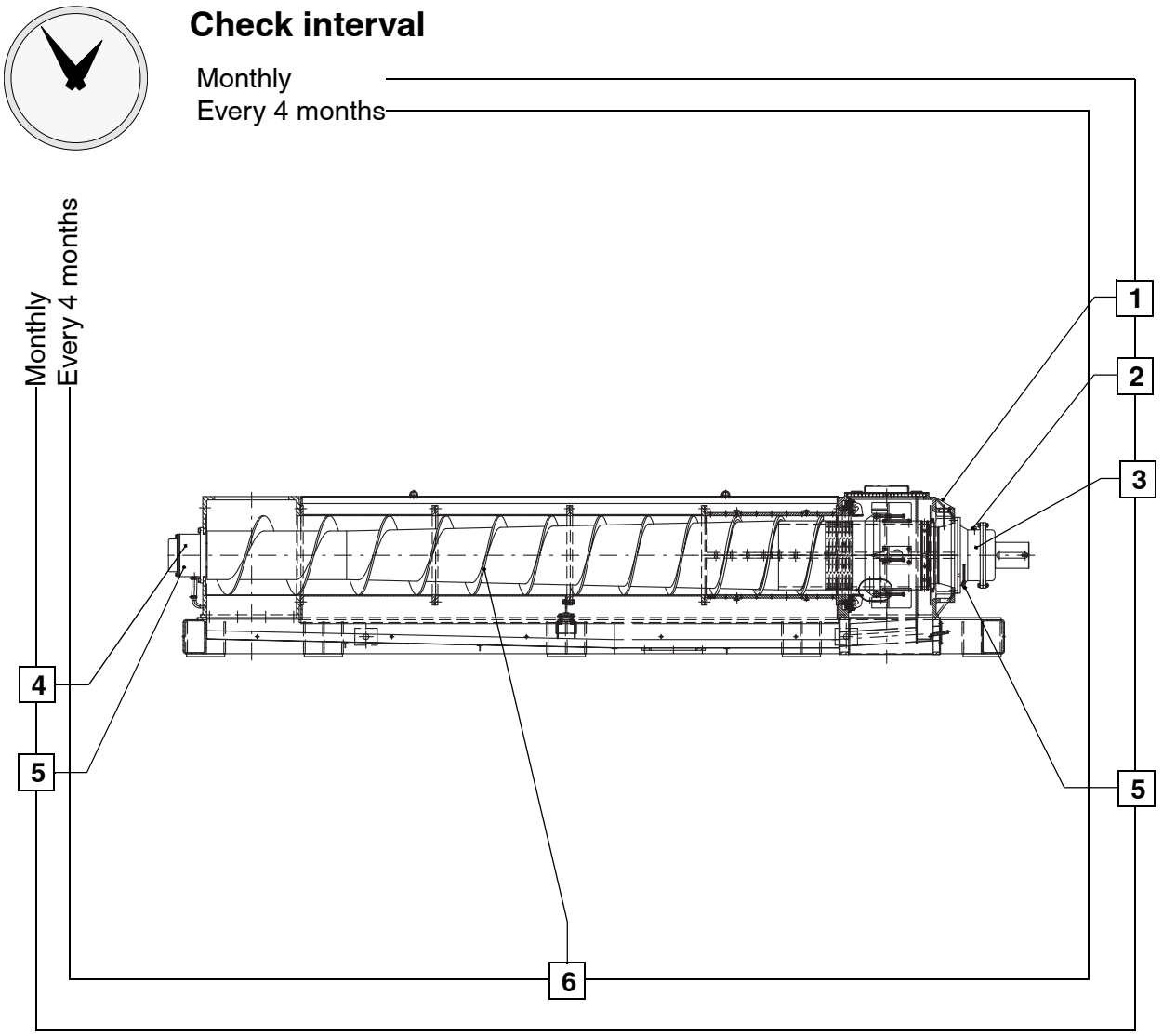

Fig. 8-1 Check intervals

General

The screw press is low-maintenance. Nevertheless, it is important to check system functions from time to time. Periodic maintenance according adequate periods of time will ensure that your machine and system remain operational for a long time. If you follow the maintenance guidelines below, you will increase the operational reliability of your system.

See respective supplier documentation (⇨ Sec. 12, Supplier Documentation on page 12-1) for the check intervals for the drive components.

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No.	Check interval	Assembly	Check	Measure	Remark
1	Monthly	Bearing assembly on outlet housing	Sufficient grease in bearing	Regrease if necessary	(⇨ Sec. 8.3, Lubrication on page 8-4)
2			Oil level in bearing [1)]	Refill and/or replace as necessary	(⇨ Sec. 8.3, Lubrication on page 8-4)
3			Check bearing for oil leakages	Replace corresponding seals if necessary	(⇨ Sec. , Disassembling outlet side bearing on page 8-34)
4	Monthly	Bearing assembly on inlet housing	Sufficient grease in bearing	Regrease if necessary	(⇨Sec. 8.3, Lubrication on page 8-4)
5	Monthly	Bearing	Check bearing for vibrations	Replace bearing if necessary.	(⇨ Sec. , Dismounting the bearing on page 8-28)
			Bearing temperature	Lubricate bearing on inlet side Check oil level at the bearing at the outlet side; close oil leakage where necessary and refill oil. Replace bearing if necessary.	(⇨Sec. 8.3, Lubrication on page 8-4) (⇨ Sec. , Dismounting the bearing on page 8-28)
6	Every 4 months	Outer edges of the press screw spiral and wear segments	Visual inspection for damage or wear	If the outer edges of the press screw spiral are worn, contact VP Service. They can repair the press screw. Replace worn wear segments	(⇨Sec. 8.4, Checking the outer edges of the press screw spiral for wear on page 8-6)

Tab. 8-1 Checks

1) Only check oil level when the screw press is not running. During operation of the screw press, the oil level is displayed as too low.

The information in this table is only a general guideline based on previous experience. Your application may require different maintenance intervals.

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8.3 Lubrication

General

Sufficient lubrication will assure long and trouble-free operation of the bearings. The lubrication intervals and the lubricants themselves are specifically tailored to address the needs of each system.

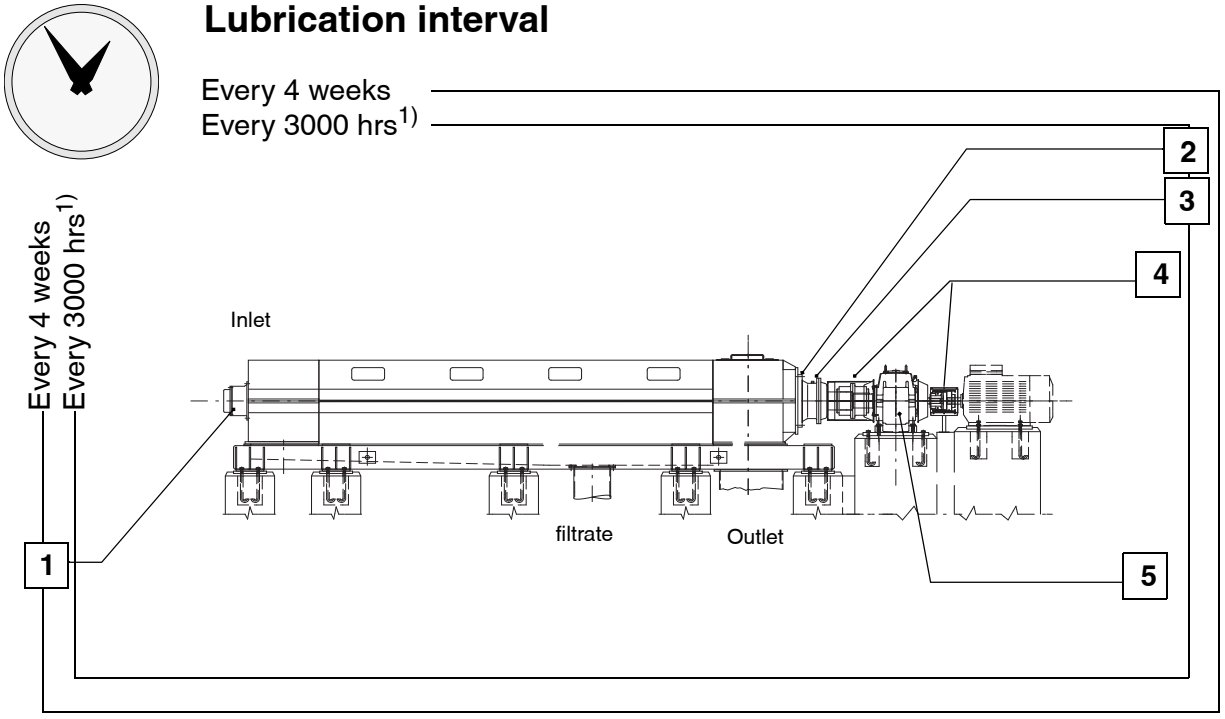
– The system is delivered from the factory with pre-lubricated parts. The machine is to be relubricated before it is put into service.

– The equipment must be lubricated at the designated lubrication points.

– Proper lubrication has been achieved when the lubricant begins to ooze out of the filling nozzles. This excess lubricant should be wiped off.

– When relubricating or changing lubricants, the information in the following table is to be observed. The information given is only intended as a guideline for minimum maintenance. Depending on the application, however, it may be necessary to top up or change lubricants at shorter intervals.

Lubrication interval



1) On first filling and bearing replacement after 400 hrs.

Fig. 8-2 Lubrication interval

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No.	Lubricant interval	Lubrication type	Assembly	Lubrication point	Lubricant	Lubricant quantity
1	Initial lubrication	Grease lubrication	Bearing on inlet side	Lubricating nipple	Grease	2 kg
	Every 4 weeks	Grease lubrication	Bearing on inlet side	Lubricating nipple	Grease	As required until grease comes out
2	Initial lubrication	Grease lubrication	Bearing on the outlet side	Lubricating nipple	Grease	1 kg
	Every 4 weeks	Grease lubrication	Bearing on the outlet side	Lubricating nipple	Grease	As required until grease comes out
3	After the first 300 hours and then every 3,000 hours	Oil filling	Bearing on the outlet side	Filling opening	Oil	5.0l
4	in accordance with manufacturer's specifications	Grease lubrication	Coupling	⇨ Sec. 12, Supplier Documentation on page 12-1		
5	in accordance with manufacturer's specifications	Oil	Gear	⇨ Sec. 12, Supplier Documentation on page 12-1		

Tab. 8-2 Lubrication interval and lubricant quantities

NOTICE

Using wrong lubricants drastically may shorten the service life of the gear, the motor and the bearings.

Only use lubricants described in the motor and gear manufacturer's documentation. For the bearings, use lubricants specified in Tab. 8-3, Recommended lubricants for the bearings.

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No.	Lubricant properties	Designation
1 + 2	Lithium-based roller bearing grease (bearing on the inlet side)	Lithium-based roller bearing grease NLGI grade 3 DIN51818
3	Oil (bearing on the outlet side)	Mineral oil/synthetic ISO-VG 680 EP DIN51519

Tab. 8-3 Recommended lubricants for the bearings

8.4 Checking the outer edges of the press screw spiral for wear

✓ The press is switched off (⇨ Sec. 6.5, Switching the machine off on page 6-16) and locked to prevent unintentional start-up.

The outer edge of the press screw spiral is subject to higher wear on the pressure side. This manifests itself in rounded edges (Fig. 8-3, Wear on the outer edges of the press screw spiral) and / or already reduced diameter of the press screw spiral.

Especially the outer edges of the press screw spiral in the compression zone (divided screen unit) should be checked for wear. Remove the machine cover in this area and the upper section of the divided screen unit. Here the wear segments can also be checked. If the whole edge of the press screw spiral is also to be checked, then the lower part of the divided screen unit is also to be disassembled. Then the other screen baskets can be loosened and moved one after the other on the press screw until the required area is accessible for further inspection.

If the edge is worn more than shown in Fig. 8-3/ **R2,5**, it has to be resurfaced.

If necessary, the flights must be resurfaced or the wear segments replaced (⇨ Sec. , Resurfacing worn edges of the press screw spiral on page 8-24 and Sec. , Replacing worn wear elements on the spiral on the press screw on page 8-26).

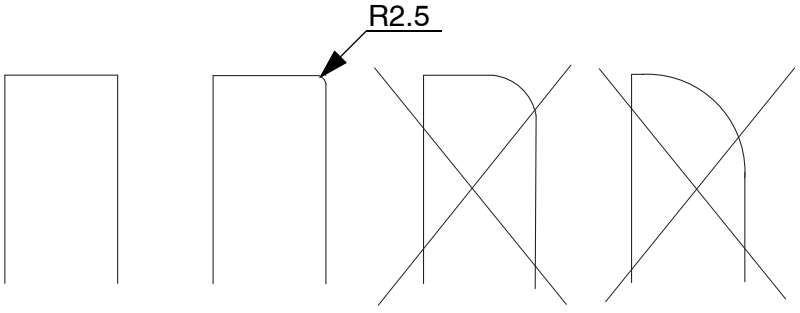

Fig. 8-3 Wear on the outer edges of the press screw spiral

Wear segments must also be replaced if they are damaged or if the radius on the pressure side is larger than 2.5 mm and/or if the clearance between the spiral and the screen is too large due to the reduced diameter of the press screw.(⇨ Sec. , Replacing worn wear elements on the spiral on the press screw on page 8-26.

8.5 Disassembling the screw press

General

Disassembling the machine

The screw press is designed for disassembly in modules.

NOTICE

Cover the outlets of the filtrate collecting tray and of the outlet housing so that no parts can enter downstream machines or system parts.

NOTICE

Do not drive any screwdrivers, chisels etc. between the flanges to separate flange connections. Instead, use forcing screws or other appropriate tools if necessary.

Make sure that no bolts, tools or other parts remain in the screw press after completing the work.

Disassembly of the bearing assemblies should only be performed under dry and dust-free conditions.

Assembly

Always reassemble the disassembled components in reverse order to disassembly. If you have to observe anything in particular here, you will find the instructions in the corresponding assembly instructions.

NOTICE

Before assembling the press, check that all contact surfaces are thoroughly clean and make sure that no fibers or other impurities are present.

An adjustable torque wrench is recommended for tightening all bolts. The nominal torques are given in the following table.

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Type of material	Bolt size				
	M10	M12	M16	M20	M24
ISO 3506, A4 70	30	55	140	270	470
ISO 3506, A4 80	45	75	185	365	630

Tab. 8-4 Recommended tightening torques for bolts (Nm)

Please note that the torques listed are based on the use of a high quality lubricant. For example:

– Copaslip Antiseize Assembly Compound (Molyslip Int.)

– Chesterton No. 725 Nickel Anti-Seize Compound (Chesterton Ind.)

After assembly, check the following:

✓ Bolts properly tightened (⇨ Tab. 8-4, Recommended tightening torques for bolts (Nm) on page 8-8).

✓ Seal water supply reconnected and intact.

✓ Measuring units reconnected and intact.

✓ The press screw moves freely in the screen units without contact with the screen units.

❑ You can rotate the press screw manually if the drive coupling is not yet installed.

→ Readjust the alignment of the screen units, using the screen supports in the filtrate tray if necessary (⇨ 5.6, Screen adjustment on page 5-8).

✓ The bearing are sufficient greased, and/or there is sufficient oil.

✓ The drive coupling is remounted.

✓ The inlet pipework is reconnected.

❑ The horizontal alignment of the complete screw press is within tolerances (⇨ 5.5, Setting up and aligning on page 5-5).

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Preconditions for disassembly

✓ The press is switched off (⇨ Sec. 6.5, Switching the machine off on page 6-16) and locked to prevent unintentional start-up.

✓ The drive coupling is disassembled and the instruments are disassembled to allow sufficient space for carrying out the work.

Removing the cover of the screen units

Disassembling the machine

The covers of the screen units can be easily removed. No further description is necessary.

Assembly

❑ The rubber seal strips on the cover plates and frames are undamaged.

→ Replace rubber seal strips on the cover plates if necessary.

→ Attach the cover plates to the frames provided and secure against falling down.

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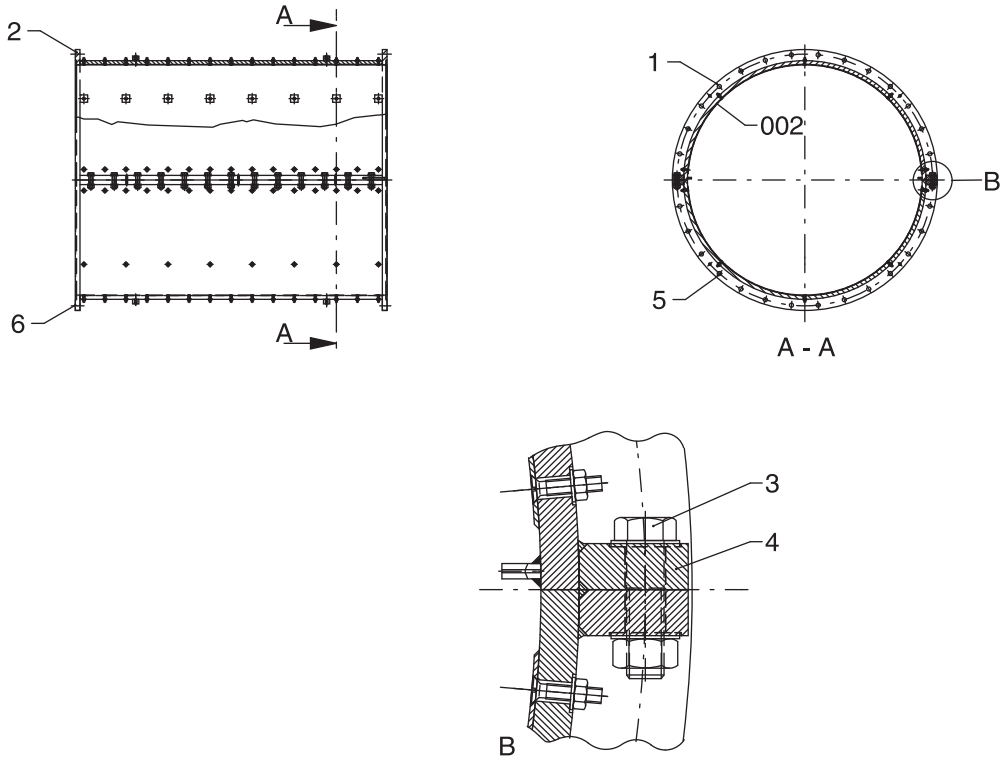
Disassembling the divided screen units / replacing the screen halves

The screen must be opened in the compression zone in order to check the last area of the press screw spiral, to replace the screen plates or to remove a plug, that is too hard.
The screen is divided horizontally into two halves to facilitate disassembly.

Preconditions

✓ The cover of the screen unit is removed (⇨ Sec. , Removing the cover of the screen units on page 8-9).



1	Semi-circular flange	**3**	Bolt unit	**5**	Semi-circular flange
2	Upper screen unit half	**4**	Flange strip	**6**	Lower screen unit half

Fig. 8-4 Disassembling the upper and lower part of the divided screen unit

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Disassembling the upper part of the divided screen unit

→ Remove the bolt unit on both semi-circular flanges (Fig. 8-4/**1**) on both sides of the upper screen unit half (Fig. 8-4/**2**).

→ Remove the bolt units (Fig. 8-4/**3**) on the lateral flange rails (Fig. 8-4/**4**) of the screen units.

→ Turn bolts into the 4 threaded extraction holes in the flange rails (Fig. 8-4/**4**) of the upper screen unit half. Turn these into the thread until the upper screen unit half is detached from the lower half and can be lifted off.

→ Remove forcing screws.

→ Screw four shackles into the forcing tapped holes.

→ Lift the upper screen unit part out of the machine and put it at suitable place.

Disassembling the lower part of the divided screen unit

✓ The upper screen unit half is disassembled.

→ Secure the lower screen unit half with shackles and corresponding lifting equipment against falling off.

→ Remove the bolt units on both semi-circular flanges (Fig. 8-4/**5**) on both sides of the lower screen unit half (Fig. 8-4/**6**).

→ Turn the lower screen unit half around the axis of the press screw to approximately the original position of the upper screen unit half.

→ Lift the lower screen unit half out of the machine and set it down in a suitable place.

A screen half is bolted to each screen unit half.

When installing the divided screen unit, make sure that the centerings run properly in the grooves of the cylindrical screen unit and of the outlet housing.

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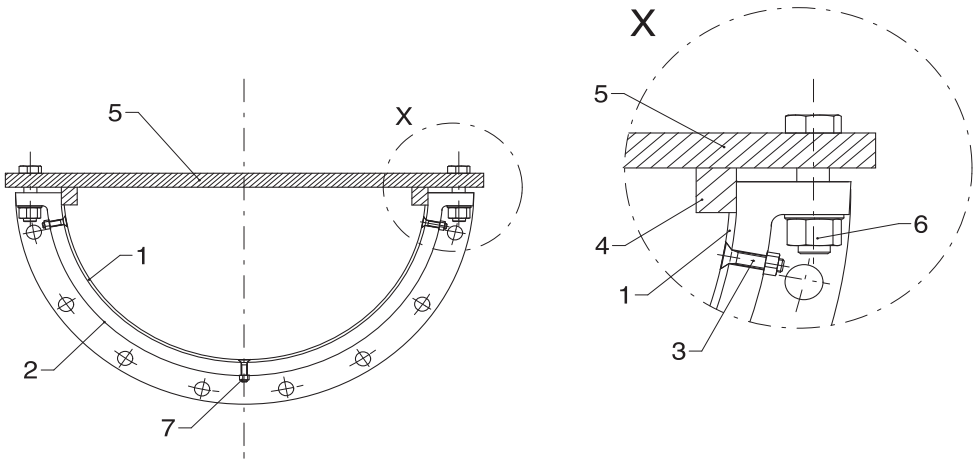
Replacing screen halves of the screen unit halves

NOTICE

The screen unit is welded into the screen unit halves. The weld seams have to be ground when replacing this screen unit. Only use suitable grinding material and tools so as not to damage the screen unit halves.



1 Screen half
2 Support half
3 Bolt unit
4 Pressure strip
5 Clamping fixture
6 Bolt units
7 Lower bolt units

Fig. 8-5 Replacing screen halves of the divided screen unit

→ Dismount used screen halves (Fig. 8-5/**1**) from the support halves (Fig. 8-5/**2**): loosen fastening screws, grind weld seams.

→ Thoroughly clean support halves (Fig. 8-5/**2**).

→ Insert new screen halves (Fig. 8-5/**1**) into the support halves, loosely pre-install bolt units (Fig. 8-5/**3**) (do not tighten firmly).

→ Place the pressing strips (Fig. 8-5/**4**) onto the clamping fixture (Fig. 8-5/**5**) at the upper side of the screen halves (Fig. 8-5/**1**).

Grind the bevel in the area of the pressing strip if the upper side of the screen half is fastened.

→ Gradually tighten the bolt units of the clamping fixtures alternately (Fig. 8-5/**6**) "cross-wise" onto the flange rails of the support halves until the whole surface of the screen half lies in the support half.

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→ Tighten the lower bolt units (Fig. 8-5/**7**).

NOTICE

When welding, a lot of heat energy is introduced into the parts to be welded. This may under certain circumstances cause the parts to be welded to be deformed and also become unusable.

→ Therefore, take care when welding:

– Only set the welding equipment to the necessary current.

– Do not use more seam length than absolutely necessary.

→ Place a 30 mm weld seam at the lower end (in the center of the bolt unit area (Fig. 8-5/**7**). Then alternately place 30 mm weld seams on the left and at 135 mm intervals until the upper end.

→ Tighten the upper bolt units (Fig. 8-5/**3**).

→ Remove clamping fixture (Fig. 8-5/**5**).

→ First place 30 mm weld seams at the ends of the screen half faces (4 per screen half).

→ Then place 30 mm weld seams on all 4 sides at 135 mm intervals.

→ Grind the upper side of the bolt units (Fig. 8-5/**3**) on the inside of the screen flush with the screen half surface.

→ Grind the weld seams smooth.

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Disassembling the press screw

Preconditions

✓ The cover of the screen unit is removed (⇨ Sec. , Removing the cover of the screen units on page 8-9).

✓ Both halves of the divided screen units are removed (⇨ Sec. , Disassembling the divided screen units / replacing the screen halves on page 8-10).

✓ The inlet pipework is removed.

✓ The pressure transmitter of the upper half of the inlet housing is removed.

✓ The coupling between the gear and the press screw is removed (⇨ Sec. 12, Supplier Documentation on page 12-1)

✓ The compressed air lines to the counterpressure system are removed.

✓ The outlet hose for the seal water at the inlet housing is removed.

✓ A place where to put down (⇨ Fig. 8-6, Disassembling the cylindrical screen units (1) on page 8-16) the press screw is arranged.

❑ Observe the weight of the press screw unit therefore. (⇨Sec. 3.2, Weights on page 3-1).

Unfastening cylindrical screen units

→ Remove all bolts of the cylindrical screen units at the inlet housing.

→ Remove all screws of the cylindrical screw units together.

→ Remove all the bolts of the cylindrical screen units for screen support (in the filtrate tray).

→ Dismount the upper part of the screen support (⇨ Fig. 10-4, Component parts screen basket, divided (complete) on page 10-8 position **2**).

→ Push away the cylindrical screen units at least 10 cm from the inlet housing.

Removing the upper part of the inlet housing

→ Remove all bolts of the inlet side bearings at the upper part of the inlet housing.

→ Remove all bolts of the upper part at the lower part of the inlet housing.

→ Fasten the upper part of the inlet housing with suitable lifting equipment.

→ Loosen the upper part of the inlet housing from the lower part, using the forcing screw into the specified tapped holes in the flanges of the upper part.

→ Lift the upper part of the inlet housing with a crane and put down at suitable place.

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Removing the upper part of the outlet housing

→ Remove all bolts of the outlet side bearings at the upper part of the outlet housing.

→ Remove grease nipple and lubricating pipe (⇨, Disassembling grease nipple and lubricating pipe on page 8-35).

→ Remove all bolts of the upper part at the lower part of the outlet housing.

→ Fasten the upper part of the outlet housing with suitable lifting equipment.

→ Loosen the upper part of the outlet housing from the lower part, using the forcing screw into the specified tapped holes in the flanges of the upper part.

→ Lift the upper part of the outlet housing with a crane and put down at suitable place.

Removing press screw unit with the cylindrical screen unit

The press screw unit consists of:

– the cylindrical screen units

– the press screw with the counterpressure cone and the shredder flights inside

– the mounted inlet and outlet side bearing

→ Remove all bolts between the inlet side bearing and the lower part of the inlet housing.

→ Remove all screws between the outlet side bearing and the lower part of the outlet housing.

NOTICE

Do not place the press screw unit at the cylindrical screen units. They can damage due to the high weight.

→ Lift the press screw unit with suitable lifting equipment out of the inlet and outlet housing and put it down on the provided suitable place (⇨ Fig. 8-6, Disassembling the cylindrical screen units (1) on page 8-16).

→ Secure the press screw unit against falling (rolling or slipping).

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Disassembling the cylindrical screen units

❑ The press screw unit is dismounted, put on suitable place and secured against falling.
(⇨Fig. 8-6, Disassembling the cylindrical screen units (1) on page 8-16)

The cylindrical screen units are pulled off successively and separately from the press screw.

NOTICE

Use suitable lifting equipment for lifting the press screw unit with the screen units.
(⇨Sec. 3.2, Weights on page 3-1).

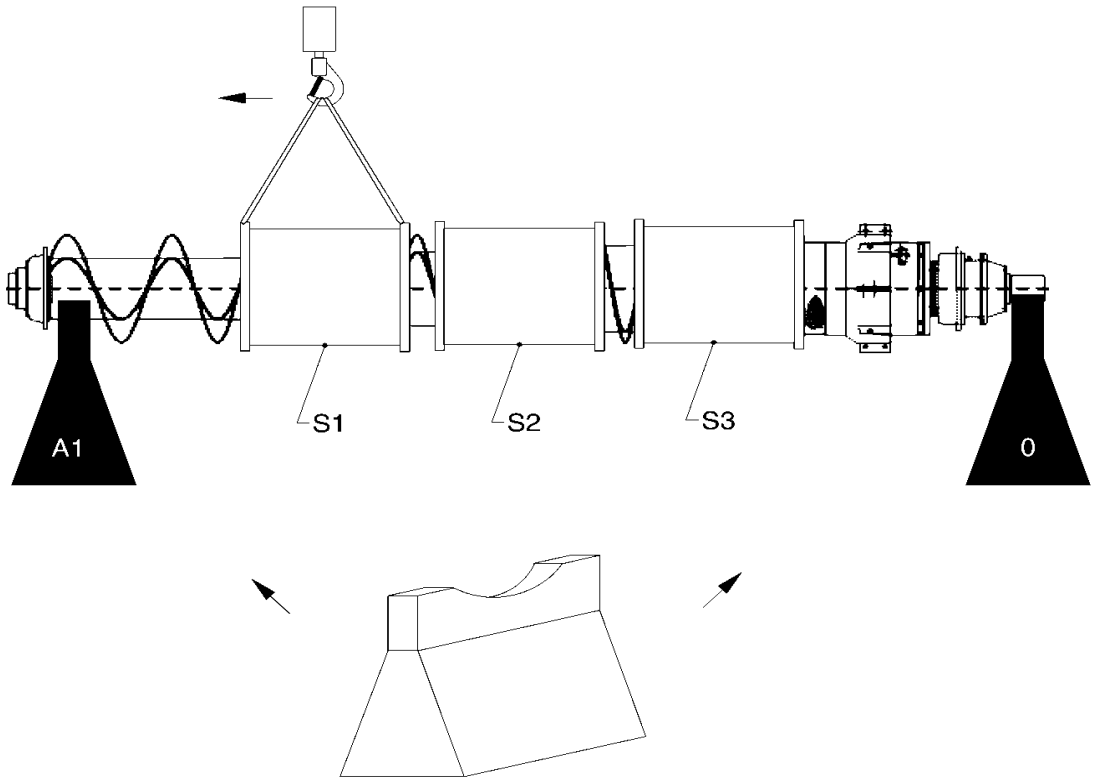

Fig. 8-6 Disassembling the cylindrical screen units (1)

→ Move the screen S1 unit with a crane towards the inlet bearing.

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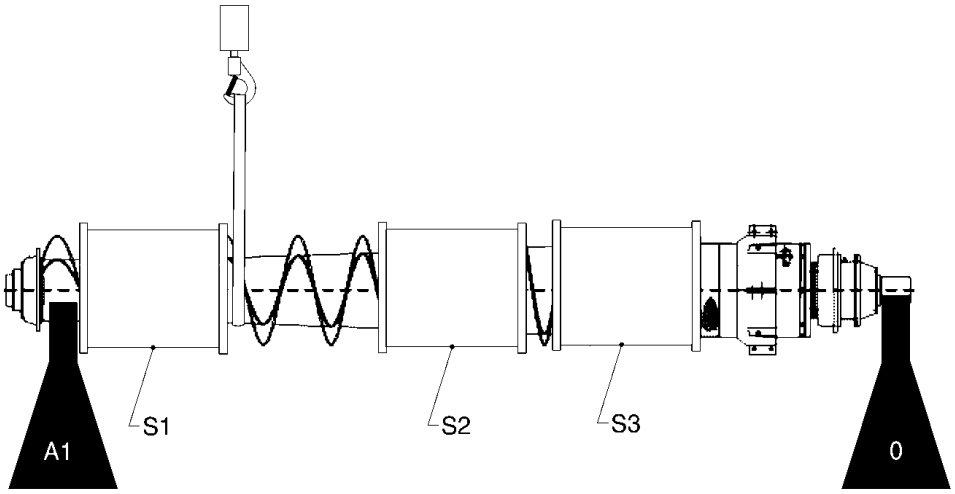

Fig. 8-7 Disassembling the cylindrical screen units (2)

→ Loosen screen unit from lifting equipment.

→ Lift the press screw slightly using a crane.

→ Remove bearing bracket A1.

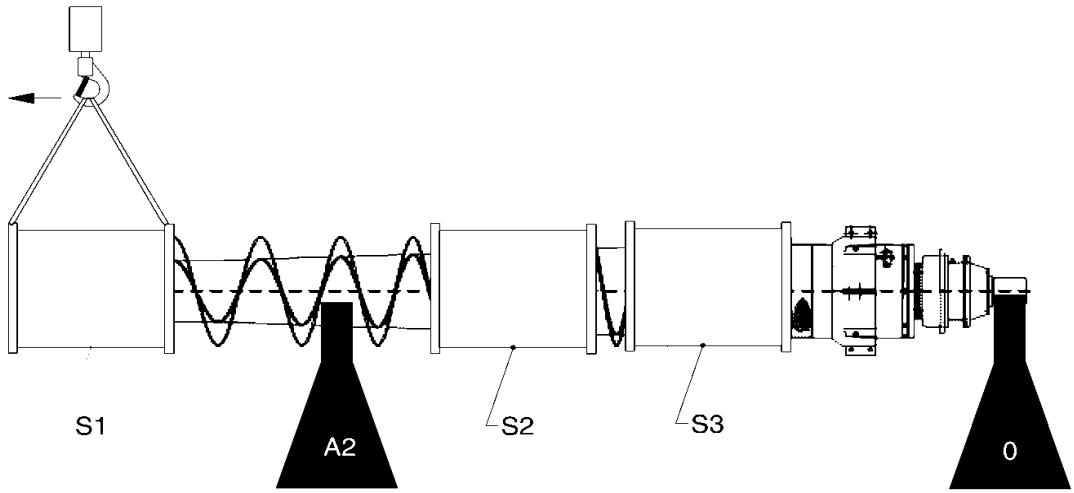

Fig. 8-8 Disassembling the cylindrical screen units (3)

→ Place the press screw onto bearing bracket A2.

→ Hook screen unit S1 to crane and pull it from the end of the press screw

→ Put screen unit S1 at suitable place.

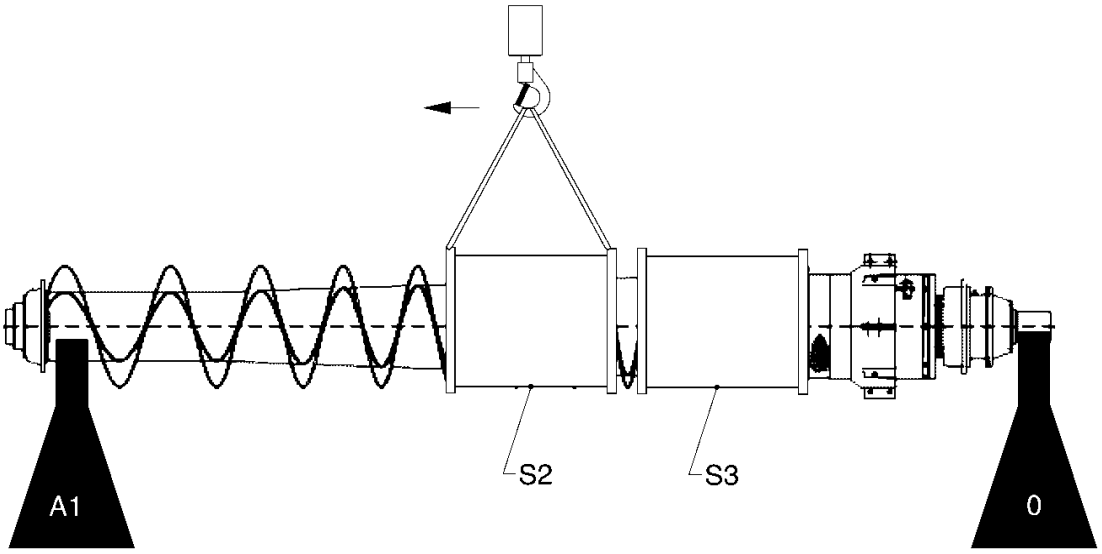

Fig. 8-9 Disassembling the cylindrical screen units (4)

→ Lift press screw with crane, remove bearing bracket A2 and place bearing bracket A1 below.

Now the same procedure can be used for the second and third screen unit.

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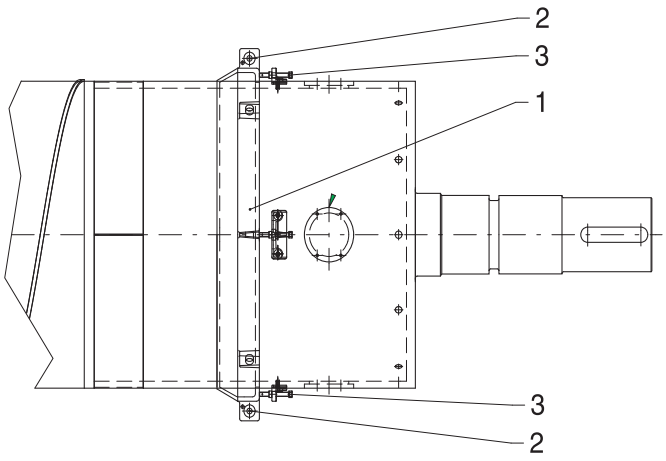
Disassembling and adjusting the counterpressure cone with shredding teeth



1 Counterpressure cone
2 Bolt units
3 Adjusting bolt

Fig. 8-10 Removing and fitting the counterpressure cone with shredding teeth

Removal:

→ Secure both halves of the counterpressure cone (Fig. 8-10/**1**) against falling off.

→ Loosen bolt units (Fig. 8-10/**2**).

→ Remove both halves of the counterpressure cone (Fig. 8-10/**1**).

Adjustment:

→ Secure both halves of the counterpressure cone (Fig. 8-10/**1**) against falling off.

→ Loosen bolt units (Fig. 8-10/**2**) slightly.

→ Loosen the locknuts of the setscrews (Fig. 8-10/**3**).

→ Adjust the counterpressure cone by using the setscrew (Fig. 8-10/**3**) in the prescribed direction (⇨ Sec. , Counterpressure cone on page 6-14).

→ Tighten the locknuts of the setscrews (Fig. 8-10/**3**).

→ Tighten screw units (Fig. 8-10/**2**).

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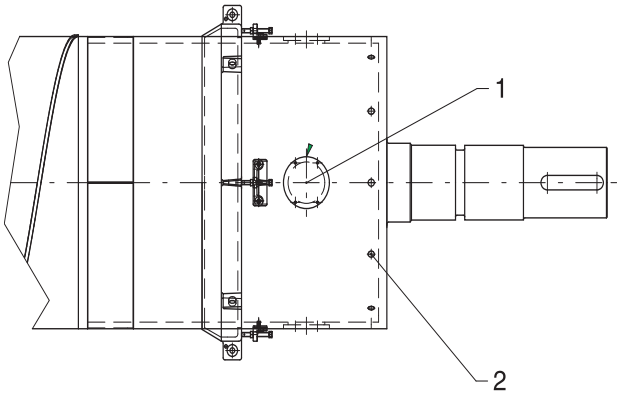
Uncovering the filtrate outlet holes in the press screw body

After longer operation the filtrate outlet holes in the press screw body may clog. These should always be free from pluggings for optimal function of the press screw.

❑ Press screw unit is removed (⇨Sec. , Disassembling the press screw on page 8-14).



1 Cover **2** Filtrate outlet holes

Fig. 8-11 Uncovering the filtrate outlet holes

→ Open the cover (Fig. 8-11/**1**) to the maintenance openings in the press screw body.

→ Turn the press screw until one maintenance opening is below.

→ Dissolve the plugging at the filtrate outlet holes (Fig. 8-11/**2**) with high pressure cleaner or other suitable tool.

→ Flush out fiber lumps etc from the inside of the press screw.

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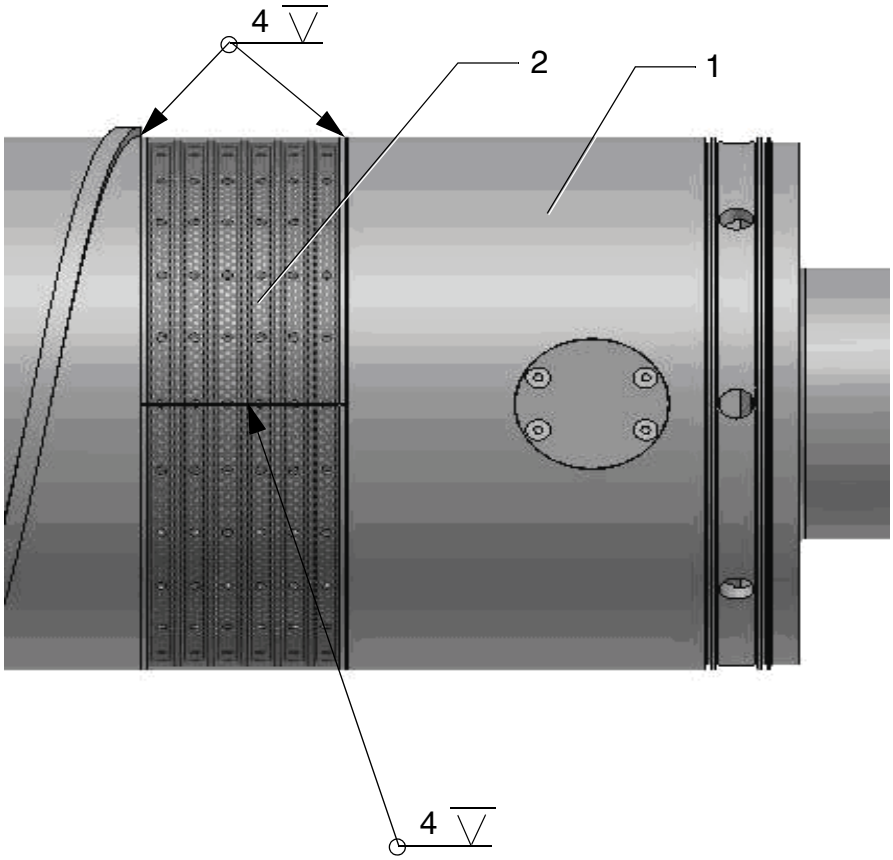
Replacing the screen unit in the press screw body

❑ The press screw unit is removed
(⇨Sec. , Disassembling the press screw on page 8-14).



1 Press screw body **2** Screen unit

Fig. 8-12 Screen unit in press screw body

Removing the screen unit from the press screw body

NOTICE

The screen unit is welded into the press screw body. The weld seams have to be ground when replacing this screen unit. Only use suitable grinding material and tools so as not to damage the rest of the press screw body.

→ Grind weld seams between the screen unit (Fig. 8-12/**2**) and the rest of the press screw body (Fig. 8-12/**1**).

→ Carefully unpick screen unit (Fig. 8-12/**2**) longitudinally.

→ Remove screen unit (Fig. 8-12/**2**).

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Welding the screen unit into press screw body

NOTICE

When welding, a lot of heat energy is introduced into the parts to be welded. This may under certain circumstances cause the parts to be welded to be deformed and also become unusable.

→ Therefore, take care when welding:

– Only set the welding equipment to the necessary current.

– Do not use more seam length than absolutely necessary.

→ Insert new screen unit flush into the seat of the press screw (⇨ Sec. 8-12, Screen unit in press screw body on page 8-22).

→ Weld in the screen unit as shown (⇨Sec. 8-12, Screen unit in press screw body on page 8-22).

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Resurfacing worn edges of the press screw spiral

Normally the edges of the screw flights of the press screw are subject to a high degree of wear. Therefore the edge of the screw flights is provided with a carbide coating from the inlet side to the area equipped with segments.

If the screw press runs too long without maintenance and the wear is extensive, the screw flight have to be rebuilt with stainless steel electrodes and grind to a sharp edge. The wear segments on the last part of the screw flight are easy to replace. However, all areas of the screw flights should be checked for wear.

We therefore recommend that all repair work be carried out by Voith Paper.

If you carry out the work yourself, please observe the following:

When welding, a lot of heat energy is introduced into the parts to be welded. This may under certain circumstances cause the parts to be welded to be deformed and also become unusable.

→ Therefore, take care when welding:

– Only use the necessary current for the welding equipment.

– Do not use more seam length than absolutely necessary.

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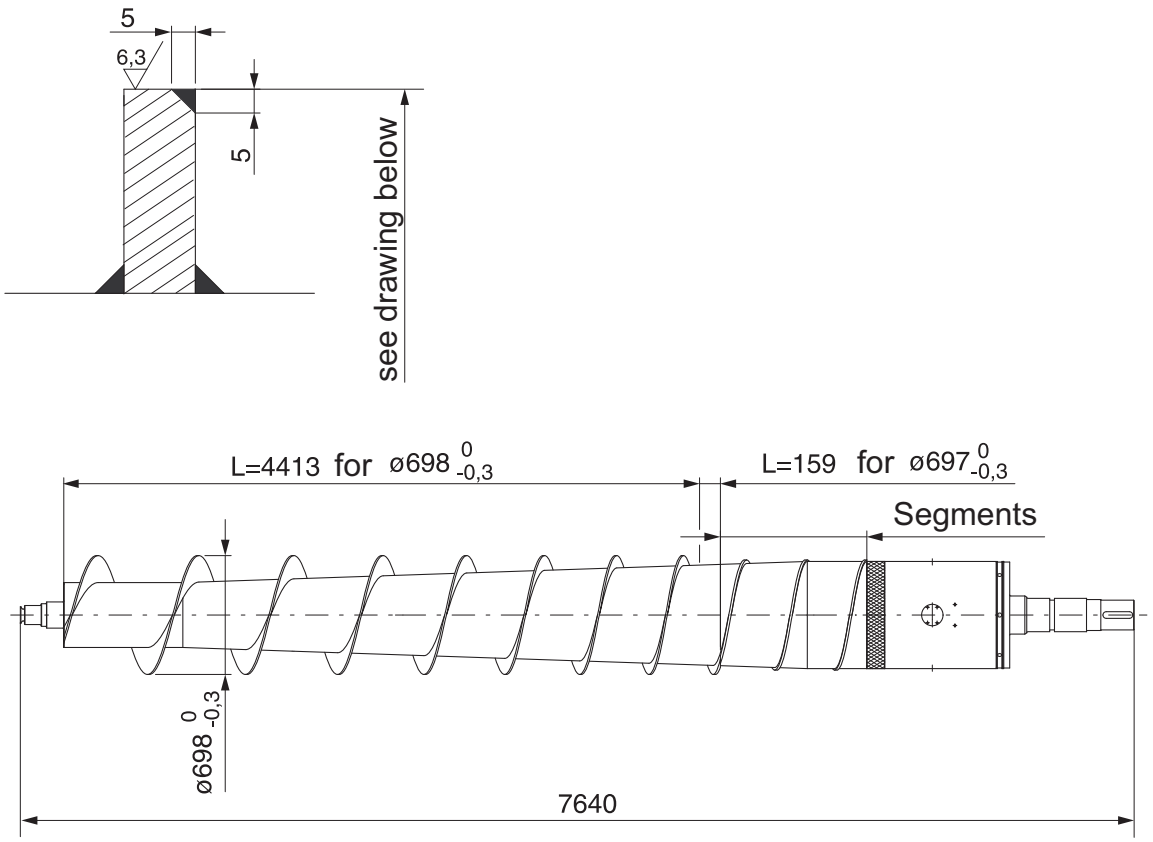

Fig. 8-13 Resurfacing worn edges on the press screw spiral

To achieve an optimum dewatering effect, the outer diameter of the press screw must be observed over the total length of the outer press screw edge.

→ Grind worn edge to a 5 x 45° mm bevel.

→ Weld the edges with Castolin DO 04 or 6804.

→ Grind corner to a sharp edge (no curve).

→ Observe the outer diameter of the press screw edge.

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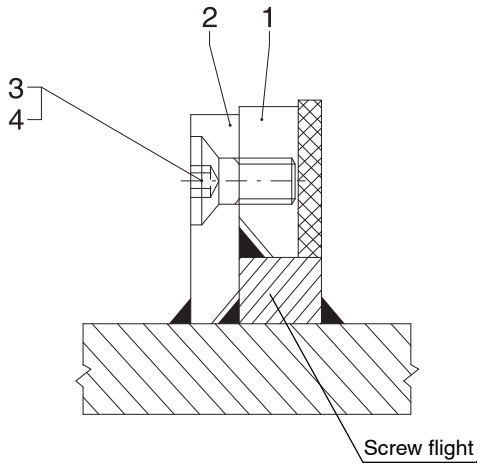
Replacing worn wear elements on the spiral on the press screw

In the compression zone (in the area of the divided screen unit) the wear is higher than in other areas. Therefore replaceable wear segments of a considerably more wear-resistant material are installed here. However, these must also be replaced from time to time.



1 Wear part
2 Wear segment holder
3 Bolt
4 Loctite 270

Fig. 8-14 Wear parts

- ❑ The upper part of the divided screen unit is removed (⇨Sec. 8-4, Disassembling the upper and lower part of the divided screen unit on page 8-10).
- ❑ The wear segments and especially the bolts (Fig. 8-14/**3**) are cleaned from paper stock rests.

Disassembling wear segments

→ Remove bolts (Fig. 8-14/**3**).

→ Remove wear segments (Fig. 8-14/**1**).

NOTICE

The hexagon socket bolt wears due to the bolt being screwed in and unscrewed. The bolts should always be replaced with new ones after disassembly to avoid problems when replacing the wear parts later.

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Installation of the new wear parts

→ Clean the surface of the wear segment holders (Fig. 8-14/**2**).

→ Apply Loctite 270 (or similar) to the new bolts (Fig. 8-14/**3**).

→ Insert bolts (2 per wear segment) and tighten with a tightening torque of 44 Nm.

NOTICE

Allow the threadlocker to set long enough before the next start-up (see manufacturer's specifications).

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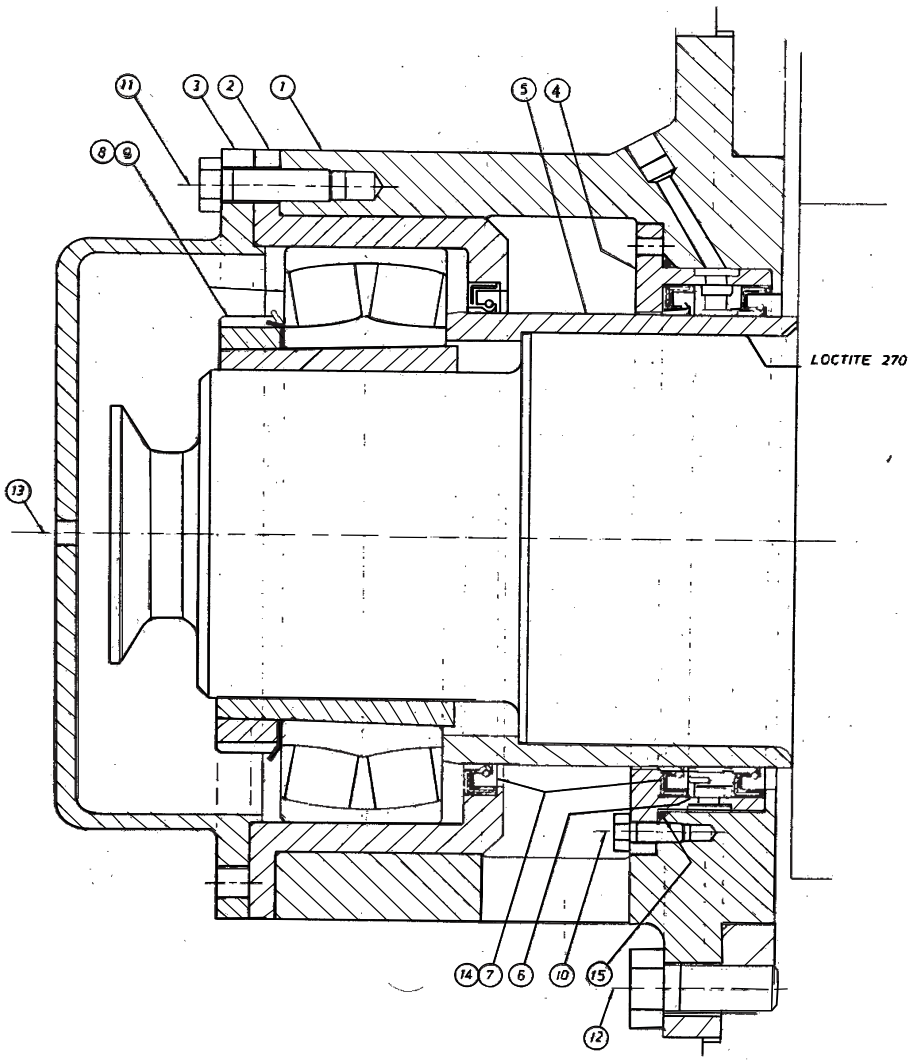
Dismounting the bearing

Disassembling the inlet side bearing



1	Bearing housing	**6**	Seal ring	**11**	Hexagon bolt
2	Bearing housing	**7**	Shaft seal ring	**12**	Hexagon bolt
3	Cover	**8**	Spherical roller bearing	**13**	Conical lubric. nipple
4	Washer	**9**	Adapter sleeve		
5	Wear sleeve	**10**	Hexagon bolt		

Fig. 8-15 Bearing inlet side

The proceeding described here can be used as well if the press screw unit is still mounted into the screw press.

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NOTICE

If the inlet side bearing has to be dismounted and the press screw unit still is mounted in the screw press, the vertical and horizontal fixation of the press screw unit has to be ensured in some other way.

Disassembling outer cover from bearing housing

→ Remove bolt units (Fig. 8-15/**11**) from the bearing cover (Fig. 8-15/**3**).

→ Remove outer bearing cover (Fig. 8-15/**3**).

Disassembling inner bearing housing

→ Release the rotation lock for the nut of the clamping sleeve (Fig. 8-15/**9**).

→ Loosen the nut of the adapter sleeve (Fig. 8-15/**9**) a couple of turns.

→ Loosen adapter sleeve by using a hammer to knock at the face of the adapter sleeve (Fig. 8-15/**9**) over a suitable device. The adapter sleeve may not become canted.

NOTICE

The adapter sleeve and the bearing are already unfastened and can fall off when pressing them out.

Pull out the inner bearing housing carefully and secure the adapter sleeve and the bearing against unintentional falling off.

→ Pull off the inner bearing housing (Fig. 8-15/**2**) with the bearing (Fig. 8-15/**8**), the clamping sleeve (Fig. 8-15/**9**) and the shaft seal ring (Fig. 8-15/**7**) using the forcing screws.

→ Pull bearing (Fig. 8-15/**8**) out of the inner bearing housing (Fig. 8-15/**2**) with suitable tools.

→ Put the parts at a clean place.

❑ Check bearing (Fig. 8-15/**8**), adapter sleeve and shaft seal ring (Fig. 8-15/**7**) for damages and wear.

↳ Replace the corresponding part if necessary.

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Disassembling the outer bearing housing with seals

→ Remove bolt units (Fig. 8-15/**12**).

NOTICE

The seals can become damaged when pulling them out.

Pull off the outer bearing housing with seals carefully.

→ Pull off the outer bearing housing (Fig. 8-15/**1**) with the seal ring (Fig. 8-15/**6**) and the shaft seal ring (Fig. 8-15/**7**) using the forcing screws.

→ Loosen bolts (Fig. 8-15/**10**) and remove washers (Fig. 8-15/**4**).

→ Remove shaft seal ring (Fig. 8-15/**7**) and seal ring (Fig. 8-15/**6**) out of the bearing housing.

→ Put the parts at a clean place.

❑ Check seal ring (Fig. 8-15/**7**) and shaft seal ring (Fig. 8-15/**11**) for damages and wear.

↳ Replace the corresponding part if necessary.

Dismounting wear sleeve

The wear sleeve is fixed to the shaft with Loctite 648 (see Sec. –, Loctite 648 Technical Data Sheet and MSDS on page -1) or a similar means. It may be necessary to heat it up to 200°C to loosen the connection.

CAUTION

Danger of burning!!

Touching hot surfaces may lead to burns.

→ Wear suitable PPE when working.

→ Heat the outer circumference of the wear sleeve (Fig. 8-15/**5**) if necessary.

→ Remove wear sleeve (Fig. 8-15/**5**).

❑ Check sleeve for wear.

↳ Replace if necessary.

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Mounting inlet side bearing

Always use new seals when fitting the parts.

Reverse removal sequence when fitting the bearing.

- ❑ Especially observe that the seal lips are correctly mounted.
- ❑ Check the wear sleeve for damage and wear.
- ↳ If necessary, replace them with new ones before reassembly.
- ❑ Check the bearing (Fig. 8-15/**8**) for damage and wear.
- ↳ If necessary, replace them with new ones before reassembly.
- → Lubricate the bearing with grease when necessary.

Preparation for mounting the wear sleeve (Fig. 8-15/**5**)

Clean surfaces to which adhesive will be applied later:

- → Remove all adhesive residue carefully with a metal brush or carefully by sandblasting.
- → Spray contact surfaces of the complete shaft journal with a standard solvent (trichlorethane or isopropyl alcohol) and clean the journal with a clean cloth.
- → Clean the wear sleeve on the inside with the same solvent.
- → Let the solvent evaporate completely.
- → Apply activating agent (e.g. Loctite 7471 Activator Sec. –, Loctite 7471 Technical Data Sheet and MSDS on page -1) in the area of the shaft where the wear sleeve is to be mounted.
- → Let the solvent of the activating agent evaporate (see manufacturer's specifications).
- → Apply adhesive (e.g. Loctite 648 Sec. –, Loctite 648 Technical Data Sheet and MSDS on page -1) in the area of the shaft to which you have already applied the activating agent.

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Wear PPE for the following activity:

Danger of burning!!

Touching hot surfaces may lead to burns.

Wear suitable PPE when working.

→ Heat wear sleeve carefully to 100 - 150°C.

→ Push wear sleeve to the intended place on the shaft, turning the wearing sleeve back and forth slightly as you push.

→ Let the adhesive bond set for at least 20 minutes (see also manufacturer's specifications) and let the wear sleeve cool down.

The setting time for maximum strength depends on the adhesive; it is - depending on temperature - approx. 3 hours (see also manufacturer's specifications).

→ Otherwise, install the components of the inlet side bearing in the reverse order to disassembly.

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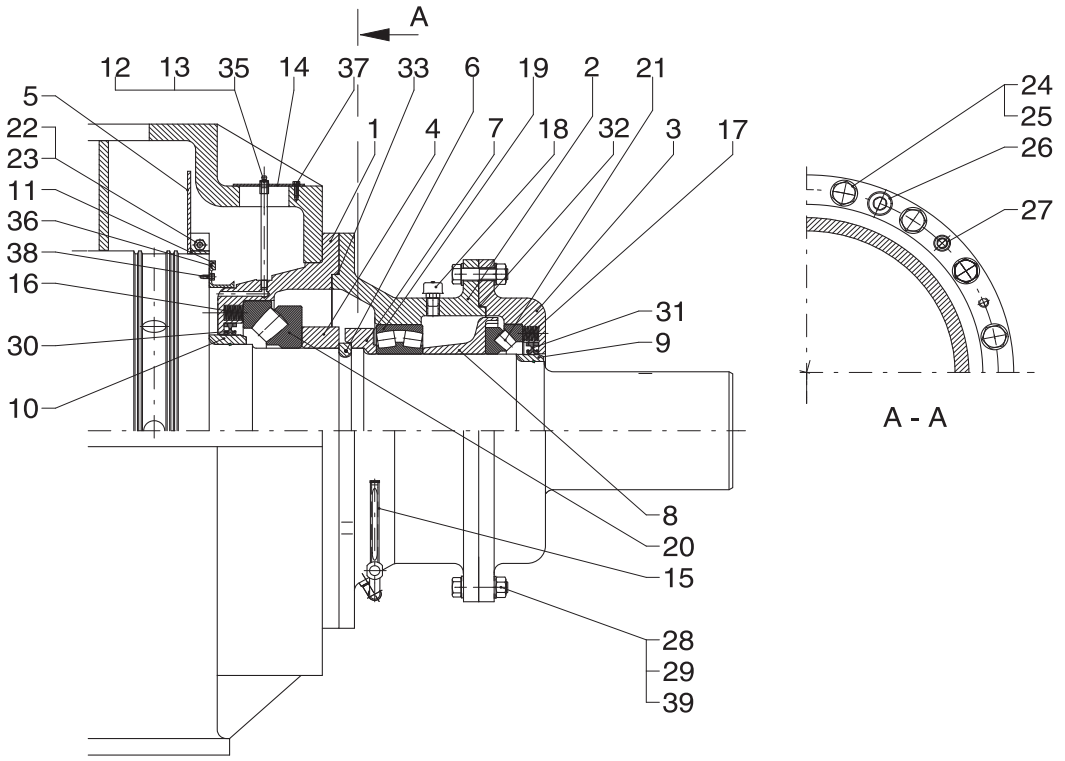
Disassembling outlet side bearing

❑ The press screw unit is dismounted and safely secured at suitable place.



1	Bearing housing	**14**	Plate	**27**	Socket head cap screw
2	Bearing housing	**15**	Oil level indicator	**28**	Hexagon bolt
3	Bearing housing	**16**	Spring	**29**	Washer
4	Spacer ring	**17**	Compression spring	**30**	Seal ring
5	Cover	**18**	Bleed screw	**31**	Seal ring
6	Retaining ring	**19**	Spherical roller bearing	**32**	O-ring
7	Ring	**20**	Ax. spherical roller bearing	**33**	O-ring
8	Spacer ring	**21**	Ax. spherical roller bearing	**34**	—
9	Protection sleeve	**22**	Hexagon bolt	**35**	Lubricating nipple
10	Protection sleeve	**23**	Hexagon nuts	**36**	O-ring
11	Cover	**24**	Hexagon bolt	**37**	Hexagon bolt
12	Lubrication pipe	**25**	Washer	**38**	Hexagon bolt
13	Adapter	**26**	Socket head cap screw	**39**	Hexagon nuts

Fig. 8-16 Bearing at the outlet side

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Outer bearing housing, spherical roller bearing and spacer ring Remove

→ Remove bolt units (Fig. 8-16/**28, 29** and **39**) on the outer bearing housing.

NOTICE

Pull off the bearing housing carefully, otherwise the shaft seal ring can be damaged.

→ Pull off the outer bearing housing (Fig. 8-16/**3**) and compression springs (Fig. 8-16/**17**) together with the shaft seal ring (Fig. 8-16/**31**).

→ Remove spherical roller bearing (Fig. 8-16/**21**).

→ Pull off spacer ring (Fig. 8-16/**8**).

→ Put the parts at a clean place.

❑ Check spherical roller bearing (Fig. 8-16/**21**) and shaft seal ring (Fig. 8-16/**31**) for damages and wear.

↳ Replace the corresponding part if necessary.

Dismounting bearing housing and radial bearing

→ Remove bolt units (Fig. 8-16/**24**) on the middle bearing housing (Fig. 8-16/**2**).

→ Pull off the middle bearing housing (Fig. 8-16/**2**) from the radial bearing (Fig. 8-16/**19**).

→ Remove O-ring (Fig. 8-16/**33**).

→ Put the parts at a clean place.

❑ Check radial bearing (Fig. 8-16/**19**) and the O-rings (Fig. 8-16/**33**) for damages and wear.

↳ Replace the corresponding part if necessary.

Disassembling retaining ring and spacer ring

→ Pull off spacer ring (Fig. 8-16/**7**).

→ Pull out retaining ring (Fig. 8-16/**6**).

→ Put the parts at a clean place.

Disassembling grease nipple and lubricating pipe

→ Loosen and remove socket head cap screws (Fig. 8-16/**37**).

→ Remove plate (Fig. 8-16/**14**) with grease nipple (Fig. 8-16/**35**), adapter (Fig. 8-16/**13**) and lubricating pipe (Fig. 8-16/**12**).

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Dismounting inner bearing housing and axial bearing

NOTICE

The seals can become damaged when dismounting the bearing housing and axial bearing. Therefore use suitable pull-off tool and work carefully.

→ Remove the inner bearing housing (Fig. 8-16/**1**) together with the axial bearing (Fig. 8-16/**8**), the compression springs (Fig. 8-16/**16**), the shaft seal ring (Fig. 8-16/**20**) and the pertinent bolts (Fig. 8-16/**32**).

→ Put the parts at a clean place.

❑ Check the axial bearing (Fig. 8-16/**20**) and the shaft seal ring (Fig. 8-16/**30**) for damages and wear.

↳ Replace the corresponding part if necessary.

Dismounting wear sleeve

❑ Check sleeves for wear.

↳ Replace if necessary.

The wear sleeves are fixed to the shaft with Loctite 648 j(see Sec. –, Loctite 648 Technical Data Sheet and MSDS on page -1) or a similar means. It may be necessary to heat it up to 200°C to loosen the connection.

CAUTION

Danger of burning!!

Touching hot surfaces may lead to burns.

→ Wear suitable PPE when working.

→ Heat the outer circumference of the wear sleeves (Fig. 8-16/**9** and **10**) if necessary.

→ Pull off the wear sleeves (Fig. 8-15/**9** and **10**).

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Assembling outlet side bearing

Always use new seals when fitting the parts.

Reverse removal sequence when fitting the bearing.

- ❑ Especially observe that the seal lips are correctly mounted.
- ❑ Check the wear sleeves for damage and wear.
- ↳ If necessary, replace them with new ones before reassembly.
- ❑ Check the bearings (Fig. 8-15/**19,20** and **21**) for damage and wear.
- ↳ If necessary, replace them with new ones before reassembly.
- → Lubricate the bearing when necessary.

Preparation for mounting the wear sleeve (Fig. 8-15/5)

Clean surfaces to which adhesive will be applied later:

- → Remove all adhesive residue carefully with a metal brush or carefully by sandblasting.
- → Spray contact surfaces of the complete shaft journal with a standard solvent (trichlorethane or isopropyl alcohol) and clean the journal with a clean cloth.
- → Clean the wear sleeve on the inside with the same solvent.
- → Let the solvent evaporate completely.
- → Apply activating agent (e.g. Loctite Activator Sec. –, Loctite 7471 Technical Data Sheet and MSDS on page -1) in the area of the shaft where the wear sleeve is to be mounted.
- → Let the solvent of the activating agent evaporate (see manufacturer's specifications).
- → Apply adhesive (e.g. Loctite 648 Sec. –, Loctite 648 Technical Data Sheet and MSDS on page -1) in the area of the shaft to which you have already applied the activating agent.

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Wear PPE for the following activity:

Danger of burning!!

Touching hot surfaces may lead to burns.

Wear suitable PPE when working.

→ Heat wear sleeve carefully to 100 - 150°C.

→ Push wear sleeve to the intended place on the shaft, turning the wearing sleeve back and forth slightly as you push.

→ Let the adhesive bond set for at least 20 minutes (see also manufacturer's specifications) and let the wear sleeve cool down.

The setting time for maximum strength depends on the adhesive; it is - depending on temperature - approx. 3 hours (see also manufacturer's specifications).

→ Otherwise, install the components of the inlet side bearing in the reverse order to disassembly.

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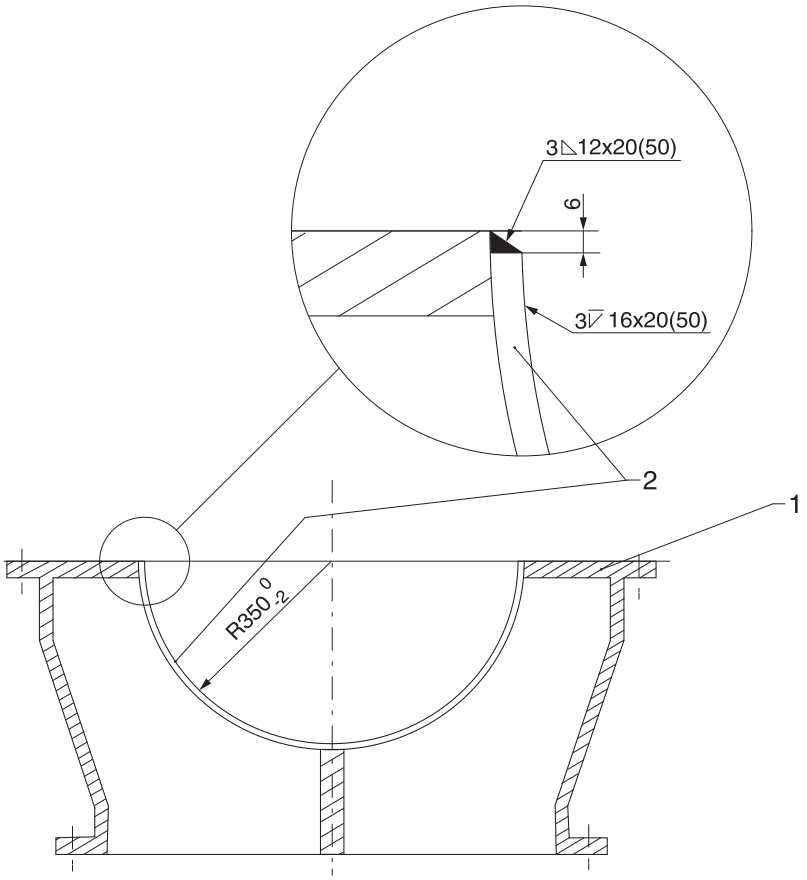
Replacing screen unit on lower part of inlet housing

Preconditions

Press screw unit is removed (⇨Sec. , Disassembling the press screw on page 8-14).



1 Inlet housing **2** Screen unit

Fig. 8-17 Screen unit in inlet housing

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Removing screen unit in lower part of inlet housing

NOTICE

The screen unit is welded into the lower section of the inlet housing. The weld seams have to be ground when replacing this screen unit. Only use suitable grinding materials and tools so as not to damage the lower section of the inlet housing.

→ Grind weld seams between screen unit (Fig. 8-17/**2**) and the lower section of the inlet housing (Fig. 8-17/**1**).

→ Remove screen unit (Fig. 8-17/**2**).

Welding screen unit on lower part of inlet housing

NOTICE

When welding, a lot of heat energy is introduced into the parts to be welded. This may under certain circumstances cause the parts to be welded to be deformed and also become unusable.

→ Therefore, take care when welding:

– Only use the necessary current for the welding equipment.

– Do not use more footage of welds than necessary.

→ Put new screen unit in the place provided for the lower part of the inlet housing
(⇨ Fig. 8-17, Screen unit in inlet housing on page 8-40).

→ Weld in the screen unit as shown
(⇨Fig. 8-17, Screen unit in inlet housing on page 8-40).

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Replacing the counterpressure unit

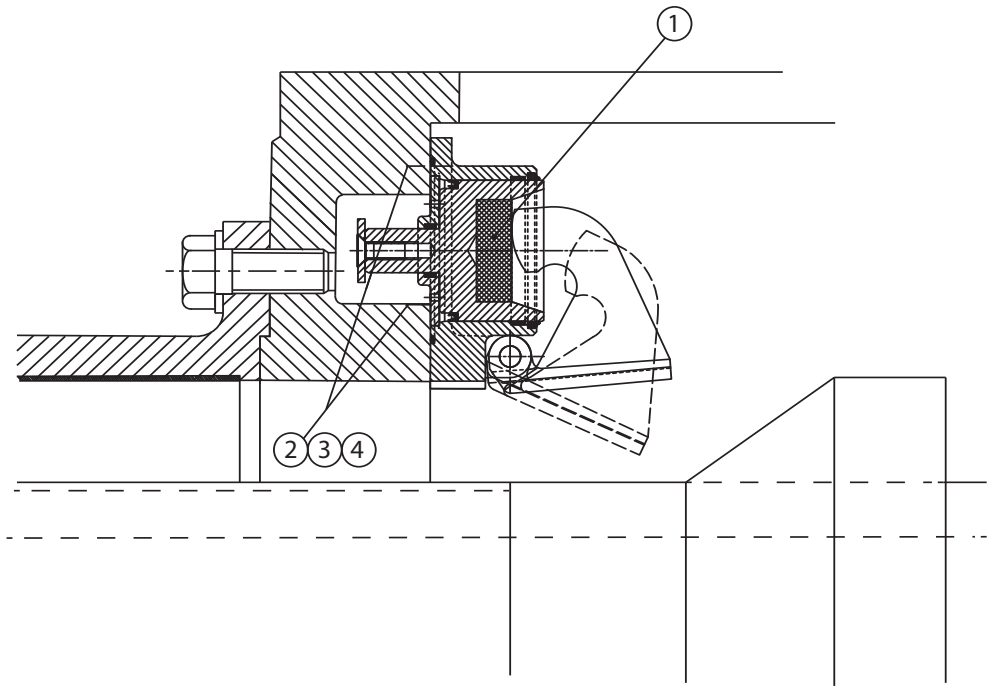
The respective counterpressure units may be removed separately.

Preconditions

✓ The press is switched off (⇨ Sec. 6.5, Switching the machine off on page 6-16) and locked to prevent unintentional start-up.

✓ The compressed air of the counterpressure system is reduced to 0 bar and the compressed air supply is disconnected.

Disassembling the machine



1 Cylinder
2 Stud bolt
3 Washer
4 Hexagon nuts

Fig. 8-18 Counterpressure unit

→ Loosen hexagon nuts (Fig. 8-18/**4**) and remove together with washers (Fig. 8-18/**3**).

→ Remove cylinder (Fig. 8-18/**1**) from stud bolts (Fig. 8-18/**2**).

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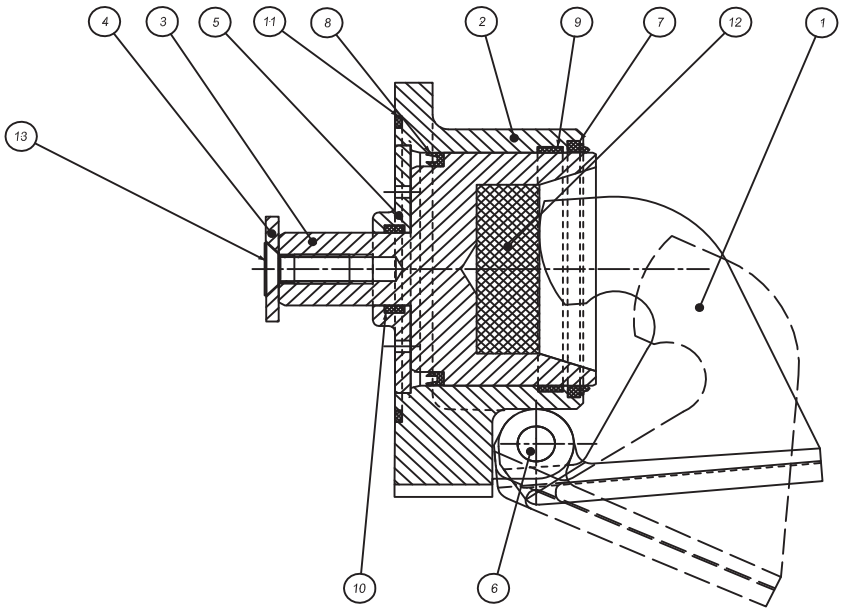

1	Counterpressure flap	**8**	Seal ring
2	Cylinder	**9**	Slide ring
3	Piston	**10**	Slide ring
4	Stopper	**11**	O-ring
5	Guide ring	**12**	Slide block
6	Bolt	**13**	Countersunk screw
7	Scraper		

Fig. 8-19 Disassembling counterpressure unit

Disassemble counterpressure unit as specified in (⇨ Sec. 8-19, Disassembling counterpressure unit on page 8-43).

❑ Check wear on parts.

↬ Replace worn parts if necessary.

It is recommended to replace the following parts against new parts:

– Slide ring (Fig. 8-19/**9**)
– Seal ring (Fig. 8-19/**8**).
– Scraper (Fig. 8-19/**7**)
– Slide ring (Fig. 8-19/**10**)

This applies as well if only one of the parts is damaged.

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9 Spare Parts

We recommend stocking up with spare parts in time because long delivery periods cannot always be avoided.

Use the preprinted order form to order spare parts (⇨ Sec. 11, Appendix on page 11-1).

The following position numbers refer to the diagrams in Sec. 10, Component Parts List on page 10-1.

9.1 Wearing parts

Pos. No.	Qty.	Designation	Dimensions	Part No.
009	1	SLIDE RING		20472-011
008	1	SEAL		20348-014
007	1	SCRAPER		20673-007
010	1	SLIDE RING		20472-013

Tab. 9-1 Wearing parts counterpressure cylinder

Pos. No.	Qty.	Designation	Dimensions	Part No.
002	2	SCREEN HALF SD D = 1.5	D1170/1056 X 3	HC021776001

Tab. 9-2 Wearing parts screen basket, divided (complete)

Pos. No.	Qty.	Designation	Dimensions	Part No.
002	1	SCREEN HALF SD=1.5	D 1097/816 X 6	T446300002

Tab. 9-3 Wearing parts inlet housing

Pos. No.	Qty.	Designation	Dimensions	Part No.
012	55	WEAR SEGMENT	20 X 104 X 32.5	H1131-012

Tab. 9-4 Wearing parts press screw

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9.2 Replacement parts

Pos. No.	Qty.	Designation	Dimensions	Part No.
006	1	SEAL	238/220 X 9	H0008-001
007	3	SEAL (RING) OIL LIP METRIC	220/250 X 15	6GSEOM2201
014	1	V-RING	V. 220, A	2740220A72
020	1	O-RING	229.5 X 3	20175-741

Tab. 9-5 Replacement parts bearing assembly (inlet)

Pos. No.	Qty.	Designation	Dimensions	Part No.
030	1	SEAL	CK 325/365 X 20	T207330013
031	1	SEAL	CK 259/300 X 20	T207330014
032	1	O-RING DIN3771	420 X 4	5040000005
033	1	O-RING DIN3771	530 X 4	5040000006
036	1	O-RING VN1171	553 X 5.7	5040000016

Tab. 9-6 Replacement parts bearing assembly (outlet)

Pos. No.	Qty.	Designation	Dimensions	Part No.
007	1	SCRAPER		20673-007
011	1	O-RING	3 X 150 X 144	20070-233

Tab. 9-7 Replacement parts counterpressure cylinder

Pos. No.	Qty.	Designation	Dimensions	Part No.
014	110	COUNTERSUNK SCREW ISO10642	M 10 X 25	20013-141

Tab. 9-8 Replacement parts press screw

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10 Component Parts List

General

The component parts list is structured in such way that parts can be identified in an overview drawing and the associated respective list.

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10.1 Overview of assemblies

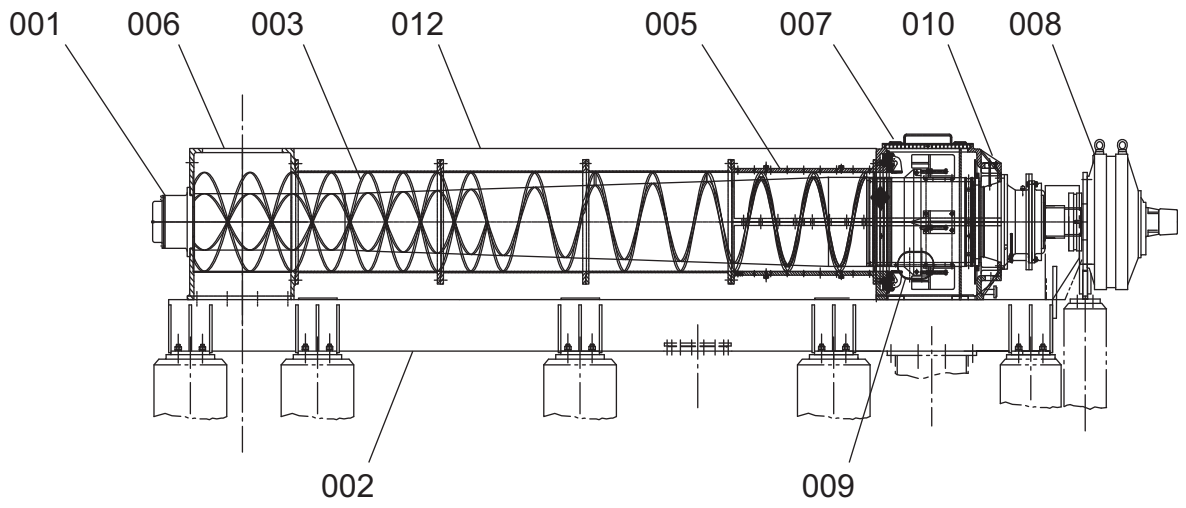

Fig. 10-1 Assemblies

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Pos. No.	Qty.	Designation	Dimensions	Part No.
001	1	BEARING ASSEMBLY (INLET)	⇨ Sec. 10.2, Bearing assembly (inlet) on page 10-4	44819-004
002	1	SUPPORT FRAME	760 X 1876 X 5262	153938
003	1	PRESS SCREW	⇨ Sec. 10.3, Press screw on page 10-6	H06026-001
005	1	DIVIDED SCREEN BASKET	⇨ Sec. 10.4, Divided screen basket on page 10-8	96943-001
006	1	INLET HOUSING	⇨ Sec. 10.5, Inlet housing on page 10-12	458.191409
007	1	OUTLET HOUSING WITH COVER	⇨ Sec. 10.6, Outlet housing with cover on page 10-14	458.191615
008	1	DRIVE	⇨ Sec. 10.7, Drive on page 10-17	153464
009	1	COUNTERPRESSURE RING	⇨ Sec. 10.8, Counter-pressure ring on page 10-18	48592-004
010	1	BEARING ASSEMBLY OUTLET)	⇨ Sec. 10.9, Bearing assembly (outlet) on page 10-20	49829-008
012	1	COVER PLATE	⇨ Sec. 10.10, Cover on page 10-22	153824
—	1	ACCESSORIES	⇨ Sec. 10.11, Acces-sories on page 10-24	458.197319
—	1	CONTROL CABINET	⇨ Sec. 10.12, Control cabinet on page 10-25	154563

Tab. 10-1 Component parts list assemblies

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10.2 Bearing assembly (inlet)

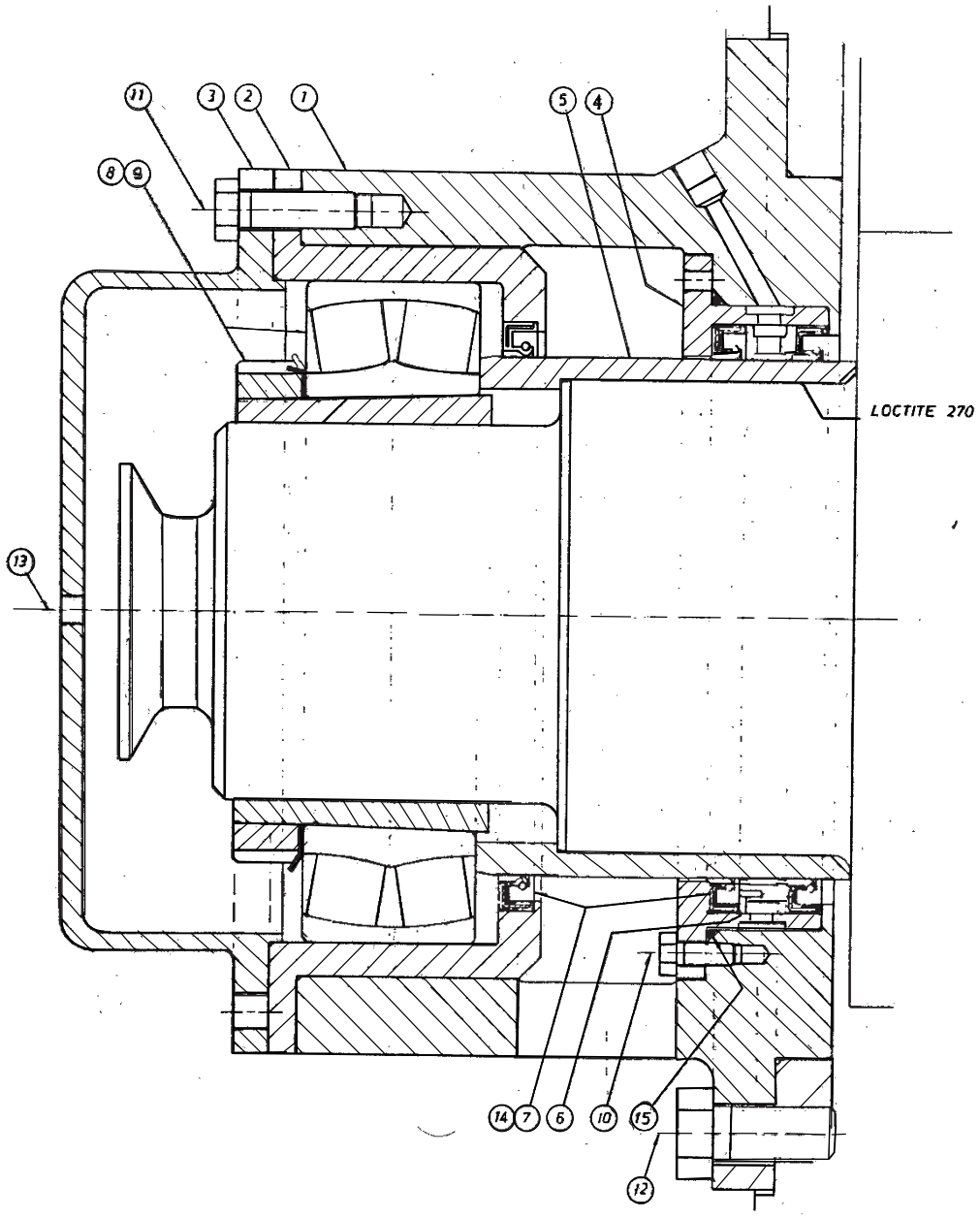

Fig. 10-2 Component parts list bearing assembly (inlet)

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Pos. No.	Qty.	Designation	Dimensions	Part No.
1	1	BEARING HOUSING		45592-001
2	1	BEARING HOUSING		T455910003
3	1	COVER (SP-70)		45608-002
4	1	PLATE (SP-70)		T455960001
5	1	SLEEVE (SP-70) SS316L		T455970001
6	1	SEAL RING FOR INLET END BEARING		H0008-001
7	3	SEAL (RING) OIL LIP METRIC	220/250 X 15	6GSEOM2201
8	1	BRG RLR SPHER 180X280X74M	SKF 23036CCK	T203470045
9	1	SLEEVE ADAPTER BRG M 160IDX109	SKF H3036	6BSLA36001
10	3	CAPSC (HEX HD) M10-25 DIN 933		79066
11	8	CAPSC (HEX HD) M16-50 DIN933		782746
12	8	CAPSC (HEX HD) M24-50 DIN933		712820
13	1	GREASE FITING 1/4”NPT #1627		6PFIG04001
14	1	V-RING #V-220A NITRILE	V-220 A NITRIL	2740220A72
15	1	BEND (SP-70)		20133-071
16	2	WELDING SOCKET R1”SS2343 UD		20206-006
17	1	HOSE (SP-70)		20431-440
18	2	HOSE CLAMP (SP-70)		20433-052
19	1	PIPE FOR INLET BEARING (SP-70)		44819-801
20	1	O-RING FOR INLET END BEAR-ING	229 5X3 NITRIL W/TIPAFLON	20175-741

Tab. 10-2 Components parts list bearing assembly (inlet)

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10.3 Press screw

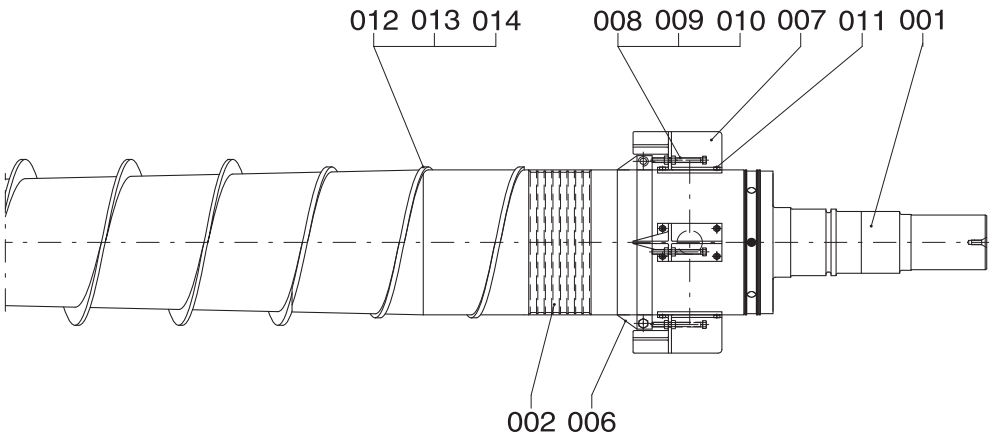

Fig. 10-3 Component parts press screw

Pos. No.	Qty.	Designation	Dimensions	Part No.
001	1	PRESS SCREW	710 X 7653	H0626-001
002	1	SCREEN PLATE SD D = 1.2	4 X 246 X 949.9	TH01590001
006	1	COUNTERPRESSURE CONE	730/610 X 138	458.191233
007	4	SHREDDER TOOTH	352 X 174 X 160	458.191223
008	4	ADJUSTING BOLT	M 20 X 200	458.164806
009	8	HEXAGON NUT ISO4032	M 20	458.163700
010	4	SPLIT PIN	4 X 10	450.376046
011	16	HEXAGON BOLT ISO4017	M 16 X 40	458.163702
012	55	WEAR SEGMENT	20 X 104 X 32.5	H1131-012
013	55	HOLDER	104 X 12 X 45.4	H1131-001
014	110	COUNTERSUNK SCREW ISO10642	M 10 X 25	20013-141

Tab. 10-3 Component parts list press screw

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Editor: VPAW, Watson, 2132
Translator: -

As of: 02/13/2014
Revision No.:-

10.4 Divided screen basket

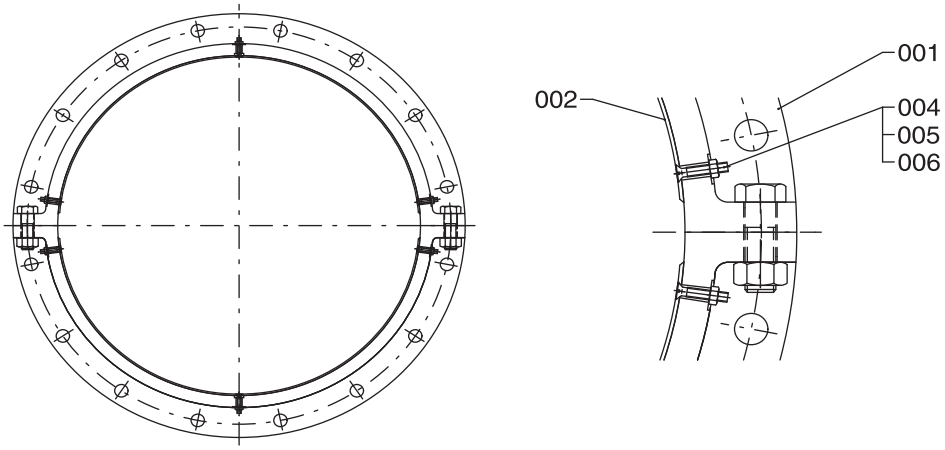

Fig. 10-4 Component parts screen basket, divided (complete)

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 02/13/2014
Revision No.:-

Pos. No.	Qty.	Designation	Dimensions	Part No.
001	1	SCREEN BASKET; DIVIDED	880/700 X 1200 ⇨Sec. 10-5, Component parts list screen basket, divided (complete) on page 10-11	96943-001
002	2	SCREEN HALF SD D = 1.5	D1170/1056 X 3	HC021776001
004	54	COUNTERSUNK SCREW ISO10642	M 8 X 40	24908050MH
005	54	WASHER ISO7089	8	8331019
006	54	HEXAGON NUT ISO10511	M 8	28308001MH

Tab. 10-4 Component parts list screen basket, divided (complete)

As of: 02/13/2014
Revision No.:-
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

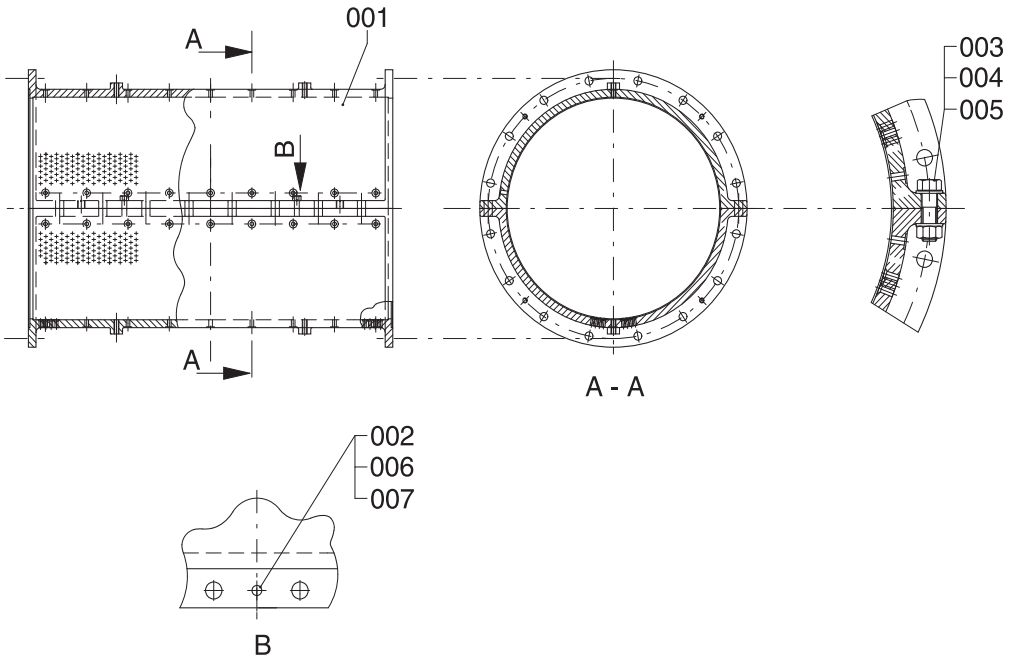

Fig. 10-5 Component parts screen basket, divided

,

As of: 02/13/2014
Revision No.:-
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Pos. No.	Qty.	Designation	Dimensions	Part No.
001	2	SCREEN HALF	445/355 X 1202	96943-001
002	8	TAPER PIN ISO8737	16 X 85	20709-085
003	16	HEXAGON BOLT ISO4017	M 24 X 80	20019-055
004	16	HEXAGON NUT ISO4032	M 24	20005-050
005	32	WASHER ISO7089	24	20019-060
006	8	HEXAGON NUT ISO4032	M 16	20005-027
007	8	WASHER ISO7089	16	20013-001

Tab. 10-5 Component parts list screen basket, divided (complete)

As of: 02/13/2014
Revision No.:-
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

10.5 Inlet housing

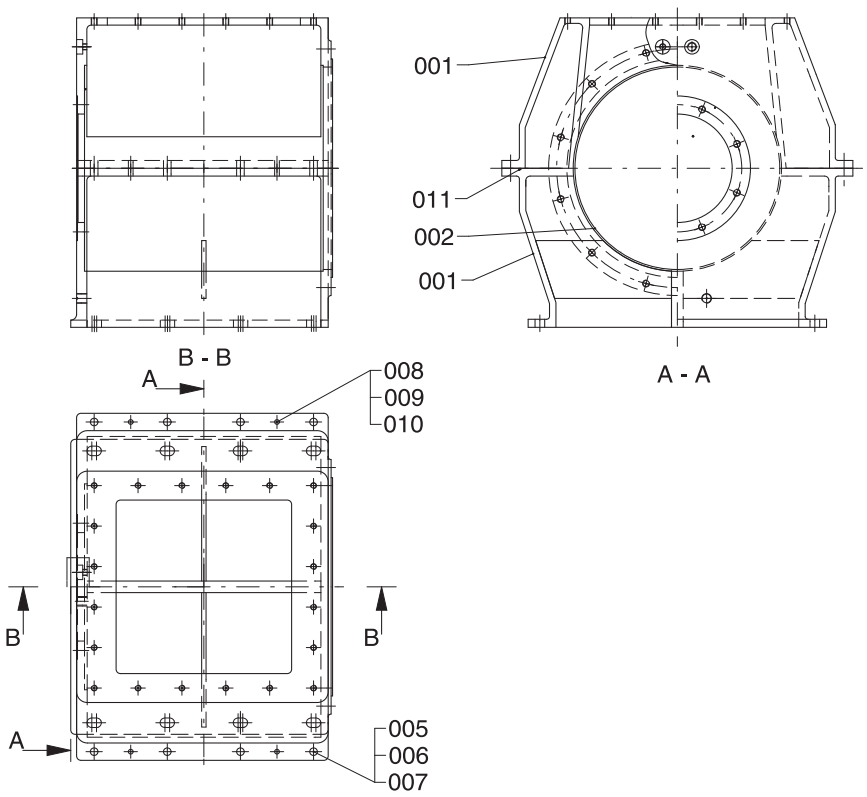

Fig. 10-6 Component parts inlet housing

As of: 02/13/2014
Revision No.: -
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Pos. No.	Qty.	Designation	Dimensions	Part No.
001	1	HOUSING, SPLIT	900 X 1076 X 1200	458.191404
002	1	SCREEN HALF SD=1.5	D 1097/816 X 6	T446300002
005	8	HEXAGON BOLT ISO4017	M 24 X 80	20019-055
006	8	HEXAGON NUT ISO4032	M 24	20005-090
007	8	WASHER ISO7090	24	20018-060
008	4	TAPER PIN ISO8737	M 16 X 85	H01.103056
009	4	HEXAGON NUT ISO4032	M 16	H01.201462
010	4	WASHER ISO7089	16	H01.056970
011	2	O-RING	5 X2800	458.191386

Tab. 10-6 Component parts list inlet housing

As of: 02/13/2014
Revision No.:-
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

10.6 Outlet housing with cover

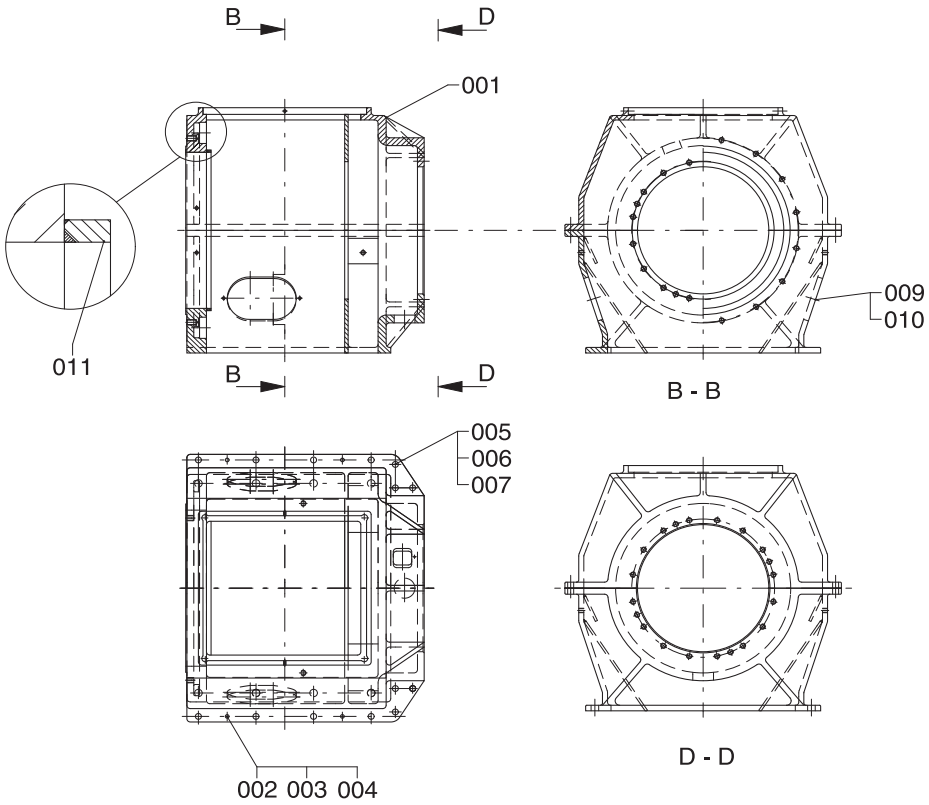

Fig. 10-7 Component parts outlet housing

As of: 02/13/2014
Revision No.: -
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Pos. No.	Qty.	Designation	Dimensions	Part No.
001	1	OUTLET HOUSING	1041 X 1108 X 1200	458.192983
002	4	TAPER PIN DIN7977	M 16 X 85	458.165851
003	4	HEXAGON NUT ISO4032	M 16	458.163521
004	4	WASHER ISO7089	16	H01.056970
005	14	HEXAGON BOLT ISO4017	M 24 X 80	20019-055
006	14	HEXAGON NUT ISO4032	M 24	20005-080
007	14	WASHER ISO7089	24	20018-060
009	4	HEXAGON BOLT ISO4017	M 12 X 30	H01.200350
010	2	COVER	5 X 260 X 360	458.191624
011	2	RING HALF	10 X 20 X 350	458.192029

Tab. 10-7 Component parts list outlet housing

As of: 02/13/2014
Revision No.:-
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
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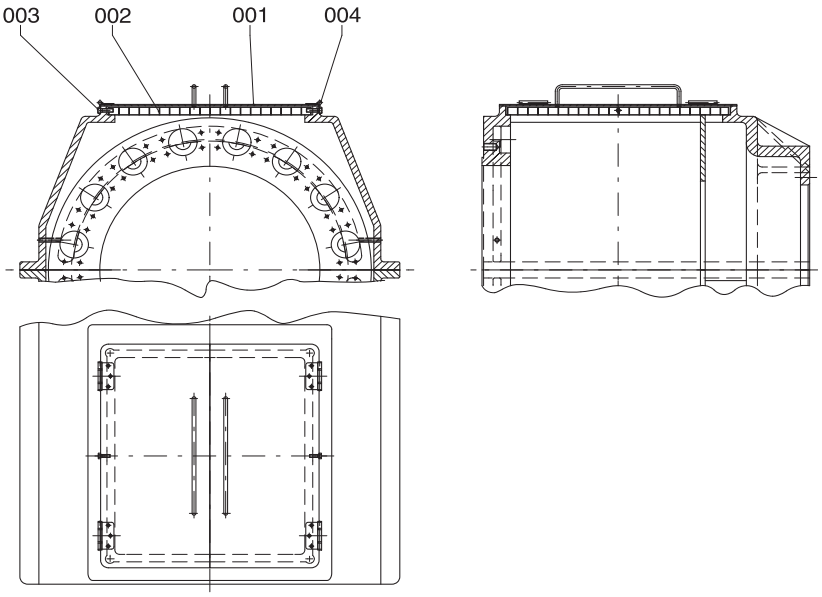

Fig. 10-8 Component parts outlet housing/cover

Pos. No.	Qty.	Designation	Dimensions	Part No.
001	2	COVER	66 X 345 X 750	458.192166
002	1	INSERT	25 X 640 X 700	458.192173
003	2	HEXAGON BOLT ISO4017	M 12 X 40	H01.200275
004	4	HINGE	85 X 85	458.192174

Tab. 10-8 Component parts list outlet housing/cover

As of: 02/13/2014
Revision No.: -
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
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10.7 Drive

Pos. No.	Qty.	Designation	Dimensions	Part No.
—	1	DRIVE UNIT, HYDRAULIC		

Tab. 10-9 Component parts list drive

As of: 02/13/2014
Revision No.:-
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
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10.8 Counterpressure ring

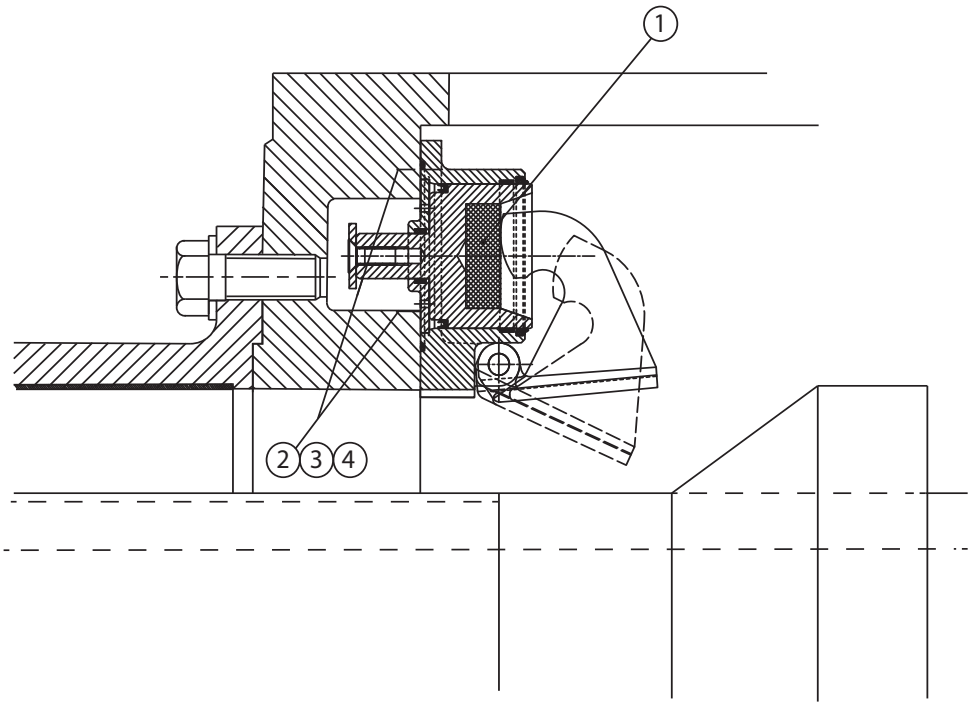

Fig. 10-9 Component parts counterpressure ring (complete)

Pos. No.	Qty.	Designation	DIMENSIONS	Part No.
1	16	COUNTERPRESSURE UNIT		50062-001
2	64	STUD A4-70	M10-1.50 X 35MM	136563
3	64	WSHR FL RGLR A4	M10	839011
4	64	NUT LOCK HEX A4	M10	28310001MH

Tab. 10-10 Component parts list counterpressure ring (complete)

As of: 02/13/2014
Revision No.: -
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

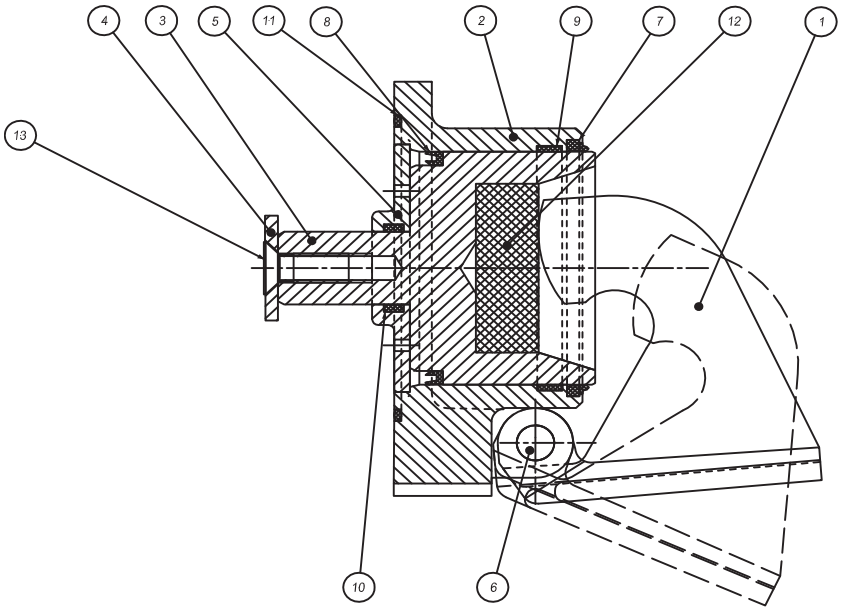

Fig. 10-10 Component parts counterpressure cylinder

Pos. No.	Qty.	Designation	Dimensions	Part No.
1	1	COUNTERPRESSURE FLAP		48677-004
2	1	CYLINDER		48710-002
3	1	PISTON		48708-004
4	1	STOPPER		49510-001
5	1	GUIDE RING		49509-001
6	1	BOLT		49519-001
7	1	SCRAPER		20673-007
8	1	SEAL RING		20348-014
9	1	SLIDE RING		20472-011
10	1	SLIDE RING		20472-013
11	1	O-RING		20070-233
12	1	SLIDE BLOCK		48728-001
13	1	COUNTERSUNK SCREW		20013-056

Tab. 10-11 Component parts counterpressure cylinder

As of: 02/13/2014
Revision No.:-
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
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10.9 Bearing assembly (outlet)

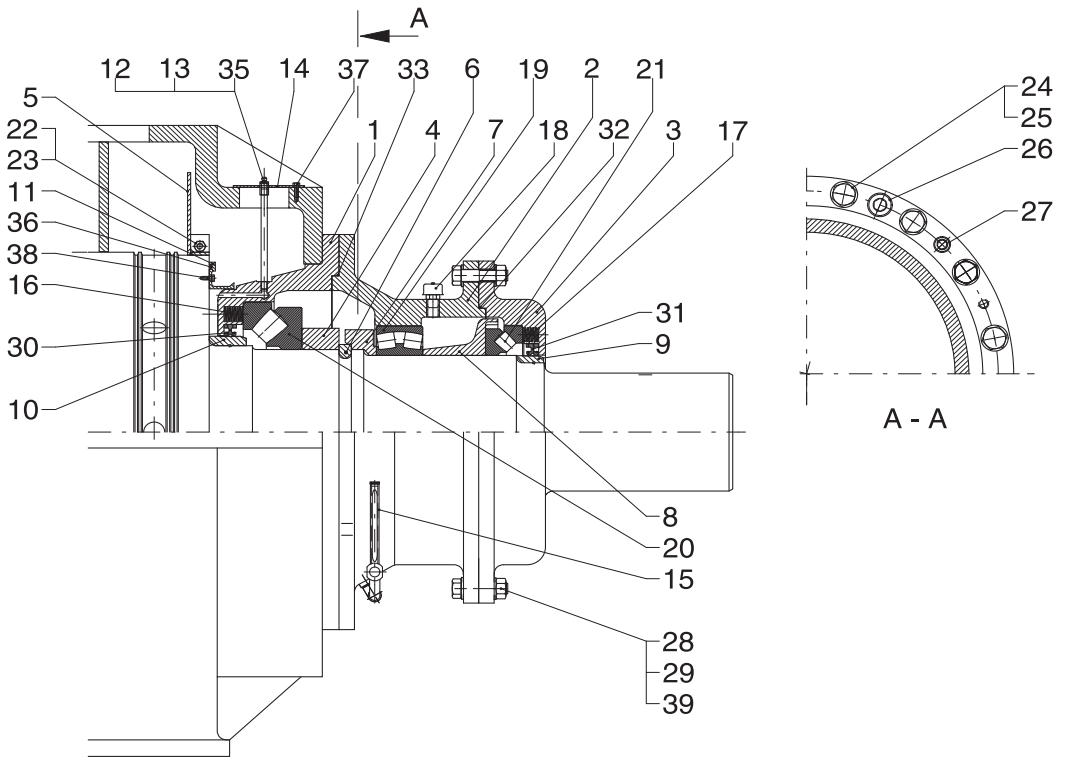

Fig. 10-11 Component parts bearing assembly (outlet)

As of: 02/13/2014
Revision No.: -
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Pos.No.	Qty.	Designation	Part No.
1	1	BEARING HOUSING (SP-70)	T498300004
2	1	BEARING HOUSING FOR SP-70	T498310001
3	1	EXTERNAL BEARING HOUSING SP70	T498320007
4	1	SPACER SP-70	T498370001
5	1	PULP FLINGER SP70L/SL	TA18900001
6	1	BLOCKING (SP-70) MS	T498400001
7	1	EXTRACTION COLLAR: SP70 AS PER	T498410001
8	1	SPACER RING SP-70	T498370001
9	1	SLEEVE SP-70 SS316L	T498360001
10	1	SLEEVE SP-70 SS316L	T498350001
11	1	SEAL PROTECTION SS316L (SP-70)	T961630001
12	1	GREASE PIPE (SP-70) 1/4”NPT	T961640001
13	1	CONNECTING NIPPLE (SP-70)	T961650001
14	1	CLOSING PLATE SS316L (SP-70)	T961660001
15	1	OIL SIGHT GLASS #95958-003	T959580003
16	12	HELICAL SPRING SP70	T204380056
17	12	HELICAL SPRING SP-70	T204380057
18	1	FILTER PLUG SP45/70	T203170012
19	1	RADIAL ROLLER BEARING SP-70	T203470073
20	1	THRUST ROLLER BEARING #29356	T201360054
21	1	THRUST ROLLED BEARING SP-70	T201360053
22	2	CAP SCR HH A4-80 M10-1.50 X 50	144897
23	2	NUT HEX A4-80 M10-1.50	140012
24	16	CAP SCR HH A4-70 M24-3.00 X 90	257043
25	16	WSHR FL RGLR A4 M24	743858
26	4	CAP SCR SCH A4-70 M24-3.00 X 60	721913
27	4	CAP SCR SCH A4-80 M16-2.00 X 35	144898
28	16	CAP SCR HH A4-80 M20-2.50 X 70	108652
29	32	WSHR FL RGLR A4 M20	721787
30	1	SEAL CK 325/365 X 20	T207330013
31	1	SEAL CK 259/300 X 20	T207330014
32	1	O-RING 4MM X 420MM ID NITRILE	5040000005
33	1	O-RING 4MM X 530MM ID NITRILE	5040000006
35	1	GREASE FITTING 1/8”NPT #1610	6PFIG00001
36	1	O-RING 5.7MM X 553MM ID	5040000016
37	1	CAP SCR HH A4-80 M06-1.00 X 20	107920
38	4	CAP SCR HH A4-80 M06-1.00 X 16	717656
39	16	NUT HEX A4-80 M20-2.50	766038

Tab. 10-12 Component parts list bearing assembly (outlet)

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 02/13/2014
Revision No.:-

10.10 Cover

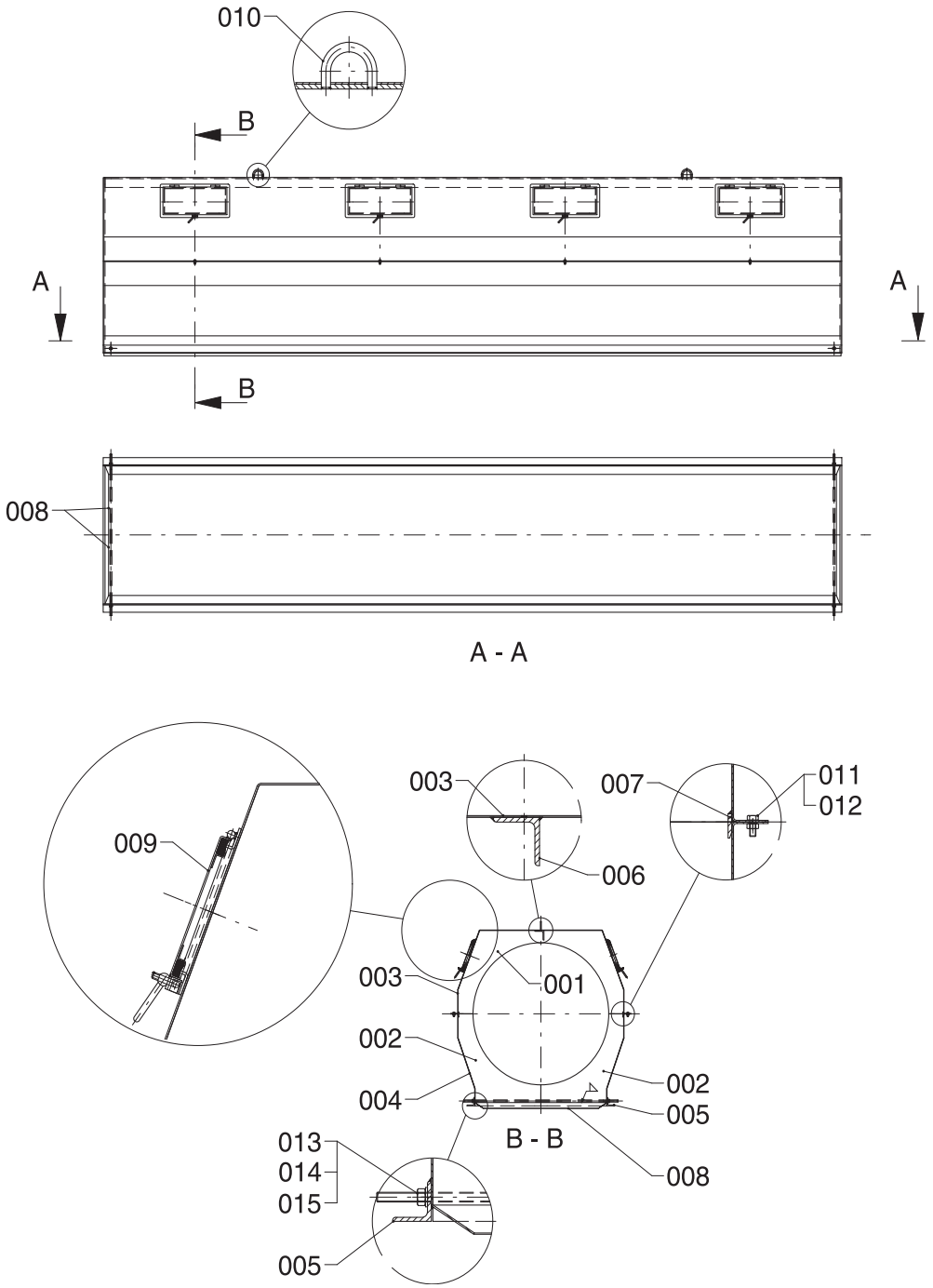

Fig. 10-12 Component parts cover

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 02/13/2014
Revision No.:-

Pos. No.	Qty.	Designation	Dimensions	Part No.
001	2	END PLATE	12 X 522 X 1074	458.192154
002	4	END PLATE	12 X 542 X 575	458.192155
003	2	COVER	519 X 581 X 4780	458.192156
004	2	COVER	210 X 585 X 4780	458.192163
005	2	ANGLE	50 X 50 X 5 X 4790	458.192164
006	1	ANGLE	60 X 60 X 6 X 4765	458.192285
007	2	STRIP	5 X 30 X 4765	458.192169
008	4	STRIP	3 X 50 X 427	458.192170
009	8	FLAP	22 X 220 X 450	458.192275
010	2	SUSPENSION BRACKET	12 X 56 X 72	458.192238
011	8	HEXAGON BOLT ISO4017	M 8 X 20	H01.152559
012	8	HEXAGON NUT ISO4032	M 8	458.163517
013	2	STUD BOLT DIN976-1	M 12 X 1000	450.866649
014	4	HEXAGON NUT ISO10511	M 12	450.315012
015	4	WASHER ISO7089	12	H01.056969

Tab. 10-13 Component parts list cover

As of: 02/13/2014
Revision No.:-
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

10.11 Accessories

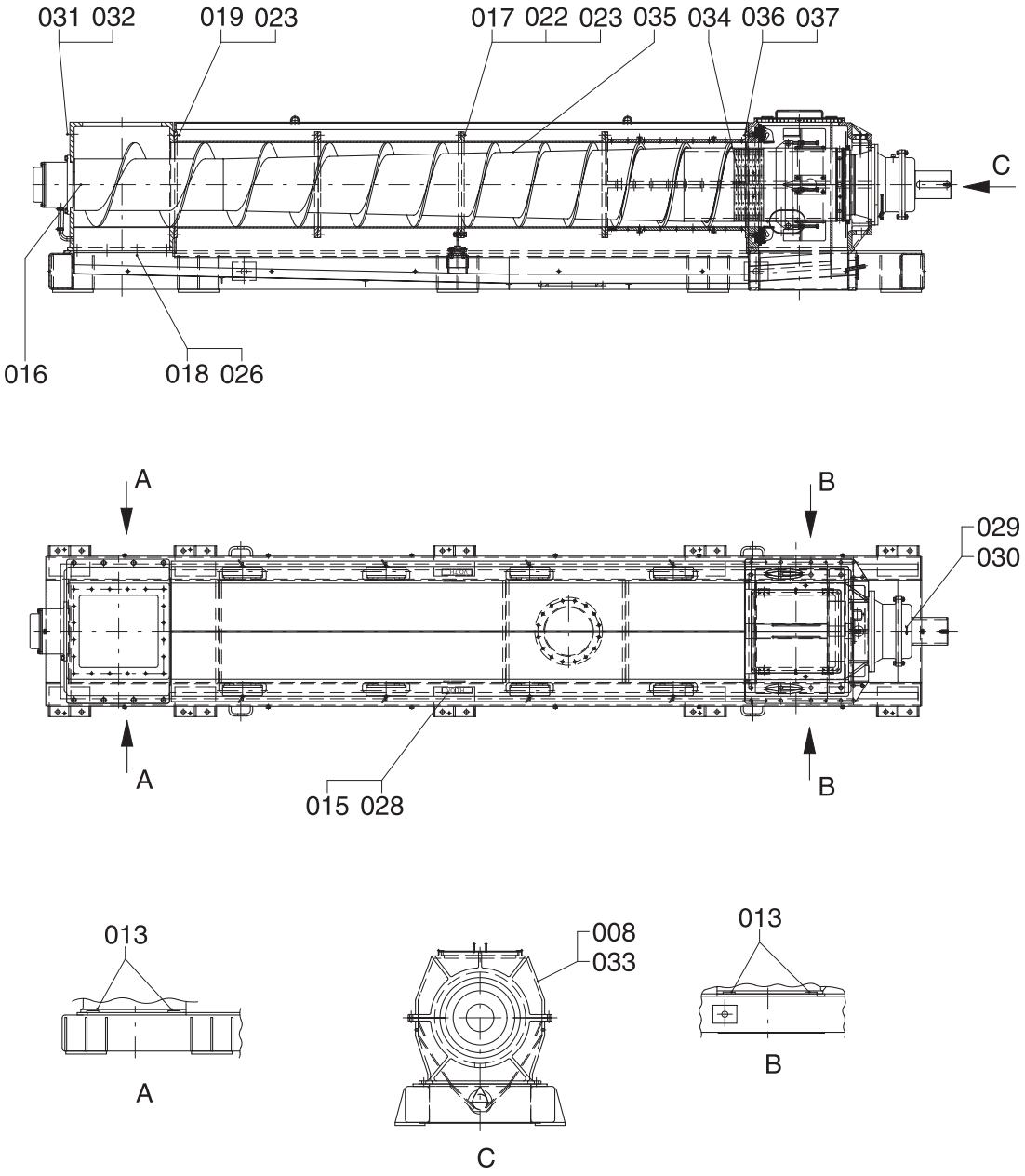

Fig. 10-13 Component parts accessories

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 02/13/2014
Revision No.:-

Pos. No.	Qty.	Designation	Dimensions	Part No.
008	1	DATA PLATE	105 X 74 X 2.5	458.184412
013	8	SQUARE	15 X 15 X 100	458.166228
015	2	NAMEPLATE	H=40, 6 X 63 X 265	450.888720
016	1	SEAL	3 X 2000	458.197329
017	36	HEXAGON BOLT ISO4017	M 24 X 80	H01.045565
018	16	HEXAGON BOLT ISO4017	M 30 X 80	H01.115735
019	12	HEXAGON BOLT ISO4017	M 24 X 60	H01.045564
022	36	HEXAGON NUT ISO4032	M 24	H01.200623
023	48	WASHER ISO7089	24	H01.056972
026	16	WASHER ISO7089	30	H01.056973
028	8	COUNTERSUNK SCREW ISO2009	M 4 X 16	H01.203683
029	2	ROUND-HEAD NOTCHED PIN ISO8746	2 X 6	450.374003
030	1	PLATE	74 X 16 X 1	450.887002
031	1	SCREW PLUG DIN906	M 30 X1.5	H01.152878
032	1	SCREW PLUG DIN908	G 1/2 A	H01.203826
033	4	BLIND RIVET ISO15983	3 X 10	H01.209943
034	2	ROTATION LOCK	12 X 30 X 100	458.166243
035	1	CONTROL REPORT	SP70SL	—
036	16	HEXAGON BOLT ISO4017	M 24 X 90	H01.072194
037	16	SLEEVE	D 40/25 X 35	458.166236

Tab. 10-14 Component parts list accessories

As of: 02/13/2014
Revision No.:-
Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
Screw Press SP70-SL
Codeword: Buckeye Florida
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10.12 Control cabinet

Pos. No.	Qty.	Designation	Dimensions	Part No.
—	1	ELECT.CONTROL UNIT	—	154563

Tab. 10-15 Component parts list control cabinet

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 02/13/2014
Revision No.:-

11 Appendix

The appendix contains:

– 3 forms for data logging
– Order Form for Spare Parts
– Certification Sheet
– Installation Drawing No. 5.87-001477/B
– Control Console Drawing No. 5.87-002204

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 07/17/2012
Revision No.:-

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 07/17/2012
Revision No.: -

DATA REF						FLOW DATA		LAB ANALYSIS DATA			OUTLET STOCK FLOW	
No.	Date	Time	Inlet pressure	Motor speed	open screen area	Inlet volumetric flow	Filtrate volumetric flow	Inlet stock consistency	Filtrate stock consistency	Outlet stock consistency	Total mass flow wet	Total mass flow dry
			bar	rpm	%	l/min	l/min	%	%	%	kg/min	t(BD)/t

Tab. 11-1 Data logging - screw press/general operating specifications

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 07/17/2012
Revision No.:-

DATA REF No.	Origin	Paper stock type	Sub-system	Freeness ml CSF	Tempera-ture °C	Ash content %	Miscella-neous	REMARKS

Tab. 11-2 Data recording - screw press/paper stock data

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 07/17/2012
Revision No.:-

DATA REF	ELECTRIC DRIVE			FREQUENCY CONVERTER				HYDRAULIC DRIVE			CALCULATED LOAD		
No.	Current	Voltage	Gear ratio	Frequency	Current	Voltage	Disp. power consumption	Operating pressure	Feed pressure	Hydr. motor specifications	Power input	Torque	Specific energy consumption
	A	V		Hz	A	V	kW	bar	bar		kW	kNm	kWh (BD)

Tab. 11-3 Data logging - screw press / drive specifications

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 07/17/2012
Revision No.:-

Voith Paper Fiber & Environmental Solutions
Products & Services Dept.
2200 N. Roemer Rd.
Appleton, WI 54912
Telephone: (920) 731-7724
Fax No. (920) 731-2848

Order Form for Spare Parts

Customer: Buckeye Florida _____

Address: Perry, FL_____

Prepared by: _____

Dept. / Tel.: _____

P.O. No.: _____

Job No.: 176392_____

Machine designation: Screw Press _____

Type / Size SP70-SL_____

Serial No.: 034272 _____

Part No.	Quantity	Description

Requested delivery date: _____

Requested shipment: _____

Date, signature: _____

VOITH

Voith Paper Inc.
Appleton

SCREW PRESS
Certification Sheet

IDENTIFICATION

CUSTOMER Buckeye Florida
ADDRESS (ORDER) Perry, FL
ADDRESS (INSTALL) Same
CUSTOMER P.O. NO. 7520300037
DATED 12/08/2011
CUSTOMER EQUIPMENT NO. 262400
CERTIFIED BY _____
Michael E. Wiedemeier

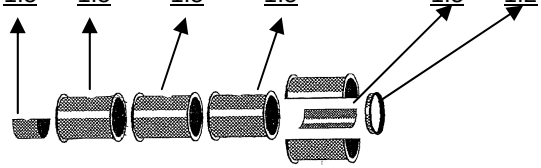
TYPE Thune
MODEL NO. SP70-SL
SERIAL NO. * _____
VOITH PAPER JOB NO. 176392
VOITH PAPER ORDER DATE 11/14/2011
TITLE **Senior Product Engineer**

APPLICATION

INSTALLATION DRAWING 5.87-001477/B
THROUGHPUT 170 **ADMTPD** **STOCK** Bleached Kraft **FREENESS** 700 ML CSF
STOCK CONSISTENCY 3% **BD** **TEMP.** 140° F **PH** 6.8 - 7.1 **OPERATING PRESSURE** _____
FEED FROM _____ **DISCHARGE TO** _____
SCREW TYPE HC **FLIGHT TYPE** DH
WEAR SEGMENTS ☒ **INLET HARDFACING** N/A **CORE HARDFACING** _____
POWER REQUIREMENT 300 **HP** **CONVEYOR SPEED** 0 - 34 **RPM**

SCREEN

HOLE SIZE 1.5 1.5 1.5 1.5 1.5 1.2 **ANTI-ROTATION (Y/N):** N



DRIVE

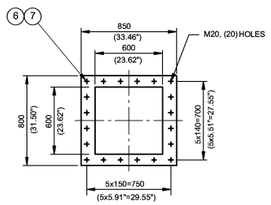
HYDRAULIC MOTOR CB 400-280 **HYDRAULIC POWER PACK** PAC 402-355-300-21
MOTOR BY Voith **MAKE** _____ 300 **HP** _____ **RPM** **VOLTS** 460
3 **PHASE** 60 **CYCLE** _____ **FRAME** _____ **ENCLOSURE**

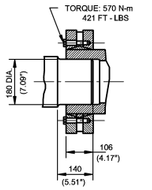
REMARKS

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

10/04/2011 Revision "A:" - Certify Per Customer Markups.
02/10/2012 Revision "B" - Corrected Outlet Conn. and Filtrate Conn.

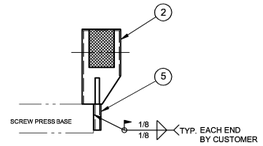
Voith Paper Inc., Fiber & Environmental Solutions
2620 E. Glendale Ave., Appleton, WI 54911
Phone: (920) 731-7724 Fax: (920) 731-8083





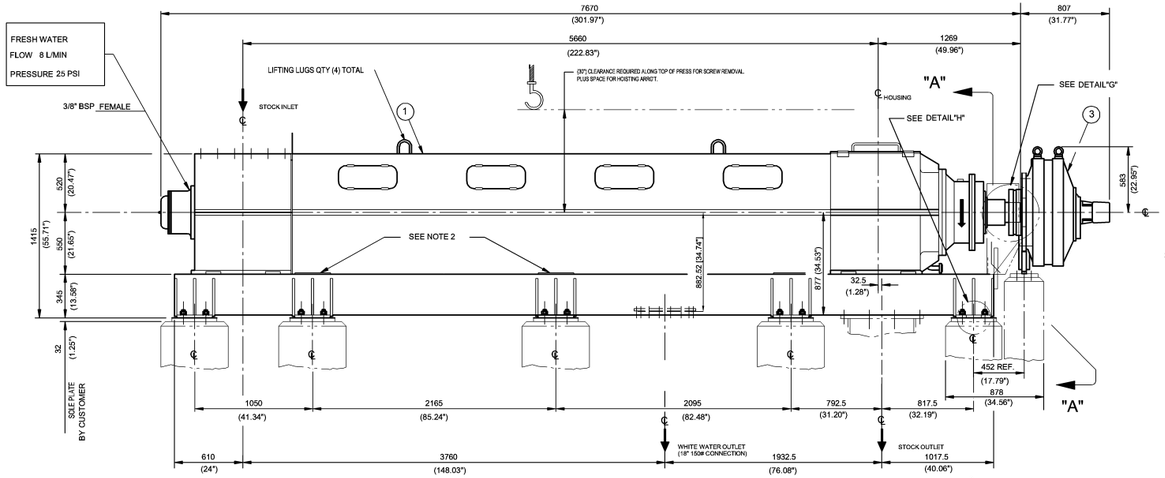
SEE SPECIFICATIONS

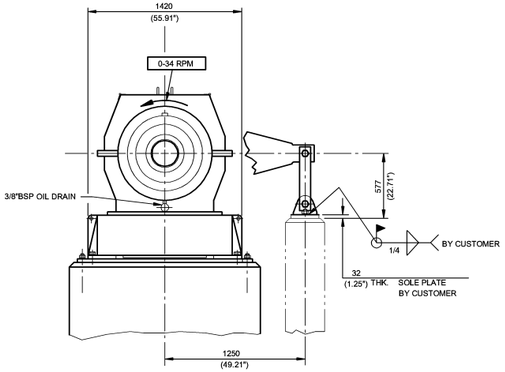
DETAIL " G"



GUARD INSTALLATION DETAIL

	REQ.	DESCRIPTION	Nº	DRAWING CATALOGUE
1	1	SCREWPRESS SP70-SL FOR HYDRAULIC DRIVE		
2	1	GUARD SHAFT		
3	1	HAGGLUNDS DRIVE		
4	2	LOCATING BAR		
5	2	PIPE MOUNTING GUARD 2½" SCH 40		
6	20	CAPSCR HH M20-40 A4-70 DIN 933		
7	20	WASHER HELICAL LOCK M20		
8	14	CAP SCR HH M16-40 DIN 933 A4-70		
9	14	WASHER HELICAL LOCK M16		





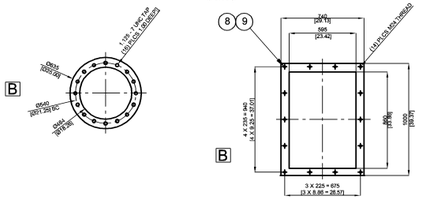
SECTION "A-A"

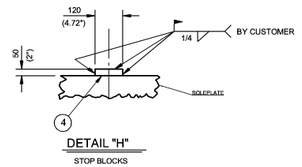
DRIVE SPECIFICATION		
HYDRAULIC MOTOR		CB 400-280
TORQUE ARM	TMA-45-2	C/W PIVOT ATTACHMENT
POWER UNIT		PAC 402-355-300-21

EQUIPMENT WEIGHT	
WEIGHT OF SCREW PRESS - EMPTY	11300 KG 24860 LBS
OPERATING WEIGHT OF SCREW PRESS	14600 KG 32120 LBS
DRIVE WEIGHT	1565 KG 3443 LBS
SCREW SHAFT WEIGHT	3800 KG 8360 LBS

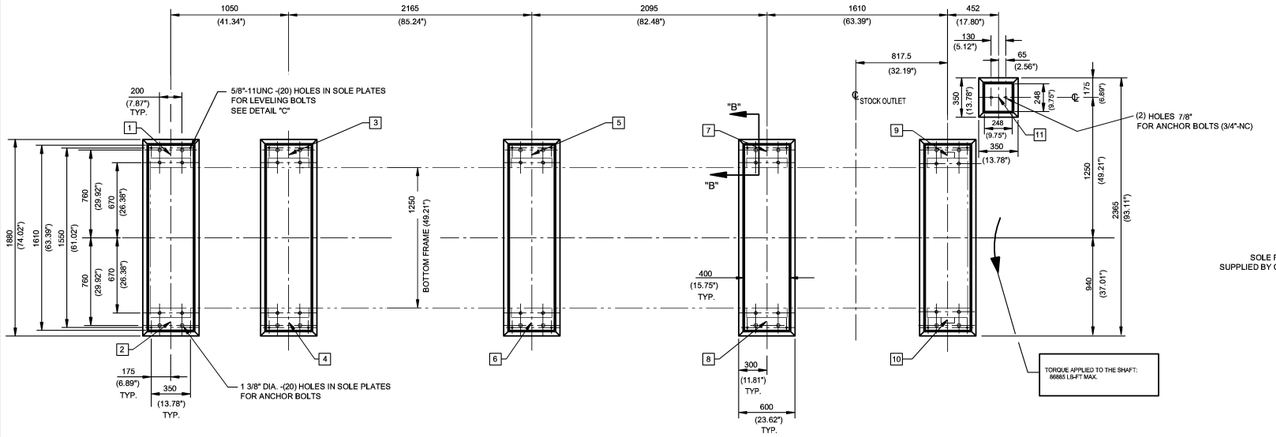
NOTES.	
1.	GUARD TO BE INSTALLED BY CUSTOMER AT MILL SITE
2.	SURFACE TO BE USED FOR PRESS LEVELLING TOLERANCES ±0.005"
3.	THIS EQUIPMENT IS BUILT TO METRIC DIMENSIONS
4.	SUGGESTED CAVITY FOR ANCHOR BOLTS: 11-3/4" x 7-1/8" x 14 3/8" DEEP CENTER WITH ANCHOR BOLT

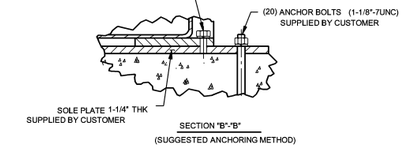
PAINT SPECIFICATIONS	
PAINT FINISH	VOITH STANDARD
EQUIPMENT	RAL5022
GUARD	SAFETY YELLOW
DRIVE	HAGGLUND STD.



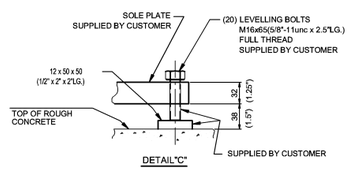


DETAIL "H"
STOP BLOCKS





SECTION "B"-"B"
(SUGGESTED ANCHORING METHOD)



DETAIL"C"

SP-70 SL			
LOAD WITH HYDRAULIC MOTOR HAGGLUNDS 400-280			
Mt MAX.	117800 Nm, 86885 LB-FT,	@ 15 RPM	
11		94240 N 21185 LB	94240 N 21185 LB
10	48400 N 10881 LB	75500 N 16973 LB	32900 N 7396 LB
9	5800 N 1304 LB	32900 N 7396 LB	75500 N 16973 LB
8	48400 N 10881 LB	75500 N 16973 LB	32900 N 7396 LB
7	5800 N 1304 LB	32900 N 7396 LB	75500 N 16973 LB
6	16300 N 3664 LB	24100 N 6418 LB	7100 N 1596 LB
5	700 N 157 LB	7100 N 1596 LB	24100 N 5418 LB
4	24800 N 5575 LB	32900 N 7329 LB	1400 N 315 LB
3	9200 N 2068 LB	1400 N 315 LB	32900 N 7329 LB
2	24800 N 5575 LB	32900 N 7329 LB	1400 N 316 LB
1	9200 N 2068 LB	1400 N 315 LB	32900 N 7329 LB
BOLT No.	NORMALLY	MAX.	REVERSE

DOCUMENT SUBMITTAL STATUS	
☐ PRELIMINARY	☐ APPROVAL
☐ REFERENCE ONLY	☒ CERTIFIED
☐ FOR CONSTRUCTION	☐ AS BUILT

BY: MEW DATE: 2-10-12

CUSTOMER: Buckeye Florida, L.P.
LOCATION: Perry, FL
MODEL: SP70-SL
DESIGNATION: Screw Press #1
CUST. P.O. NO.: 7520300037
CUST. EQUIP. NO.: 262400
SERIAL NO.:
VOITH JOB NO.: 176392

NOTE:
TAG WITH STAINLESS STEEL TAGS
WITH BKI & KBR EQ. NUMBERS

MIXER PRESS
KBR EQUIP. NO.
220-577-80.00

POIDS / WEIGHT : VOIR / SEE TABLE
COPIE DE / COPY FROM :

Rev. Index	No. of times	Rev. no.	Rev. descr. (shop and eng. info only)	Date: Dr.	Name	App.
B			CORRECTED OUTLET CONN. AND FILTRATE CONN.	10.02.2012	APL_MWIE	APL_BMAT

Dim.			Chamfers		ISO 13715 (DIN 6784)
	≤ 4000 mm	ISO 2768-m		Inside + 1,6 mm	
	> 4000 mm	DIN 7168-m		Outside - 0,2 mm	
Geo-metr. tol.	≤ 3000 mm	ISO 2768-K-E	Surfaces	Ra in µm	ISO 1302
	> 3000 mm	DIN 7168-T	General tolerances welding parts		ISO 13920-BF

Gen. tol. steel drop forgings	EN 10243-F
Gen. tol. castings	ISO 8062
Further detailed information for gen. tolerances	VN 1803

Codeword: Buckeye

Dimensions in mm

Release note: F

	Date	Name
Dr.	06.09.2011	APL_MWIE
Ch.	16.09.2011	GENSKEN
Appr.	16.09.2011	APL_AHES
Dept.	APL	

VOITH

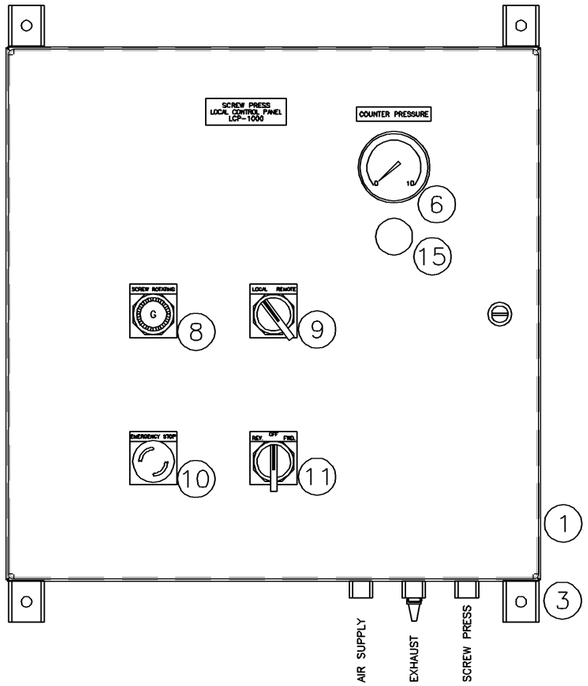
Orig.

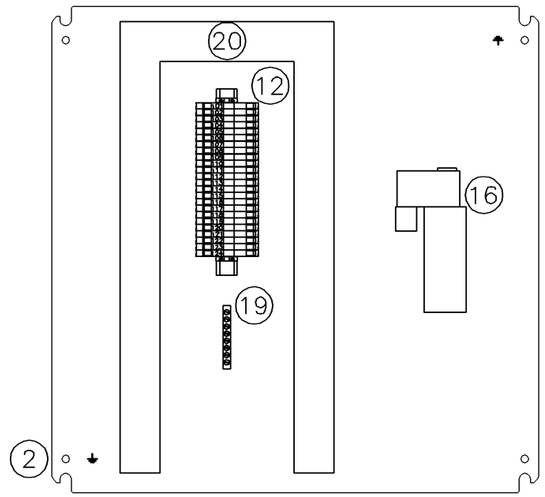
Scale of orig. 1:25 | Weight kg

Title: install.drawing
screw press

Drawing no. 5.87-001477 | Rev. B | Sheet 1 | 1 Sh.

AutoCAD Mechanical | DIN A1 (594x841)





BILL OF MATERIALS

ITEM	QUANTITY	DESCRIPTION
1	1	HOFFMAN CSD20208SS 20"x 20"x 8" NEMA 4X S/S ENCLOSURE
2	1	HOFFMAN CP2020 SUBPANEL
3	1	HOFFMAN CMFKSS MOUNTING FEET
4		
5		
6	1	WIKA TYPE 233.53 PRESSURE GAUGE, 0–10 BAR, .25" NPT, GLYCERINE FILLED
7		
8	1	ALLEN–BRADLEY 800T–QH2G GREEN LED PILOT LIGHT
9	1	ALLEN–BRADLEY 800T–H17A 2–POSITION SELECTOR SWITCH, MAINTAINED
10	1	ALLEN–BRADLEY 800T–FXT6A1D2 40MM RED PUSH–PULL/TWIST EMERGENCY STOP
11	1	ALLEN–BRADLEY 800T–J18A 3–POSITION SELECTOR SWITCH, SPRING RETURN FROM LEFT
12	24	ALLEN–BRADLEY 1492–J4 TERMINAL BLOCKS
13		
14		
15	1	REXROTH REGULATOR PR08–02–F0G0, 0–125PSI, .25"NPT
16	1	REXROTH CD–7 SOLENOID VALVE PS31010–6955, 120 VAC, .25"NPT
17		
18		
19	1	GROUNDING BAR
20	LOT	2" X 2" WIREDUCT
21		
22		
23		
24		
25		

	MIXER PRESS	FLUFFER PRESS
KBR EQUIPTMENT NO.	220-577-80.00	240-577-430.00
BKI EQUIPTMENT NO.	26-2400	26-2700

Rev. Index	No. of times	Rev. no.	Rev. descr. (shop and eng. info only)	Date: Dr.	Name	App.

Dim.	≤ 4000 mm	ISO 2768-m	Chamfers	Inside + 1,6 mm	ISO 13715 (DIN 6784)
	> 4000 mm	DIN 7168-m		Outside - 0,2 mm	
Geo-metr. tol.	≤ 3000 mm	ISO 2768-K-E	Surfaces	Ra in µm	ISO 1302
	> 3000 mm	DIN 7168-T	General tolerances welding parts		ISO 13920-BF

Gen. tol. steel drop forgings	EN 10243-F
Gen. tol. castings	ISO 8062
Further detailed information for gen. tolerances	VN 1803

Codeword: LCP-1000

Dimensions in mm

Release note: F

	Date	Name
Dr.	05.06.2012	APL_MWIE
Ch.	2012-06-06	APL_AHES
Appr.	2012-06-06	APL_BMAT
Dept.	APL	

VOITH

Orig.

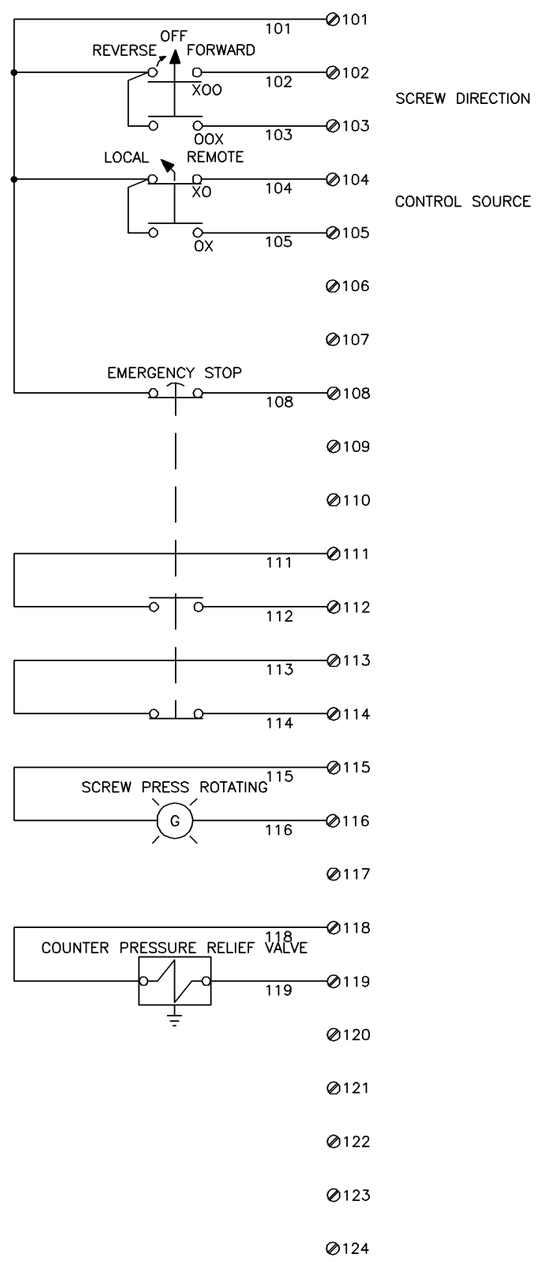
Scale of orig. 1:1 | Weight kg

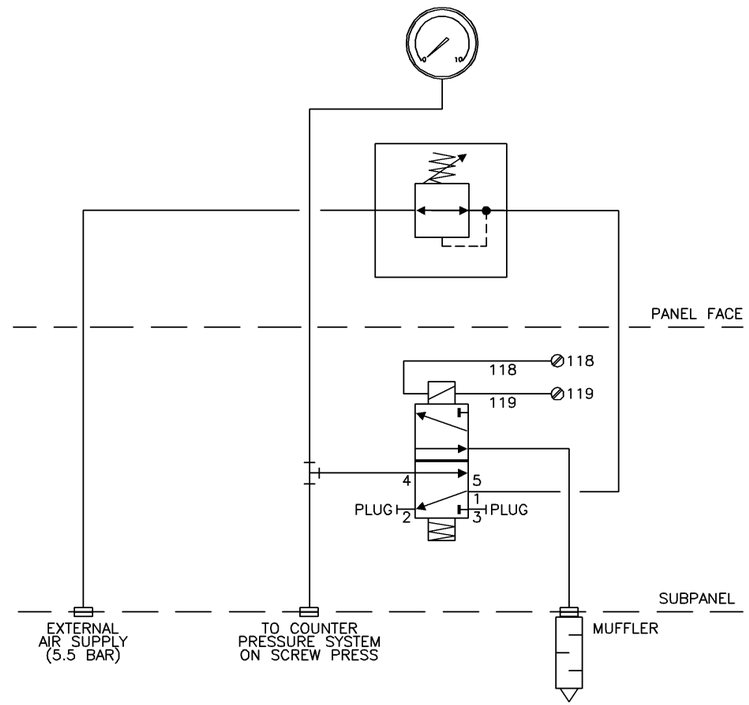
Title: control console
screw press

Drawing no. 5.87-002204 | Rev. - | Sheet 1 | 2 Sh.

AutoCAD Mechanical | DIN A3 (297x420)

EI465 1/08/2015





	MIXER PRESS	FLUFFER PRESS
KBR EQUIPTMENT NO.	220-577-80.00	240-577-430.00
BKI EQUIPTMENT NO.	26-2400	26-2700

Rev. Index	No. of times	Rev. no.	Rev. descr. (shop and eng. info only)	Date: Dr.	Name	App.

Dim.	≤ 4000 mm	ISO 2768-m	Chamfers Inside + 1,6 mm Outside - 0,2 mm	ISO 13715 (DIN 6784)	
	> 4000 mm	DIN 7168-m			
Geo-metr. tol.	≤ 3000 mm	ISO 2768-K-E	Surfaces Ra in µm	ISO 1302	
	> 3000 mm	DIN 7168-T	General tolerances welding parts	ISO 13920-BF	

Gen. tol. steel drop forgings	EN 10243-F	
Gen. tol. castings	ISO 8062	
Further detailed information for gen. tolerances	VN 1803	

Codeword: LCP-1000

Dimensions in mm

Release note: F

	Date	Name
Dr.	05.06.2012	APL_MWIE
Ch.	2012-06-06	APL_AHES
Appr.	2012-06-06	APL_BMAT
Dept.	APL	

VOITH

Orig.

Scale of orig. 1:1

Weight kg

Title: control console screw press

Drawing no. 5.87-002204

Rev. -

Sheet 2 / 2 Sh.

AutoCAD Mechanical

DIN A3 (297x420)

12 Supplier Documentation

Contents:

– Rex Roth Hydraulic Drive Operation and Instruction Manual
(Comes as Separate Manual)

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 07/17/2012
Revision No.:-

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

As of: 07/17/2012
Revision No.: -

13 Safety Documentation

Materials

– Loctite 648 Technical Data Sheet and MSDS

– Loctite 7471 Technical Data Sheet and MSDS

Regional safety references*)

Subject/Resource Title	Location
– General Duty for Occupational Health and Safety – Canada Occupational Health and Safety Regulations (full text) – Inspection Checklists — Sample Checklist for Manufacturing Facilities	– http://www.hrsdc.gc.ca/eng/labour/publications/health_safety/pdf/employer_and_employee_duties.pdf – http://laws-lois.justice.gc.ca/PDF/SOR-86-304.pdf – http://www.ccohs.ca/oshanswers/hsprograms/list_mft.html
Confined Spaces	– http://www.hrsdc.gc.ca/eng/labour/publications/health_safety/confined/page00.shtml – http://www.wcb.yk.ca/Media/documents/Part_2.pdf
Crane and Forklift Safety	– http://ohs.csa.ca/standards/equipment_machinery/Overhead_Cranes/dsp_Overhead-Cranes.asp – http://ohs.csa.ca/standards/equipment_machinery/Machine_Safety/Z91-02.asp – http://ohs.csa.ca/standards/equipment_machinery/Lift_Trucks/B335-04.asp
Electrical Safety	– http://www.csa.ca/cm/ca/en/search/article/comprehensive-standard-for-workplace-electrical-safety – http://www.ccohs.ca/oshanswers/safety_haz/electrical.html – http://www.wcb.yk.ca/Media/documents/Part_9.pdf
Fall Prevention and Protection	– http://www.ccohs.ca/oshanswers/safety_haz/falls.html – http://ohs.csa.ca/standards/personal_protective/Fall_Protection/Z259-16-04.asp – http://www.hrsdc.gc.ca/eng/labour/ipg/065.shtml
Ladder Safety	– http://www.ccohs.ca/oshanswers/safety_haz/ladders/
Lockout	– http://ohs.csa.ca/standards/electrical/lockout/Z460-05.asp – http://www.wcb.yk.ca/Media/documents/Part_3.pdf

Tab. 13-1 Regional safety references

*) This list is a general resource. It is not exhaustive and it does not constitute legal advice. The user is solely responsible for compliance with all applicable laws and regulations pertaining to the use of this machine.

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -
As of: 07/17/2012
Revision No.:-
Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

Subject/Resource Title	Location
Machine Guarding	– http://www.wcb.yk.ca/Media/documents/Part_7.pdf – http://ohs.csa.ca/standards/equipment_machinery/Machine_Safety/Z432-04.asp
Personal Protective Equipment	– http://ohs.csa.ca/standards/personal_protective/index.asp
Respiratory Protection	– http://www.hrsdc.gc.ca/eng/labour/publications/health_safety/lungs/page00.shtml
Welding	– http://www.hrsdc.gc.ca/eng/labour/publications/health_safety/hhhcmrwap/page00.shtml – http://www.ccohs.ca/oshanswers/safety_haz/welding/
Workplace Hazardous Materials Information System	– http://www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/occup-travail/whmis-simdut/info_sheet-eng.pdf – http://www.ccohs.ca/products/publications/whmis_ghs/ – http://www.hrsdc.gc.ca/eng/labour/publications/health_safety/manage_guide/page00.shtml

Tab. 13-1 Regional safety references (Cont'd)

As of: 07/17/2012
Revision No.:-

Author: VPAW, Wiedemeier, 2141
Editor: VPAW, Watson, 2132
Translator: -

Screw Press SP70-SL
Codeword: Buckeye Florida
Created with FrameMaker 10

LOCTITE® 648™

October 2005

PRODUCT DESCRIPTION

LOCTITE® 648™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Urethane methacrylate
Appearance (uncured)	Green liquid[LMS]
Fluorescence	Positive under UV light[LMS]
Components	One component - requires no mixing
Viscosity	Low
Cure	Anaerobic
Secondary Cure	Activator
Application	Retaining
Strength	High

LOCTITE® 648™ is designed for the bonding of cylindrical fitting parts. The product cures when confined in the absence of air between close fitting metal surfaces and prevents loosening and leakage from shock and vibration. Typical applications include holding gears and sprockets onto gearbox shafts and rotors on electric motor shafts .

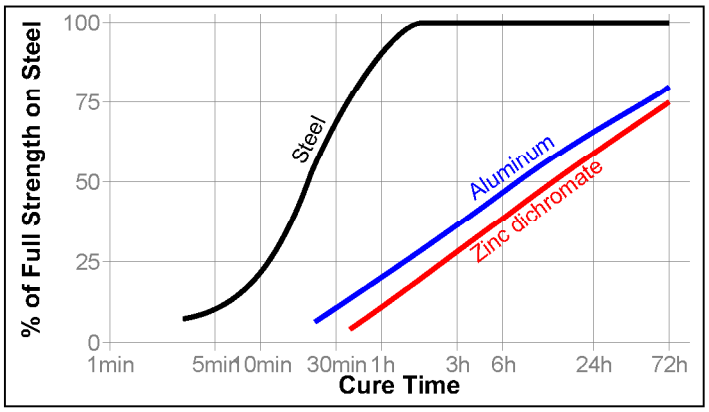
TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.13
Flash Point - See MSDS:	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 2, speed 20 rpm	400 to 600[LMS]
Viscosity, EN 12092 - MV, 25 °C, after 180 s, mPa·s (cP):	
Shear rate 129 s^{-1}	300 to 600

TYPICAL CURING PERFORMANCE

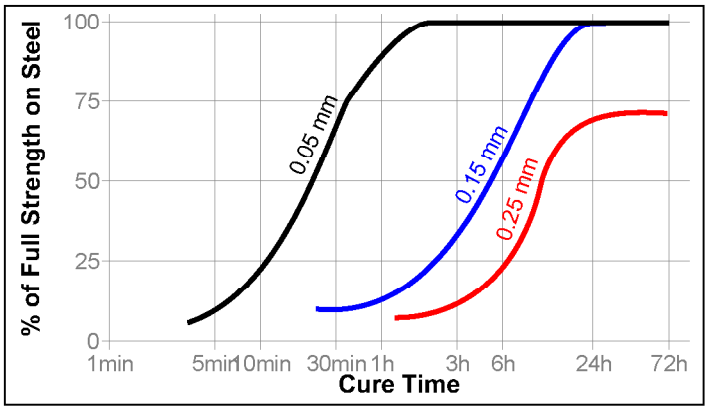
Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the shear strength developed with time on steel pins and collars compared to different materials and tested according to ISO 10123.



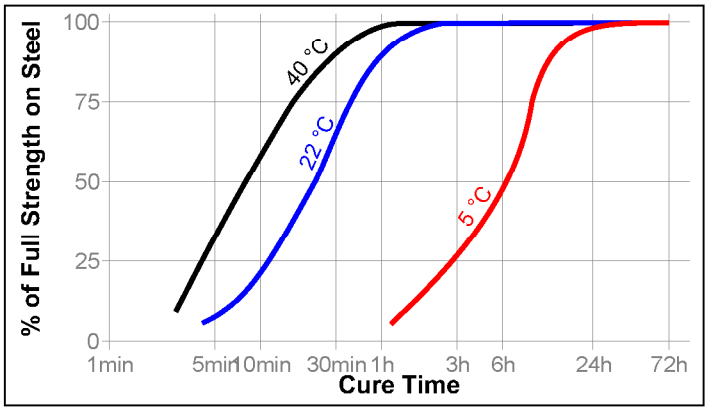
Cure Speed vs. Bond Gap

The rate of cure will depend on the bondline gap. The following graph shows shear strength developed with time on steel pins and collars at different controlled gaps and tested according to ISO 10123.



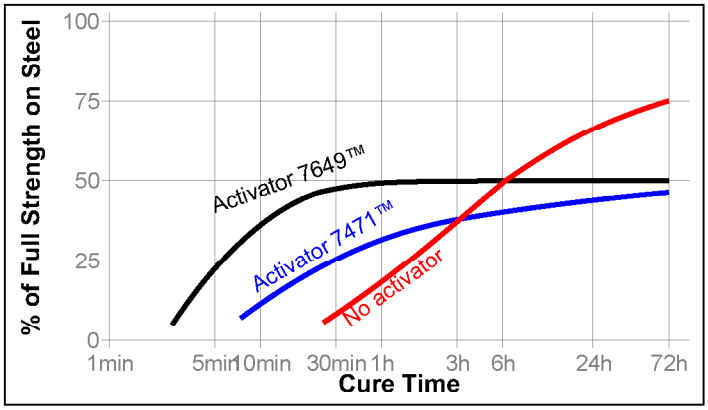
Cure Speed vs. Temperature

The rate of cure will depend on the temperature. The graph below shows the shear strength developed with time at different temperatures on steel pins and collars and tested according to ISO 10123.



Cure Speed vs. Activator

Where cure speed is unacceptably long, or large gaps are present, applying activator to the surface will improve cure speed. The graph below shows the shear strength developed with time on zinc dichromate steel pins and collars using Activator 7471™ or 7649™ and tested according to ISO 10123.



Henkel Technologies

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Coefficient of Thermal Expansion, ASTM D 696, K^{-1}	80×10^{-6}
Coefficient of Thermal Conductivity, ASTM C177, W/(m·K)	0.1
Specific Heat, kJ/(kg·K)	0.3

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 15 minutes @ 22 °C

Compressive Shear Strength, ISO 10123:

Steel pins and collars	N/mm²	≥13.5[LMS]
	(psi)	(≥1,957)

Cured for 24 hours @ 22 °C

Compressive Shear Strength, ISO 10123:

Steel pins and collars	N/mm²	≥25[LMS]
	(psi)	(≥3,625)

TYPICAL ENVIRONMENTAL RESISTANCE

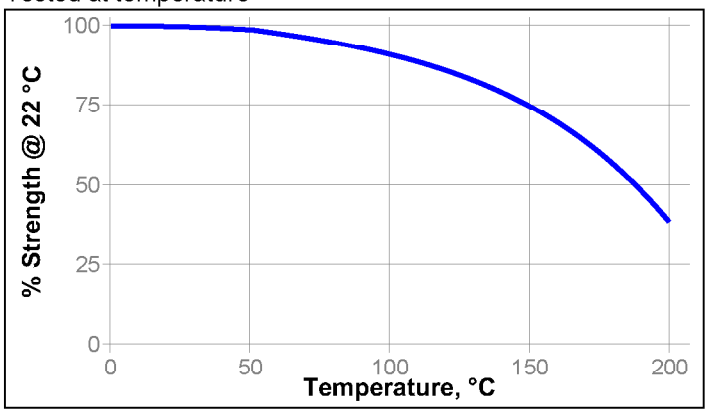
Cured for 1 week @ 22 °C

Compressive Shear Strength, ISO 10123:

Steel pins and collars

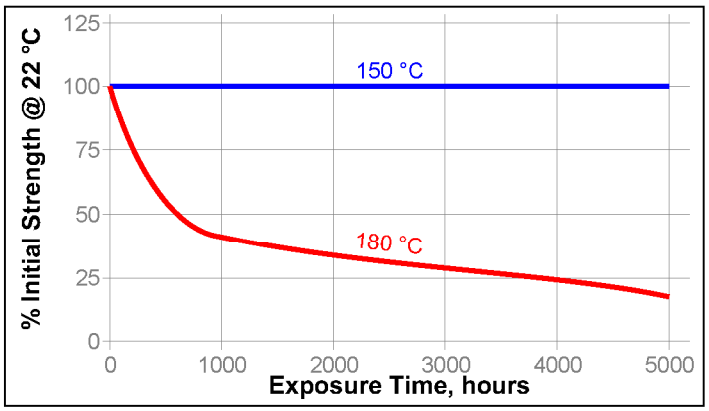
Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested @ 22 °C



Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22 °C.

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
Motor oil (MIL-L-46152)	125	100	100	100
Unleaded Petrol	22	100	100	100
Brake fluid	22	100	100	100
Water/glycol 50/50	87	100	90	75
Ethanol	22	100	100	100
Acetone	22	100	100	100

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Material Safety Data Sheet (MSDS).

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

This product is not normally recommended for use on plastics (particularly thermoplastic materials where stress cracking of the plastic could result). Users are recommended to confirm compatibility of the product with such substrates.

Directions for use

For Assembly

1. For best results, clean all surfaces (external and internal) with a LOCTITE® cleaning solvent and allow to dry.
2. If the material is an inactive metal or the cure speed is too slow, spray with Activator 7471™ or 7649™ and allow to dry.
3. **For Slip Fitted Assemblies**, apply adhesive around the leading edge of the pin and the inside of the collar and use a rotating motion during assembly to ensure good coverage.
4. **For Press Fitted Assemblies**, apply adhesive thoroughly to both bond surfaces and assemble at high press on rates.
5. **For Shrink Fitted Assemblies** the adhesive should be coated onto the pin, the collar should then be heated to create sufficient clearance for free assembly.
6. Parts should not be disturbed until sufficient handling strength is achieved.

For Disassembly

1. Apply localized heat to the assembly to approximately 250 °C. Disassemble while hot.

For Cleanup

1. Cured product can be removed with a combination of soaking in a Loctite solvent and mechanical abrasion such as a wire brush.

Loctite Material Specification[LMS]
LMS dated June 16, 2000. Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Quality.

Storage
Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.
Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties. Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Conversions
(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm^2 x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Note
The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage

Reference 2.1

Material Safety Data Sheet

Revision Date: 03/06/2006 **Issue date:** 03/06/2006

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: Loctite(R) 648 Retaining Compound Press Fit
Product type: Anaerobic Adhesive
Item No. : 21444
Region: United States

Company address:
Henkel Corporation
1001 Trout Brook Crossing
Rocky Hill, Connecticut 06067

Contact Information:
Telephone: 860.571.5100
Emergency telephone: 860.571.5100
Internet: www.loctite.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components	%	ACGIH TLV	OSHA PEL	OTHER
Polyurethane methacrylate resin PROPRIETARY	30-60	None	None	None
Polyglycol dimethacrylate 109-16-0	10-30	None	None	None
Acrylic acid 79-10-7	5-10	2 ppm TWA (skin)	10 ppm TWA; 30 mg/m³	1 ppm TWA (skin); 3 ppm STEL (skin)
Hydroxyalkyl methacrylate 27813-02-1	5-10	None	None	1 ppm TWA; 3 ppm STEL
Polyglycol dimethacrylate 25852-47-5	1-5	None	None	None
Cumene hydroperoxide 80-15-9	1-5	None	None	1 ppm (6 mg/m³) Skin (WEEL)
1-Acetyl-2-phenylhydrazine 114-83-0	0.1-1	None	None	None

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HMIS:

Physical state: Liquid
Color: Green
Odor: Sharp

HEALTH: 2*
FLAMMABILITY: 1
PHYSICAL HAZARD: 1
Personal Protection: See Section 8

WARNING: CAUSES EYE AND SKIN IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.
MAY BE HARMFUL IF SWALLOWED.
MAY CAUSE RESPIRATORY TRACT IRRITATION.

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects

Inhalation: May cause irritation to nose and throat.
Skin contact: Irritating to skin. May cause allergic skin reaction.
Eye contact: Vapors may irritate eyes. Contact with eyes will cause irritation.

Ingestion:	May cause gastrointestinal tract irritation if swallowed.
Existing conditions aggravated by exposure:	Eye, skin, and respiratory disorders.

See Section 11 for additional toxicological information.

4. FIRST AID MEASURES

Inhalation:	Remove to fresh air. If symptoms develop and persist, get medical attention.
Skin contact:	Wash with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if symptoms occur.
Eye contact:	Flush with copious amounts of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time. Get medical attention.
Ingestion:	Do not induce vomiting. Keep individual calm. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Flash point:	Greater than 93ºC (200ºF) Tagliabue closed cup
Autoignition temperature:	Not available
Flammable/Explosive limits-lower %:	Not available
Flammable/Explosive limits-upper %:	Not available
Extinguishing media:	Foam, dry chemical or carbon dioxide.
Special fire fighting procedures:	None
Unusual fire or explosion hazards:	None
Hazardous combustion products:	Oxides of carbon. Oxides of sulfur. Oxides of nitrogen. Irritating organic vapors.

6. ACCIDENTAL RELEASE MEASURES

Environmental precautions:	Prevent product from entering drains or open waters.
Clean-up methods:	Ensure adequate ventilation. Soak up with inert absorbent. Store in a partly filled, closed container until disposal.

7. HANDLING AND STORAGE

Handling:	Avoid contact with eyes, skin and clothing. Do not breathe mist or vapors.
Storage:	For safe storage, store at or below 38°C (100°F).
Incompatible products:	Refer to Section 10.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls:	Use local exhaust ventilation to maintain airborne concentrations below established exposure limits.
Respiratory protection:	Use NIOSH approved respirator if there is potential to exceed exposure limit(s).

Skin protection: Use impermeable gloves and protective clothing as necessary to prevent skin contact. Neoprene gloves.

Eye/face protection: Safety goggles or safety glasses with side shields.

See Section 2 for exposure limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
Color: Green
Odor: Sharp
Vapor pressure: Less than 10 mm Hg at 27ºC (80ºF)
pH: Not applicable
Boiling point/range: Greater than 149ºC (300ºF)
Melting point/range: Not available
Specific gravity: 1.1
Vapor density: Not available
Evaporation rate: Not available
Solubility in water: Slight
Partition coefficient (n-octanol/water): Not available
VOC content: 5.3403%; 50.9756 grams/liter

10. STABILITY AND REACTIVITY

Stability: Stable.

Hazardous polymerization: Will not occur.

Hazardous decomposition products: Oxides of carbon. Oxides of sulfur. Oxides of nitrogen. Irritating organic vapors.

Incompatability: Strong oxidizers.

Conditions to avoid: See "Handling and Storage" (Section 7) and "Incompatabilty" (Section 10).

11. TOXICOLOGICAL INFORMATION

Product toxicity data: Acute LD50 (oral) :Greater than 5000 (rat). (estimated). Acute dermal LD50 greater than 5000 mg/kg (rabbit).

Carcinogen Status

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen
Polyurethane methacrylate resin PROPRIETARY	No	No	No
Polyglycol dimethacrylate 109-16-0	No	No	No
Acrylic acid 79-10-7	No	No	No
Hydroxyalkyl methacrylate 27813-02-1	No	No	No
Polyglycol dimethacrylate 25852-47-5	No	No	No
Cumene hydroperoxide 80-15-9	No	No	No
1-Acetyl-2-phenylhydrazine 114-83-0	No	No	No

Literature Referenced Target Organ & Other Health Effects

Hazardous components	Health Effects/Target Organs
Polyurethane methacrylate resin PROPRIETARY	Allergen, Irritant
Polyglycol dimethacrylate 109-16-0	Allergen, Irritant
Acrylic acid 79-10-7	Allergen, Corrosive, Irritant, Kidney, Liver
Hydroxyalkyl methacrylate 27813-02-1	Allergen, Irritant
Polyglycol dimethacrylate 25852-47-5	Allergen, Irritant
Cumene hydroperoxide 80-15-9	Allergen, Central nervous system, Corrosive, Irritant, Mutagen
1-Acetyl-2-phenylhydrazine 114-83-0	Allergen, Blood, Kidney, Mutagen, Some evidence of carcinogenicity

12. ECOLOGICAL INFORMATION

Ecological information: Not available

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Dispose of according to Federal, State and local governmental regulations.

EPA hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

U.S. Department of Transportation Ground (49 CFR):

Proper shipping name: Unrestricted
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA):

Proper shipping name: Unrestricted
Hazard class or division: None
Identification number: None
Packing group: None

WaterTransportation (IMO/IMDG):

Proper shipping name: Unrestricted
Hazard class or division: None
Identification number: None
Packing group: None
Marine pollutant: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification: 4-Methoxyphenol (150-76-5).

CERCLA/SARA Section 302 EHS: None above reporting de minimus.
CERCLA/SARA Section 311/312: Immediate Health Hazard, Delayed Health Hazard
CERCLA/SARA 313: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Acrylic acid (CAS# 79-10-7). Cumene hydroperoxide (CAS# 80-15-9).

California Proposition 65: This product contains a chemical known to the State of California to cause cancer.

Canada Regulatory Information

CEPA DSL/NDSL Status: All components are listed on or are exempt from listing on the Domestic Substances List.
WHMIS hazard class: D.2.B

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: 14

Prepared by: Kyra Kozak Woods, Product Safety and Regulatory Affairs Specialist

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation does not assume responsibility for any results obtained by persons over whose methods Henkel Corporation has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any of Henkel Corporation's products. In light of the foregoing, Henkel Corporation specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

LOCTITE® 7471

July 2004

PRODUCT DESCRIPTION

LOCTITE® 7471 provides the following product characteristics:

Technology	Activator for Loctite anaerobic adhesives and sealants
Chemical Type	Amine and Thiazole
Solvent	Acetone and Isopropanol
Appearance	Transparent, yellow to amber liquid LMS
Viscosity	Very low
Cure	Not applicable
Application	Cure acceleration of Loctite anaerobic products

LOCTITE® 7471 is used where increased cure speed of Loctite anaerobic products is required. It is especially recommended for applications with passive metals or inert surfaces and with large bond gaps. LOCTITE® 7471 is particularly recommended when prevailing temperature is low (<15 °C).

TYPICAL PROPERTIES

Specific Gravity @ 25 °C	0.79
Viscosity @ 20 °C, mPa·s (cP)	2
Flash Point - See MSDS	
Drying Time at 20 °C, seconds	30 to 70
On Part Life, days	≤7

TYPICAL PERFORMANCE

Fixture time and cure speed achieved as a result of using LOCTITE® 7471 depend on the adhesive used and the substrate bonded.

Fixture Time, ISO 4587, minutes:

Zinc Dichromate and Loctite® Adhesive 640, two side activation	≤25 LMS

(Fixture time is defined as the time to develop a shear strength of 0.1 N/mm²)

HANDLING PRECAUTIONS

Activator must be handled in a manner applicable to highly flammable materials and in compliance with relevant local regulations.

The solvent can affect certain plastics or coatings. It is recommended to check all surfaces for compatibility before use.

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected with a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Material Safety Data Sheet (MSDS).

Under no circumstances should activator and adhesive be mixed directly as liquids. Use only in a well ventilated area.

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

Directions for use

1. Spray or brush on the activator on both mating surfaces to be bonded. For small gaps, treatment of only one surface may be adequate. Contaminated surfaces may need repeated treatment or special degreasing prior to activation to remove any dissolvable contamination. Porous surfaces may need two treatments of activator.
2. Allow the solvent time to evaporate under good ventilation until the surfaces are completely dry.
3. After activation, parts should be bonded within 7 days. Contamination of the surface before bonding should be prevented.
4. Apply the Loctite Anaerobic product to one or both surfaces and assemble parts immediately.
5. Where possible, move surfaces in relation to each other for a few seconds on assembly to properly distribute the adhesive and for maximum activation.
6. Secure the assembly and await fixturing before any further handling.

Loctite Material Specification LMS

LMS dated July 08, 2004. Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Loctite Quality.

Storage

This activator is classified as **HIGHLY FLAMMABLE** and must be stored in an appropriate manner in compliance with relevant regulations. Do not store near oxidising agents or combustible materials. The product is light sensitve and accordingly, translucent containers should be kept in a dark place when not in use. Store product in the unopened container in a dry location. Storage information may also be indicated on the product container labelling.

Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties.

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Conversions
(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·mm x 0.142 = oz·in
mPa·s = cP

Note
The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage
LOCTITE is a trademark of Henkel Corporation

Reference 1

Material Safety Data Sheet

Revision Date: 05/25/2007 **Issue date:** 05/25/2007

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: Locquic(R) Primer T 7471
Product type: Activator
Company address:
Henkel Corporation
1001 Trout Brook Crossing
Rocky Hill, Connecticut 06067

Item No. : 19267
Region: United States
Contact Information:
Telephone: 860.571.5100
Emergency telephone: 860.571.5100
Internet: www.loctite.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components	%	ACGIH TLV	OSHA PEL	OTHER
Acetone 67-64-1	60-100	500 ppm TWA 750 ppm STEL	1000 ppm TWA 2400 mg/m³ TWA	None
Isopropyl alcohol 67-63-0	10-30	200 ppm TWA 400 ppm STEL	400 ppm TWA 980 mg/m³ TWA	None
Ethanol,2,2`- (4-methylphenyl)imino bis- 3077-12-1	1-5	None	None	None
2-Mercaptobenzothiazole 149-30-4	0.1-1	None	None	5 mg/m³, skin, dermal sensitizer TWA, (WEEL)

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HMIS:

Physical state: Liquid
Color: Yellow to Amber
Odor: Acetone

HEALTH: 2*
FLAMMABILITY: 3
PHYSICAL HAZARD: 0
Personal Protection: See Section 8

DANGER: FLAMMABLE LIQUID AND VAPOR.
CAUSES EYE AND SKIN IRRITATION.
MAY CAUSE RESPIRATORY TRACT IRRITATION.

Relevant routes of exposure: Inhalation, Skin contact, Eyes, Ingestion

Potential Health Effects

Inhalation: May cause respiratory tract irritation. Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.
Skin contact: Irritating to skin. Solvent action can dry and defat the skin, causing the skin to crack, leading to dermatitis.
Eye contact: Vapors may irritate eyes. Contact with eyes will cause irritation.
Ingestion: Moderately toxic by ingestion.

Existing conditions aggravated by exposure: Eye, skin, and respiratory disorders.

See Section 11 for additional toxicological information.

4. FIRST AID MEASURES

Inhalation: Remove to fresh air. If discomfort persists seek medical attention.

Skin contact: Wash with soap and water.

Eye contact: Flush with copious amounts of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time.

Ingestion: If conscious, drink plenty of water. Do not induce vomiting. Keep individual calm. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Flash point: -8.3°C (17°F) (estimated)

Autoignition temperature: Not available

Flammable/Explosive limits-lower %: Not available

Flammable/Explosive limits-upper %: Not available

Extinguishing media: Foam, dry chemical or carbon dioxide.

Special fire fighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Unusual fire or explosion hazards: Vapors may accumulate in low or confined areas, travel considerable distance to source of ignition, and flash back.

Hazardous combustion products: Oxides of carbon. Oxides of nitrogen. Oxides of sulfur. Irritating organic vapors.

6. ACCIDENTAL RELEASE MEASURES

Environmental precautions: Prevent product from entering drains or open waters.

Clean-up methods: Remove all ignition sources. Ensure adequate ventilation. Soak up with inert absorbent. Store in a closed container until ready for disposal.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Avoid breathing vapor and mist. Wash thoroughly after handling. During use and until all vapors are gone: Keep area ventilated - do not smoke; extinguish all flames, pilot lights, and heaters; turn off stoves, electrical tools and appliances, and any other sources of ignition.

Storage: Store away from heat, sparks, flames, or other sources of ignition. For safe storage, store at or below 49°C (120°F).

Incompatible products: Refer to Section 10.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls: Use local ventilation if general ventilation is insufficient to maintain vapor concentration below established exposure limits.

Respiratory protection: Use NIOSH approved respirator if there is potential to exceed exposure limit(s).

Skin protection: Chemical resistant, impermeable gloves.

Eye/face protection: Safety goggles or safety glasses with side shields.

See Section 2 for exposure limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
Color: Yellow to Amber
Odor: Acetone
Vapor pressure: 172 mmHg at 20 ºC (68 °F)
pH: Not applicable
Boiling point/range: Not available
Melting point/range: Not available
Specific gravity: 0.7953
Vapor density: Not available
Evaporation rate: Not available
Solubility in water: Completely miscible
Partition coefficient (n-octanol/water): Not available
VOC content: 13.3%; 106 grams/liter (EPA Method 24)

10. STABILITY AND REACTIVITY

Stability: Stable.

Hazardous polymerization: Will not occur.

Hazardous decomposition products: Oxides of carbon. Oxides of nitrogen. Oxides of sulfur. Irritating organic vapors.

Incompatability: Strong oxidizers. Acids.

Conditions to avoid: See "Handling and Storage" (Section 7) and "Incompatabilty" (Section 10).

11. TOXICOLOGICAL INFORMATION

Carcinogen Status

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen
Acetone 67-64-1	No	No	No
Isopropyl alcohol 67-63-0	No	No	No
Ethanol,2,2`- (4-methylphenyl)imino bis- 3077-12-1	No	No	No
2-Mercaptobenzothiazole 149-30-4	No	No	No

Literature Referenced Target Organ & Other Health Effects

Hazardous components	Health Effects/Target Organs
Acetone 67-64-1	Blood, Central nervous system, Irritant, Reproductive
Isopropyl alcohol 67-63-0	Allergen, Blood, Central nervous system, Irritant, Kidney, Liver, Brain, Spleen
Ethanol,2,2`- (4-methylphenyl)imino bis- 3077-12-1	Allergen
2-Mercaptobenzothiazole 149-30-4	Allergen, Kidney, Some evidence of carcinogenicity

12. ECOLOGICAL INFORMATION

Ecological information: Not available

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Dispose of according to Federal, State and local governmental regulations.

EPA hazardous waste number: D001: Ignitable.

14. TRANSPORT INFORMATION

U.S. Department of Transportation Ground (49 CFR):

Proper shipping name: Flammable liquid, n.o.s. (Acetone , Isopropanol)
Hazard class or division: 3
Identification number: UN 1993
Packing group: II
Exceptions: Consumer Commodity ORM-D (Not more than 1 Liter)

International Air Transportation (ICAO/IATA):

Proper shipping name: FLAMMABLE LIQUID, N.O.S. (Acetone , Isopropanol)
Hazard class or division: 3
Identification number: UN 1993
Packing group: II
Exceptions: May Qualify as Consumer Commodity ID8000 (Not more than 500 ml)

WaterTransportation (IMO/IMDG):

Proper shipping name: Flammable liquid n.o.s. (Acetone , Isopropanol)
Hazard class or division: 3
Identification number: UN 1993
Packing group: II
Exceptions: Limited quantity (Not more than 1 L)
Marine pollutant: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification: None.

CERCLA/SARA Section 302 EHS: None above reporting de minimus.
CERCLA/SARA Section 311/312: Immediate Health Hazard, Delayed Health Hazard, Fire
CERCLA/SARA 313: None above reporting de minimus.

California Proposition 65: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Canada Regulatory Information

CEPA DSL/NDSL Status: All components are listed on or are exempt from listing on the Domestic Substances List.
WHMIS hazard class: B.2, D.2.A, D.2.B

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: 2, 15

Prepared by: Kyra Kozak Woods, Manager, Regulatory Affairs

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation does not assume responsibility for any results obtained by persons over whose methods Henkel Corporation has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any of Henkel Corporation's products. In light of the foregoing, Henkel Corporation specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation further disclaims any liability for consequential or incidental damages of any kind, including lost profits.