Not Binding Operating and Assembly Instruction Macerator

This operating and assembly instruction is only for general information.

Type

I 25 with flush connection

I 25 without flush connection
Not Binding Operating and Assembly Instruction Macerator

This operating and assembly instruction is only for general information.

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1.1 General notes

- Always keep the operating and maintenance instructions close by the machine.
- If problems cannot be solved with reference to the operating and maintenance instructions, please contact the manufacturer.

Observe the following points in addition to these operating and maintenance instructions:
- Prohibition, warning and mandatory signs, warning notes on the machine
- Relevant laws and ordinances
- Statutory provisions on accident prevention
- Corresponding harmonised standards and regulations

1.2 Safety and warning notes

- Comply with safety and warning notes for safe and efficient use of the product.

Signal words for specific dangers and (possible) consequences are explained below. These are supplemented by symbols (pictograms) if necessary.

1.2.1 Warning notes

<table>
<thead>
<tr>
<th>Notice</th>
<th>Caution for machine!</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Possible danger.</td>
</tr>
<tr>
<td></td>
<td>Material damage can occur.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Caution</th>
<th>Caution for people and machine!</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Possible danger.</td>
</tr>
<tr>
<td></td>
<td>Minor injury or damage to property can occur.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Warning</th>
<th>Warning for people!</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Possible danger.</td>
</tr>
<tr>
<td></td>
<td>Death or serious injury can occur.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Danger</th>
<th>Danger for people!</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Possible danger.</td>
</tr>
<tr>
<td></td>
<td>Immediate risk of severe or fatal injury.</td>
</tr>
</tbody>
</table>

1.2.2 Danger symbols

- Warning: Suspended load.
- Warning: Dangerous electrical voltage.
1.2.3 Information symbols

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTICE</td>
<td></td>
</tr>
</tbody>
</table>

Ensure environmental protection.
Wear eye protection.

- Instruction to act/take measures
- List item

1.3 Dangers that can be caused by the machine

SeepeX machines are built in accordance with the state of the art. Nevertheless, there is a residual risk, because the machine works with:
- Mechanical movements that pose a danger
- Electrical voltages and currents

We have used design measures and applied safety technology to minimise the risk to the health of people posed by this danger.

1.4 Qualification of the personnel

This handbook is intended for:
- Owner
- Operators
- Setters
- Maintenance personnel

1.5 Authorised people

People authorised to undertake operation, set up and maintenance are instructed and trained specialists employed by the owner/manufacturer.

Detailed technical knowledge is essential for performing any work on the machine.

The owner is responsible for:
- Personnel training
- Compliance with safety regulations
- Compliance with operating and maintenance instructions

The operator must:
- Have received instruction
- Read and understood the relevant parts of the operating instructions before starting work
- Know the safety devices and regulations
1.5.1 Tasks and information for the owner/operators
➢ Regularly check and maintain the machine, replacing all parts in good time which no longer guarantee safe operation.
➢ It is essential to comply with the procedure described in the operating instructions for shutting down the machine.
• On completion of work, attach all safety and protective devices and make sure they are functioning.

1.5.2 Safety notes for maintenance, inspection and assembly work
➢ Do not work on the machine or system unless it is stationary and depressurised.
➢ Switch off the master switch and pull out the power plug before starting work on live components.
➢ Comply with the procedure for shutting down the machine as described in the Shut-down chapter.
➢ Decontaminate (de-toxify) machines that are used for pumping media that can be harmful to health.
➢ Refer to the Initial start-up chapter before repeated start-up of the machine.

1.6 Personal protective equipment
➢ Wear personal protective equipment and/or additional equipment for your own safety.
➢ Avoid/limit risks by the use of collective technical protective equipment or by organisational measures at work.

1.7 Safety and protective devices
➢ Prior to start-up, bolt seepex machines onto a concrete foundation so as to ensure stability.
➢ Starting and stopping devices must be clearly recognisable. Take appropriate measures to avoid defects.
• No protective device is necessary for checking and/or setting the shaft seal.
• Hot surfaces are identified with a danger symbol on the machine.

1.8 Foreseeable misuse
Serious personal injury and damage to property can be caused by:
• Incorrect use
• Incorrect installation or operation of the machine
• Impermissible removal of necessary protective equipment
1.9 Designated use

- Only use seepex machines if they are in perfect condition and in compliance with the operating and maintenance instructions.
- Do not start up the machine unless the system in which the machine is installed is in accordance with the provisions of the applicable guidelines and statutory regulations.
- Equivalent sustained sound pressure level at workplaces of operating personnel C75 dB (A). Cavitation-free operation of the machine and screwed connection to concrete foundation are essential.
- seepex machines are components that are exclusively intended for pumping media in accordance with the technical data (→ chapter 3). Written approval must be obtained from the manufacturer before other media are pumped.
- Refer to the information on the type plate and the operating instructions for technical data (→ chapter 3), and comply with them.
- The operating instructions are assigned to the seepex machine based on the commission number.

1.10 Warranty

- Warranty in accordance with our terms and conditions of delivery and order confirmation.
- It is a condition of the machine warranty that the machine must correspond to the listed operating instructions in accordance with the type plate/data sheet.
- All wearing parts are excluded from the warranty.
- These operating instructions are subject to copyright. Reproduction is not permitted and will be punished. Contravention will be pursued through the courts.
2.1 General description

seepex macerators consist of:

- Cutterhead assembly
- Shear plate, rotating cutter head knives
- Macerator casing drive

Characteristic features

- The fixed shear plate has round or long-hole openings.

2.2 Mode of operation and principle of maceration

- The macerator serves to chop solids and textiles.
- The optimum cutting effect is the result of the minimal space between the shear plate and the knives.
- The material is chopped and not torn.

2.3 Constructive design

Range I

<table>
<thead>
<tr>
<th>Item</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANT</td>
<td>Drive</td>
</tr>
<tr>
<td>102</td>
<td>Drive shaft</td>
</tr>
<tr>
<td>200</td>
<td>Lantern</td>
</tr>
<tr>
<td>SDE</td>
<td>Cutterhead assembly</td>
</tr>
<tr>
<td>500</td>
<td>Cutter casing</td>
</tr>
<tr>
<td>900</td>
<td>Shear plate</td>
</tr>
<tr>
<td>905</td>
<td>Cutting head</td>
</tr>
</tbody>
</table>

Range U

<table>
<thead>
<tr>
<th>Item</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANT</td>
<td>Drive</td>
</tr>
<tr>
<td>102</td>
<td>Drive shaft</td>
</tr>
<tr>
<td>SDE</td>
<td>Cutterhead assembly</td>
</tr>
<tr>
<td>500</td>
<td>Cutter casing</td>
</tr>
<tr>
<td>900</td>
<td>Shear plate</td>
</tr>
<tr>
<td>905</td>
<td>Cutting head</td>
</tr>
</tbody>
</table>
3.1 Data sheet

3.2 Declaration

- Data sheet and declarations are commission specific documents and not part of this not binding operating and assembly instruction.
4.1 Safety

**CAUTION**

Damage to property/injuries due to incorrect transport
Slight injury or damage to property can occur
- Comply with the safety notes and transport notes on the packaging.
- Use suitable means of transport, lifting devices and tools.
- Use protective equipment.

4.2 Transport

4.2.1 Dimensions, weights and center of gravity
- Note the dimensional drawing (chapter 5.6).

4.2.2 Symbols
- Meaning of symbol

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>✆</td>
<td>Top</td>
</tr>
<tr>
<td>🥀</td>
<td>Fragile item</td>
</tr>
<tr>
<td>🌧</td>
<td>Against moisture protect</td>
</tr>
<tr>
<td>🌊</td>
<td>Centre of gravity</td>
</tr>
<tr>
<td>🛠</td>
<td>Lashing points</td>
</tr>
</tbody>
</table>

4.2.3 Sling points (AP) for lifting devices

**WARNING**

Warning of suspended load.
Death of serious injury can occur.
- Use the lashing points (AP) for lifting divices.
- Note the centre of gravity (dimensional drawing, chapter 5.6).

Range I | Range U
---|---
AP | AP
4.2.4 Unpacking the machine

- Comply with the symbols and notices on the packaging.
- Remove the screwed connection between the machine and packaging.
- Remove the machine with a lifting machine/industrial truck.

4.3 Temporary storage/Corrosion protection

If stored temporary for longer periods

- additional corrosion protection is necessary.
- Discuss required corrosion protection measures with seepex.
- Store in dry, closed rooms that are free of frost to protect against ambient influences.

4.4 Disposal

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental protection</td>
</tr>
</tbody>
</table>
Material damage can occur. |
- Drain the pumping medium and dispose of it in accordance with the regulations. |
- Dispose of the machine with regard to its composition and existing regulations. |
5.1 Mounting tools/Lifting gear

CAUTION

Macerator falling.
Slight injury or damage to property may occur.
- Observe sling points for lifting device.
- Observe dimensions, weights and center of gravity.
- Use suitable mounting tools/lifting gear.

5.2 Space requirements.
Define space requirements under consideration of the following factors:
- Dimensions and weight.
- Required transport and lifting gear.
- Pipeline course

5.2.1 Heavy solid collection separator

NOTICE

Heavy components that cannot be chopped (e.g. metals, stones)
Damage to the cutting tools
- Separate components prior to entry
- Connect seepex heavy solid collection separator upstream
- Open emptying flap and remove solids.

5.3 Installing the fully assembled macerator.

- as per technical data (Chapter 3).
- Observe dimensional drawing.

Zero-potential assembly of macerator
- Even out unevenness with suitable underlay.
  - Applies to assembly on foundations/bearing-type fixtures.
  - All surfaces of macerator contact surfaces rest on foundation/bearing-type fixture.

Correct seat of drives
- All drives are aligned and assembled ready for operation.
- Align/fasten drive unit if the drive has been shifted during transport/installation of the macerator.

CAUTION

Safety and protective devices
Slight injury or damage to property may occur.
- Attach protective device and put into operation.
5.4 seepex macerator power supply

![DANGER]

**Line voltage and rated frequency.**
Death or serious injury will occur.

- Observe type plate on macerator.
- Note manufacturer's regulations (Chapter 13).
- Observe safety regulations.

5.5 Pipelines

5.5.1 Inlet and outlet connection

- Please refer to the dimensional drawing for the position, nominal width and standard.
- Observe flow direction of liquid.

5.5.2 Pipeline dimensioning

- Observe specifications on the pressure in the inlet and outlet connection.
- Observe technical data (Chapter 3).
- Nominal width of pipeline = nominal width of macerator inlet and outlet connection.

5.5.3 Residue-free pipelines

![NOTICE]

**Damage to property from assembly residue.**
Loss of warranty claim if not observed.

- Keep all pipelines free of contaminants.
- Remove any welding splatter, screws, steel shaving etc.

5.5.4 Zero-potential assembly

- Assembly pipelines and other components on the macerator with zero potential.
# Commissioning / De-commissioning

## 6.1 Commissioning report

Send commissioning report online to www.seepex.com

**Must be specified with every order!**

<table>
<thead>
<tr>
<th>Commission</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**From:**

Contact person: ............................................
Tel.: .............................................................
Fax: .............................................................
E-mail: ............................................................

**Customer Service:**

<table>
<thead>
<tr>
<th>Germany</th>
<th>Address of plant:</th>
</tr>
</thead>
<tbody>
<tr>
<td>seepex GmbH</td>
<td>Phone:+49 2041.996-231</td>
</tr>
<tr>
<td>Postfach 10 15 64</td>
<td>Fax: +49 2041.996-431</td>
</tr>
<tr>
<td>D-46215 Bottrop</td>
<td>Phone:+49 2041.996-224</td>
</tr>
<tr>
<td><a href="mailto:service@seepex.com">service@seepex.com</a></td>
<td>Fax: +49 2041.996-424</td>
</tr>
<tr>
<td>Rest of Europe</td>
<td>Phone:+49 2041.996-120</td>
</tr>
<tr>
<td>Outside Europe</td>
<td>Fax: +49 2041.996-432</td>
</tr>
</tbody>
</table>

**Delivery date:**

Date of installation:

Assembly check carried out on:

**Please enter operational data:**

**Conveying liquid:**

**Temperature:**

**Fuse level/motor protection or power consumption**

<table>
<thead>
<tr>
<th>Frequency control</th>
<th>If yes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>Supplied by seepex</td>
</tr>
<tr>
<td></td>
<td>Supplied by customer</td>
</tr>
</tbody>
</table>

| Frequency: |
| Speed: |
| Power consumption: |

________________________________ _______________________________________
Place, date Signature / company stamp
6.2 Measures before commissioning

➢ Note the technical data (→ chapter 3.).

6.2.1 Checking pipelines

➢ Check flange screwed connections (SCH).

### Design: I

![Image of Design: I]

### Design: U

![Image of Design: U]

### NOTICE

Ensure unrestrained flow of liquid.
Breakdown and/or irreparable damage to the macerator.
➢ Open all shut-off elements prior to switching on the macerator.

6.2.2 Protective devices on the macerator

#### DANGER

**Missing protective device.**
Danger from drawing in and crushing.

➢ Equip macerator with protective device. Protective devices designed to prevent touching surfaces or moving parts must be regarded as adequate if testing with test finger is not possible taking into account penetration possibility, strength and shock resistance.

➢ Observe country-specific protective regulations.

➢ Fit touch protection on macerators with open suction casing. These safety clearances protect persons who try to reach into danger zones without additional help and under the conditions specified for the different situations of reaching up, down or through parts

Touch protection is only necessary on shaft seals if parts are situated on the rotating shaft.

6.2.3 Electrical/hydraulic connections

#### DANGER

**Dangerous voltage.**
Death or serious injury can occur.

➢ Note safety regulations.

➢ Disconnect motor from all sources of energy.

➢ Secure electrical connections against restarting.
6.2.4 Direction of rotation check

- The direction of rotation of the macerator’s drive shaft is clockwise when viewed from the drive unit.
- Note direction of rotation indicated on the type plate.

Flow direction

6.2.5 Additional devices - optional

- Refer to additional devices (→ chapter 12.1).

6.3 Initial commissioning/repeated commissioning

Macerator start-up

- Start macerator prior to feeding the conveying product
  - so that the knives are cleared of any residue.

Start-up macerator - pump

Macerator - pump combination

- First start macerator, then the pump.
  - Solids may clog the holes of the shear plate and block the macerator.

---

**NOTICE**

Macerator dry running.
Breakdown and/or irreparable damage to the macerator.
- Fill casing on inlet side with liquid.

6.3.1 Heavy components that cannot be chopped

---

**NOTICE**

Heavy components that cannot be chopped (e.g. metals, stones)
Damage to the cutting tools
- Separate components prior to entry.
- Connect seepex heavy solid collection separator upstream
- Open emptying flap and remove solids.

6.3.2 Avoid macerator dry running

---

**NOTICE**

High temperature between knife and shear plate.
Irreparable damage to cutting elements
Complete failure of macerator.
- Ensure that the cutter casing is filled with water when starting up.
- In the event of shaft seals, flush them with rinsing liquid.
6.3.3 Pressure in the macerator

**NOTICE**

**High pressure.**
Breakdown and/or irreparable damage to the shaft seal or macerator.

- Observe pressure in the macerator as specified in the technical data (→ Chapter 3).

6.4 De-commissioning

Protect macerator and auxiliary equipment from the following:
- Frost,
- deposit of solids,
- sediments of the liquid,
- corrosion on parts that come into contact with the liquid.

### 6.4.1 Switch off macerator

**DANGER**

**Dangerous voltage.**
Death or serious injury can occur.

- Note safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.

### 6.4.2 Empty out macerator

- Empty out macerator
  - Note dismounting / reassembly (→ Chapter 9).

### 6.4.3 Dismantling the macerator

- Dismantling the macerator
  - Note dismounting / reassembly (→ Chapter 9).

### 6.4.4 Storing/Protecting the macerator from corrosion

**NOTICE**

**Damage to property from missing corrosion protection.**
Damage to property may occur from corrosion.

- Discuss suitable corrosion protection measures with Seepex.
  - Keep commission no. of macerator ready.
7.1 Preventive measures

The maintenance personnel must have these operating instructions, follow them and also require corresponding qualifications.

![DANGER]

**DANGER**

**Dangerous voltage.**

Death or serious injury can occur.

- Note safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.

7.1.1 Macerator standstill

![NOTICE]

**NOTICE**

**Macerator standstill.**

Production failure due to wear.

- Obtain replacement cutterhead assembly.

7.2 Lubrication

![Image of lubrication system]

<table>
<thead>
<tr>
<th>Item</th>
<th>Denomination</th>
<th>Lubricant</th>
<th>Fill volume</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cutterhead assembly</td>
<td>NLGI class 1,5 - 3</td>
<td>125 cm³</td>
<td>Relubrication via lubrication nipple</td>
</tr>
<tr>
<td>2</td>
<td>Drive</td>
<td>Refer to manufacturer's documentation (chapter 13._)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Knives/shear plate</td>
<td>Conveying medium</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shaft seal</td>
<td>Note dismantling/reassembly shaft seal (chapter 9.4).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.3 Inspection

<table>
<thead>
<tr>
<th>Component</th>
<th>Interval</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutterhead assembly</td>
<td>Every 600-800 operating hours at least every 3 months</td>
<td>refill the lubricants Relubrication app. 35 cm³</td>
</tr>
<tr>
<td>Shaft seal</td>
<td>Every week</td>
<td>Visual check for leaks</td>
</tr>
<tr>
<td>Drive unit</td>
<td>Every 3000 operating hours at least every 6 months</td>
<td>Comply with manufacturer's documentation</td>
</tr>
</tbody>
</table>
See the macerator's technical data (Chapter 3) for its application.

<table>
<thead>
<tr>
<th>Operational malfunction</th>
<th>Causes</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macerator not chopping</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.) not met</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor gets too warm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft seal not tight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macerator loud</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macerator does not start up</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>Friction between shear plate/headstock too large.</th>
<th>Set cutter clearance. Put lubricant (liquid soap) between shear plate/knives.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>Wrong or faulty shear plate</td>
<td>Debur and clean contact surfaces on bearing housing. If necessary, exchange shear plate.</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>Suction line or shaft seal leaking.</td>
<td>Seal untight parts.</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>Maceration degree too high</td>
<td>Check suction head, if necessary increase pipe diameter on suction line and insert larger filters, fully open valve on suction side, reduce speed.</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>Incorrect speed.</td>
<td>Correct speed (data sheet).</td>
</tr>
</tbody>
</table>
9.1 Macerator Dismantling / Reassembly

Range:  I  
Size:  25

9.1.1 Prepare macerator for dismantling

**DANGER**

Dangerous voltage.
Death or serious injury can occur.
- Note safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.

**WARNING**

Tilting or falling macerator.
Death or serious injury can occur
- Attach cutter casing (500) to secure the macerator.

9.1.1.1 Empty macerator

**CAUTION**

Oozing liquid.
Slight injury or damage to property may occur.
- Wear suitable protective clothing.
- See the technical data (→ chapter 3) for the corresponding design of the macerator casing.

- Drain pipelines on inlet and outlet sides, or shut off behind macerator connections.
- Block/remove existing flushing connection (SSÜ).
- Remove screw fitting (513, 514).
- Remove cleanout (510) and seal (517).
- Drain liquid from cutter casing (500).
9.1.2 Dismantling

9.1.2.1 Macerator - dismantling

Alternative A

➢ Remove screw fitting (SCH) on pipelines (FLA).
➢ Remove pipelines (FLA).
➢ Remove screw fitting (SCH) on macerator feet.
➢ Observe de-commissioning instructions (→ chapter 6.4).

Alternative B

➢ Remove screw fitting (SCH) on pipelines (FLA).
➢ Remove screw fitting (SCH) on macerator feet.
➢ Remove macerator.
➢ Observe de-commissioning instructions (→ chapter 6.4).

9.1.2.2 Drive (ANT), lantern (200), coupling (149) - dismantling

➢ Remove the screw fitting (231, 232, 233).
➢ Remove drive (ANT) and coupling (149.1).
➢ Remove coupling (149.1) from drive (ANT).
Dismantling / Reassembly

9.1.2.3 Cutterhead assembly (SDE) - dismantling

- Remove the screw fitting (562, 563, 564).
- Remove lantern (200).
- Remove coupling (149.2).

9.1.3 Reassembly

![Diagram](image1.png)

**WARNING**

Tilting or falling macerator.
Death or serious injury can occur

- Attach cutter casing (500) to secure the macerator.

9.1.3.1 Cutterhead assembly (SDE) - mounting

- Follow cutterhead assembly (SDE) reassembly instructions
  (→ chapter 9.1.10).
- Check O-ring (501) for damage and replace if necessary.
- Insert O-ring (501).
- Insert cutterhead assembly (SDE) in cutter casing (500).
- Note installation position
  – Marking/arrows (P)
- Note flushing connection (SSÜ) position.
- Mount screw fitting (507, 509).
9.1.3.2 Drive (ANT), lantern (200), coupling (149) - reassembly

- Coat drive shaft spline profile (102) with anti-seize graphite petroleum (GF).
- Push coupling (149.2) as far as drive shaft (102) stop.
- Mount lantern (200) with screw fitting (562, 563, 564).

- Push coupling (149.1) onto drive (ANT) as far as stop.
- Mount drive (ANT) with screw fitting (231, 232, 233).
  - Note position of motor terminal box for drive (ANT).

9.1.3.3 Macerator - reassembly

Alternative A

- Place pipeline (FLA) on macerator.
- Mount screw fitting (SCH) on pipelines (FLA).
- Mount screw fitting (SCH) on macerator feet.
- Assemble flushing connection (SSÜ).

Alternative B

- Insert macerator between pipelines (FLA).
- Mount screw fitting (SCH) on pipelines (FLA).
- Mount screw fitting (SCH) on macerator feet.
- Assemble flushing connection (SSÜ).
9.1.10 Macerator cutterhead assembly dismantling/reassembly

Macerators with flexible coupling
Series: I and U
Size: 25

9.1.10.1 Preparing the cutterhead assembly for dismantling

**DANGER**

Dangerous voltage.
Death or serious injury can occur.

- Observe safety regulations
- Disconnect the PRWRU from all sources of energy.
- Prevent electrical connections from being switched on again.

9.1.10.2 Dismantling

**Headstock (905)**

**Shear plate (900)**

**Shaft seal (330)**

- Release set screw (378).
- Remove retaining ring (109).
- Dismantling shaft seal (330) off drive shaft.
Dismantling / Reassembly

Drive shaft (102)

End cover (120)

Drive shaft (102) dismantle

Drive shaft (102)
9.1.10.3 Reassembly

Bearing housing (100) - pre-assembly

- Remove burrs, faults and edges.
- Clean bearing housing (100).
- Check shaft sealing ring (127) for damage and renew if necessary.
- Press in shaft sealing ring (127) and fill with grease.

Drive shaft (102) - pre-assembly

- Remove burrs, faults and edges.
- Clean drive shaft (102).

To assemble bearing (104) on drive shaft (102).
  - Use tool W50, W51.
- Fill interior of spacer sleeve (105) with grease to assemble upper bearing (104).

To assemble shaft protection sleeve (104).
  - Use tool W58.
- Set the bearing loosely using lock nut (106) and new lock washer (107).
Bearing housing (100) - final assembly

Mount drive shaft (102)

- Use tool W57.

Bearing setting

- Use tool W8.

Cover plate (120)

- Check lip seal (126) for damage and renew if necessary.
- Press in lip seal (126) and fill with grease.
Shaft seal (330)

- Shaft seal - reassembly.
  - Note document (chapter 9.).
- To assemble shaft seal (330).
  - Use tool W58.
- Secure with circlip (109) and set screw (378).

Shear plate (900)

- Deburr and clean the contact surface on bearing housing (100).
  - Note installation position of shear plates/shear grooves (detail "X").

Headstock (905)

Setting the knife clearance

A Determining the fitting discs thickness.
A1 Push fitting discs (112) 3 mm total thickness (dimension "P") and headstock (905) onto drive shaft (102) and secure with screw (142).
A2 Measure distance "M" between knife "C" in headstock (905) and shear plate (900) using a feeler gauge.
A3 Dismantle headstock (905).
A4 Reduce fitting discs (112) until achieving a distance of 0.05 to max. 0.2 mm (dimension "M") between knife "C" in headstock (905) and shear plate (900).

B Assemble correct fitting disc thickness and check.
B1 Repeat assembly "A1" with reduced fittings discs (112) as defined in "A4", check knife clearance from shear plate as follows:

CAUTION

B2 Demolition to knife and shear plate.
Material damage can occur.
- Knives in headstock (905) are not allowed to contact shear plate (900).
C Preparation for final assembly.
  ➢ Assemble headstock (905).
    – Note assembly sequence.

Headstock (905) - assembly
  ➢ Assembly as shown.
  ➢ Secure screws (142) with screw retention, “medium strength” adhesive.
  ➢ Check again according to no. B2.

9.1.10.4 Cutterhead assembly (SDE) - functional check/running-in time

Functional check
  ➢ Give the cutterhead assembly a functional check in assembled condition.
  ➢ Check bearing for running noises and check headstock (905) setting (B2).

Running-in time
  ➢ Check during the running-in time.
    – Bearing temperature can rise.
    – Do not exceed temperature of 80 °C.
  ➢ Stop operation if the temperature is exceeded.
  ➢ After cooling-down time, grease cutterhead assembly with grease/grease gun and take into operation.
  ➢ Check the bearing setting if temperature of 80 °C continues to be exceeded.

Cutterhead assembly (SDE) - lubrication
  ➢ Perform first regreasing after running-in time.
  ➢ Perform regreasing depending on operating conditions, every 600-800 operating hours, at least every 3 months.
9.4 Single acting mechanical seal

9.4.1 Safety

⚠️ **WARNING**

*Shaft seal is leaky.*
Leakage may escape into the atmosphere.
- Take safety measures to protect persons and the environment.
- Wear suitable protective clothing.
- Dispose of leakage appropriately.
- Note applicable regulations when handling hazardous substances.

9.4.2 Operating conditions and material combination

- Adjust to the relevant application
  - Refer to technical data (chapter 3).

9.4.3 Design

- Single acting mechanical seal

9.4.4 Commissioning

**NOTICE**

*Dry running of the mechanical seal.*
Damage to property may result.
- The mechanical seal must be laid in liquid medium before being commissioned.

9.4.5 Maintenance

No maintenance is required if the machine is operated according to the regulations.

9.4.6 Dismantling mechanical seal

Refer to data sheet (chapter 3.1) and sectional drawing of shaft seal (chapter 9._) for version of shaft seal.
- Unscrew set screw (378).
- Remove lock (109).
- Push shaft seal (330) off drive shaft (102).
9.4.7 Reassembly of mechanical seal

Shaft seals are high-quality precision parts. This means they must be installed carefully. Careful handling and utmost cleanliness are essential.

- Use of installation aids such as oil/grease is not permitted.

9.4.8 Flush connection for shaft seal

**NOTICE**

Irreparable damage due to overheating/penetration of the product. Material damage can occur.

- Connect flush connection before commissioning.

Flushing medium: water

Flushing pressure (Dp): 0.5 bar above the pressure in the bearing housing

Flushing volume (QSp):

![Graph showing flushing volume (QSp)]

Connection fittings:

A barrier chamber supply unit without/with flow meter must be installed for applying flushing/barrier liquid to the shaft seal.
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10.1 Spare parts list

10.2 Sectional drawing and parts list
## Spare parts

### 10.1 Spare parts list

Spare parts can be ordered online or requested from www.seepex.com

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**Customer service:**
seepex GmbH
Postfach 10 15 64
D-46215 Bottrop
service@seepex.com

**Delivery address:**
Germany
Tel +492041.996-231
Fax +492041.996-431

Rest of Europe
Tel +492041.996-224
Fax +492041.996-424

Outside Europe
Tel +492041.996-120
Fax +492041.996-432

---

**Type:** I and U 25-110

**Sender:**

Contact: .........................................................
Tel.: ..........................................................
Fax: ..........................................................
E-mail: .........................................................

**Must be included in every order or enquiry!**

Commission: ________________________________
Type: _______________________________________

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**Place, date Signature / company stamp**
## Version for copying

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<td>910</td>
<td>1</td>
<td>Felt ring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Place, date

Signature / company stamp
11. Special tools

Ordering special tools

Commission number ............................................................
The commission number and type are printed on the type plate of your SEEPEX machine.

Type ......................................................................................

Request ☐

Order ☐

After placing the order, you will receive an order confirmation and deadline before the parts are shipped.

Your data

First Name .................................................................

Surname .................................................................

Company .................................................................

Department .................................................................

Street ........................................................................

Postcode, City ...............................................................

Telephone .................................................................

Fax ................................................................................

E-mail ............................................................................

Our contact data

Customer Service
Fax +49.2041.996-5350
service@seepex.com
## 11. Special tools

**Your order**

Order special tools tailored to your macerator.

<table>
<thead>
<tr>
<th>Tool no.</th>
<th>Denomination</th>
<th>For assembly of</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>W8</td>
<td>Drive-in sleeve</td>
<td>Lubrication nipple</td>
<td>ESH</td>
</tr>
<tr>
<td>W51</td>
<td>Montagehülse</td>
<td>Lager</td>
<td>HUL</td>
</tr>
<tr>
<td>W50</td>
<td>Montagesockel</td>
<td>Schneideinheit</td>
<td>MSO</td>
</tr>
<tr>
<td>W57</td>
<td>Montagehülse</td>
<td>Lager</td>
<td>MHL</td>
</tr>
<tr>
<td>W58</td>
<td>Montagehülse</td>
<td>Wellenabdichtung Wellenschonhülse</td>
<td>HUL</td>
</tr>
</tbody>
</table>

*see sectional drawing and parts list (→ Chapter 10.2)

Place, date ___________________________  Signature, company stamp ___________________________
12.1 Zusatzeinrichtungen/Technische Information

• Zusatzeinrichtungen und technische Informationen sind kommissions-
spezifische Dokumente und nicht Bestandteil dieser unverbindlichen 
Betriebs- und Montageanleitung.
13.1 Herstellerunterlagen / Zulieferer

• Hersteller- und Zuliefererunterlagen sind kommissionsspezifische Dokumente und nicht Bestandteil dieser unverbindlichen Betriebs- und Montageanleitung.
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Fax +44.1935.479836
sales@seepex.co.uk

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Vertriebsbüro Österreich
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Fax +43.2231.610862
hfriedl@seepex.com

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Bureau België
Industriestraat Klein Gent-Link 21
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Fax +32.14.501461
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Fax + 45.49.193200
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Fax +34.91.6409371
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Fax +31.570.516077
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Str. 2 Bidg. 23
115088 Moscow
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Fax +7.495.2874830
info.cis@seepex.com

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Tel +1.937.8647150
Fax +1.937.8647157
sales@seepex.net

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Fax +86.21.38108899
info.cn@seepex.com

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Fax +91.22.40240436
info.ind@seepex.com

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Fax +81.46.2595941
info.jp@seepex.com

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Selangor Darul Ehsan
Tel +60.3.68009986
seepex.m@seepex.com

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Tel +61.2.43554500
Fax +61.2.43554022
info.au@seepex.com

More SEEPEX sales partners in Europe, America, Asia, Africa and Oceania you will find on our website.

www.seepex.com
Not Binding Operating and Assembly Instruction Macerator

This operating and assembly instruction is only for general information.

Type
I 25 without flush connection
Index

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   1.2 Safety and warning notes
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       1.2.2 Danger symbols
       1.2.3 Information symbols
   1.3 Dangers that can be caused by the machine
   1.4 Qualification of the personnel
   1.5 Authorised people
       1.5.1 Tasks and information for the owner/operators
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1.1 General notes

- Always keep the operating and maintenance instructions close by the machine.
- If problems cannot be solved with reference to the operating and maintenance instructions, please contact the manufacturer.

Observe the following points in addition to these operating and maintenance instructions:
- Prohibition, warning and mandatory signs, warning notes on the machine
- Relevant laws and ordinances
- Statutory provisions on accident prevention
- Corresponding harmonised standards and regulations

1.2 Safety and warning notes

- Comply with safety and warning notes for safe and efficient use of the product.

Signal words for specific dangers and (possible) consequences are explained below. These are supplemented by symbols (pictograms) if necessary.

1.2.1 Warning notes

<table>
<thead>
<tr>
<th>Signal Word</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTICE</td>
<td>Caution for machine! Possible danger. Material damage can occur.</td>
</tr>
<tr>
<td>CAUTION</td>
<td>Caution for people and machine! Possible danger. Minor injury or damage to property can occur.</td>
</tr>
<tr>
<td>WARNING</td>
<td>Warning for people! Possible danger. Death or serious injury can occur.</td>
</tr>
<tr>
<td>DANGER</td>
<td>Danger for people! Possible danger. Immediate risk of sever or fatal injury.</td>
</tr>
</tbody>
</table>

1.2.2 Danger symbols

- Warning: Suspended load.
- Warning: Dangerous electrical voltage.
1.2.3 Information symbols

NOTICE

Ensure environmental protection.
Wear eye protection.

➢ Instruction to act/take measures
  • List item

1.3 Dangers that can be caused by the machine

seepeX machines are built in accordance with the state of the art.
Nevertheless, there is a residual risk, because the machine works with:
• Mechanical movements that pose a danger
• Electrical voltages and currents
We have used design measures and applied safety technology to minimise the risk to the health of people posed by this danger.

1.4 Qualification of the personnel

This handbook is intended for:
• Owner
• Operators
• Setters
• Maintenance personnel

1.5 Authorised people

People authorised to undertake operation, set up and maintenance are instructed and trained specialists employed by the owner/manufacturer.

Detailed technical knowledge is essential for performing any work on the machine.

The owner is responsible for:
• Personnel training
• Compliance with safety regulations
• Compliance with operating and maintenance instructions
The operator must:
• Have received instruction
• Read and understood the relevant parts of the operating instructions before starting work
• Know the safety devices and regulations
1.5.1 Tasks and information for the owner/operators

- Regularly check and maintain the machine, replacing all parts in good time which no longer guarantee safe operation.
- It is essential to comply with the procedure described in the operating instructions for shutting down the machine.
- On completion of work, attach all safety and protective devices and make sure they are functioning.

1.5.2 Safety notes for maintenance, inspection and assembly work

- Do not work on the machine or system unless it is stationary and depressurised.
- Switch off the master switch and pull out the power plug before starting work on live components.
- Comply with the procedure for shutting down the machine as described in the Shut-down chapter.
- Decontaminate (de-toxify) machines that are used for pumping media that can be harmful to health.
- Refer to the Initial start-up chapter before repeated start-up of the machine.

1.6 Personal protective equipment

- Wear personal protective equipment and/or additional equipment for your own safety.
- Avoid/limit risks by the use of collective technical protective equipment or by organisational measures at work.

1.7 Safety and protective devices

- Prior to start-up, bolt seepex machines onto a concrete foundation so as to ensure stability.
- Starting and stopping devices must be clearly recognisable. Take appropriate measures to avoid defects.
- No protective device is necessary for checking and/or setting the shaft seal.
- Hot surfaces are identified with a danger symbol on the machine.

1.8 Foreseeable misuse

Serious personal injury and damage to property can be caused by:
- Incorrect use
- Incorrect installation or operation of the machine
- Impermissible removal of necessary protective equipment
1.9 Designated use

- Only use seepex machines if they are in perfect condition and in compliance with the operating and maintenance instructions.
- Do not start up the machine unless the system in which the machine is installed is in accordance with the provisions of the applicable guidelines and statutory regulations.
- Equivalent sustained sound pressure level at workplaces of operating personnel C75 dB (A). Cavitation-free operation of the machine and screwed connection to concrete foundation are essential.
- seepex machines are components that are exclusively intended for pumping media in accordance with the technical data (→ chapter 3). Written approval must be obtained from the manufacturer before other media are pumped.
- Refer to the information on the type plate and the operating instructions for technical data (→ chapter 3), and comply with them.
- The operating instructions are assigned to the seepex machine based on the commission number.

1.10 Warranty

- Warranty in accordance with our terms and conditions of delivery and order confirmation.
- It is a condition of the machine warranty that the machine must correspond to the listed operating instructions in accordance with the type plate/data sheet.
- All wearing parts are excluded from the warranty.
- These operating instructions are subject to copyright. Reproduction is not permitted and will be punished. Contravention will be pursued through the courts.
2.1 General description

**seepex macerators consist of:**
- Cutterhead assembly
- Shear plate, rotating cutter head knives
- Macerator casing drive

**Characteristic features**
- The fixed shear plate has round or long-hole openings.

2.2 Mode of operation and principle of maceration

- The macerator serves to chop solids and textiles.
- The optimum cutting effect is the result of the minimal space between the shear plate and the knives.
- The material is chopped and not torn.

2.3 Constructive design

### Range I

<table>
<thead>
<tr>
<th>Item</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANT</td>
<td>Drive</td>
</tr>
<tr>
<td>102</td>
<td>Drive shaft</td>
</tr>
<tr>
<td>200</td>
<td>Lantern</td>
</tr>
<tr>
<td>SDE</td>
<td>Cutterhead assembly</td>
</tr>
<tr>
<td>500</td>
<td>Cutter casing</td>
</tr>
<tr>
<td>900</td>
<td>Shear plate</td>
</tr>
<tr>
<td>905</td>
<td>Cutting head</td>
</tr>
</tbody>
</table>

### Range U

<table>
<thead>
<tr>
<th>Item</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANT</td>
<td>Drive</td>
</tr>
<tr>
<td>102</td>
<td>Drive shaft</td>
</tr>
<tr>
<td>SDE</td>
<td>Cutterhead assembly</td>
</tr>
<tr>
<td>500</td>
<td>Cutter casing</td>
</tr>
<tr>
<td>900</td>
<td>Shear plate</td>
</tr>
<tr>
<td>905</td>
<td>Cutting head</td>
</tr>
</tbody>
</table>
3.1 Data sheet

3.2 Declaration

- Data sheet and declarations are commission specific documents and not part of this not binding operating and assembly instruction.
4.1 Safety

**CAUTION**

Damage to property/injuries due to incorrect transport
Slight injury or damage to property can occur
- Comply with the safety notes and transport notes on the packaging.
- Use suitable means of transport, lifting devices and tools.
- Use protective equipment.

4.2 Transport

4.2.1 Dimensions, weights and center of gravity
- Note the dimensional drawing (chapter 5.6).

4.2.2 Symbols
- Meaning of symbol

<table>
<thead>
<tr>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Symbol" /></td>
</tr>
<tr>
<td><img src="image2" alt="Symbol" /></td>
</tr>
<tr>
<td><img src="image3" alt="Symbol" /></td>
</tr>
<tr>
<td><img src="image4" alt="Symbol" /></td>
</tr>
</tbody>
</table>

- Top
- Fragile item
- Against moisture protect
- Centre of gravity
- Lashing points

4.2.3 Sling points (AP) for lifting devices

**WARNING**

Warning of suspended load.
Death of serious injury can occur.
- Use the lashing points (AP) for lifting devices.
- Note the centre of gravity (dimensional drawing, chapter 5.6).

<table>
<thead>
<tr>
<th>Range I</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image5" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range U</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image6" alt="Image" /></td>
</tr>
</tbody>
</table>
4.2.4 Unpacking the machine

➢ Comply with the symbols and notices on the packaging.
➢ Remove the screwed connection between the machine and packaging.
➢ Remove the machine with a lifting machine/industrial truck.

4.3 Temporary storage/Corrosion protection

If stored temporary for longer periods

➢ additional corrosion protection is necessary.
➢ Discuss required corrosion protection measures with seepeX.
➢ Store in dry, closed rooms that are free of frost to protect against ambient influences.

4.4 Disposal

**NOTICE**

Environmental protection
Material damage can occur.

➢ Drain the pumping medium and dispose of it in accordance with the regulations.
➢ Dispose of the machine with regard to its composition and existing regulations.
5.1 Mounting tools/Lifting gear

![CAUTION]

**Macerator falling.**
Slight injury or damage to property may occur.

- Observe sling points for lifting device.
- Observe dimensions, weights and center of gravity.
- Use suitable mounting tools/lifting gear.

5.2 Space requirements.

Define space requirements under consideration of the following factors:

- Dimensions and weight.
- Required transport and lifting gear.
- Pipeline course

5.2.1 Heavy solid collection separator

![NOTICE]

**Heavy components that cannot be chopped (e.g. metals, stones)**
Damage to the cutting tools

- Separate components prior to entry
- Connect seepex heavy solid collection separator upstream
- Open emptying flap and remove solids.

5.3 Installing the fully assembled macerator.

- as per technical data (Chapter 3).
- Observe dimensional drawing.

**Zero-potential assembly of macerator**

- Even out unevenness with suitable underlay.
  - Applies to assembly on foundations/bearing-type fixtures.
  - All surfaces of macerator contact surfaces rest on foundation/bearing-type fixture.

**Correct seat of drives**

- All drives are aligned and assembled ready for operation.
- Align/fasten drive unit if the drive has been shifted during transport/installation of the macerator.

![CAUTION]

**Safety and protective devices**
Slight injury or damage to property may occur.

- Attach protective device and put into operation.
5.4 seepex macerator power supply

![DANGER]

**Line voltage and rated frequency.**
Death or serious injury will occur.
- Observe type plate on macerator.
- Note manufacturer's regulations (Chapter 13).
- Observe safety regulations.

5.5 Pipelines

5.5.1 Inlet and outlet connection

- Please refer to the dimensional drawing for the position, nominal width and standard.
- Observe flow direction of liquid.

5.5.2 Pipeline dimensioning

- Observe specifications on the pressure in the inlet and outlet connection.
- Observe technical data (Chapter 3).
- Nominal width of pipeline = nominal width of macerator inlet and outlet connection.

5.5.3 Residue-free pipelines

![NOTICE]

**Damage to property from assembly residue.**
Loss of warranty claim if not observed.
- Keep all pipelines free of contaminants.
- Remove any welding splatter, screws, steel shaving etc.

5.5.4 Zero-potential assembly

- Assembly pipelines and other components on the macerator with zero potential.
6.1 Commissioning report

Send commissioning report online to www.seepex.com

**Must be specified with every order!**

<table>
<thead>
<tr>
<th>Commission:</th>
<th>Model:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**From:**

<table>
<thead>
<tr>
<th>Contact person:</th>
<th>Tel.:</th>
<th>Fax:</th>
<th>E-mail:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Customer Service:**

<table>
<thead>
<tr>
<th>seepex GmbH</th>
<th>Germany</th>
<th>Phone: +49 2041.996-231</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postfach 10 15 64</td>
<td>Rest of Europe</td>
<td>Phone: +49 2041.996-224</td>
</tr>
<tr>
<td>D-46215 Bottrop</td>
<td>Europe</td>
<td>Fax: +49 2041.996-424</td>
</tr>
<tr>
<td><a href="mailto:service@seepex.com">service@seepex.com</a></td>
<td>Outside</td>
<td>Phone: +49 2041.996-120</td>
</tr>
<tr>
<td></td>
<td>Europe</td>
<td>Fax: +49 2041.996-432</td>
</tr>
</tbody>
</table>

**Address of plant:**

<table>
<thead>
<tr>
<th>Address of plant:</th>
<th>Phone:</th>
<th>Fax:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Delivery date:**

**Date of installation:**

**Assembly check carried out on:**

**Please enter operational data:**

Conveying liquid:

Temperature:

Fuse level/motor protection or power consumption:

<table>
<thead>
<tr>
<th>Frequency control</th>
<th>no</th>
<th>yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If yes:

<table>
<thead>
<tr>
<th>Supplied by seepex</th>
<th>Supplied by customer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Frequency:

Speed:

Power consumption:

<table>
<thead>
<tr>
<th>Place, date</th>
<th>Signature / company stamp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.2 Measures before commissioning

- Note the technical data (→ chapter 3.).

6.2.1 Checking pipelines

- Check flange screwed connections (SCH).

<table>
<thead>
<tr>
<th>Design: I</th>
<th>Design: U</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="SCH" /></td>
<td><img src="image2" alt="SCH" /></td>
</tr>
</tbody>
</table>

**NOTICE**

Ensure unrestrained flow of liquid.
Breakdown and/or irreparable damage to the macerator.

- Open all shut-off elements prior to switching on the macerator.

6.2.2 Protective devices on the macerator

**DANGER**

Missing protective device.
Danger from drawing in and crushing.

- Equip macerator with protective device. Protective devices designed to prevent touching surfaces or moving parts must be regarded as adequate if testing with test finger is not possible taking into account penetration possibility, strength and shock resistance.
- Observe country-specific protective regulations.
- Fit touch protection on macerators with open suction casing. These safety clearances protect persons who try to reach into danger zones without additional help and under the conditions specified for the different situations of reaching up, down or through parts.
- Touch protection is only necessary on shaft seals if parts are situated on the rotating shaft.

6.2.3 Electrical/hydraulic connections

**DANGER**

Dangerous voltage.
Death or serious injury can occur.

- Note safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.
6.2.4 Direction of rotation check

- The direction of rotation of the macerator’s drive shaft is clockwise when viewed from the drive unit.
- Note direction of rotation indicated on the type plate.

Flow direction

Design: I

Design: U

6.2.5 Additional devices - optional

- Refer to additional devices (→ chapter 12.1).

6.3 Initial commissioning/repeated commissioning

Macerator start-up

- Start macerator prior to feeding the conveying product
  - so that the knives are cleared of any residue.

Start-up macerator - pump

Macerator - pump combination

- First start macerator, then the pump.
  - Solids may clog the holes of the shear plate and block the macerator.

**NOTICE**

Macerator dry running.
Breakdown and/or irreparable damage to the macerator.

- Fill casing on inlet side with liquid.

6.3.1 Heavy components that cannot be chopped

**NOTICE**

Heavy components that cannot be chopped (e.g. metals, stones)
Damage to the cutting tools

- Separate components prior to entry.
- Connect seepex heavy solid collection separator upstream
- Open emptying flap and remove solids.

6.3.2 Avoid macerator dry running

**NOTICE**

High temperature between knife and shear plate.
Irreparable damage to cutting elements
Complete failure of macerator.

- Ensure that the cutter casing is filled with water when starting up.
- In the event of shaft seals, flush them with rinsing liquid.
6.3.3 Pressure in the macerator

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
</table>
| High pressure.  
Breakdown and/or irreparable damage to the shaft seal or macerator.  
➢ Observe pressure in the macerator as specified in the technical data (→ Chapter 3). |

6.4 De-commissioning

Protect macerator and auxiliary equipment from the following:

• Frost,
• deposit of solids,
• sediments of the liquid,
• corrosion on parts that come into contact with the liquid.

6.4.1 Switch off macerator

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
</table>
| Dangerous voltage.  
Death or serious injury can occur.  
➢ Note safety regulations.  
➢ Disconnect motor from all sources of energy.  
➢ Secure electrical connections against restarting. |

6.4.2 Empty out macerator

➢ Empty out macerator  
  ➢ Note dismounting / reassembly (→ Chapter 9).

6.4.3 Dismantling the macerator

➢ Dismantling the macerator  
  ➢ Note dismounting / reassembly (→ Chapter 9).

6.4.4 Storing/Protecting the macerator from corrosion

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
</table>
| Damage to property from missing corrosion protection.  
Damage to property may occur from corrosion.  
➢ Discuss suitable corrosion protection measures with seepex.  
  ➢ Keep commission no. of macerator ready. |
7.1 Preventive measures

The maintenance personnel must have these operating instructions, follow them and also require corresponding qualifications.

---

**DANGER**

Dangerous voltage.
Death or serious injury can occur.
- Note safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.

---

7.1.1 Macerator standstill

**NOTICE**

Macerator standstill.
Production failure due to wear.
- Obtain replacement cutterhead assembly.

---

7.2 Lubrication

![Lubrication Diagram]

<table>
<thead>
<tr>
<th>Item</th>
<th>Denomination</th>
<th>Lubricant</th>
<th>Fill volume</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cutterhead assembly</td>
<td>NLGI class 1,5 - 3</td>
<td>125 cm³</td>
<td>Relubrication via lubrication nipple</td>
</tr>
<tr>
<td>2</td>
<td>Drive</td>
<td>Refer to manufacturer's documentation (chapter 13._)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Knives/shear plate</td>
<td>Conveying medium</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shaft seal</td>
<td>Note dismantling/reassembly shaft seal (chapter 9.4).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

7.3 Inspection

<table>
<thead>
<tr>
<th>Component</th>
<th>Interval</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutterhead assembly</td>
<td>Every 600-800 operating hours at least every 3 months</td>
<td>refill the lubricants Relubrication app. 35 cm³</td>
</tr>
<tr>
<td>Shaft seal</td>
<td>Every week</td>
<td>Visual check for leaks</td>
</tr>
<tr>
<td>Drive unit</td>
<td>Every 3000 operating hours, at least every 6 months</td>
<td>Comply with manufacturer's documentation</td>
</tr>
</tbody>
</table>
See the macerator’s technical data (Chapter 3) for its application.

<table>
<thead>
<tr>
<th>Operational malfunction</th>
<th>Causes</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macerator not chopping</td>
<td>Friction between shear plate/headstock too large.</td>
<td>Set cutter clearance. Put lubricant (liquid soap) between shear plate/knives.</td>
</tr>
<tr>
<td>Mincer not running</td>
<td>Friction between shear plate/headstock too large.</td>
<td>Set cutter clearance. Put lubricant (liquid soap) between shear plate/knives.</td>
</tr>
<tr>
<td>Motor gets too warm</td>
<td>Friction between shear plate/headstock too large.</td>
<td>Set cutter clearance. Put lubricant (liquid soap) between shear plate/knives.</td>
</tr>
<tr>
<td>Shaft seal not tight</td>
<td>Friction between shear plate/headstock too large.</td>
<td>Set cutter clearance. Put lubricant (liquid soap) between shear plate/knives.</td>
</tr>
<tr>
<td>Macerator loud</td>
<td>Friction between shear plate/headstock too large.</td>
<td>Set cutter clearance. Put lubricant (liquid soap) between shear plate/knives.</td>
</tr>
<tr>
<td>Macerator does not start up</td>
<td>Friction between shear plate/headstock too large.</td>
<td>Set cutter clearance. Put lubricant (liquid soap) between shear plate/knives.</td>
</tr>
</tbody>
</table>

- Friction between shear plate/headstock too large.
- Set cutter clearance.
- Put lubricant (liquid soap) between shear plate/knives.
- Deburr and clean contact surfaces on bearing housing. If necessary, exchange shear plate.
- Seal untight parts.
- Check suction head, if necessary increase pipe diameter on suction line and insert larger filters, fully open valve on suction side, reduce speed.
- Correct speed (data sheet).
9.1 Macerator Dismantling / Reassembly

Range: I
Size: 25

9.1.1 Prepare macerator for dismantling

**DANGER**

**Dangerous voltage.**
Death or serious injury can occur.
- Note safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.

**WARNING**

**Tilting or falling macerator.**
Death or serious injury can occur
- Attach cutter casing (500) to secure the macerator.

9.1.1.1 Empty macerator

**CAUTION**

**Oozing liquid.**
Slight injury or damage to property may occur.
- Wear suitable protective clothing.
- See the technical data (→ chapter 3) for the corresponding design of the macerator casing.

- Drain pipelines on inlet and outlet sides, or shut off behind macerator connections.
- Block/remove existing flushing connection (SSÜ).
- Remove screw fitting (513, 514).
- Remove cleanout (510) and seal (517).
- Drain liquid from cutter casing (500).
9.1.2 Dismantling

9.1.2.1 Macerator - dismantling

Alternative A

- Remove screw fitting (SCH) on pipelines (FLA).
- Remove pipelines (FLA).
- Remove screw fitting (SCH) on macerator feet.
- Observe de-commissioning instructions (→ chapter 6.4).

Alternative B

- Remove screw fitting (SCH) on pipelines (FLA).
- Remove screw fitting (SCH) on macerator feet.
- Remove macerator.
- Observe de-commissioning instructions (→ chapter 6.4).

9.1.2.2 Drive (ANT), lantern (200), coupling (149) - dismantling

- Remove the screw fitting (231, 232, 233).
- Remove drive (ANT) and coupling (149.1).
- Remove coupling (149.1) from drive (ANT).
9.1.2.3 Cutterhead assembly (SDE) - dismantling

- Remove the screw fitting (562, 563, 564).
- Remove lantern (200).
- Remove coupling (149.2).

9.1.3 Reassembly

**WARNING**

Tilting or falling macerator. Death or serious injury can occur

- Attach cutter casing (500) to secure the macerator.

9.1.3.1 Cutterhead assembly (SDE) - mounting

- Follow cutterhead assembly (SDE) reassembly instructions
  (→ chapter 9.1.10).
- Check O-ring (501) for damage and replace if necessary.
- Insert O-ring (501).
- Insert cutterhead assembly (SDE) in cutter casing (500).
- Note installation position
  - Marking/arrows (P)
- Note flushing connection (SSÜ) position.
- Mount screw fitting (507, 509).
9.1.3.2 Drive (ANT), lantern (200), coupling (149) - reassembly

- Coat drive shaft spline profile (102) with anti-seize graphite petroleum (GF).
- Push coupling (149.2) as far as drive shaft (102) stop.
- Mount lantern (200) with screw fitting (562, 563, 564).
- Push coupling (149.1) onto drive (ANT) as far as stop.
- Mount drive (ANT) with screw fitting (231, 232, 233).
  - Note position of motor terminal box for drive (ANT).

9.1.3.3 Macerator - reassembly

Alternative A

- Place pipeline (FLA) on macerator.
- Mount screw fitting (SCH) on pipelines (FLA).
- Mount screw fitting (SCH) on macerator feet.
- Assemble flushing connection (SSÜ).

Alternative B

- Insert macerator between pipelines (FLA).
- Mount screw fitting (SCH) on pipelines (FLA).
- Mount screw fitting (SCH) on macerator feet.
- Assemble flushing connection (SSÜ).
These operating instructions are valid for macerators with fleible coupling range I and U size 25 without flushing connection

Table of contents:

1.0 Disassembly
2.0 Reassembly
3.0 Lubrication

For this required:
Sectional drawing  075-008
Parts list  SL.075.008

Mounting tools
Some mounting tools are required for the disassembly and reassembly. Refer to the document OM.SPT.02 regarding these tools.

The sectional drawing "Headstock Assembly" and parts list can be taken from Point 9.

1.0 Disassembly

1.1 Headstock (905)

1.2 Shear Plate (900)

1.3 Shaft Sealing (330)
Before starting further disassembly please see description of shaft sealing (330), document OM.SEA.____, release set screw (378), remove circlip (109). When disassembling the drive shaft (102) item 1.4.2, the shaft sealing (330) is stripped of the drive shaft (102).

1.4 Drive Shaft (102)

1.4.1 Cover Plate (120)

1.4.2 Drive Shaft (102) - Disassembly
1.4.3
Drive Shaft (102)

2.0
Re-assembly

2.1
Bearing Housing (100)

Remove burrs, flaws and edges and clean bearing housing. Lip seal (127) examined for damages / renewed, pressed into / and filled with grease 1).

2.2
Drive Shaft (102) - Preassembly

Examine drive shaft (102) for damage, then remove any burrs and flaws and clean it.

To mount the bearings (104) on the drive shaft (102) use mounting tool (W50 und W51).
Before mounting the upper bearing (104) fill interior of distance sleeve (105) with grease 1).

To mount the shaft securing sleeve (140) use mounting tool (W58).

Adjust the bearing loosely with lock nut (106) and new locking plate (107), a clearance-free installation and locking is described under item 2.3.2., only.

2.3
Bearing Housing (100) - Final assembly

2.3.1
Drive Shaft (102) - assembly

Bearing housing (100) treated according to item 2.1 and preassembled drive shaft acc. to item 2.2. To mount the drive shaft (102) use mounting tool (W57).

1) quality of grease see document OM.MAI__, Point 7.2.1.3.
2.3.2 Bearing adjustment

Adjust the bearing with lock nut (106) without clearance / without pre-clamping and lock it with a locking plate (107).

Press lubrication nipple (101) in with mounting tool (W8). Fill internal of bearing with grease till the grease 1) exposes at the upper bearing (104).

2.3.3 Cover Plate (120)

Lip seal (126) examined for damages / renewed, pressed into / and filled with grease 1).

2.4 Shaft Sealing (SEA)

Before reassembly of the shaft sealing (330) see document OM.SEA.__. Assemble shaft sealing (330) with mounting tool (W58) and lock it with circlip (109) and set screw (378).

2.5 Shear Plate (900)

Burr and clean the seat-engaging surface in the bearing housing (100).

Installation position of the shear plate (900) with grooves as illustrated (detail X).

2.6 Headstock (905)

2.6.1 Adjustment of the distance between knives

A - Ascertain thickness of fitting disc.
A1 - Slip the fitting discs (112) with a total thickness of 3 mm (dimension "P") and headstock (905) on the drive shaft (102) and screw it down with screw (142).
A2 - Measure the distance between the knife "C" in the headstock (905) and the shear plate (900) using a thickness gauge.
A3 - Dismantle headstock (905) again.
A4 - Reduce the fitting disc (112) in such a way that the distance between the knife "C" in the headstock (905) and the shear plate (900) is 0.05 mm up to max. 0.2 mm (dimension "M").
B - Assemble the fitting disc with the right thickness and check it.

B1 - Repeat the assembly "A1" with reduced fitting discs (112) as ascertained in "A4" and check the distance between knife and shear plate as follows:

B2 - **CAUTION**

The knives in the headstock (905) must not touch the shear plate (900), because of danger to destroy knives and shear plate.

C - Preparation for pre-mounting Dismantle headstock (905) again. Continue assembly acc. to Point 2.6.2.

2.6.2 Headstock (905)

Continue assembly as illustrated and observe particularly:

In addition, the screws (142) have to be medium strength fastened with screw retention / adhesive. Recheck acc. to Point 2.6.1 - item B2.

2.7 Headstock Assembly - control of function/inlet phase

2.7.1 Control of function

The function of the headstock assembly is examined in the mounted condition. In this connection the bearing has to be checked with regard to running noises and the headstock (905) acc. to point 2.6.1, item B2.

2.7.2 inlet phase

During the inlet phase - when being operated it is approximately 2 - 4 hours - the temperature within the bearing could increase, whereas 80° C must not be exceeded. In case the temperature is exce- ded the operation has to be stopped. After a cooling phase the cutting unit has to be lubricated with grease/grease press and to put in operation, again.

However, if the temperature of 80° C continues to exceed, the bearing arrangement has to be checked according to point 2.3.2.

3.0 Lubrication of Headstock Assembly (SDE)

The first following-up lubrication\(^1\) has to be carried out after the inlet phase. Such lubrication should be carried out all 600 - 800 operating hours in dependency on the application conditions, however at least every three months. (See also document OM.MAI__.)

\(^1\)quality of grease see document OM.MAI__, Point 7.2.1.3.
9.4 Single acting mechanical seal

9.4.1 Safety

**WARNING**

*Shaft seal is leaky.*

Leakage may escape into the atmosphere.

- Take safety measures to protect persons and the environment.
- Wear suitable protective clothing.
- Dispose of leakage appropriately.
- Note applicable regulations when handling hazardous substances.

---

9.4.2 Operating conditions and and material combination

- Adjust to the relevant application
  - Refer to technical data (chapter 3).

9.4.3 Design

- Single acting mechanical seal

---

9.4.4 Commissioning

**NOTICE**

*Dry running of the mechanical seal.*

Damage to property may result.

- The mechanical seal must be laid in liquid medium before being commissioned.

**Circulation, flushing and/or flushing pipe**

- Additional flushing or circulation pipes are not required where shaft sealing lies in medium.
- Flushing pipes may be possible under special circumstances and after speaking to seepex.

**Adjust shaft seal**

- Adjust at the application site in a manner appropriate for the operating conditions.
- Refer to the sectional drawing of the shaft seal for setting measurements.
- Set the setting measurements of the shaft seal to the drive shaft (102).

9.4.5 Maintenance

No maintenance is required if the machine is operated according to the regulations.
9.4.6 Dismantling mechanical seal

Refer to data sheet (chapter 3.1) and sectional drawing of shaft seal (chapter 9.) for version of shaft seal.

- Unscrew set screw (378).
- Remove lock (109).
- Push shaft seal (330) off drive shaft (102).

9.4.7 Reassembly mechanical seal

Shaft seals are high-quality precision parts. This means they must be installed carefully. Careful handling and utmost cleanliness are essential.

- Use of installation aids such as oil/grease is not permitted.
- Install shaft seal (330) with mounting tool (W58).
- Secure with retaining ring (109) and set screw (378).
- Use of installation aids such as oil/grease is not permitted.
Please observe when ordering spare parts for necessary repairs!

The repair in the own workshop requires a certified and well-trained staff as well as a testing device for an inspection of the function of the headstock assembly.

For the own repair, the purchase of a completely overhauled, certified and function-tested spare headstock assembly is less expensive and provides security of function.

To overhaul your headstock assembly to be repaired, please return it to us and ask for an overhauled or new spare headstock assembly.

Zur Beachtung bei Ersatzteilbestellungen für notwendige Reparaturen!

Die Reparaturen im eigenen Haus erfordern qualifiziertes Fachpersonal und ein Prüfgerät zur Funktionsprüfung der Schneidteile.

Der Kauf einer kompletten, von einer Firma zugelassenen und von uns überprüften Schneidteilekombination ist günstiger und sichert den Betrieb der Schneidmaschine.

Vor dem Einbau der Reparaturen nach unseren Bedingungen bitten wir um die Rückgabe der zu reparierenden Schneidteilekombination und bitten um ein überprüftes oder neues Schneidteilekombination.
<table>
<thead>
<tr>
<th>Stck.</th>
<th>Pos.</th>
<th>DE</th>
<th>EN</th>
<th>FR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>Lagergehäuse</td>
<td>bearing housing</td>
<td>lagement du palier</td>
</tr>
<tr>
<td>1</td>
<td>101</td>
<td>Schmiernippel</td>
<td>lubrication nipple</td>
<td>raccord filé de graissage</td>
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<tr>
<td>1</td>
<td>102</td>
<td>Antriebswelle</td>
<td>drive shaft</td>
<td>arbre d'entraînement</td>
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<tr>
<td>1</td>
<td>103</td>
<td>Passfeder</td>
<td>fitting key</td>
<td>clavette</td>
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<tr>
<td>2</td>
<td>104</td>
<td>Kegelrollenlager</td>
<td>taper roller bearing</td>
<td>roulement à rouleaux coniques</td>
</tr>
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<td>Distanzstück</td>
<td>spacer</td>
<td>butée d'espacement</td>
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<tr>
<td>1</td>
<td>106</td>
<td>Wellenmutter</td>
<td>lock nut</td>
<td>écur d'ondes</td>
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<td>107</td>
<td>Sicherungsblech</td>
<td>locking plate</td>
<td>arrêt à aileron</td>
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<tr>
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<td>Sicherungsrings</td>
<td>circlip</td>
<td>circlip</td>
</tr>
<tr>
<td>1</td>
<td>112</td>
<td>Passscheibensatz</td>
<td>set of fitting discs</td>
<td>jeu de rondelle d'adjustage</td>
</tr>
<tr>
<td>1</td>
<td>120</td>
<td>Deckel</td>
<td>cover</td>
<td>couvercle</td>
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<td>socket screw</td>
<td>vis à tête cylindrique</td>
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<td>4</td>
<td>125</td>
<td>Federring</td>
<td>spring washer</td>
<td>rondelle frein</td>
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<td>1</td>
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<td>Wellendichtring</td>
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<td>bague d'étanchéité d'ondes</td>
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<tr>
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<tr>
<td>1</td>
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<td>Zylinderschraube</td>
<td>socket screw</td>
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<td>1</td>
<td>330</td>
<td>Gleitringdichtung</td>
<td>mechanical seal</td>
<td>garniture mécanique</td>
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<tr>
<td>1</td>
<td>332</td>
<td>Federteller</td>
<td>spring plate</td>
<td>cuvette de ressort</td>
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<tr>
<td>1</td>
<td>378</td>
<td>Gewindestift</td>
<td>set screw</td>
<td>vis sans tête</td>
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<td>Schneidplatte</td>
<td>shear plate</td>
<td>plaque de carburé</td>
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<tr>
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<td>Zylinderschraube</td>
<td>socket screw</td>
<td>vis à tête cylindrique</td>
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<tr>
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<tr>
<td>1</td>
<td>905</td>
<td>Messerkopf</td>
<td>headstock</td>
<td>tête de couteaux</td>
</tr>
</tbody>
</table>

Zur Beachtung bei
Ersatzteilbestellungen für
notwendige Reparaturen! Die
Reparatur im eigenen Hause
erfordert fachlich geschultes
Personal, sowie eine
Prüfeinrichtung zur
Funktionsprüfung der
Schneideinheit.

Please observe when ordering
spares for necessary repairs!
The repair in the own workshop
requires technically trained staff
as well as a testing device for
an inspection of the function of
the headstock assembly.

A considérer concernant des
commandes des pièces de
rechange pour des réparations
nécessaires! La réparation
dans votre établissement
requise du personnel qualifié
ainsi qu'un dispositif d'essai
pour la vérification du
fonctionnement de l'unité
sécatrice.

Der Kauf einer komplett
überholten, fertig montierten
und funktionsgeprüften
Ersatzschneideinheit ist aus o.g.
Grund konstengünstiger und
gewährleistet die
Funktionssicherheit.

For the a.m. reason the
purchase of a completely
overhauled, fitted and function
tested spare headstock
assembly is less expensive and
provides security of function.

L'achat d'une unité sécarice de
substitution qui a été
réconditionnée complètement,
montée pour l'installation et
verifiée de fonctionnement est
plus économique pour la raison
mentionnée ci-dessus et
garantit la sûreté de
fonctionnement.

Senden Sie uns zur Überholung
ihre zu reparierende
Schneideinheit zurück und
fordern Sie eine überholte oder
neue Schneideinheit an.

To overhaul your headstock
assembly to be repaired, please
return it to us and ask for an
overhauled or new spare
headstock assembly.

Nous retourner votre unité
sécatrice à réparer pour le
reconditionnement et demander
une unité sécatrice refaite ou
nouvelle.

Leckageöffnung
leakage opening
ouverture de fuite
10.1 Spare parts list

10.2 Sectional drawing and parts list
## 10.1 Spare parts list

Spare parts can be ordered online or requested from www.seepex.com.

### Request Order

**Must be included in every order or enquiry!**

<table>
<thead>
<tr>
<th>Commission:</th>
<th>Type:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Customer service:**

- **seepex GmbH**
- **Postfach 10 15 64**
- **D-46215 Bottrop**
- **service@seepex.com**

**Germany**
- Tel: +492041.996-231
- Fax: +492041.996-431

**Rest of Europe**
- Tel: +492041.996-224
- Fax: +492041.996-424

**Outside Europe**
- Tel: +492041.996-120
- Fax: +492041.996-432

**Type: I and U 25-110**

<table>
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<th>Material</th>
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<tbody>
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<tr>
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<td>Bearing</td>
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<td>1</td>
<td>Coupling</td>
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<td>151</td>
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<td>Bearing</td>
<td></td>
<td></td>
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<tr>
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<td>1</td>
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<td>Slip ring</td>
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</tr>
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<td>905</td>
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Place, date                        Signature / company stamp
### Version for copying

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<th>Component</th>
<th>Material</th>
<th>Comment</th>
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<td>O-ring / gasket</td>
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<td>according to data sheet (chapter 3.1)</td>
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<tr>
<td>126</td>
<td>1</td>
<td>Lip seal</td>
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<td>Lip seal</td>
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<td>according to data sheet (chapter 3.1)</td>
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<td>910</td>
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<td>Felt ring</td>
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__________________________________ _______________________________________

Place, date  
Signature / company stamp
11. Special tools

Ordering special tools

Commission number .......................................................... The commission number and type are printed on the type plate of your SEEPEX machine.

Type ............................................................................... 

Request ☐ After placing the order, you will receive an order confirmation and deadline before the parts are shipped.

Order ☐

Your data

First Name .......................................................................... 

Surname ............................................................................ 

Company ......................................................................... 

Department ....................................................................... 

Street ................................................................................ 

Postcode, City .................................................................... 

Telephone ......................................................................... 

Fax .................................................................................... 

E-mail ................................................................................ 

Our contact data

Customer Service
Fax +49.2041.996-5350
service@seepex.com
11. Special tools

Your order

Order special tools tailored to your macerator.

<table>
<thead>
<tr>
<th>Tool no.</th>
<th>Denomination</th>
<th>For assembly of</th>
<th>Order no.</th>
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<td>Lubrication nipple</td>
<td>ESH</td>
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<td>Montagehülse</td>
<td>Lager</td>
<td>HUL</td>
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<td>Montagesockel</td>
<td>Schneideinheit</td>
<td>MSO</td>
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<td>Wellenabdichtung Wellenschonhülse</td>
<td>HUL</td>
</tr>
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</table>

*see sectional drawing and parts list (→ Chapter 10.2)

______________________________   ______________________________
Place, date                     Signature, company stamp
12.1 Zusatzeinrichtungen/Technische Information

- Zusatzeinrichtungen und technische Informationen sind kommissions-
spezifische Dokumente und nicht Bestandteil dieser unverbindlichen
Betriebs- und Montageanleitung.
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