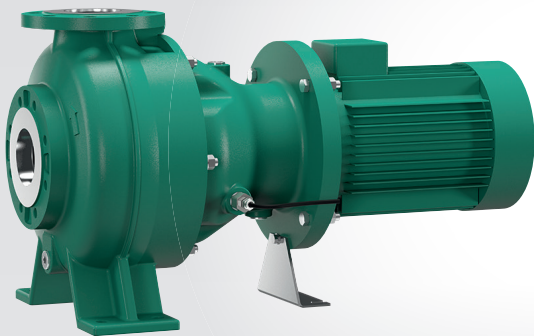


Wilo-RexaBloc RE/Rexa BLOC



en Installation and operating instructions

Fig. 1a - 08.52W, 10.44W, 15.84D, V08.68, V08.97, V10.73, V15.84

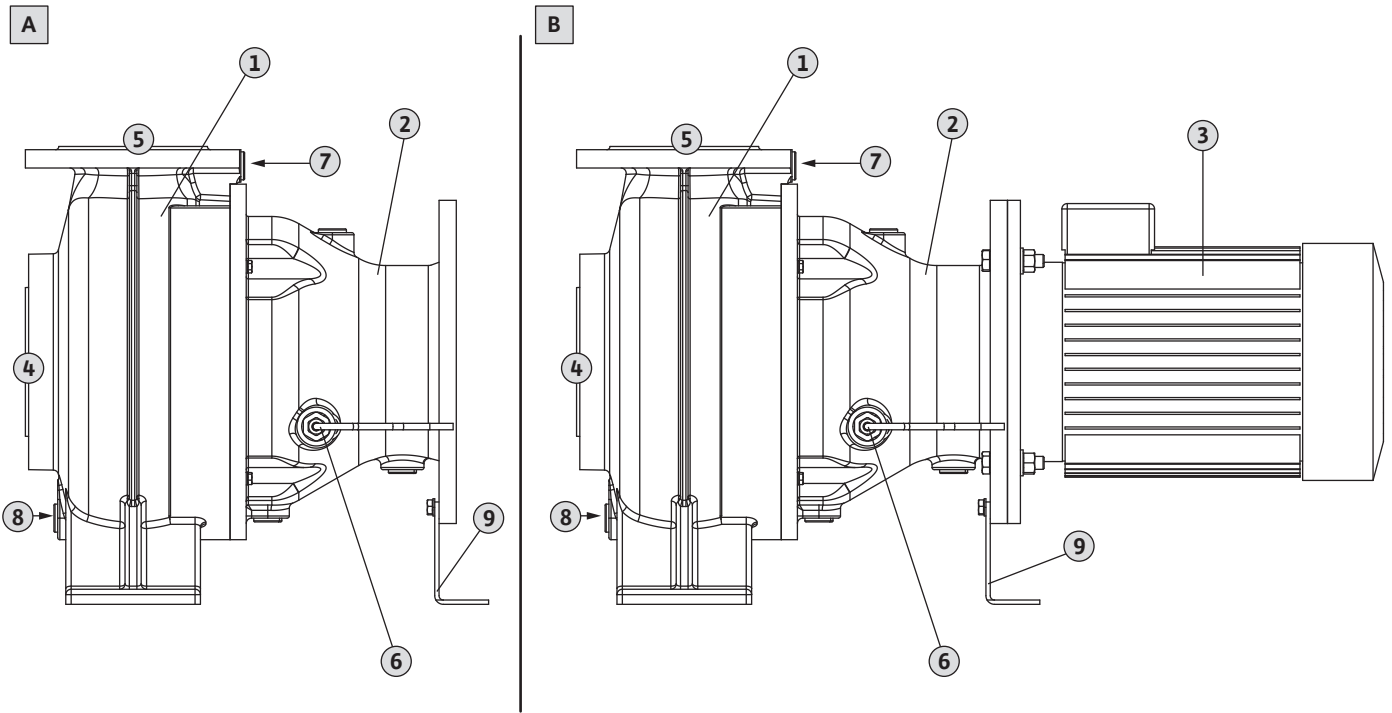


Fig. 1b- V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51

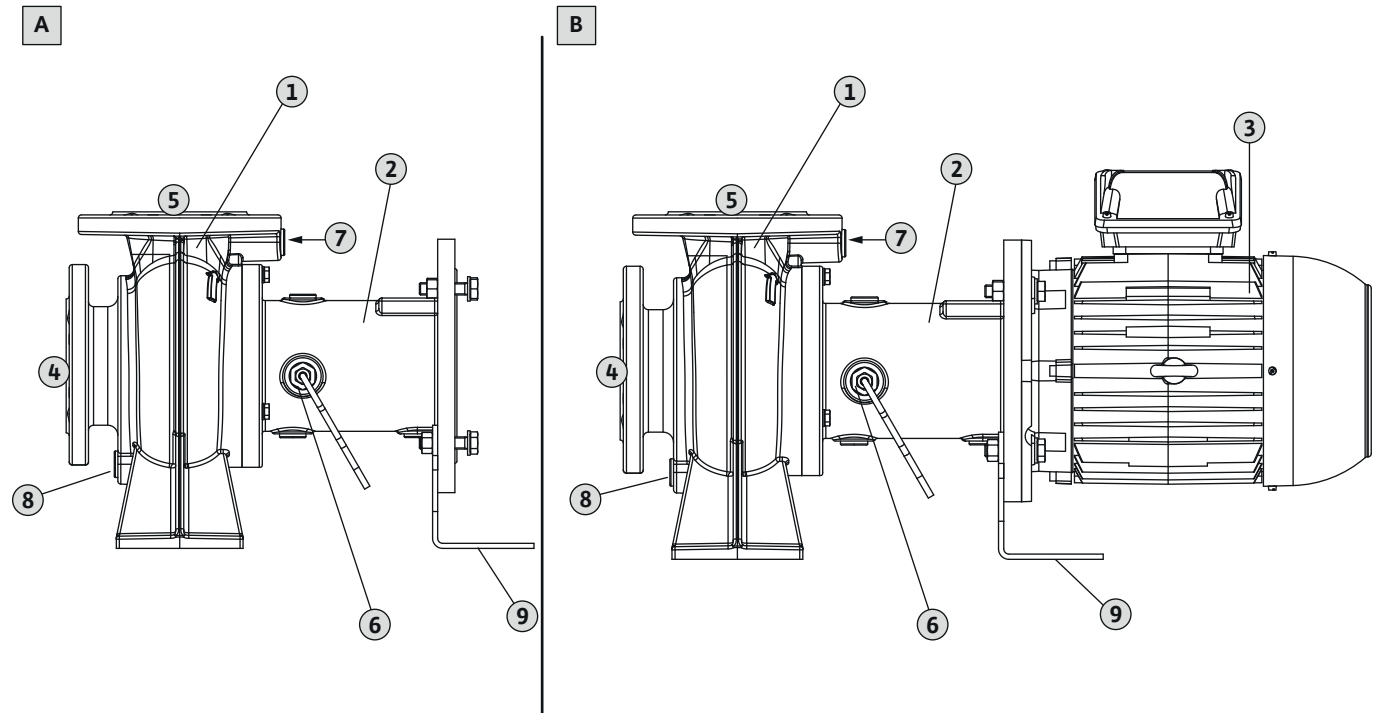


Fig. 1c - V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51

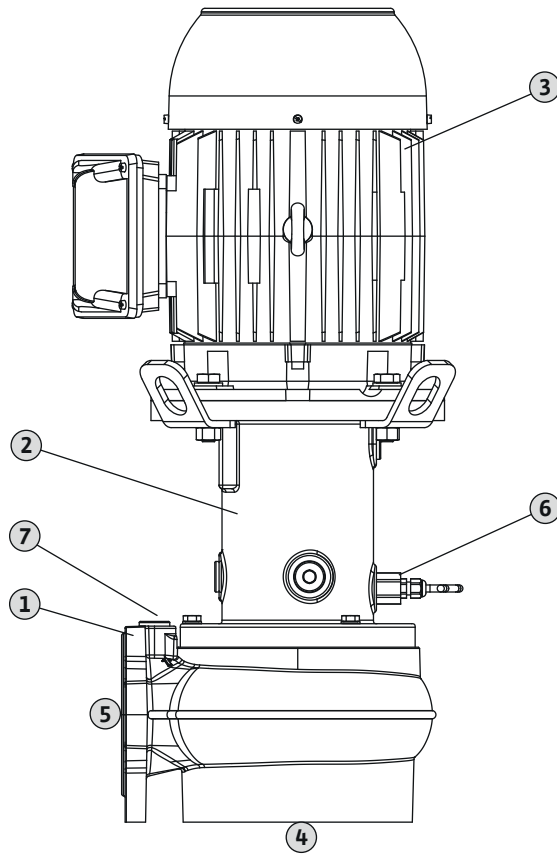


Fig. 2a - 08.52W, 10.44W, 15.84D, V08.68, V08.97, V10.73, V15.84

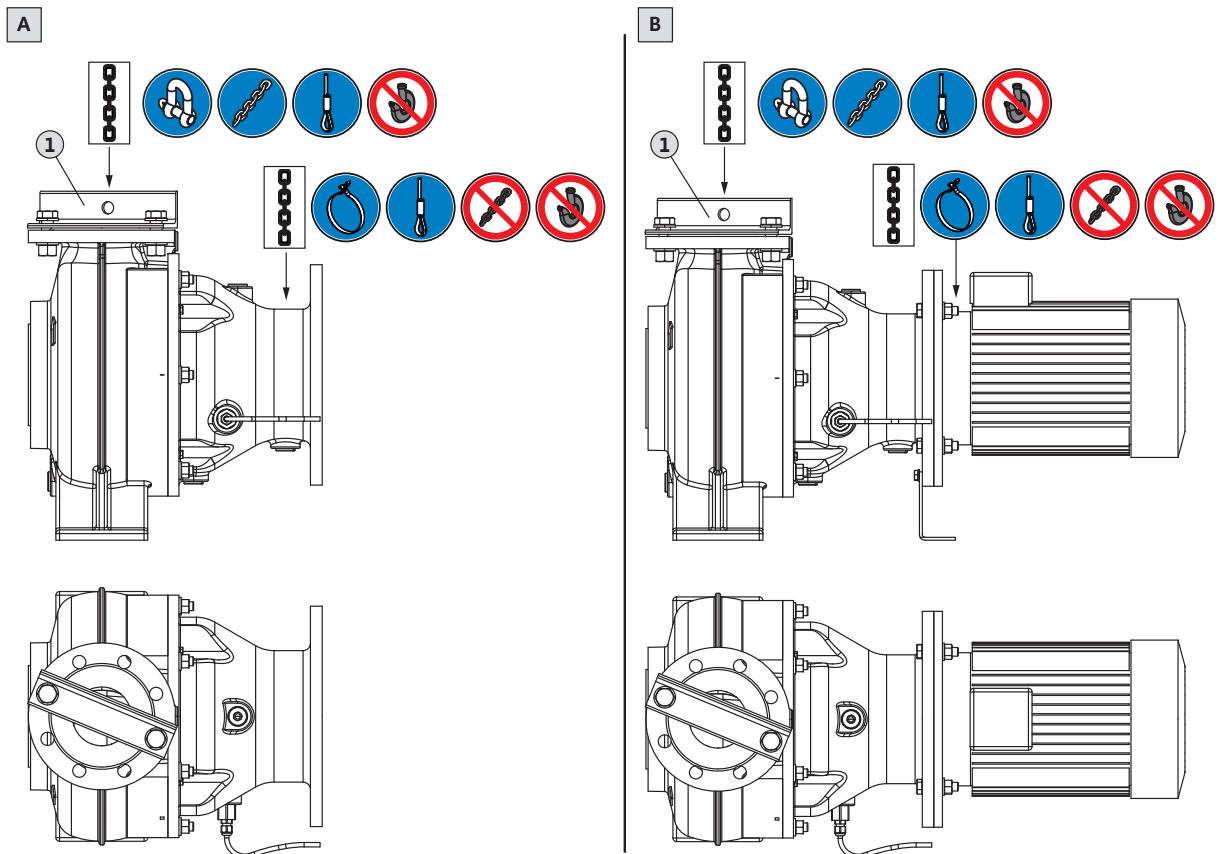


Fig. 2b - V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51

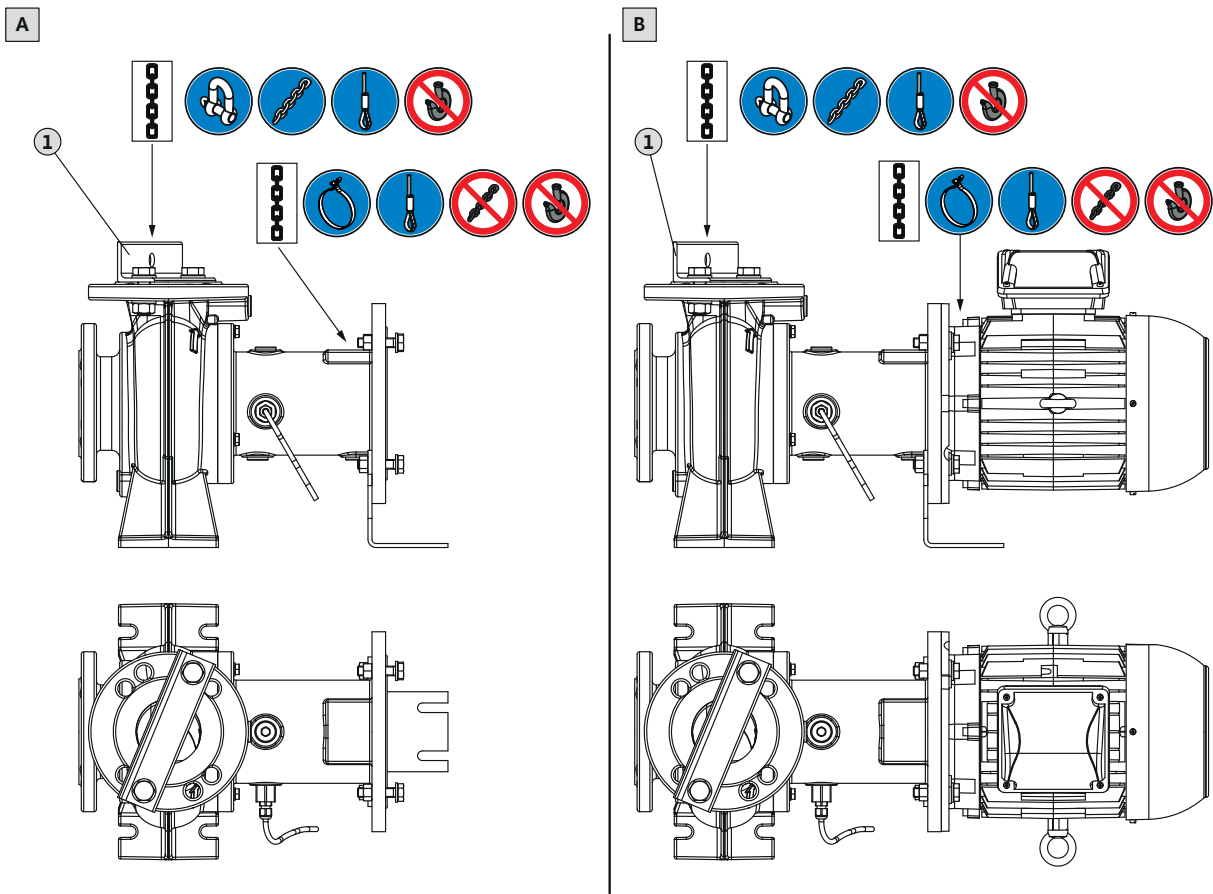


Fig. 2c - V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51

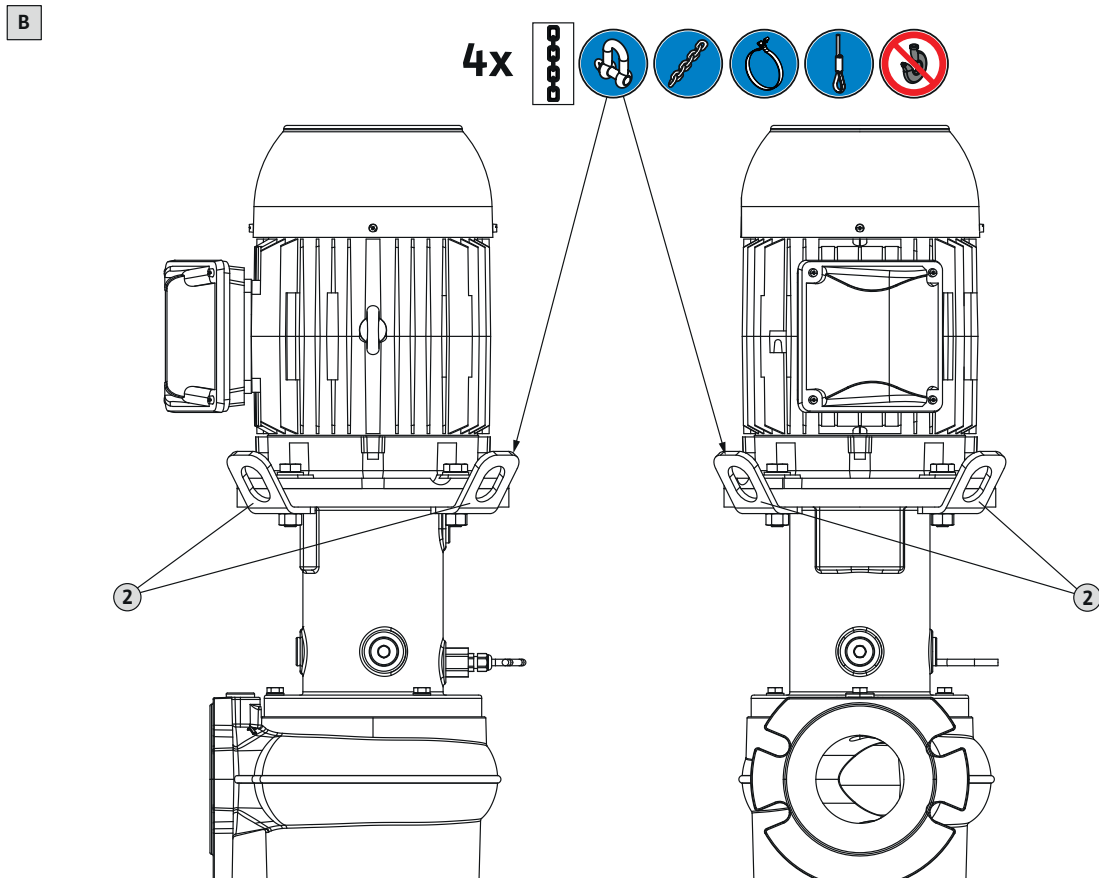


Fig. 3a - 08.52W, 10.44W, 15.84D, V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V08.68, V08.97, V10.42, C10.51, V10.73, V15.84

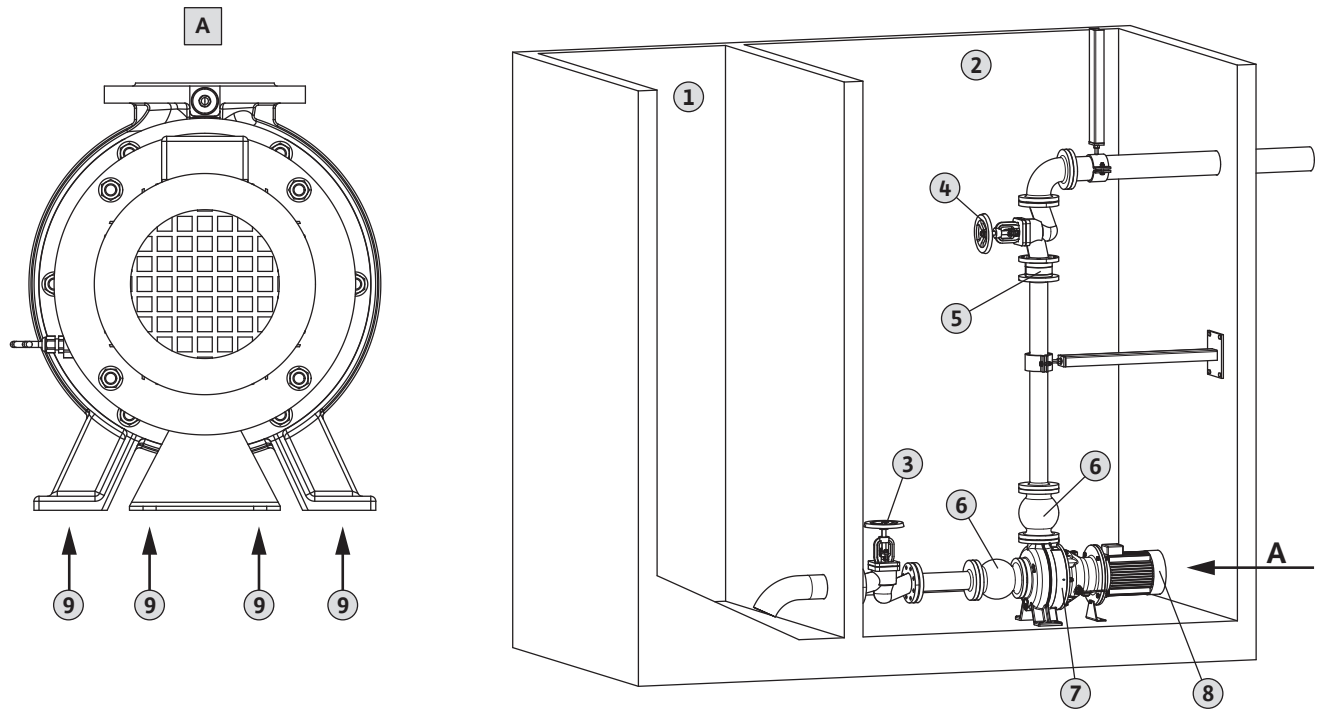


Fig. 3b - V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51

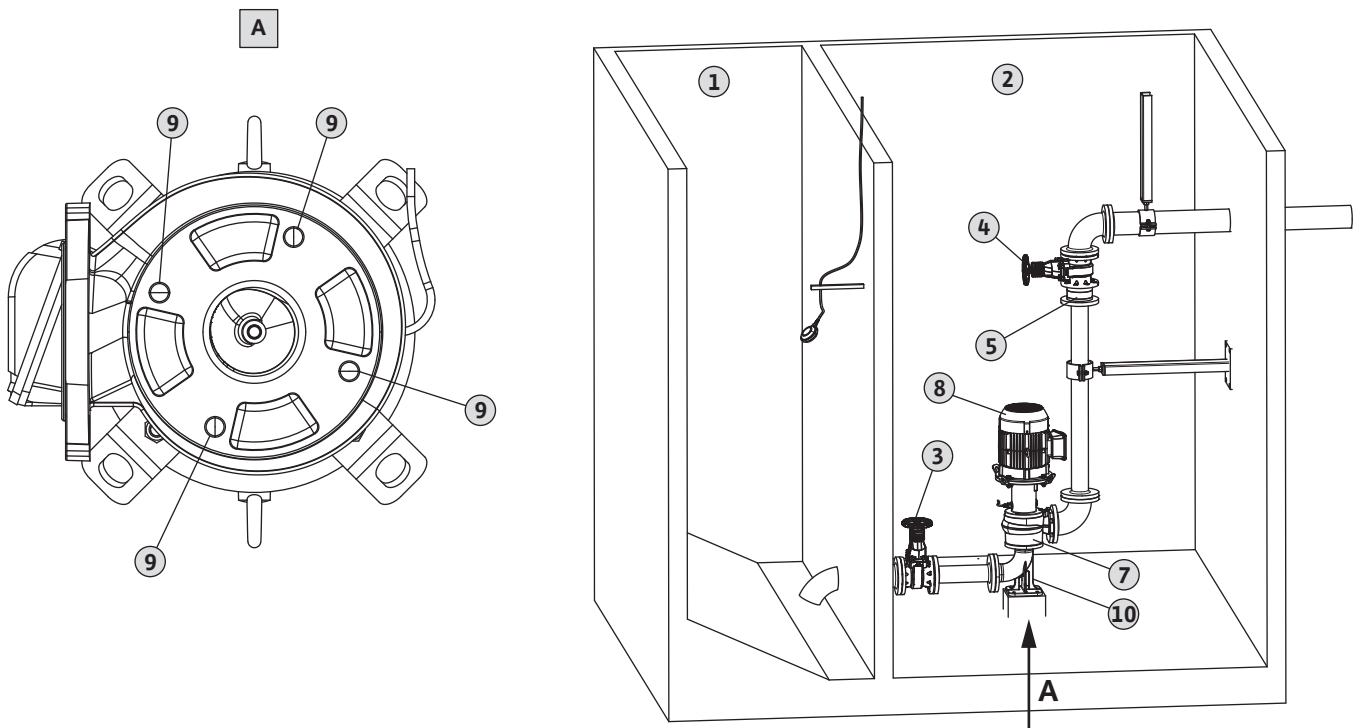


Fig. 4a - 08.52W, 10.44W, 15.84D, V08.68, V08.97, V10.73, V15.84

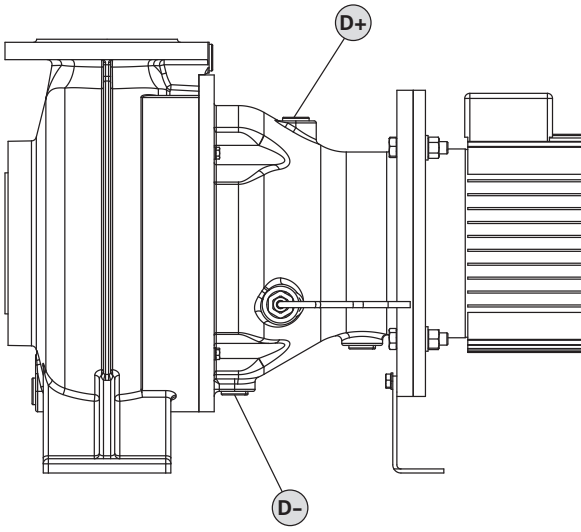


Fig. 4b - V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51

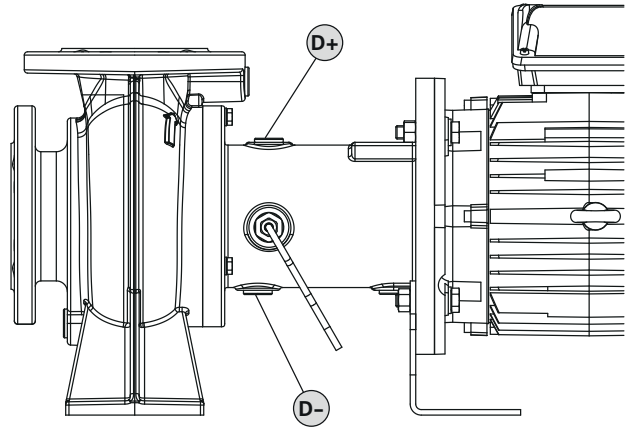


Fig. 4c - V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51

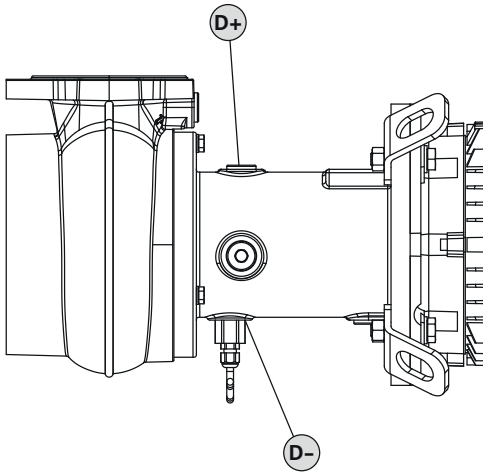


Fig. 5

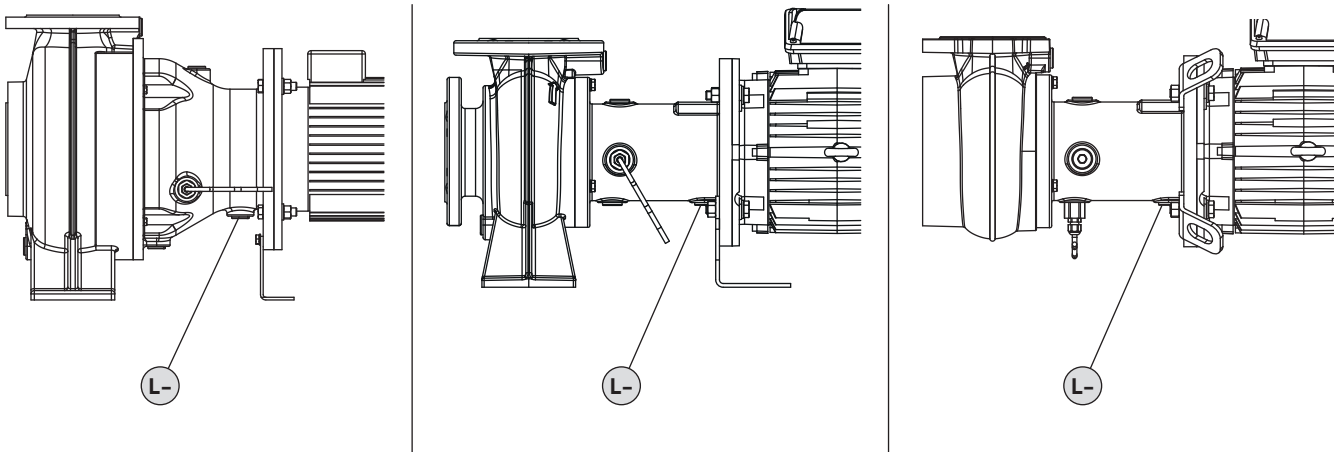


Fig. 6a - 08.52W, 10.44W, 15.84D, V08.68, V08.97, V10.73, V15.84

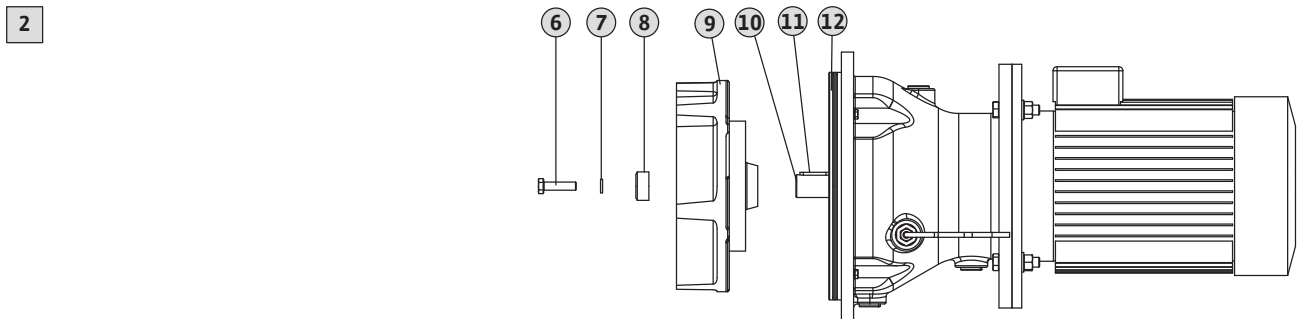
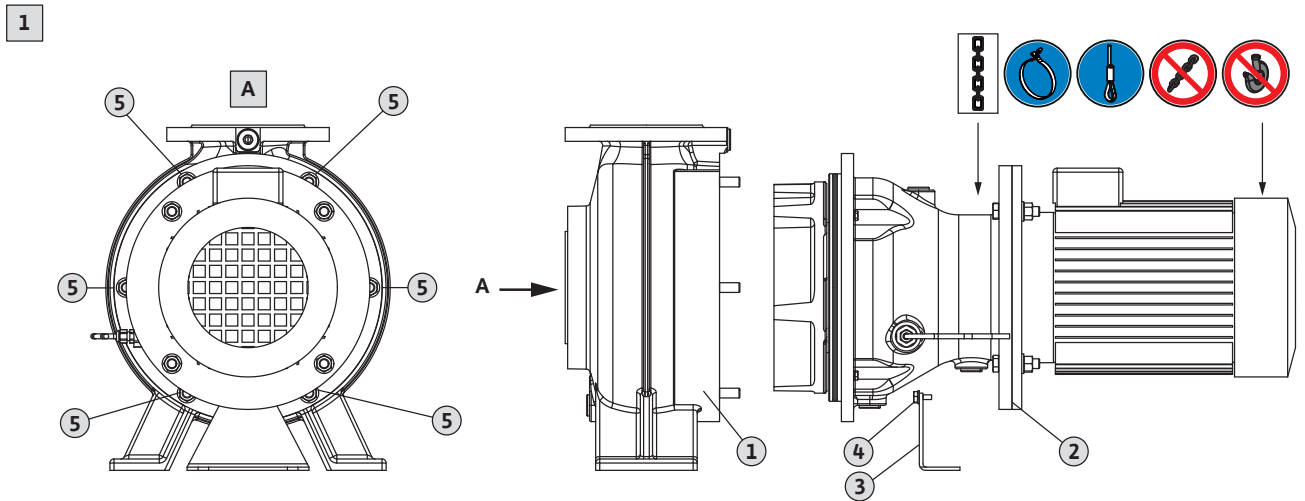


Fig. 6b - V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51

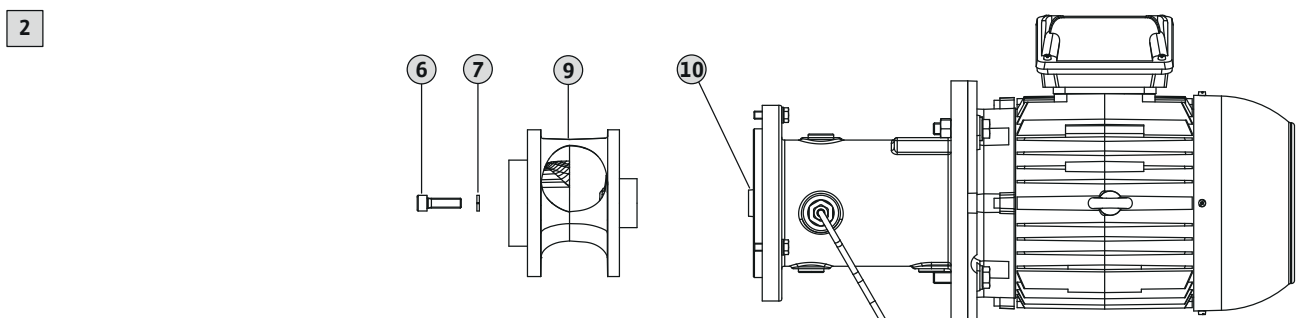
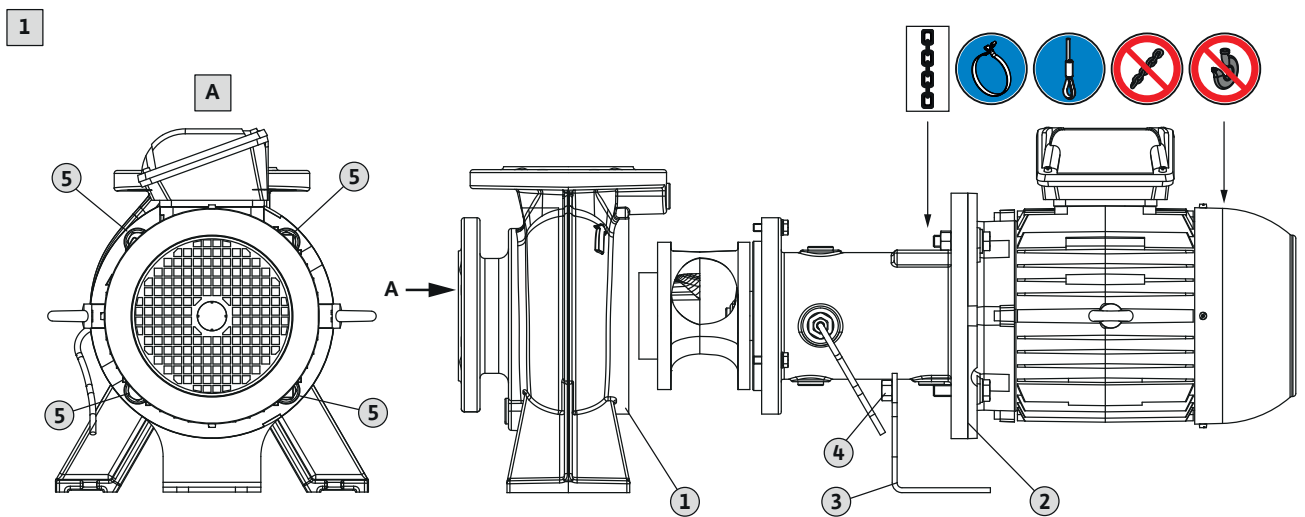


Fig. 7a - 08.52W, 10.44W, 15.84D, V08.68, V08.97, V10.73

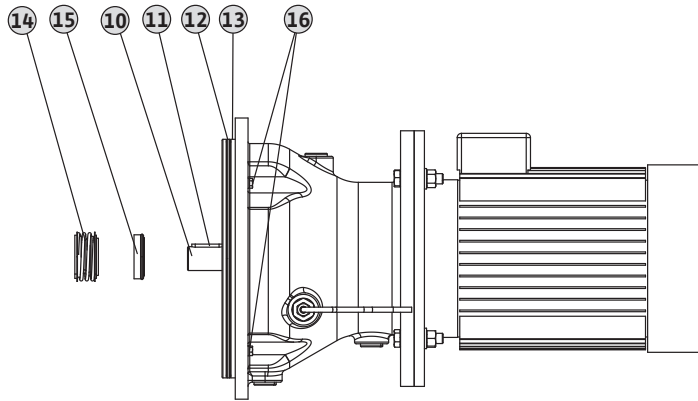


Fig. 7b - V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51

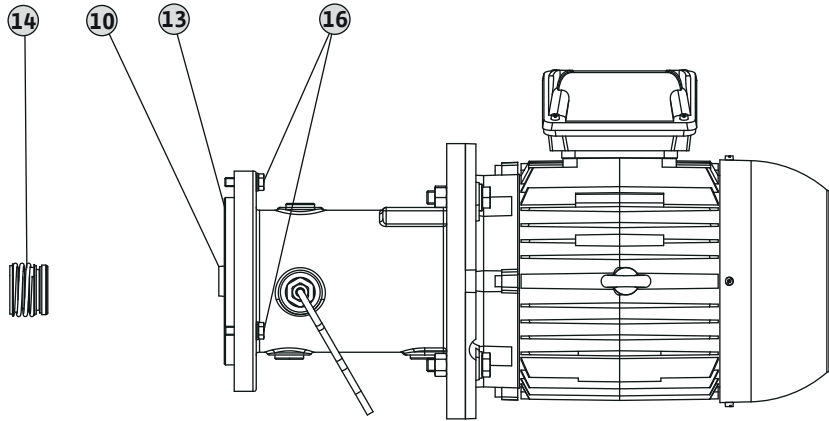


Fig. 8a - 08.52W, 10.44W, 15.84D, V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V08.68, V08.97, V10.42, C10.51, V10.73, V15.84

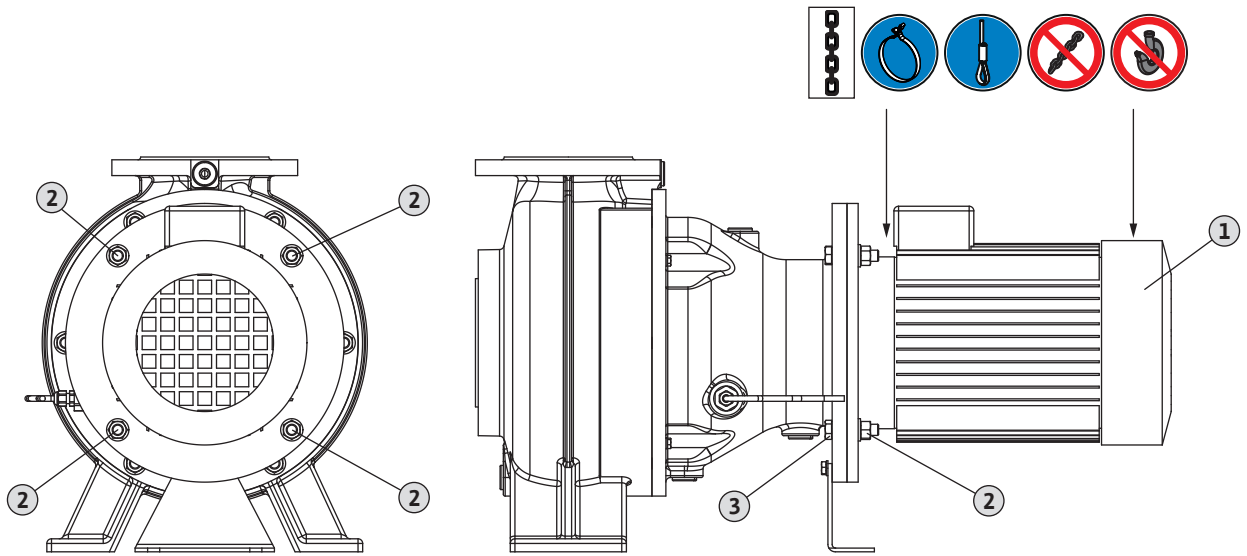
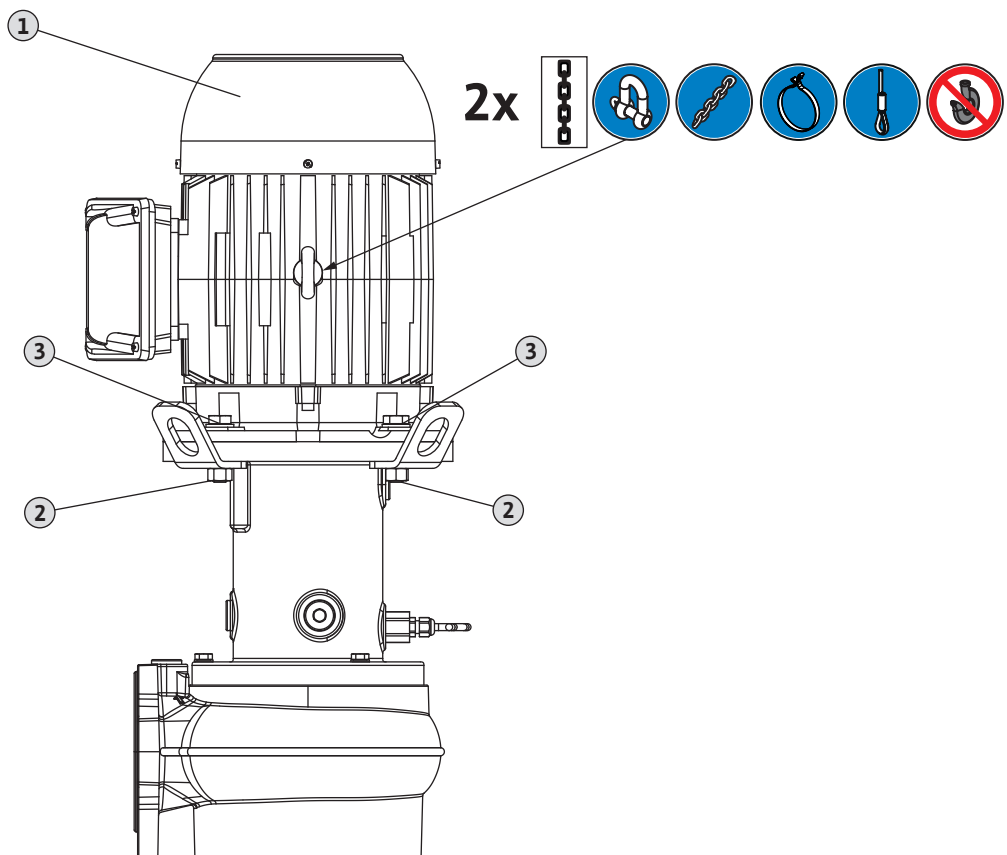


Fig. 8b - V05.22, V05.32, C05.32, V06.22, C06.34, V06.62, V08.24, C08.41, V08.42, C08.43, V08.52, V10.42, C10.51





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1. Introduction

1.1. About this document

The language of the original operating instructions is German. All other languages of these instructions are translations of the original operating instructions.

This manual is divided into individual sections, which are listed in the table of contents. Each section has a meaningful heading which clearly describes its content.

A copy of the EC declaration of conformity is an integral part of these installation and operating instructions.

If a technical modification is made to the designs named there without our agreement, this declaration loses its validity.

1.2. Personnel qualifications

All personnel who work on or with the hydraulics must be qualified for such work; electrical work, for example, may only be carried out by a qualified electrician. All personnel must be of legal age.

National accident prevention regulations must also be observed as a basis by the operating and maintenance personnel.

It must be ensured that personnel have read and understood the instructions in this operating and maintenance manual; if necessary, this manual must be ordered from the manufacturer in the required language.

The hydraulics is not intended for use by persons (including children) with limited physical, sensory or mental capacities or without the relevant experience or knowledge, unless they are supervised by a person responsible for their safety and receive instructions from this person on how to use the hydraulics.

Children must be supervised in order to ensure that they do not play with the hydraulics.

1.3. Copyright

This operating and maintenance manual has been copyrighted by the manufacturer. The operating and maintenance manual is intended for use by installation, operating and maintenance personnel. It contains technical regulations and drawings which may not be reproduced or distributed, neither completely nor in part, or used for purposes of competition, or shared with others without the express consent of the manufacturer. The illustrations used may differ from the original and are only intended as an exemplary representation of the hydraulics.

1.4. Subject to change

The manufacturer reserves the right to make technical modifications to systems and/or components. This operating and maintenance manual refers to the hydraulics shown on the title page.

1.5. Warranty

In general, the specifications in the current "General Terms and Conditions" apply to the warranty. You can find these here: www.wilo.com/legal

Any deviations must be contractually agreed and shall then be given priority.

1.5.1. General

The manufacturer is obliged to correct any defects found in the hydraulics it sells, provided that the defects meet one or more of the following requirements:

- The quality defects were caused by the materials used or the way the device was manufactured and/or designed
- The defects were reported in writing to the manufacturer within the agreed warranty period
- The hydraulics was used only as prescribed
- All monitoring devices are connected and were tested before commissioning.

1.5.2. Warranty period

The duration of the warranty period is stipulated in the "General Terms and Conditions".

Any deviations must be contractually agreed!

1.5.3. Spare parts, add-ons and modifications

Only genuine spare parts from the manufacturer may be used for repairs, replacements, add-ons and modifications. Unauthorised add-ons and modifications or the use of non-original spare parts can seriously damage the hydraulics and/or injure personnel.

1.5.4. Maintenance

The prescribed maintenance and inspection work should be carried out regularly. This work may only be carried out by qualified, trained and authorised personnel.

1.5.5. Damage to the product

Damage and malfunctions that endanger safety must be eliminated immediately and properly by trained personnel. The hydraulics may only be operated if it is in perfect working order.

In general, repairs should only be carried out by Wilo customer service!

1.5.6. Exclusion of liability

No warranty claims will be accepted or liability will be assumed for hydraulics damage if any of the following items apply:

- Inadequate configuration by the manufacturer due to the information provided by the operator or customer being insufficient and/or incorrect
- Non-compliance with safety instructions and work instructions as specified in this operating and maintenance manual
- Improper use
- Incorrect storage and transport
- Improper installation/dismantling
- Insufficient maintenance
- Incorrect repairs
- Inadequate construction site or construction work
- Chemical, electrochemical and electrical influences
- Wear

This means the manufacturer's liability also excludes all liability for personal injury, material damage and/or financial losses.

2. Safety

This section lists all the generally applicable safety instructions and technical information. In addition, all the other sections contain specific safety instructions and techni-

cal information. All instructions and information must be observed and followed during the various phases of the hydraulics's life cycle (installation, operation, maintenance, transport etc.)! The operator is responsible for ensuring that all personnel follow these instructions and guidelines.

2.1. Instructions and safety instructions

This manual uses instructions and safety instructions for preventing personal injury and material damage. To clearly identify them for personnel, the instructions and safety instructions are distinguished as follows:

- Instructions appear in “bold” and refer directly to the preceding text or section.
- Safety instructions are slightly “indented and bold” and always start with a signal word.
 - **Danger**
Serious or fatal injuries can occur!
 - **Warning**
Serious injuries can occur!
 - **Caution**
Injuries can occur!
 - **Caution** (notice without symbol)
Substantial material damage can occur. Irreparable damage is possible!
- Safety instructions that refer to personal injury appear in black and are always accompanied by a safety symbol. Danger, prohibition or instruction symbols are used as safety symbols. Example:



Danger symbol: General hazard



Danger symbol, e.g. electrical current



Symbol for prohibited action, e.g. “No entry!”



Instruction symbol, e.g. “Wear protective clothing.”

The safety symbols used conform to the generally applicable directives and regulations, such as DIN, ANSI.

- Safety instructions that only refer to material damage are printed in grey, without safety symbols.

2.2. General safety information

- When installing or removing the hydraulics, never work alone in rooms and sump. A second person must always be present.
- The hydraulics must always be switched off before any work is performed on it (assembly, dismantling, maintenance, installation). The drive for the hydraulics must be disconnected from the electrical system and secured against being switched on again. All rotating parts must have come to a standstill.
- The operator must report any faults or irregularities that occur to a line manager immediately.

- The operator must shut down the equipment immediately if defects occur that represent a safety risk. These include:
 - Failure of the safety and/or monitoring devices
 - Damage to important parts
 - Damage to electrical equipment, cables and insulation.
- Tools and other objects should only be kept in their designated places so that safe operation is ensured.
- Sufficient ventilation must be provided when working in enclosed spaces.
- When welding and/or working with electrical devices, make sure there is no risk of explosion.
- Only use lifting gear which is legally designated as such and officially approved.
- The lifting gear must be kept safely and must be suitable for the conditions of use (weather, hooking unit, load, etc.).
- Mobile equipment for lifting loads should be used in such a way that it is guaranteed to remain stable during operation.
- When using mobile equipment for lifting non-guided loads, take action to prevent tipping, shifting, sliding etc.
- Measures should be taken to ensure that no person is ever directly beneath a suspended load. Furthermore, it is prohibited to move suspended loads over workplaces where people are present.
- If mobile equipment is used for lifting loads, a second person should be present to coordinate the procedure if required (e.g. if the operator's field of vision is blocked).
- The load to be lifted must be transported so that no-one will be injured if there is a power failure. Furthermore, if such work is being performed outdoors, it must be cancelled if the weather conditions worsen.

These instructions must be strictly observed. Non-observance can result in personal injury and/or substantial material damage.

2.3. Drive

The hydraulics has a standardised connection flange for installing an IEC standard motor. See the technical data for the performance data (e.g. size, construction, hydraulic rated power, speed) needed to select a motor.

2.4. Electrical work



DANGER due to electrical current!
Incorrectly performed electrical work can result in fatal injury! This work may only be carried out by a qualified electrician.

The motor must be connected in accordance with the information in the operating and maintenance manual for the motor. The governing local directives, standards and regulations (e.g. VDE 0100) as well as the requirements of the local energy supply company must be observed.

The person operating the motor must know where it is supplied with power and how to cut off the supply. A motor protection switch must be installed on-site. It is advisable to install a residual-current device (RCD). If there is a possibility that people can come into contact with the motor and the fluid, the connection **must** be equipped with an additional residual-current device (RCD).

The hydraulics must always be earthed. In a standard system, the hydraulics are earthed through the motor's connection to the mains. Alternatively, the hydraulics can be earthed through a separate connection.

2.5. Safety and monitoring devices

CAUTION!

Never operate the hydraulics if the attached monitoring devices have been removed or damaged, or if they do not work!



NOTICE

Also note all the information in the operating and maintenance manual for the motor!

The hydraulics are not fitted with monitoring devices as standard.

Optionally, the sealing chamber can be monitored with an external pencil electrode.

All existing monitoring devices must be connected by an electrician and checked to ensure that they function correctly before commissioning.

The personnel must be informed about the installed systems and how they work.

2.6. Conduct during operation



CAUTION! Risk of burns!

The housing parts can heat up to well above 40 °C. There is a risk of burns!

- **Never touch parts of the housing with your bare hands.**
- **After switching them off, let the hydraulics cool down to ambient temperature.**
- **Wear heat-resistant protective gloves.**

During operation of the hydraulics, always follow the locally applicable laws and regulations for work safety, accident prevention and handling electrical machinery. To help ensure safe working practice, the responsibilities of employees should be clearly specified by the operator. All personnel are responsible for ensuring that regulations are observed.

During operation, all gate valves in the suction and discharge pipe must be completely open.

If the slide valves on the suction and discharge sides are closed during operation, the fluid in the hydraulics housing is heated up by the pumping movement. This heating creates strong pressure in the hydraulics housing. The pressure can result in the hydraulics exploding! Before switching on the hydraulics, ensure that all the slide valves are open and open any closed slide valves if necessary.

2.7. Pumped fluids

Each fluid differs with respect to composition, corrosiveness, abrasiveness, dry matter content and in many other aspects. Generally, the hydraulics can be used for many applications. Please note that if requirements change (density, viscosity or general composition), this can also affect many parameters of the hydraulics.

When using or replacing the hydraulics to pump a different fluid, observe the following points:

- The fluid can be contaminated by oil from the sealing chamber if the mechanical seal is defective.

Pumping drinking water is not permitted!

- Hydraulics that has been operated to pump contaminated water must be cleaned thoroughly before being used to pump other fluids.
- Hydraulics that has been operated to pump fluids containing faeces and/or fluids that are hazardous to health must be generally decontaminated before being used to pump other fluids.

First clarify whether the hydraulics may be used to pump other fluids!

2.8. Operator responsibilities

2.8.1. Integration into the existing safety concept

The operator shall ensure that the unit is integrated into the existing safety concept and that it can be switched off in an emergency using the existing safety shutdowns.

2.8.2. Recommended monitoring devices

The hydraulics are driven by a standard motor. Standard motors are not overflow-proof. We therefore recommend using an alarm switchgear to record major leakages. In the event of a major discharge of fluid (e.g. faulty piping), the motor must switch off.

2.8.3. Sound pressure



NOTICE

Also note all the information in the operating and maintenance manual for the motor!



CAUTION: Wear noise protection!

According to applicable laws and regulations, ear protection must be worn if the sound-pressure level is 85 dB (A) or more! The end-user must make sure that this is complied with!

The hydraulics generates a sound-pressure level of approx. 70 dB (A) to 80 dB (A) during operation.

However, the actual sound pressure depends on several factors. These include e.g. installation, fixation of accessories and pipe, duty point etc.

We recommend that the operator take an additional measurement at the workplace once the hydraulics is running at its duty point and under all operating conditions.

2.9. Standards and guidelines used

The hydraulics is subject to various European directives and harmonised standards. Refer to the EC declaration of conformity for precise information about this.

In addition, various standards are used as a basis for operating, installing and dismantling the hydraulics.

2.10. CE marking

The CE marking is attached to the rating plate for the hydraulics.

3. Product description

The hydraulics is manufactured with great care and is subject to constant quality controls. Trouble-free operation is guaranteed if the device is installed and maintained correctly.

3.1. Intended use and fields of application



DANGER due to explosive fluids!
It is strictly prohibited to pump explosive fluids (petrol, kerosene etc.). The hydraulics is not designed for these fluids!

The Wilo-RexaBloc RE... sewage hydraulics is suitable for pumping:

- Wastewater
- Sewage containing faeces
- Sludges with up to 8 % dry matter (depending on type)

The sewage hydraulics must **not** be used for pumping:

- Drinking water
- Fluids containing hard components such as stones, wood, metals, sand etc.
- Highly flammable and explosive fluids in pure form

Intended use also includes compliance with this manual. Any other use is regarded as non-intended use.

3.2. Structure

The Wilo-RexaBloc RE are sewage hydraulics with a flanged IEC standard motor in monobloc design for stationary dry well installation.

Fig. 1.: Description

1	Hydraulics	6	Sealing chamber monitoring (optionally available)
2	Bearing bracket	7	Venting screw
3	IEC standard motor	8	Drainage screw
4	Suction connection	9	Support
5	Discharge connection		
A	"Bare shaft" design (hydraulics without motor)		
B	Unit (hydraulics with flanged motor)		

3.2.1. Version

As standard, a unit consisting of hydraulics with a flanged motor is delivered.

Alternatively, a "bare shaft" design can be delivered. In this case, the operator has to provide a suitable motor and install it on site.

3.2.2. Hydraulics

Hydraulics housing and bearing bracket as a self-contained unit, with channel impeller or vortex impeller, axial suction port and radial discharge port. The connections are configured as flange connections.

Bearing bracket with seal on the fluid and motor sides, as well as sealing chamber and leakage chamber for receiving fluid ingress through the seal. The sealing chamber is filled with environmentally harmless medicinal white oil.

The hydraulics are not self-priming, in other words, the fluid must flow in either automatically or with supply pressure.

3.2.3. Monitoring devices

As an option, the sealing chamber can be monitored by an external pencil electrode. This signals if there is water ingress into the sealing chamber through the mechanical seal on the fluid side.

3.2.4. Seal

Sealing on the fluid side is achieved by a bidirectional mechanical seal. Sealing on the motor side is achieved by a rotary shaft seal.

3.2.5. Materials

- Hydraulics housing: EN-GJL-250
- Impeller: EN-GJL-250 / EN-GJS-500
- Bearing bracket: EN-GJL-250
- Housing cover: EN-GJL-250
- Shaft: 1.4021
- Static gaskets: NBR
- Seal
 - On the fluid side: SiC/SiC
 - On the motor side: NBR or carbon/aluminium oxide
- Motor housing: EN-GJL-250

3.2.6. Drive

The hydraulics is driven by IEC standard motors in "B5" construction. For more information about the motor and the monitoring devices present, see the installation and operating instructions for the motor manufacturer.

3.3. Operation in an explosive atmosphere

The hydraulics must **not** be operated in an explosive atmosphere!

3.4. Operation with frequency converters



NOTICE

Also note all the information in the operating and maintenance manual for the motor!

Operation on a frequency converter is possible. The following parameters must be observed:

- The maximum speed must **not exceed** 1450 rpm.
- Continuous duty with a volume flow of $Q_{opt} < 0.7$ m/s should be avoided.
- The circumferential speed must **not fall below** a minimum of 13 m/s.



NOTICE

The circumferential speed can be calculated as follows: $v = n \cdot d \cdot \pi / 60,000$

Key:

- n = speed in rpm
- d = impeller diameter in mm
- v = circumferential speed in m/s

3.5. Operating modes

See the rating plate or installation and operating instructions for the motor to see the possible operating modes.

3.5.1. Operating mode S1 (continuous duty)

The motor can operate continuously at the rated load without exceeding the permissible temperature.

3.5.2. Operating mode S2 (short-time duty)

The maximum operating period for the motor is specified in minutes, e.g. S2-15. The pause must last until the machine temperature no longer differs from the temperature of the coolant by more than 2 K.

3.5.3. Operating mode S3 (intermittent periodic duty)

This operating mode defines a combination of periods of operation and standstill of the motor. With S3 operation, the values given are always calculated based on a period of 10 min.

Example: S3 25 %

Operating time 25 % of 10 min = 2.5 min / standstill time

75 % of 10 min = 7.5 min

3.6. Technical data

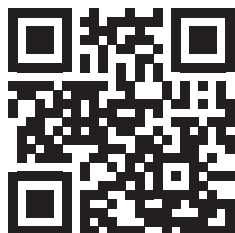
The following technical data can be found on the rating plate:

Max. delivery head:	H_{\max}
Max. volume flow:	Q_{\max}
Rated power required from hydraulics:	P_2
Discharge connection:	☉-]
Suction connection:	[-☉
Fluid temperature:	T
Size of standard motor:	Type key
Standard speed:	N
Weight:	M_{hydr}

The total weight is calculated from the weight of the hydraulics and the weight of the motor (see rating plate on motor)!

The detailed motor data according to EU 2019/1781 can be consulted via the motor's article number here:

<https://qr.wilo.com/motors>



3.7. Type key

Example: Wilo-Rexa BLOC-V08.52-260DAH132M4	
BLOC	Series
V	Impeller shape V = vortex impeller C = single-channel impeller M = multi-channel
08	Size discharge connection, e.g. 08 = DN 80
52	Internal performance indicator
260	Impeller diameter in mm
D	Flange connections A = ANSI connection D = DN connection

A	Material version A = standard version Y = special version
H	Installation type H = horizontal V = vertical
132 m	Construction size of standard motor
4	Number of poles for the necessary hydraulics speed

Alternative type key

Example: Wilo-RexaBloc RE 08.52W-260DAH132M4	
RE	Series
08	Size discharge connection, e.g. 08 = DN 80
52	Internal performance indicator
W	Impeller shape W = vortex impeller D = three-channel impeller
260	Impeller diameter in mm
D	Flange connections D = DN connection A = ANSI connection
A	Material version A = standard version Y = special version
H	Installation type H = horizontal V = vertical
132 m	Construction size of standard motor
4	Number of poles for the necessary hydraulics speed

3.8. Scope of delivery

- Version:
 - Unit: Sewage hydraulics with built-on standard motor
 - "Bare shaft" version: Sewage hydraulics without motor
- Transport shackle built onto the discharge port as attachment point
- Installation and operating instructions:
 - Unit: separate instructions for hydraulics and motor
 - "Bare shaft" version: Instructions for hydraulics
- CE declaration

3.9. Accessories

- Connection cable, sold by the metre
- External pencil electrode for sealing chamber monitoring
- Level control devices
- Fixation accessories and chains
- Switchgear, relays and plugs

4. Transportation and storage



NOTICE

Also note all the information regarding transport and storage in the operating and maintenance manual for the motor manufacturer!

4.1. Delivery

Upon delivery, check immediately that the shipment is complete and undamaged. If any parts are damaged or missing, the transport company or the manufacturer must be notified on the day of delivery since claims cannot be made afterwards. Damage to parts must be noted on the freight documentation!

4.2. Transportation

Only the designated and approved fastening devices, transportation and lifting equipment may be used for transportation. These must have sufficient load-bearing capacity to ensure that the hydraulics can be transported safely. When using chains, these must be secured against slipping.

Personnel must be qualified for the tasks and must follow all applicable national safety regulations during the work.

The hydraulics is delivered by the manufacturer or shipping agency in suitable packaging. This normally precludes the possibility of damage occurring during transportation and storage. The packaging should be stored safely for reuse if the product is frequently used at different locations.

Note the additional information in the operating and maintenance manual of the motor manufacturer regarding transportation.

4.3. Storage

Newly supplied hydraulics are prepared so that they can be stored for at least 1 year. The hydraulics should be cleaned thoroughly before they are put into temporary storage!

Note the additional information in the operating and maintenance manual for the motor regarding "storage".

The following should be taken into consideration for storage:

- Place the hydraulics on a firm surface and secure it against slipping and falling over. Sewage hydraulics are stored horizontally.



DANGER due to risk of falling over!
Never set the hydraulics down if unsecured.
If the hydraulics falls over, this may lead to injuries!

- Our hydraulics can be stored at temperatures down to $-15\text{ }^{\circ}\text{C}$. The storeroom must be dry. We recommend a frost-protected room for storage with a temperature between $5\text{ }^{\circ}\text{C}$ and $25\text{ }^{\circ}\text{C}$.
- The hydraulics must not be stored in rooms in which welding work is carried out because the resulting gases or radiation can damage the elastomer components and coating.
- Suction and discharge connections must be sealed securely to prevent contamination getting in.
- The hydraulics must be protected from direct sunlight, heat, dust and frost. Heat or frost can cause serious damage to impellers and coatings!
- The impellers should be checked at regular intervals. This prevents the bearings from jamming and renews the lubrication film on the mechanical seal.



WARNING! Sharp edges!

Sharp edges may form on the impeller and on the openings of the suction and discharge ports. There is a risk of injury! Wear the necessary protective clothing, such as protective gloves.

- If the hydraulics has been stored for a long period of time, it should be cleaned of impurities such as dust and oil residue before commissioning. Check that the impellers move freely and check the housing coatings for damage.

Prior to commissioning, the fill level in the sealing chamber should be checked and topped up, if necessary! Damaged coatings must be repaired immediately. Only an intact coating fulfils its intended purpose!

Please note that elastomer components and coatings become naturally brittle over time. If the product is to be stored for longer than 6 months, we recommend checking these parts and replacing them as necessary. Please consult Wilo customer service for details.

4.4. Return delivery

Hydraulics that are returned to the factory must be properly packaged. This means that impurities have been cleaned from the hydraulics and that it has been decontaminated if used to pump fluids that are hazardous to health.

For shipping, the parts must be packed in tear-proof plastic bags of sufficient size in such a manner that they are tightly sealed and leak-proof. Furthermore, the packaging must protect the hydraulics from damage during transportation. If you have any questions, please contact Wilo customer service!

5. Installation

In order to prevent damage to the device or serious injury during installation, the following points must be observed:

- Installation work – assembly and installation of the hydraulics – may only be carried out by qualified persons. The safety instructions must be followed at all times.
- The hydraulics must be inspected for transport damage before any installation work is carried out.

5.1. General

For design and operation of technical sewage systems, observe the pertinent local regulations and directives for sewage technology (such as those of sewage technology associations).

Note that, in stationary installations, pressure surges can occur in cases where water is pumped with longer discharge pipelines (especially with steady ascents or steep terrain). Pressure surges can result in destruction of the hydraulics/system and noise pollution due to flap knock. Pressure surges can be prevented by applying suitable measures (e.g. swing check valves with an adjustable closing time or special routing of the discharge pipeline).

Air pockets in the hydraulics or pipeline system must be avoided at all costs and must be removed using a suitable ventilation system.

Protect the hydraulics from frost.

5.2. Installation types



DANGER due to units falling over!
Vertical installation may only be carried out for units up to 7.5 kW. If the unit falls over, there is a risk of injury!



NOTICE
Horizontal dry well installation: only products with "...H..."
Vertical dry well installation: only products with "...V..." ≤ 7.5 kW

5.3. Installation



NOTICE
Also note all the information regarding installation in the operating and maintenance manual from the motor manufacturer!

The following information should be taken into consideration when installing the hydraulics:

- This work must be performed by qualified personnel and electrical work must be performed by a qualified electrician.
- The operating space must be clean, dry and free from frost, and designed for the hydraulics in question.
- When working in pump chambers, a second person must be present for safety reasons. Take the necessary countermeasures if there is a risk of toxic or suffocating gases collecting!
- Ensure that lifting equipment can be fitted without any trouble, since this is required for the installation and dismantling of the hydraulics. It must be possible to reach the hydraulics safely in their operating and storage locations using the lifting equipment. The set-down location must have a solid bearing surface. For transporting the hydraulics, the lifting gear must be secured to the prescribed attachment points. When using chains, these must be connected to the attachment point using a shackle. The lifting gear used must be technically approved.
- The structural components and foundations must be of sufficient stability in order to allow the product to be fixed securely and properly. The operator or the supplier is responsible for providing the foundations and their suitability in terms of dimensions, stability and strength!
- For vertical dry well installation, there must be a fixation to the foundation.
 - Flange foot arch (Fig. 3b)
 - Holder with flange connection for the hydraulics provided by the customer
- Never let the hydraulics run dry. Air pockets are to be avoided at all costs. Appropriate ventilation systems must be provided.
- Check that the available consulting documents (installation plans, layout of the operating space, inlet conditions) are complete and correct.
- Also refer to all regulations, rules and laws for working with heavy and suspended loads. Wear appropriate protective clothing.

- Please also observe the applicable national accident prevention and safety regulations of professional and trade associations.

5.3.1. Attachment points

To raise and lower the hydraulics, they must be fastened at the specified attachment points. We differentiate here between the unit and the "bare shaft" version.

Fig. 2.: Attachment points

A	"Bare shaft" version (horizontal)
B	Unit (horizontal + vertical)
1	Transport shackle (horizontal)
2	Lifting eye (vertical)

Definition of symbols



Attach here!



Shackle must be used!



Lifting equipment: Chain permitted



Lifting equipment: Wire rope or nylon rope permitted



Lifting equipment: Transport strap permitted



Use of a hook for attachment is prohibited!



Use of chains as lifting equipment prohibited

The following information must be observed when attaching the lifting equipment:

Horizontal installation:

- The lifting equipment must be fastened to the transport shackle by a shackle. Carrying straps, wire ropes and plastic ropes or chains may be used as lifting equipment.
- The transport shackle must be dismantled after positioning is complete.
- When attached to the housing parts, the lifting equipment must be fastened in a loop. Chains may **not** be used here!

Vertical installation:

- Units for vertical installation are delivered horizontally and lifted at the lifting eyes (Fig. 2, Item 2).
- Attach the lifting equipment to all 4 lifting eyes by means of shackles. Carrying straps, wire ropes and plastic ropes or chains may be used as lifting equipment.

5.3.2. Maintenance work

After a storage period of more than 6 months, the following maintenance work must be carried out before installation:

- Rotate impeller
- Check oil in the sealing chamber

Rotate impeller

1. Place the hydraulics horizontally on a firm surface.

Make sure that the hydraulics cannot fall over and/or slip!

2. Carefully and slowly reach into the hydraulics housing through the suction port and rotate the impeller.



WARNING! Sharp edges!
Sharp edges can form on the impeller and the opening on the suction port. There is a risk of injury! Wear the necessary protective clothing, such as protective gloves.

5.3.3. Check oil in the sealing chamber (“Fig. 4.: Screw plugs”)

The sealing chamber has a separate opening for draining and filling the sealing chamber.

1. Place the hydraulics horizontally on a firm surface.

Make sure that the hydraulics cannot fall over and/or slip!

2. Unscrew screw plug (D+).
3. Place a suitable tank under the screw plug (D-) to collect the operating fluid.
4. Unscrew screw plug (D-) and allow the operating fluid to drain out. If the oil is clear, does not contain any water, and the quantity matches the specification, it can be reused. If the oil is contaminated, it must be disposed of in accordance with the requirements in the “Disposal” Section.
5. Clean the screw plug (D-), renew the seal ring and screw it back in.
6. Pour the operating fluid in through the opening (D+). Note the recommended operating fluids and filling quantities, see Section 8!
7. Clean the screw plug (D+), renew the seal ring and screw it back in.

5.3.4. Stationary dry well installation

In this installation type, the operating space is divided: collector tank and machine room. The fluid is collected in the collector tank and the hydraulics is installed in the machine room. The operating space must be blocked out as per the manufacturer’s configuration or consulting aid. The hydraulics is connected to the pipeline system on the suction and discharge side at the specified point in the machine room. The hydraulics is not immersed in the fluid.

The pipeline system on the suction and discharge side must be self-supporting, i.e. it may not be supported by the hydraulics. In addition, the hydraulics connection to the pipeline system must be free of stress and vibrations. We therefore recommend using elastic connection pieces (compensators).

The following operating parameters must be complied with:

- The **maximum fluid temperature** is **70 °C**.
- **Motor cooling** – To ensure sufficient motor cooling by the motor fan, the minimum distance to the rear wall must be complied with. See the operating and maintenance manual of the motor manufacturer!

- **Max. ambient temperature** – See the operating and maintenance manual of the motor manufacturer.

The hydraulics is not self-priming so that hydraulics housing must be completely filled with the fluid. Ensure that there is an appropriate inlet pressure. Air pockets are to be avoided at all costs. Appropriate ventilation systems must be provided!

Fig. 3.: Stationary dry well installation

1	Collector tank	6	Compensator
2	Machine room	7	Hydraulics
3	Gate valve inlet	8	Standard motor
4	Gate valve discharge pipeline	9	Attachment points for floor fixation
5	Non-return valve	10	Flange foot arch

Work steps

1. Installing the hydraulics: about 3–5 h
 - Check that the pipeline system is secured firmly.
 - Fasten lifting equipment to the corresponding attachment points and position the hydraulics in the planned location.
 - For horizontal installation, the hydraulics is attached to the foundation. (6x fixation points: 4x hydraulics, 2x supports). We recommend using anchor bolts for this fixation.
 - Vertical installation; set up the hydraulics vertically.
 - For vertical installation, the hydraulics is screwed to the piping (flange foot bend).

Notice: The hydraulics is constructed in a “back pull-out” design. In other words, the motor, bearing housing and impeller can be removed as a unit without dismantling the hydraulics housing from the piping. For horizontal installation, a minimum distance of 500 mm must be ensured here between the motor fan and the rear wall.

- Loosen the lifting gear and remove the transport shackle from the discharge port.

Keep the transport shackle for later transport!

- Connect the pipeline system on the suction and discharge side. To ensure that the pipeline system is connected free of stress and vibrations, we recommend using elastic connection pieces (compensators)
 - Route the power supply cables (**must** be provided by the customer) in accordance with local requirements.
 - Have the electrical connections made by a qualified electrician.
2. Install optional accessories, such as alarm switchgear for detecting moisture.
 3. Commissioning the hydraulics: about 2–4 h
 - As described in the “Commissioning” section
 - Open the slide valves on suction and discharge sides.
 - Vent the hydraulics and pipeline system.

5.4. Electrical connection



RISK of fatal injury due to electrical current! Improper electrical connections can lead to fatal electric shock. Electrical connection may only be carried out by a qualified electrician approved by the local energy supply company, in accordance with locally applicable regulations.



NOTICE

Also note all the information regarding electrical connections in the operating and maintenance manual for the motor!

- The current and voltage of the mains connection must be designed in accordance with the information in the operating and maintenance manual for the motor. See also the specifications on the rating plate for the motor.
- The power supply cable must be provided by the customer. The cable cross-section and chosen routing option must comply with local standards and requirements.
- Any available monitoring devices, e.g. sealing chamber monitoring, must be connected and tested to ensure that it is working properly.
- Earth the hydraulics according to the regulations. Earthing is provided by the motor connection. Alternatively, the hydraulics can be earthed through a separate connection. The cable cross-section for the protective earth conductor connection must comply with local regulations.

5.4.1. Check the monitoring devices before commissioning

If the measured values deviate from the specifications, the monitoring devices may be faulty. Consult Wilo customer service.

Optional pencil electrode for sealing chamber monitoring

Before the pencil electrode is connected, it must be checked with an ohmmeter. The following values must be complied with:

- This value must approach “infinity”. If the values are low, there is water in the oil. Please also observe the instructions of the optional evaluation relay.

5.4.2. Connecting the monitoring devices

Connecting the pencil electrode (available as an option) for sealing chamber monitoring

- The pencil electrode must be connected via an evaluation relay. We recommend the “NIV 101/A” relay for this. The threshold is 30 kOhm. When the threshold is reached, a warning must be given, or the unit must be switched off.

CAUTION!

If there is only a warning, the hydraulics could be irreparably damaged by water ingress. We always recommend switching the hydraulics off!

5.4.3. Connecting the standard motor

The information for connecting the motor to the mains, the information concerning existing monitoring devices and connecting these devices, and concerning possible activation types can be found in the operating and maintenance manual of the motor manufacturer!

5.5. Operator responsibilities

5.5.1. Recommended monitoring devices

The hydraulics are driven by a standard motor. Standard motors are not overflow-proof. We therefore recommend using an alarm switchgear to record major leakages. In the event of a major discharge of fluid (e.g. faulty piping), an alarm can be issued and the unit switched off.

6. Commissioning



NOTICE

Also note all the information regarding commissioning in the operating and maintenance manual for the motor!

The “Commissioning” section contains all the important instructions for the operating personnel for starting up and operating the hydraulics.

The following general conditions must always be met and checked:

- Maximum ambient temperature (see installation and operating instructions for motor)
- All slide valves on the suction and discharge side are open

These general conditions must also be checked after a lengthy period of standstill, and any defects detected must be remedied!

Always keep this manual either by the hydraulics or in a place specially reserved for it, where it is accessible for the entire operating personnel at all times.

In order to prevent damage or serious injury when commissioning the hydraulics, the following points must be observed:

- Commissioning of the hydraulics may only be carried out by qualified and trained personnel in accordance with the safety instructions.
- All persons working on or with the hydraulics must have received, read and understood this operating and maintenance manual.
- All safety devices and emergency cut-outs are connected and have been checked to ensure that they work properly.
- Electrical engineering and mechanical adjustments must be carried out by qualified personnel.
- The hydraulics is suitable for use under the specified operating conditions.
- When working in pump chambers, a second person must be present. If there is a risk of toxic gases forming, sufficient ventilation must be ensured.

6.1. Electrical components



RISK of fatal injury due to electrical current! Improper electrical connections can lead to fatal electric shock. Electrical connection may only be carried out by a qualified electrician approved by the local energy supply company, in accordance with locally applicable regulations.

The standard motor is connected to the mains and the power supply cables are routed in accordance with the operating and maintenance manual for the motor and in accordance with locally applicable regulations.

The hydraulics must be properly protected and earthed. All monitoring devices are connected, and their function has been tested.

6.2. Direction of rotation monitoring

If the direction of rotation is incorrect, the hydraulics will not perform as specified and may be damaged. When you look at the hydraulics from the front, they must rotate counter-clockwise (see direction of rotation arrow on the hydraulics). Units delivered from the factory with a built-on standard motor require a clockwise rotating field to ensure the correct direction of rotation. The rotating field can be checked with a rotating field tester by a local electrician.

The hydraulics is not suitable for operation with a counter-clockwise rotating field!

The electrical connection must be completed in accordance with the information in the operating and maintenance manual for the motor.

There must be a test run without fluid and with the slide valve on the suction side closed!

If the direction of rotation is incorrect for motors with direct starting, two phases must be swapped. In the case of star-delta starting, the connections of two windings must be swapped, e.g. U1 with V1 and U2 with V2.

6.3. Operation in potentially explosive atmospheres

The hydraulics must not be operated in an explosive atmosphere!

6.4. Operation with frequency converters



NOTICE
Also note all the information in the operating and maintenance manual for the motor!

Operation on a frequency converter is possible. The following parameters must be observed:

- The maximum speed must **not exceed** 1450 rpm.
- Continuous duty with a volume flow of $Q_{opt} < 0.7$ m/s should be avoided.
- The circumferential speed must **not fall below** a minimum of 13 m/s.



NOTICE

The circumferential speed can be calculated as follows: $v = n \cdot d \cdot \pi / 60,000$

Key:

- n = speed in rpm
- d = impeller diameter in mm
- v = circumferential speed in m/s

6.5. Commissioning

The hydraulics must have been installed properly as specified in the "Installation" section. This must be checked before the system is switched on.

The electrical connection must have been completed in accordance with the information in the operating and maintenance manual for the motor.

In the version with a plug, note the plug's IP protection class.

6.5.1. Before activating

Check the following points:

- Min./max. temperatures of the fluid
- Min./max. ambient temperature
- Pipeline system is free of deposits and solids on the suction and discharge side
- Open all slide valves on the discharge and suction sides

If the slide valves on the suction and discharge sides are closed during operation, the fluid in the hydraulics housing is heated up by the pumping movement. This heating creates strong pressure in the hydraulics housing. The pressure can result in the hydraulics exploding! Before switching on the hydraulics, ensure that all the slide valves are open and open any closed slide valves if necessary.

- The hydraulics housing must be completely filled by the fluid and there must be no air in the housing. Venting is provided by a venting screw on the discharge port (Fig. 1, Item 7).
- Check to ensure all accessories are firmly and properly fitted

6.5.2. Switching on/off

The standard motor is switched on and off using a separate operating point (on/off switch, switchgear) provided by the customer.

See also the information in the operating and maintenance manual for the motor!

6.6. Conduct during operation



CAUTION! Risk of burns!

The housing parts can heat up to well above 40 °C. There is a risk of burns!

- **Never touch parts of the housing with your bare hands.**
- **After switching them off, let the hydraulics cool down to ambient temperature.**
- **Wear heat-resistant protective gloves.**

During operation of the hydraulics, always follow the locally applicable laws and regulations for work safety, accident prevention and handling electrical machinery. To help ensure safe working practice, the responsibilities of employees should be clearly specified by the operator. All personnel are responsible for ensuring that regulations are observed.

During operation, all gate valves in the suction and discharge pipe must be completely open.

If the slide valves on the suction and discharge sides are closed during operation, the fluid in the hydraulics housing is heated up by the pumping movement. This heating creates strong pressure in the hydraulics housing. The pressure can result in the hydraulics exploding! Before switching on the hydraulics, ensure that all the slide valves are open and open any closed slide valves if necessary.

7. Shutdown/disposal



NOTICE

Also note all the information regarding shutdown/disposal in the operating and maintenance manual for the motor!

- All work must be carried out with the greatest care.
- Proper protective clothing must be worn.
- When carrying out work in basins and/or tanks, the respective local protection measures must be observed. A second person must be present for safety reasons.
- Lifting equipment in perfect technical condition and officially approved lifting gear must be used for lifting and lowering the hydraulics.



DANGER! Risk of fatal injury due to malfunction!

Lifting gear and lifting equipment must be in perfect technical condition. Work may only commence if the lifting equipment has been checked and is found to be in perfect working order. If it is not inspected, there is a risk of fatal injury!

7.1. Shutdown

1. Switch the electronic control for the unit to manual mode.
2. Close gate valve on the suction side.
3. Manually activate the unit to pump the remaining fluid into the discharge pipeline.
4. Switch off the motor and secure it against being switched on again by unauthorised persons.
5. Close gate valve on the discharge side.
6. Work on removal, maintenance and storage can now commence.

7.2. Removal



DANGER due to toxic substances!

Hydraulics that pump liquids hazardous to health must always be decontaminated before undertaking any other work! Otherwise there is a risk of fatal injury! Wear the necessary protective clothing!



CAUTION! Risk of burns!

The housing parts can heat up to well above 40 °C. There is a risk of burns!

- **Never touch parts of the housing with your bare hands.**
- **After switching them off, let the hydraulics cool down to ambient temperature.**
- **Wear heat-resistant protective gloves.**



NOTICE

Note that the residual fluid in the hydraulics housing will escape during removal. Suitable collector tanks should be positioned to collect all of the escaping fluid!

1. Have a qualified electrician disconnect the motor from the mains.
2. Drain the residual fluid through the drainage screw on the hydraulics (Fig. 1, Item 8).

Caution: Collect the fluid in a suitable tank and dispose of it properly.

3. To remove the hydraulics, you have to loosen the screwed connections on the suction and discharge ports and the floor fixation on the hydraulics housing and on the support.
4. Attach the lifting equipment to the corresponding attachment points. For horizontal installation, **to do this, you must first attach** the enclosed transport shackle (Fig. 2, Item 1) **to the discharge port**. The hydraulics can then be removed from the operating space.
5. The operating space must be cleaned thoroughly after the hydraulics is removed, and any drips must be wiped up.

7.3. Return delivery/storage

For shipping, the parts must be packed in tear-proof plastic bags of sufficient size in such a manner that they are tightly sealed and leak-proof.

For return delivery and storage, please also refer to the "Transport and storage" section!

7.4. Disposal

7.4.1. Operating fluid

Oils and lubricants must be collected in appropriate containers and properly disposed of in terms of EC Directive 75/439/EEC as well as in compliance with the provisions of sections 5a and 5b of the German Waste Act or the applicable local laws.

7.4.2. Protective clothing

Protective clothing worn for cleaning and maintenance work is to be disposed of in accordance with the German Waste Code TA 524 02 and EC Directive 91/689/EEC.

7.4.3. Product

Proper disposal of this product will avoid harm to the environment and risks to personal health.

- Use the services of public or private waste disposal companies, or consult them for the disposal of the product or parts thereof.

- For more information about proper disposal, please contact your local council or waste disposal office or the supplier from where you obtained the product.

8. Maintenance and repair



RISK of fatal injury due to electrical current!
There is a risk of fatal injury from electric shock when working on electrical devices.
With all maintenance or repair work, the motor must be disconnected from the mains by a qualified electrician and secured against being switched on again without permission.



NOTICE
 Also note all the information regarding maintenance and repair in the operating and maintenance manual for the motor!

- Before any maintenance or repair work, the hydraulics must be deactivated and dismantled as described in the “Shutdown/disposal” section.
- After maintenance or repair work, the hydraulics must be installed and connected as described in the “Installation” section.
- The hydraulics is switched on as described in the “Commissioning” section.

Note the following:

- All maintenance and repair work must be carried out by the Wilo customer service, authorised service workshops or qualified personnel with the greatest of care and in a safe workplace. Proper protective clothing must be worn.
- This manual must be available to and observed by the maintenance staff. Only maintenance and repair work described in this manual may be carried out.

Any other work and/or alterations to the construction must only be carried out by Wilo customer service!

- When carrying out work in basins and/or tanks, the respective local protection measures must be observed in all cases. A second person must be present for safety reasons.
- Lifting equipment in perfect technical condition and officially approved lifting gear must be used for lifting and lowering the hydraulics. The max. permissible bearing capacity must never be exceeded!

Make sure the lifting gear, wire rope and safety devices of the lifting equipment are in perfect working order. Work may only commence if the lifting equipment has been checked and is found to be in perfect working order. If it is not inspected, there is a risk of fatal injury!

- If flammable solvents and cleaning agents are used, fire, naked flames and smoking are prohibited.
- Hydraulics that pump liquids hazardous to health must always be decontaminated. In addition, make sure that no gases that are hazardous to health form or are present.

If injuries are caused by fluids or gases that are hazardous to health, apply the first-aid measures specified on the notice at the working premises and notify a doctor immediately!

- Make sure that the necessary tools and materials are available. Order and cleanliness ensure safe and smooth work on the hydraulics. After working on the hydraulics, remove any used cleaning materials and tools from the pump. Store all materials and tools in their proper place.
- Operating fluids should be collected in suitable containers and disposed of properly. Always wear appropriate protective clothing when performing maintenance and repair work. This must also be disposed of properly.

8.1. Operating fluid

8.1.1. Overview of white oil

The sealing chamber is filled with white oil that is potentially biodegradable.

When changing the oil, we recommend the following oil types:

- ExxonMobile: Marcol 52
- ExxonMobile: Marcol 82
- Total: Finavestan A 80 B (NSF-H1 certified)

Filling quantities

Type RexaBloc RE	Filling quantity (litre)
08.52W	1.6
10.44W	0.8
15.84D	0.8

Type Rexa BLOC	Filling quantity (litre)
V05.22	0.5
V05.32	0.8
C05.32	0.65
V06.22	0.5
C06.34	0.65
V06.62	0.8
V08.24	0.8
C08.41	0.65
V08.42	0.8
C08.43	0.65
V08.52	0.8
V08.68	0.8
V08.97 (160M, 160L, 180M, 180L)	0.8
V08.97 (132M, 132L)	1.6
V10.42	0.8
C10.51	0.8
V10.73 (160M, 160L, 180M, 180L)	0.8
V10.73 (132M, 132L)	1.6
V15.84	0.8

8.1.2. Overview of lubricating grease

The following lubricating greases can be used in accordance with DIN 51818 / NLGI Class 3:

- Esso Unirex N3

8.2. Maintenance intervals

To ensure reliable operation, various maintenance tasks must be carried out regularly.

The maintenance intervals must be specified according to the load on the hydraulics! Regardless of the specified maintenance intervals, the hydraulics or installation must be checked if strong vibrations occur during operation.

Also note the maintenance intervals and maintenance work for the motor. See the operating and maintenance manual for the motor!

8.2.1. Intervals for normal operating conditions

2 years

- Visual inspection of the coating and housing for wear
- Functional check of pencil electrode (available as an option) for sealing chamber monitoring
- Oil change in the sealing chamber
- Check the leakage chamber for leaks



NOTICE

If sealing chamber monitoring is installed, the maintenance interval corresponds to the indicator!

15,000 operating hours or after 10 years at the latest

- Complete overhaul

8.2.2. Intervals for harsh operating conditions

Under harsh operating conditions, the specified maintenance intervals must be shortened accordingly. In this case, contact Wilo customer service. When using the hydraulics under harsh conditions, we also recommend signing a maintenance contract.

Harsh operating conditions include:

- A large proportion of fibrous material or sand in the fluid
- Strongly corrosive media
- Strongly gassing fluids
- Unfavourable duty points
- Operation at risk from water hammers

8.2.3. Recommended maintenance measures to ensure smooth operation

We recommend regular inspections of the current consumption and the operating voltage in all phases. In normal operation, these values remain constant. Slight fluctuations depend on the characteristics of the fluid. Current consumption can provide an early indication of damage and/or malfunctions in the impeller, bearings and/or motor, which can be rectified. Larger voltage fluctuations strain the motor winding and can cause the motor to break down. Regular inspections can therefore largely prevent major secondary damage and reduce the risk of total breakdown. We recommend the use of remote monitoring for regular inspections. Please contact Wilo customer service.

8.3. Maintenance work

Before carrying out maintenance work:

- Disconnect the motor from the power and secure it against being switched on inadvertently.
- Allow the hydraulics to cool down and clean them thoroughly.
- Make sure that all the operationally relevant parts are in good condition.

8.3.1. Visual inspection of coating and housing for wear

The coatings and housing parts must not show any signs of damage. If there is visible damage to the coatings, repair the coating accordingly. If there is visible damage to the housing parts, contact Wilo customer service.

8.3.2. Functional check of pencil electrode (available as an option) for sealing chamber monitoring

To check the pencil electrode, the hydraulics has to be cooled to the ambient temperature and the electrical connection for the pencil electrode has to be disconnected in the switch-gear. The monitoring device can then be checked with an ohmmeter. The following values should be measured:

- This value must approach "infinity". If the values are low, there is water in the oil. Please also observe the instructions of the optional evaluation relay.

If there are larger deviations, please consult Wilo customer service!

8.3.3. Oil change in the sealing chamber

The sealing chamber has separate openings for draining and filling the chamber.



WARNING! Risk of injury from hot and/or pressurised operating fluid!

After the hydraulics are switched off, the oil is still hot and pressurised. This can cause the screw plug to be ejected and hot oil to escape. There is a risk of injury or burns! First allow the oil to cool down to ambient temperature.



NOTICE

For vertical installation, the unit must first be brought into a horizontal position!

Fig. 4.: Screw plugs

D-	Drain hole screw plug
D+	Filler hole screw plug

1. If you can place a tank beneath the hydraulics to collect the operating fluids, you do not need to remove the hydraulics.
2. Carefully and slowly unscrew the screw plug (D+).
Caution: The operating fluid may be pressurised! This can cause the screw to be ejected at speed.
3. Place a suitable tank beneath the screw plug (D-) to collect the operating fluid.
4. Carefully and slowly unscrew the screw plug (D-) and allow the operating fluid to drain out. Dispose of the operating fluid in accordance with the requirements in the "Disposal" section.
5. Clean the screw plug (D-), renew the seal ring and screw it back in.
6. Pour the new operating fluid in through the hole for the screw plug (D+). Note the recommended operating fluids and filling quantities!
7. Clean the screw plug (D+), renew the seal ring and screw it back in.

8.3.4. Check the leakage chamber for leaks

The leakage chamber is a self-contained chamber and receives the leakage from the sealing chamber in the event of faults. If there are large quantities of water in the leakage chamber, please contact Wilo customer service.

Fig. 5.: Screw plug

L-	Drain hole screw plug
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1. If you can place a tank beneath the hydraulics to collect the operating fluids, you do not need to remove the hydraulics.
2. Place a collector tank underneath the screw plug (L-).
3. Carefully and slowly unscrew the screw plug (L-) and allow the operating fluid to drain out. Dispose of the operating fluid in accordance with the requirements in the "Disposal" section.
4. Clean the screw plug (L-), renew the seal ring and screw it back in.

8.3.5. Complete overhaul

In a general overhaul, the normal maintenance work is carried out, and in addition, the shaft seals, O-rings and shaft bearings are checked and replaced if necessary. This work may only be performed by the manufacturer or an authorised service centre.

8.4. Repairs



DANGER due to toxic substances!
Hydraulics that pump liquids hazardous to health must always be decontaminated before undertaking any other work! Otherwise there is a risk of fatal injury! Wear the necessary protective clothing!



WARNING! Sharp edges!
Sharp edges can form on the impeller and the opening on the suction port. There is a risk of injury! Wear the necessary protective clothing, such as protective gloves.



CAUTION! Risk of burns!
The housing parts can heat up to well above 40 °C. There is a risk of burns!

- **Never touch parts of the housing with your bare hands.**
- **After switching them off, let the hydraulics cool down to ambient temperature.**
- **Wear heat-resistant protective gloves.**

Before carrying out repairs:

- Have a qualified electrician disconnect the motor's power supply cable on the motor and secure it against being switched on inadvertently.
- Allow the hydraulics and motor to cool down and clean them thoroughly.
- Make sure that all the operationally relevant parts are in good condition.
- Always replace O-rings, gaskets and screw locking devices (spring lock washers, Nord-Lock washers).
- The specified tightening torques must be complied with.
- Never use force when carrying out this work!

8.4.1. Use of screw locking

Screw locking is used on all screws. This must always be renewed after dismantling.

The screw locking can be applied in different ways:

- Liquid thread-locking compound, e.g. Loctite 243
- Mechanical screw locking with Nord-Lock washer

Thread-locking fluid

Thread-locking fluid can be unfastened by applying increased force. If this is not possible, the connection must be heated to about 300 °C in order to be released. The affected components must be thoroughly cleaned and, on assembly, once again have the thread-locking fluid applied to them.

Mechanical screw locking device

The Nord-Lock washer is only used on bolts with strength class 10.9 which have been coated with Geomet.

The Nord-Lock washer must not be used for screw locking with rust-free screws!

8.4.2. Which repair work is allowed to be performed?

- Impeller change
- Changing the mechanical seal
- Change of hydraulics
- Change of motor

8.4.3. Impeller change

The bearing bracket and housing cover, impeller and motor are constructed in "back pull-out" design. This means that these components can be removed as a complete unit. The hydraulics housing remains installed in the pipeline system.

Fig. 6.: Removal of the impeller

1	Hydraulics housing	7	Washer
2	"Back pull-out" unit	8	Screw locking device
3	Support	9	Impeller
4	Fastening screw for support	10	Shaft
5	Fastening nuts for back pull-out unit	11	Key
6	Impeller fixation	12	O-ring

1. Fasten the lifting equipment to the marked attachment points.
2. Loosen the fastening screw (4) on the support (3) and remove it.
3. Loosen and remove the hexagon nuts (5) for fixation of the back pull-out unit (2).
4. Slowly and carefully pull the back pull-out unit (2) off the hydraulics housing (1).

Warning: Danger of crushing!

When the back pull-out unit is pulled off the stud bolts, it can fall suddenly. Limbs may be crushed between the impeller and flange! Pull the back pull-out unit off the stud bolts slowly and wear suitable protective gloves.

5. Secure the impeller (9) with suitable means, unscrew and remove the fastening screw (6). Note the washer (7) and the screw locking device (8).

Warning! Sharp edges!

Sharp edges can form on the impeller. There is a risk of injury! Wear the necessary protective clothing, such as protective gloves.

6. Carefully pull the impeller (9) off the shaft (10). Make sure that the key (11) remains in the groove.
7. Clean the shaft (10) and key (11).
8. Push a new impeller (9) onto the shaft (10). Make sure that the sliding surfaces are not damaged and that the key (11) is pushed into the groove on the impeller (9)!
9. Fit a new screw locking device (8) and a new washer (7) to a new fastening screw (6). Screw the fastening screw (6) back in. Secure the impeller (9) and tighten the fastening screw (6) tightly.
10. Change the O-ring (12) on the bearing bracket of the back pull-out unit.
11. Push the back pull-out unit back onto the stud bolts on the hydraulics housing and secure it with the hexagon nuts (5).
12. Secure the support (3) to the flange again with the fastening screw (4).
13. Test: It must be possible to turn the impeller by hand.

Warning! Sharp edges!

Sharp edges can form on the opening of the suction port. There is a risk of injury! Wear the necessary protective clothing, such as protective gloves.

8.4.4. Changing the mechanical seal

Great care must be taken during this task. The mechanical seal is a very sensitive component that will be destroyed if incorrect forces are applied to it. This work must be carried out by trained personnel or Wilo customer service.

Fig. 7.: Component overview

10	Shaft	14	Rubber bellows with spring
11	Key	15	Stationary ring with angle collar
12	O-ring	13	Housing cover
16	Fastening screw for housing cover		

1. Drain the oil from the sealing chamber – see section “Oil change in sealing chamber”
2. Dismantle the impeller – see section “Impeller change”
3. Remove the key (11).
4. Carefully and slowly pull the rubber bellows and spring (14) (rotating part of the mechanical seal) off the shaft (10).

Caution!

Avoid tilting! Otherwise the shaft may be damaged.

5. Loosen the four fastening screws (16) on the housing cover and completely unscrew them.
6. Carefully and slowly pull the housing cover (13) off the shaft.

Caution!

Avoid tilting! Otherwise the shaft may be damaged.

7. Press the stationary ring with angle collar (15) (stationary part of the mechanical seal) out of its seat in the bearing bracket cover (13).
8. Clean the shaft (10) and housing cover (13) thoroughly and check for wear and corrosion.

If the components are damaged, please contact Wilo customer service!

9. Unpack the new mechanical seal and check for damage.

Faulty parts must not be installed!

10. To reduce friction during installation, lubricate the shaft, the seat on the bearing bracket cover and the two components of the mechanical seal with low surface tension water (with dishwashing detergent added) or pure dishwashing detergent.

Caution!

Never use oil or grease as lubricants!

11. Applying an even distribution of pressure, press the stationary ring with angle collar (15) into its seat in the housing cover (13).
12. Fit a new O-ring (12) to the housing cover (13), carefully and slowly push it onto the shaft (10) and secure it again with the four fastening screws (16).

Caution!

Avoid tilting! Otherwise the shaft or sliding surface of the mechanical seal may be damaged!

13. Slide the rubber bellows with spring (14) onto the shaft (10), turning it slightly clockwise until it is completely in contact with the stationary ring (15).

Caution!

Avoid tilting! For longer distances, remoisten frequently. Only apply force to the last turn of the spring!

14. Insert the key (11) again.
15. Install the impeller – see section “Impeller change”

8.4.5. Change of hydraulics

To change the hydraulics, proceed as described in the “Removal” chapter. To do so, remove the back pull-out unit and then replace the hydraulics housing in the piping.

8.4.6. Change of motor

The system is driven as standard by IEC standard motors. These can be replaced at any time. See the type designation for the size; the B5 motor construction is used.

Fig. 8.: Removal of the motor

1	Standard motor
2	Hexagon nuts for fixation of the motor
3	Hexagon head screws for fixation of the motor

1. Fasten the lifting equipment to the marked attachment points.
 2. Loosen and remove hexagon nuts.
 3. Press the hexagon head screws out of the flange.
 4. Carefully pull or lift off the motor from the hydraulic flange.
 5. Place a new motor on the hydraulic flange.
- Pay attention to the sliding surfaces of the motor shaft.**

6. Insert hexagon head screws into the flange
7. Attach hexagon nuts with washers to the hexagon head screws and screw them tight.

9. Troubleshooting and possible solutions

In order to prevent damage or serious injury while rectifying hydraulics faults, the following points must be observed:

- Only attempt to remedy a fault if you have qualified staff, meaning that each job must be carried out by qualified personnel. Electrical work, for example, must be performed by a trained electrician.
- Always secure the hydraulics against an accidental restart by disconnecting the motor from the mains. Take appropriate safety precautions.
- Always have a second person on hand to ensure the hydraulics are switched off in an emergency.
- Secure moving parts to prevent injury.
- Unsanctioned changes to the hydraulics are made at the operator's own risk and release the manufacturer from any warranty obligations!

Fault: The unit will not start

1. Tripping of fuses, motor protection switch and/or monitoring devices
 - Check that the impeller runs freely. If necessary, clean it and ensure it runs freely again
2. The sealing chamber monitoring (optional) has interrupted the electric circuit (operator-related)
 - See fault: Mechanical seal leak, sealing chamber monitoring reports a fault or shuts down the unit

Fault: The unit starts, but the motor protection switch triggers shortly after commissioning

1. Incorrect direction of rotation
 - Swap the 2 phases of the mains supply
2. Impeller slowed by accumulation, clogging and/or solid matter, increased current consumption
 - Switch off the hydraulics, secure them against being switched back on again and free the impeller or clear the suction port
3. The density of the fluid is too high
 - Contact Wilo customer service

Fault: The unit is running, but not pumping

1. No fluid available
 - Open inlet for tank or slide valve
2. Inlet clogged
 - Clean the supply line, slide valve, suction piece, suction port or suction strainer
3. Impeller blocked or slowed
 - Switch off the hydraulics, secure them against being switched back on again and free the impeller
4. Defective piping
 - Replace defective parts
5. Intermittent operation
 - Check switching system

Fault: The unit is running, but not within the specified operating parameters

1. Inlet clogged
 - Clean the supply line, slide valve, suction piece, suction port or suction strainer
2. Slide valve closed in the discharge pipe
 - Fully open the slide valve
3. Impeller blocked or slowed
 - Switch off the hydraulics, secure them against being switched back on again and free the impeller

4. Incorrect direction of rotation
 - Swap 2 phases of the mains supply
5. Air in the system
 - Check the piping and hydraulics, and vent if necessary
6. Hydraulics pumping against excessive pressure
 - Check the slide valve in the discharge pipe and open it completely if necessary, use a different impeller, consult the factory
7. Signs of wear
 - Replace worn parts
8. Defective piping
 - Replace defective parts
9. Inadmissible levels of gas in the fluid
 - Consult the factory
10. 2-phase operation
 - Have a specialist inspect the connection and correct it if necessary

Fault: The unit is not running smoothly and is noisy

1. Hydraulics are operating in an inadmissible range
 - Check the operating data of the hydraulics and correct if necessary and/or adjust the operating conditions
2. Suction port, suction strainer and/or impeller clogged
 - Clean the suction port, suction strainer and/or impeller
3. Impeller stiff
 - Switch off the hydraulics, secure them against being switched back on again and free the impeller
4. Inadmissible levels of gas in the fluid
 - Consult the factory
5. Incorrect direction of rotation
 - Swap 2 phases of the mains supply
6. Signs of wear
 - Replace worn parts
7. Shaft bearing defective
 - Consult the factory
8. Hydraulics are installed under tension
 - Check installation, use rubber compensators if necessary

Fault: Mechanical seal leak, sealing chamber monitoring reports a fault or shuts down the unit

1. Condensation water build-up due to extended storage and/or temperature fluctuations
 - Operate the hydraulics briefly (max. 5 min) without pencil electrode
2. Increased leakage when running in new mechanical seals
 - Change the oil
3. Defective pencil electrode cables
 - Replace pencil electrode
4. Mechanical seal is defective
 - Replace the mechanical seal and contact the factory!

Further steps for troubleshooting

If the points listed here do not rectify the fault, contact Wilo customer service. They can help you as follows:

- Telephone and/or written support from Wilo customer service
- On-site support from Wilo customer service
- Inspection or repair of the hydraulics at the factory

Please note that you may be charged for some services provided by our customer service! For more details, please contact the Wilo customer service.

10. Appendix

10.1. Tightening torques

Rust-free screws (A2/A4)		
Thread	Tightening torque	
	Nm	kp m
M5	5.5	0.56
M6	7.5	0.76
M8	18.5	1.89
M10	37	3.77
M12	57	5.81
M16	135	13.76
M20	230	23.45
M24	285	29.05
M27	415	42.30
M30	565	57.59

Geomet-coated screws (strength 10.9) with Nord-Lock washer		
Thread	Tightening torque	
	Nm	kp m
M5	9.2	0.94
M6	15	1.53
M8	36.8	3.75
M10	73.6	7.50
M12	126.5	12.90
M16	155	15.84
M20	265	27.08

10.2. Spare parts

Spare parts can be ordered from Wilo customer service. To avoid further questions and incorrect orders, the serial and/or article number must always be supplied.

Subject to technical modifications without prior notice!







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