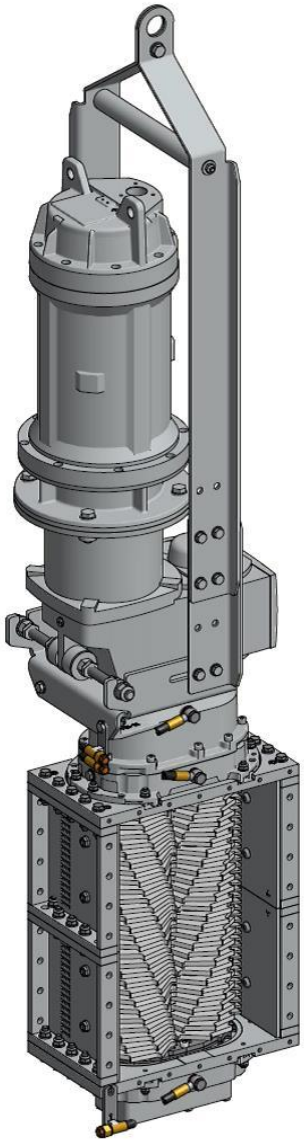
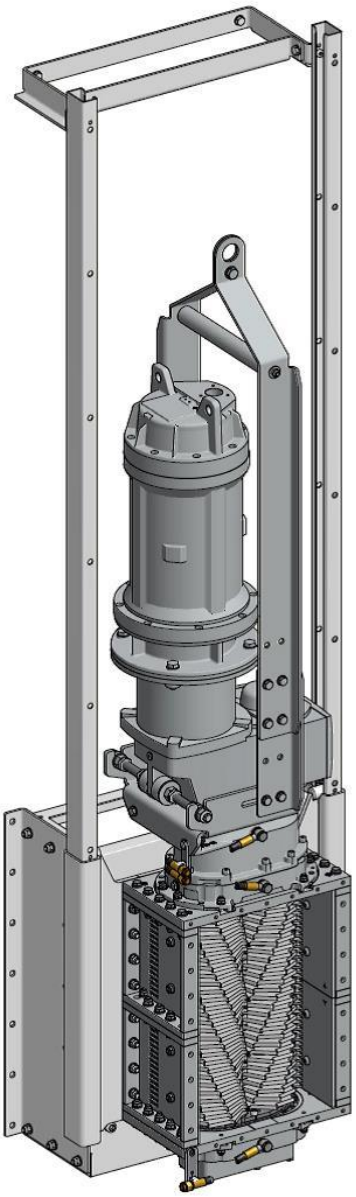
Operating Instructions

XRipper

XRC136QD + SIK

ENGINEERED TO WORK





2016-07-25

WBV.XRP.003.EN
XRC136QD SIK V1.0

Original operating instructions

Issuer

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We reserve the right to make technical modifications to the diagrams and information presented in this document in the event that such modifications become necessary for the enhancement of the machine.

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Dear customer,

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

If you want to know more about our company or put forward requests or suggestions, a wealth of information can be found at www.vogelsang.info

Issuer **2**

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Relevant documents

- Dimension sheet / drawing
- EC declaration
- Characteristic line

Optional:

- Technical information on drive system
- Technical information on safety devices

Please 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"

The machines listed in these operating instructions are subject to the Machinery Directive (2006/42/EC), see sample printout in →**Chapter** "EC declaration".

2 Specifications

Series XRC136/size	280QD	560QD
Max. permissible pressure [bar]	2	2
Blade widths [mm]	6 / 10 / 14	6 / 10 / 14
Max. permissible operating torque [Nm]	1200	1200
Max. throughput at max. accumulation head* [m³/h]	115**	320**
XRipper chamber length [mm]	280	560
Weight [kg]	470	570

* Max. accumulation head = XRipper chamber length

** The throughput is based on water as the medium

*** With submersible motor

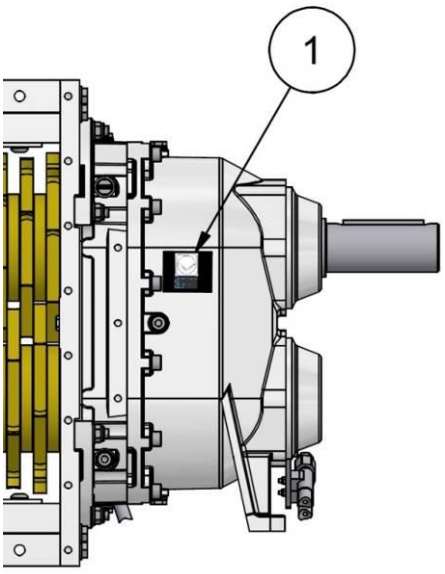
Dimensions

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



The name plate (1) contains the following details:

- Vogelsang address
- XRipper type
- Serial number
- Year of construction

Fig. 1: Name plate

3 EC declaration

Declaration of installation

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

Manufacturer: Hugo Vogelsang
Maschinenbau GmbH
Holthöge 10-14
D-49632 Essen/Oldb.

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

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 1037:1995+A1:2008
DIN EN 349:1993+A1:2008
DIN EN ISO 13857:2008

Applied national standards and technical specifications:
DIN EN 82079-1:2012
DIN 4844-1:2012
DIN 4844-2:2012
DIN ISO 3864-1:2012

The special technical documents according to annex VII B have been prepared and can be obtained if necessary.
The person authorized to compile the technical documentation is:
Hugo Vogelsang Maschinenbau GmbH; 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, 2015-04-27



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-gmbh.com

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.

This includes the following, 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 improve tracking, 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 shall instruct personnel to always wear the necessary protective equipment and shall monitor usage.

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



WARNING

Risk of injury due to insufficient qualification!

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

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

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

4.2.1 Qualifications

The following qualifications are required for different fields of activity:

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

Is able, due to his or her specialist training, skills, experience and knowledge of the relevant provisions, to perform the work for which he or she is responsible, and is 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 provisions, to perform work on electrical systems, and is able to identify and avoid possible hazards independently.

4.2.2 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. ☎✉

4.3 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 substances 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.

Any other use is contrary to the intended purpose. The manufacturer is not liable for any resulting damage.

WARNING

The XRipper described in these operating instructions is **not** intended for use in potentially explosive environments.

4.4 General safety notes

WARNING

Risk of injury due to sharp-edged XRipper rotors!

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

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

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** 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 zone.
- Before maintenance and repair work, switch the XRipper to 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, pull up the XRipper when there is a risk of frost → **Chapter** "Pulling up the XRipper".

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 → **Chapter** "Pulling up the XRipper".

4.5 Safety devices

4.5.1 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.

4.5.2 Maintenance and repair switch

DANGER

Danger if the machine starts up unexpectedly!

To safely exclude the possibility of unexpected machine start-up in accordance with DIN EN 1037, 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.

NOTICE

Switching “OFF” in points 1 and 2 means “all-pole disconnection”.

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.

4.6 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.

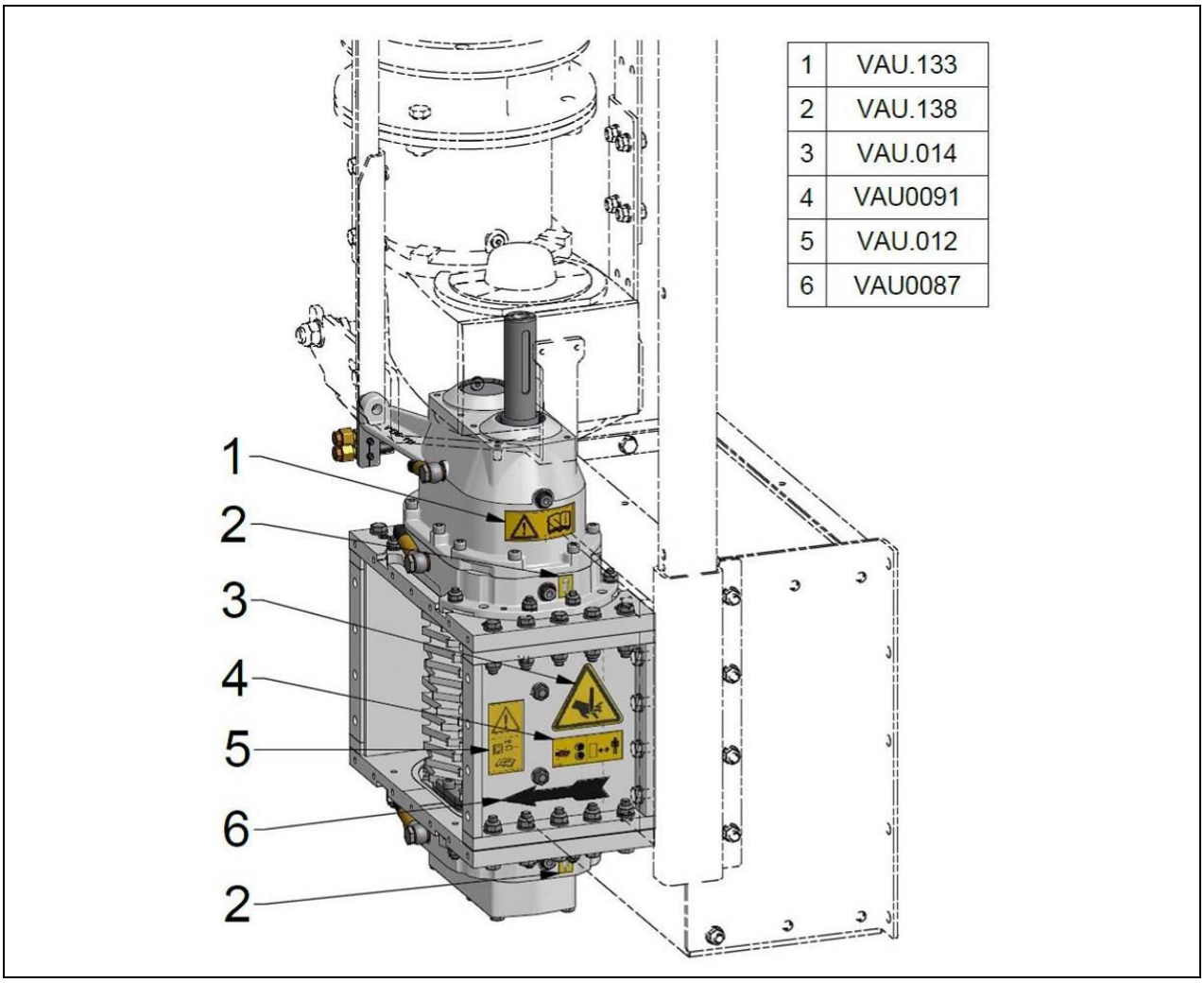
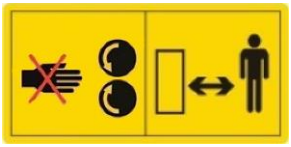


Fig. 2: Positions of the warning and safety labels

(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.138		Buffer fluid tank

VAU.014		Caution: risk of hand injuries!
VAU0091		Warning: risk of injury due to being dragged in by rotating XRipper rotors! Keep a safe distance!
VAU.012		Before carrying out maintenance and repair work, pull the maintenance and repair switch.
VAU0087		Direction arrow

5 Transport, storage

5.1 Transport

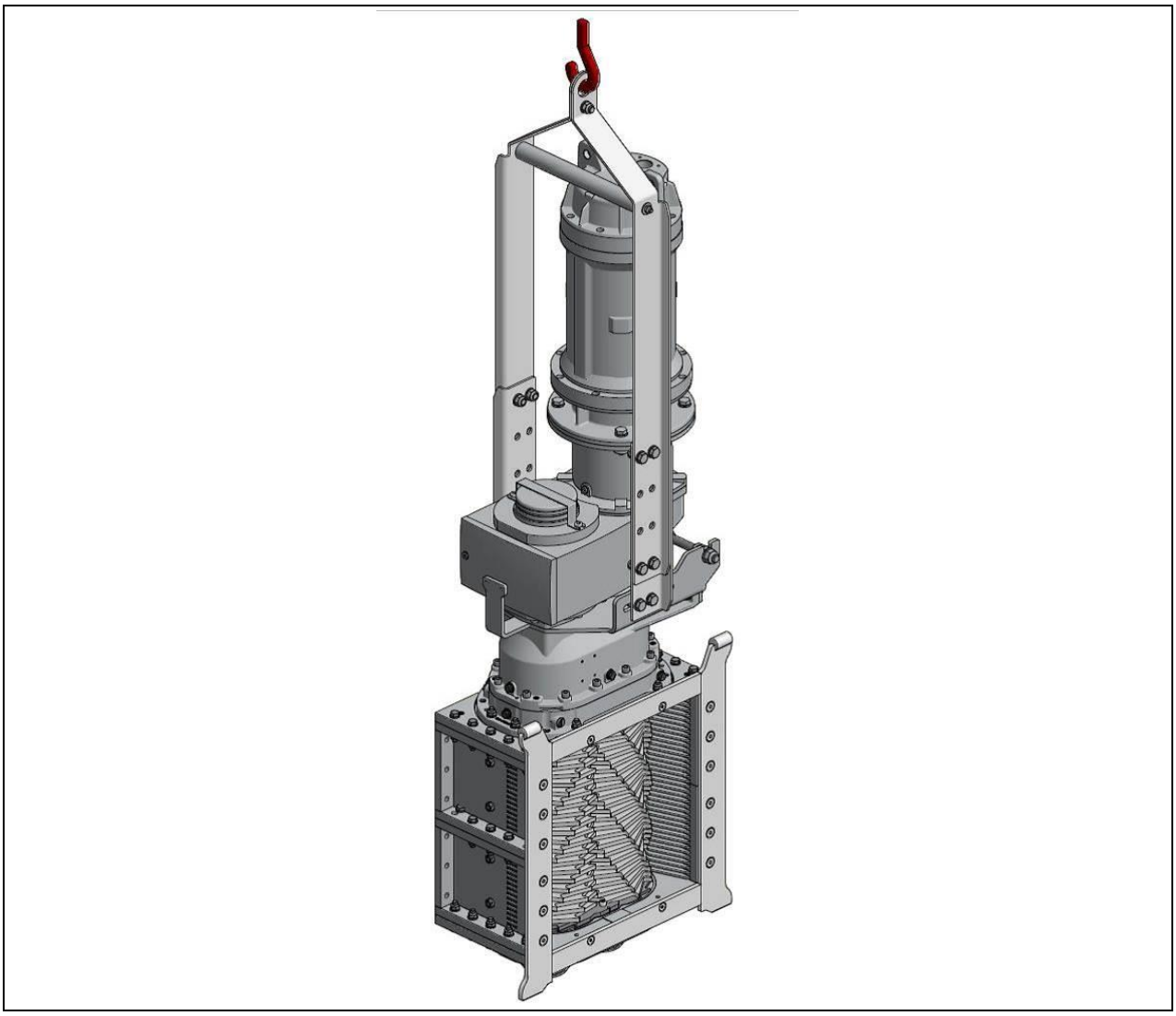


Fig. 3: Transport aid

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 and hoists as well as forklifts must be designed for the weight of the transport units. Weights: → **Chap.** "Specifications".
- Standing under raised loads is prohibited. Have people leave the danger area.
- Permissible transport options for the machine:
  - Bolted to a Euro-pallet
  - Suspended with suitable hosting gear. Securely fasten the lifting tackle for hoisting gear.

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 XRipper rotors!

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

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

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 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 zone.

6.1 Installing the SIK (Sewer Integration Kit)

6.1.1 Installing the wall-mounted frame

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

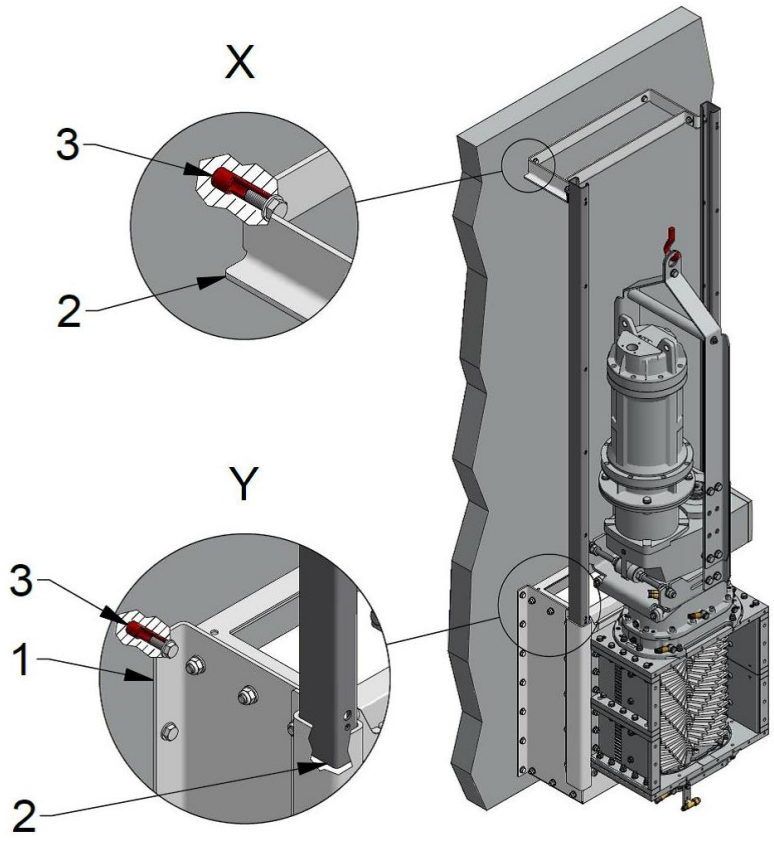
The compressive strength of the concrete must be at least C 20/25.

Fasteners

For the fasteners, we recommend:

Thread size M12, property class 8.8, tensile load resistance approx. 54 kN, shear load resistance approx. 32 kN. Anchor rods with resin cartridges may be used, for example.

Install the wall-mounted frame (1) on a flat, smooth and uncracked concrete surface and align it centrally relative to the wall lead-through → **Fig.** “Wall lead-through”.



1	Wall-mounted frame
2	Guide rail
3	Anchor rod

Fig. 4: Wall-mounted frame with guide rail

The dimensions stated in Fig. “Wall lead-through” must not be exceeded.
Dimension H = XRipper chamber length (280 mm / 560 mm).

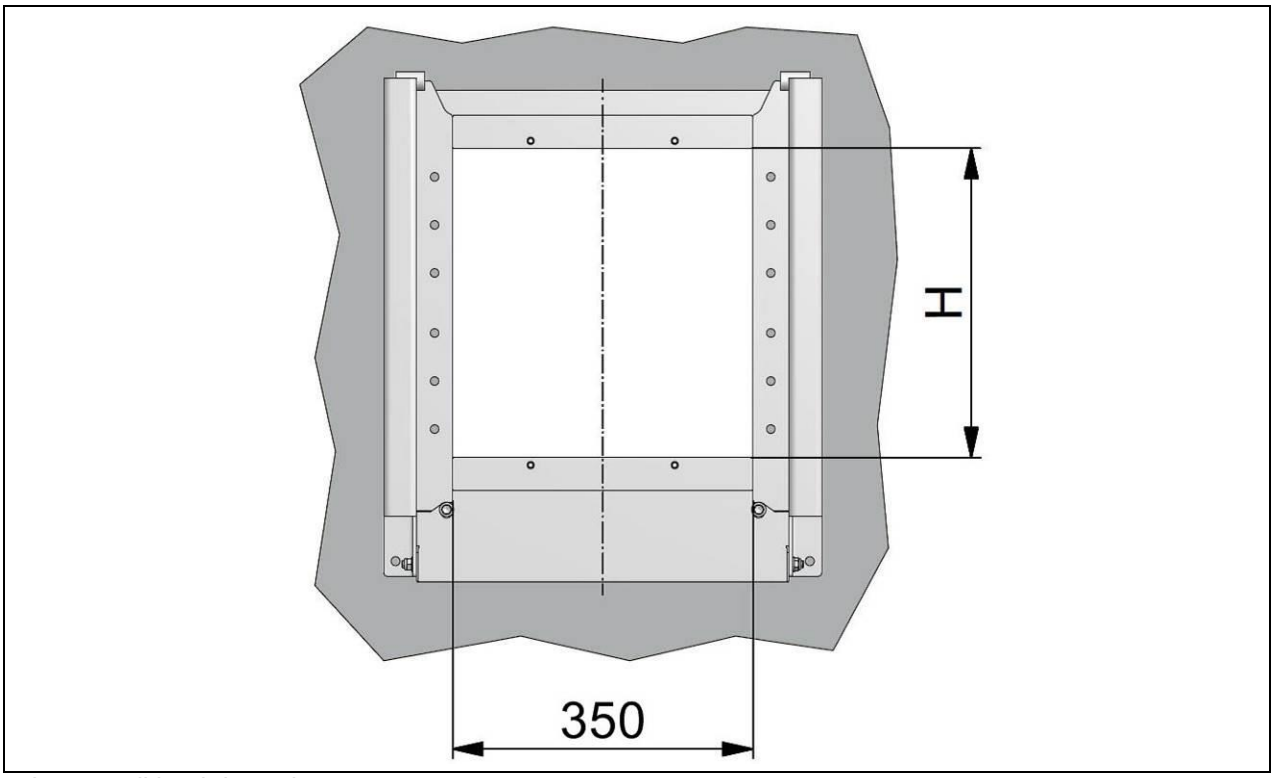


Fig. 5: Wall lead-through

6.1.2 Installing the guide rail

→ **Fig.** “Wall-mounted frame with guide rail”.
Insert the guide rail (2) into the wall-mounted frame (1) as far as it will go and secure it with anchor rods (3) (see detail Y).
Join guide rails together using a connector (see detail Z).

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 people 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”.

6.2.1 Lowering the XRipper

1. Carefully insert the slide rail (6) of the XRipper on both sides into the slots on the guide rails (2).
2. Slowly and carefully lower the XRipper into the wall bracket as far as it will go.

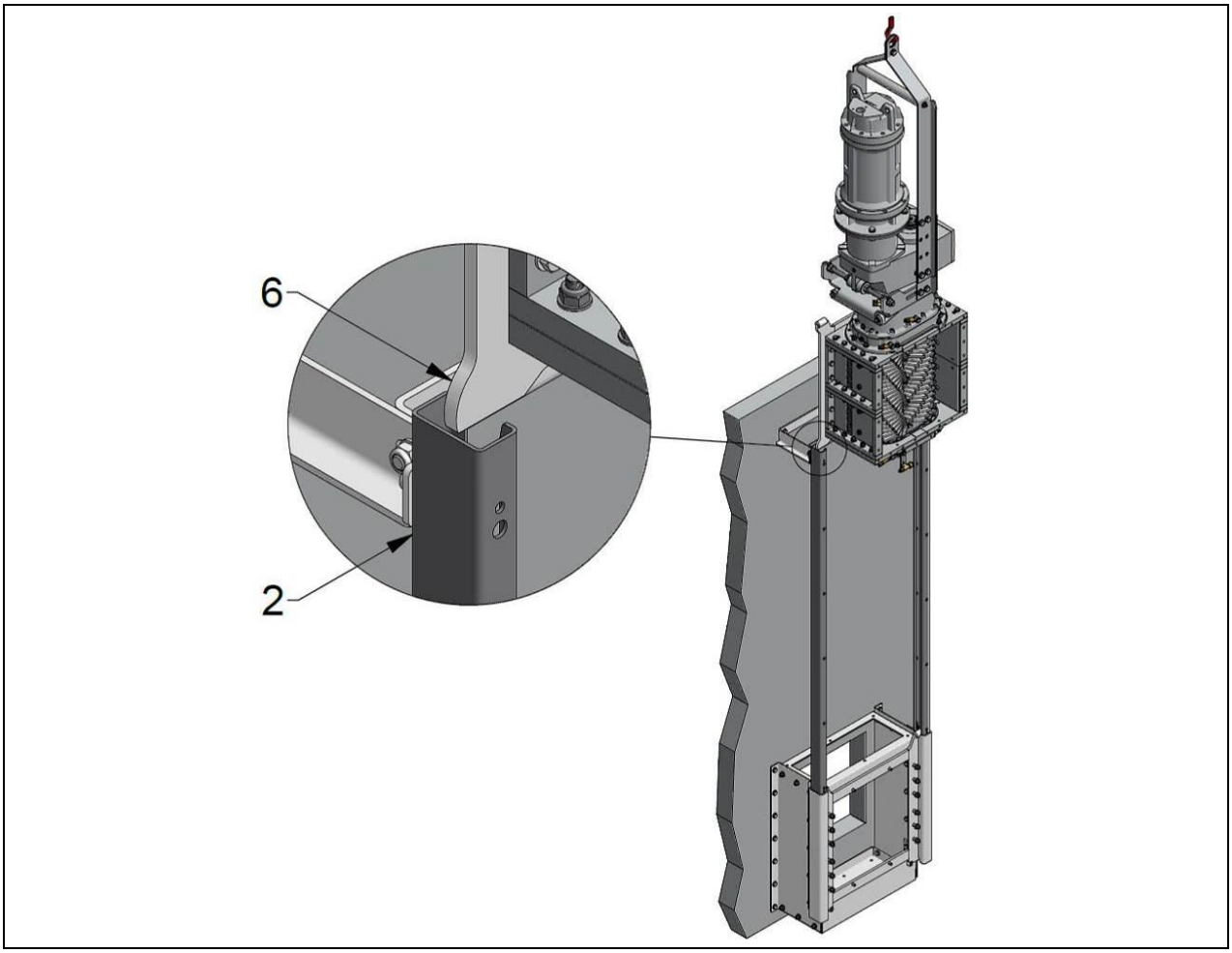


Fig. 6: Lowering and pulling up the XRipper

6	Slide rail
2	Guide rails

6.2.2 Pulling up the XRipper

1. Before pulling up the XRipper, make sure that the guide rails (2) can move freely and are not blocked by foreign matter.
2. In the case of submersed application, make sure that the extension hose for the buffer fluid tank can move unhindered as well → **Chap.** “Pressurisable buffer fluid tank for submersed applications”.

6.3 Drive

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

In addition, also read and note the following: "Technical information for the drive system to be installed".

6.3.1 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 observe 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 or to a PTC control unit.
- 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.

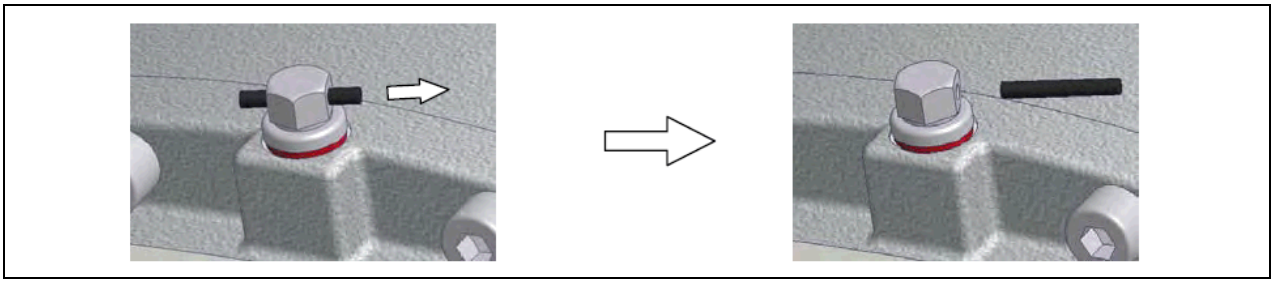


Fig. 7: Vent screw on the gearbox (removing the seal)

6.3.2 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".

6.4 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

1. Switch the main switch to OFF.
2. Check the XRipper chamber for foreign matter and remove it before the functional test.
3. 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?
- ☐ Are the wall-mounted frame and guide 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*

8 Maintenance

WARNING

Risk of injury (cutting, amputation) due to sharp-edged, rotating XRipper rotors if the machine starts up unexpectedly!

Before starting maintenance and repair work (opening covers, disassembling connectors) and before trouble-shooting, switch the machine off and secure it against being switched on again.

WARNING

Risk of injury from working materials escaping under high pressure!

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

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

8.1 Buffer chamber

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

→ **Chapter** "Pressurisable buffer fluid tank"

→ **Chapter** "Plugs"

8.1.1 Pressurisable buffer fluid tank

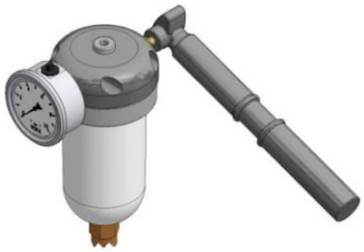
The pressurisable buffer fluid tank (hereafter referred to as "tank") with manual air pump ensures a constant and defined buffer chamber pressure (buffer chamber pressure = tank pressure).
The tank is for reliably monitoring the buffer chamber.

Installing the tank (before XRipper start-up)

1. Remove the plug from the buffer chamber.
2. Open the tank: undo the upper coupling of the upper housing (hold the union nut firmly in place so that the lower coupling is not detached).
3. Screw the tank directly into the cast body of the buffer chamber. Fill the tank about one quarter full (when delivered, the buffer chamber is already filled).
4. Close the tank and use a manual air pump or a compressed-air supply outlet to set the required tank pressure.

Topping up buffer fluid (maintenance and inspection)

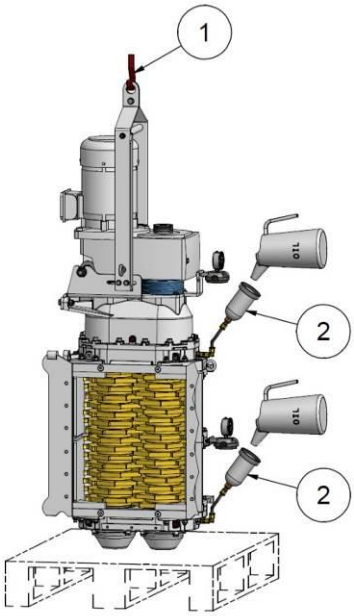
1. Keep the XRipper suspended for safety.
2. Release the pressure in the buffer chamber via the valve on the tank.
3. Open the tank: undo the upper coupling of the upper housing (hold the union nut firmly in place so that the lower coupling is not detached).
4. Top up the buffer fluid in the tank. The tank must be one quarter full.
5. Close the tank and use a manual air pump or a compressed-air supply outlet to set the required tank pressure.



Buffer fluid tank with pressure gauge, valve and manual air pump



Opening the buffer fluid tank



Filling the buffer chamber
1 Lifting lug
2 Buffer fluid tank

Fig. 8: XRipper with buffer fluid tank

Tank pressure

The tank pressure should be about 0.5 bar higher than the average pressure in the XRipper.
Tank pressure = 0.5 bar + (pressure at inlet side + pressure at outlet side) / 2

The tank pressure with a single mechanical seal must be max. 5 bar and max. 10 bar with a double mechanical seal.

Changing the XRipper rotors and cartridge mechanical seal

Before changing the XRipper rotors and before a cartridge mechanical seal change, depressurise the **tank pressure** and prime it again after changing.

Trouble indication

Possible indications of trouble 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.

8.1.2 Pressurisable buffer fluid tank (for submersed applications)

8.1.2.1 Function and adjustments

→ **Chap.** “Pressurisable buffer fluid tank”

8.1.2.2 Installation

When the XRipper is delivered, the buffer fluid tank (1) is located in the position shown in the following figure →**Fig.** “Buffer fluid tanks when delivered”.

In the case of submersed applications, the buffer fluid tank must be relocated upwards using the hose extension supplied →**Fig.** “Buffer fluid tank with hose extension”.

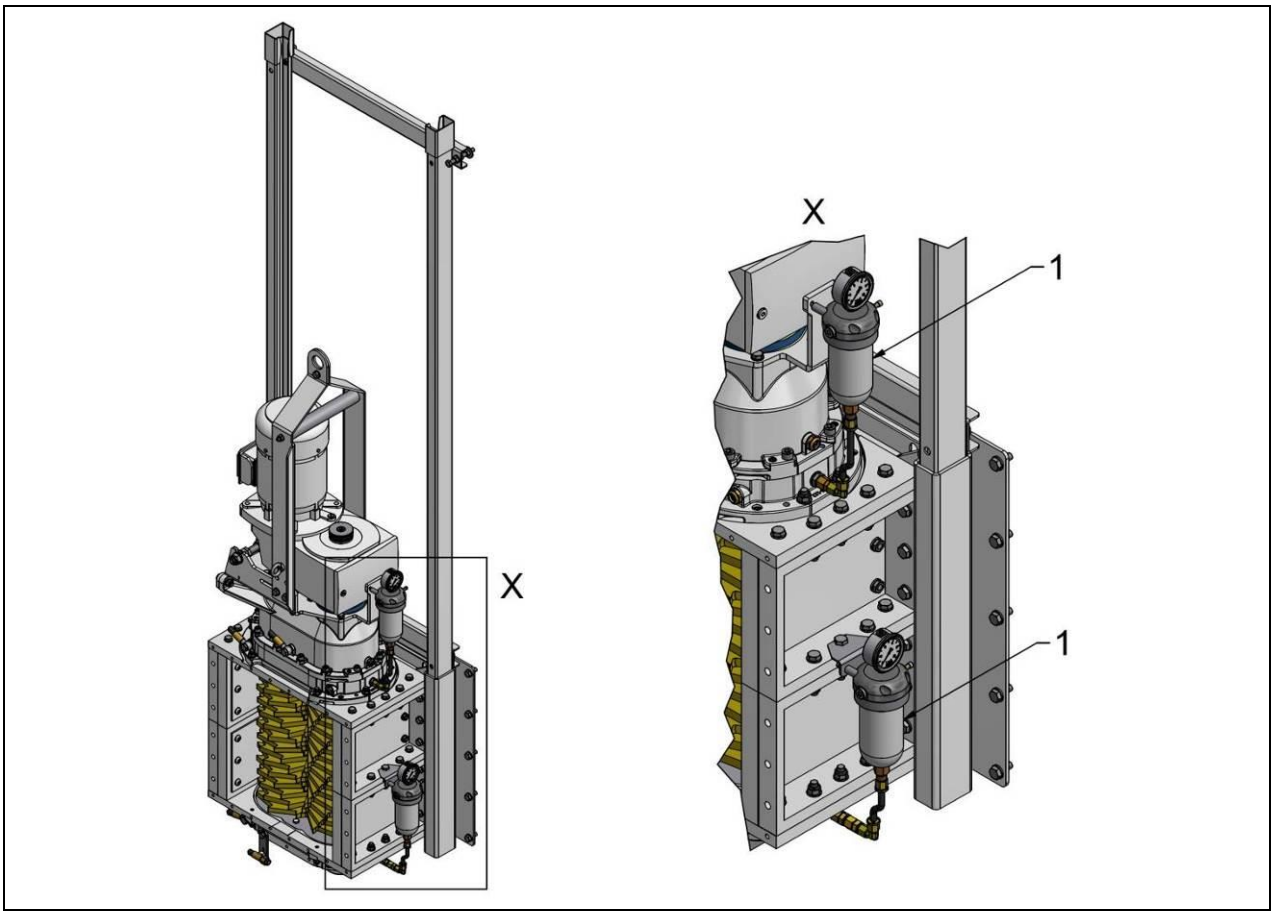


Fig. 9: Buffer fluid tanks when delivered

1. Using the hose extensions supplied, move the buffer fluid tanks (1) to an easily visible location.
2. Lay the hose extensions so that they are always rising.

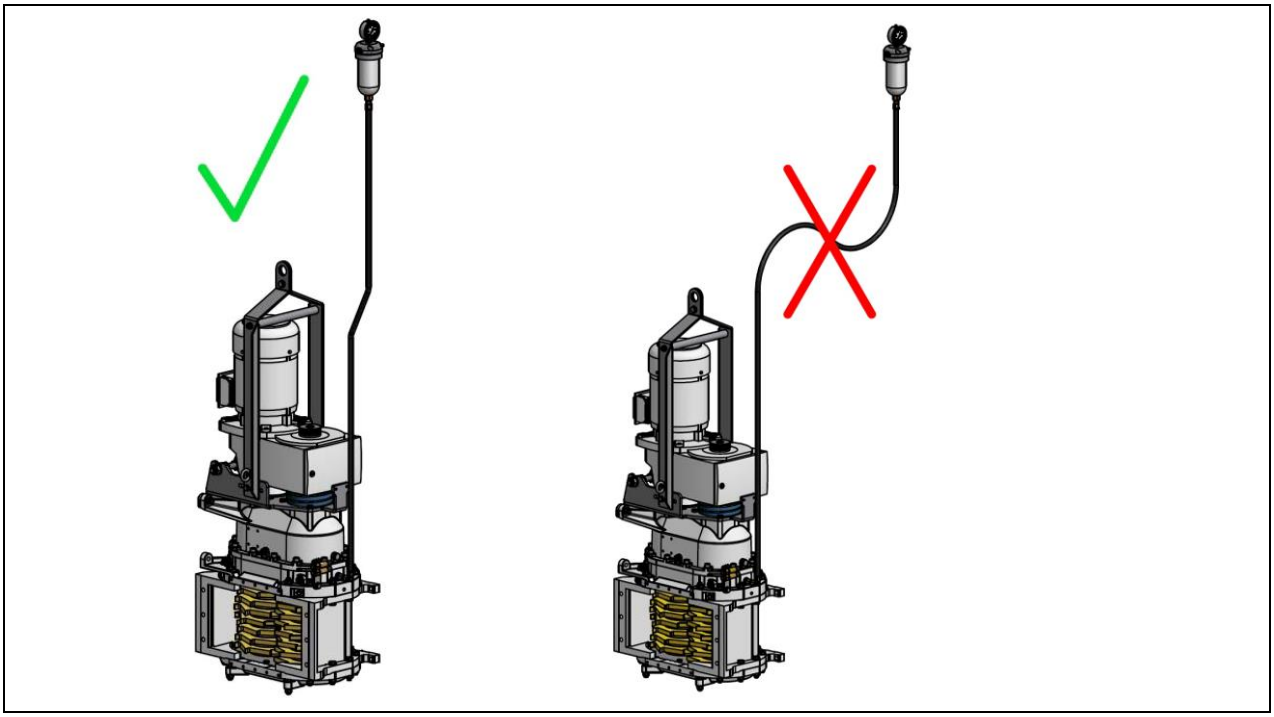


Fig. 10: Buffer fluid tank with hose extension

8.1.3 Plugs

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

Topping up buffer fluid

Air buffer

When adding buffer fluid, leave a buffer of air above it, see pos. 1 in → **Fig.** "Buffer chamber assembly with plug". The air buffer prevents the buffer chamber fluid from building up an unacceptably high pressure due to thermal expansion.

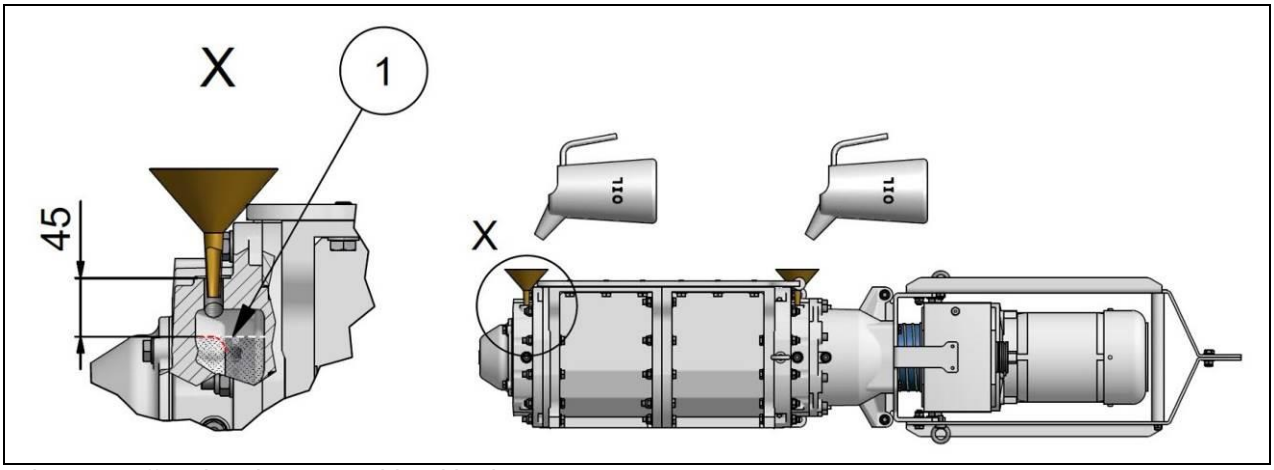


Fig. 11: Buffer chamber assembly with plug

8.1.4 Buffer fluid – type

For optimum functioning of the mechanical seal, we recommend the oil grades listed in → **Chapter** "Oils". Please check your order confirmation to see whether the buffer chamber of your machine is filled with an oil that deviates from this chapter.

Only use 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.

8.1.5 Buffer fluid – amount

Series	XRC136	XRC136VVA*
Buffer fluid amount per buffer chamber	**1.5** litres**	**1.2** litres**

* VVA = All wetted steel and cast parts of this are made of stainless steel.
** Guideline, depends on the buffer chamber assembly → **Chapter** "Buffer chamber".

8.1.6 Buffer fluid – inspection and change

Buffer fluid

- Inspect:
  - After the first 20 operating hours
  - Every 200 operating hours
- Change:
  - Every 2000 operating hours
  - When contamination is present

When there is intense leakage, replace the cartridge mechanical seal → **Chapter** "Cartridge mechanical seal change".

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.



Environmentally friendly disposal

Treat buffer fluid, such as oils and hydraulic fluid, like hazardous waste and dispose of it properly.

8.2 Draining and cleaning the buffer chamber

Draining and cleaning the buffer chamber

- If the cartridge mechanical seal is defective, drain and clean the buffer chamber.
- Before changing a cartridge mechanical seal, drain the buffer chamber and clean it if it is contaminated severely.

Procedure

→ **Fig.** “Draining the buffer chamber”

1. In case of a buffer chamber assembly with “Pressurisable buffer fluid tank”, depressurise the buffer chamber before draining or cleaning.
2. Remove the buffer fluid tank or plug (1).
3. Undo the lower screw plug (2) and drain buffer fluid.
4. If there is severe contamination, clean the buffer chamber.
5. Screw the lower screw plug (2) back in (tightening torque: 60 Nm) and reinstall the buffer fluid tank or plug. Pressurise the buffer fluid tank if necessary.

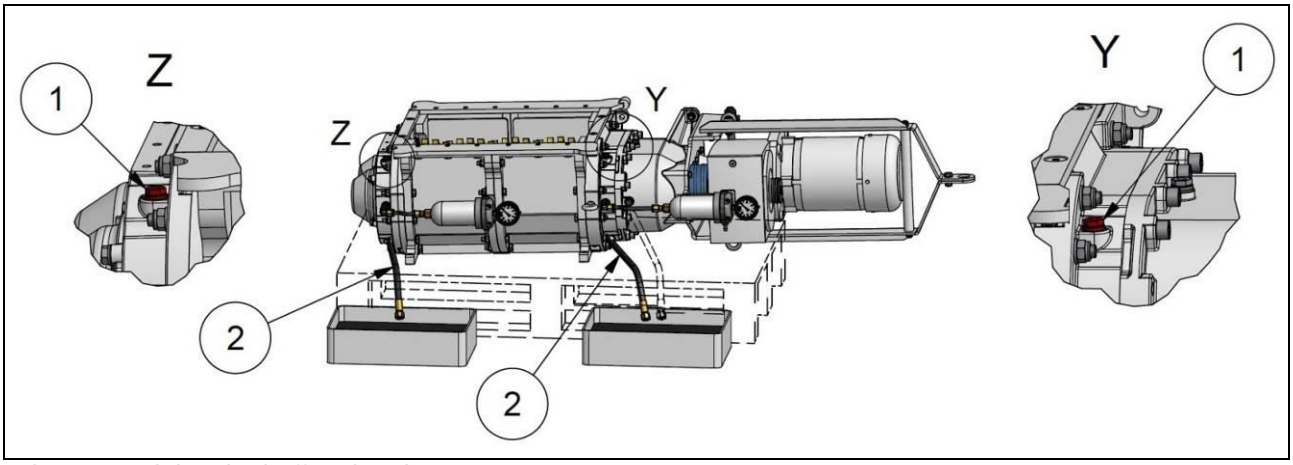


Fig. 12: Draining the buffer chamber

8.3 Gearbox

8.3.1 Gear oil - grade

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

8.3.2 Gear oil - quantity

2.6 litres

8.3.3 Gear oil – inspection and change

→ **Fig.** "Gear oil change"

Inspect the gear oil and top up small quantities up to the seal indicator pipe (2) (only top up when the gearbox is at a standstill):

- Every 500 operating hours, however at least every 3 months

Change gear oil:

- After the first 20 operating hours
- Every 2000 operating hours

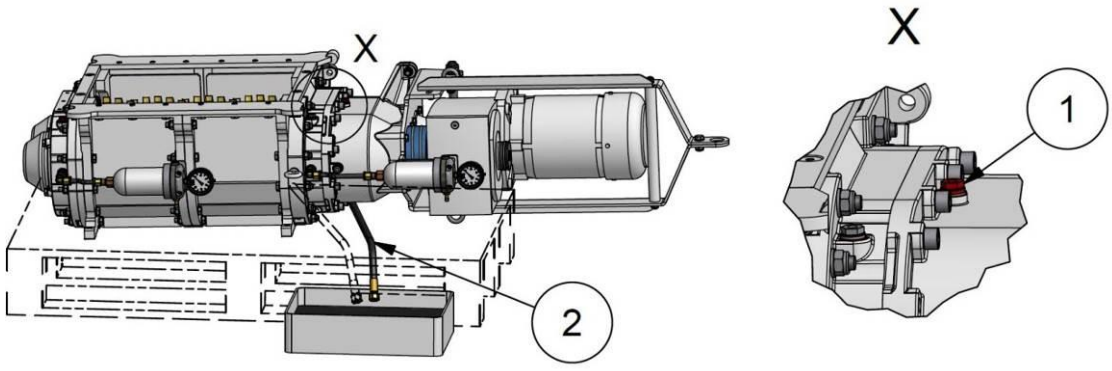
The buffer fluid should be changed at the same time as the gear oil change → **Chapter** "Buffer chamber".



Environmentally friendly disposal

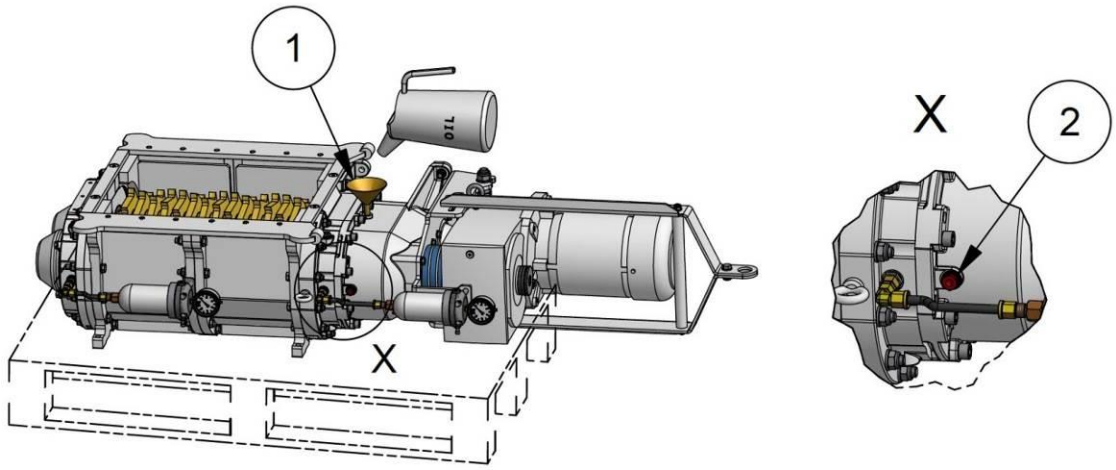
Treat gearbox oils like hazardous wastes and dispose of properly.

Draining



1 | Loosen screw plug (ventilation)
2 | Draining

Filling



1 | Filling
2 | Checking

Fig. 13: Gear oil change

Tightening torque

Tightening torque for mounting the screw plugs → **60 Nm**

8.4 Oil grades for XRipper gearbox and buffer chamber

1 Standard Vogelsang oil for XRipper gearbox and buffer 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 mm²/s	
at 100 °C	17.3 mm²/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 buffer 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 mm²/s	
at 100°C	26.7 mm²/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 mm²/s	
at 40 °C	68 mm²/s	
at 100 °C	8.4 mm²/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	

! Sealing system with mechanical seal ring made of Duronit

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

3 **Alternative oils for the buffer 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 mm²/s	
at 100 °C	6.9 mm²/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 mm²/s	
at 100 °C	9.6 mm²/s	
Flash point	300 °C	DIN ISO 2592
Pour point	-36 °C	DIN ISO 3016
Water hazard class	Slightly hazardous to waters	

9 Repair

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.

Before maintenance and repair work, switch the machine to OFF and secure it against being turned on again.

WARNING

Risk of injury from working materials escaping under high pressure!

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

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

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.

QD cover weight

Before disassembly and assembly observe the following: the QD cover weighs approx. 39 kg. Please use suitable hoisting gear.

9.2 Opening the QD cover

1. Pull up the XRipper → **Chap.** “Pulling up the XRipper”.
2. Depressurise the buffer chambers if necessary → **Chap.** “Buffer chamber”.
3. If necessary, separate the buffer fluid tank (2) from the bracket by undoing the hexagon nut (3) → **Chap.** “Detaching the buffer fluid tank”.

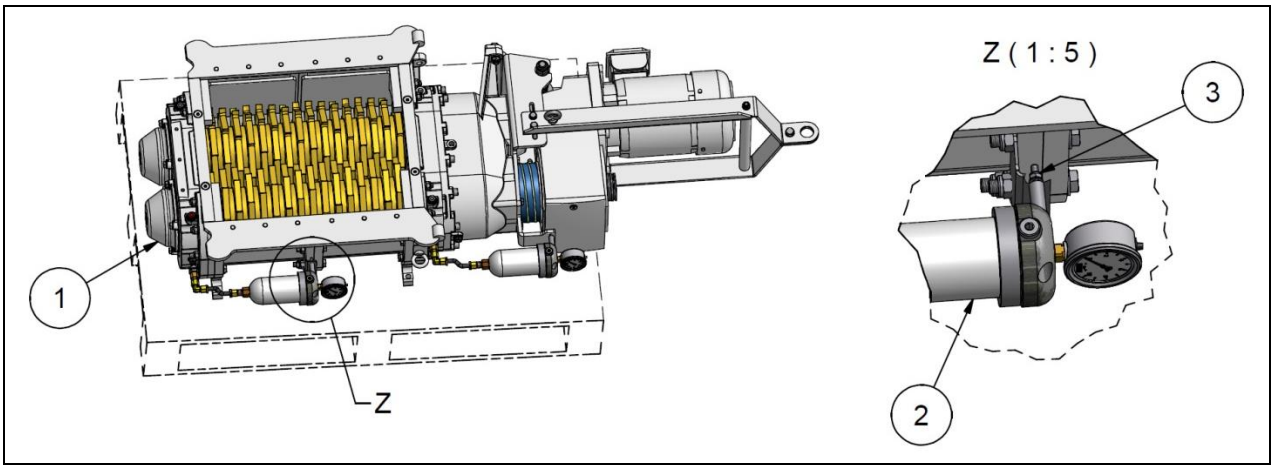


Fig. 14: Undoing the buffer fluid tank

1	QD cover
2	Buffer fluid tank
3	Hexagon nut

→ **Fig.** “Opening/closing the QD cover”

4. Undo hexagon nuts (1) of the twelve hexagon head bolts on the QD cover (3).
5. Remove the screw plugs (4) carefully, as medium could spurt out due to pressure in the XRipper housing. Where appropriate, cover the plugs to be removed with a cloth or similar item.
6. Undo strain bolts (5).
7. Using the hexagon head bolts, the QD cover can be pressed off via the threads (2) until the cover is loose.
   Attention! Do not tilt the cover; press it off evenly by hand!
8. Remove O-ring (6).

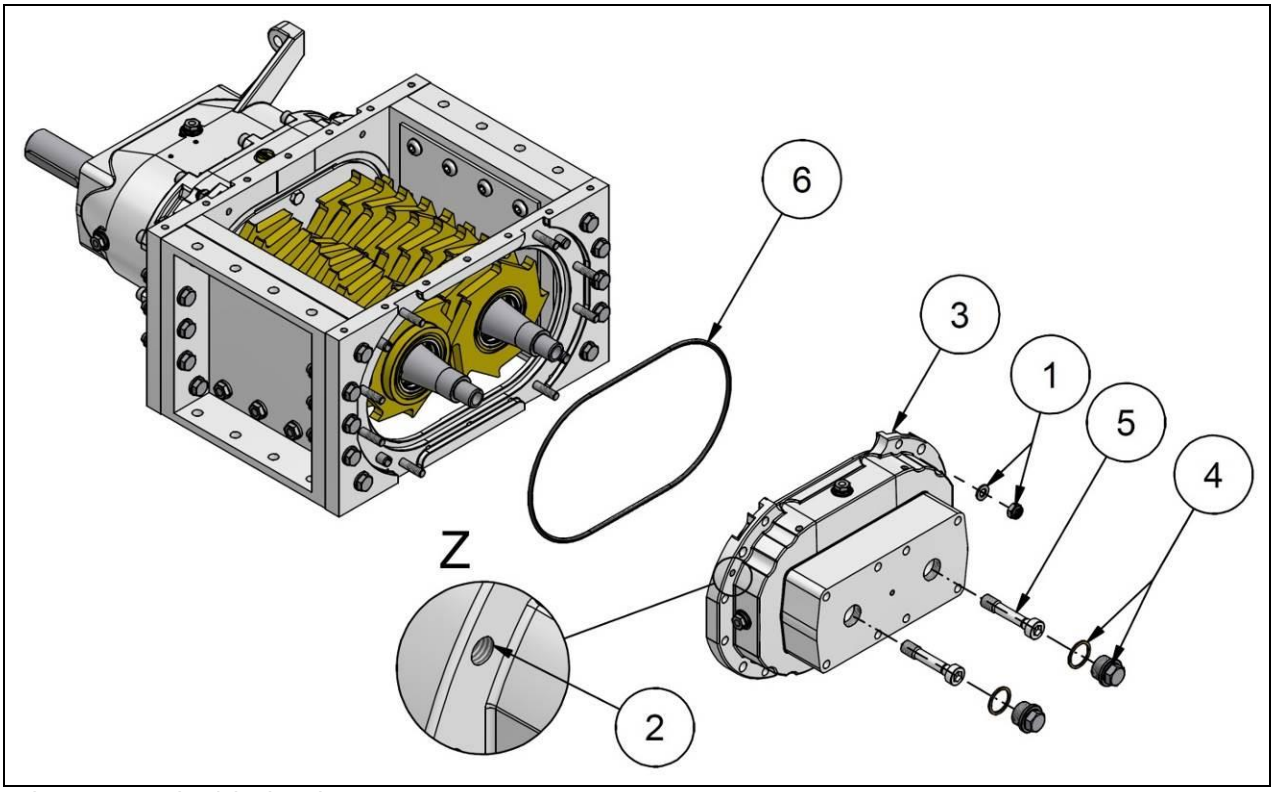


Fig. 15: Opening/closing the QD cover

1	Hexagon nut	**4**	Screw plug
2	Thread – see A	**5**	Strain bolt
3	QD cover	**6**	O-ring

9.3 Replacing the ripper rotors

WARNING

Risk of injury due to sharp-edged XRipper rotors!

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

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

Puller for XRipper rotors

Size 136-280QD: Part no. PBA.B001.T1

Size 136-560QD: Part no. PBA0107

→ **Fig.** "Changing the XRipper rotors"

1. Open the QD cover (1-5) → **Chapter** "Opening the QD cover".
2. Pull the XRipper rotors (7) off the upper and lower shaft in pairs using the puller (see spare parts list).
3. Install the new XRipper rotors in reverse sequence. Fit an O-ring (6) on the gearbox side and cover side of each XRipper rotor. When installing two XRipper rotors on each shaft, also fit an O-ring (8) between the XRipper rotors.
4. Close the QD cover → **Chapter** "Closing the QD cover".
5. Pressurise the buffer chambers if necessary → **Chapter** "Buffer chamber".

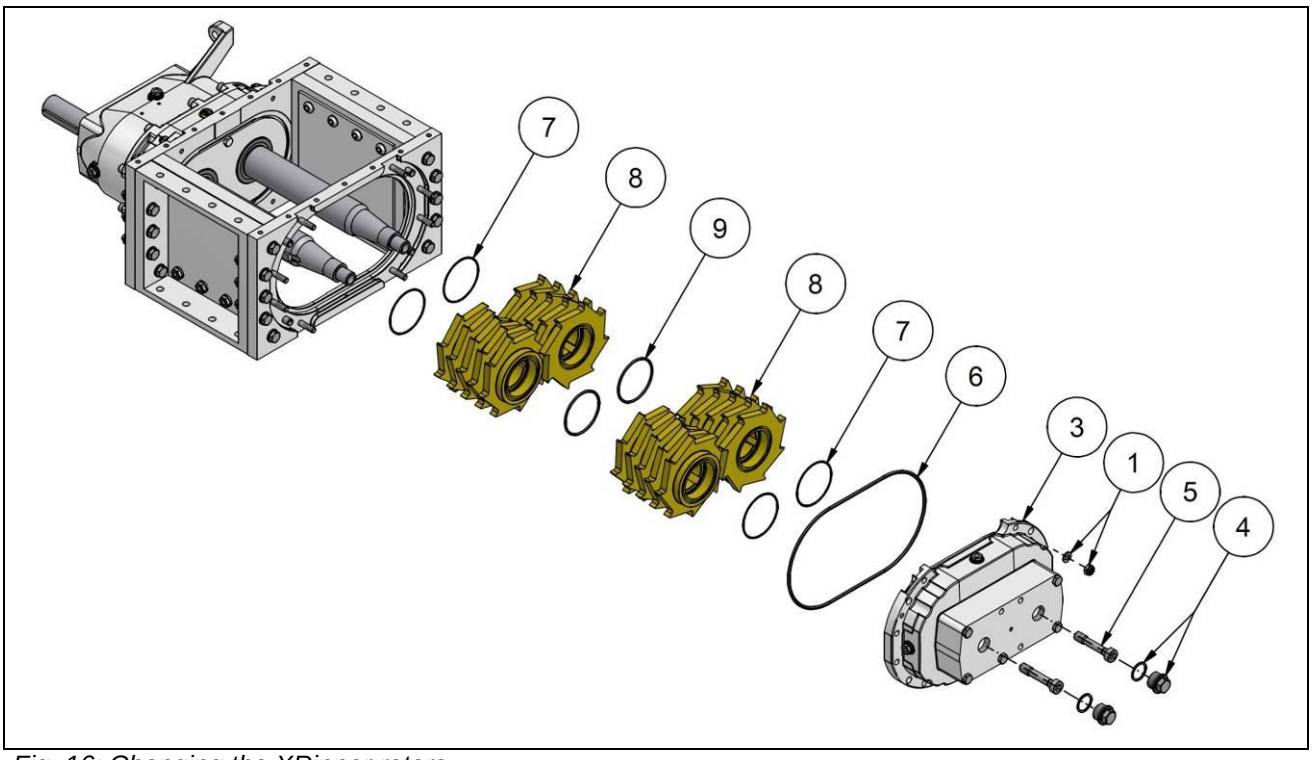


Fig. 16: Changing the XRipper rotors

9.4 Change of wear plates

9.4.1 Orientation of the wear plates

The following chapters describe how to change the wear plates located on the QD cover and XRipper gearbox. The wear plates are assembled in the reverse order of disassembly. When assembling, make sure the orientation of the wear plates is correct, on both the cover side and the gearbox side:

ATTENTION

The cutting direction (1) of the wear plates must always be the opposite of the cutting direction of the XRipper rotor blades (2). → **Fig.** “Orientation of the wear plates”.

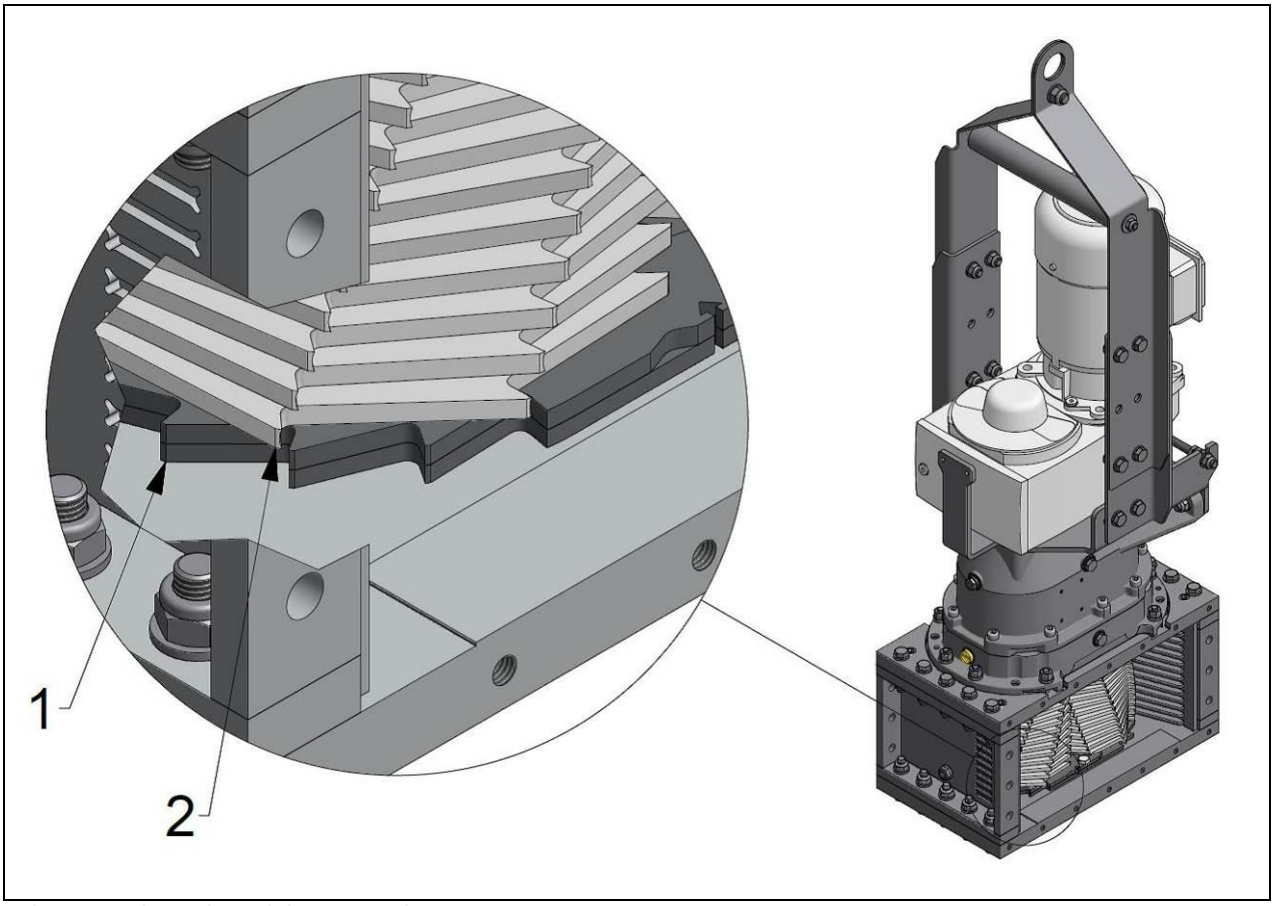


Fig. 17: Orientation of the wear plates

9.4.2 Changing the wear plates on the QD cover

1. Open the QD cover (4) → **Chap.** “Opening the QD cover”.
2. Undo bolts (1) and remove wear plates (2) → **Fig.** “Changing the wear plates on the QD cover”.
3. Thoroughly clean the contact surfaces before installing the new wear plates.

Tightening torque

Bolts (1): **40 Nm**

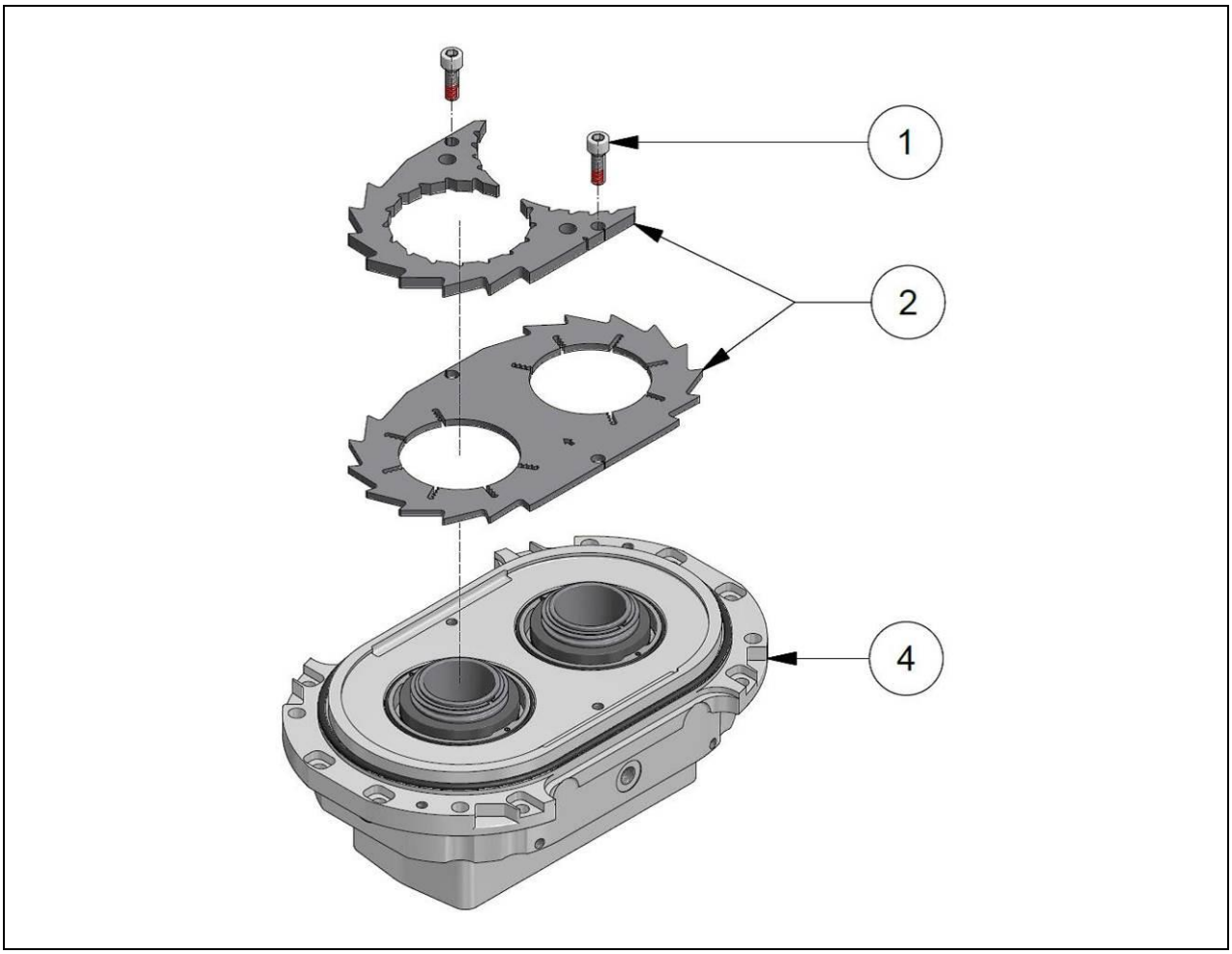


Fig. 18: Changing the wear plates on the QD cover

9.4.3 Changing the wear plates on the gearbox

1. Perform the steps 1. – 3. in → **Chap.** “Changing the XRipper rotors”.
2. Undo the bolts (1) and remove the wear plates (2) and (3).→ **Fig.** “Changing the wear plates on the gearbox”.
3. Thoroughly clean the contact surfaces before installing the new wear plates.

Tightening torque

Bolts (1): **40 Nm**

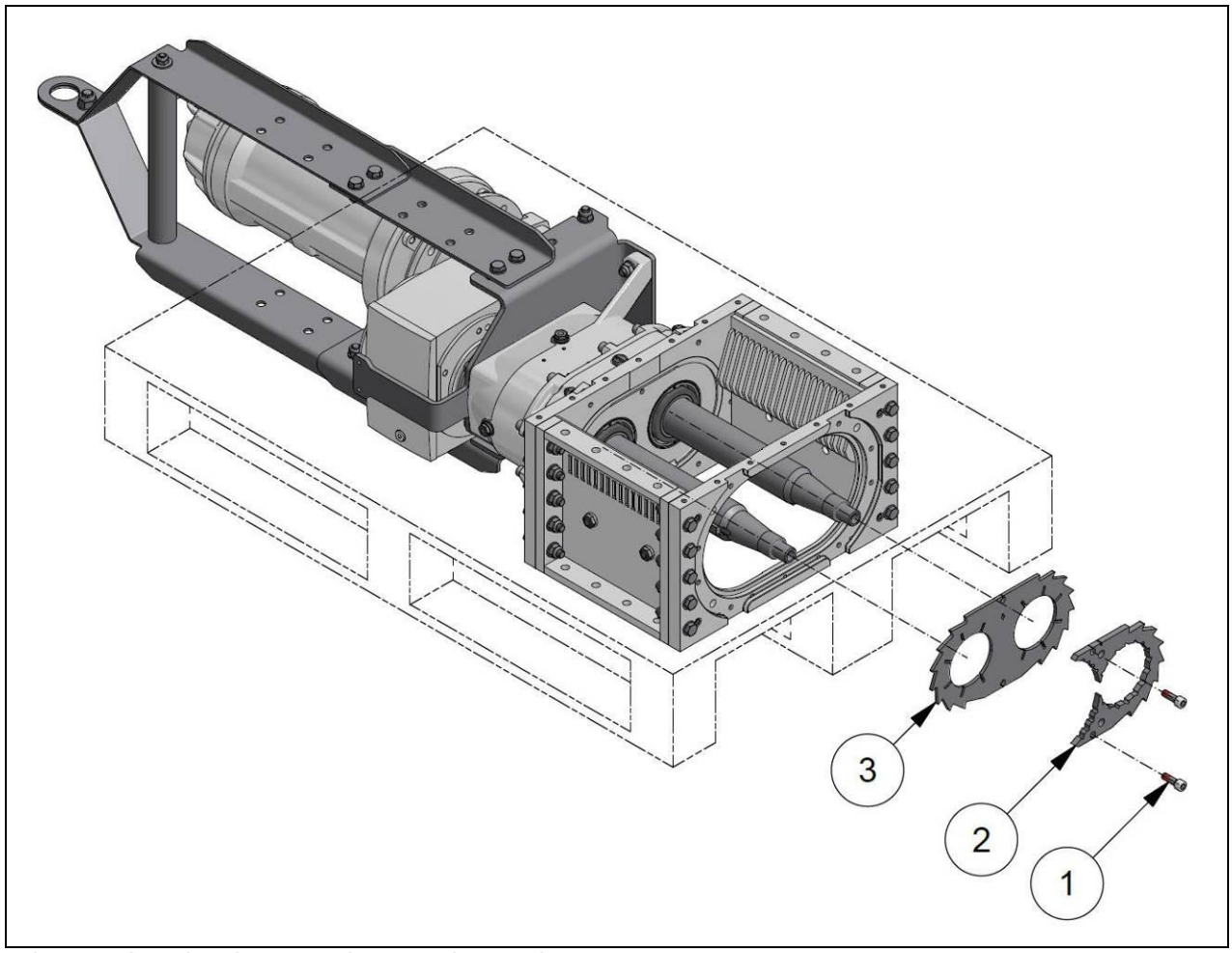


Fig. 19: Changing the wear plates on the gearbox

9.5 Change of cartridge mechanical seal

9.5.1 Change of cartridge mechanical seal on the gearbox

Cartridge mechanical seal – installation/disassembly tool
Size 136QD: Part no. WKZ0172

1. Depressurise the buffer chambers if necessary.
2. Drain and clean the buffer chamber on the gearbox.
3. Drain gear oil.
4. Perform the steps according to → **Chap.** “Changing the XRipper rotors” and → **Chap.** “Wear plate change”.
5. Remove the set screws (1) of the cartridge mechanical seal.
6. Put on tool (A) and screw the cylinder head bolts (2) into the extracting boreholes of the cartridge mechanical seal.
7. Pull out the cartridge mechanical seal evenly using the three hexagon head bolts (3) of the tool (A).
8. Change O-ring (4) in the bearing seal housing.
9. Before installing the new cartridge mechanical seal, carefully remove the burrs on the keyways and clean the cartridge mechanical seal seat in the XRipper housing.
10. Push new cartridge mechanical seal onto the shaft. Carefully oil the outer O-rings (5) on the seal carrier before installation. Attention! Do not use mineral oil or grease for O-rings made of EPDM. Use glycol as an alternative.

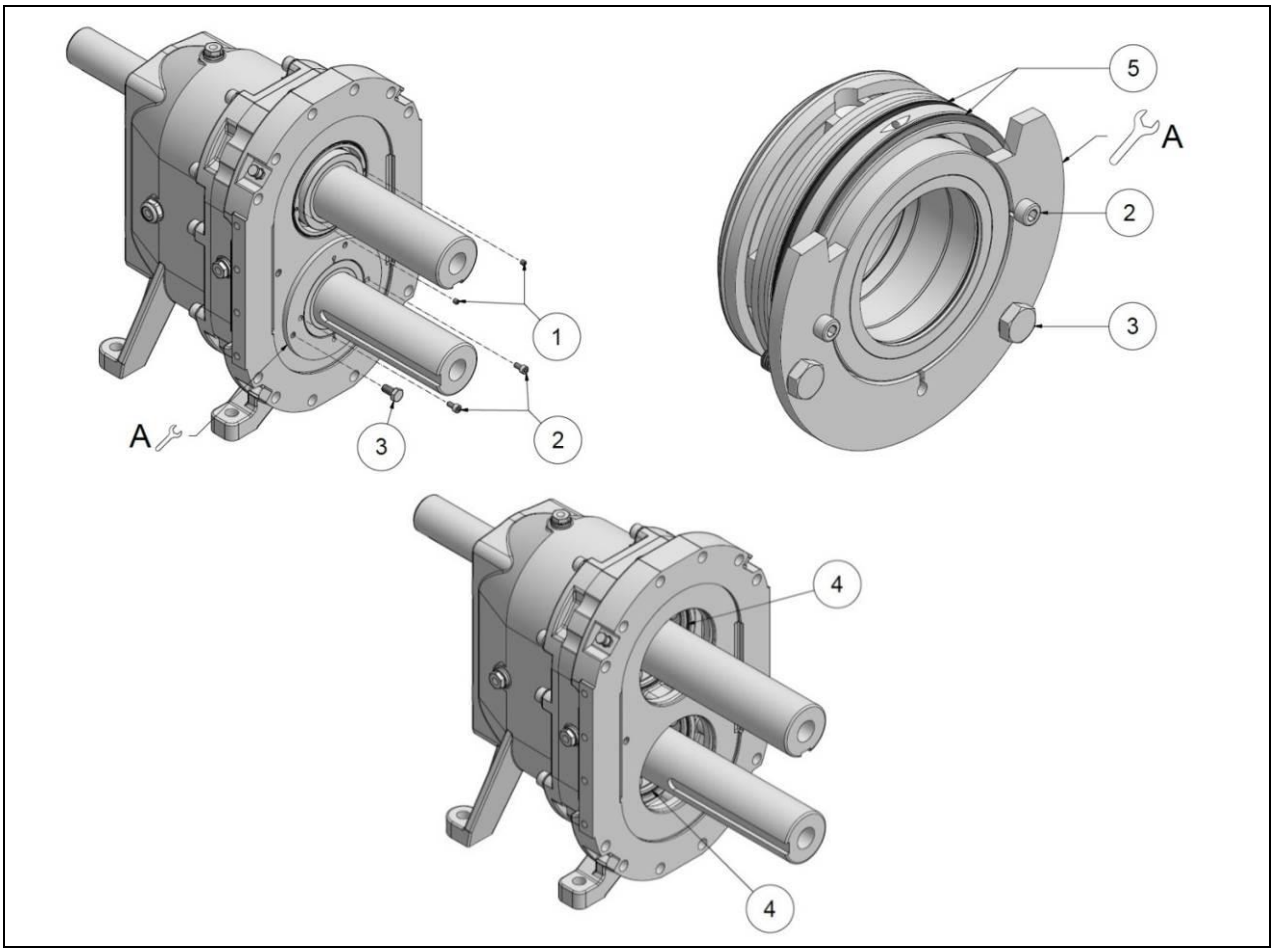


Fig. 20: Cartridge mechanical seal on the gearbox
(pos. A, 2 and 3 are included in tool A; for part no. see above)

11. To install the new cartridge mechanical seal, place the installation/disassembly tool on the cartridge mechanical seal without bolts.
12. Push the XRipper rotor without fitting key onto the shaft and press it against the cartridge mechanical seal until the seal is sitting flush. If the pressing force is not sufficient, install QD cover and strain bolt as well → **Fig.** “Changing the XRipper rotors”. Tighten the XRipper rotor with QD cover/strain bolt until the cartridge mechanical seal is sitting flush.
13. Remove the QD cover/strain bolt and XRipper rotors again.
14. Push O-Ring (6) and support ring (7) onto the shaft.

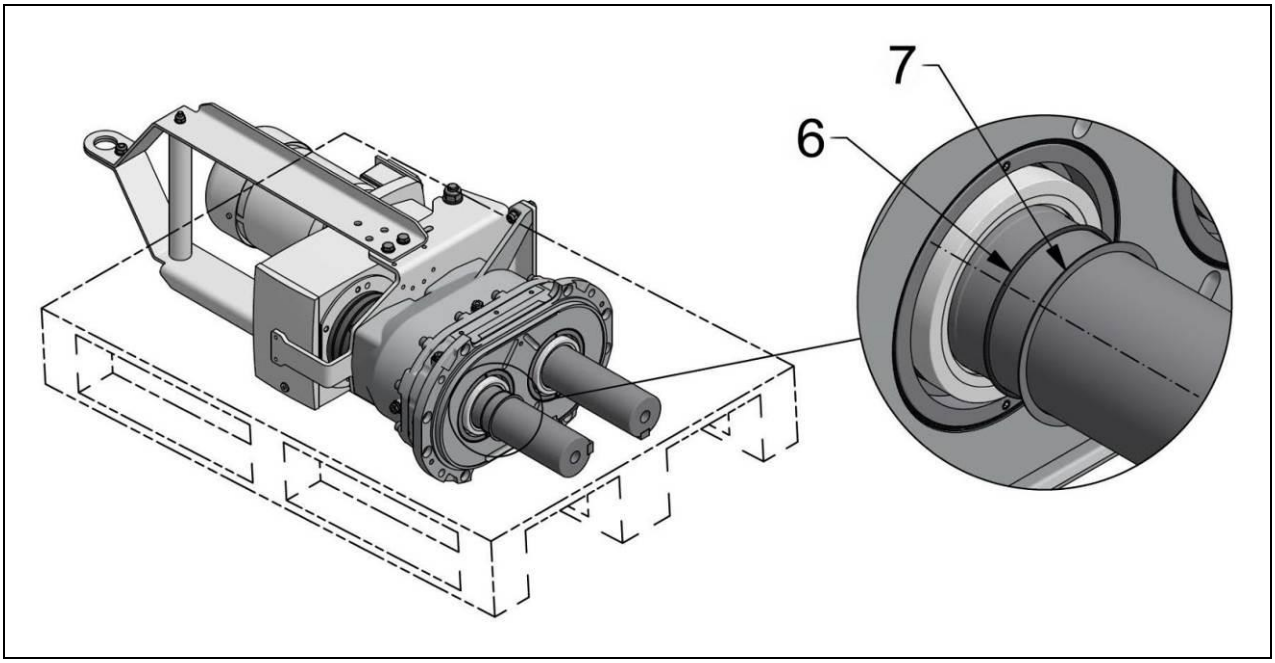


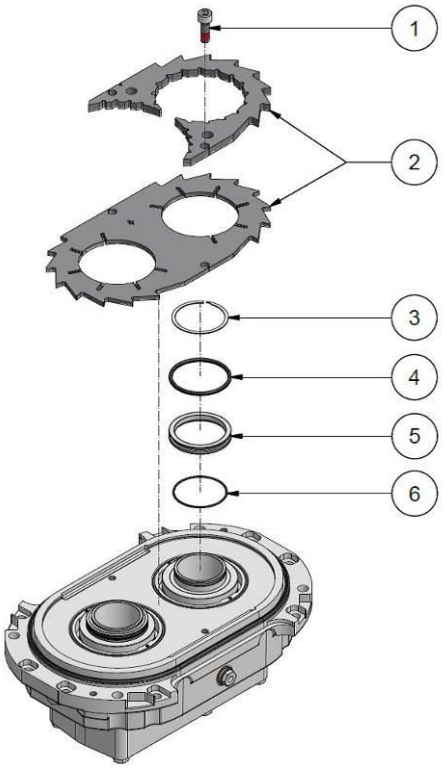
Fig. 21: O-ring and support ring disassembly/assembly

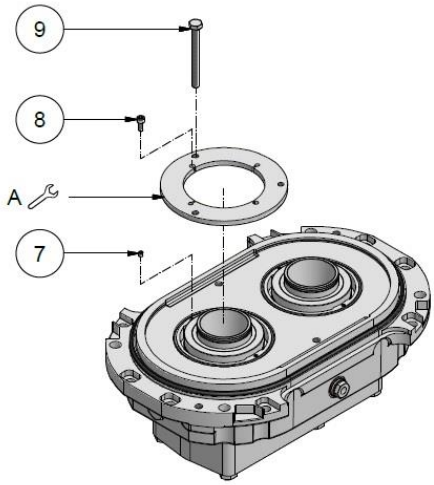
15. Before installing the XRipper rotors, thoroughly clean the contact surfaces of the XRipper rotors and cartridge mechanical seal!
16. Re-install the wear plates and XRipper rotors.
17. Top up the buffer chamber and readjust the pressure in the buffer chambers if necessary.
18. Top up the gear oil.

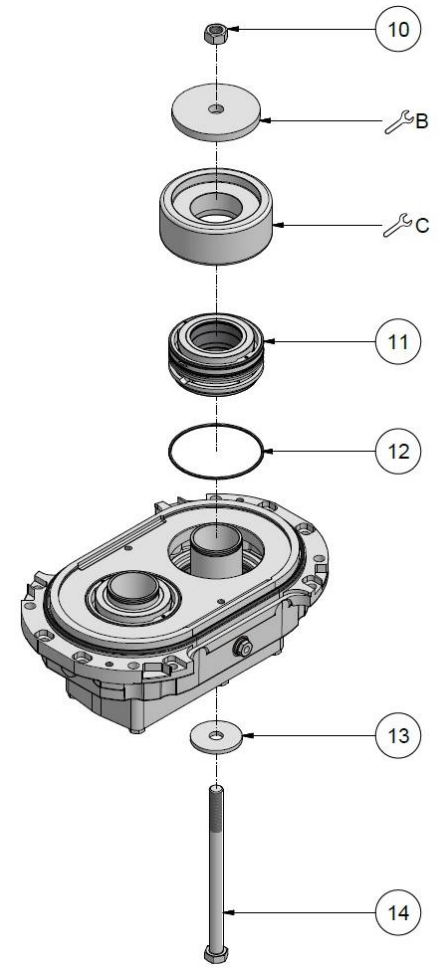
9.5.2 Cartridge mechanical seal change on the QD cover

→ **Fig.** "Cartridge mechanical seal on the QD cover"

1. Depressurise the two buffer chambers if necessary → **Chapter** "Buffer chamber".
2. Drain and clean the buffer chamber on the QD cover → **Chapter** "Draining and cleaning the buffer chamber".
3. Follow the steps specified in → **Chapter** "Opening the QD cover".
4. Undo the hexagon head bolts (1) and remove the wear plate (2).
5. Remove the retaining rings (3), seal carriers (5) and O-rings (4, 6).
6. Remove the slotted set screws (7).
7. Put on tool (A) and screw the cylinder head bolts (8) into the extracting boreholes of the cartridge mechanical seal.
8. Pull out the cartridge mechanical seal evenly using the three hexagon head bolts (9) of the tool (A).
9. Place washer (13) on hexagon head bolt (14) and push it through the bearing cover.
10. Change O-ring (12) in the bearing seal housing.
11. Clean cartridge mechanical seal in the QD cover.
12. Insert new cartridge mechanical seal (11).
13. Put on tool (C) with the large internal turning facing the cartridge mechanical seal.
14. Insert tool (B) in tool (C).
15. Slowly tighten the cartridge mechanical seal by tightening the hexagon nut (10).
16. Remove tools (B) and (C).
17. Install seal carriers (5), O-rings (4, 6) and retaining rings (3).
18. Remove hexagon nut (10), washer (13) and hexagon head bolt (14).
19. Install wear plate (2).
20. Close the QD cover as per → **Chapter** "Closing the QD cover".
21. Top up buffer fluid.
22. Readjust the pressure in the two buffer chambers if necessary → **Chapter** "Buffer chamber".







1	Hexagon head bolt
2	Wear plate
3	Retaining ring
4	O-ring
5	Seal carrier
6	O-ring
7	Set screw
8	Cylinder head bolt
9	Hexagon head bolt
10	Hexagon nut*
11	Cartridge mechanical seal
12	O-ring
13	Washer*
14	Hexagon head bolt*
A	Tool WKZ0456 (includes pos. 8, 9)*
B	Tool WKZ0119*
C	Tool WKZ0171*

** included in tool with part no. WKZ0172*

Fig. 22: Cartridge mechanical seal on the QD cover

9.6 Closing the QD cover

→ **Fig.** "Opening/closing the QD cover"

1. Before assembly of the QD cover (3) thoroughly clean the components and also oil them if necessary → **Fig.** "Cleaning before QD cover assembly".
2. Pull O-ring (6) onto the QD cover.
3. Set QD cover in place.
4. Screw in the two strain bolts (5) loosely but do **not** tighten them.
5. Tighten hexagon nuts (1) of the twelve hexagon head bolts or threaded rods. **Attention! Do not tilt the QD cover while doing this, but press it evenly "by hand" (no tools). Make sure the O-ring is seated correctly.**

Tightening torques

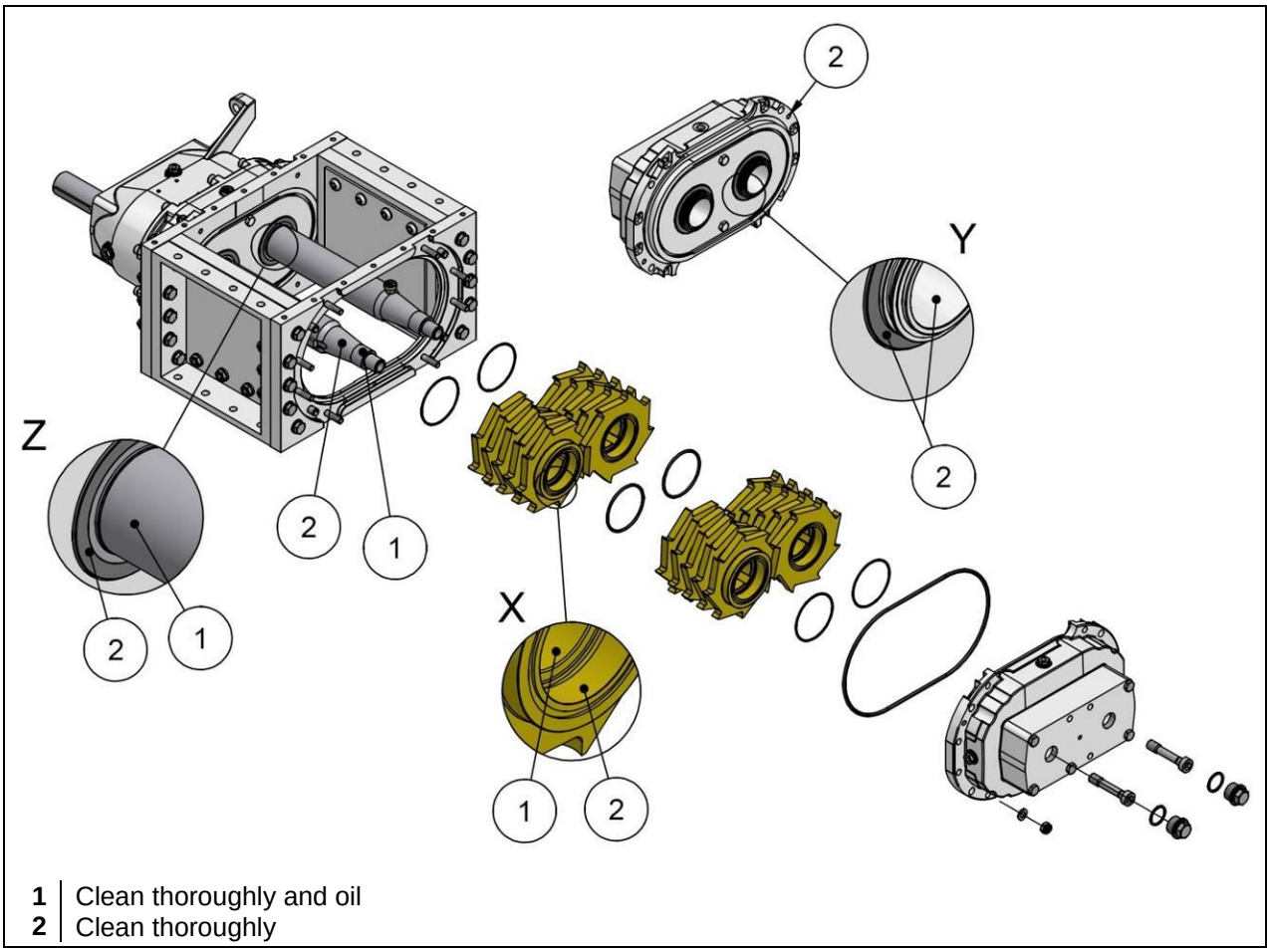
- Hexagon nut M 10 (10.9) → 70 Nm
- Hexagon nut M 10 (A4 70) → 40 Nm

6. Tighten the strain bolts.

Tightening torques

- Tighten the M16 strain bolt (10.9, steel) with 200 Nm, then loosen it and tighten again with 140 Nm.
- Tighten the M16 strain bolt (A4, stainless steel) with 160 Nm, then loosen it and tighten again with 140 Nm.

7. Install the screw plugs (4).
8. Re-adjust the pressure in the two buffer chambers if necessary → **Chapter** "Buffer chamber".



1 Clean thoroughly and oil
2 Clean thoroughly

Fig. 23: Cleaning before QD cover installation

10 Troubleshooting

10.1 Application problems

Application problem	Help → Chapter "Help"
• XRipper stops after starting, will not start	A, B
• XRipper stops during operation	A, B
• Power consumption too high during operation	H, I
• Pressure and level variations in the buffer chamber	E, G
• Leakage at the mechanical seal	F, G
• Extreme pressure and level changes in the buffer chamber	F
• XRipper too hot	D
• Motor too hot	B, C, K
• Noises & vibrations	B, D, I

10.2 Help

	Possible cause	Possible remedy	Observe notices and safety notes → Chapter
A	Hard foreign matter in the XRipper chamber	Retrofit the system control, which attempts 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 electrical equipment.	"Drive"
C	Motor speed too low during variable frequency drive operation	Install external fan, increase motor speed.	"System control": Variable frequency drive operation
D	Oil level in the XRipper gearbox is not OK	→ **Chapter** "Gearbox"	"Maintenance"
E	Operational fluctuations in buffer chamber	→ **Chapter** "Buffer chamber"	"Maintenance"
F	Cartridge mechanical seal damage	Change the cartridge mechanical seal, → **Chapter** "Cartridge mechanical seal change"	"Repair"
	Faulty repair of the cartridge mechanical seal		
	Buffer fluid tank leaking	Check buffer fluid tank for leaks.	"Maintenance"
G	Cartridge mechanical seal elements not in ideal position	Pressurise the buffer chamber once with the max. permissible buffer chamber pressure (tank pressure) (single mechanical seal: 5 bar, double mechanical seal: 10 bar). Then restore the design pressure.	"Buffer chamber" "Pressurisable buffer fluid tank"
		Put the buffer chamber into operation in its non-pressurised state (buffer fluid tank closed) and observe the buffer chamber fluid level and pressure.	
		Adjust the tank pressure (buffer chamber pressure) to higher than its design pressure. Observe max. permissible buffer chamber pressure (tank pressure): Single mechanical seal: 5 bar, double mechanical seal: 10 bar	

	Possible cause	Possible remedy	Observe notices and safety notes → Chapter
H	Foreign matter jammed in between the XRipper discs	Clean the XRipper chamber and XRipper rotors (XRipper discs)	"Opening the QD cover" and the instructions after that
I	Damaged XRipper discs	Check the XRipper rotors for coarse burrs, 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"	

11 Putting out of operation and disposal

1. Disconnect XRipper from the power supply. Observe notices and safety notes → **Chapter** "Installation" → **Chapter** "Drive".

2. Drain working materials and residual medium.
   - Drain XRipper gearbox: Observe notices and safety notes → **Chapter** "Maintenance" → **Chapter** "Gear oil – inspection and change".
   - Drain buffer chamber: Observe notices and safety notes → **Chapter** "Draining and cleaning the buffer chamber".
   - Drain any residual medium: Observe notices and safety notes before opening the XRipper cover → **Chapter** "Repair".

3. Drain working materials.
   - Drain the gear oil from the XRipper gearbox. Observe notices and safety notes → **Chapter** "Gear oil – inspection and change".
   - Drain buffer fluid from the buffer chamber. Observe notices and safety notes → **Chapter** "Draining the buffer chamber".

4. Drain the XRipper and remove residual medium. Observe notices and safety notes when opening the XRipper cover → **Chapter** "Repair".



Environmentally friendly disposal

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

5. Hand over XRipper for scrap: observe notices and safety notes → **Chapter** "Transport, storage".

Maintenance and service plan

12 Maintenance plan

12.1 Maintenance instructions

ATTENTION!

Carefully follow the following maintenance instructions and, if applicable, document them in the service plan → **Chap.** "Service plan".

Safety devices must be checked on a regular basis for proper function, especially after maintenance and repair work and before start-up.

Observe and comply with the **maintenance instructions in the relevant documents** → **Chap.** "Relevant documents".

Before and after long periods of shutdown, rinse the XRipper with water

Change the buffer fluid if it is **severely contaminated.**

If the machine's **running noise changes** → **Chap.** "Trouble-shooting".

12.2 Maintenance intervals

ATTENTION!

Carefully observe the following maintenance intervals and document them in the service plan → **Chap.** "Service plan".

After the first 20 operating hours:

- Tighten the screws connecting the wall-mounted frame
- Check buffer fluid
- Change gear oil

Every 200 operating hours:

Check buffer fluid

Every 500 operating hours, at least once every three months:

Check gear oil

Every 2000 operating hours, at least once a year:

- Change buffer fluid
- Change gear oil

13 Service plan

The guarantee is valid only if maintenance and service work is performed and documented acc. to → **Chap.** “Maintenance plan”.

Serial number: _____

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

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