

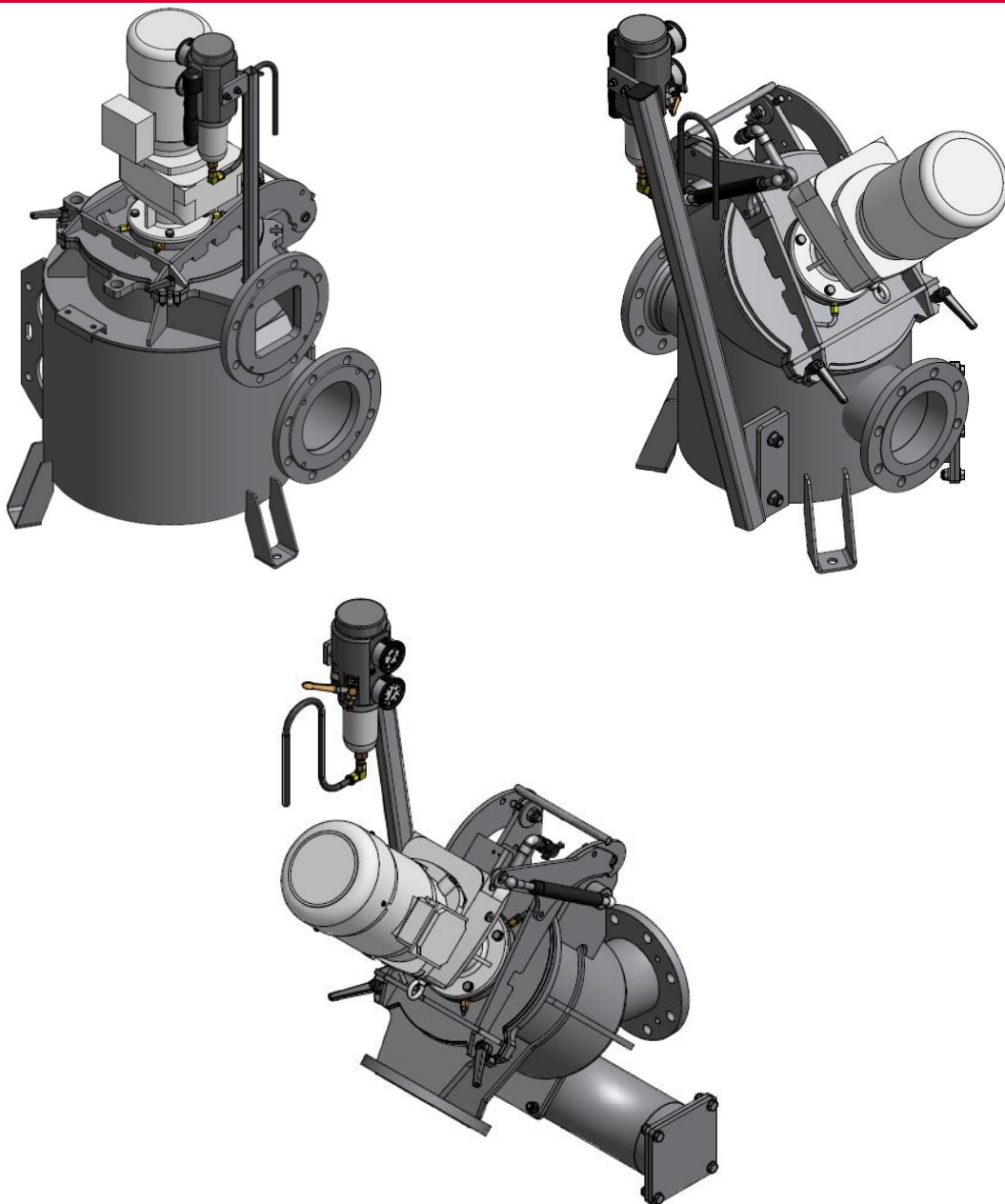


# Operating instructions

**RotaCut®**

**RC3000 Inline, Cyclone, BioCut and RC5000 Inline, Cyclone**

ENGINEERED TO WORK



## Original operating instructions

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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](http://www.vogelsang.info)

## 1 User information

### 1.1 Using the operating instructions

These instructions contain all necessary information concerning the operating elements, handling, start-up and maintenance and repair work, as well as all of the relevant technical data.

The operating instructions are a component of the machine.

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

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 maintenance and operating instructions.

## 1.2 Warning signs, danger symbols, information

### Symbols



This warning advisory warns you of possible dangers to the health and life of yourself and other people resulting from the handling and operation of this machine.



This warning advisory warns you of possible dangers through electric shock.



This warning advisory warns you of possible dangers for your machine.





This information provides you with additional advice and tips.



We use this symbol to indicate measures to be observe to prevent damage to the environment.

## 1.3 Presentation convention

| Illustration  | Meaning  |
|---|--|
| •   | Listing  |
| —   | Sublisting   |
| 1.<br>2.  | Carry out these actions in the described sequence by |
| → <b>Fig.</b> "Caption"   | Reference to a figure for additional information     |
| → <b>Chapter</b> "Chapter heading"  | Reference to a chapter for additional information    |
| → <b>Table</b> "Table caption"  | Reference to a table for additional information      |
|  "Relevant Vogelsang document" | Request this document from us if you need it         |
|  Technical support             | Contact our Technical Support                        |

## 2 Intended purpose

The Vogelsang RotaCut is intended for cutting up fibrous matter, macerating solid matter and separating foreign matter in pumpable fluids (medium).

The medium can have the following properties:

- Temperature: 0°C to max. 80°C
- pH value: <7 (acidic), =7 (neutral) or >7 (alkaline)

The use of the RotaCut as a shredder for macerating solid matter or as a mixer for mixing fluids and/or solid matter, as well as any other use, is contrary to the designated use. Vogelsang is not liable for any damage resulting from incorrect use.

A RotaCut without a pot or without a safety device is a partly completed machine. The installation instructions are provided in the → **Chapter "Installation"**.

The declaration of incorporation is part of these operating instructions.

The RotaCuts described in these operating instructions are not intended for use in potentially explosive atmospheres.

## 3 Safety Notes

Before start-up, carefully read and note the contents of the operating instructions and the safety notes.

- The warning and safety stickers fitted provide important information for safe operation.
- Observance of these stickers is in the interest of your own safety.
- The warning and safety stickers must not be removed and must be replaced immediately if damaged or lost → **Chapter "Warning and safety stickers"**.



### **Risk of injury from rotating parts**

---

- Start-up of the RotaCut can only be done once the inlet and outlet lines are connected. This ensures that access to the cutting components is not possible.
- Before performing any maintenance and repair work, switch off the drive and make sure that the drive cannot be unintentionally switched on again.



### **Skin and eye irritation caused by auxiliary materials, operating materials and macerating medium**

---

Protective clothing (protective goggles, protective gloves) must be worn during all work involving possible contact with auxiliary materials, operating materials and macerating medium.

Before opening maintenance ports, covers, connectors etc., the system must be depressurised to prevent the medium from spraying out.



### **Risk of injury from rotating parts when the RotaCut is unintentionally started up**

---

To prevent unintentional starting, the control system of the RotaCut must conform to **Performance Level "c"** or higher as per EN ISO 13849 (safety device). The safety device must be connected and regularly checked by qualified technical personnel, especially before start-up and after maintenance and repair work.

**Risk of injury from electric shock when using RotaCut with an electrical drive**

---

Only qualified electricians may connect the device to the power supply.

**Risk of injury from sharp cutting edges**

---

Wear protective gloves when working in the danger area and be sure to prevent the blade rotor and blades from falling off.

Lock any movable parts, e.g. the blade rotor, before carrying out maintenance and repair work.

**Risk of injury from bursting parts and medium spraying out under high pressure**

---

- The maximum operating pressure must not be exceeded → **Chapter "Specifications"**.
- Fermentation processes may occur in closed pipes and/or in the RotaCut pot during periods of inactivity. The resulting gas can result in a large pressure increase that can damage the system and cause injury. To prevent the build-up of pressure, open the following components:
  - the slide valves of the RotaCut / system
  - the ball valve in the RotaCut cutter head
- Vent the RotaCut before rinsing.
- When the flow direction of a positive displacement pump is changed, the suction side becomes the discharge side and must be protected against overpressure.

**Thermal hazards (burns)**

---

Gas accumulation in the system can cause the RotaCut and the connected pipes to become very hot.

- The plant operator must ensure that gas cannot accumulate in the system → **Chapter "Installation"**.
- The RotaCut must be vented before positive medium pressures are reached.
- Avoid dry running of the cutting blades.

**Danger of burning or scalding by auxiliary materials, shop supplies and medium starting at 60°C**

---

is present

- when there is direct contact with hot auxiliary materials, shop supplies and hot medium.
- from spraying of hot auxiliary materials, shop supplies and hot medium.
- when there is inadvertent contact with hot surfaces (RotaCut pot, pipes).

Therefore

- before maintenance and repair work, allow the RotaCut to cool down, wear protective gloves and protective goggles.
- avoid touching the RotaCut and the pipes during operation.

**RotaCuts with a mechanical seal consisting of the mating materials SiC-SiC:**

---

To avoid adhesion of the mechanical seal ring surfaces, the shaft on new RotaCuts with this gasket that are not started up immediately needs to be rotated (at least one revolution) every two months.

### 3.1 Opening the cutter head

**Attention! In the interest of safety, take note of the following warnings before releasing the quick latches and opening the cutter head:**



---

#### **Risk of crushing caused by the RotaCut tilting or falling**

- Ensure that the RotaCut is firmly connected to the floor or firmly installed in the pipe.



---

#### **Risk of injury from rotating parts**

- Switch off the drive and make sure that the drive cannot be switched on again while the cutter head is open.
- Also set the main switch to "0".
- Ensure that the installed safety switch (part no. SMD0013) is connected and adjusted in such a way, that the cutter head ceases operation immediately → **Chapter** "Safety switch safety device".



---

#### **Skin and eye irritation caused by macerating medium**

To prevent the medium from spraying out,

- depressurise the system
- carefully open the ball valve on the cutter head



---

#### **Risk of injury from sharp cutting edges**

Wear protective gloves when working in the danger area and be sure to prevent the blade rotor and blades from falling off.

Lock any movable parts, e.g. the blade rotor, before carrying out maintenance and repair work.



### 3.2 Training of persons

Only trained and instructed persons may work with and on the RotaCut. The operator must clearly define the responsibilities of the persons for operating, servicing and maintaining equipment.

A person to be trained may only work with and on RotaCut under the supervision of an experienced person.

| Activity/persons       | Person specially trained for the activity <sup>1)</sup> | Instructed person <sup>2)</sup> | Persons with specialised training (qualified workshop) <sup>3)</sup> |
|------------------------|---|---------------------------------|--|
| Transport              | X   | --                              | X  |
| Assembly, installation | --  | --                              | X  |
| Start-up               | --  | --                              | X  |
| Operation              | X   | X                               | X  |
| Maintenance            | X   | X                               | X  |
| Repair                 | --  | --                              | X  |

Key:

X..allowed

--..not allowed

- 1) A person who can take on a specific task and who is authorised to carry it out for a company that is suitably qualified.
- 2) Whoever has been instructed, and if necessary trained, about the tasks assigned to them and possible risks associated with incorrect behaviour and has been instructed about the required protective equipment and protective measures is considered a trained person.
- 3) Persons with specialised training are considered specialists. Based on their technical training and knowledge of the relevant provisions, they can assess the tasks assigned to them and recognise possible risks.

Note:

A qualification equivalent to technical training may also have been attained by many years of activity in the relevant field of work.

### 3.3 Warnings and safety notes on the RotaCut

Warning and safety stickers on the machine provide important information for safe operation of the RotaCut. Heeding the stickers promotes the safety of persons who work with and on the RotaCut.

The warning and safety stickers must not be removed and must be replaced immediately if damaged or lost

→ **Chapter** "Warning and safety stickers"

### 3.4 Warning and safety labels

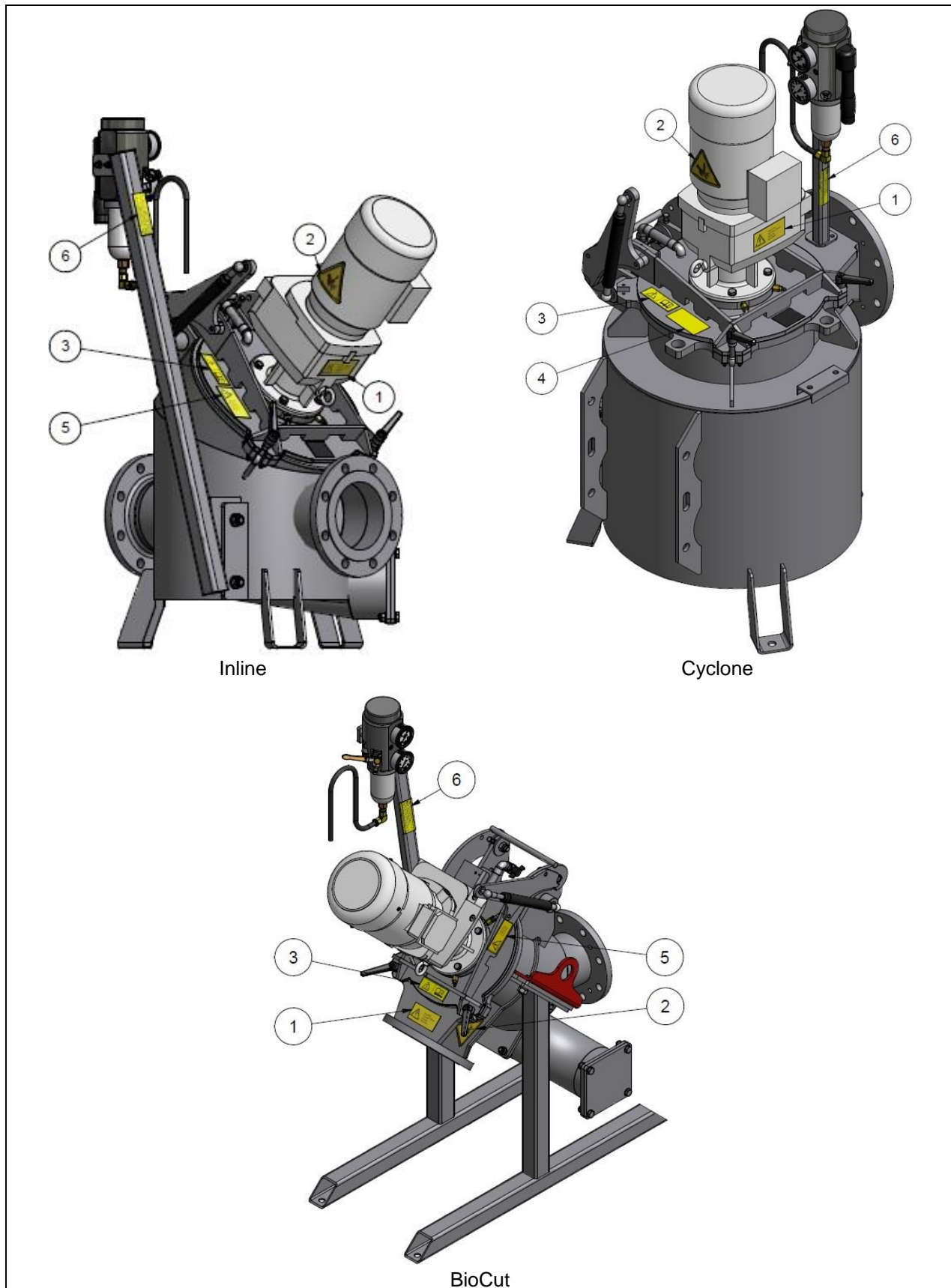





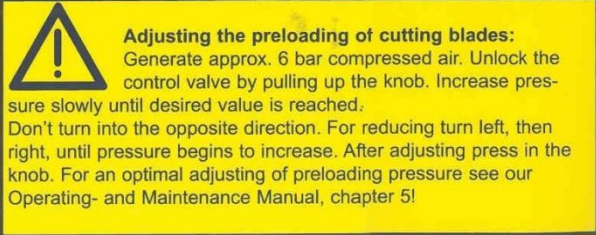


Fig. 1: Positioning of the warning and safety stickers  
(The figures shown here are examples only and do not reflect the precise positioning of the stickers)

| Pos. | Sticker   | Part no. | Meaning  |
|------|---|----------|--|
| 1    |    | VAU.013  | see sticker  |
| 2    |    | VAU.014  | Risk of hand injuries!   |
| 3    |    | VAU.133  | Before starting up the machine, it is vital you read the operating instructions. |
| 4    |    | VAU.142  | see sticker (RotaCut Cyclone)  |
| 5    |   | VAU.144  | see sticker (RotaCut Inline and RC3000 BioCut)                                   |
| 6    |  | VAU.140  | see sticker (RotaCut with ACC)   |

## 4 Assembly

### 4.1 Transport



#### Risk of crushing caused by the RotaCut falling

→ Fig. "Transport aid"

- The unit may only be transported suspended or screwed to a Euro pallet.
- Attach the round cord for suspended transport of the RotaCut.
- Observe the transport recommendations, identified articulation points and direction arrows on the transport crates.

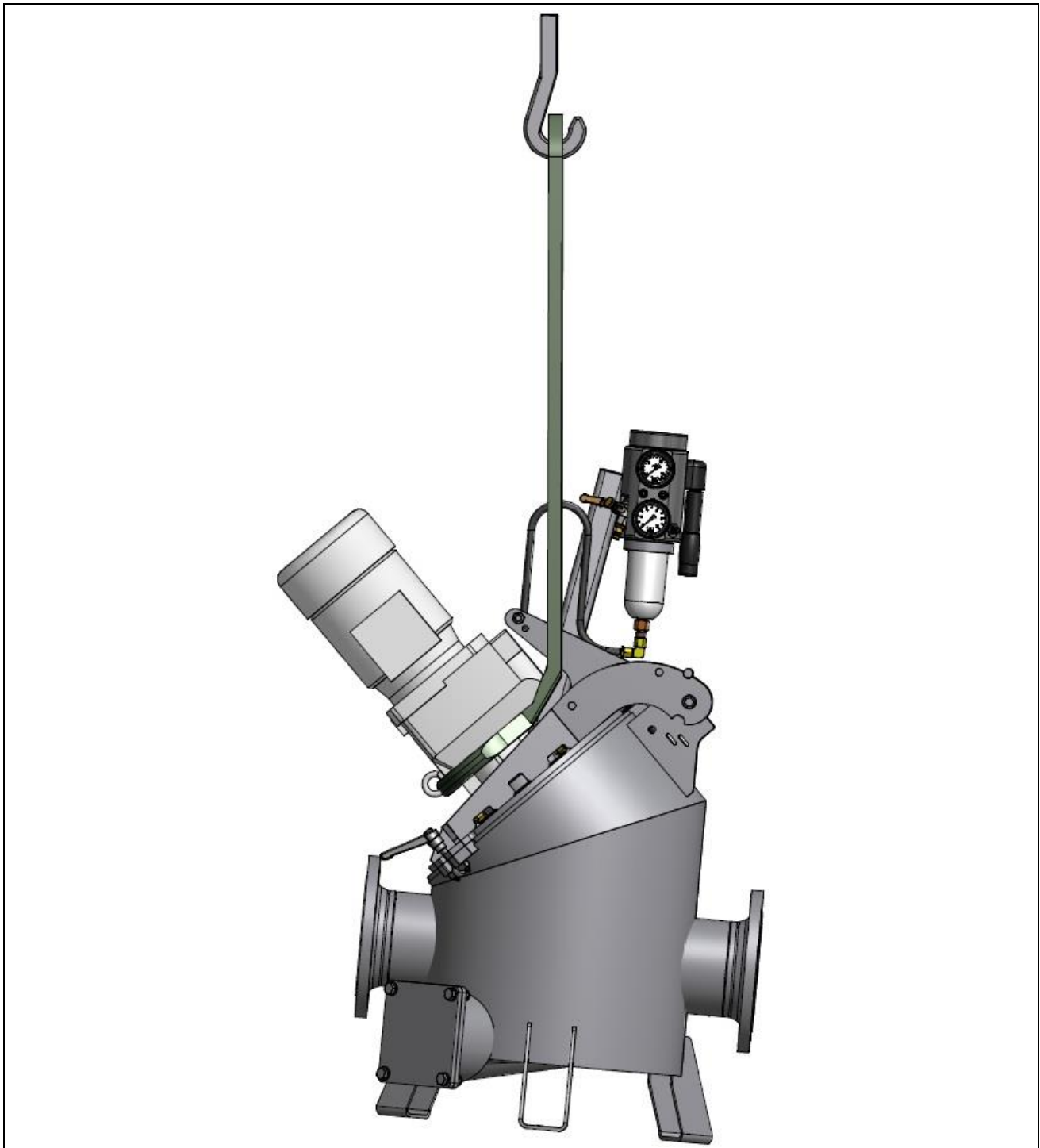


Fig. 2: Transport aids

## 4.2 Connection to the pipe system

### 4.2.1 Installation

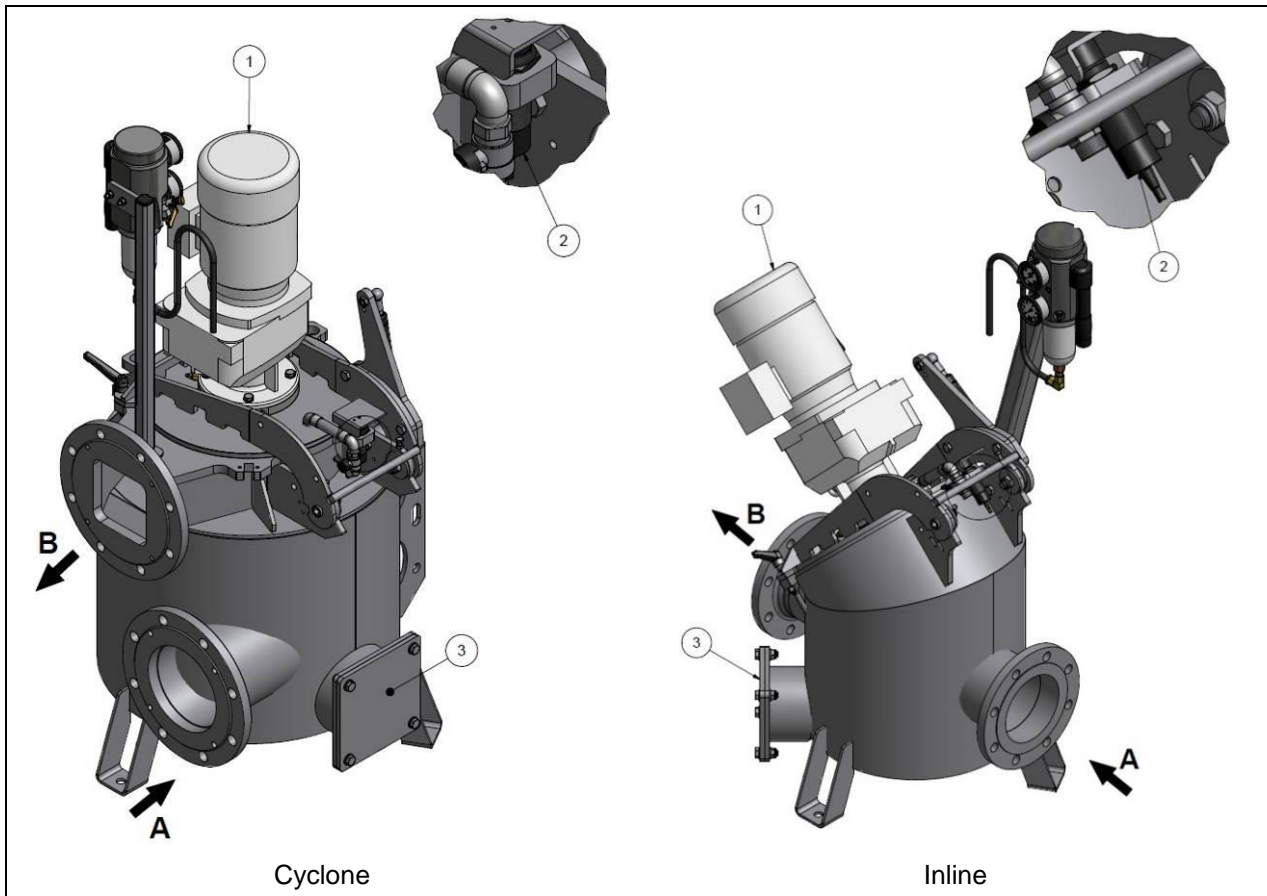


Fig. 3: Installation and flow direction

- |   |               |   |                             |
|---|---------------|---|-----------------------------|
| 1 | Geared motor  | A | Inlet from the suction side |
| 2 | Safety switch | B | Outlet to the pump          |
| 3 | Cleaning port |   |                             |

The RotaCut is usually installed on the suction side. When installing on the pressure side, observe the maximum pressure stated in the chapter “Technical data”.



#### **Risk of crushing caused by the RotaCut tilting or falling**

Ensure that the RotaCut is firmly connected to the floor or firmly installed in the pipe.



#### **Thermal hazard (burns) due to incorrect installation in the pipe**

Gas accumulation in the system can cause the RotaCut and the connected pipes to become very hot.

- Especially in the case of positive medium pressures, the pipe on the outlet side of the RotaCut must be installed so that it inclines upwards.
- The RotaCut must be vented before positive medium pressures are reached.
- Avoid dry running of the blades.

**Skin and eye irritation caused by leakages of auxiliary materials, operating materials and macerating medium as a result of faulty seals.**

---

- The sealing materials must be compatible with the medium.
- Protective clothing (protective goggles, protective gloves) must be worn during all work involving possible contact with auxiliary materials, operating materials and macerating medium.
- Before opening maintenance ports, covers, connectors etc. the system must be depressurised to prevent the medium from spraying out.

**Risk of vibrations or breakage as a result of misalignment**

---

The connectors must be mounted free from stress. In other words, the connectors have to be precisely one in front of the other, even when they are not screwed into place.

**Assembly position of the pressure transmission unit**

---

When pressure transmission unit is mounted by the customer, please note:

To ensure that the mechanical seal is sufficiently supplied with oil, the pressure transmission unit must be positioned above the mechanical seal.

**4.2.2 Direction of flow**

- During installation, note the red directional arrows on the RotaCut pot which indicate the direction of flow.
- In the RotaCut Cyclone, the medium must flow in through the tangential connector, not through the lower cleaning port. (tangential = in the peripheral direction)

### 4.3 Installation of the automatic preload system ACC (Automatic Cut Control)



#### Risk of injury from rotating parts

- Switch off the drive and make sure that the drive cannot be switched on again while the cutter head is open.
- Also set the main switch to "0".
- Ensure that the installed safety switch (part no. SMD0013) is connected and adjusted in such a way, that the cutter head ceases operation immediately → **Chapter** "Safety switch safety device".



#### Risk of injury from sharp cutting edges

Wear protective gloves when working in the danger area and be sure to prevent the blade rotor and blades from falling off.

Lock any movable parts, e.g. the blade rotor, before carrying out maintenance and repair work.

#### → Fig. "Sectional drawing of RotaCut with ACC"

- Install the flywheel, cutting screen and blade rotor, **with cutting blades removed**, as well as the ACC cylinder (6) with the vent screw (13) loosened. For a RotaCut with ACC, a hexagon socket head cap screw (9) that is 10 mm longer than that used in a manual preload system is required.
- tighten vent screws (13) and vent valve (16). On the pressure regulator (pos. 9) in → **Fig. "Pressure transmission unit"** generate 1 - 2 bar of compressed air. Using a screwdriver (for example), decelerate the ACC cylinder (6) between the blade rotor and cutting screen, so that it moves out slowly. If air starts escaping at the ACC piston (18), there should still be a gap of 2 - 3 mm between the blade rotor and the cutting screen.
- Dismount the ACC and blade rotor.
- Undo the vent screw (13). Install the blade rotor, with the cutting blades inserted, and the ACC parts kit.
- Tighten the hexagon socket head cap screw (9):



#### Tightening torque

|  |                          |
|--|--------------------------|
| hexagon socket head cap screw (9) made of steel:           | 230 Nm + 10 Nm / -10 Nm  |
| hexagon socket head cap screw (9) made of stainless steel: | 180 Nm + 10 Nm / - 10 Nm |

- Generate pressure using the pressure regulator on the pressure transmission unit until oil, which is free from bubbles, escapes at the borehole (has to be facing upwards) of the vent screw (13). Tighten the vent screw.
- Using the vent valve (16) situated at the top of the device, perform ventilation until oil, which is free from bubbles, begins to escape. Close the vent valve.



#### Note on filling

A RotaCut that is fitted with a bevelled cutter head (Inline, BioCut) must be filled from the bottom. In this case, it is best to fill the RotaCut with the cutter head open.

- Adjust the preload pressure on the pressure regulator of the pressure transmission unit to 1 bar. Turn the rotor by hand to check whether the cutting blades are lying evenly on the cutting screen.
- Close and secure the cutter unit. Ensure cleanliness in the area of the pot seal and, if required, in the area of the gap seal. If present, remove any foreign matter.
- Set the operating pressure on the pressure regulator of the pressure transmission unit → **Chapter** "RotaCut with ACC (Automatic Cut Control)".



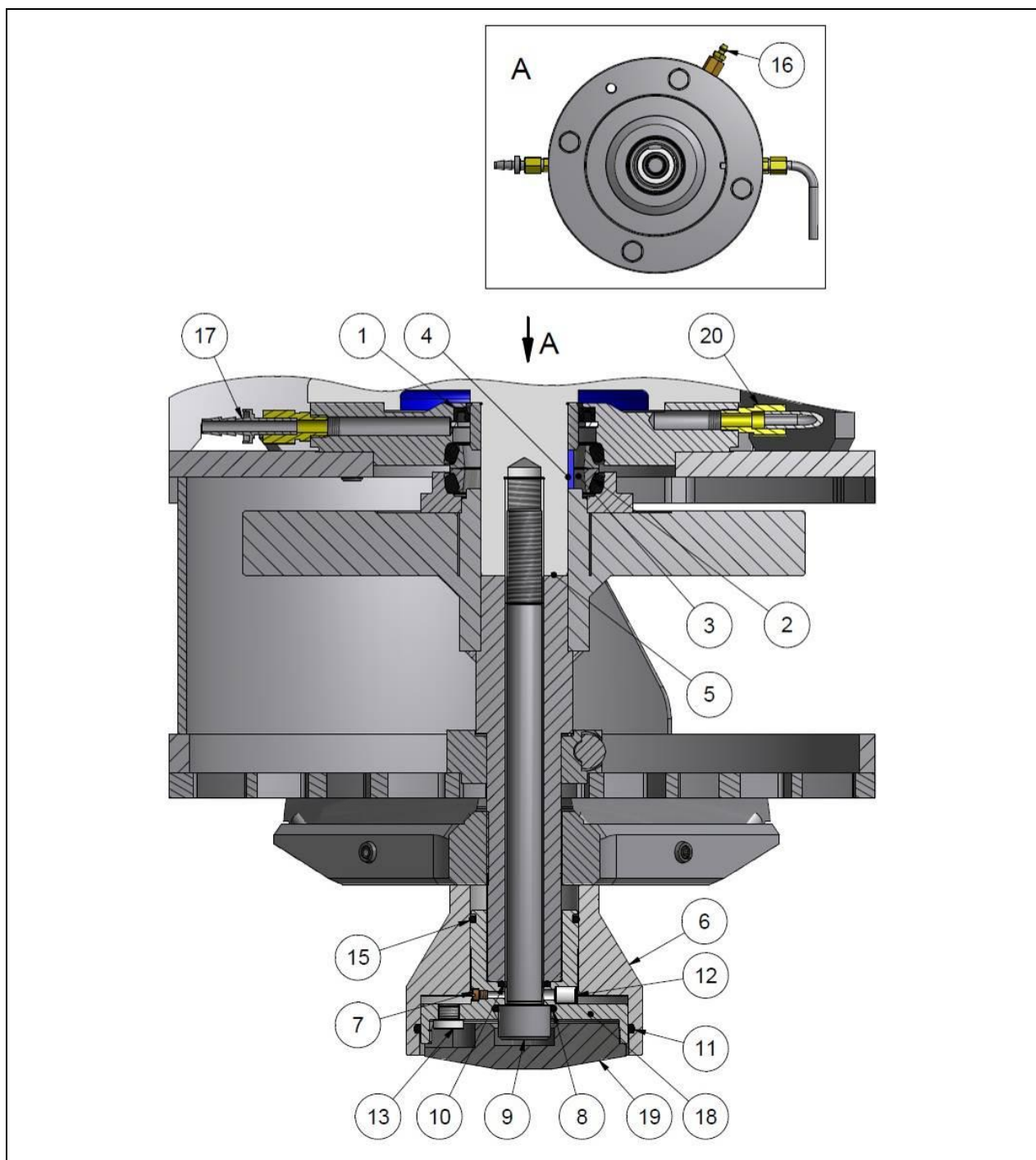


Fig. 4: Sectional drawing of RotaCut ACC

- |    |                               |    |   |
|----|-------------------------------|----|---|
| 1  | Radial shaft seal ring        | 11 | O-ring 96 x 3                           |
| 2  | Mechanical seal               | 12 | Check valve (PSV.006)                   |
| 3  | Buffer chamber                | 13 | Vent screw (NSK.209.EE)                 |
| 4  | Fitting key                   | 15 | O-ring 45 x 3                           |
| 5  | Groove or borehole            | 16 | Vent valve (NLV.001)                    |
| 6  | Cylinder, outer part          | 17 | Connector to pressure transmission unit |
| 7  | Throttle (GRS.142)            | 18 | ACC piston                              |
| 8  | O-ring 24 x 3                 | 19 | Protective cap                          |
| 9  | Hexagon socket head cap screw | 20 | Seal leakage seal indicator pipe        |
| 10 | O-ring 18.4 x 2.77            |    |   |

**Tightening torques**

Steel hex socket head screw (pos. 9): 230 Nm + 10 Nm/-10 Nm

Stainless steel hex socket head screw (pos. 9): 180 Nm + 10 Nm/-10 Nm



#### 4.4 Installation of ACC-pressure control switch



##### Connecting the ACC pressure switch

When an automatic preload system (ACC) is installed, an ACC pressure switch switches off the RotaCut and the associated pump if pressure in the preload system is too low.

Risk of damage to the sealing system, shaft and blade rotor due to the ACC pressure switch being incorrectly connected or not being connected at all



##### Warranty claim

If the ACC pressure switch is connected incorrectly or not at all, **no** warranty claim can be made → Chapter "Maintenance", → Chapter "Adjustment of the ACC pressure switch".

#### 4.5 Safety device safety switch



##### Risk of injury from rotating parts when the RotaCut is unintentionally started up

To prevent unintentional starting, the control of the RotaCut must conform to **Performance Level "c"** or higher as per EN ISO 13849 (safety device). The safety device must be connected and regularly checked by qualified technical personnel, especially before start-up and after maintenance and repair work.

- The installed safety switch (part. no. SMD0013, PL=d) must be connected and adjusted so that when the cover is opened, the RotaCut comes to an immediate halt → Fig. "Safety switch - schematic diagram in voltage-free state, sensor not actuated".
- The RotaCut may only be restarted by fault confirmation / restart if the cover is closed, which needs to be ensured by the connected control.
- The RotaCut may not be put into operation if the safety switch is not working properly.

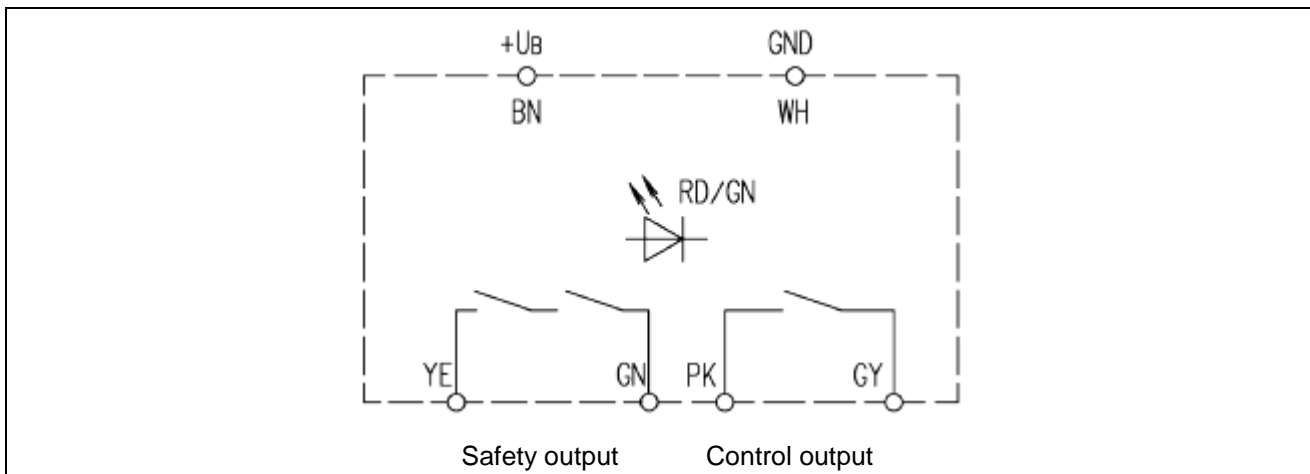
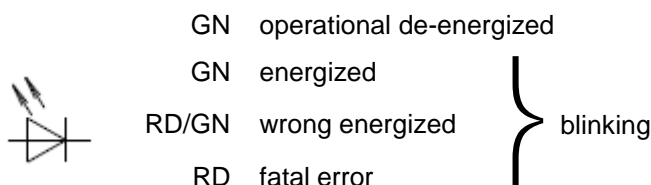


Fig. 5: Safety switch – schematic diagram of switch in idle condition, sensor not activated



#### 4.5.1 Orientation of the safety switch

When installing the safety switch, ensure that the orientation surface and groove of the sensor (1) and the orientation groove of the magnet (2) are pointing in the same direction. Otherwise correct switching is not possible and the RotaCut will not start.

If the safety switch was replaced or shifted during installation of the RotaCut, also check that the orientation is correct.

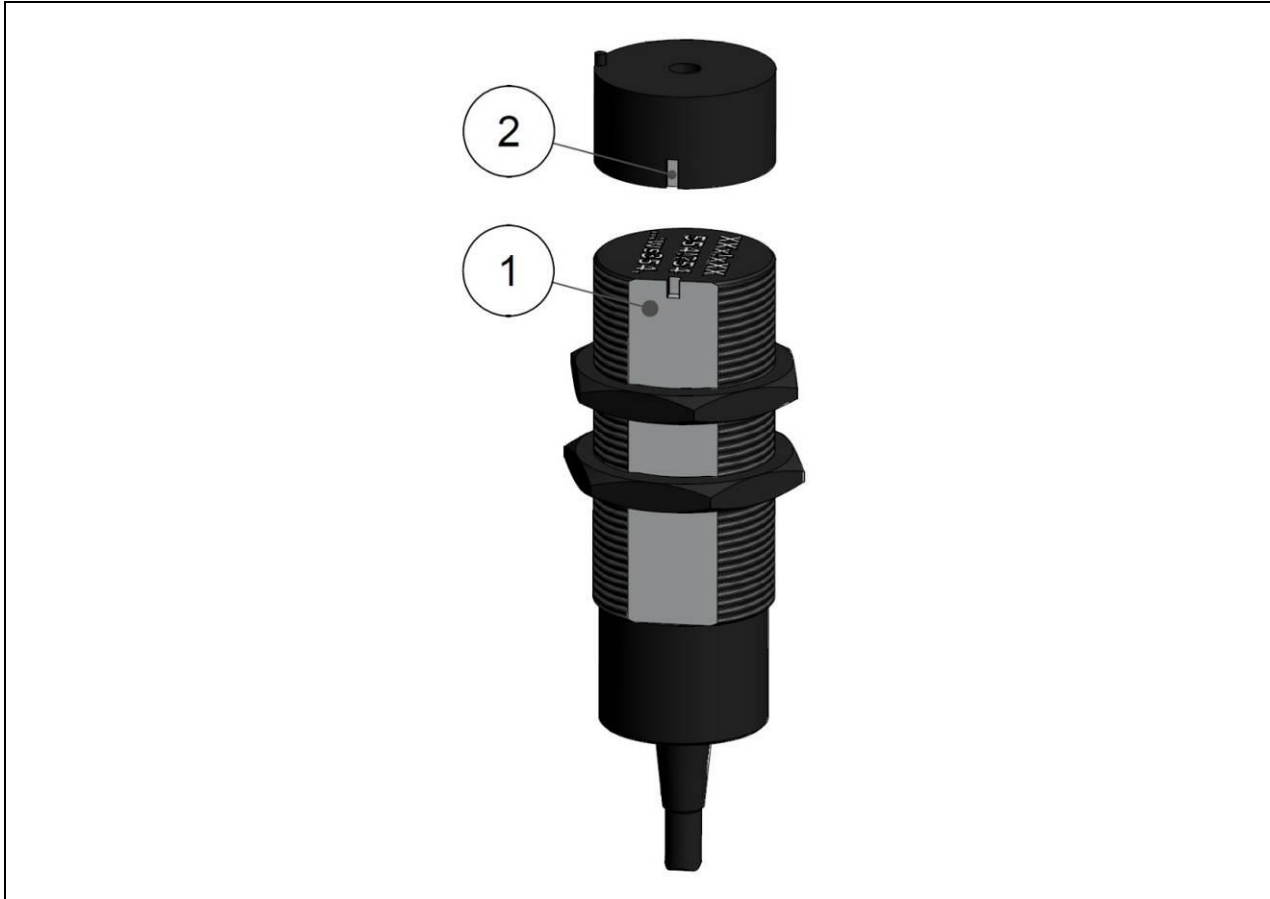


Fig. 6: Correct sensor and magnet orientation

## 4.6 Notes on the control



### **Control: Performance Control Unit (PCU)**

---

We recommend using our control that is specially designed for use with the RotaCut in order to provide optimal effectiveness and service time of the RotaCut. All connections that are required for connecting the RotaCut to a control are readily available.

If a new control is developed by a switchgear manufacturer, the following points must be observed:

- The control must at least fulfil PL "c" in accordance with EN ISO 13849.
- AC4 contactors should be used. The rated current in this is the value  $I_N$  in the "Table: Extended operating range for IE2 motors".
- Softstarter or variable frequency converter
  - must be suitable for high starting currents and at least 8 starts within a minute. Therefore, oversized units should be used for heavy starting. We recommend using our softstarters which are specifically tailored to the requirements of our units.
  - Increasing acceleration and delay times should be kept below one second. The rated current in this is the value  $I_N$  in the "Table: Extended operating range for IE2 motors".
- If difficult applications with frequent total blockages are to be expected, the motor current must be monitored in addition to the circuit breaker and the PTC resistor of the geared motor. If the motor current is above the value of  $I_N$  in "Table: Extended operating range for IE2 motors" + 30% for more than 0.4 seconds, the RotaCut must be stopped. Restarting in the other direction of rotation is permitted after 2 seconds.
- Please generally observe the following in the context of Vogelsang RotaCut 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.



### **Protection against gearbox damage**

---

While the machine is running, the direction of rotation must not be changed without a delay of about 2 seconds.

## 4.7 Connection to the power supply

### 4.7.1 Connecting the geared motor

The geared motor can only be connected to the energy supply **after** it has been installed in the pipe.



#### **Risk of injury from electric shock when using RotaCut with an electrical drive**

Only qualified electricians may connect the device to the power supply.



#### **Connecting the geared motor**

Before connecting the geared motor

- check that the power supply is correct for the motor.
- check that the power feed and fuse protection are adequately dimensioned to cope with multiple rotation direction changes and possible peak loads over short periods of time. The power feed and fuse protection must be able to operate the motor in the extended operating range as well, → **Chapter "Extended operating range for IE2 motors"**.
- be sure to follow the cable layout diagram on the inside of the motor terminal box cover. Normally the RotaCut is operated without a star-delta connection, i.e., directly.
- note that the PTC resistor of the geared motor must be connected to the terminals provided on the Vogelsang RotaCut control, to a PTC evaluator or to a variable frequency drive with a PTC input (each available as an option).
- Install a maintenance switch near to the machine (recommendation).

Before start-up or long-term storage

- remove the seal in the vent screw (if present) in order to prevent overpressure build-up in the gearbox and thus leakage (see the accompanying documentation "Operating instructions – geared motor").

### 4.7.2 Table: Extended operating range for IE2 motors

| $P_N$ | $f$  | $P_{S1max}$ | $n_N$   | $I_N$ |
|-------|------|-------------|---------|-------|
| [kW]  | [Hz] | [kW]        | [1/min] | [A]   |
| 1.5   | 50   | 2.2         | 1345    | 4.67  |
|       | 60   | 2.25        | 1680    | 4.02  |
| 2.2   | 50   | 3.3         | 1395    | 6.64  |
|       | 60   | 3.3         | 1720    | 5.63  |
| 3     | 50   | 3.5         | 1395    | 7.39  |
|       | 60   | 4           | 1700    | 6.96  |
| 4     | 50   | 5           | 1425    | 9.79  |
|       | 60   | 5.5         | 1730    | 9.21  |
| 5.5   | 50   | 7.5         | 1440    | 14.1  |
|       | 60   | 8.25        | 1740    | 13.3  |
| 7.5   | 50   | 9.5         | 1445    | 18.2  |
|       | 60   | 11.25       | 1740    | 18.8  |

## 5 Start-up

The RotaCut may only be started if the cover is closed and, if an ACC is installed, at least 5 bar of compressed air must be applied to the compressed-air tank of the pressure transmission unit (7-10 bar recommended). If the pressure drops below 3.5 bar, it is switched off.

We recommend using the Vogelsang control → **Chapter "Notes on the control"**.



### Protection against cavitation

To protect the pump unit from cavitation, a pressure monitoring unit, for example a gauge, should be installed on the suction side, between the pump and the RotaCut. This means that the pump and the RotaCut can be switched off if the pressure is too low or too high. If the pressure is extremely low, check whether the suction pipe or RotaCut is clogged (see chap. "Safety notes").



### 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.

### 5.1 Check list before start-up

- ☐ Is the ACC pressure OK?
- ☐ Are the oil grade and oil level in the gearbox and buffer chamber of the RotaCut OK?
- ☐ Have all seal plugs been removed from the vent screws?
- ☐ Have all safety devices been installed and their proper functioning ensured?
- ☐ Is the motor connected correctly to the power supply (see 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 variable-frequency drive/soft starter, if present, designed and configured correctly?
    - Equipment should be suitable for heavy starting.
- ☐ Is the **emergency stop** device/maintenance switch easily accessible?
- ☐ Is the flow direction OK? Check the pump's direction of rotation.
- ☐ Is the pipe system sealed and free of leakage?
- ☐ Are the drain cocks closed and is the RotaCut filled with fluid?

## 6 Maintenance



### Risk of injury from rotating parts

- Switch off the drive and make sure that the drive cannot be switched on again while the cutter head is open.
- Also set the main switch to "0".
- Ensure that the installed safety switch (part no. SMD0013) is connected and adjusted in such a way, that the cutter head ceases operation immediately → **Chapter** "Safety switch safety device".



### Risk of injury from sharp cutting edges

Wear protective gloves when working in the danger area and be sure to prevent the blade rotor and blades from falling off.

Lock any movable parts, e.g. the blade rotor, before carrying out maintenance and repair work.

### 6.1 Inspection of the cutting blades

- After long operation breaks, check that the cutting blades can move in the blade rotor. Clean and grease the cutting blades if necessary.
- If the gap between the blade rotor and the cutting screen is less than 2 mm, the cutting blades must be replaced → **Chapter** "Change of the cutting blades".

#### 6.1.1 Inspection of the cutting blade preload

Regularly inspect the preload of the cutting blades and correct as necessary → **Table** "Inspection intervals".

Without sufficient preload, the cutting blades are not sharpened. Rounded cutting edges lift the cutting blades. This leads to uneven running as well as wear on the blade rotor and the shaft.

The inspection intervals vary and depend on the medium **to a high degree**.

The optimum time interval is based on experience acquired by the operator under his own operating conditions. An abrasive medium should be assumed to begin with. Use the intervals in the following table as a **rough** guide:

| Inspection intervals               | Abrasive | Normal | Non-abrasive |                 |
|------------------------------------|----------|--------|--------------|-----------------|
| First inspection after             | 4        | 8      | 8            | Operating hours |
| Subsequent inspections after every | 12       | 120    | 240          | Operating hours |



### Preload

A blade rotor that turns very easily, an increase in noise, rounded cutting edges or clogging of the RotaCut are signs of insufficient preload.

## 6.2 Adjustment of the preload of the cutting blades

### 6.2.1 RotaCut with preload locking nut and spring washer

1. Open cutter head. Caution! Observe the warning and safety notes → **Chapter** "Opening the cutter head"
2. Undo the locking screw (part no. NSI.034) in the tensioning nut.
3. Undo the tensioning nut and then unscrew until the spring washer is only just touched, but the cutting blades touch the cutting screen.
4. Turn the tensioning nut another 2 - 2.5 revolutions with the open-end spanner. The open-end spanner (part no. GMS.001) is included in delivery.
5. Secure the tensioning nut with the locking screw. Check that the tensioning nut is tight.

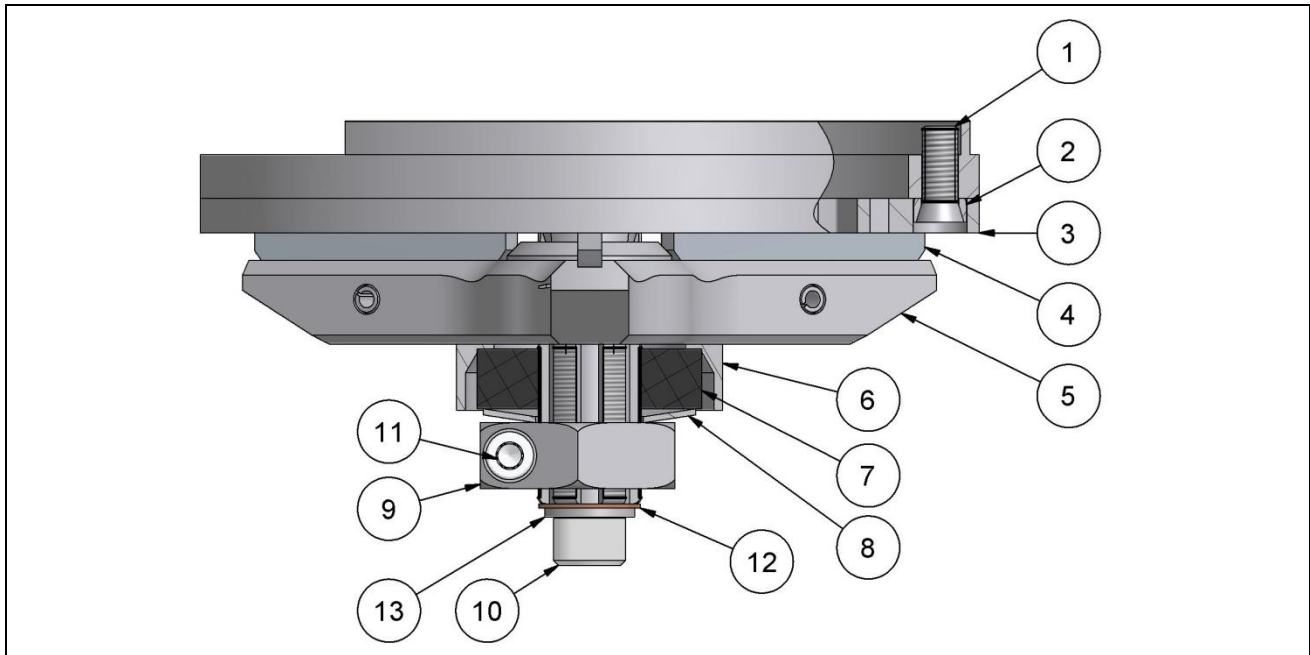


Fig. 7: Adjusting preload of cutting blades with preload locking nut and spring washer

|   |                 |    |                       |
|---|-----------------|----|-----------------------|
| 1 | Tension bolt    | 8  | Spring washer         |
| 2 | Spring pin      | 9  | Preload locking nut   |
| 3 | Cutting screen  | 10 | Hex socket head screw |
| 4 | Blade           | 11 | Safety screw          |
| 5 | Blade rotor     | 12 | Copper ring           |
| 6 | Protection ring | 13 | Washer                |
| 7 | Rubber disk     |    |                       |

### 6.2.2 RotaCut with semicircular counter-nut (hard preload)

1. Open cutter head. Caution! Observe the warning and safety notes → **Chapter** "Opening the cutter head"
2. Undo semicircular counter-nut with two open-end spanners (part no. GMS.003).
3. Using the tensioning nut, set the preload so that the blade rotor can still be rotated with both hands.
4. Counter the tensioning nut with the semicircular counter-nut.

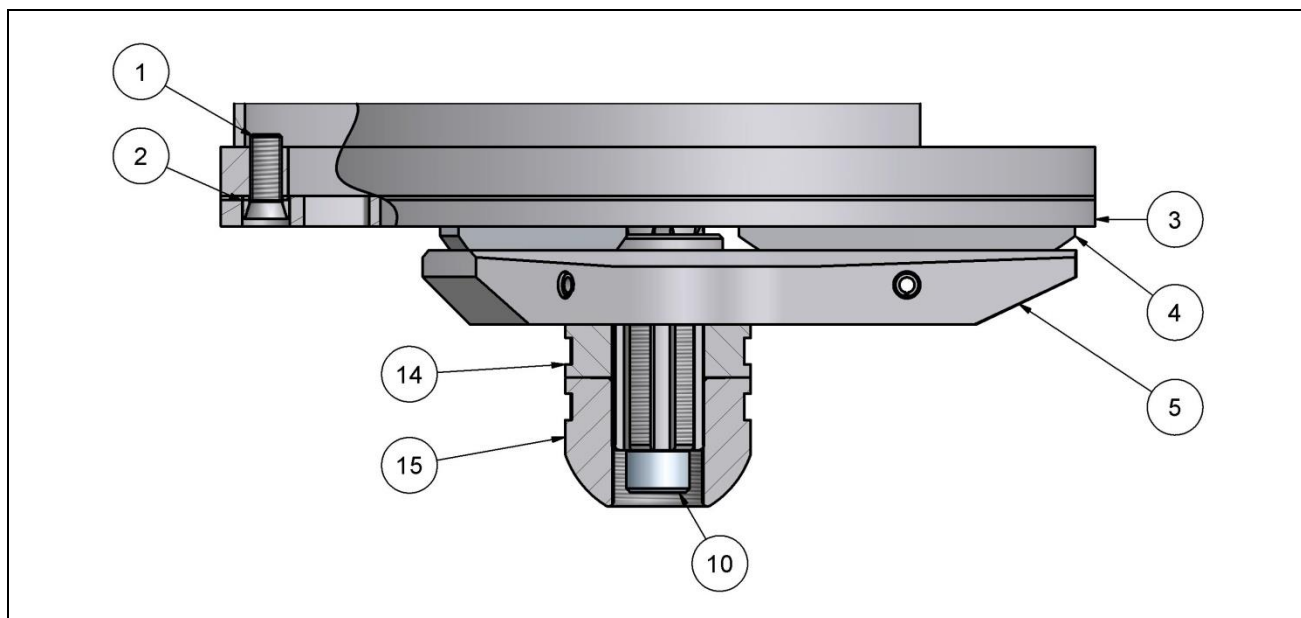


Fig. 8: Adjusting preload of cutting blades with semicircular counter-nut (hard preload)

- |  |   |
|--|---|
| <p>1 Tension bolt</p> <p>2 Spring pin</p> <p>3 Cutting screen</p> <p>4 Blade</p> | <p>5 Blade rotor</p> <p>10 Hex socket head screw</p> <p>14 Preload locking nut, straight (GRS.126)</p> <p>15 Preload locking nut (counter-nut), rounded (GRS.127)</p> |
|--|---|



### 6.2.3 RotaCut with automatic cut control - ACC

Using automatic cut control (ACC), a hydraulic cylinder is mounted on the shaft of the RotaCut cutting unit. A hydraulic pressure is generated by a pressure transmission unit inside the chamber of the ring seal. This hydraulic pressure is transmitted via canals inside the rotor shaft to the cylinder of the ACC unit. If the pressure in the chamber is increased, then the pressure in the ACC unit is increased as well. This allows the pressure force of the knife rotor onto the cutting screen to be variably adjusted, without steps in pressure magnitude.

#### Advantages:

- Cutting forces can be easily matched to the fluid requirements.
- Load is automatically adjusted to compensate for wear. The amount of preload is held constant over the entire area of wear.
- Reaching the wear limit the RotaCut switches-off automatically.

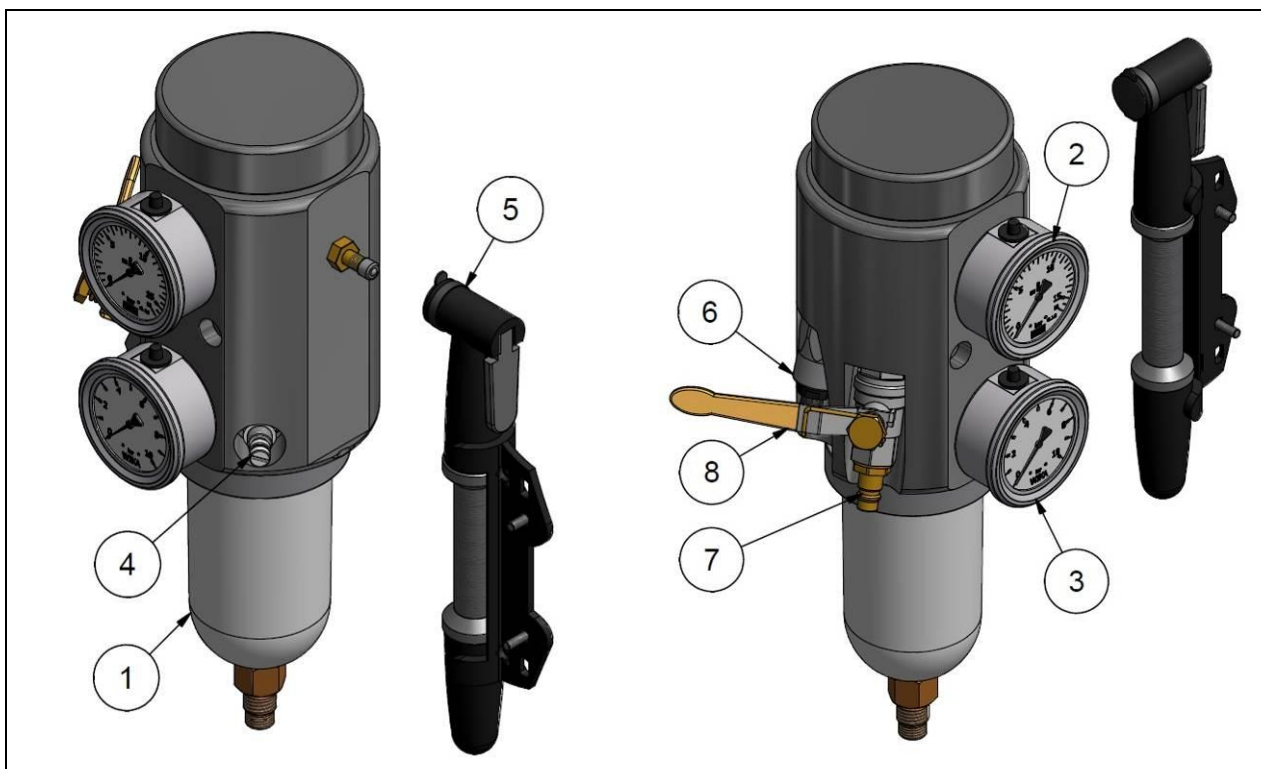


Fig. 9: Pressure transmission unit

- |   |  |
|---|--|
| 1 | Oil tank   |
| 2 | Pressure gauge (16 bar for compressed-air tank)                            |
| 3 | Pressure gauge (10 bar for oil tank) - preload pressure for cutting blades |
| 4 | Pressure regulator (for adjusting the preload pressure in the oil tank)    |
| 5 | Manual air pump  |
| 6 | ACC pressure switch  |
| 7 | Pneumatic plug nipple (for compressed air supply outlet)                   |
| 8 | Ball valve with spring-operated reset mechanism                            |

### 6.2.3.1 Adjusting the preloading pressure at the pressure control valve

→ Fig. "Pressure transmission unit"

- Produce a pressure of approx. 7-10 bar in the compressed-air tank using the manual air pump (5) or the compressed air supply outlet (7).



#### **Risk of injury from bursting parts and medium spraying out under high pressure**

#### **Attention - in the event of external pressurisation via the compressed air supply outlet:**

The ball valve to be actuated (8) has a spring-operated reset mechanism. The spring must not be unhooked. Otherwise, with a worn ACC, there would be a risk of too much internal pressure building up in the RotaCut pot or the pipe due to compressed air flowing in.

- Set the **preload pressure** on the pressure regulator (4). The preload pressure depends on the medium, the quantity and width of the cutting blades, the cutting screen, the medium pressure, the speed and the RotaCut series. The pressure can lie between 0.5 and 8 bar.

Recommendation for setting the preload pressure:

| RotaCut series | Preload pressure (recommendation):             |                                      |
|----------------|--|--------------------------------------|
|                | for light use,<br>e.g. sewage treatment plants | for heavy use,<br>e.g. biogas plants |
| 3000           | 2.5 bar  | 3.5 bar                              |
| 5000           | 3 bar  | 4 bar                                |



#### **Optimising the service life of the cutting components**

- An optimal setting of the preload pressure leads to an increased service life. If the preload is too low, the service life of the blade rotor and drive shaft are significantly reduced. The blades and the cutting screen lose their cutting effect.  
If the preload is too high, the wear on the blades and cutting screen is increased.
- A pressure that remains constant for the blades' entire service life is achieved as follows: starting at 0, slowly set the pressure to the desired value. Do not turn back in the opposite direction. If the pressure is to be reduced, reduce it by "turning to the left" (anticlockwise direction). Then "turn to the right" (clockwise direction) again, until the pressure in the oil tank begins to increase.



#### **Preload pressure on the blades**

High pressure in the RotaCut reduces the preload pressure of the ACC. Low pressure increases it. This means:

the blades are not subject to any preload pressure when the pressure in the RotaCut and at the ACC is at 1 bar.

It is essential that the preload pressure is higher than the medium pressure.



#### **Blade wear**

Setting the preload pressure when the blade wear level is too high:

1. Start with a high preload pressure
2. Reduce the preload pressure in increments of 0.5 bar
3. Operate the RotaCut for several hours
4. If after approx. 10 operating hours you notice noises, vibrations (uneven running), rounded blade cutting edges, clogging or accumulation of fibres at the cutting blades and the cutting screen, the pressure must be increased again until even running and safe cutting have been ensured once more.

For worn cutting blades, a gap of 2-3 mm should remain between the blade rotor and the cutting screen. A smaller gap may lead to the blade rotor being damaged. A larger gap reduces the wear travel.

### 6.2.3.2 Adjustment of the ACC pressure switch

ACC pressure switch (pos. 6) → Fig. "Pressure transmission unit"

#### Specifications

|                                 |           |
|---------------------------------|-----------|
| Voltage:                        | max. 42 V |
| Rated current (resistive load): | max. 4 A  |
| Switching capacity:             | 100 VA    |

#### Functions and settings

→ Fig. "Adjustment of the ACC pressure switch"

The ACC pressure switch has two functions:

1. The ACC pressure switch is used for switching off the RotaCut at the wear limit of the cutting unit. To ensure this, the switching point must be between the pressure of the compressed air and the medium to ensure that the system switches off.
2. The ACC pressure switch (normally closed contact) is used to check the leak tightness of the ACC and the pressure transmission unit.

The switching point of the ACC pressure switch is set to 3.5 bar at the factory and should

- not be set higher unless the ACC pressure or medium pressure is above 4 bar
- be 0.5 bar higher than the ACC or medium pressure

To check the switching point:

- Generate 5 bar compressed air pressure
- Connect continuity tester to contacts A and B
- Slowly release the pressure at the manual inflating valve:  
The continuity tester should show contact from 3.5 bar onwards.

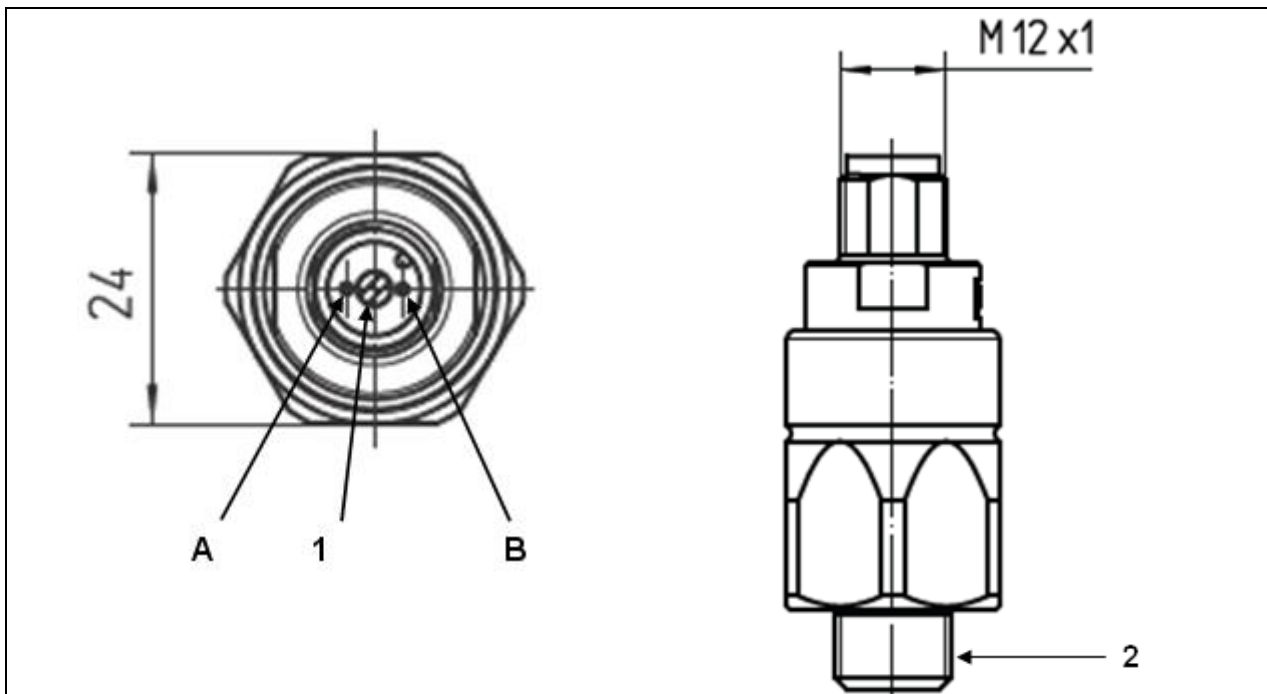


Fig. 10: Adjustment of the ACC pressure switch

|          |       |          |                         |
|----------|-------|----------|-------------------------|
| <b>A</b> | Blue  | <b>1</b> | Adjustment screw        |
| <b>B</b> | Brown | <b>2</b> | Medium connection G1/4" |

### 6.3 Checking the buffer fluid

#### Inspection intervals

- at start-up
- after 5 operating hours
- then every 100 operating hours



#### Buffer fluid

Slight contamination of the buffer fluid as well as a slight increase or decrease in the buffer fluid level are both determined by the hydrodynamic lubrication film of the mechanical seal.

#### 6.3.1 Inspection of the buffer fluid on a RotaCut without ACC

See oil level (sight glass) in the buffer fluid tank (pos. 6) → Fig. "Change of the buffer fluid on RotaCut without ACC")

| see sight glass   | possible cause                    | Inspection and / or action                        |
|---|-----------------------------------|---|
| <b>no</b> oil visible, seal indicator pipe shows no leakage                                 | Leakage at the mechanical seal    | Check the mechanical seal and change if necessary |
| <b>no</b> oil visible, seal indicator pipe shows leakage                                    | Leakage at radial shaft seal ring | Change the radial shaft seal ring                 |
| Oil level <b>sharply increases</b>  | Mechanical seal leakage           | Check the mechanical seal and change if necessary |
| Oil <b>heavily contaminated</b> (especially when the RotaCut is used on the discharge side) | Defective mechanical seal         | Check the mechanical seal and change if necessary |

#### 6.3.2 Inspecting the buffer fluid on RotaCut with ACC

See oil level (sight glass) in the oil tank of the pressure transmission unit (pos. 1) → Fig. "pressure transmission unit"

| see sight glass         | possible cause  | Inspection and / or action                        |
|-------------------------|---|---|
| <b>No</b> oil visible   | Cutting blades worn in usual case   | Change the cutting blades                         |
|                         | Defective sealing system or leaking units                                   | Seal, fill and ventilate the system               |
| <b>More</b> oil visible | Mechanical seal leakage   | Check the mechanical seal and change if necessary |
|                         | Rotor "lift" due to massive clogging, oil is pressed back into the oil tank | Relieve clogging                                  |
| Oil level <b>drops</b>  | Indications of blade wear   | Check the cutting blades and change if necessary  |



#### Cutting blade wear limit

If the oil level drops by about 2.8 mm, the cutting blades are worn by about 1 mm.

#### Wear limit

Standard cutting blades: when the oil level has sunk by about 22 mm  
 "High version" cutting blades: when the oil level has sunk by about 31 mm

## 6.4 Change of the buffer fluid for RotaCut without ACC

**Oil grade (buffer fluid):** → Chapter "Oils and lubricants".

**Interval** for changing the buffer fluid:

- every 2000 operating hours

### Procedure

→ **Fig. "Change of the buffer fluid for RotaCut without ACC"**

1. Depressurise the buffer fluid tank (6).
2. Remove the protective cap on the vent valve (1).
3. Fill the buffer fluid tank with buffer fluid and pressurise with 1 bar of pressure via the manual inflating valve (5).
4. Loosen the vent valve until clean buffer fluid escapes from it, or the buffer fluid tank is nearly empty.



Never completely drain the buffer fluid tank to prevent air from getting into the buffer chamber.

5. To collect used buffer fluid, connect a hose to the vent valve.



### Environmentally friendly disposal

Treat shop supplies, such as oils and hydraulic fluids, like hazardous waste and dispose of them properly.

6. Retighten the vent valve and replace the protective cap.
7. Half fill the buffer fluid tank with oil and pressurise with about 0.5 bar of pressure.



### Note on filling

A RotaCut that is fitted with a bevelled cutter head (Inline, BioCut) must be filled from the bottom. In this case, it is best to fill the RotaCut with the cutter head open.

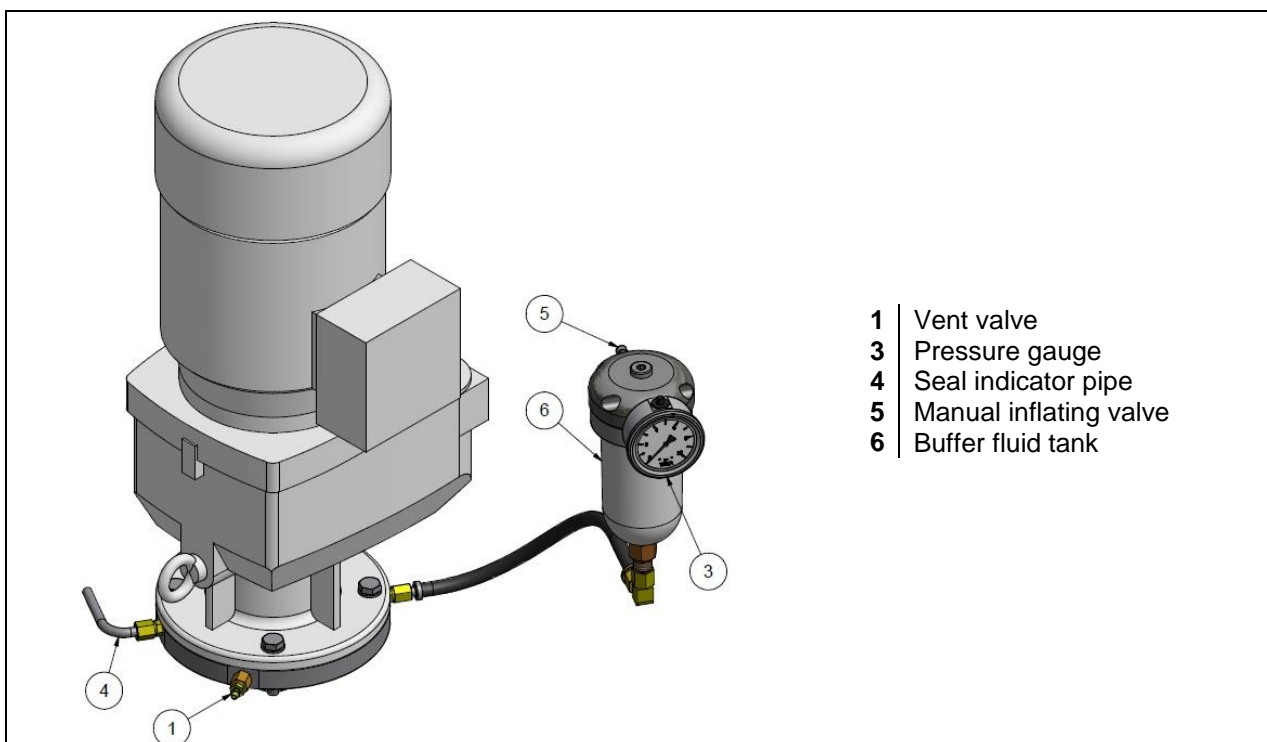


Fig. 11: Change of the buffer fluid for RotaCut without ACC

## 6.5 Change of the buffer fluid for RotaCut with ACC

**Oil grade (buffer fluid):** → Chapter "Oils and lubricants".

Do not mix different oil grades.

**Interval** for changing the buffer fluid:

For a RotaCut with ACC it is normally sufficient to change the oil while changing the cutting blades so that an additional buffer fluid change is not necessary.

## 6.6 Sealing monitoring based on leakage checks

- If, during operation, medium escapes from the seal indicator pipe (pos. 4) → **Fig.** "Changing the buffer fluid for RotaCut without ACC", the sealing package must be replaced → **Chapter** "Replacing the sealing package".
- If clean oil is leaking out, please check whether the oil is coming from the gearbox or the sealing system. If it is coming from the sealing system, replace the sealing package.
- If oil is missing from the gearbox, check the shaft clearance. If the clearance is OK, change the radial shaft seal ring (DWD.054 for geared motor SK32). Make sure that the oil passage of the fitting key points outwards during installation.
- If air is drawn through the seal indicator pipe (pos. 4) for suction-side installation of the RotaCut, then at least replace the mechanical seal. It would be better to replace the complete sealing package.

## 6.7 Control foreign matter

The RotaCut pot must be cleaned of foreign matter at regular intervals.

On the side of the RotaCut pot there is a cleaning port. → **Fig.** "Installation and flow direction" Foreign matter can be removed through this opening.

## 6.8 Checking for wear and corrosion

Particularly abrasive or corrosive pump media can lead to a reduction in wall thickness, particularly in the area of the RotaCut pot. If the wall thickness has been reduced by more than 1 mm, the pot should be replaced.

## 6.9 Change of the gear oil for the RotaCut geared motor



### Gear oil change

Please refer to the accompanying documentation "Operating instructions" of the RotaCut geared motor for gear oil grade, gear oil quantity and the maintenance intervals.

## 6.10 Oils and lubricants

| RotaCut types                 | Application                             | Oil part no.                         |
|-------------------------------|---|--------------------------------------|
| 3000, 5000 <b>without ACC</b> | Buffer fluid tank for mechanical seal   | BSS.006                              |
| 3000, 5000 <b>with ACC*</b>   | Pressure transmission unit ACC oil tank | BSS.016,<br>alternatively<br>BSS.010 |



\* If buffer chamber oil should not be allowed to get into the pump medium in a RotaCut **with ACC**, use the alternative oil BSS.010 only!

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

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

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

## 7 Repair



### **Risk of injury from rotating parts**

---

- Switch off the drive and make sure that the drive cannot be switched on again while the cutter head is open.
- Also set the main switch to "0".
- Ensure that the installed safety switch (part no. SMD0013) is connected and adjusted in such a way, that the cutter head ceases operation immediately → **Chapter** "Safety switch safety device".



### **Risk of injury from sharp cutting edges**

---

Wear protective gloves when working in the danger area and be sure to prevent the blade rotor and blades from falling off.

Lock any movable parts, e.g. the blade rotor, before carrying out maintenance and repair work.

### **7.1 Conversion and spare parts**

Modifications or changes to the unit are only permissible after consultation with the manufacturer. Only spare parts approved by the manufacturer or original spare parts can be used. The use of other parts invalidates the guarantee for any resulting damage.



## 7.2 Replacing the cutting blades



### Oil in the operating medium

If the blades of a RotaCut with ACC are not changed at the specified intervals, buffer chamber oil escapes into the operating medium and the RotaCut switches itself off. We recommend using biodegradable oil (e.g. Vogelsang part-no. BSS.016) or food grade oil BSS.010.

1. Remove the preload parts:
  - **Preload system with tensioning nut and spring washer**  
→ Fig. "Setting the cutting blades with tensioning nut and spring washer"  
Tensioning nut (loosen locking screw), spring washer, rubber disc and protection ring.
  - **Preload system with semicircular counter-nut (strong preload)**  
→ Fig. "Adjusting the preload of the cutting blades with semicircular counter-nut"  
Loosen semicircular counter-nut, loosen tensioning nut.
  - **Preload system with ACC**  
→ Fig. "Pressure transmission unit"  
When dismantling parts, set the pressure regulator to "0" bar, unscrew the preload cylinder and collect the leak oil in a container.
2. Pull blade rotor from the shaft and change the cutting blades.
  - Fig. "Pressure transmission unit"
  - Chapter "Assembly: blade rotor, cutting blades and spring pins".
  - The cutting screen can be turned over once, meaning that the cutting screen itself will not have to be replaced until the next time the cutting blades are changed.
  - If an ACC is present, also exchange the O-rings when changing the cutting blades  
→ Fig. "Sectional drawing of RotaCut with ACC".
3. Changing the cutting screen.
  - Chapter "Assembly: Tensioning screw, clamping sleeve, cutting screen on the cutter head"
  - Slightly loosen the tensioning screws that fix the cutting screen to the outer edge via clamping sleeves. Before loosening the tensioning screws, clean the hexagon socket.
  - Exchange or turn around the cutting screen. Make sure the contact surface of the cutting screen is clean.
  - Check that the cutting screen lies completely on the cutter screen holder. If necessary, close any gaps in the area around the fixing holes of the cutting screen using a plastic hammer.
  - Tighten tensioning screws (material A4-80) with 80 Nm.
4. Install the blade rotor and the preload parts.
  - Chapter "Installation of the Automatic Cut Control (ACC)"
5. Readjust the preload of the cutting blades.
  - Chapter "Adjusting the preload of the cutting blades"

## 7.2.1 Assembly: blade rotor, blades and spring pins

### 7.2.1.1 Preparing the blade rotor for installation of the cutting blades

Place the foam (polyethylene cord - part no. see spare parts list) at the end of the blade rotor slot and press the foam into the slot, for example, using a screwdriver.

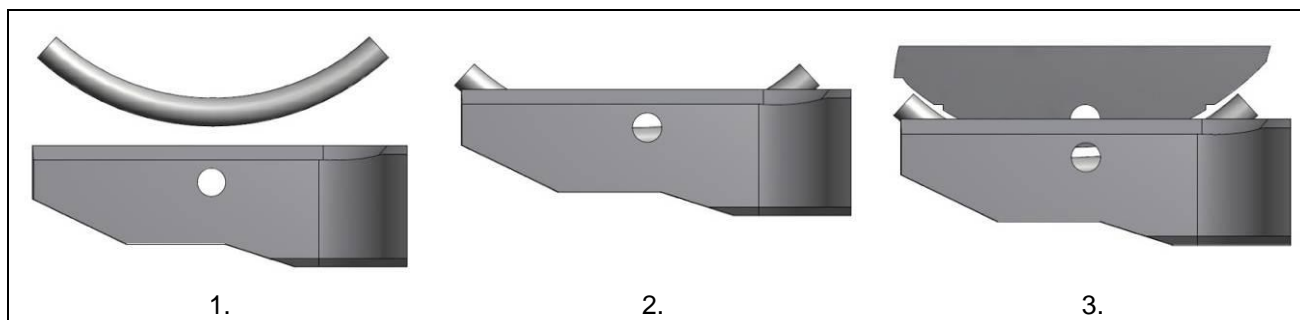


Fig. 12: Preparing the blade rotor for installation of the cutting blades

### 7.2.1.2 Correct installation of the cutting blades

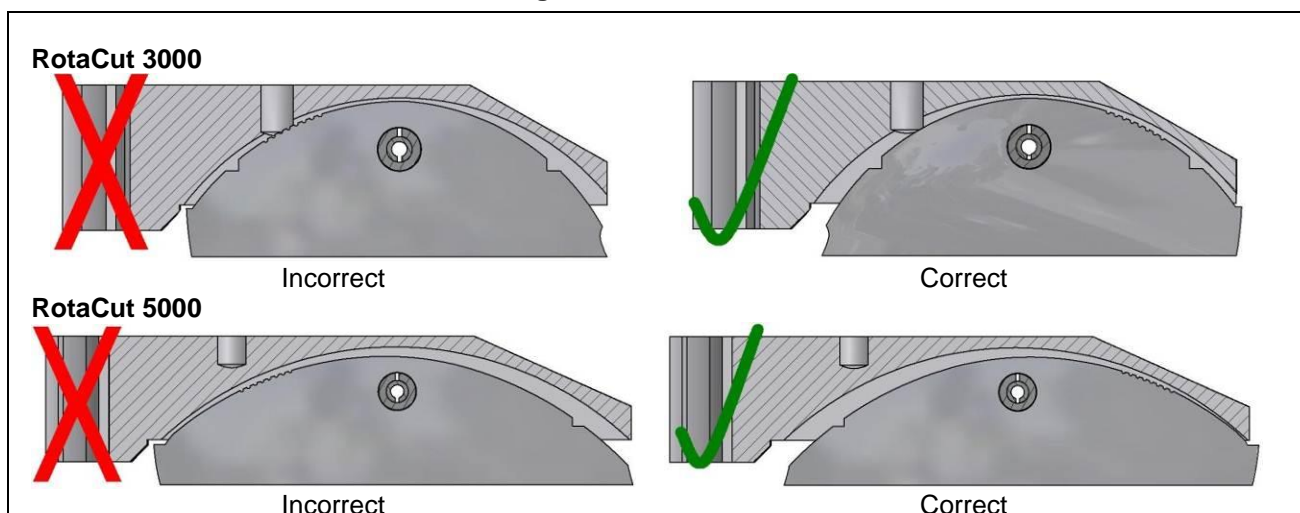


Fig. 13: Correct installation of the cutting blades

### 7.2.1.3 Installation of the cutting blades and spring pins



#### Assembly instructions

Place the blade rotor together with the cutting blades and foam into the **WKZ.082 tool**. Turn the star knob screw until the holes of the cutting blade and the blade rotor are aligned.

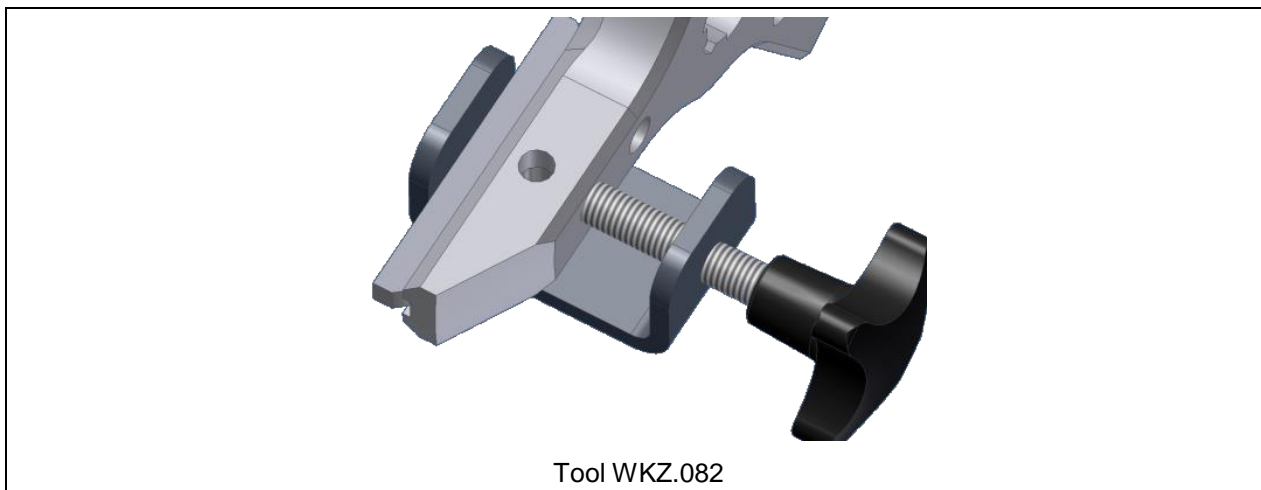


Fig. 14: Installation of the cutting blades and spring pins

### 7.2.1.4 Orientation of the spring pins

To avoid premature wear, the slots of the outer spring pins (2) must be aligned so that they face away from the cutting surface and the slots of the inner spring pins (3) must be fitted in the opposing position.

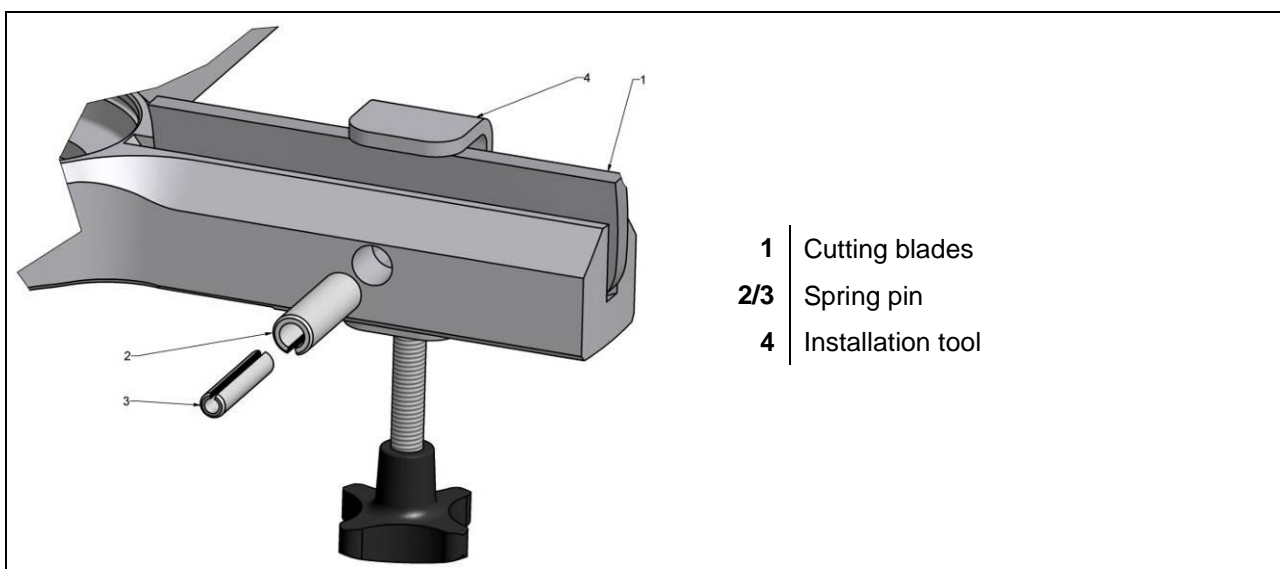


Fig. 15: Orientation of the spring pins

### 7.2.1.5 Assembly: Tension bolt, spring pin, cutting screen on the cutter head

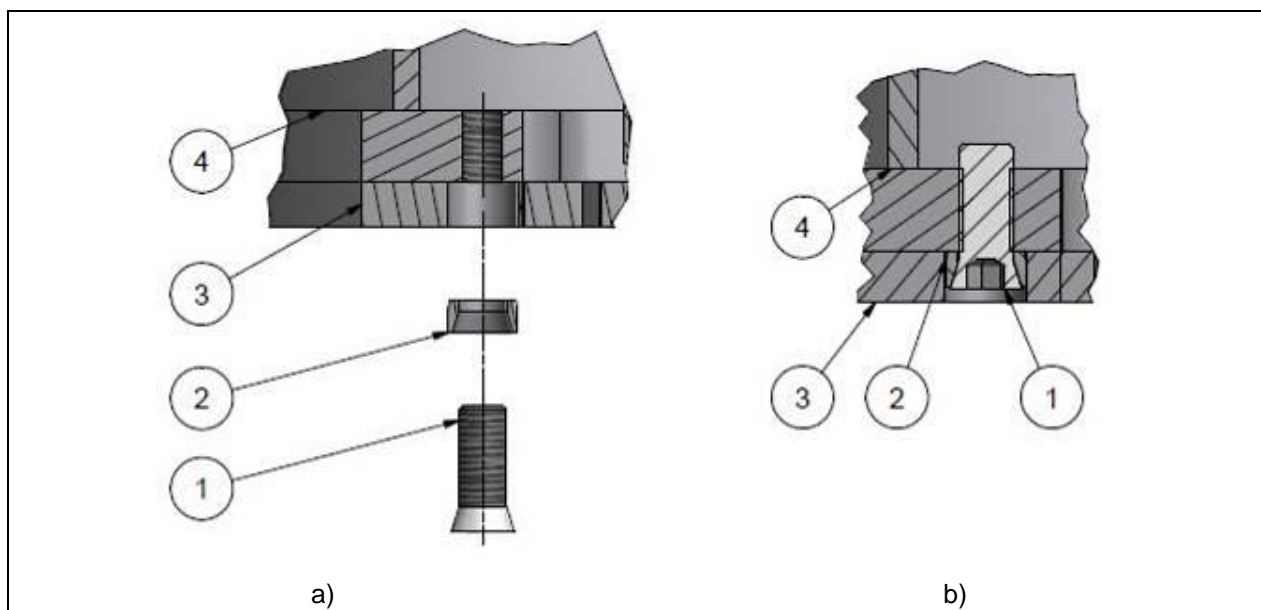


Fig. 16: Installation: tensioning screw, clamping sleeve, cutting screen on the cutter head

|   |                  |   |
|---|------------------|---|
| 1 | Tensioning screw | Part no. GRS.203.EE (material A4-80 - stainless steel)            |
| 2 | Clamping sleeve  | Part no. GRS.202.EE (stainless steel)<br>Part no. GRS.202 (steel) |
| 3 | Cutting screen   |   |
| 4 | Cutter head      |   |

1. Clean the cutting screen (3) and the contact surface of cutting screen, and clean any oil and grease from the clamping sleeve (2) and tensioning screw (1).
2. Align the hole pattern of the cutting screen (3) to the hole pattern of the cutter head (4).
3. Align the clamping sleeve (2) according to the drawing and press to the bottom of the cutter head.
4. Coat the thread of the tensioning screw evenly with anti-seize paste in order to avoid 'seizing' of the stainless steel.
5. Insert the tensioning screw (1) through the clamping sleeve (2) and screw it into the cutter head (4) (b).
6. Check whether the cutting screen is positioned fully on the cutting screen holder. Close any gaps in the area around the fixing holes of the cutting screen using a plastic hammer.



#### Tightening torques

Tightening torque for installing the tensioning screw (material A4-80): 80 Nm

When replacing a worn part, before loosening the tensioning screws, the hexagon socket must be cleaned.

### 7.3 Replacing the sealing package

1. Open cutter head. Caution! Observe the warning and safety notes  
→ **Chapter** "Opening the cutter head"
2. If there is an ACC, first release air pressure at the pressure regulator!
3. Dismount the preload system and the blade rotor.
  - Collect leaking oil in an appropriate manner and dispose of it properly.
  - Unscrew geared motor and mounting plate from the cutter head.
  - Completely remove liquid gasket and clean the flange surfaces.



#### Environmentally friendly disposal

Treat auxiliary materials and supplies, such as oils and hydraulic fluids, like hazardous waste and dispose of them properly.

→ **Fig.** "Replacing the sealing package"

4. Replace the radial shaft seal ring (7), inner ring (6) → **Fig.** "Installing the inner ring" and the mechanical ring (9). Reinstall the retaining ring (10).



#### Tools

- Installation tool for mechanical seal: Part no. PBA.D006.N1.T1
- Tool for drive shaft / flywheel pulling and fitting device: Part no. WKZ.043



#### Components sensitive to contamination

The seals and automatic preload system (ACC) are very sensitive to contamination. Be sure to keep these components completely clean during installation.

5. Install the mounting plate, geared motor and flywheel as well as the cutting screen, blade rotor and the preload system → **Chapter** "Installation: blade rotor, cutting blades and spring pins".
  - Apply Weicon Lock (BKL.013) to the contact surfaces between the mounting plate and the geared motor and between the contact plate and the cutter head.
  - Change the elastomers of the preload system.
  - Check that the hexagon socket head cap screw is free from burrs under the head. Deburr if necessary or replace.
6. Before filling the system with buffer fluid, pressurise the system once to rule out any potential mechanical seal leakages. Replace the buffer fluid.



#### Note on filling

A RotaCut that is fitted with a bevelled cutter head (Inline, BioCut) must be filled from the bottom. In this case, it is best to fill the RotaCut with the cutter head open.

7. Adjust the preload of the cutting blades → **Chapter** "Adjusting the preload of the cutting blades".



#### Note on the mechanical seal change

If the mechanical seal is the only component being changed, the geared motor need not be dismounted. However, we recommend that the radial shaft seal ring and inner ring be changed at the same time.

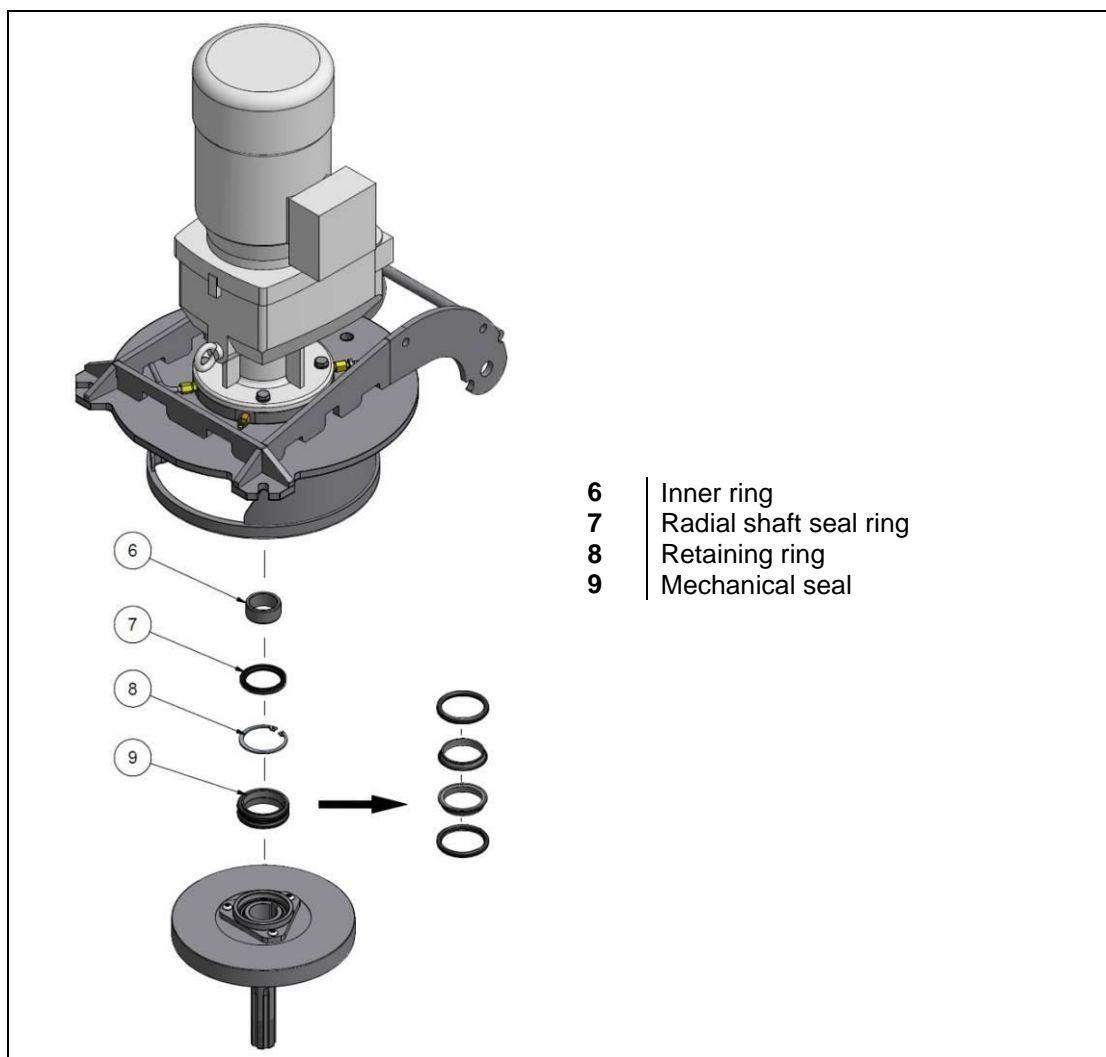


Fig. 17: Sealing package replacement

## 7.4 Installation of the inner ring on geared motor

The radial surface of the motor shaft (for the inner ring) has to be spreaded with glue.  
Additionally please spread the spot face at motor side of the inner ring with some seal agent.  
We recommend:

- glue „Weicon Lock AN 306-48“ for the radial surface (Art-no. BKL.002)
- seal agent „Weicon Lock AN 305-74“ for the spot face (Art-no. BKL.013)

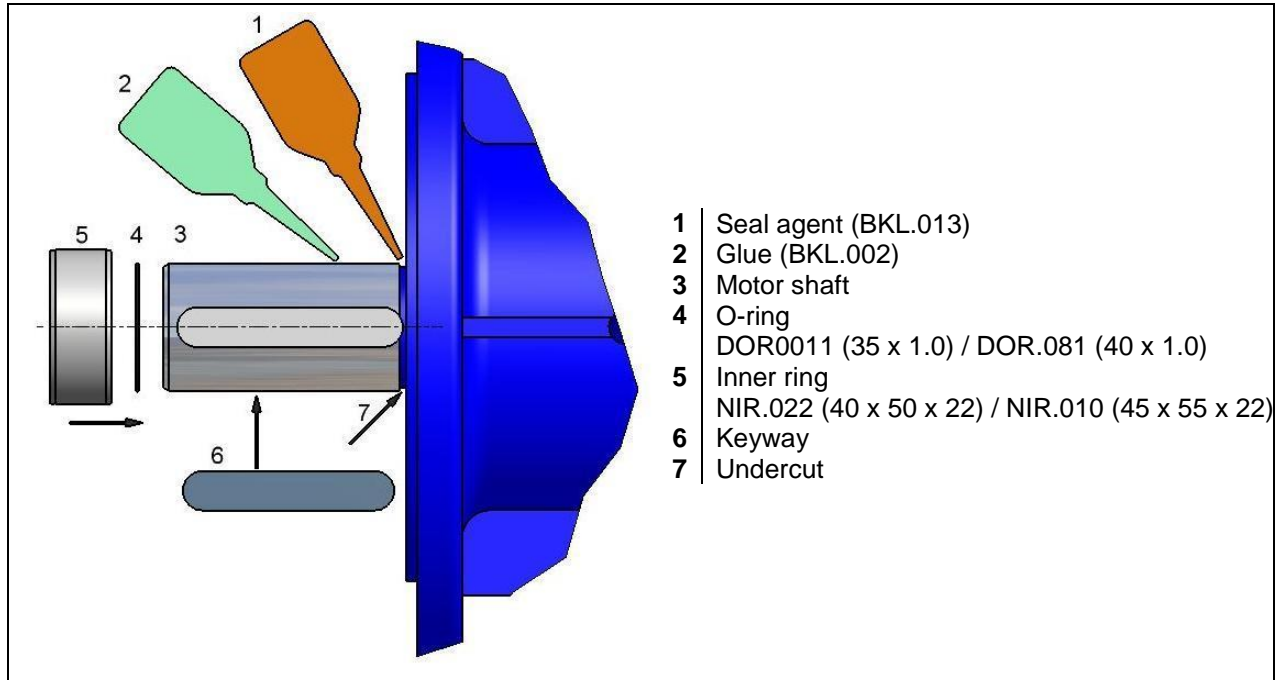


Fig. 18: Installation of inner ring

## 8 Maintenance plan

|                                 | Start-up* | After the first 20 operating hours | Every 200 operating hours | Every 2000 operating hours, at least once a year | When there is severe contamination |
|---------------------------------|-----------|------------------------------------|---------------------------|--|------------------------------------|
| Tighten the screws for the base |           | X                                  |                           |  |                                    |
| Check the buffer fluid          | X         | X                                  | X                         |  |                                    |
| Change the buffer fluid         |           |                                    |                           | X  | X                                  |

\* → Chapter "Checklist before start-up"



## 9 Service plan

Warranty is valid only when service intervals acc. to → **Chapter** "Service instructions" have been followed and documented.

[illegible]

## 10 Trouble-shooting

| RotaCut stops after starting | Intake flow breaks away after start | Flow rate too low | RotaCut blocked | Power consumption too high | Leakage on RotaCut | Extreme pressure and level changes in the buffer chamber | Medium or oil escapes from the leakage indicator pipe | RotaCut too hot | Motor too hot | Noises & vibration | Cause  | Action to be taken   |
|------------------------------|-------------------------------------|-------------------|-----------------|----------------------------|--------------------|--|---|-----------------|---------------|--------------------|--|--|
|                              |                                     |                   |                 |                            |                    |  |   | X               |               | X                  | Pump is not priming  | Check pump   |
|                              |                                     |                   | X               | X                          | X                  |  |   |                 |               | X                  | Pipe causing tension in the RotaCut housing                          | Check the orientation of the pipe to the RotaCut; if necessary, install a compensator or fasten the pipe more securely |
|                              | X                                   |                   |                 |                            |                    |  |   |                 |               | X                  | Suction pipe clogged   | Check free orifice diameter of the pipe system on the suction side   |
| X                            |                                     |                   | X               |                            |                    |  |   |                 | X             | X                  | Faulty electrical connector  | Check electrical equipment   |
|                              |                                     |                   | X               |                            |                    |  |   |                 |               |                    | Error in the hydraulic system  | Check the hydraulics   |
|                              |                                     |                   | X               |                            |                    |  |   |                 |               |                    | Major foreign matter in medium                                       | Retrofit the control, which attempts to get rid of the blockage by reversing several times                             |
|                              |                                     |                   |                 |                            |                    |  |   |                 | X             |                    | Motor speed too low during variable frequency drive operation        | Install external fan<br>Increase motor speed   |
|                              |                                     |                   |                 |                            |                    |  |   | X               |               | X                  | Oil level in the gearbox is not okay                                 | → Chapter "Maintenance"  |
|                              |                                     |                   |                 |                            |                    | X  | X   |                 |               |                    | Mechanical seal damage<br>Faulty repair<br>Buffer fluid tank leaking | Replace sealing package →<br>Chapter "Repair"<br>Check buffer fluid tank for leaks                                     |
|                              |                                     |                   |                 |                            |                    |  | X   |                 |               |                    | Seal leaking   | Replace the sealing package  |
| X                            |                                     |                   | X               | X                          | X                  |  |   | X               | X             | X                  | Operating pressure too high  | Reduce the operating pressure  |
|                              |                                     |                   | X               |                            |                    |  |   | X               |               |                    | No medium in the RotaCut   | Check RotaCut for clogging, check pump   |
|                              |                                     |                   |                 |                            |                    |  | X   |                 | X             |                    | Geared motor gearbox is leaking                                      | Check oil level of geared motor  |
| X                            | X                                   | X                 | X               | X                          |                    |  |   |                 | X             |                    | Cutting screen clogged   | Increase ACC pressure  |

## 11 Specifications

| RotaCut types   | Max. flow rate [m³/h]* | Max. free passage [mm]           | Approx. flow area [cm²] | DIN connector flange inlet **** | DIN connector flange outlet**** | Combi connector flange inlet | Combi connector flange outlet*** | Cleaning port*** | Max. permissible internal pressure [bar] ** | RotaCut pot volume [litre] |
|-----------------|------------------------|----------------------------------|-------------------------|---------------------------------|---------------------------------|------------------------------|----------------------------------|------------------|---|----------------------------|
| 3000<br>Inline  | 180                    | Ø 4-28<br><br>(Standard<br>Ø 20) | 164<br>-<br>283         | DN 125<br>PN 16                 | -                               | -                            | -                                | 6"<br>DN 150     | 2   | 40                         |
| 3000<br>Cyclone |                        |                                  |                         | DN 150<br>PN 16                 |                                 |                              |                                  |                  | 0.5   | 80                         |
| 3000<br>BioCut  |                        |                                  |                         | -                               |                                 |                              |                                  |                  | 6" DN 150                                   |                            |
| 5000<br>Inline  | 300                    | Ø 4-30<br><br>(Standard<br>Ø 24) | 279<br>-<br>447         | DN 150<br>PN16                  | -                               | -                            | 8"<br>DN 200                     |                  | 2   | 85                         |
| 5000<br>Cyclone |                        |                                  |                         | -                               | 8"<br>DN 200                    | 8"<br>DN 200                 |                                  |                  | 8"<br>DN 200                                | 0.5                        |

\* Theoretically achievable flow rate with standard cutting screen + water as medium

\*\* Only the pressure from the liquid column of the feed material may be applied.  
Pressure may only be applied when the RotaCut pot is filled with fluid.

\*\*\* Combi-flanges up to and including DN 150, similar to DIN 2633  
Combi-flanges above DN 150, similar to DIN 2632

\*\*\*\* DIN flanges up to and including DN 150, DIN 2633  
DIN flanges above DN 150, DIN 2632



### Notes on flow

The number in the RotaCut type designation indicates the max. flow in l/min, e.g. RotaCut 3000: max. 3000 l/min (in the case of water, this volume is greatly reduced as the amount of DS content increases).

## 12 Long-term storage

No particular measures need to be taken in the case of short-term storage of up to two months.

For long-term storage of the RotaCut, please observe the following points:

- If the Rotacut was already put into operation, remove any foreign matter.
- Rinse the RotaCut with clean water (mixture of water and glycol), drain and dry.
- Touch up any damage to the external paint.
- Avoid a storage temperature range of -5 °C to +50 °C and large temperature differences in this area.
- Set the ACC preload pressure to a value between 0 and 0.5 bar.
- Turn the rotor manually by at least a full revolution at least once every 3 months.
- In the event of a RotaCut with a mechanical seal made of the mating materials SiC-SiC, the shaft must be turned at least once every two months (at least one revolution) to prevent the sealing surfaces from sticking to each other.
- Moisten cutting screen, blade rotor, cutting blades and shaft with oil.
- Fill the gearbox of the drive unit almost completely with suitable gear oil (note thermal expansion) to ensure better protection against damage caused by corrosion or moisture. If in doubt, see also the drive unit manufacturer's operating instructions.

### 13 Putting out of operation and disposal

1. Disconnect RotaCut from the power supply.
  - Observe notes and safety notes → **Chapter** "Connection to the power supply".
2. Disconnect RotaCut from the pipe: Observe notes and safety notes → **Chapter** "Installation".



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#### **Risk of injury by crushing or falling down**

Pipes under flexural strain can spring back under spring energy. In order to prevent risk of injury due to crushing or falling, carefully loosen screws. Wear protective clothing.

3. Empty shop supplies and residual medium.
  - Drain gear oil from the motor: Observe notes and safety notes in the operating instructions of the geared motor on draining the gear oil.
  - Draining the buffer chamber: Observe notes and safety notes → **Chapter** "Change of the buffer fluid".
  - Draining residual medium: Observe notes and safety notes → **Chapter** "Maintenance".



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#### **Environmentally friendly disposal**

Treat shop supplies, such as oils, hydraulic fluids and dangerous media, like hazardous waste and dispose of properly.

4. Hand over RotaCut for scrap: Observe notes and safety notes → **Chapter** "Transport".

## 14 Declaration of Installation



### Declaration of installation

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

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**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:** Cutting tool installation kit for macerating fibrous matter  
in pumpable fluids

**Type of machine:** RotaCut®

The technical documents according to annex VII B have been prepared and can if necessary be obtained from: Ms Ilona Ballmann; Hugo Vogelsang Maschinenbau GmbH; D-49632 Essen/Oldb., Germany

All basic health and safety requirements according to Annex I of the above-mentioned directive are applied and observed.

**Applied harmonised standards:**

EN 349:1993+A1:2008  
EN 1037:1995+A1:2008  
EN ISO 12100:2010  
EN ISO 13857:2008

**Applied national standards and technical specifications:**

DIN 4844-1:2005  
DIN 4844-2:2001+A1:2004  
DIN ISO 23601:2010  
EN 707:1999+A1:2009  
EN ISO 4413:2010  
EN 62079:2001

49632 Essen, 2012-01-03

Harald Vogelsang (Managing Director)



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