Pioneering for You

Wilo-Padus PRO

en Installation and operating instructions

6084247 • Ed.02/2019-10

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1 General information

1.1 About these instructions

These installation and operating instructions are an integral part of the product. Read these instructions before commencing work and keep them in an accessible place at all times. Strict adherence to these instructions is a precondition for the intended use and correct operation of the product. All information and markings on the product must be observed.

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

1.2 Copyright

1.3 Subject to change

The manufacturer reserves the right to make technical modifications to the device or individual components. The illustrations used may differ from the original and are intended as an example representation of the device.

1.4 Warranty

The specifications in the current “General Terms and Conditions” apply to the warranty and the warranty period. These can be found at www.wilo.com/legal

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

Claim to warranty

If the following points are complied with, the manufacturer is obligated to rectify every qualitative or constructive flaw:

- → The defects are reported in writing to the manufacturer within the warranty period.
- → Application according to intended use.
- → All monitoring devices are connected and tested before commissioning.

Exclusion from liability

Exclusion from liability excludes all liability for personal injury, material damage or financial losses. This exclusion ensues as soon as one of the following applies:

- → Inadequate configuration due to inadequate or incorrect instructions by the operator or the client
- → Non-compliance with installation and operating instructions
- → Improper use
- → Incorrect storage or transport
- → Incorrect installation or dismantling
- → Insufficient maintenance
- → Unauthorised repairs
- → Inadequate construction site
- → Chemical, electrical or electro-chemical influences
- → Wear

2 Safety

This chapter contains basic information for the individual phases of the life cycle. Failure to observe this information carries the following risks:

- → Injury to persons from electrical, mechanical and bacteriological factors as well as electromagnetic fields
- → Environmental damage from discharge of hazardous substances
- → Property damage
- → Failure of important functions of the product

Failure to observe the information contained herein will result in the loss of claims for damages.

The instructions and safety instructions in the other chapters must also be observed!

2.1 Identification of safety instructions

These installation and operating instructions set out safety instructions for preventing personal injury and damage to property. These safety instructions are shown differently:

- → Safety instructions relating to personal injury start with a signal word, are **preceded by a corresponding symbol** and are shaded in grey.

DANGER

Type and source of the danger!

Consequences of the danger and instructions for avoidance.

→ Safety instructions relating to property damage start with a signal word and are displayed **without** a symbol.

CAUTION

Type and source of the danger!

Consequences or information.

Signal words

→ **DANGER!**
Failure to observe the safety instructions will result in serious injuries or death!

→ **WARNING!**
Failure to follow the instructions can lead to (serious) injuries!

→ **CAUTION!**
Failure to follow the instructions can lead to property damage and a possible total loss.

→ **NOTICE!**
Useful information on handling the product

Markups

✓ Prerequisite

1. Work step/list

⇒ Notice/instructions

► Result

Symbols

These instructions use the following symbols:


Danger caused by electric voltages


Danger of bacterial infection


Danger of explosion


General warning symbol


Warning – risk of cuts and similar injuries


Warning – hot surfaces


Warning – high pressure


Warning – suspended loads


Personal protective equipment: wear a safety helmet


Personal protective equipment: wear foot protection


Personal protective equipment: wear hand protection


Personal protective equipment: wear mouth protection


Personal protective equipment: wear safety goggles


Working alone is prohibited! A second person must be present.


Useful information

2.2 Personnel qualifications

Personnel must:
- → Be instructed about locally applicable regulations governing accident prevention.
- → Have read and understood the installation and operating instructions.

Personnel must have the following qualifications.
- → Electrical work: A qualified electrician must carry out the electrical work.
- → Installation/dismantling: The technician must be trained in the use of the necessary tools and fixation materials for the relevant construction site.
- → Maintenance tasks: The technician must be familiar with the use of operating fluids and their disposal. In addition, the technician must have basic knowledge of mechanical engineering.

Definition of "qualified electrician"

A qualified electrician is a person with appropriate technical education, knowledge and experience who can identify **and** prevent electrical hazards.

2.3 Electrical work

- → Electrical work must be carried out by a qualified electrician.
- → Before commencing work, disconnect the product from the mains and secure it against being switched on again.
- → Observe applicable local regulations when connecting to the mains power supply.
- → Comply with the requirements of the local energy supply company.
- → Train personnel in how to make electrical connections.
- → Instruct personnel in the methods to switch off the device.
- → Observe the technical information in these installation and operating instructions as well as on the rating plate.
- → Earth the device.
- → Observe regulations for connection to the electrical switching system.
- → It is not possible to connect the device to electronic start-up controllers (e.g. soft starter or frequency converter).
- → Replace defective connection cables. Contact customer service.

2.4 Monitoring devices

The following monitoring devices must be provided on-site:

Circuit breaker

The size and switching characteristics of the circuit breakers must conform to the rated current of the connected product. Observe local regulations.

Motor protection switch

Make provision for an on-site motor protection switch for devices without a plug! The minimum requirement is a thermal relay/motor protection switch with temperature compensation, differential triggering and anti-reactivation device in accordance with the local regulations. In case of sensitive mains, make provision for the installation on-

site of other protective equipment (e.g. overvoltage, undervoltage or phase failure relay, etc.).

Residual-current device (RCD)

Comply with the regulations of the local energy supply company! The use of a residual-current device is recommended.
If persons come into contact with the device and conductive fluids, secure the connection **with** a residual-current device (RCD).

2.5 Use in fluids hazardous to health

There is a danger of bacterial infection when using the device in fluids hazardous to health! Thoroughly clean and disinfect the device after dismantling and prior to further use. The operator must ensure the following:
- → The following protective equipment is provided and worn when cleaning the device:
  - – Closed safety goggles
  - – Breathing mask
  - – Protective gloves
- → All persons are informed about the fluid, the associated danger and its correct handling!

2.6 Transport

- → Wear the following protective equipment:
  - – Safety shoes
  - – Safety helmet (when using lifting equipment)
- → Always hold the handle to transport the device. Never pull the device by the connection cable!
- → Only use legally specified and approved lifting gear.
- → Select the lifting gear based on the prevailing conditions (weather, attachment point, load, etc.).
- → Always attach the lifting gear to the attachment points (handle or lifting eye).
- → The stability of the lifting equipment must be ensured during operation.
- → When using lifting equipment, ensure a second person is present to coordinate the procedure if required (e.g. if the operator's field of vision is blocked).
- → Persons must not stand underneath suspended loads. Do **not** move suspended loads over workplaces where people are present.

2.7 Installing/dismantling

- → Wear the following protective equipment:
  - – Safety shoes
  - – Safety gloves for protection against cuts
  - – Safety helmet (when using lifting equipment)
- → Locally applicable laws and regulations for work safety and accident prevention must be complied with.
- → Disconnect the device from the mains and secure it against being switched on again without authorisation.
- → All rotating parts must be at a standstill.
- → Provide adequate aeration in closed rooms.
- → When working in chambers and closed spaces, a second person must be present for safety reasons.
- → Take immediate countermeasures if there is a build-up of toxic or suffocating gases!
- → Clean the device thoroughly. Disinfect devices that are used in fluids hazardous to health!
- → Make sure that there is no risk of explosion when carrying out any type of welding work or work with electrical devices.

2.8 During operation

- → Wear the following protective equipment:
  - – Safety shoes
  - – Ear protection (in accordance with work regulations notice)
- → The work area in which the device is used is not a recreational area. No persons are allowed in the work area during operation.
- → The operator must immediately report any faults or irregularities to their line manager.
- → If hazardous defects occur, the operator must immediately deactivate the device. Hazardous defects include:
  - – Malfunction of safety and monitoring devices
  - – Damage to housing parts
  - – Damage to electrical equipment
- → Never remove the suction strainer or reach into the suction port. The rotating parts can crush and sever limbs.

- If the motor emerges during operation, the motor housing can heat up to above 40 °C (104 °F).
- Open all gate valves in the piping on both the suction and pressure sides.
- Ensure minimum water submersion by using dry-running protection.
- Under normal operating conditions, the sound-pressure level of the product is below 85 dB(A). However, the actual sound-pressure level depends on several factors:
  - Installation depth
  - Installation
  - Fixation of accessories and pipe
  - Duty point
  - Immersion depth
- The operator must measure the sound pressure when the device is being operated under the applicable operating conditions. Ear protection must be worn for sound pressure levels of 85 dB(A) and above, and a notice must be added to the work regulations!

2.9 Maintenance tasks

- Wear the following protective equipment:
  - Closed safety goggles
  - Safety shoes
  - Safety gloves for protection against cuts
- Always carry out maintenance tasks outside the operating space/installation site.
- Only carry out maintenance tasks mentioned in these installation and operating instructions.
- Only original parts from the manufacturer may be used for maintenance and repairs. Use of parts other than the original parts releases the manufacturer from any liability.
- Collect any leakage of fluid and operating fluid immediately and dispose of it according to the locally applicable guidelines.
- Store tools at the designated locations.
- After completing work, reattach all safety and monitoring devices and check that they function properly.

Changing operating fluid

In case of a defect, a pressure **of several bar can build up** in the motor! This pressure escapes when the screw plugs are **opened**. If screw plugs are opened without due caution, they can be ejected at high speed! To avoid injuries, observe the following instructions:

- Adhere to the prescribed sequence of work steps.
- Unscrew the screw plugs slowly, but never unscrew them completely. As soon as the pressure escapes (audible whistling or hissing of air), stop turning the screw plug any further.
  WARNING! Hot operating fluids can also spray out when the pressure is escaping. This can result in scalding! To avoid injuries, allow the motor to cool down to the ambient temperature before carrying out any work!
- When the pressure has completely dissipated, fully unscrew the screw plug.

2.10 Operating fluid

In the sealing chamber, the motor is filled with white oil. Operating fluid must be replaced during regular maintenance work and disposed off according to the local guidelines.

2.11 Operator responsibilities

- Installation and operating instructions must be in a language which the personnel can understand.
- Make sure that the personnel is relevantly trained for the specified work.
- Provide the necessary protective equipment and make sure that the personnel wears it.
- Safety and information signs mounted on the device must be always legible.
- Train the personnel pertaining to the functioning of the system.
- Eliminate risk from electrical current.
- Equip hazardous components inside the system with an on-site guard.
- Identify and cordon off the work area.
- To ensure safe working practice, define the responsibilities of the employees.

Children and persons younger than 16 years or with reduced physical, sensory or mental capacities or limited experience are prohibited from handling the product! A technician must supervise persons younger than 18 years!

3 Application/use

3.1 Intended use

The submersible pumps are suitable for pumping:
- → Wastewater
- → Fluids containing abrasive content (e.g. sand, gravel) with a maximum grain size of 10 mm.
- → Fluids of a slightly acidic or alkaline character (pH value 4 – 8).

3.2 Improper use

DANGER

Explosion due to pumping of explosive fluids!

Pumping of highly flammable and explosive fluids (gasoline, kerosene, etc.) in pure form is strictly prohibited. There is a risk of fatal injury due to explosion! The pumps are not designed for these fluids.

DANGER

Danger due to fluids hazardous to health!

If the pump is used in fluids hazardous to health, decontaminate the pump after dismantling and before carrying out any other work! There is a risk of fatal injury! Observe the specifications in the work regulations! The operator must make sure that the personnel have received and read the work regulations!

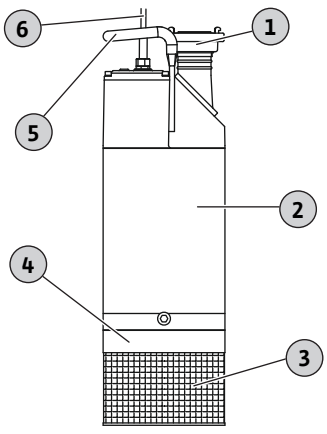
The submersible pumps **must not be used** for pumping:
- → Drinking water
- → Sewage, with or without faeces
- → Acids or alkaline solutions
- → Fluids containing hard components (such as stones, wood, metal, etc.)
- → Fluids containing dry matter
- → Fluids containing substances that may dissolve rubber

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

4 Product description

4.1 Design

Submersible drainage pump as a submersible monobloc unit for continuous duty in wet well installation.



1	Discharge port
2	Cooling shroud
3	Suction strainer
4	Hydraulics housing
5	Handle/attachment point
6	Connection cable

Fig. 1: Padus PRO overview

4.1.1 Hydraulics

Centrifugal hydraulics with multi-channel impeller and vertical threaded connection on the pressure side. If necessary, the pressure connection can be fitted horizontally. A Storz coupling is fitted to the pressure connection.
The hydraulics are **not** self-priming, i.e. the fluid must flow in either automatically or with supply pressure.

4.1.2 Motor

The surface-cooled IE3 motor is available in alternating current or three-phase current versions. Cooling is provided using sheath flow cooling. Waste heat is transferred directly to the fluid via the motor housing. The motor can be used for continuous duty both immersed and non-immersed.

On AC motors, the start capacitor and operating capacitor is installed in a separate switchgear. The switchgear is integrated in the connection cable. The connection cable is available in the following versions:
- → Bare cable end
- → With plug and fitted float switch

4.1.3 Seal

The seal for the fluid and the motor compartment is made via two mechanical seals. The sealing chamber between the mechanical seals is filled with medical white oil.

4.1.4 Material

- → Pump housing: EN-AC-AlSi10Mg + NBR-70
- → Impeller: 1.4470
- → Suction strainer: 1.4301
- → Cooling shroud: 1.4301
- → Motor housing: EN-AC-AlSi10Mg
- → Shaft: 1.4404
- → Seal on the motor side: SiC/SiC
- → Seal on the fluid side: SiC/SiC
- → Static seal: NBR

4.1.5 Fitted accessories

Version “A” of the pump is equipped with a plug and float switch. Depending on the fill level, it is possible to switch the pump on and off automatically using the float switch. The plug is designed for use in commercially available shock-proof or CEE sockets and is **not** overflow-proof.

4.2 Monitoring devices

The thermal motor monitoring protects the motor winding from overheating. A temperature limiter with a bimetallic strip is fitted as standard. The motor monitoring is designed as follows:
- → Version with bare cable end: The thermal motor monitoring is self-switching. This means that the motor is switched off if it overheats and will be automatically switched on again when it has cooled down.
- → Version “A”: The thermal motor monitoring is fitted to the plug on the motor protection relay.

4.3 Operating modes

Operating mode S1: Continuous duty

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

“Slurping operation” operating mode

Slurping operation facilitates the pumping of very small amounts of fluid. **CAUTION! Never allow the machine to dry run! Non-compliance can lead to irreparable damage!**

4.4 Operation with frequency converter

Operation on the frequency converter is not permitted.

4.5 Operation in an explosive atmosphere

Operation in an explosive atmosphere is not permitted.

4.6 Technical data

General	
Date of manufacture [MFY]	See rating plate
Mains connection [U/f]	See rating plate
Power consumption [P_1]	See rating plate
Rated power [P_2]	See rating plate
Max. delivery head [H]	See rating plate
Max. volume flow [Q]	See rating plate
Activation type [AT]	See rating plate

Fluid temperature [t]	3...40 °C
Protection class	IP68
Insulation class [Cl.]	H
Speed [n]	See rating plate
Max. switching frequency	20/h
Max. immersion depth [⧖]	See rating plate
Cable length (standard version)	23 m
Sound-pressure level	70 dB (A)
Explosion protection	-
Pressure connection	
Padus PRO M05	Storz C
Padus PRO M08	Storz B
Operating modes	
Immersed [OTs]	S1
Non-immersed [OTe]	S1

Statement of date of manufacture

The date of manufacture is stated in accordance with ISO 8601: JJJJWww
→ JJJJ = year
→ W = abbreviation for week
→ ww = calendar week

4.7 Type key

Example: Wilo-Padus PRO M08L/T039-540/A	
PRO	Series
M	Impeller shape = semi-open multi-channel impeller
08	Size
L	Hydraulics: - n/a = standard version - L = low-pressure version
T	Mains connection version: M = 1~, T = 3~
039	/10 = rated power P_2 in kW
5	Mains connection frequency: 5 = 50 Hz, 6 = 60 Hz
40	Key for rated voltage
A	Additional electrical equipment: n/a = with bare cable end A = with float switch and plug P = with plug

4.8 Scope of delivery

→ Pump with 23 m (75 ft) cable
→ Storz coupling
→ Connection cable with
  – bare cable end
  – float switch and plug
→ Installation and operating instructions

5 Transportation and storage

5.1 Delivery

After receiving the shipment, this must be checked immediately for defects (damage, completeness). Defects must be noted on the freight documentation! Furthermore, defects must be notified to the transport company or the manufacturer immediately on the day of receipt of shipment. Subsequently notified defects can no longer be asserted.

5.2 Transport

WARNING

Standing under suspended loads!

Never allow anyone to stand under suspended loads! Danger of (serious) injuries caused by falling parts. Loads may not be carried over work places where people are present!

WARNING

Head and foot injuries due to a lack of protective equipment!

Danger of (serious) injuries during work. Wear the following protective equipment:

- Safety shoes
- Safety helmet must be worn if lifting equipment are used!

NOTICE

Use only properly functioning lifting equipment!

Use only properly functioning lifting equipment to lift and lower the pump. Ensure that the pump does not become jammed during lifting and lowering. Do **not** exceed the maximum bearing capacity of the lifting equipment! Check that lifting equipment is functioning properly before use!

CAUTION

Soaked packaging may tear!

The product may fall on the ground if unprotected and may be damaged. Lift wet packaging carefully and replace it immediately!

Only remove the outer packaging at the place of utilisation to ensure that the pump is not damaged during transport. Use tear-proof plastic sacks of sufficient size to package used pumps for transport in a leak-proof manner.

The following points must also be observed:

→ Adhere to the applicable national safety regulations.
→ Use legally specified and approved lifting gear.
→ Select the lifting gear based on the existing conditions (weather, attachment point, load, etc.).
→ Only attach the lifting gear to the attachment point. Fix with a shackle.
→ Use lifting equipment with sufficient bearing capacity.
→ The stability of the lifting equipment must be ensured during operation.
→ When using lifting equipment, a second person must be present to coordinate the procedure if required (e.g. if the operator's field of vision is blocked).

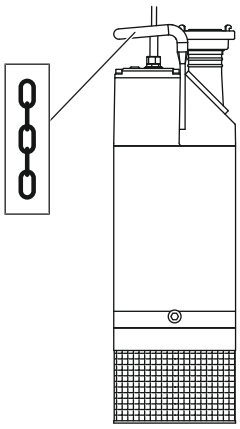


Fig. 2: Attachment point

5.3 Storage

WARNING

Sharp edges on the impeller and suction port!

Sharp edges can form on the impeller and suction port. There is danger of limbs being severed! Protective gloves must be worn to protect from cuts.

CAUTION

Total damage due to moisture ingress

The ingress of moisture into the connection cable damages the cable and the pump! Never immerse the ends of the connection cable in fluid. Seal them tightly during storage.

Newly delivered pumps can be stored for one year. Contact customer service before storing the device for more than one year.

When storing the pump, please note the following points:
- → Place the pump upright (vertical) on a firm bearing surface. **Secure the pump against falling over and slipping!**
- → The max. storage temperature is -15 °C to +60 °C (5 °F to 140 °F). The max. relative humidity is 90 %, non-condensing. We recommend frost-proof storage. Ambient temperature: 5 to 25 °C (41 to 77 °F), relative humidity: 40 to 50 %.
- → Do not store the pump in rooms in which welding work is carried out. The resulting gases or radiation can corrode the elastomer parts and coatings.
- → Seal the suction and pressure connection tightly.
- → Protect the connection cable against kinking and damage. Maintain a constant bend radius!
- → Impellers must be turned by 180° at regular intervals (3 – 6 months). This prevents the bearings from jamming and renews the lubrication film on the mechanical seal. **WARNING! There is a risk of injury due to sharp edges on the impeller and suction port!**
- → Elastomer parts and the coating are subject to natural brittleness. Contact customer service if the mixer has to be stored for more than 6 months.

After storage, remove any dust and oil from the pump and check the coating for damage. Repair damaged coatings before further use.

6 Installation and electrical connection

6.1 Personnel qualifications

- → Electrical work: A qualified electrician must carry out the electrical work.
- → Installation/dismantling: The technician must be trained in the use of the necessary tools and fixation materials for the relevant construction site.

6.2 Installation types

- → Vertical portable wet well installation

The following installation types are **not** permitted:
- → Vertical stationary wet well installation with suspension unit
- → Vertical stationary dry well installation
- → Horizontal installation

6.3 Operator responsibilities

- → Observe the locally applicable professional and trade association accident prevention and safety regulations.
- → Observe all regulations for working with heavy loads and under suspended loads.
- → Provide protective equipment and ensure that the protective equipment is worn by personnel.
- → Observe local regulations on the latest technology for the disposal of wastewater and sewage (without faeces).
- → Avoid pressure surges!
- → Check that the available consulting documents (installation plans, design of the operating space, inflow conditions) are complete and correct.

6.4 Installation

DANGER

Risk of fatal injury due to dangerous lone working practices!

Work in chambers and narrow rooms as well as work involving risk of falling are dangerous work. Such work may not be carried out autonomously! A second person must be present for safety reasons.

WARNING

Hand and foot injuries due to lack of protective equipment!

Danger of (serious) injuries during work. Wear the following protective equipment:

- Safety gloves for protection against cuts
- Safety shoes
- Safety helmet must be worn if lifting equipment are used!

NOTICE

Use only properly functioning lifting equipment!

Use only properly functioning lifting equipment to lift and lower the pump. Ensure that the pump does not become jammed during lifting and lowering. Do **not** exceed the maximum bearing capacity of the lifting equipment! Check that lifting equipment is functioning properly before use!

→ Prepare the operating space/installation location as follows:
  – Clean, free of coarse solids
  – Dry
  – Frost-free
  – Decontaminated
→ Take immediate countermeasures if there is a build-up of toxic or suffocating gases!
→ Use the handle for lifting, lowering and transporting the pump. Never carry or drag the pump by the connection cable!
→ It must be possible to attach the lifting equipment safely. The storage place and the operating space/installation site must be accessible by the lifting equipment. The set-down location must have a firm surface.
→ Attach the lifting gear to the handle using a shackle. Only use lifting gear which has been technically approved.
→ The laid connection cables must enable safe operation. Check whether the cable cross-section and the cable length are sufficient for the selected installation type.
→ The corresponding IP class must be observed when using switchgear. Install the switchgear in an overflow-proof position and away from potentially explosive atmosphere areas!

6.4.1 Maintenance tasks

After a storage period of more than 6 months, turn the impeller prior to installation.

6.4.1.1 Rotate impeller

WARNING

Sharp edges on the impeller and suction port!

Sharp edges can form on the impeller and suction port. There is danger of limbs being severed! Protective gloves must be worn to protect from cuts.

✓ The pump is **not** connected to the mains!

✓ Protective equipment must be worn!

1. Place the pump on a firm surface in a vertical position.
   WARNING! Risk of hands being crushed. Make sure that the pump cannot fall over or slip!
2. Disassemble the suction strainer.
   Loosen the four hexagon nuts on the suction strainer and remove with the washer.
3. Pull off the suction strainer.
4. Reach slowly and carefully into the hydraulics and turn the impeller.
5. Mount the suction strainer.
   Push the suction strainer into position. Screw in the four hexagon nuts with washers and tighten. **Max. tightening torque: 20 Nm!**

6.4.2 Portable wet well installation

WARNING

Risk of burns from hot surfaces!

Motor housing can become hot during operation. It may cause burns. Allow the pump to cool down at ambient temperature after switching it off!

WARNING

Separation of pressure hose!

Separation or movement of the pressure hose can lead to (serious) injuries. Securely attach the pressure hose to the outlet! Prevent buckling of the pressure hose.

For portable installation, the pump is equipped with a strainer. The strainer filters coarse solids out of the fluid and enables secure standing if placed on a solid load bearing surface. This allows the pump to be installed anywhere in the operating space/installation location. To prevent sinking in, a hard base must be used at the installation location in case of soft load bearing surfaces. A pressure hose or pipework is connected on the pressure side.

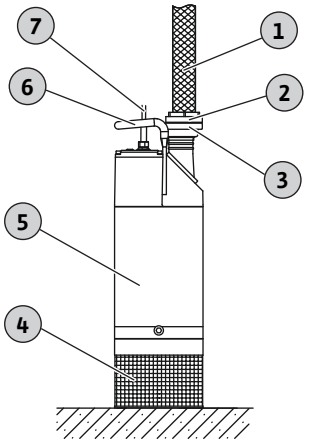


Fig. 3: Wet well installation, portable

Work steps

1	Pressure hose
2	Storz coupling (pressure hose)
3	Storz coupling (pressure connection)
4	Suction strainer
5	Pump
6	Handle: Attachment point for lifting equipment
7	Connection cable

✓ Pressure connection prepared: Hose connection or Storz coupling fitted.

1. Use a shackle to attach the hoisting gear to the attachment point of the pump.
2. Lift and align the pump at the installation location.
3. Place the pump on a solid load bearing surface. **CAUTION! Prevent the pump sinking in!**
4. Lay the pressure hose and fasten it to a certain point (e.g. drainage). **DANGER! Separation or movement of the pressure hose can lead to (serious) injuries! Secure the pressure hose at the outlet.**
5. Lay the connection cable properly. **CAUTION! Do not damage the connection cable!**

► The pump is installed, the qualified electrician can make the electrical connection.

6.4.3 Level control

With a level control device, the current fill levels are determined and the pump is switched on and off automatically depending on the fill levels. Fill levels are recorded by using different sensor types (float switches, pressure and ultrasound measurements or electrodes). The following must be observed when using a level control device:

→ Float switches can move freely!
→ The water level must **not fall below** the minimum permissible!
→ The maximum switching frequency **must not be exceeded**!
→ If the fill levels fluctuate strongly, a level control with two measuring points is recommended. This makes it possible to achieve larger differential gaps.

Use of attached float switch

The “A” version is equipped with a float switch. The pump is switched on and off depending on the fill level. The switching level is determined by the cable length of the float switch.

Use of on-site level controls

When using an on-site level control device, refer to the manufacturer’s own installation and operating instructions for specifications on the installation.

6.5 Electrical connection

DANGER

Risk of death due to electrocution!

Improper conduct when carrying out electrical work can lead to death due to electric shock! Electrical work must be carried out by a qualified electrician in accordance with the locally applicable regulations.

- → The mains connection must match the specifications on the rating plate.
- → Power supply on mains side for three-phase current motors with clockwise rotating field.
- → Lay the connection cable in accordance with the locally applicable regulations and connect it according to the wire assignment.
- → Connect the monitoring devices and check their function.
- → Earth the device properly in accordance with applicable local regulations.

6.5.1 Fuse on mains side

Circuit breaker

The size and switching characteristics of the circuit breakers must conform to the rated current of the connected product. Observe local regulations.

Motor protection switch

Make provision for an on-site motor protection switch for devices without a plug! The minimum requirement is a thermal relay/motor protection switch with temperature compensation, differential triggering and anti-reactivation device in accordance with the local regulations. In case of sensitive mains, make provision for the installation on-site of other protective equipment (e.g. overvoltage, undervoltage or phase failure relay, etc.).

Residual-current device (RCD)

Comply with the regulations of the local energy supply company! The use of a residual-current device is recommended.
If persons come into contact with the device and conductive fluids, secure the connection **with** a residual-current device (RCD).

6.5.2 Maintenance tasks

Check the insulation resistance of the motor winding before installation. If the measured values differ from the specifications, moisture may have penetrated into the motor or the connection cable. Contact customer service in the event of a fault.

6.5.2.1 Checking the insulation resistance of the motor winding

Use an insulation tester to measure the insulation resistance (measuring voltage = 1000 V). Observe the following values:

- → At the time of initial commissioning: Insulation resistance may not be less than 20 MΩ.
- → For further measurements: Value must be greater than 2 MΩ.

NOTICE! For motors with an integrated capacitor, short-circuit the windings prior to checking!

6.5.3 Three-phase current motor connection

NOTICE! A clockwise rotating field must be available to allow the correct direction of rotation.

NOTICE! The individual wires are identified according to the connection diagram. Do not cut the wires! There is no further relationship between the wiring diagram and the connection diagram.

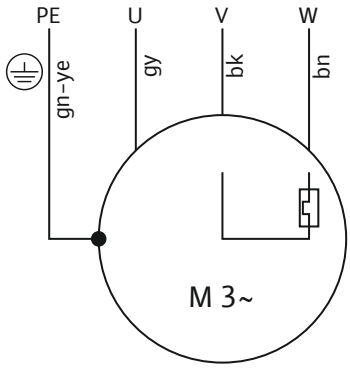


Fig. 4: Connection diagram for three-phase current motor without plug and float switch

Standard version without plug and float switch

Wire colour	Designation	Terminal
Grey (gy)	U	L1
Black (bk)	V	L2
Brown (bn)	W	L3
Green/yellow (gn-ye)	Earth	PE

The connection cable features bare cable ends. Connection to the mains is established by connecting the connection cable in the switchgear. **Electrical connection must always be carried out by a qualified electrician!**

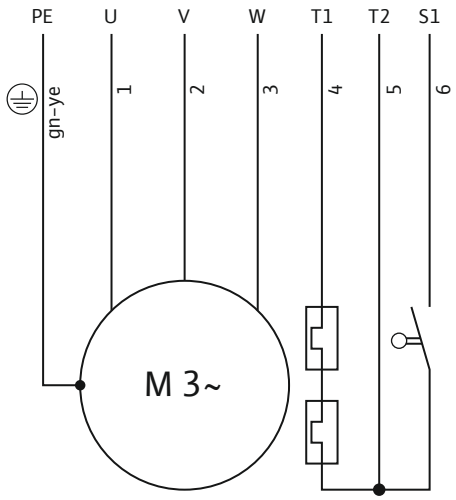


Fig. 5: Connection diagram for three-phase current motor with plug and float switch

Version "A" with plug and float switch

Wire	Designation	Terminal
1	U	L1
2	V	L2
3	W	L3
4, 5	T1, T2	Monitoring of motor winding
6	S1	Float switch
Green/yellow (gn-ye)	PE	Earth

The connection cable is equipped with a CEE plug. The connection to the mains is established by inserting the plug into a socket. The plug is **not** overflow-proof. **Install the socket so that it is overflow-proof!** Observe the information on the protection class (IP) of the plug.

DANGER! If the pump is to be connected directly to the switchgear, arrange for the electrical connection to be carried out by a qualified electrician!

6.5.4 Motor protection adjustment

Motor protection must be set depending on the selected activation type.

6.5.4.1 Direct activation

At full load, set the motor protection switch to the rated current (see rating plate). At partial load, it is recommended to set the motor protection switch 5 % above the current measured at the duty point.

6.5.5 Soft starter

It is not possible to connect the device to a soft starter!

6.5.6 Operation with frequency converter

Operation on the frequency converter is not permitted.

7 Commissioning

WARNING

Foot injuries due to a lack of protective equipment!

Danger of (serious) injuries during work. Wear safety shoes!

7.1 Personnel qualifications

→ Electrical work: A qualified electrician must carry out the electrical work.
→ Operation/control: Operating personnel must be instructed in the functioning of the complete system.

7.2 Operator responsibilities

→ Providing installation and operating instructions by the pump or at a place specially reserved for it.

→ Making the installation and operating instructions available in the language of the personnel.
→ Making sure that the installation and operating instructions are read and understood by all personnel.
→ All safety devices and emergency cut-outs on the system-side must be active and checked to ensure that they work properly.
→ The pump is suitable for use under the specified operating conditions.

7.3 Direction of rotation check (for three-phase current motors only)

The pump has been checked and adjusted to the correct direction of rotation for a clockwise rotating field at the factory. Connection is made in accordance with the specifications in the “Electrical connection” chapter.

Checking the direction of rotation

A qualified electrician checks the rotating field at the mains connection with a rotating-field testing device. To allow the correct direction of rotation, a clockwise rotating field must be available at the mains connection. The pump is **not** approved for operation with a counter-clockwise rotating field! **CAUTION! If the direction of rotation is checked with a test run, comply with the environmental and operating conditions!**

Incorrect direction of rotation

If the direction of rotation is incorrect, exchange the two phases at the mains connection.

Pumps with CEE plug and phase inverter

1. Insert CEE plug into the socket.
2. Check the control lamp.
   ⇒ Control lamp off: Direction of rotation correct.
   ⇒ Control lamp on: Incorrect direction of rotation.
3. Correct the direction of rotation.
   ⇒ Use a suitable screwdriver to push the phase inverter into the plug and turn by 180°.

► Direction of rotation set correctly.

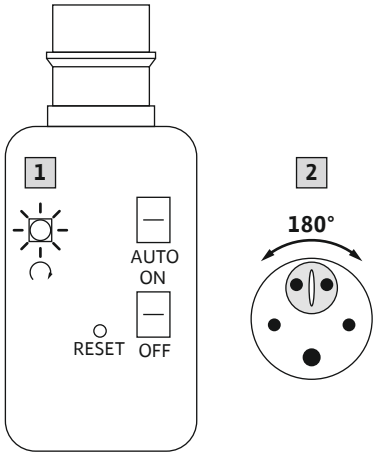


Fig. 6: Phase inverter

7.4 Operation in an explosive atmosphere

Operation in an explosive atmosphere is not permitted.

7.5 Before switching on

Check the following prior to activation:
→ Check whether the device has been installed properly and in accordance with the locally applicable regulations:
  – Has the pump been earthed?
  – Has the power supply cable routing been tested?
  – Has the electrical connection been carried out in accordance with regulations?
  – Are all mechanical components attached correctly?
→ Check level control:
  – Can the float switches move freely?
  – Have the switching levels been tested (pump on, pump off, minimum water level)?
  – Is additional dry-running protection installed?
→ Check the operating conditions:
  – Have the min./max. temperatures of the fluid been tested?
  – Has the max. immersion depth been checked?
  – Is the max. switching frequency complied with?
  – Has a hard base been installed in the case of soft flooring?
  – Are all gate valves open?

7.6 Switching on and off

During the start process, the rated current is temporarily exceeded. During operation, the rated current may no longer be exceeded. **CAUTION! If the pump does not start, switch off the pump immediately. Remove the fault before reactivating the pump!**

Pumps with bare cable end

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

Pump with attached plug

→ After inserting the plug into the socket, the pump is ready for operation. The pump is switched on and off with the ON/OFF switch.

Pump with attached float switch and plug

→ After inserting the plug into the socket, the pump is ready for operation. The pump is controlled via two switches on the plug:
  – HAND/AUTO: Determines if the pump is switched on and off directly (HAND) or depending on the fill level (AUTO).
  – ON/OFF: Switches the pump on and off.

7.7 During operation

WARNING

Amputation of limbs due to rotating components!

No persons must be present in the work area of the pump! There is risk of (serious) injuries due to rotating components! No persons must be present in the work area of the pump during start-up or operation.

WARNING

Risk of burns from hot surfaces!

Motor housing can become hot during operation. It may cause burns. Allow the pump to cool down at ambient temperature after switching it off!

When operating the pump, observe the locally applicable regulations on the following topics:

→ Workplace safety
→ Accident prevention
→ Handling electrical machines

Strictly comply with the personnel responsibilities specified by the operator. All personnel are responsible for ensuring compliance with responsibilities and regulations!

Due to their design, centrifugal pumps have rotating parts that are easily accessible. Depending on operating conditions, sharp edges can develop on these parts. **WARNING! This can lead to cuts and limbs may be severed!** Check the following at regular intervals:

→ Operating voltage (+/-10 % of the rated voltage)
→ Frequency (+/-2 % of the rated frequency)
→ Current consumption between individual phases (max. 5 %)
→ Voltage difference between the individual phases (max. 1 %)
→ Max. switching frequency
→ Level control device/dry-running protection: Switching points
→ All gate valves open

8 Shut-down/dismantling

8.1 Personnel qualifications

→ Operation/control: Operating personnel must be instructed in the functioning of the complete system.
→ Electrical work: A qualified electrician must carry out the electrical work.
→ Installation/dismantling: The technician must be trained in the use of the necessary tools and fixation materials for the relevant construction site.

8.2 Operator responsibilities

→ Locally applicable accident prevention and safety regulations of trade associations.
→ Observe regulations for working with heavy loads and under suspended loads.

→ Provide the necessary protective equipment and make sure that the personnel wears it.
→ Provide adequate aeration in closed rooms.
→ Take immediate countermeasures if there is a build-up of toxic or suffocating gases!

8.3 Shut-down

The pump is deactivated during decommissioning, but remains installed. This ensures that the pump is always ready for operation.

✓ To protect the pump from frost and ice, always immerse the pump completely in the fluid.

✓ The temperature of the fluid must always be above +3 °C (+37 °F).

1. Switch off the pump at the operating point.
2. Secure the operating point against being switched on again by unauthorised persons (e.g. lock main switch).

► The pump is out of operation and can now be dismantled.

If the pump remains installed after decommissioning, observe the following:
→ Ensure that the prerequisites for decommissioning are maintained for the complete period of decommissioning. If these prerequisites cannot be guaranteed, dismantle the pump after decommissioning!
→ For an extended period of decommissioning, carry out a 5-minute function test at regular intervals (monthly to quarterly). **CAUTION! A function test may only be carried out under the applicable operating conditions. A dry run is not permitted! Non-compliance can result in irreparable damage!**

8.4 Removal

DANGER

Danger due to fluids hazardous to health!

If the pump is used in fluids hazardous to health, decontaminate the pump after dismantling and before carrying out any other work! There is a risk of fatal injury! Observe the specifications in the work regulations! The operator must make sure that the personnel have received and read the work regulations!

DANGER

Risk of death due to electrocution!

Improper conduct when carrying out electrical work can lead to death due to electric shock! Electrical work must be carried out by a qualified electrician in accordance with the locally applicable regulations.

DANGER

Risk of fatal injury due to dangerous lone working practices!

Work in chambers and narrow rooms as well as work involving risk of falling are dangerous work. Such work may not be carried out autonomously! A second person must be present for safety reasons.

WARNING

Risk of burns from hot surfaces!

Motor housing can become hot during operation. It may cause burns. Allow the pump to cool down at ambient temperature after switching it off!

NOTICE

Use only properly functioning lifting equipment!

Use only properly functioning lifting equipment to lift and lower the pump. Ensure that the pump does not become jammed during lifting and lowering. Do **not** exceed the maximum bearing capacity of the lifting equipment! Check that lifting equipment is functioning properly before use!

8.4.1 Portable wet well installation

✓ Pump has been taken out of service.

1. Disconnect the pump from the mains.
2. Roll up the connection cable and lay it across the motor housing. **CAUTION! Do not kink the connection cable and maintain a constant bend radius. Never pull the device by the connection cable – doing so will damage the connection cable!**
3. Loosen the pressure pipe from the pressure port.
4. Attach the lifting equipment to the attachment point.
5. Lift the pump out of the operating space. **CAUTION! There is a risk of squeezing and damaging the connection cable when setting the pump down! Pay attention to the connection cable when setting the pump down!**
6. Clean the pump thoroughly (see “Cleaning and disinfecting”). **DANGER! If the pump has been used in fluids hazardous to health, disinfect the pump!**

8.4.2 Clean and disinfect

DANGER

Danger due to fluids hazardous to health!

Danger to life if the pump is used in fluids hazardous to health! Decontaminate the pump before carrying out any further work! Wear the following protective equipment while performing cleaning tasks:

- Closed safety goggles
- Breathing mask
- Protective gloves

⇒ The equipment listed here is the minimum requirement, observe the specifications of the work regulations! The operator must make sure that the personnel have received and read the work regulations!

✓ Pump is dismantled.

✓ Contaminated cleaning water is disposed of in the sewer in accordance with local regulations.

✓ A disinfectant is provided for contaminated pumps.

1. Attach the lifting equipment to the attachment point of the pump.
2. Lift the pump approximately 30 cm (10 in) above the ground.
3. Spray the pump with clear water from top to bottom. **NOTICE! An appropriate disinfectant must be used for contaminated pumps! Strictly observe the manufacturer’s specifications concerning use!**
4. To clean the impeller and the pump interior, guide the water jet inside via the pressure port.
5. Flush all dirt residue onto the floor of the channel.
6. Allow the pump to dry out.

9 Maintenance and repair

DANGER

Danger due to fluids hazardous to health!

If the pump is used in fluids hazardous to health, decontaminate the pump after dismantling and before carrying out any other work! There is a risk of fatal injury! Observe the specifications in the work regulations! The operator must make sure that the personnel have received and read the work regulations!

NOTICE

Use only properly functioning lifting equipment!

Use only properly functioning lifting equipment to lift and lower the pump. Ensure that the pump does not become jammed during lifting and lowering. Do **not** exceed

the maximum bearing capacity of the lifting equipment! Check that lifting equipment is functioning properly before use!

- Always carry out maintenance tasks in a clean location with good lighting. It must be possible to position the pump safely and secure it.
- Only carry out maintenance tasks mentioned in these installation and operating instructions.
- Wear the following protective equipment while performing maintenance tasks:
  - Safety goggles
  - Safety shoes
  - Safety gloves

9.1 Personnel qualifications

- Electrical work: A qualified electrician must carry out the electrical work.
- Maintenance tasks: The technician must be familiar with the use of operating fluids and their disposal. In addition, the technician must have basic knowledge of mechanical engineering.

9.2 Operator responsibilities

- Provide the necessary protective equipment and make sure that the personnel wears it.
- Collect operating fluids in suitable tanks and dispose of properly.
- Dispose of protective clothing used in accordance with regulations.
- Use only original parts of the manufacturer. Use of parts other than the original parts releases the manufacturer from any liability.
- Collect any leakage of fluid and operating fluid immediately and dispose of it according to the locally applicable guidelines.
- Provide the tools required.
- If flammable solvents and cleaning agents are used, open flames, naked lights and smoking are prohibited.

9.3 Operating fluid

9.3.1 Oil types

Medicinal white oil is filled into the sealing chamber ex-factory. The following oil types are recommended when changing the oil:

- Aral Autin PL*
- Shell ONDINA 919
- Esso MARCOL 52* or 82*
- BP WHITEMORE WOM 14*
- Texaco Pharmaceutical 30* or 40*

All oil types marked with "*" are approved for use with foods in accordance with "USDA-H1".

9.3.2 Filling quantities

The filling volumes are:

- Padus PRO M05: 800 ml (27 US.fl.oz)
- Padus PRO M08: 1250 ml (42 US.fl.oz)

9.4 Maintenance intervals

To ensure reliable operation, maintenance tasks must be carried out regularly. Depending on the real ambient temperatures, maintenance intervals different from those mentioned in the contract can be defined! If strong vibrations occur during operation, the pump and the installation must be checked regardless of the defined maintenance intervals.

9.4.1 Maintenance intervals for normal conditions

4000 operating hours

- Visual inspection of the connection cables
- Visual inspection of accessories
- Visual inspection of the housings for wear
- Function test of monitoring devices
- Oil change

15000 operating hours

- Complete overhaul

9.4.2 Maintenance intervals for harsh conditions

Under harsh operating conditions, specified maintenance intervals must be shortened if required. Harsh operating conditions include:

- Fluids with long-fibre components
- Turbulent inlet (e.g. due to air intake, cavitation)

→ Strongly corroding or abrasive fluids
→ Heavily gas generating fluids
→ Operation at an unfavourable duty point
→ Pressure surges

When using pumps under hard conditions, it is recommended to sign a maintenance contract. Contact customer service.

9.5 Maintenance measures

WARNING

Sharp edges on the impeller and suction port!

Sharp edges can form on the impeller and suction port. There is danger of limbs being severed! Protective gloves must be worn to protect from cuts.

WARNING

Hand, foot or eye injuries due to the absence of protective equipment!

Danger of (serious) injuries during work. Wear the following protective equipment:

- Safety gloves for protection against cuts
- Safety shoes
- Closed safety goggles

The following pre-requisites must be fulfilled prior to starting maintenance measures:
→ Pump cooled down to the ambient temperature.
→ Pump cleaned thoroughly and disinfected (if required).

9.5.1 Visual inspection of the connection cable

Check connection cable for:
→ Bubbles
→ Cracks
→ Scratches
→ Abrasion
→ Pinch points

If damage is identified on the connection cable, decommission the pump immediately! Have the connection cable replaced by Wilo customer service. Only operate the pump up again once the damage has been properly remedied!

CAUTION! Water may penetrate into the pump due to the damaged connection cable! Water ingress leads to total failure of the pump.

9.5.2 Visual inspection of accessories

Accessories must be checked for:
→ Correct fixation
→ Smooth function
→ Signs of wear, e.g. cracks caused by frequencies

Any defects detected must be repaired immediately or the accessories must be replaced.

9.5.3 Visual inspection of coatings and housing for wear

The coatings and housing parts must not show any signs of damage. If there are defects, the following must be observed:
→ If the coating is damaged, it must be restored.
→ Contact customer service if housing parts have worn out!

9.5.4 Function test of the monitoring device

To test resistances, the pump must be cooled down to the ambient temperature!

9.5.4.1 Test the resistor of the temperature sensor

Measure the resistor of the temperature sensors with an ohmmeter. The bimetallic strips must have a measured value of 0 Ohm (passage).

9.5.5 Oil change in sealing chamber

WARNING

Operating fluid under high pressure!

A pressure of **several bar can build up** in the motor! This pressure escapes when the screw plugs are **opened**. If screw plugs are opened without due caution, they can be ejected at high speed! To avoid injuries, observe the following instructions:

- Adhere to the prescribed sequence of work steps.
- Unscrew the screw plugs slowly, but never unscrew them completely. As soon as the pressure escapes (audible whistling or hissing of air), stop turning the screw plug any further!
- When the pressure has completely dissipated, fully unscrew the screw plugs.
- Wear closed safety goggles.

WARNING

Scalding from hot operating fluids!

Hot operating fluids can also spray out when pressure is released. This can result in scalding! To avoid injuries, the following instructions must be observed:

- Allow the motor to cool down to the ambient temperature before opening the screw plugs.
- Wear closed safety goggles or face protection and gloves.

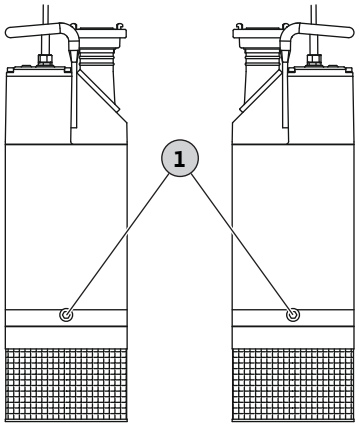


Fig. 7: Sealing chamber: Oil change

1	Sealing chamber screw plugs

The pump has two screw plugs for the sealing chamber. The operating fluid is drained through one screw plug. The other screw plug is used to aerate the sealing chamber.

✓ Protective equipment must be worn!

✓ Pump has been dismantled and cleaned (decontaminated if required).

1. Position the pump in a horizontal position on a firm surface. The screw plug should face upwards. **WARNING! Risk of hands being crushed. Make sure that the pump cannot fall over or slip!**
2. Unscrew the screw plug slowly, but do not unscrew it completely. **WARNING! Overpressure in the motor! Stop turning the screw plug further if hissing or whistling is audible! Wait until the pressure has completely dissipated.**
3. After the pressure has dissipated, completely unscrew the screw plug.
4. Position a suitable reservoir to collect the operating fluid.
5. Drain the operating fluid: rotate the pump until the opening points downwards. Unscrew the second screw plug for aeration.
6. Check the operating fluid:
   ⇒ If there is a leak in the mechanical seal, small amounts of water can enter the sealing chamber. This turns the oil milky/cloudy. If the ratio of oil to water is smaller than 2:1, the mechanical seal may be damaged. Change the oil and check again after 4 weeks. If water is in the oil again on the second check, contact customer service!
   ⇒ Notify customer service if the operating fluid contains metal swarf!
7. Clean the aeration screw plug, replace the seal ring and screw the screw plug in again. **Max. tightening torque: 8 Nm (5.9 ft·lb)!**
8. Pour in operating fluid: Rotate the pump until the opening points upwards. Pour the operating fluid into the opening.
   ⇒ Comply with the specifications for the operating fluid type and quantity!
9. Clean the screw plug, replace the seal ring and screw it back in. **Max. tightening torque: 8 Nm (5.9 ft·lb)!**

9.5.6 General overhaul

During the general overhaul, the motor bearings, shaft sealings, O-rings and connection cables are checked for wear and damage. Damaged components are replaced with original parts. This ensures correct operation.

The general overhaul is performed by the manufacturer or an authorised service centre.

10 Repairs

WARNING

Sharp edges on the impeller and suction port!

Sharp edges can form on the impeller and suction port. There is danger of limbs being severed! Protective gloves must be worn to protect from cuts.

WARNING

Hand, foot or eye injuries due to the absence of protective equipment!

Danger of (serious) injuries during work. Wear the following protective equipment:

- Safety gloves for protection against cuts
- Safety shoes
- Closed safety goggles

The following preconditions must be met prior to starting repair work:

→ Pump cooled down to the ambient temperature.
→ Pump is switched voltage-free and secured against being activated inadvertently.
→ Pump cleaned thoroughly and disinfected (if required).

For repair work the following generally applies:

→ Wipe up spillage quantities of fluid and operating fluid immediately!
→ Always replace O-rings, gaskets and screw locking devices!
→ Observe the tightening torques in the appendix!
→ Never use force when carrying out this work!

10.1 Adjusting the impeller clearance

Using the device to pump abrasive fluids can result in wear on the impeller. This lowers the pump's output. The clearance between the impeller and suction port can be adjusted to compensate for impeller wear.

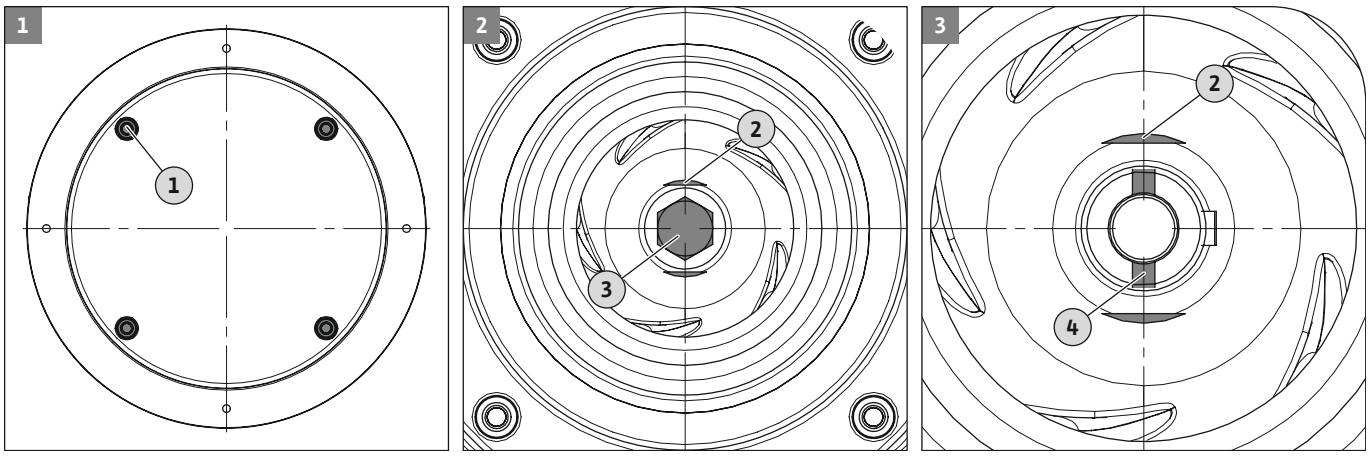


Fig. 8: Adjusting the impeller clearance

1	Fastening nuts on suction strainer with baseplate
2	Faces to stop the impeller
3	Cap nut for impeller fixation
4	Readjustment slot: Adjusting screw groove to insert the open-ended spanner

✓ Pump has been removed.

✓ Pump has been thoroughly cleaned.

✓ Special tool to hand (open-ended spanner, included in scope of delivery).

1. Loosen the four hexagon nuts on the baseplate and remove with the washer.
2. Remove the suction strainer with baseplate.
3. Fix impeller in place, e.g. using an open-end wrench.
4. Loosen the cap nut for impeller fixation.
5. Remove the cap nut and washer.
6. Insert special tool (open-ended spanner) in the groove of the adjusting screw.
7. Turn the special tool clockwise until the impeller contacts the suction port.
8. Turn the special tool by one-quarter rotation anti-clockwise.
9. Put the washer in place and screw on the cap nut.
10. Tighten the cap nut:
    ⇒ **Padus PRO M05: Max. tightening torque: 30 Nm!**
    ⇒ **Padus PRO M08: Max. tightening torque: 35 Nm!**
11. Loosen the tool holding the impeller in place.
12. Turn the impeller by hand. The impeller must not contact or grind on anything.
13. Put the suction strainer with baseplate in place.
14. Screw in the four hexagon nuts with washers and tighten. **Max. tightening torque: 20 Nm!**

► Impeller clearance corrected.

11 Faults, causes and remedies

DANGER

Danger due to fluids hazardous to health!

Danger of death in case of pumps with fluids hazardous to health! Wear the following protective equipment while performing the work:

- Closed safety goggles
- Breathing mask
- Protective gloves

⇒ The equipment listed here is the minimum requirement, observe the specifications of the work regulations! The operator must make sure that the personnel have received and read the work regulations!

DANGER

Risk of death due to electrocution!

Improper conduct when carrying out electrical work can lead to death due to electric shock! Electrical work must be carried out by a qualified electrician in accordance with the locally applicable regulations.

DANGER

Risk of fatal injury due to dangerous lone working practices!

Work in chambers and narrow rooms as well as work involving risk of falling are dangerous work. Such work may not be carried out autonomously! A second person must be present for safety reasons.

WARNING

No persons are allowed to be present inside the working area of the pump!

Persons may suffer (serious) injuries while the pump is in operation! No persons may therefore be present inside the working area. If persons must enter the working area of the pump, the pump must be decommissioned and secured against being switched on again without authorisation.

WARNING

Sharp edges on the impeller and suction port!

Sharp edges can form on the impeller and suction port. There is danger of limbs being severed! Protective gloves must be worn to protect from cuts.

Fault: Pump does not start

1. Electricity supply interrupted or short-circuit/earth fault in the cable or motor winding.
   ⇒ Have the connection and motor checked by a qualified electrician and replace if necessary.
2. Tripping of fuses, of the motor protection switch or the monitoring equipment
   ⇒ Have the connection and the monitoring equipment checked by a qualified electrician and change it if necessary.
   ⇒ Have the motor protection switches and fuses installed and adjusted according to the technical specifications by a qualified electrician and reset monitoring equipment.
   ⇒ Check the impeller to make sure that it runs smoothly, clean the hydraulics if necessary.

Fault: Pump starts up, motor protection trips after short period

1. Motor protection switch set incorrectly.
   ⇒ Have the adjustment of the trigger checked and corrected by a qualified electrician.
2. Increased power consumption due to major voltage drop.
   ⇒ Have the voltage of individual phases checked by a qualified electrician. Contact the electricity distribution network.
3. There are only two phases at the connection.
   ⇒ Have the connection checked and corrected by a qualified electrician.
4. Excessive differences in voltage between the phases.
   ⇒ Have the voltage of individual phases checked by a qualified electrician. Contact the electricity distribution network.
5. Incorrect direction of rotation.
   ⇒ Have the connection corrected by a qualified electrician.
6. Increased power consumption through jammed hydraulics.
   ⇒ Clean the hydraulics and check the inlet.
7. The density of the fluid is too high.
   ⇒ Contact customer service.

Fault: Pump runs, there is no volume flow

1. There is no fluid.
   ⇒ Check the inlet, open all gate valves.
2. Inlet clogged.
   ⇒ Check the inlet and remove clogging.
3. Hydraulics jammed.
   ⇒ Clean the hydraulics.

4. Pipe system on the pressure side or pressure hose clogged.
   ⇒ Remove clogging and replace the damaged components if necessary.
5. Intermittent operation.
   ⇒ Check the switching system.

Fault: Pump starts, duty point is not reached

1. Inlet clogged.
   ⇒ Check the inlet and remove clogging.
2. Slide valves on the pressure side closed.
   ⇒ Open all gate valves completely.
3. Hydraulics jammed.
   ⇒ Clean the hydraulics.
4. Incorrect direction of rotation.
   ⇒ Have the connection corrected by a qualified electrician.
5. Air cushion in the pipe system.
   ⇒ Vent the pipe system.
   ⇒ If air cushions occur frequently: Locate and prevent the air intake, if required install ventilation systems at specified locations.
6. Pump pumping against excessive pressure.
   ⇒ Open all gate valves on the pressure side completely.
7. Signs of wear on the hydraulics.
   ⇒ Have the components (impeller, suction port, pump housing) checked and replaced by customer service.
   ⇒ Impeller clearance too great. Adjust the impeller clearance.
8. Pipe system on the pressure side or pressure hose clogged.
   ⇒ Remove clogging and replace the damaged components if necessary.
9. Strongly gassing fluid.
   ⇒ Contact customer service.
10. The connection only has two phases.
    ⇒ Have the connection checked and corrected by a qualified electrician.
11. Excessive decrease in the fill level during operation.
    ⇒ Check supply/capacity of the system.
    ⇒ Have the switching points of the level control checked and adjusted if necessary.

Fault: The pump does not run smoothly and is noisy

1. Improper duty point.
   ⇒ Check the pump configuration and the duty point, contact customer service.
2. Hydraulics jammed.
   ⇒ Clean the hydraulics.
3. Strongly gassing fluid.
   ⇒ Contact customer service.
4. There are only two phases at the connection.
   ⇒ Have the connection checked and corrected by a qualified electrician.
5. Incorrect direction of rotation.
   ⇒ Have the connection corrected by a qualified electrician.
6. Signs of wear on the hydraulics.
   ⇒ Have the components (impeller, suction port, pump housing) checked and replaced by customer service.
7. Motor bearings have worn.
   ⇒ Inform customer service; send the pump back to the factory for overhauling.

8. Pump is installed under tension.
   ⇒ Check installation, install rubber compensators if necessary.

Further steps for troubleshooting

If the points listed here do not rectify the fault, contact customer service. Customer service can assist in the following ways:
→ Telephone or written support.
→ On-site support.
→ Inspection and repair at the factory.

Costs may be incurred if you request customer services! Please contact customer services for more information.

12 Spare parts

Spare parts are ordered via customer service. To avoid return queries and incorrect orders, the serial or article number must always be supplied. **Subject to change without prior notice!**

13 Disposal

13.1 Oils and lubricants

Operating fluid must be collected in suitable tanks and disposed of in accordance with the locally applicable guidelines. Wipe up drips immediately!

13.2 Protective clothing

Used protective clothing must be disposed off in accordance with the locally applicable guidelines.

13.3 Information on the collection of used electrical and electronic products

Proper disposal and appropriate recycling of this product prevents damage to the environment and danger to your personal health.

NOTICE

Disposal in domestic waste is forbidden!

In the European Union, this symbol can appear on the product, the packaging or the accompanying documentation. It means that the electrical and electronic products in question must not be disposed of along with domestic waste.

To ensure proper handling, recycling and disposal of the used products in question, please note the following points:
→ Only hand over these products at designated, certified collecting points.
→ Observe the locally applicable regulations!

Please consult your local municipality, the nearest waste disposal site, or the dealer who sold the product to you for information on proper disposal. Further recycling information at www.wilo-recycling.com.

Subject to change without prior notice!

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