

Operating Instructions

XRipper®

XRC100QD + SIK

FOR PARTS AND SERVICE, CONTACT



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Original operating instructions

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in every one of our products, you will see the entirety of our competence and our power of innovation at work. Each product is developed and built so that you can work more successfully.

We call it quite simply: ENGINEERED TO WORK

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Relevant documents

- Dimension sheet/drawing
- Spare parts list
- Characteristic curve
- Technical information on drive system
- Technical information on safety/monitoring devices
- EC declaration

Read and adhere to the information and instructions in the relevant documents.

1 User information

1.1 Using the operating instructions

These instructions contain information concerning operating elements, handling, start-up and maintenance and repair work, as well as the relevant specifications.

The operating instructions are a component of the machine.

IMPORTANT READ CAREFULLY BEFORE USE

Read the operating instructions thoroughly. All of the points presented in these instructions must be understood and observed by those persons responsible for the installation, operation, maintenance and repair of the machine.


Vogelsang does not accept any liability for damage resulting from failure to comply with these operating instructions.

KEEP FOR FUTURE REFERENCE

Please keep the manual ready at hand to ensure easy access to the necessary information at all times.

Additional copies of the manual are available upon request. ☎️✉️

1.2 Presentation convention

Presentation	Meaning
•	Listing
–	Sublisting
1. 2.	Carry out these actions in the described sequence
→ Fig. "Caption"	Reference to a figure for additional information
→ Chapter "Chapter heading"	Reference to a chapter for additional information
→ Table "Table caption"	Reference to a table for additional information
 "Relevant document"	Reference to a document for additional information
☎️✉️ Technical support	Contact our technical support

1.3 Explanation of symbols

The following symbols and signal words are used in this manual:

- 1 If personal protective equipment is needed to work with and on the machine, that is indicated by the following symbols:



Indicates that protective gloves must be worn for subsequent tasks.



Indicates that protective goggles must be worn for subsequent tasks.



Indicates that safety shoes must be worn for subsequent tasks.

- 2 This symbol draws attention to the use of tools:



Tools, mounting devices and resources required for the following work tasks.

- 3 General notices and information about environmental protection are marked by these symbols:



NOTE

Refers to further information and useful notes.



ENVIRONMENTAL PROTECTION

Refers to measures to be observed to prevent damage to the environment.

4 Safety notes are introduced by these symbols and words:



CAUTION

Refers to a dangerous situation in which failure to comply with the safety note could result in light injuries.



WARNING

Refers to a dangerous situation in which failure to comply with the safety note could result in death or serious injuries.



DANGER

Refers to an (extremely) dangerous situation in which failure to comply with the safety note will result in death or serious injuries.



RISK OF ELECTRIC SHOCK

Touching live parts leads to dangerous electrocution.

This can result in electric shock, burns or death.



ATTENTION

Refers to possible damage to machinery or property as a result of failure to comply with this note.

1.4 Machine versions described here

The "Installation" chapter contains important assembly instructions and warning and safety notes that the operator must always comply with.

The following optional machine versions are described in the "Installation" chapter:

Machine version	Chapter reference
• With SIK (Sewer Integration Kit)	→ Chapter "Installation"
• With the following drive options:	→ Chapter "Drive"
– Electric drive	
– Hydraulic drive	
• With or without system control	→ Chapter "System control"

1.5 Overview drawing

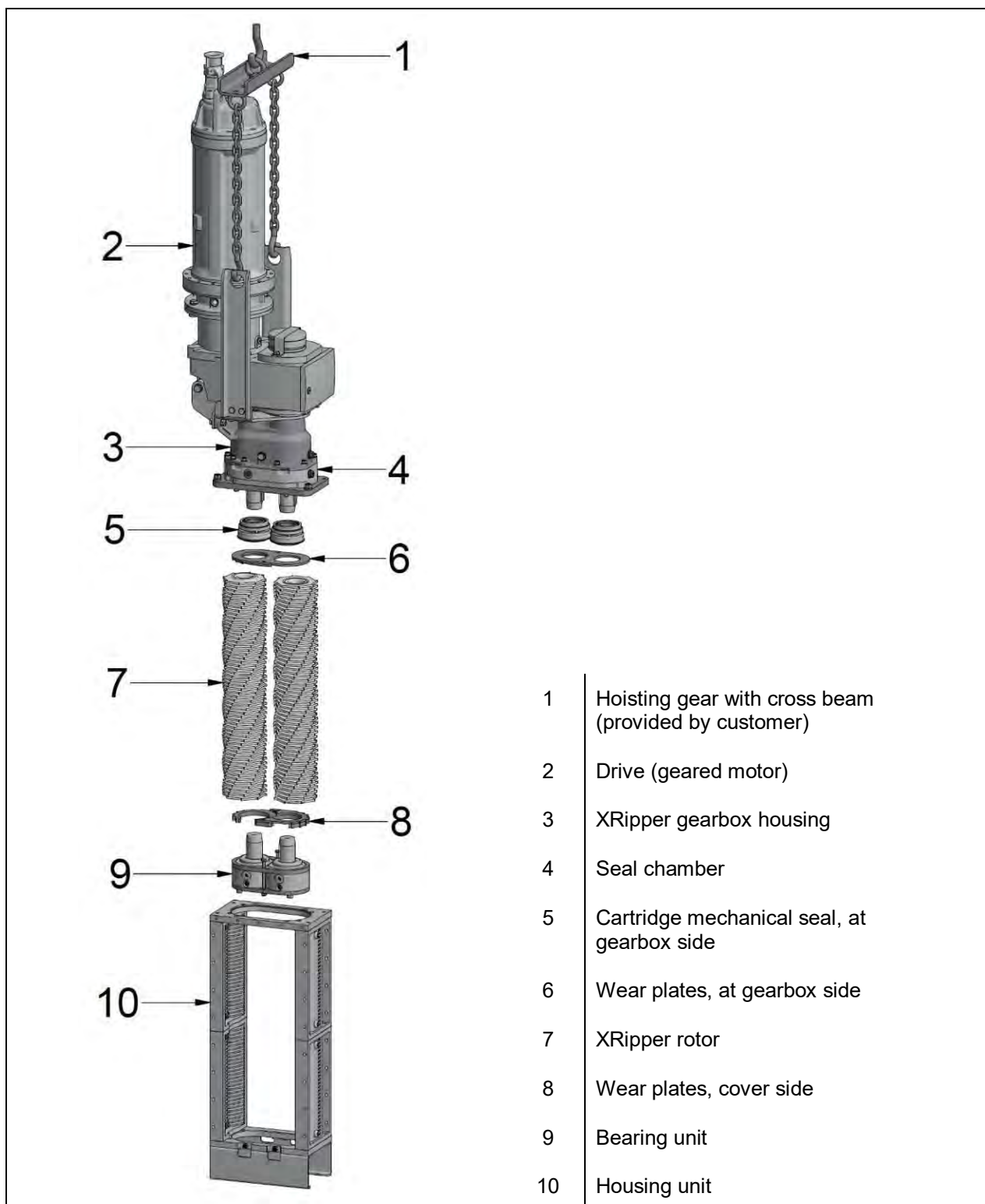


Fig. 1: Overview drawing

2 Specifications


Series XRC100QD/size	320	480	640	800	960
Max. permissible pressure [bar]	2				
Blade widths [mm]	5.5 / 7.9				
Max. permissible torque [Nm]	500				
Max. throughput* [m³/h]	140**	222**	310**	480**	690**
XRipper chamber length [mm]	320	480	640	800	960
Ambient temperature range [°C]	0 - 45				
Weight*** [kg]	300***	320***	340***	360***	380***

* in optimal installation conditions


** The throughput is based on water as the medium

*** Inc. submersible motor

Dimensions

For the machine's dimensions: see  "Dimension sheet"

Characteristic lines

For the machine's characteristic lines (curve charts), see  "Characteristic line"

2.1 Name plate

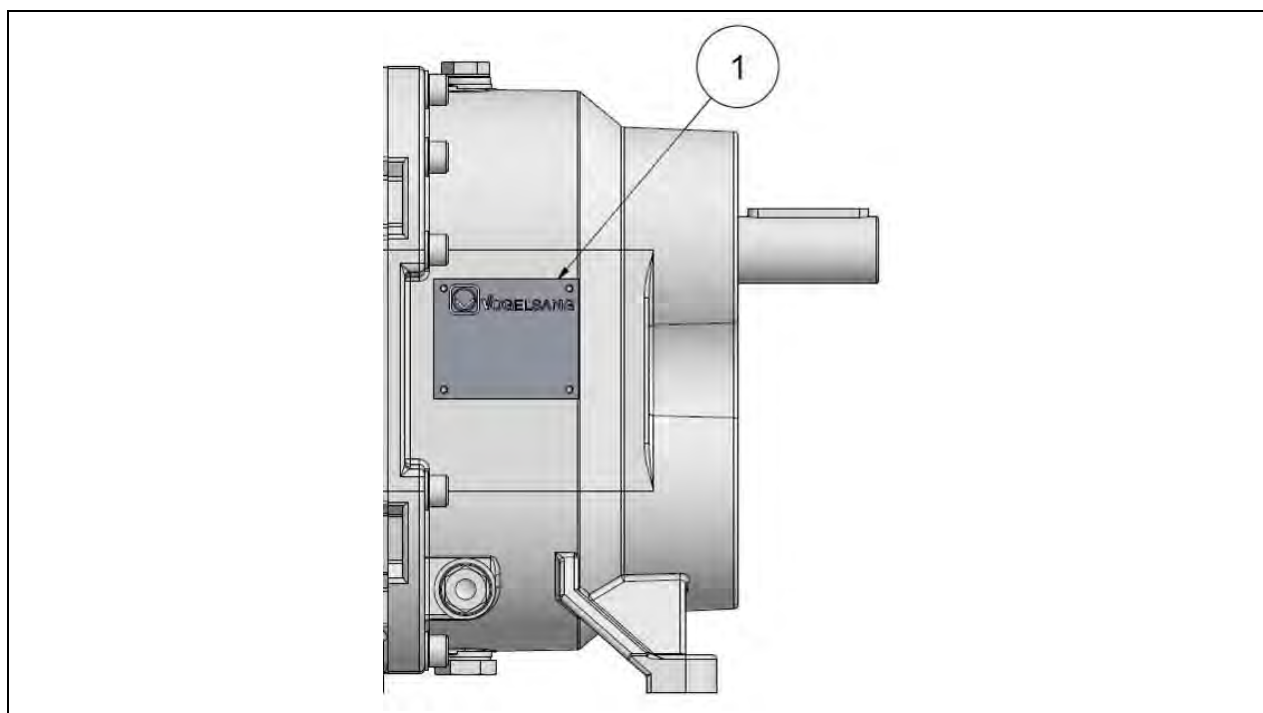



Fig. 2: Name plate

The name plate (1) contains the following details:

 VOGELSANG	QR code
Product	Year of manufacture
Design (Series)	Weight
Serial number	
Part number	
Address Vogelsang, GERMANY	

3 EC declaration

(sample printout)

Declaration of installation

for an incomplete machine according to Machinery Directive 2006/42/EC; annex II B

Manufacturer: Vogelsang GmbH & Co. KG
Holthöge 10-14
49632 Essen/Oldb.
GERMANY

We declare that this delivery concerns the following machine which is not complete. The machine must not be put into service until the machinery into which this incomplete machine is incorporated is in conformity with the Machinery Directive 2006/42/EC.

Product: XRipper
Machine type: XRC, XRC+SIK, XRG

The following basic health and safety requirements according to Annex I of the Machinery Directive (2006/42/EC) are applied and observed:

1.1.2; 1.1.3; 1.1.5; 1.5.4; 1.5.13; 1.6.1; 1.7.1.1; 1.7.3; 1.7.4

Applied harmonised standards:

DIN EN ISO 12100:2010
DIN EN ISO 14118:2018
DIN EN 349:1993+A1:2008
DIN EN ISO 13857:2008

The special technical documents according to annex VII B have been prepared and can be obtained if necessary.

The person or entity authorised to compile the technical documentation is:
Vogelsang GmbH & Co. KG; Holthöge 10-14; 49632 Essen/Oldb., GERMANY

The manufacturer is obligated to electronically forward the relevant technical documentation for the partly completed machine to national authorities upon justified request.

49632 Essen, 2018-05-24



Harald Vogelsang (Managing Director)

4 Safety

This section gives you an overview of important safety aspects needed to ensure optimum protection of personnel and to ensure safe and trouble-free operation.

Failure to comply with the instructions and safety information specified in this manual may result in serious hazards.

In the event of any abnormalities and/or signs relating to the safety of the product supplied by Vogelsang, please contact us without delay via:

produktsicherheit@vogelsang.info

4.1 Operator's responsibilities

The machine is used commercially. The operator of the machine is therefore subject to the statutory occupational safety regulations.

In addition to the safety information provided in this manual, the relevant safety, accident prevention and environmental protection requirements for the area in which the machine is used must be complied with.

The following applies in particular:

- The operator shall ensure that all persons who handle the machine have read and understood this manual. If necessary, the operator shall train personnel and inform them of possible hazards. To help keep track of training, we recommend creating a training log.
- The operator shall clearly regulate and define responsibilities for transport, installation, start-up, operation, maintenance, repair, cleaning, troubleshooting, shutdown and disposal.
- The operator must take appropriate safety measures as required by the nature of the media, such as acidic or alkaline media, or high media temperatures > 60 °C.

The operator is responsible for ensuring that the machine is always in perfect technical condition.

The following therefore applies:

- The operator shall ensure that maintenance intervals described in this manual are complied with and are documented in the service plan.
- The operator shall have all safety devices checked at regular intervals to ensure that they are fully functioning and complete.

4.2 Personnel qualification

Instructed person

Has been instructed by the operator to perform the tasks for which the instructed person is responsible and has been informed of possible hazards in the event of improper behaviour.

Qualified technical personnel

Are able, due to their specialist training, skills, experience and knowledge of the relevant regulations, to perform the work for which they are responsible, and are able to identify and avoid possible hazards independently.

Qualified electrician

Is able, due to his or her specialist training, skills, experience and knowledge of the relevant standards and regulations, to perform work on electrical systems, and is able to identify and avoid possible hazards independently.

Handling the machine improperly can result in serious injuries and property damage.

For this reason, all activities must be performed by qualified personnel only.

Only persons who can be expected to perform their work reliably shall be permitted as personnel. Persons whose ability to respond is impaired, for example due to drugs, alcohol or medication, are not approved.

4.3 Fields of activity

- The activities described in this manual may be performed by instructed persons unless explicit mention is made of a special qualification that is necessary.
- If activities may only be performed by qualified technical personnel, this fact will be clearly stated in this manual. Safety devices may only be connected and checked by qualified technical personnel.
- Electrical work and work on the electrical system may only be performed by qualified electricians.

Vogelsang must always be consulted prior to any system-specific activities that are not described in this manual. ☎️✉️

Training in the activities described in this manual may be provided by Vogelsang on request. ☎️✉️

4.4 Intended use

The Vogelsang XRipper (referred to hereinafter as the “machine”) is a twin-shaft cutter.

The counter-rotating XRipper rotors are positioned on the two shafts.

The XRipper + SIK (Sewer Integration Kit)

- is designed for installation in sewers, to shred the disruptive matter contained in the wastewater, such as textiles, wood or plastic waste, and to break up clumps and entangled material.
- is designed for submersed applications.

The XRipper is configured for the medium to be shredded as specified by the customer.

For a different medium, or if the XRipper was not configured for a specific application, test runs will be carried out with the medium in use. In some cases the XRipper must be reconfigured.

In addition to these specifications, the specifications in → Chap. "Specifications" must be complied with as well.

The machine is **NOT** intended for use as follows:

Use in potentially explosive atmospheres

Any other use is contrary to the intended purpose. Vogelsang is not liable for any damage resulting from incorrect use.

4.5 General safety notes



WARNING

Risk of injury due to sharp-edged rotors!

If the rotors are freely accessible or fall off, the sharp blades can result in cuts.



- Personnel must wear suitable protective clothing.
- Note and comply with the transport instructions.



WARNING

Risk of injury due to rotating, sharp-edged rotors!

Accidental contact with the rotating rotors when the machine is running can result in cutting injuries, amputation or the person being dragged in.

- **The customer must take action** to ensure that the rotors are not accessible during operation. Safety distances according to DIN EN ISO 13857 must be adhered to in order to rule out the possibility of anyone entering the danger area.
- Before maintenance and repair work, switch the machine OFF and secure it against being turned on again.
- In the case of an XRipper with control, the control must fulfil performance level “c” or higher in accordance with EN ISO 13849, in order to prevent unintentional starting.



WARNING

Skin and eye irritation caused by contact with hazardous working materials or media!

All work on the machine can lead to contact with working materials or media.



- Personnel must wear suitable protective clothing.
- The operator must inform his or her staff about any potentially hazardous substances in working materials or media.



ATTENTION

Stones or other hard objects in the medium result in heavy wear of or even damage to the XRipper.



ATTENTION

Risk of frost!

To protect the XRipper against damage caused by frozen medium, drain the XRipper when there is a risk of frost.



ATTENTION

Pull up the XRipper during temporary shutdowns.

To prevent solid matter from blocking up the XRipper inlet and causing problems when starting it up again, the XRipper must be pulled up for temporary shutdown.

4.6 Main switch, maintenance and repair switch

All-pole disconnection must be provided for the main switch and maintenance and repair switch.

4.6.1 EMERGENCY STOP shutdown (main switch)

For shutdown in the event of an emergency, an emergency stop must be present and freely accessible at all times.

4.6.2 Maintenance and repair switch

To safely exclude the possibility of unexpected machine start-up, a maintenance and repair switch must be installed in the immediate vicinity of the electric drive so that the electrical power can be safely isolated for maintenance purposes.

The maintenance and repair switch must be secured in its OFF position to prevent it being switched back on again, using a padlock for example.



WARNING

Qualified technical personnel must connect and check the safety devices on a regular basis for proper function, especially after performing maintenance and repair work and before start-up.

4.7 Warning and safety stickers on the machine

Warning and safety stickers on the machine

- provide important information for the safe operation of the machine. Observing the stickers is for the safety of persons who work with and on the machine.
- must remain legible, remove any contamination, if required.
- may not be removed and must be replaced immediately if damaged or lost.

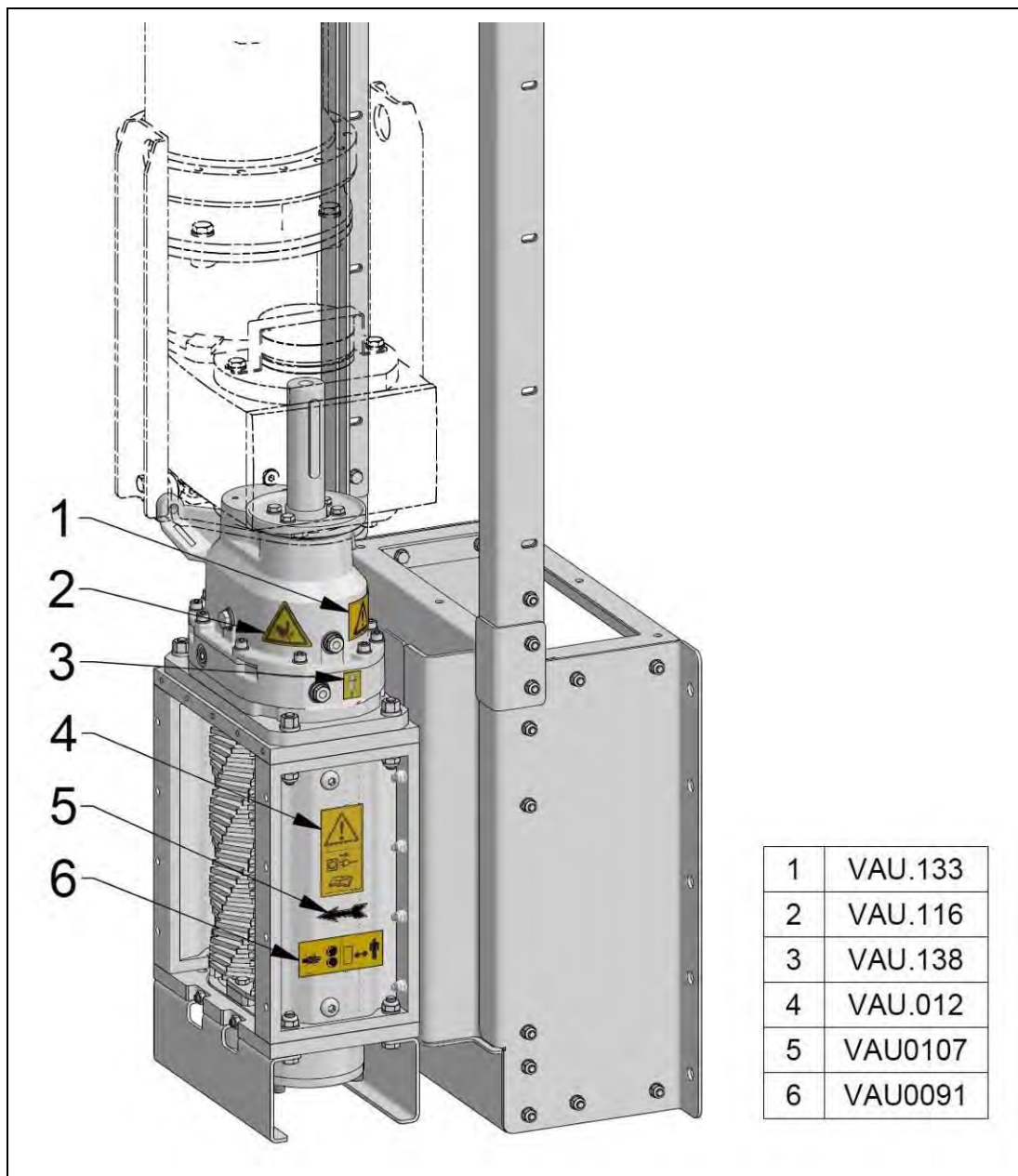








Fig. 3: Positions of the warning and safety labels

(example only, the position of the stickers can vary depending on the size)

VAU.133		Before machine start-up, operating instructions must be read!
VAU.116		Caution: risk of hand injuries!
VAU.138		Buffer fluid tank
VAU.012		Before carrying out maintenance and repair work, pull the maintenance and repair switch.
VAU0107		Direction arrow (flow direction)
VAU0091		Warning: risk of injury due to being dragged in by rotating XRipper rotors! Keep a safe distance!

5 Transport, storage

5.1 Transport

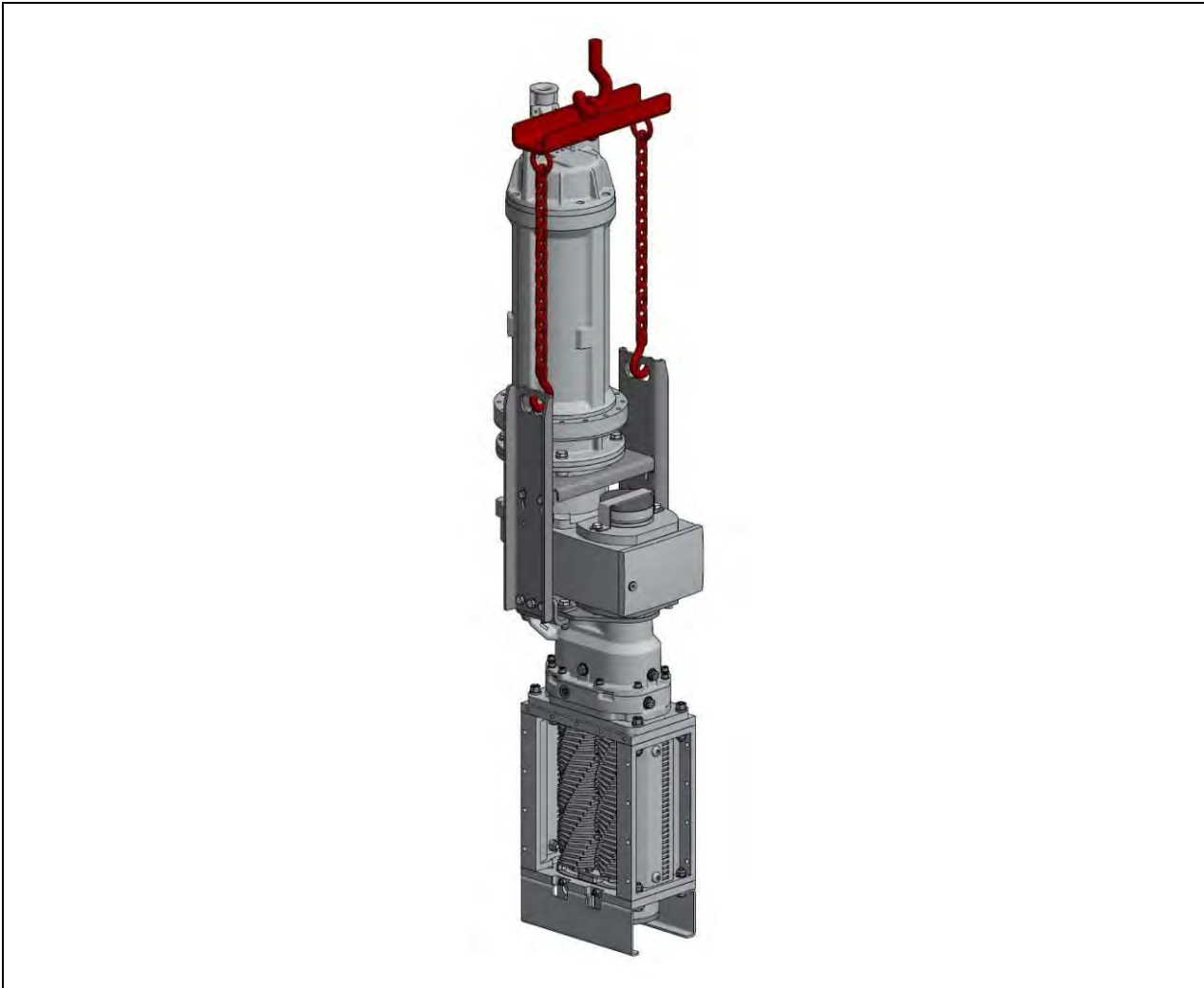


Fig. 4: Transport aid (example only)



WARNING

Risk of crushing or concussion due to falling machine!

The machine may start to sway or topple when it is transported, loaded or set down. To ensure safe transport, note the following:

- Loading and transporting may only be carried out by qualified technical personnel. In other words: The operator of a crane or forklift must be able to show an appropriate authorisation.
- Cranes, hoisting gear and forklifts must be designed for the weight of the transport units. Weights: → **Chap. "Specifications"**.
- Standing under raised loads is prohibited. Have all persons leave the danger area.
- When transporting the machine on vehicles, it must be secured against sliding and tipping.
- Permissible transport options for the machine:
 - Bolted to a Euro-pallet
 - Suspended with suitable hoisting gear. Securely fasten the lifting tackle for hoisting gear.



WARNING

Cutting injuries from the XRipper rotor blades during transport when lowering and pulling up (SIK) and when changing the XRipper rotors!

When moving and positioning the machine manually, the XRipper rotors are freely accessible, so the sharp blades of the XRipper rotors could cause cutting injuries.



Personnel must wear suitable protective clothing.

5.2 Storage

Long-term storage

of complete XRipper, individual O-rings and seal components

If not stored and handled properly, the physical characteristics of products made of rubber may change. Possible consequences include excessive hardening, softening, lasting deformation, peeling, cracking or other surface damage.

Long-term storage is possible under the following conditions (longer than 6 months to a maximum of 5 years):

- The storage area should be dry (relative humidity under 65%) and the temperature should be between 5 °C and 30 °C.
- The XRipper chamber can be sealed with a preservative that is suitable for the sealing material.
- The products should be protected against light, especially direct sunlight and strong artificial light with a high proportion of ultraviolet.

After a storage period of five years or more and before start-up we recommend:

- Checking and renewing (if necessary) all wetted gaskets and rotary lobes
- Changing the gear oil

6 Assembly



WARNING

Risk of injury due to sharp-edged rotors!

If the rotors are freely accessible or fall off, the sharp blades can result in cuts.



- Personnel must wear suitable protective clothing.
- Note and comply with the transport instructions.



WARNING

Risk of injury due to rotating, sharp-edged rotors!

Accidental contact with the rotating rotors when the machine is running can result in cutting injuries, amputation or the person being dragged in.

The customer must take action to ensure that the rotors are not accessible during operation. Safety distances according to DIN EN ISO 13857 must be adhered to in order to rule out the possibility of anyone entering the danger area.

6.1 Installing the SIK (Sewer Integration Kit)

The XRipper wall-mounted frame can be attached to the channel on the face side or on the side as required. With a wall-mounted frame on the face side, the XRipper can be lowered into the channel via guide rails and pulled up again. A wall-mounted frame on the side may be fitted with or without guide rails depending on the depth of the channel.

Always observe the following warning and safety information prior to each installation.



WARNING

Risk of crushing or concussion due to falling machine!

- Follow all the following assembly instructions and carry out installation properly.
- Retighten the fasteners (threaded) on the wall-mounted frame after 20 operating hours.



Compressive strength of concrete

The compressive strength of the concrete must be at least C 20/25.



Fasteners

For the fasteners, we recommend thread size M12 and property class 8.8. Anchor rods with resin cartridges may be used, for example.

6.1.1 Wall-mounted frame on the face side with guide rail

1. Install the wall-mounted frame (1) on a flat, level and uncracked concrete surface and align it centrally to the wall opening. The dimensions stated must not be exceeded.

Dimension H = XRipper chamber length (320 mm/480 mm/640 mm/800 mm/960 mm), → Chap. "Technical data".

2. Insert the guide rail (2) into the wall-mounted frame (1) as far as the stop and fasten with anchor rods (3).

Join multiple guide rails together using a connector (4).

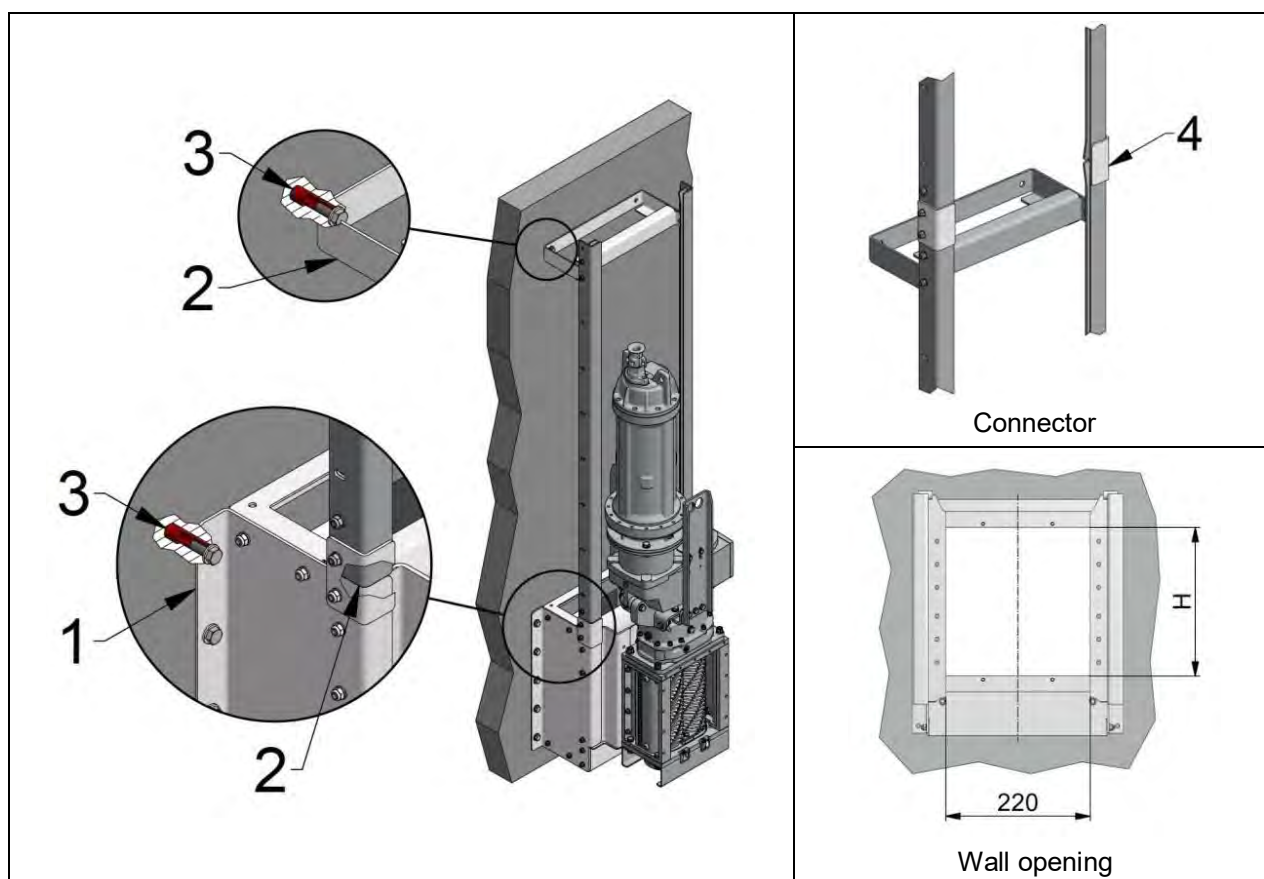


Fig. 5: Wall-mounted frame on the face side with guide rail

6.1.2 Wall-mounted frame on side with guide rail

1. Install the wall-mounted frame (1) on a flat, level and uncracked concrete surface.
2. Insert the guide rail (2) as far as possible into the wall-mounted frame (1) and fasten with anchor rods (3).

Join multiple guide rails together using a connector (5).

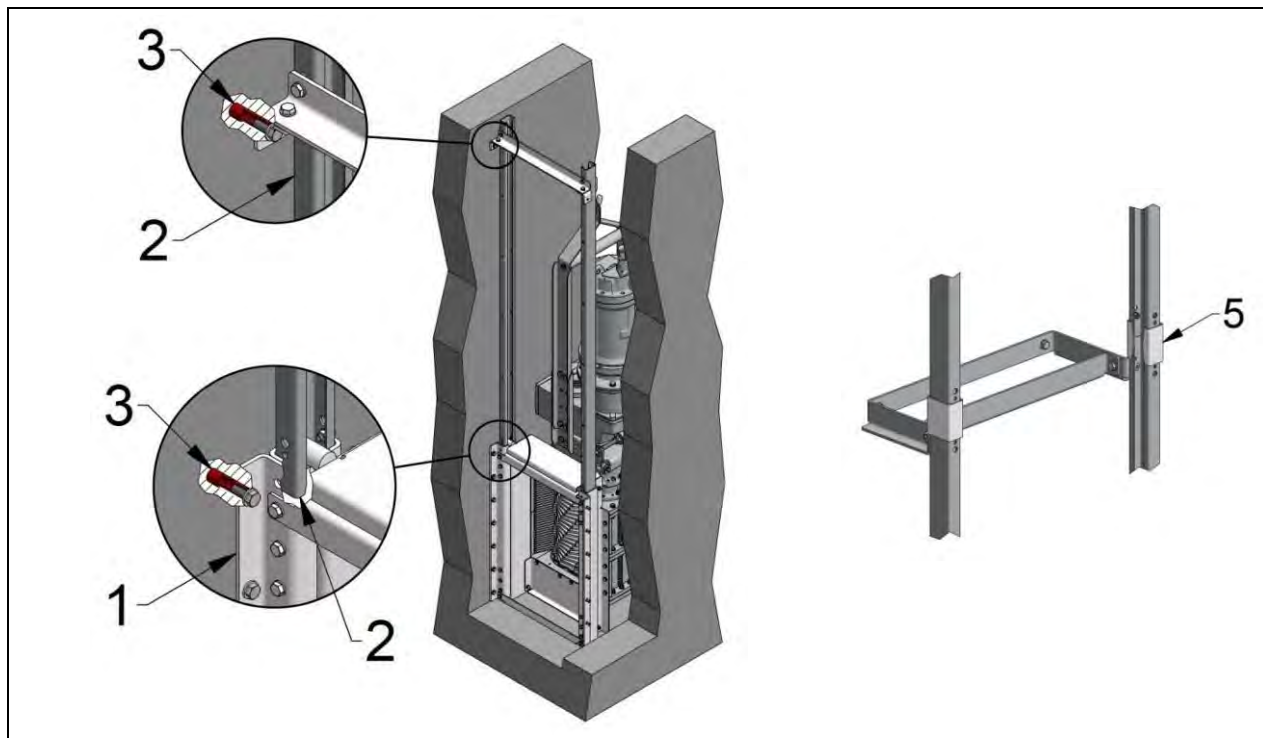


Fig. 6: Wall-mounted frame on side with guide rail

6.1.3 Wall-mounted frame on side without guide rail

1. Install the wall-mounted frame (1) on a flat, level and uncracked concrete surface and fasten with anchor rods (3).

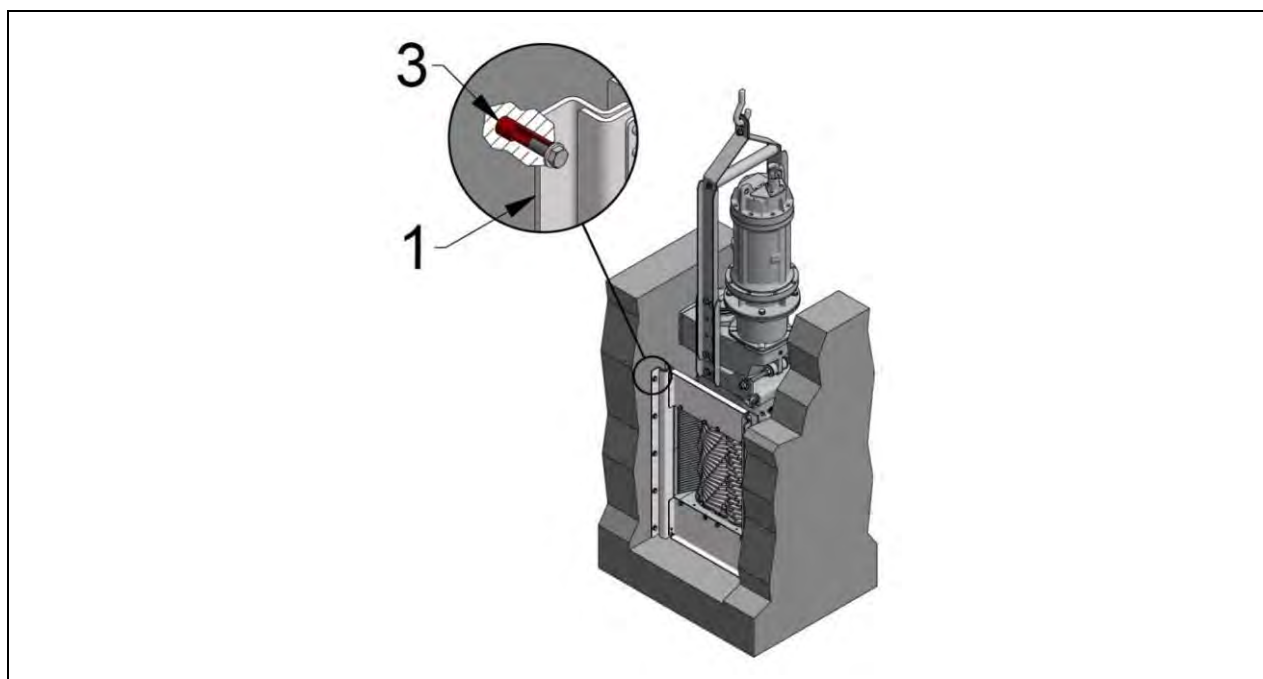


Fig. 7: Wall-mounted frame on side without guide rail

6.2 Lowering and pulling up the XRipper



WARNING

Risk of crushing or concussion due to falling machine!

The XRipper may start to sway or topple when it is lifted or set down. For safe lowering and pulling up of the XRipper, observe the following:

- Standing under raised loads is prohibited. Have all persons leave the danger area.
- Use the fitted lifting lug for hoisting gear and securely fasten the lifting tackle.
- The hoisting gear must be designed for the machine weight; see "Weights"
→ **Chap.** "Specifications".



NOTICE

If the XRipper is equipped with a pressurisable buffer fluid tank via a hose connection, make sure that the hoses can move unhindered when lowering and pulling up. The figures that follow are examples and depict the XRipper without a hose connection

6.2.1 With guide rail with mounting on the face side and on the side

1. To lower, carefully insert the slide rail (6) of the XRipper on both sides into the slots on the guide rails (2).
2. Lower the XRipper slowly and carefully.

Before pulling up the XRipper, make sure that the guide rails (2) can move freely and are not blocked by foreign matter.

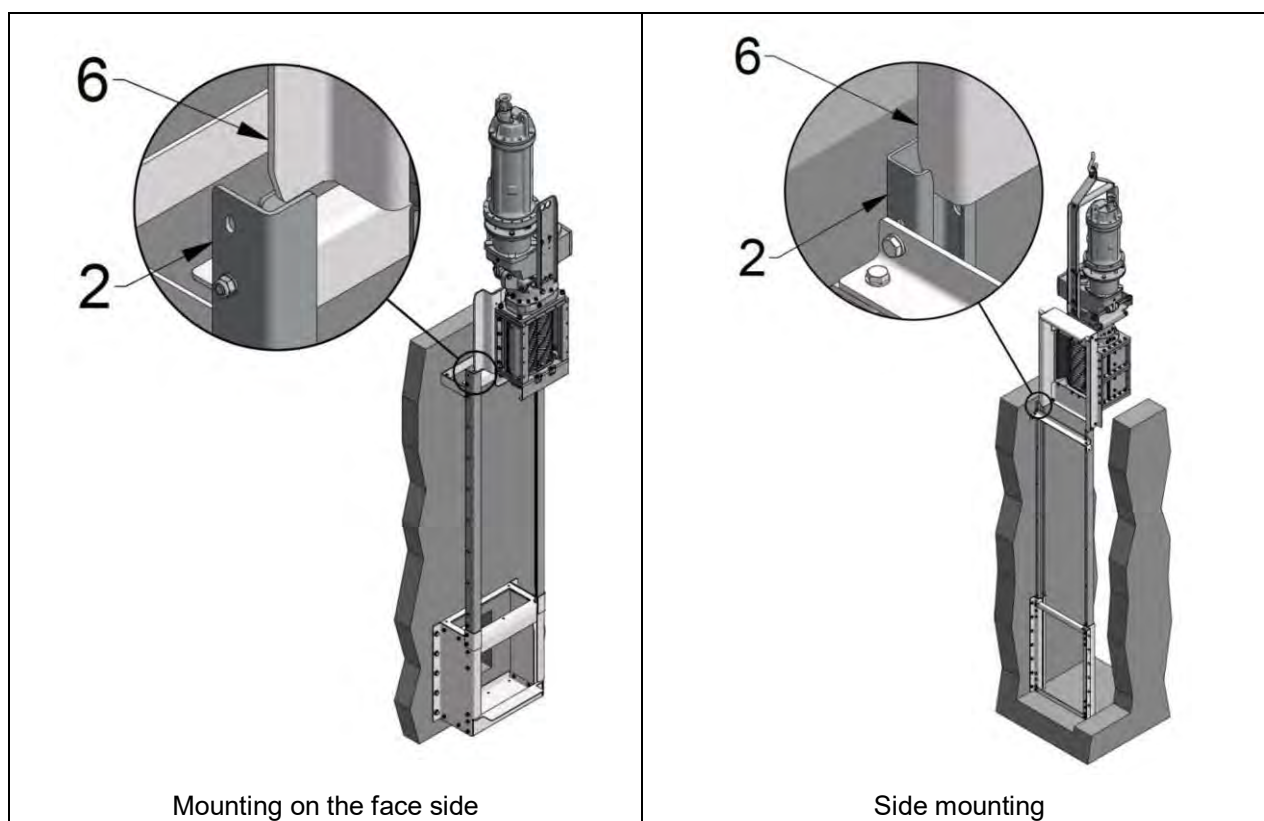


Fig. 8: Lowering and pulling up on guide rail

6.2.2 Without guide rail with mounting on the side

1. To lower, carefully insert the slide rail (6) of the XRipper on both sides into the wall-mounted frame (1).
2. Lower the XRipper slowly and carefully.

Before pulling up the XRipper, make sure that the slide rails can move freely and are not blocked by foreign matter.

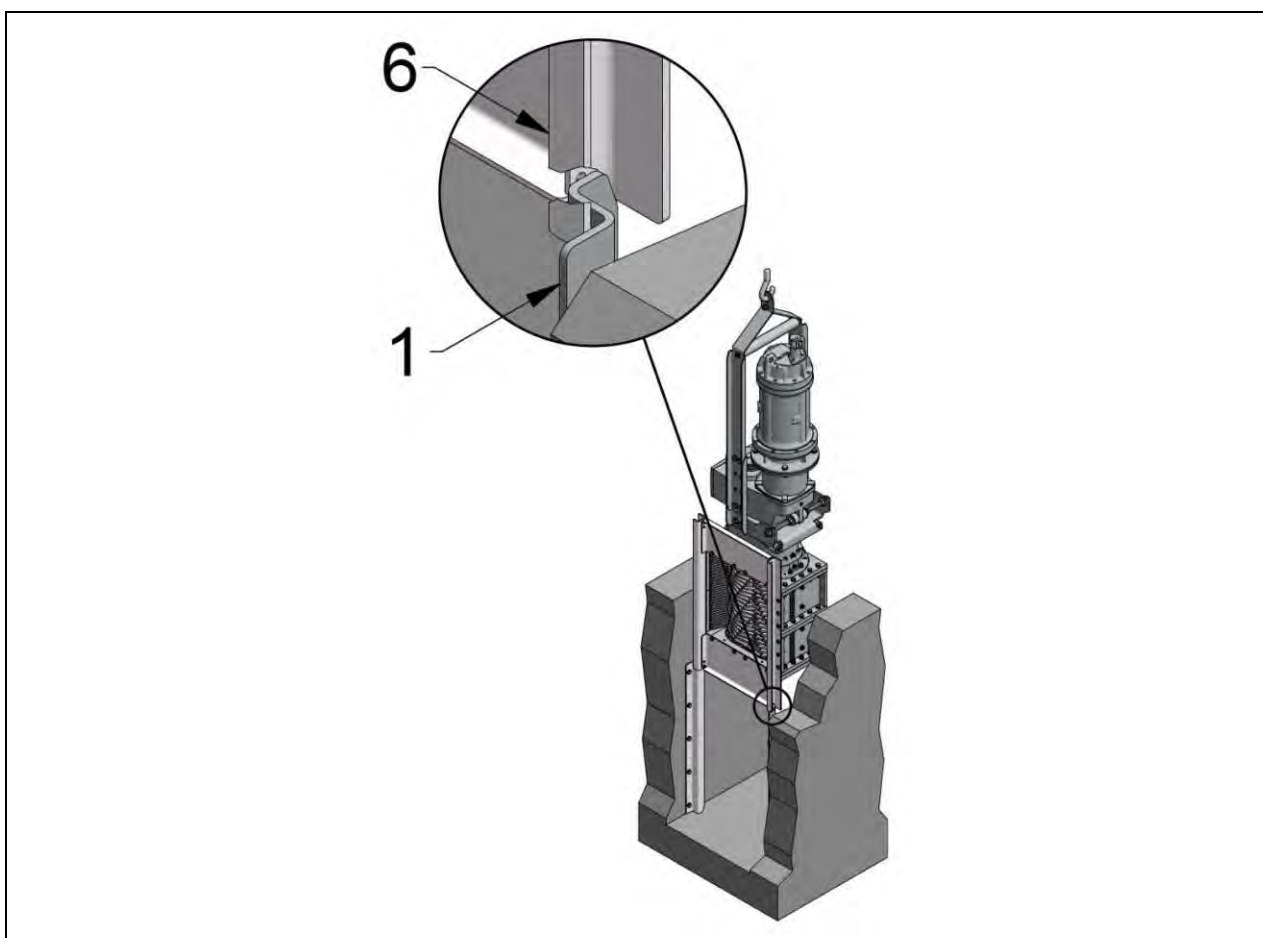


Fig. 9: Lowering and pulling up without guide rail (side mounting)

6.3 Moving the buffer fluid tank upwards (optional)

→Chap. "Seal chamber"

The pressurisable buffer fluid tank(1) is shipped separately from the XRipper.

Before lowering and starting up the XRipper, move the tank upwards using the hose extension (2) supplied and mount it in a readily visible location.

The hose extension must be installed so it rises at all times →Fig. "Moving the buffer fluid tank upwards".

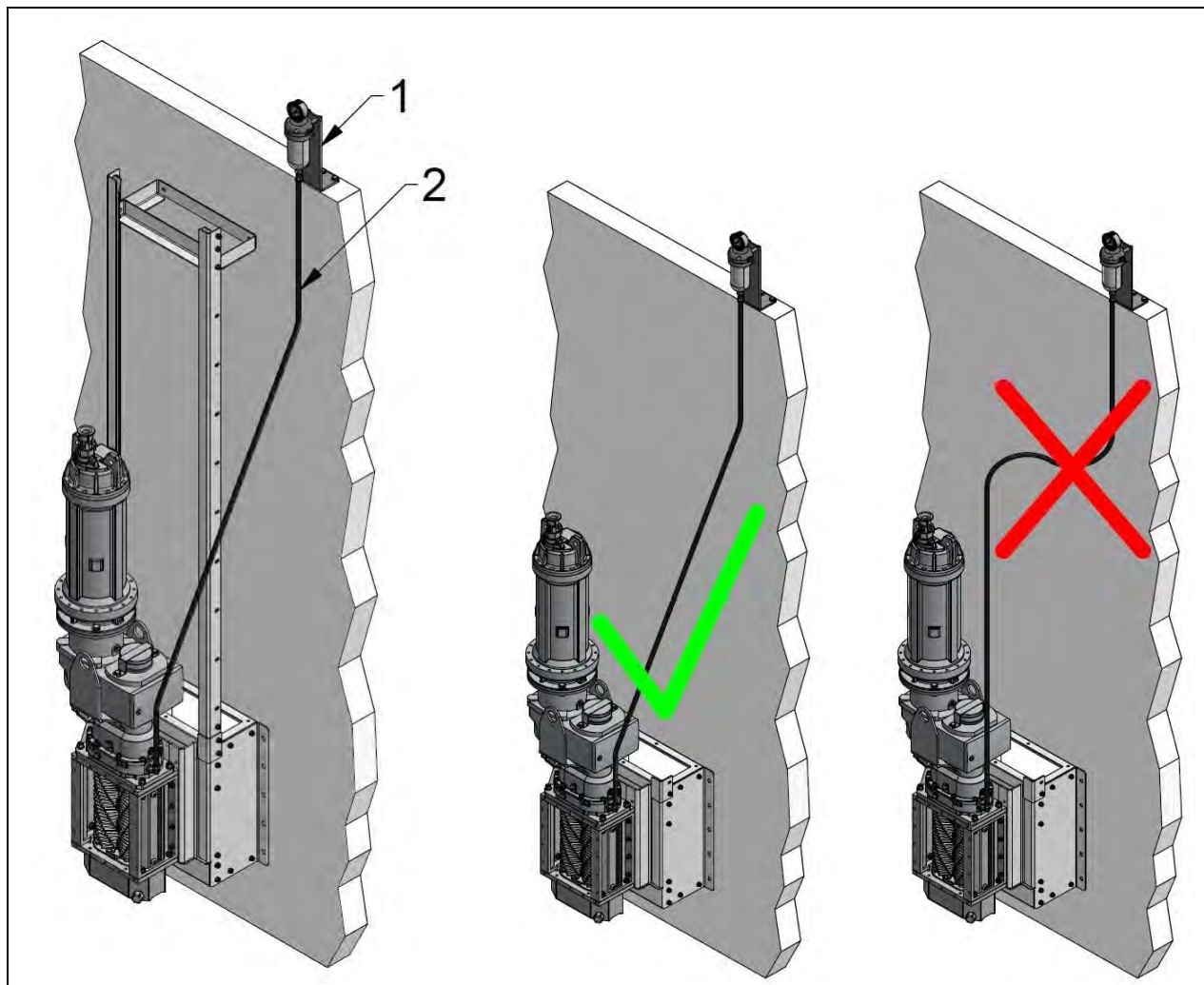


Fig. 10: Moving the buffer fluid tank upwards

6.4 Flow direction

The XRipper is principally directional.

The flow direction is set by the installation of the XRipper rotors (1) and the ribs on the housing segments (2). The ribs must be located on the inlet side.

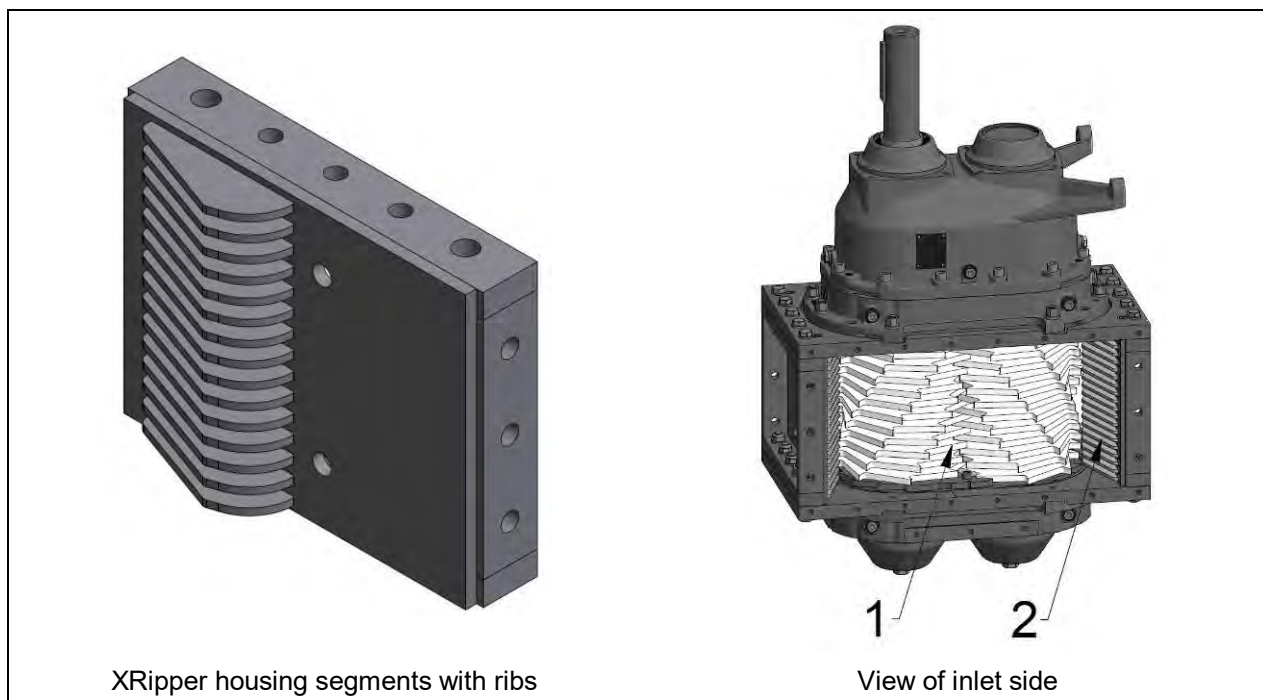


Fig. 11: View of XRipper rotors in the XRipper housing

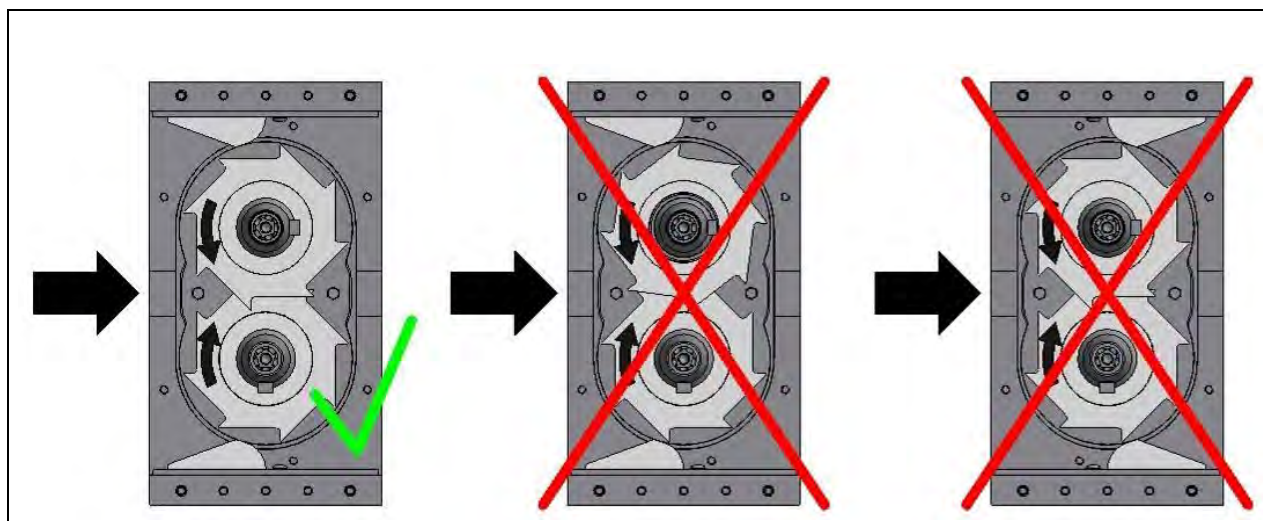


Fig. 12: Flow direction

6.5 Drive

The technical specifications for the drive system to be installed are determined by the machine's specifications → **Chap. "Specifications"**.

In addition, also read and observe the following:



"Technical information for the drive system to be installed"



"System requirements - Electrical drive technology"

6.5.1 Electric drive



RISK OF ELECTRIC SHOCK

Touching live parts leads to dangerous electrocution.

This can result in electric shock, burns or death.



RISK OF ELECTRIC SHOCK

The equipotential bonding shall be executed in accordance with standard EN 60204-1. In other words, all metallic parts of the machine or plant must be connected electroconductively to each other or to the signal ground.



In addition, also read and note the following: "Motor operating instructions"

Before connecting the geared motor (electric motor with gearbox)

- Check that the power supply is correct for the motor.
- Check that the power feed and fuse protection are adequately dimensioned to allow for multiple rotation direction changes and peak loads within a short period of time.
- Be sure to follow the cable layout diagram on the inside of the motor terminal box cover.
- Note that the PTC resistor of the geared motor must be connected to the terminals provided on the XRipper control, to a PTC control unit or to a variable frequency drive with a PTC input (each available as an option).
- Install a maintenance switch in close proximity to the machine (recommendation).

Before start-up or long-term storage

The seal on the vent screw must be removed in order to prevent overpressure build-up in the gearbox and thus leakage.

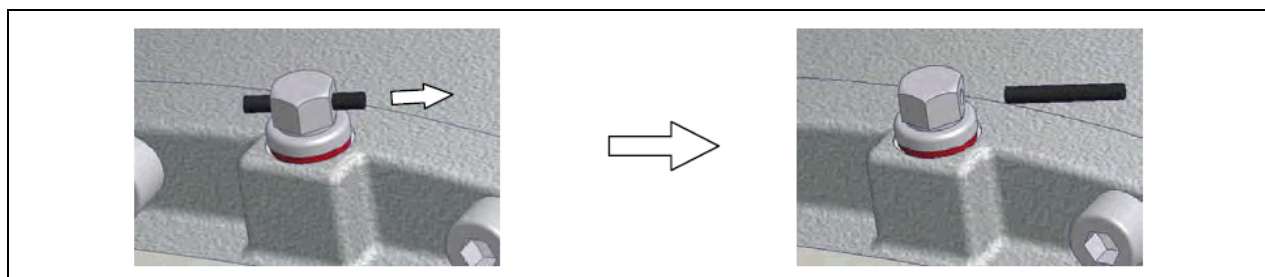


Fig. 13: Vent screw on the gearbox (removing the seal)

6.5.2 Hydraulic drive

Connection to the energy supply may only be established by qualified technical personnel **following** installation in the pipe.



WARNING

Risk of infection from hydraulic oil!

Leakages can occur due to seal faults.



- Personnel must wear suitable protective clothing.
- The connection to the power supply must be established by qualified technical personnel.

In the event of injuries with hydraulic oil, consult a doctor immediately!

In addition, also read and observe the following:  "Technical information for hydraulic motor"

Hydraulic hose lines

- Before connecting hydraulic hoses, read and follow the manufacturer's specifications for hydraulic motors.
- Observe the permissible hydraulic pressure and the permissible delivery rate.
- Connect the overflow oil line in accordance with the manufacturer's instructions.
- Replace hydraulic hose lines that show signs of damage or ageing. Only use genuine Vogelsang hydraulic hose lines.
- The date of manufacture of the hydraulic hose line is displayed on the pressing component of the connector. The period of usage for the hydraulic hose line should not exceed 6 years (although 5 years is recommended), including a possible storage period of no more than 2 years.

Installing two hydraulic motors

When two hydraulic motors are installed, they are operated parallel and the torques of both motors are added.

Control unit

In the event of high hydraulic motor speeds, never suddenly set the control unit to "lock position" in order to avoid pressure peaks. Whenever possible, switch from "operation" to "floating position".

Connection

The following diagram shows the connection of two hydraulic motors operated in parallel in relation to the flow direction.

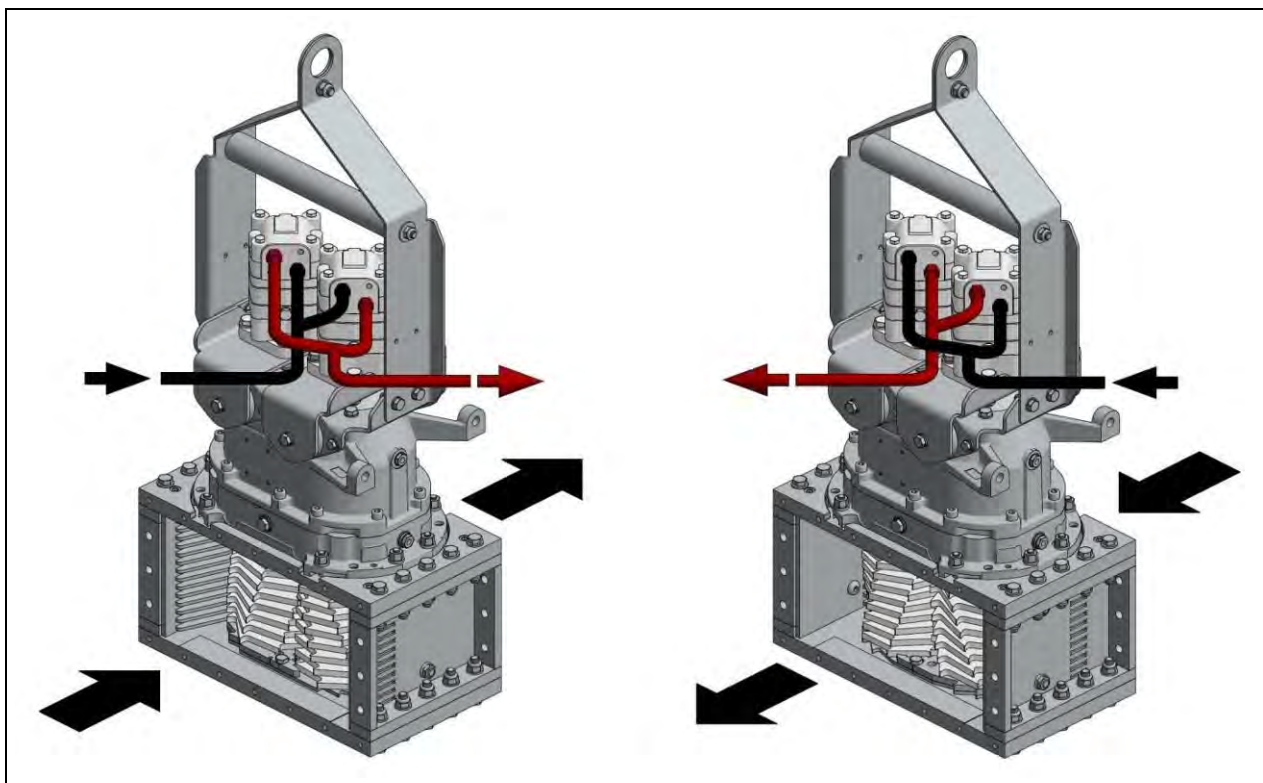


Fig. 14: Connection of two hydraulic motors operated in parallel

6.6 System control

We recommend our control that is specially designed for use with the XRipper in order to provide trouble-free operation and maximum performance and service life of the XRipper.

The control can be adapted to the specific application, and significantly increases the range of application. The control can be retrofitted to existing units and can also be used to control pumps.

Note the following regarding the control of the XRipper:

- The control must at least fulfil PL “c” in accordance with EN ISO 13849.
- The load circuit provided for the XRipper must be suitable for heavy starting.
- A soft starter is sufficient for soft starting.
- A star-delta connection is not suitable for the XRipper.
- Mains contactors for direct starting must be designed for utilisation category AC-4.
- The soft starter must be suitable for high starting currents and at least 8 starts within a minute. Therefore, oversized units should be used for heavy starting. Acceleration and delay times should be kept above two seconds.
- Please generally observe the following in the context of XRipper controls: Reversing through excess current should remain an exception. If reversing is constantly performed, please check whether the parameters of the control match the motor size used.
- Please contact us with regards to the correct programming of the control.

7 Start-up



Personnel for start-up and operation

We recommend starting up the machine in the presence of persons who are responsible for further operation of the machine.

7.1 Functional test



WARNING

Risk of injury due to sharp-edged, rotating XRipper rotors!

Accidentally inserting parts of the body into the XRipper chamber when the machine is running can result in cuts, amputation or the person being dragged in, due to the sharp-edged, rotating XRipper rotors.

- Any functional test before start-up, for example to check the direction of rotation, must be carried out by qualified technical personnel only.



- Personnel must wear suitable protective clothing.
- Before switching on the machine for functional tests, make sure that there are no persons in the danger area.

Functional test procedure

- Switch the main switch to OFF.
- Check the XRipper chamber for foreign matter and remove it before the functional test.
- Switch the main switch to ON and carry out the test, for example checking the direction of rotation.

7.2 Safety distance



WARNING

Risk of injury due to sharp-edged, rotating XRipper rotors!

Accidentally inserting parts of the body into the XRipper chamber when the machine is running can result in cuts, amputation or the person being dragged in, due to the sharp-edged, rotating XRipper rotors.

- The customer must take action before start-up to ensure that the XRipper rotors are not accessible during operation.
- Safety distances according to DIN EN ISO 13857 must be adhered to in order to rule out the possibility of anyone entering the danger area.

Checklist before start-up

Safety

- ☐ Have you taken action to ensure that the XRipper rotors are not accessible during operation?
- ☐ Are the main switch and maintenance and repair switch easy to reach?

Installation

- ☐ Are the wall bracket and extension rails properly installed?

Drive

- ☐ Is the motor connected correctly to the power supply, if applicable (→ documents provided by the motor manufacturer)?
 - ☐ Star or delta connection, voltage, frequency (see name plate and inside of terminal box)?
 - ☐ Motor protection ensured, e.g. by a circuit breaker?
 - A short switching time should be set for star-delta starting, if present.
 - A short start ramp should be set for the soft starter, if present.
 - ☐ Is the soft starter, if present, dimensioned and configured correctly?
 - Units should be suitable for heavy starting.
- ☐ Is the motor connected correctly to the hydraulic lines, if applicable (→ documents provided by the motor manufacturer)?

Buffer chamber, XRipper gearbox

- ☐ Are the optional buffer chamber assemblies correctly installed? Are they correctly adjusted?
Is the buffer chamber pressure OK, if applicable? → **Chap. "Maintenance"** – "Buffer chamber".
- ☐ Is the type of buffer fluid OK?*
- Is the fluid level in the buffer chamber OK?*
- ☐ Are the oil grade and oil level in the XRipper gearbox OK?*

**Requirements met by the XRipper when delivered*



ATTENTION

Pull up the XRipper during temporary shutdowns.

To prevent solid matter from blocking up the XRipper inlet and causing problems when starting it up again, the XRipper must be pulled up for temporary shutdown.

8 Maintenance



WARNING

Risk of injury due to rotating, sharp-edged rotors!

Accidental contact with the rotating rotors when the machine is running can result in cutting injuries, amputation or the person being dragged in.

Before maintenance and repair work, secure the maintenance and repair switch against being turned on again, for example by means of a padlock.



WARNING

Risk of injury from working materials escaping under high pressure!

When the drain plugs on the gearbox and seal chamber are loosened or the buffer fluid tank cover is opened, working materials may spray out under high pressure.



- Personnel must wear suitable protective clothing.
- Before maintenance and repair work, release the seal chamber pressure.
- To protect against fluids spraying out, open the seal chamber and the gearbox carefully and slowly. Where appropriate, cover the valves or screws to be removed with a cloth or similar item.

8.1 Seal chamber

In the following chapters, we describe the possible buffer chamber assemblies:

- **Chap.** "Plugs" (standard design)
- **Chap.** "Pressurisable buffer fluid tank" (optional)

8.1.1 Plugs

→ **Fig.** "Buffer chamber assembly with plug"

To add small quantities to the seal chamber, dismount the upper plug and top up the buffer fluid (1).

**Air buffer**

When adding buffer fluid, leave an air buffer (2) above it (about 1 cm distance between the oil level and the bearing seal housing). The air buffer prevents the seal chamber fluid from building up an unacceptably high pressure due to thermal expansion.

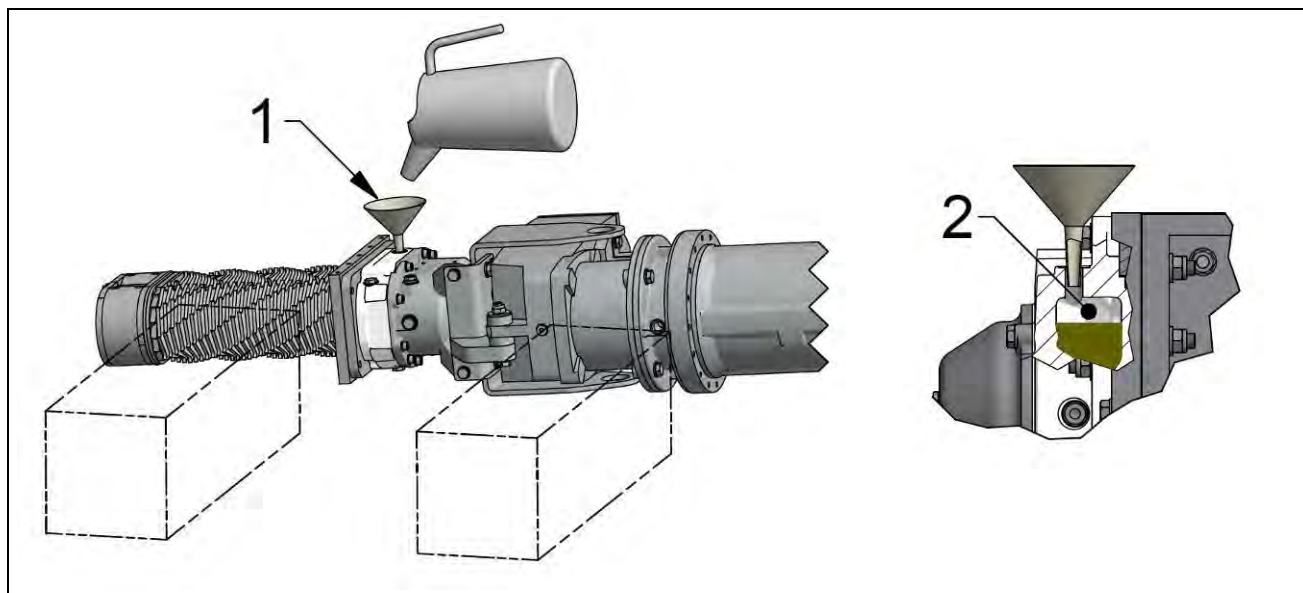


Fig. 15: Seal chamber design with plug

8.1.2 Pressurisable buffer fluid tank (optional)

The pressurisable buffer fluid tank (hereinafter referred to as "the tank") with manual air pump provides a constant, defined seal chamber pressure (seal chamber pressure = tank pressure).

The tank ensures that the seal chamber is monitored reliably.

Topping up the buffer fluid

→ Fig. "Pressurisable buffer fluid tank", pos. 1

1. Release the pressure in the seal chamber via the valve on the tank.
2. Opening the tank: Undo the upper coupling of the upper housing (while holding the union nut securely so that the lower coupling does not come undone).
3. Top up the buffer fluid in the tank. The tank must be up to **one quarter** full.
4. Close the tank and use a manual air pump or a compressed-air supply outlet to set the required tank pressure to **0.5 bar**.



Replacing the XRipper rotors and Cartridge mechanical seal replacement

Relieve the **tank pressure** before replacing the XRipper rotors or the Cartridge mechanical seal, and then pressurise it once again after replacement.

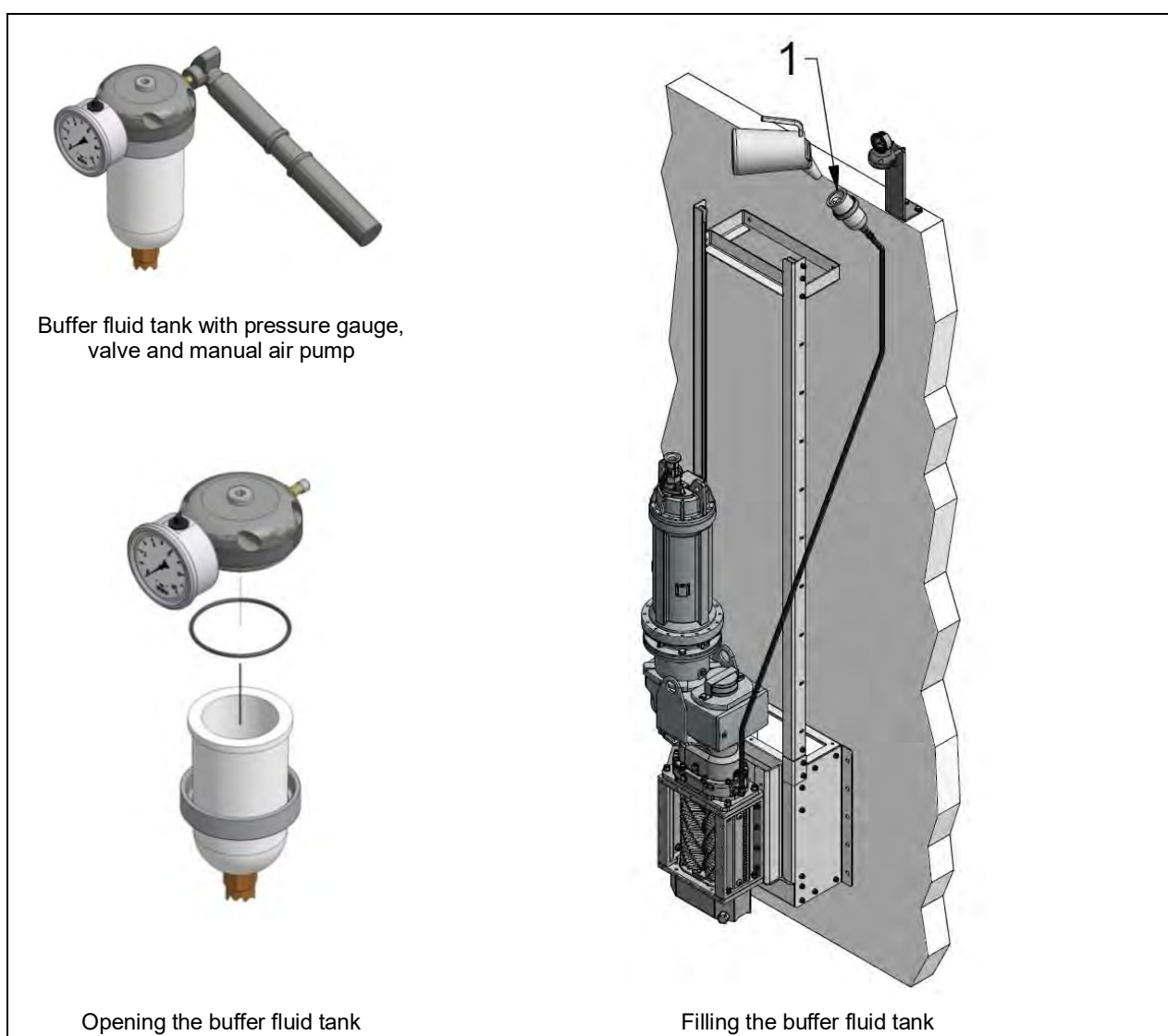


Fig. 16: Pressurisable buffer fluid tank

Trouble indication

Possible signs of malfunctions in the sealing system after the running-in period:

- Severe contamination of the buffer fluid in the tank
- Buffer fluid escaping (tank is empty)
- Increase in buffer fluid level (tank is full)

**Buffer fluid characteristics**

- The hydrodynamic lubrication film of a mechanical seal can cause:
 - Slight contamination of the buffer fluid
 - A slight increase or reduction in the buffer fluid level
- A slight increase in the buffer fluid level is also possible due to thermal expansion during XRipper operation.

8.1.3 Buffer fluid – type

To ensure optimum functioning of the mechanical seal, we recommend using the oil grades listed in → **Chap. "Oils"**.

Please check your order confirmation to determine whether the seal chamber on your machine is filled with an oil grade other than that specified in this chapter.

Use only the oil specified on your order confirmation.

**ATTENTION**

To prevent premature wear of the seal, mineral oils or greases must not be used with EPDM O-rings. Use glycol as an alternative.

8.1.4 Buffer fluid – amount

The buffer fluid quantity is approx. 0.45 litres (guideline value).

The guideline value will vary, depending on the design of the seal chamber, for example + tank capacity + capacity of hose extension.

Service interval, → **Chap. "Inspection and maintenance plan"**

8.2 Replacing the buffer fluid

8.2.1 Draining and filling the seal chamber (plug)

Before draining, read and follow Chapter 8:

→ **Chap.** "Lowering and pulling up the XRipper"

1. Pull up the XRipper.
2. Remove the top plug.
3. Undo the lower screw plug (2) and drain the buffer fluid → **Fig.** "Draining and filling the seal chamber".
4. Screw the lower screw plug back in (tightening torque: **60 Nm**).
5. Fill the seal chamber → **Chap.** "Buffer fluid – grade" and "Buffer fluid – quantity".
6. Reinstall the screw plug.
7. Lower the XRipper.

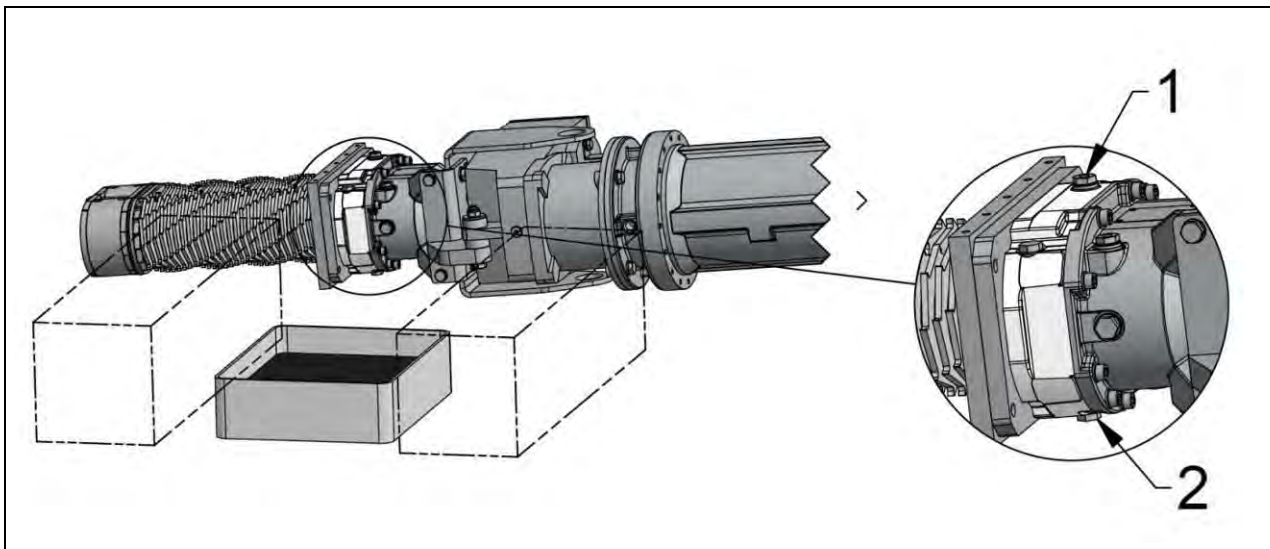


Fig. 17: Draining and filling the seal chamber

8.2.2 Draining and filling the seal chamber (buffer fluid tank)

Before draining, read and follow this chapter:

→ Chap. "Moving the buffer fluid tank upwards"

→ Chap. "Lowering and pulling up the XRipper"

1. Use the buffer fluid tank to release the pressure from the seal chamber.
2. Pull up the XRipper.

If the XRipper needs to be moved, into e.g. a workshop for maintenance purposes, the hose extension must be brought in along with the buffer fluid tank.

3. Undo the lower screw plug (2) and drain the buffer fluid → Fig. "Draining the seal chamber".
4. Screw the lower screw plug back in (tightening torque: **60 Nm**).
5. Fill the seal chamber → Chap. "Buffer fluid – grade" and "Buffer fluid – quantity".
6. Reinstall the hose connection.
7. Lower the XRipper and move the buffer fluid tank upwards.
8. Top up the buffer fluid tank to one-quarter full and pressurise it.

8.3 Gearbox

8.3.1 Gear oil - grade

We recommend the oils listed in → Chap. "Oils and lubricants".

8.3.2 Gear oil - quantity

1 litre

Service interval, → Chap. "Inspection and maintenance plan"

8.3.3 Gear oil change

Before a gear oil change, read and follow these chapters:

→ Chap. "Lowering and pulling up the XRipper"

1. Pull up the XRipper.

For optional seal chamber designs with a pressurisable buffer fluid tank, observe the following notice: If the XRipper needs to be moved, e.g. into a workshop for maintenance, the hose extension may need to be brought in along with the buffer fluid tank.

→ Fig. "Draining gear oil"

2. Loosen the top screw plug (1) for venting
3. Loosen the lower screw plug (2), drain the gear oil and collect it.
4. Screw the lower screw plug back in (tightening torque: **60 Nm**).

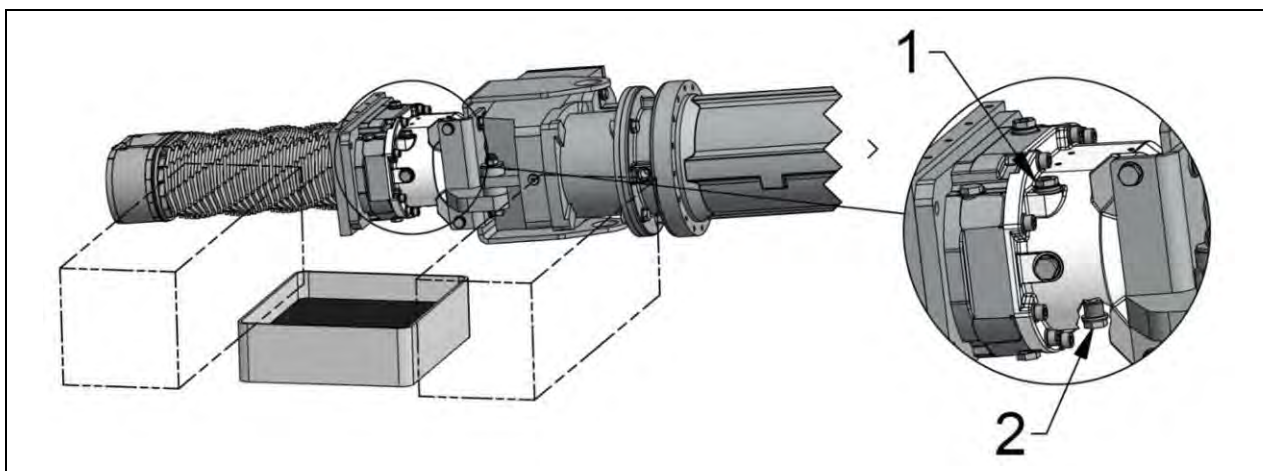


Fig. 18 Draining gear oil

→ Fig. "Topping up gear oil"

5. Fill the gearbox (1) → Chap. "Gear oil – grade" and "Gear oil – quantity". Adhere exactly to the specified gear oil quantity.
6. Lower the XRipper and, if necessary, move the hose extension upwards again.

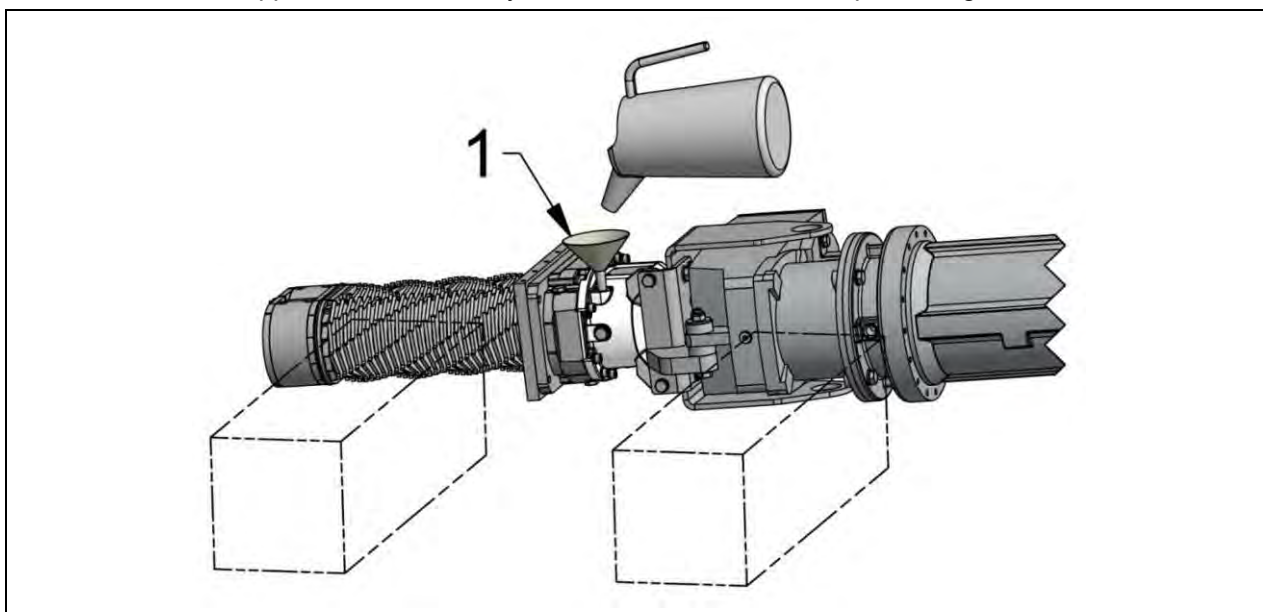


Fig. 19: Topping up gear oil

8.4 Oils and lubricants

1 Standard Vogelsang oil for XRipper gearbox and seal chamber

Part number	BSS.006	
Description	EP (Extreme Pressure) gear oil	
Trade name (Fuchs)	Titan Gear MP 90	
Characteristics		Test acc. to
SAE class	90 (85W-90)	DIN 51512 or SAE J306c
Kinematic viscosity		DIN 51562
at 40 °C	198 mm ² /s	
at 100 °C	17.3 mm ² /s	
Flash point	215 °C	DIN ISO 2592
Pour point	-18 °C	DIN ISO 3016
Damage loading step	≥ 12	
Water hazard class	Slightly hazardous to waters	

2 Alternative oils for XRipper gearbox and seal chamber

Part number	BSS0021*	
Description	Fully synthetic industrial gear oil based on poly-alpha-olefins	
Trade name (Fuchs)	Renolin Unisyn CLP	
Characteristics		Test acc. to
ISO VG	220	DIN 51519
Kinematic viscosity		DIN EN ISO 3104
at 40°C	220 mm ² /s	
at 100°C	26.7 mm ² /s	
Flash point	260°C	DIN ISO 2592
Pour point	-42°C	DIN ISO 3016
Water hazard class	Slightly hazardous to waters	

* when using BSS0021 oil for the XRipper gearbox, the maintenance interval for inspection and gear oil change may be doubled → **Chapter "Maintenance plan"**.

Part number	BSS.010**	
Description	Medical white oil: water-white, non-fluorescent, tasteless and odourless mixture of hydrocarbons	
Trade name (Fuchs)	White oil W 530 (PH.EUR.)	
Characteristics		Test acc. to
Kinematic viscosity		DIN 51562
at 20 °C	238 mm ² /s	
at 40 °C	68 mm ² /s	
at 100 °C	8.4 mm ² /s	
Flash point	230 °C	DIN ISO 2592
Pour point	-24 °C	DIN ISO 3016
Ambient temperature	-20°C to +40°C	
Water hazard class	Slightly hazardous to waters	

** **BSS.010** oil is not permitted for high performance applications and continuous operation over a maximum of 50% of the permitted pressure → **Chapter "Specifications"**. Please contact us.

**ATTENTION**

If a **mechanical seal ring** made of **Duronit** is used in the sealing system, the damage loading step for the seal chamber oil must be ≥ 12 .

3 Alternative oils for the seal chamber

Part number	BSS.014	
Description	Mineral oil based hydraulic and lubricating oil	
Trade name (Fuchs)	Renolin B 15	
Characteristics		Test acc. to
ISO VG	46	DIN 51519
Viscosity index	105	DIN ISO 2909
Kinematic viscosity		DIN EN ISO 3104
at 40 °C	46 mm ² /s	
at 100 °C	6.9 mm ² /s	
Flash point	210 °C	DIN ISO 2592
Pour point	-24 °C	DIN ISO 3016
Damage loading step	≥ 12	
Water hazard class	Slightly hazardous to waters	

Part number	BSS.016	
Description	Biodegradable, environmentally friendly, multigrade hydraulic oil based on rape seed oil (as per ISO 15308, type HETG)	
Trade name (Fuchs)	Hydraulic oil 40 N	
Characteristics		Test acc. to
ISO VG	46	DIN 51519
Viscosity index	220	DIN ISO 2909
Kinematic viscosity		DIN 51562-1
at 40 °C	42 mm ² /s	
at 100 °C	9.6 mm ² /s	
Flash point	300 °C	DIN ISO 2592
Pour point	-36 °C	DIN ISO 3016
Water hazard class	Slightly hazardous to waters	

4 Oils for the electronically monitored seal chamber

Part number	BSS.021	
Description	Fully synthetic EP industrial gear oil based on selected polyglycols (PAG)	
Trade name (Fuchs)	Renolin PG 100	
Characteristics		Test acc. to
ISO VG	100	DIN 51519
Kinematic viscosity		DIN EN ISO 3104
at 40 °C	100 mm ² /s	
at 100 °C	19.6 mm ² /s	
Flash point	260 °C	DIN ISO 2592
Pour point	-48 °C	DIN ISO 3016
Damage loading step	≥ 12	

Part number	BSS.017	
Description	Fully synthetic EP industrial gear oil based on selected polyglycols (PAG)	
Trade name (Fuchs)	Renolin PG 46	
Characteristics		Test acc. to
ISO VG	46	DIN 51519
Viscosity index	203	DIN ISO 2909
Kinematic viscosity		DIN 51562
at 40 °C	46 mm ² /s	
Flash point	240 °C	DIN ISO 2592
Damage loading step	≥ 12	
Water hazard class	Slightly hazardous to waters	

5 Lubricant for the bearing with mechanical seal

Part number	BSS.002	
Description	Lithium soap grease with a mineral oil base	
Trade name (Fuchs)	Renolit GP 2	
Characteristics		Test acc. to
Identification	K2K-30 ISO-L-X-CCEA 2	DIN 51502 ISO 6743-9
Intrinsic viscosity		DIN 51562-1
at 40 °C	110 mm ² /s	
at 100 °C	9.5 mm ² /s	
Dropping point	> 180 °C	IP 396
Service temperature	-30 to +120 °C	DIN 51825
Water hazard class	Slightly hazardous to waters	

9 Repair



WARNING

Risk of injury due to rotating, sharp-edged rotors!

Accidental contact with the rotating rotors when the machine is running can result in cutting injuries, amputation or the person being dragged in.

Before maintenance and repair work, secure the maintenance and repair switch against being turned on again, for example by means of a padlock.



WARNING

Risk of injury from working materials escaping under high pressure!

When the drain plugs on the gearbox and seal chamber are loosened or the buffer fluid tank cover is opened, working materials may spray out under high pressure.



- Personnel must wear suitable protective clothing.
- Before maintenance and repair work, release the seal chamber pressure.
- To protect against fluids spraying out, open the seal chamber and the gearbox carefully and slowly. Where appropriate, cover the valves or screws to be removed with a cloth or similar item.



ATTENTION

Before installing stainless steel bolts and stainless steel nuts:

Clean threads and contact surfaces. Apply anti-seize paste (part no. BKL.014/BAS.001) evenly and in sufficient quantity to the screw head face and bearing face and to the thread using a brush or filling knife etc. to avoid seizing of stainless steel.

9.1 Conversion and spare parts

Modifications or changes to the machine are only permissible after consultation with Vogelsang.

Only accessory parts approved by Vogelsang or genuine spare parts may be used. The use of other parts invalidates the guarantee for any resulting damage.

9.2 Functional unit

9.2.1 Dismounting the functional unit from the housing unit

1. If XRipper rotors or Cartridge mechanical seals need to be replaced, depressurise the seal chamber if it is pressurised.
2. Undo the hexagon nut (2) and the hexagon socket set screw (3).
3. Undo the hexagon nut (4).
4. Pull the functional unit out of the housing unit (6) using appropriate hoisting gear with a cross beam (1) and secure the O-ring (5) to prevent it from falling out.

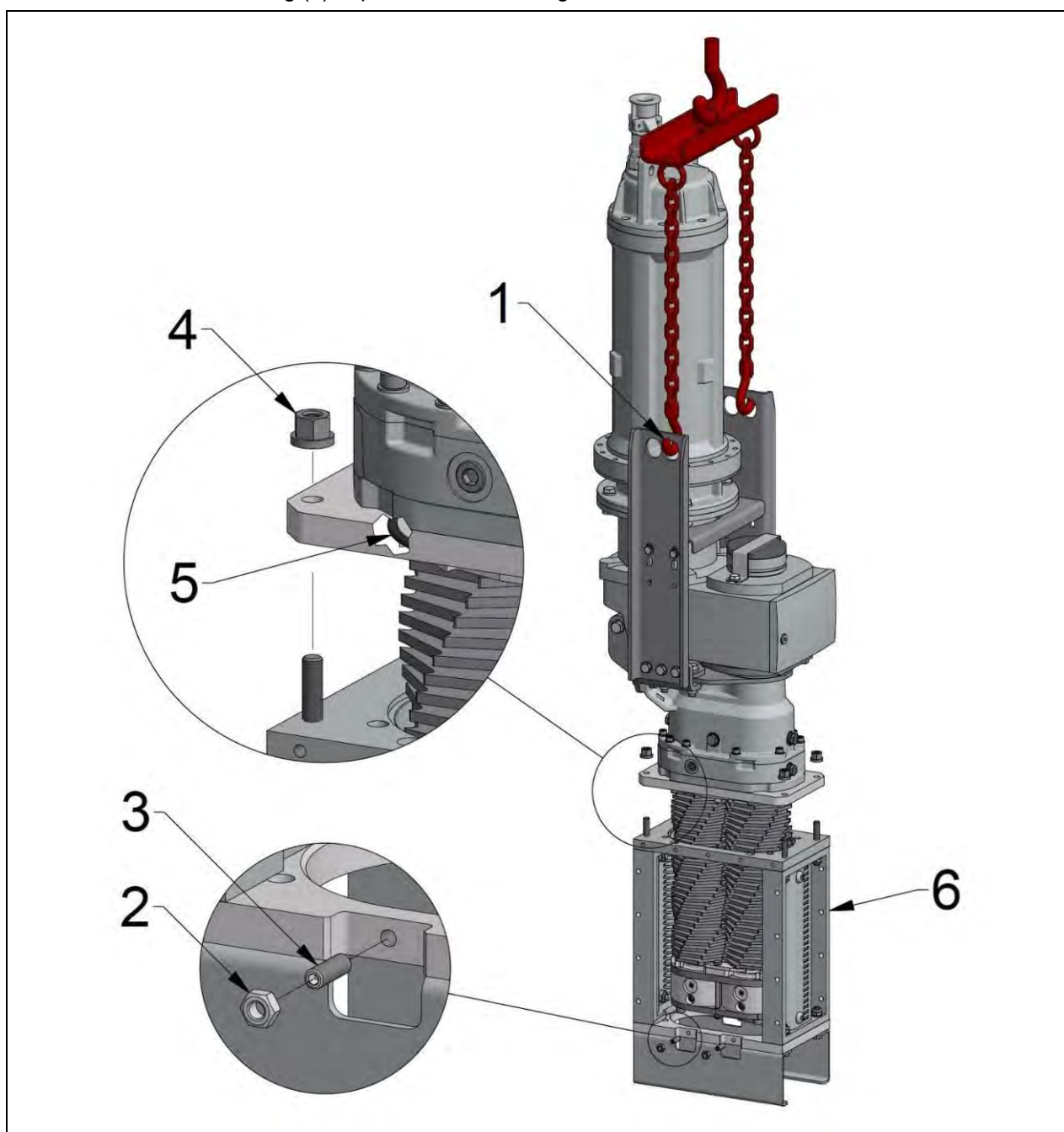


Fig. 20: Attaching the functional/housing unit

9.2.2 Reinstalling the functional unit

→ Fig. "Attaching the functional/housing unit"

1. Thoroughly clean the contact surfaces between the functional unit and the housing unit (6).
2. Grease the O-ring (5) and press it onto the contact surface. Make sure that the O-ring adheres.



WARNING

Risk of crushing hands or fingers due to rapid lowering of the functional unit!

Lower the functional unit slowly using the hoisting gear, carefully guiding the XRipper rotors into the housing unit.

3. Reinstall the hexagon nuts (4). To prevent tilting of the XRipper housing unit, install the hexagon nuts in a "crosswise" pattern and tighten them manually to **45 Nm**. Make sure the O-ring is seated correctly.
4. Tighten the hexagon socket set screw (3) and counter it with a hexagon nut (2).
5. Adjust the pressure in the seal chamber again if necessary.

9.2.3 Mounting the functional unit on the mounting rack

In order to replace the XRipper rotors or the seals, the functional unit must be mounted on the mounting rack (3) (Vogelsang part no. IBA2555).

1. Leave the functional unit attached to the hoisting gear.
2. Undo the cylinder head bolts (1) and remove them from the bearing unit (2).
3. Affix the mounting rack to the machine's support surface. The support surface must be flat.
4. Mount the functional unit on the mounting rack and tighten the cylinder head bolts finger-tight.

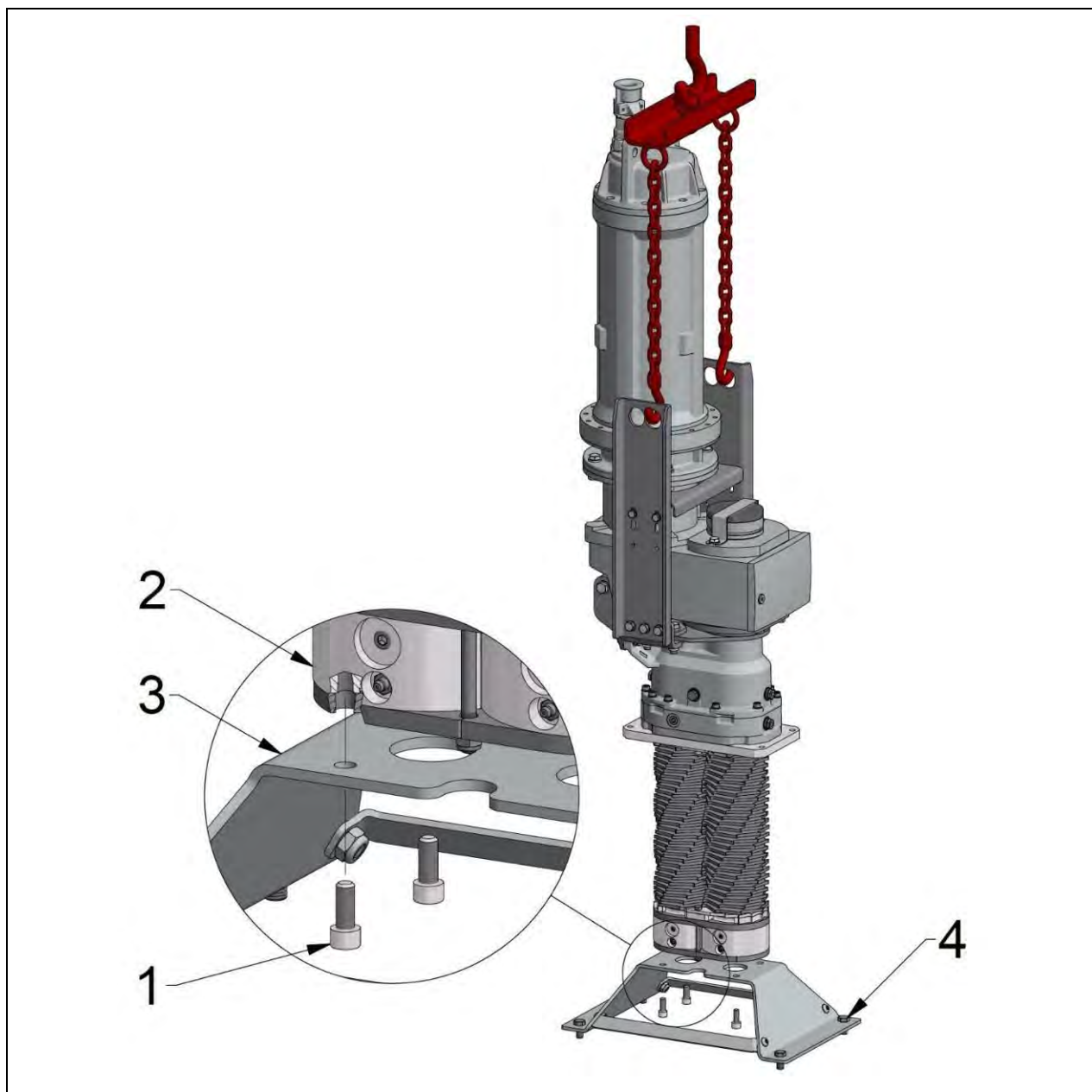


Fig. 21: Fastening the functional unit on the mounting rack

9.3 XRipper rotors



WARNING

Risk of injury due to sharp-edged rotors!

If the rotors are freely accessible or fall off, the sharp blades can result in cuts.



- Personnel must wear suitable protective clothing.
- Note and comply with the transport instructions.

9.3.1 Releasing the XRipper rotors from the gearbox housing

1. Undo the screw plugs (1) and hexagon nuts (2) in the threaded rods (3).



WARNING

Risk of impact injuries from gearbox unit swinging down in an uncontrolled manner!

When the XRipper rotors are dismantled, the machine's centre of gravity shifts.

After undoing the connection of the threaded rods and XRipper rotors and before raising the gearbox unit, slightly undo the bolts (8) and move the supports (9) as far as they go in the direction of the motor.

Before raising the XRipper with the new rotors, return the supports to their original position.

2. Re-hang the hoisting gear in the eyelet marked (8), carefully raise the functional unit (gearbox housing) and dismount the tie rods (3) from the XRipper rotors (5).
3. Remove the O-rings (4) on the gearbox side.
4. Remove tensioning elements (6) and the spring washer units (7) and reuse them for the new XRipper rotors.

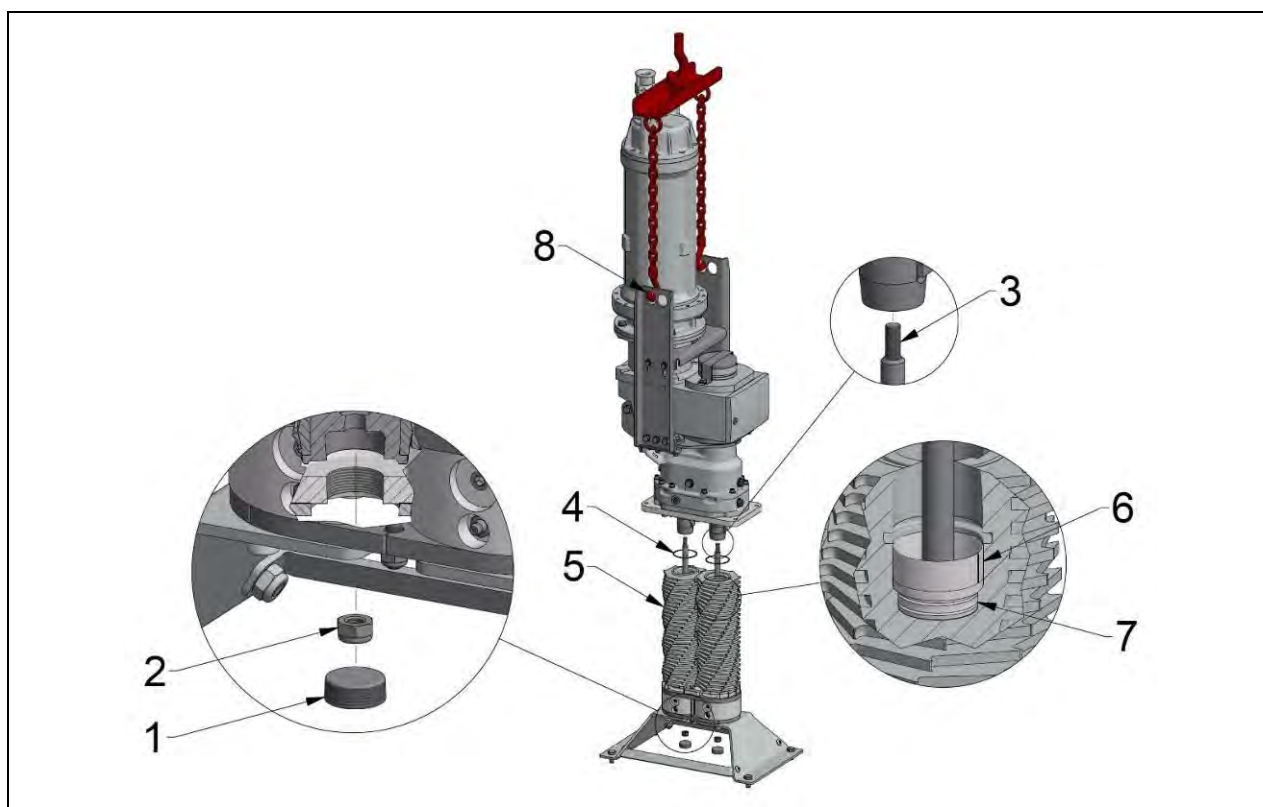


Fig. 22: Fastening of XRipper rotors and gearbox housing

9.3.2 Dismounting XRipper rotors

Dismount the XRipper rotors using the lifting device (10) (Vogelsang part no. IBA2556).

5. Slightly loosen the hexagon head bolts (11) in the lifting device so that the lifting arms can move.
6. Insert the lifting device into the XRipper rotors and hook the lifting arms securely into the groove in the XRipper rotor.
7. Tighten the hexagon head bolts (11).
8. Lift the XRipper rotors (5) and remove O-rings (4) at cover side.
9. Remove tensioning elements (6) and the spring washer units (7) and reuse them for the new XRipper rotors.



Notice: XRipper rotors

The XRipper rotors can each be rotated through 180° and put in each other's place.

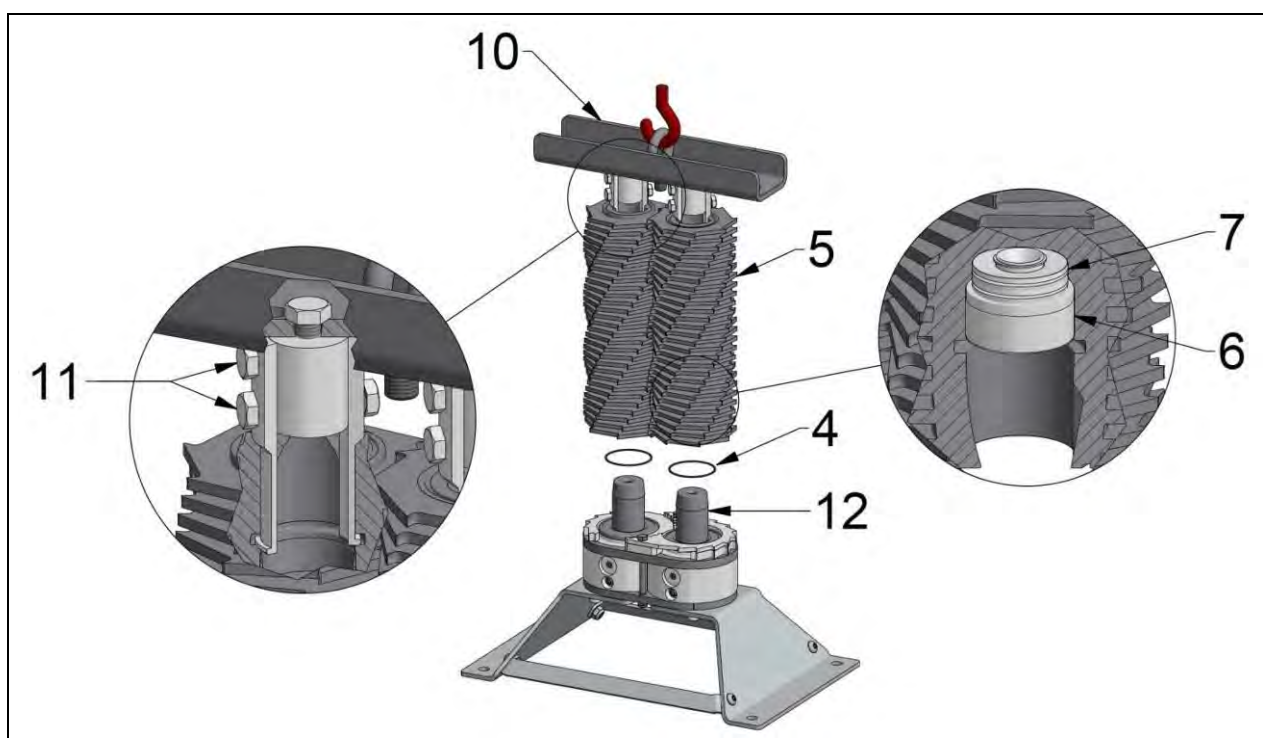


Fig. 23: Disassembly of XRipper rotors using lifting arms

9.3.3 Installing the XRipper rotors

→ Fig. Fastening of XRipper rotors and gearbox housing

→ Fig. Disassembly of XRipper rotors using lifting arms

1. Thoroughly clean the contact surfaces of the XRipper rotors and bearing units.
2. Lightly grease the ends of the shafts.
3. Loosen the hexagon head bolts on the lifting device so that the lifting arms can be moved.
4. Insert the lifting device in the new XRipper rotors and hook the lifting arms securely into the groove in the XRipper rotor.
5. Tighten the hexagon head bolts.
6. Reinstall the clamping elements and spring washer units on the cover side.
7. Grease the O-rings on the cover side and fix them in place in the XRipper rotors.
8. Using the lifting device, place the XRipper rotors on the shaft ends in pairs. Make sure the XRipper rotors are lying flush and are correctly aligned on the wear plates → Chap. "Assembling the wear plates".
9. Reinstall the tensioning elements and spring washer units on the gearbox side.
10. Mount the O-rings on the gearbox side.
11. Carefully place the gearbox unit on the XRipper rotors. Line up the keyways in the XRipper rotors with the fitting keys on the shafts and carefully reinstall the gearbox unit.
12. Install the M10 hexagon nuts. Tightening torque: 45 Nm
13. Install the screw plugs.

9.4 Wear plates

9.4.1 Dismounting wear plates

Cover side: Undo the nuts from the bolts (1) and dismount the wear plates (2 and 3).

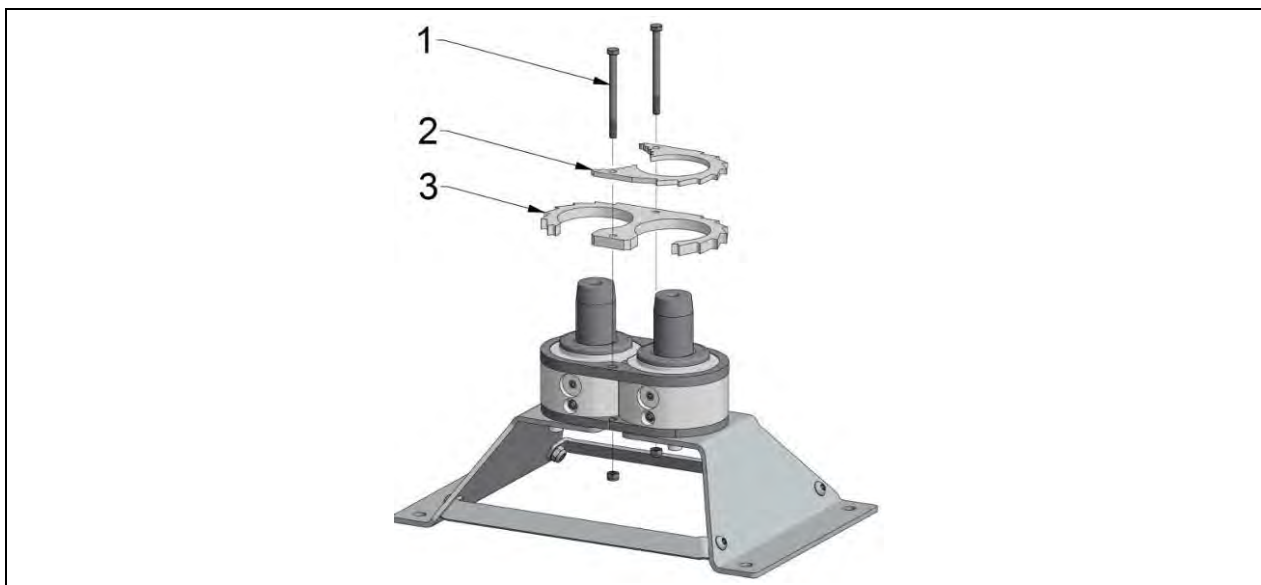


Fig. 24: Fastening the cover-side wear plates

Gearbox side: Dismount the O-ring (1), undo the bolts with microencapsulation (2) and dismount the wear plates (3 and 4).

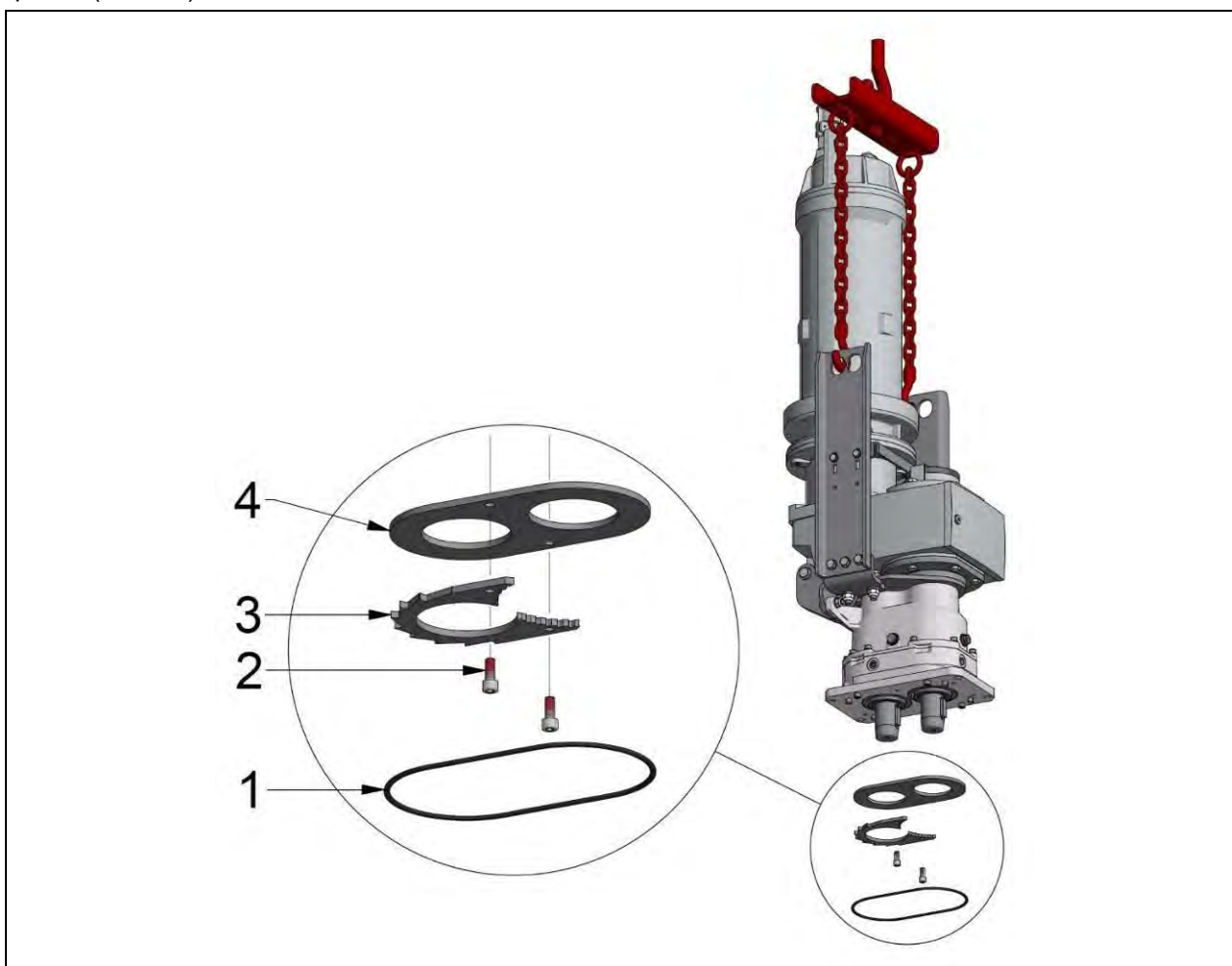


Fig. 25: Fastening the wear plates at the gearbox side

9.4.2 Reinstalling wear plates

1. Reinstall the wear plates in the reverse order of disassembly.
2. Arrange the wear plates so their cutting direction (1) is the opposite of the cutting direction of the XRipper rotor blades (2).
3. Tighten the wear plate bolts and screws to a tightening torque of **20 Nm**.

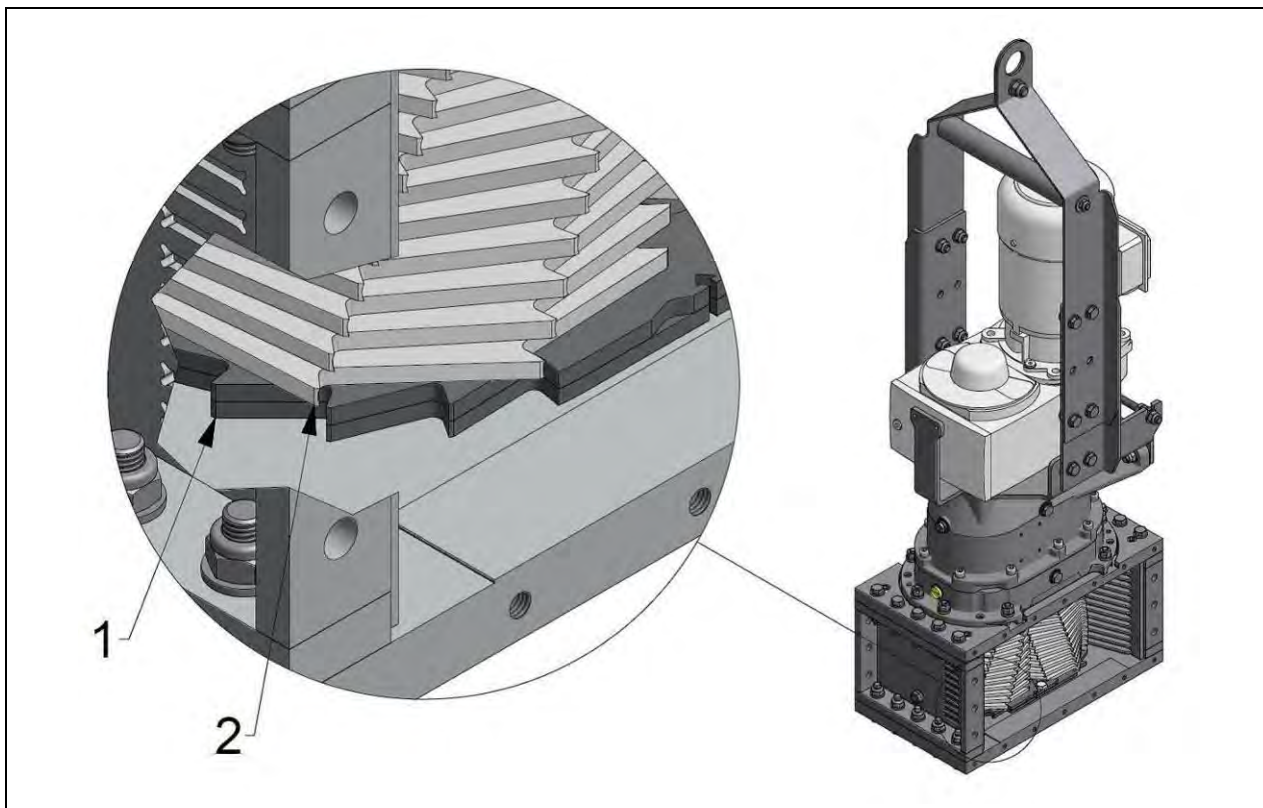


Fig. 26: Orientation of wear plates relative to XRipper rotors

9.4.3 Replacing the bearing unit

1. Remove the nuts from the hexagon head bolts (1) and remove wear plates (2 and 3).
2. Undo the cylinder head bolts (5) and remove the bearing unit (4) from the mounting rack.
3. Mount the new bearing unit on the mounting rack using the cylinder head bolts (5).
4. Re-install the wear plates (2) and (3) using the hexagon head bolts (1).

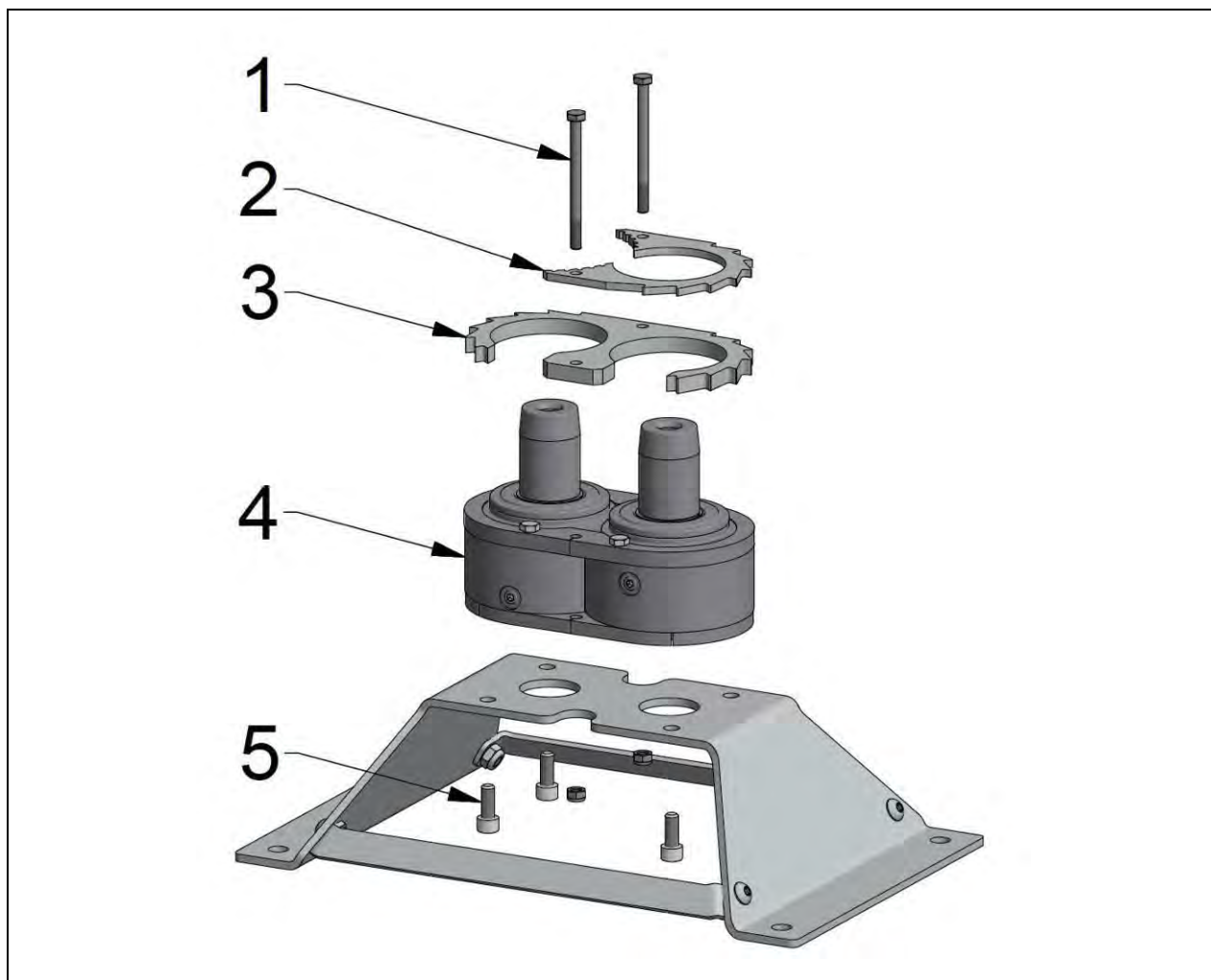


Fig. 27: Disassembly sequence for the bearing unit

9.4.4 Replacing the Cartridge mechanical seal



Cartridge mechanical seal – installation/disassembly tool:: Vogelsang part no. WKZ0455 (A)

Pos. 2 and 3 are included in part no. WKZ0455.

Perform the steps as described above:

1. → **Chap.** "Dismounting the functional unit from the housing unit"
2. Drain the seal chamber.
3. Drain the gear oil.
4. → **Chap.** "Mounting the functional unit on the mounting rack"
5. → **Chap.** "Disconnecting the XRipper rotors from the gearbox housing"
6. → **Chap.** "Dismounting the wear plates"
7. Remove the hexagon socket set screws (1) from the Cartridge mechanical seal.
8. Attach the installation/disassembly tool (A) and screw the cylinder head bolts (2) into the extracting boreholes of the Cartridge mechanical seal.
9. Pull out the Cartridge mechanical seal evenly using the three hexagon head bolts (3).
10. Carefully remove the burrs on the keyway in the shaft and clean the Cartridge mechanical seal seat in the XRipper gearbox housing.
11. Carefully oil the outer O-rings (4) on the new mechanical seal carrier before installation. Attention! Do not use mineral oil or grease for O-rings made of EPDM. Use glycol as an alternative.
12. Push the new Cartridge mechanical seal onto the shaft and install it using the installation tool.

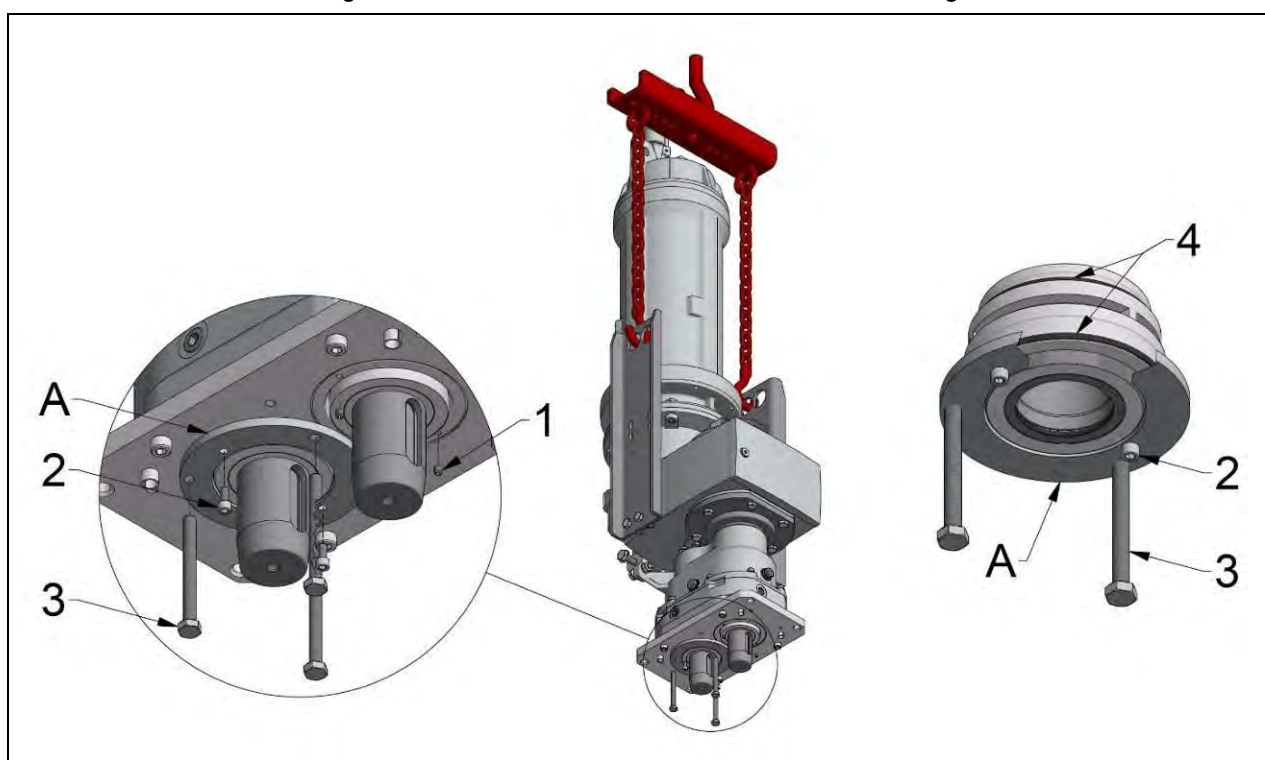


Fig. 28: Cartridge mechanical seal with installation/disassembly tool

13. Grease the O-ring (5) and support ring (6), push them onto the shaft and fix them in place.

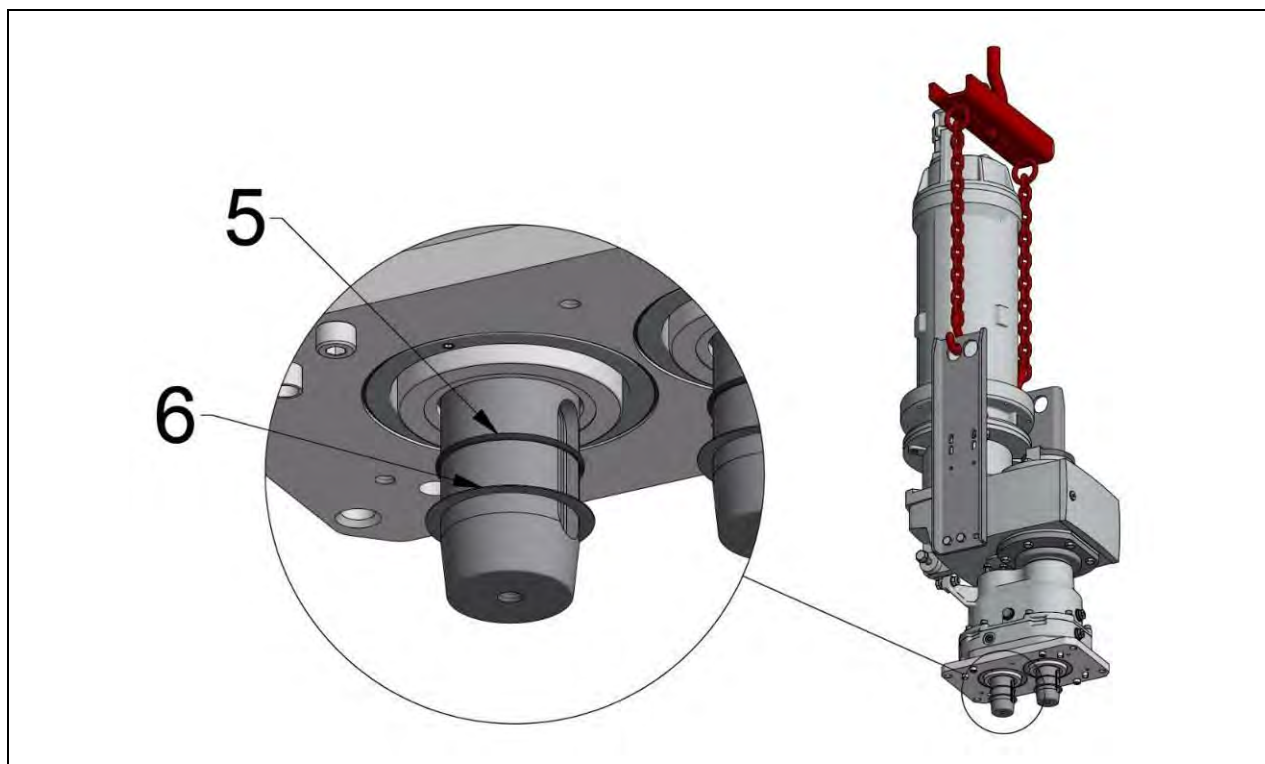


Fig. 29: O-ring and support ring disassembly/assembly

14. Before installing the XRipper rotor, thoroughly clean the contact surfaces of the XRipper rotor and the Cartridge mechanical seal.
15. → **Chap.** "Reinstalling the wear plates".
16. Put the gearbox unit back in place and restore the connection of the threaded rods and XRipper rotors. → **Chap.** "Installing the XRipper rotors".
17. Dismount the functional unit from the mounting rack. → **Chap.** "Mounting the functional unit on the mounting rack".
18. Top up the gear oil.
19. Fill the seal chamber.
20. → **Chap.** "Reinstalling the functional unit".
21. Grease the bearings.
22. Re-pressurise the seal chamber, if necessary.

10 Inspection and maintenance plan

Please note

- Perform the specified inspection and maintenance work according to schedule.
- Switch off the machine before commencing any inspection or maintenance work.
- Observe the warning and safety notes; → **Chap. "Maintenance"** and → **Chap. "Repairs"**.
- Use only original spare parts or parts approved by Vogelsang.
- Install spare parts correctly.
- Once the work has been completed, reinstall and check any removed safety devices.
- In order to avoid endangering any warranty claims, document all scheduled repair work in the service plan.

10.1 Inspection schedule

10.1.1 After 20 operating hours

Part	Inspection
Machine mounting	<ol style="list-style-type: none"> 1. Check that the screw connections fastening the machine are tight. 2. Tighten any loose screw connections.

Part	Inspection
Machine	<ol style="list-style-type: none"> 1. Check the machine for damage, dirt deposits and assembly errors (visual inspection). 2. Restore the machine to its specified condition. 1. Check the machine for running noise and vibrations. 2. If you notice any unusual running noises or vibrations, implement the appropriate measures → Chap. "Help with problems using the machine". 1. Check the machine for unusual levels of power consumption. 2. If you notice any abnormalities with regard to power consumption, implement the appropriate measures → Chap. "Help with problems using the machine".

10.1.2 Every 3 months

Part	Inspection
Machine	<ol style="list-style-type: none"> 1. Check the machine for damage, dirt deposits and assembly errors (visual inspection). 2. Restore the machine to its specified condition. 1. Check the machine for running noise and vibrations. 2. If you notice any unusual running noises or vibrations, implement the appropriate measures → Chap. "Help with problems using the machine". 1. Check the machine for unusual levels of power consumption. 2. If you notice any abnormalities with regard to power consumption, implement the appropriate measures → Chap. "Help with problems using the machine". 1. Check the cutting performance (size-reduction ratio) of the machine. 2. If the size-reduction ratio does not match the requirements, implement the appropriate measures → Chap. "Help with problems using the machine".

10.1.3 Every 12 months

Part

Machine mounting

Inspection

1. Check that the screw connections fastening the machine are tight.
2. Tighten any loose screw connections.

Part

Housing parts

Inspection

1. Check the housing parts for wear (visual inspection)
2. Replace any worn housing parts.

Part

Wear parts

Inspection

1. Check the wear parts (rotors and wear plates) for wear (visual inspection)
2. Rotate any worn rotors 180° or replace them.
3. Replace any worn wear plates.

10.1.4 After prolonged shutdown periods

Part

Buffer fluid tank

Inspection

1. Check the level in the tank.
2. Top up the buffer fluid if necessary.
1. Check the tank pressure.
2. Restore the rated pressure in the event of discrepancies.
1. Check the quality of the buffer fluid.
2. Replace the fluid if there is medium to severe contamination.

10.2 Maintenance plan

10.2.1 Every 12 months

Part	Maintenance
Seal chamber	1. Replace the buffer fluid in the seal chamber.

Part	Maintenance
Gearbox	1. Change the gear oil.

10.2.2 Before prolonged shutdown periods

Part	Maintenance
Machine	<ol style="list-style-type: none">1. Clean the machine thoroughly, removing any deposits and residual water.2. Protect the machine from frost.3. Protect wetted parts from corrosion.



Environmentally friendly disposal

Dispose of all working materials and other materials in an environmentally friendly manner.

11 Troubleshooting

11.1 Troubleshooting


Troubleshooting

• XRipper stops after starting, will not start	A, B
• XRipper stops during operation	A, B
• XRipper rotates, but does not cut	L
• Cutting performance is insufficient	M
• Power consumption is too high during operation	H, I
• Pressure and level variations in the seal chamber	E, G
• Leakage at the Cartridge mechanical seal	F, G
• Extreme pressure and level fluctuations in the seal chamber	F
• XRipper too hot	D,
• Motor too hot	B, C, K
• Noises & vibrations	B, D, I

Help
→ Chap. "Help"

11.2 Help

	Possible cause	Possible remedy	Observe notices and safety notes → Chap.
A	Hard foreign matter in the XRipper chamber	Retrofit the system control, which will attempt to get rid of the blockage by reversing several times. If the XRipper remains stationary, then remove the foreign matter from the XRipper chamber.	"System control"
B	Faulty electrical connection	Check the electrical equipment.	"Drive"
C	Motor speed too low during variable frequency drive operation	Install external fan, increase motor speed.	"System control": Frequency converter operation
D	Oil level in the XRipper gearbox is not OK	→ Chap. "Gearbox"	"Maintenance"
E	Operational fluctuations in the seal chamber Cartridge mechanical seal damage	→ Chap. "Seal chamber"	"Maintenance"
F	Faulty repair of the Cartridge mechanical seal Buffer fluid tank leaking	Replacing the Cartridge mechanical seal, → Chap. "Cartridge mechanical seal replacement"	"Repair"
G	Cartridge mechanical seal elements not in ideal position	Check the buffer fluid tank for leaks. Pressurise the seal chamber once with the max. permissible seal chamber pressure (tank pressure). Once this has been accomplished, restore the configured pressure. Start up the seal chamber in an unpressurised condition (buffer fluid tank sealed) and monitor the seal chamber level and pressure. Adjust the tank pressure (seal chamber pressure) to higher than configured. Observe the max. permissible seal chamber pressure (tank pressure):	"Seal chamber" "Pressurisable buffer fluid tank"

	Possible cause	Possible remedy	Observe notices and safety notes → Chap.
H	Foreign matter jammed in between the XRipper rotor blades, blocking them	Clean the XRipper chamber and XRipper rotors (XRipper rotor blades)	"Opening the QD cover" and the instructions after that
I	Damaged XRipper rotor blades	Check the XRipper rotors for coarse burrs and grind them off if necessary, or replace the XRipper rotors	"Replacing the XRipper rotors"
K	Oil level in the geared motor is not OK	 "Geared motor operating instructions"	
L	Incorrect direction of rotation	Change the direction of rotation of the XRipper	"Flow direction"
M	Rotors worn	Check the rotors for wear and rotate them 180° or replace them.	

12 Putting out of operation and disposal

1. Disconnect the XRipper from the power supply. Observe notices and safety notes → **Chap. "Installation"** → **Chap. "Drive"**.
2. Drain off the working materials.
 - Drain the gear oil from the XRipper gearbox. Observe notices and safety notes → **Chap. "Gear oil – inspection and change"**.
 - Drain the buffer fluid from the buffer chamber. Observe notices and safety notes → **Chap. "Draining the seal chamber"**.
3. Drain the XRipper and remove residual medium. Observe notices and safety notes before disassembly of the functional unit → **Chap. "Disassembly of the functional unit"**.



Environmentally friendly disposal

Working materials such as oils, hydraulic fluids and dangerous media should be treated as hazardous waste and disposed of properly.

4. Scrap the XRipper: Observe the notices and safety notes → **Chap. "Transport, storage"**.

13 Service plan

In order to avoid endangering any warranty claims, document all scheduled repair work in the service plan.

Serial number: _____

Activity as per maintenance plan	Operating hour meter/ Throughput rate	Date	Signature
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