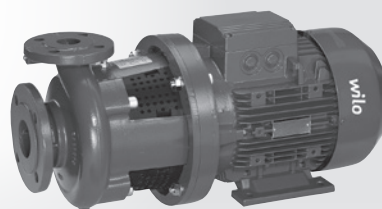
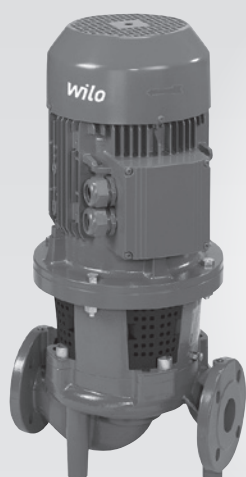


# Wilo-CronoLine-IL Wilo-CronoTwin-DL Wilo-CronoBloc-BL



- de** Einbau- und Betriebsanleitung
- en** Installation and operating instructions
- fr** Notice de montage et de mise en service
- nl** Inbouw- en bedieningsvoorschriften



Fig. 1: IL (Design A)

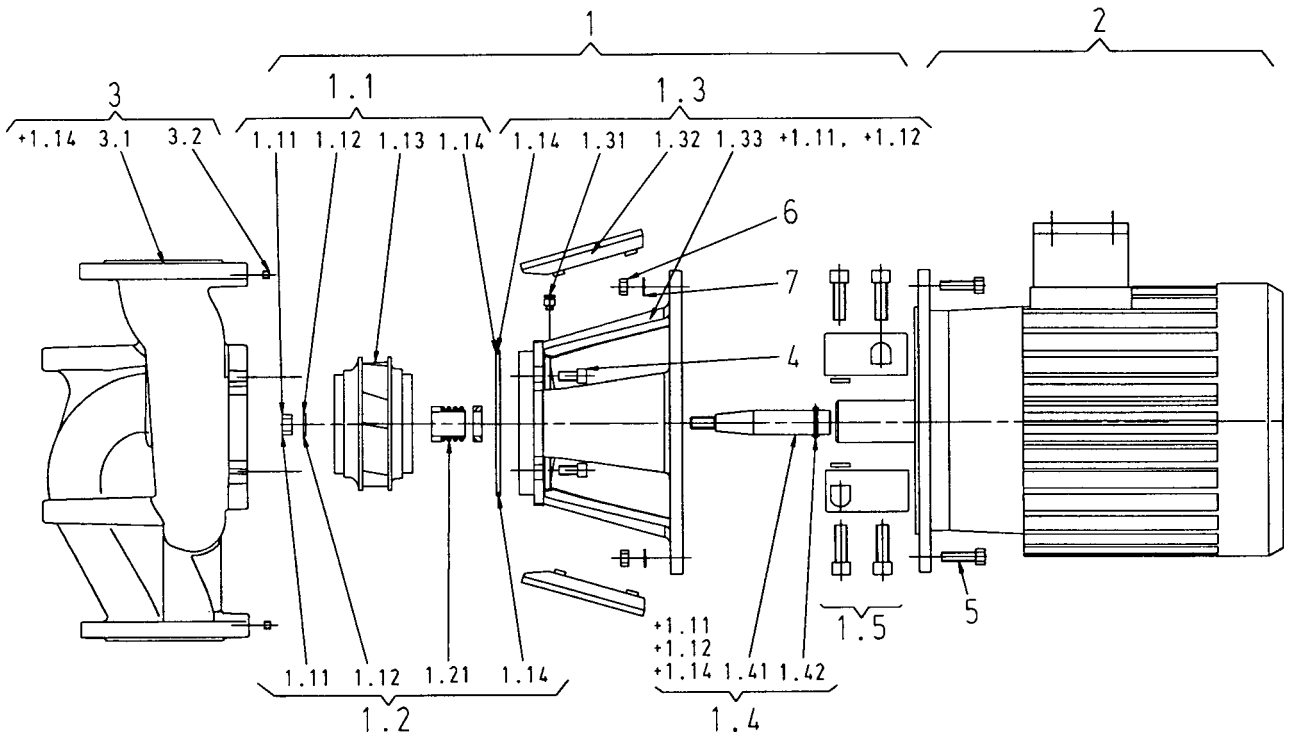


Fig. 2: DL (Design A)

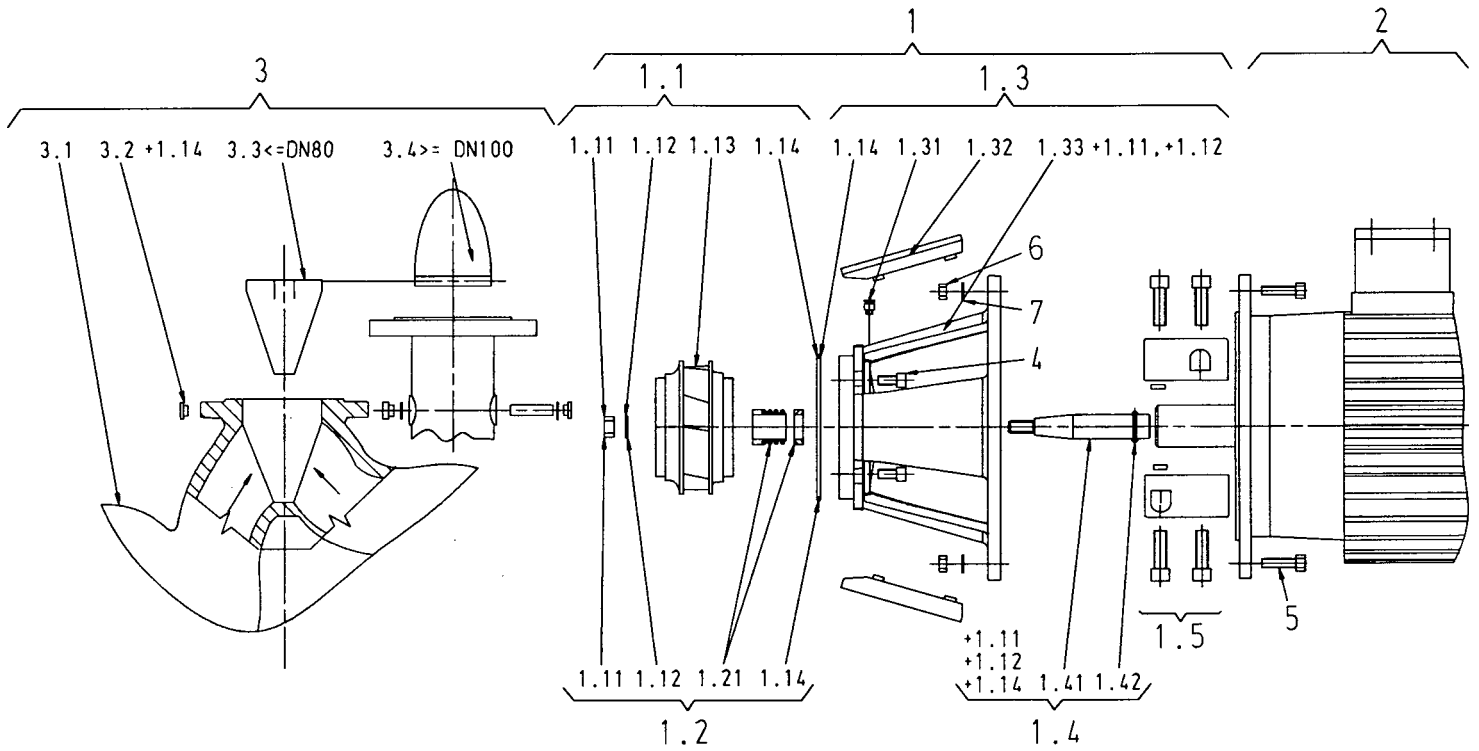


Fig. 3: BL (Design A)

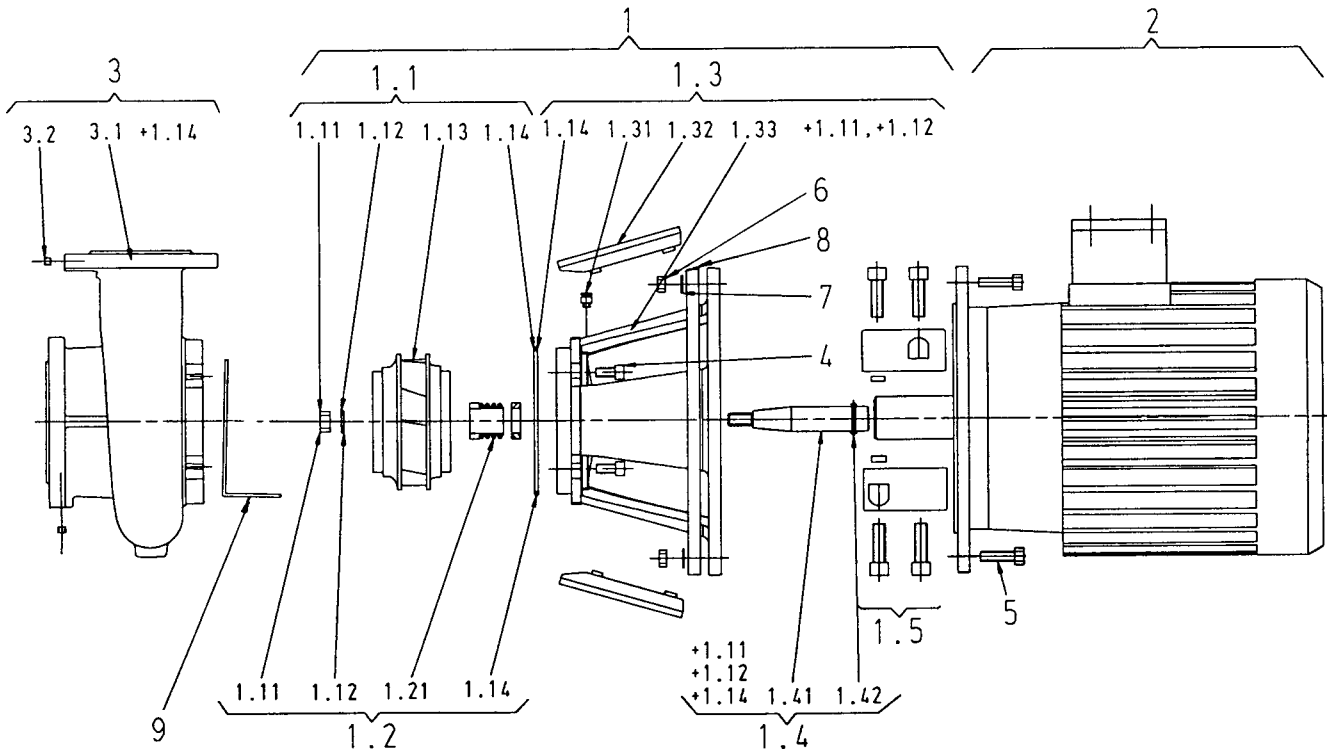


Fig. 4: IL (Design B)

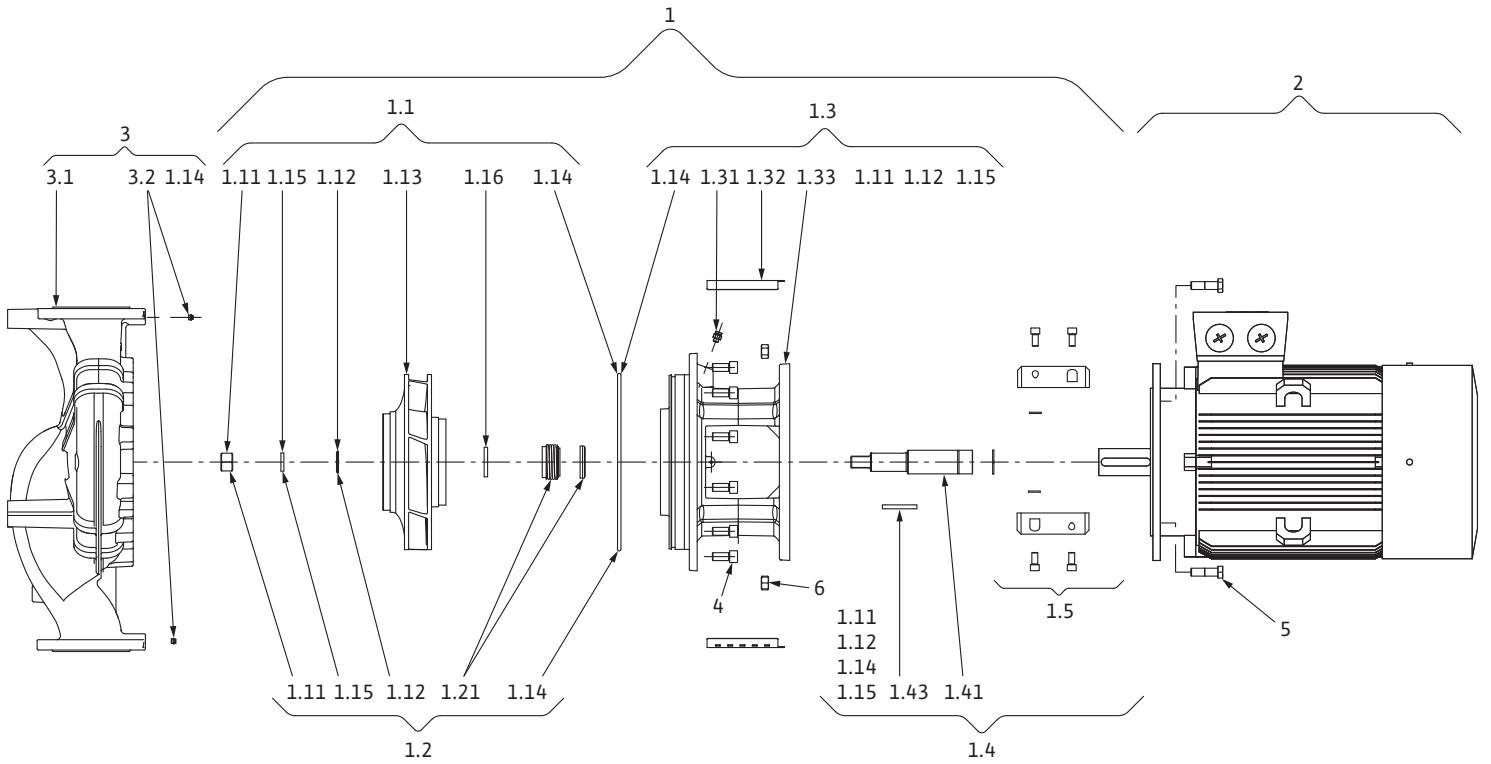
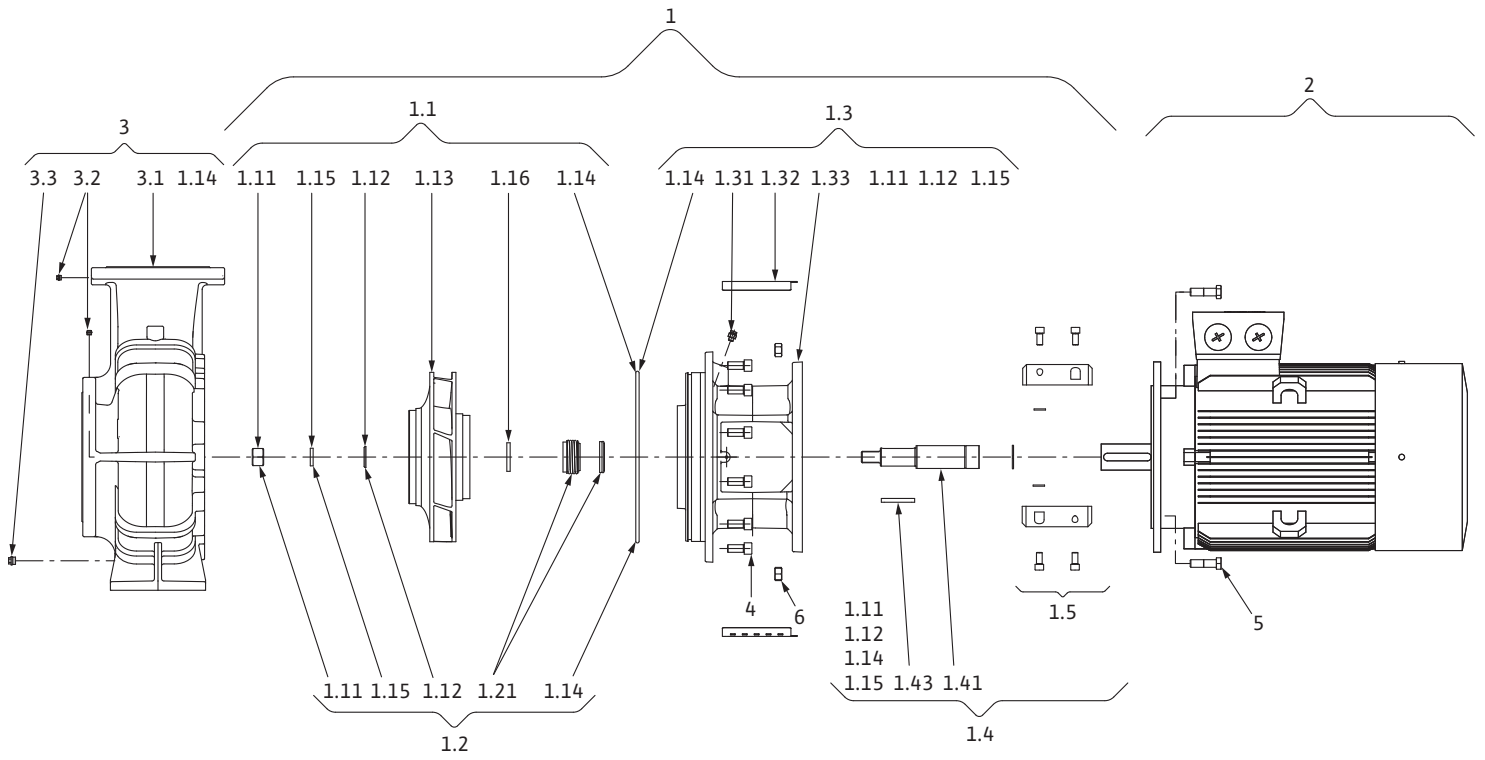


Fig. 5: BL (Design B)





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## 1 General information

### 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.

These installation and operating instructions are an integral part of the product. They must be kept readily available at the place where the product is installed. Strict adherence to these instructions is a precondition for the proper use and correct operation of the product.

These installation and operating instructions correspond to the relevant version of the product and the underlying safety standards valid at the time of going to print.

EC declaration of conformity:

A copy of the EC declaration of conformity is a component of these operating instructions.

If a technical modification is made on the designs named there without our agreement or the declarations made in the installation and operating instructions on product/personnel safety are not observed, this declaration loses its validity.

## 2 Safety

These operating instructions contain basic information which must be adhered to during installation, operation and maintenance. For this reason, these operating instructions must, without fail, be read by the service technician and the responsible specialist/operator before installation and commissioning.

It is not only the general safety instructions listed under the main point "safety" that must be adhered to but also the special safety instructions with danger symbols included under the following main points.

### 2.1 Symbols and signal words in the operating instructions

#### Symbols



**General danger symbol**



**Danger due to electrical voltage**



NOTE

#### Signal words

**DANGER!**

**Acutely dangerous situation.**

**Non-observance results in death or the most serious of injuries.**

**WARNING!**

**The user can suffer (serious) injuries. 'Warning' implies that (serious) injury to persons is probable if this information is disregarded.**

**CAUTION!**

**There is a risk of damaging the product/unit. 'Caution' implies that damage to the product is likely if this information is disregarded.**

NOTE:

Useful information on handling the product. It draws attention to possible problems.



Information that appears directly on the product, such as

- Direction of rotation arrow,
- Connection markings
- Rating plate,
- Warning sticker,

must be strictly complied with and kept in legible condition.

**2.2 Personnel qualifications**

The installation, operating and maintenance personnel must have the appropriate qualifications for this work. Area of responsibility, terms of reference and monitoring of the personnel are to be ensured by the operator. If the personnel are not in possession of the necessary knowledge, they are to be trained and instructed. This can be accomplished, if necessary, by the manufacturer of the product at the request of the operator.

**2.3 Danger in the event of non-observance of the safety instructions**

Non-observance of the safety instructions can result in risk of injury to persons and damage to the environment and the product/unit. Non-observance of the safety instructions results in the loss of any claims to damages.

In detail, non-observance can, for example, result in the following risks:

- Danger to persons due to electrical, mechanical and bacteriological factors,
- Damage to the environment due to leakage of hazardous materials,
- Property damage,
- Failure of important product/unit functions,
- Failure of required maintenance and repair procedures.



**2.4 Safety consciousness on the job**

The safety instructions included in these installation and operating instructions, the existing national regulations for accident prevention together with any internal working, operating and safety regulations of the operator are to be complied with.

**2.5 Safety instructions for the operator**

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

- Children should be supervised to ensure that they do not play with the appliance.
- If hot or cold components on the product/unit lead to hazards, local measures must be taken to guard them against touching.
- Guards protecting against touching moving components (such as the coupling) must not be removed whilst the product is in operation.
- Leakages (e.g. from a shaft seal) of hazardous fluids (e.g. explosive, toxic or hot) must be conveyed away so that no danger to persons or to the environment arises. National statutory provisions are to be complied with.
- Highly flammable materials are always to be kept at a safe distance from the product.
- Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from local energy supply companies must be adhered to.

- 2.6 Safety instructions for installation and maintenance work**
- The operator must ensure that all installation and maintenance work is carried out by authorised and qualified personnel, who are sufficiently informed from their own detailed study of the operating instructions.
- Work on the product/unit must only be carried out when at a standstill. It is mandatory that the procedure described in the installation and operating instructions for shutting down the product/unit be complied with.
- Immediately on conclusion of the work, all safety and protective devices must be put back in position and/or recommissioned.
- 2.7 Unauthorised modification and manufacture of spare parts**
- Unauthorised modification and manufacture of spare parts will impair the safety of the product/personnel and will make void the manufacturer's declarations regarding safety.
- Modifications to the product are only permissible after consultation with the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure safety. The use of other parts will absolve us of liability for consequential events.
- 2.8 Improper use**
- The operational reliability of the supplied product is only guaranteed for conventional use in accordance with chapter 4 of the installation and operating instructions. The limit values must on no account fall under or exceed those values specified in the catalogue/data sheet.
- 3 Transport and interim storage**
- 3.1 Shipping**
- The pump is enclosed in a box or lashed to a pallet ex works and is protected against dirt and moisture.
- Transport inspection**
- On arrival, inspect the pump immediately for any transport damage. If transport damage is detected, the necessary steps involving the carrier must be taken within the specified period.
- Storage**
- Before installation, the pump must be kept dry, frost-free and protected from mechanical damage.
- If available, leave the covers on the pipe connections so that no dirt and other foreign matter can get into the pump housing.
- Rotate the pump shaft once a week to prevent scoring at the bearings and sticking. Consult Wilo about which corrosion-proofing measures are to be carried out in the event of a long storage time.
-  **CAUTION! Risk of damage due to incorrect packaging!**  
If the pump is transported again at a later time, it must be packaged so that it cannot be damaged during transport.
- Use the original packaging for this, or choose equivalent packaging.
- 3.2 Transport for installation/dismantling purposes**
-  **WARNING! Risk of injury!**  
Improper transport can lead to personal injury.
- The pump must be transported using approved load lifting gear. This must be secured to the pump flanges and, if necessary, to the outer diameter of the motor (protection against slipping is required!).
  - To lift with a crane, the pump must be supported by suitable belts, as shown. Place the belt around the pump in loops which tighten from the pump's own weight.

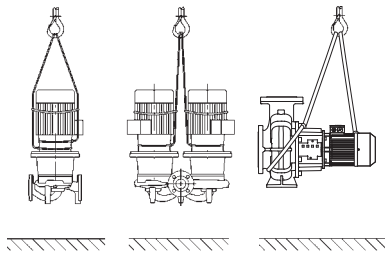


Fig. 6: Transporting the pump

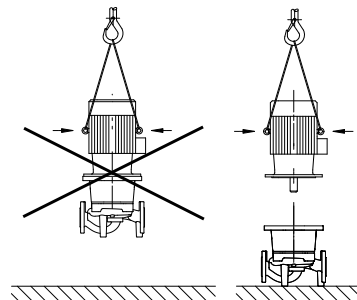


Fig. 7: Transporting the motor

- The transport eyes on the motor are only for guiding while bearing the load (Fig. 6).
- The transport eyes on the motor are only for transporting the motor, and are not approved for transporting the complete pump (Fig. 7).



**WARNING! Risk of injury!**

Setting up the pump without securing it can lead to personal injury.

- Do not place the pump unsecured on the pump support feet. The base with the threaded holes is used for attachment only. When standing freely, the pump might not be sufficiently stable.



**DANGER! Risk of fatal injury!**

The pump itself and pump parts can be extremely heavy. Falling parts pose a risk of cuts, crush injuries, bruises or impacts, which may lead to death.

- Always use suitable lifting equipment and secure parts against falling.
- Never stand underneath a suspended load.
- Make sure the pump is securely positioned and is stable during storage and transport as well as prior to all installation and other assembly work.

**4 Intended use**

**Purpose**

The glanded pumps of the IL (in-line single pump), DL (in-line double pump) and BL (monobloc pump) series are meant to be used as circulators in building services.

**Fields of application**

They may be used for:

- Hot-water heating systems
- Cooling and cold water circulation systems
- Process water systems
- Industrial circulation systems
- Heat carrier circuits

**Contraindications**

Typical installation locations are technical rooms within the building with other domestic installations. No provision has been made for direct installation of the device in rooms used for other purposes (residential and work rooms).

For these series, it is possible to set them up outdoors only in their corresponding, special version, on request (see chapter 7.3 "Anti-condensation heater connection" on page 46).



**CAUTION! Risk of property damage!**

Non-permitted substances in the fluid can destroy the pump.

Abrasive solids (e.g. sand) increase pump wear.

Pumps without an Ex rating are not suitable for use in potentially explosive areas.

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

## 5 Product information

### 5.1 Type key

The type key consists of the following elements:

<b>Example:</b> IL 80/130-5,5/2 DL 80/130-5,5/2 BL 65/130-5,5/2	
IL	Flange-end pump as <b>In</b> -line single pump
DL	Flange-end pump as in-line <b>Double</b> pump
BL	Flange-end pump as <b>Bloc</b> pump
80	Nominal diameter DN of the pipe connection (for BL: pressure side) [mm]
130	Nominal impeller diameter [mm]
5.5	Rated power $P_2$ [kW]
2	Number of poles, motor

### 5.2 Technical data

Property	Value	Remarks
Rated speed	50 Hz version • IL/DL/BL (2-/4-pole): 2900 or 1450 rpm • IL (6-pole): 725 rpm	Depending on pump type
	60 Hz version • IL/DL/BL (2-/4-pole): 3480 or 1750 rpm	Depending on pump type
Nominal diameters DN	IL: 32 to 200 mm DL: 32 to 200 mm BL: 32 to 150 mm (pressure side)	
Pipe and pressure measurement connections	PN 16 flange in accordance with DIN EN 1092-2 with pressure measurement connections Rp 1/8 in accordance with DIN 3858	
Permissible min./max. fluid temperature	-20 °C to +140 °C	Depending on fluid
Ambient temperature min./max.	0 to +40 °C	Lower or higher ambient temperatures on request
Storage temperature min./max.	-20 °C to +60 °C	
Maximum permitted operating pressure	16 bar (version... -P4: 25 bar)	Version...-P4 (25 bar) as special version at additional charge (availability depends on the pump type)
Insulation class	F	
Protection class	IP55	
Approved fluids	Heating water according to VDI 2035	Standard version
	Process water	Standard version
	Cooling/cold water	Standard version
	Water/glycol mixture up to 40 Vol.-%	Standard version
	Heat transfer oil	Special version or auxiliary equipment (at additional charge)
	Other fluids (on request)	Special version or auxiliary equipment (at additional charge)

Table 1: Technical data

Property	Value	Remarks
Electrical connection	3~ 400 V, 50 Hz	Standard version
	3~ 230 V, 50 Hz (up to 3 kW inclusive)	Alternative application for standard version (no additional charge)
	3~ 230 V, 50 Hz (from 4 kW)	Special version or auxiliary equipment (at additional charge)
	3~ 380 V, 60 Hz	partially standard version
Special voltage/frequency	Pumps with motors with different voltages or with other frequencies are available on request.	Special version or auxiliary equipment (at additional charge)
PTC thermistor sensor	standard version from 75 kW	
Speed control, pole switchover	Wilo control devices (e.g. Wilo-CC/SC-HVAC-System)	Standard version
	Pole switchover	Special version or auxiliary equipment (at additional charge)
Explosion protection (EEx e, EEx de)	up to 37 kW	Special version or auxiliary equipment (at additional charge)

Table 1: Technical data

**Fluids**

If water-glycol mixtures are used (or fluids with a viscosity other than that of pure water), an increase in power consumption of the pump is to be taken into account. Only use mixtures with corrosion protection inhibitors. Observe the relevant manufacturer specifications.

- Adjust the motor power if required.
- The fluid must be sediment-free.
- Wilo's approval must be obtained for the use of other fluids.
- In systems built according to the state of the art, it can be assumed under normal system conditions that the standard seal/standard mechanical seal is compatible with the fluid. Special circumstances (e.g. solid material, oils or EPDM-corrosive substances in the fluid, air in the system etc.) may require special seals.



**NOTE:**

Always read and follow the material safety data sheet for the fluid being pumped!

**5.3 Scope of delivery**

- Pump IL/DL/BL
- Installation and operating instructions

**5.4 Accessories**

Accessories must be ordered separately:

- PTC thermistor tripping unit for switch cabinet installation
- IL/DL: 3 mounting brackets with fixation material for installation on a base
- DL: Blind flange for repair work
- BL: For installation on a base or baseplate for rated power of 5.5 kW and above

For a detailed list, consult the catalogue and spare parts documentation.

## 6 Description and function

### 6.1 Description of the product

All the pumps described are single-stage low-pressure centrifugal pumps in compact construction design with a coupled motor. The mechanical seal is maintenance-free. The pumps can be installed both directly as a pipe installation pump in a sufficiently anchored pipe or placed on a foundation base. Installation options depend on the size of the pump. In conjunction with a control device (e.g. Wilo-CC/SC-HVAC-System), performance of the pumps can also be continuously controlled. This allows optimisation of the pump output for the demands of the installation and economically efficient pump operation.

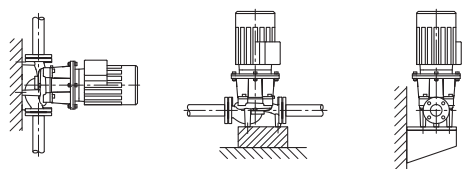


Fig. 8: View of IL

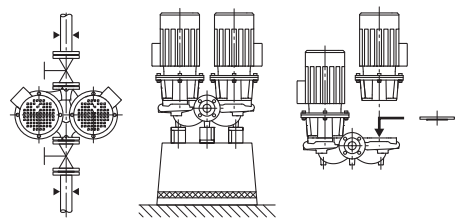


Fig. 9: View of DL

#### Version IL:

The pump housing has an in-line design, i.e. the flanges on the suction and pressure sides lie along a centre line (Fig. 8). All pump housings are provided with pump support feet. Installation on a foundation base is recommended for rated powers of 5.5 kW and higher.

#### Version DL:

Two pumps are arranged in a shared housing (double pump). The pump housing has an in-line design (Fig. 9). All pump housings are provided with pump support feet. Installation on a foundation base is recommended for rated powers of 4 kW and higher.

The base-load pump is only operated in control operation in conjunction with a control device. The second pump is available to fulfil full load operation requirements as an auxiliary peak load. Moreover, the second pump can adopt the reserve function in the event of a fault.



#### NOTE:

Blind flanges, which allow the motor impeller unit to be replaced even in double pump housing, are available (see chapter 5.4 "Accessories" on page 36) for all pump types/frame sizes in the DL series (Fig. 9 to the right). A drive can therefore remain in operation while replacing the motor impeller unit.



#### NOTE:

To ensure operational standby of the standby pump, operate the standby pump every 24 h at least once a week.

#### Version BL:

Spiral housing pump with flange dimensions in accordance with DIN EN 733 (Fig. 10). Depending on the construction:

Up to 4 kW motor power: pedestal screwed onto the pump or cast feet on the pump housing.

From 5.5 kW motor power: motors with cast or screwed on feet.

Version in design B: With cast feet on the pump housing.

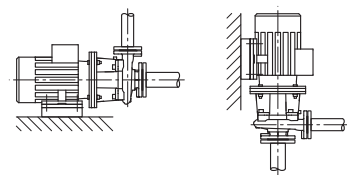


Fig. 10: View of BL

## 6.2 Anticipated noise levels

Motor power $P_N$ [kW]	Sound-pressure level $L_p$ , A [dB (A)] <sup>1)</sup>				
	2900 rpm		1450 rpm		725 rpm
	IL, BL, DL (DL in individual operation)	DL (DL in parallel operation)	IL, BL, DL (DL in individual operation)	DL (DL in parallel operation)	IL, BL
0.55	57	60	45	48	-
0.75	60	63	51	54	-
1.1	60	63	51	54	-
1.5	64	67	55	58	-
2.2	64	67	60	63	-
3	66	69	55	58	-
4	68	71	57	60	-
5.5	71	74	63	66	-
7.5	71	74	63	66	65
11	72	75	65	68	65
15	72	75	65	68	-
18.5	72	75	70	73	-
22	77	80	66	69	-
30	77	80	69	72	-
37	77	80	70	73	-
45	72	-	72	75	-
55	77	-	74	77	-
75	77	-	74	-	-
90	77	-	72	-	-
110	79	-	72	-	-
132	79	-	72	-	-
160	79	-	74	-	-
200	79	-	75	-	-
250	85	-	-	-	-

<sup>1)</sup> Spatial mean value of sound-pressure levels on a square measuring surface at a distance of 1 m from the surface of the motor.

Table 2: Anticipated noise levels

### 6.3 Permissible forces and torques on the pump flanges (only BL pumps)

See Fig. 11 and list "Table 3: Permissible forces and torques on the pump flanges" on page 39.

Values in acc. with ISO/DIN 5199 – class II (2002) – Appendix B, Family no. 1A.

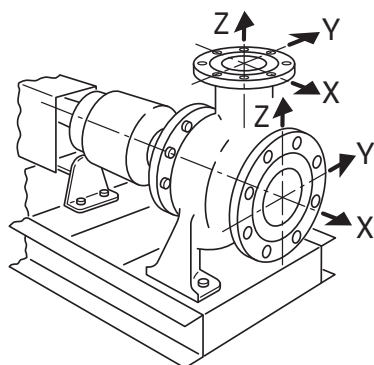


Fig. 11: Permissible forces and torques on the pump flanges – pump made of grey cast iron

	DN	Forces F [N]				Torques M [Nm]			
		F <sub>X</sub>	F <sub>Y</sub>	F <sub>Z</sub>	Σ Forces F	M <sub>X</sub>	M <sub>Y</sub>	M <sub>Z</sub>	Σ Torques M
Pressure port	32	315	298	368	578	385	263	298	560
	40	385	350	438	683	455	315	368	665
	50	525	473	578	910	490	350	403	718
	65	648	595	735	1155	525	385	420	770
	80	788	718	875	1383	560	403	455	823
	100	1050	945	1173	1838	613	438	508	910
	125	1243	1120	1383	2170	735	525	665	1068
Suction port	150	1575	1418	1750	2748	875	613	718	1278
	50	578	525	473	910	490	350	403	718
	65	735	648	595	1155	525	385	420	770
	80	875	788	718	1383	560	403	455	823
	100	1173	1050	945	1838	613	438	508	910
	125	1383	1243	1120	2170	735	525	665	1068
	150	1750	1575	1418	2748	875	613	718	1278
	200	2345	2100	1890	3658	1138	805	928	1680

Table 3: Permissible forces and torques on the pump flanges

If not all working loads reach the maximum permitted values, one of these loads may exceed the normal limit value under the condition that following additional conditions are fulfilled:

- All force and torque components must be limited to 1.4 times of the maximum permitted value.
- The following equation applies to the actual forces and torques acting on every flange (the following condition must be fulfilled):

$$\left( \frac{\sum |F|_{\text{actual}}}{\sum |F|_{\text{max.permitted}}} \right)^2 + \left( \frac{\sum |M|_{\text{actual}}}{\sum |M|_{\text{max.permitted}}} \right)^2 \leq 2$$

Where the total load  $\sum |F|$  and  $\sum |M|$  is the arithmetic total of every flange (inlet and outlet), for the actual as well as the maximum permitted values, without taking into consideration their algebraic sign, at the pump level (inlet flange + outlet flange).



## 7 Installation and electrical connection

### Safety



**DANGER! Risk of fatal injury!**

Incorrect installation and improper electrical connections can be life-threatening.

- Have the electrical connections established by approved electricians only, in compliance with the applicable regulations!
- Adhere to accident prevention regulations!



**DANGER! Risk of fatal injury!**

Failure to install safety devices on the terminal box or near the coupling can cause electrical shock or contact with rotating parts, potentially resulting in life-threatening injuries.

- Before commissioning, all safety devices such as coupling covers that were removed must be reinstalled.



**DANGER! Risk of fatal injury!**

The pump itself and pump parts can be extremely heavy. Falling parts pose a risk of cuts, crush injuries, bruises or impacts, which may lead to death.

- Always use suitable lifting equipment and secure parts against falling.
- Never stand underneath a suspended load.
- Make sure the pump is securely positioned and is stable during storage and transport as well as prior to all installation and other assembly work.



**CAUTION! Risk of property damage!**

Risk of damage due to incorrect handling.

- Have the pump installed by qualified personnel only.



**CAUTION! Damage to the pump due to overheating!**

The pump must not be allowed to operate dry for more than 1 minute. Dry running causes a build-up of energy in the pump, which can damage the shaft, impeller, and mechanical seal.

- Make sure that the volume flow  $Q_{min}$  does not fall below the minimum value.

Calculation of  $Q_{min}$ :

$$Q_{min} = 10 \% \times Q_{max \text{ pump}}$$

### 7.1 Installation

#### Preparation

- The pump has to be checked for compliance with the specifications on the delivery receipt; any damages or missing parts must be conveyed to Wilo immediately. Check slat crates/boxes/wrappings for spare parts or accessory components which could be included with the pump.
- The pump should only be installed after completion of all welding and soldering work and, if necessary, flushing of the pipe system. Dirt can cause the pump to fail.

#### Installation location

- The pumps must be protected from the weather and installed in a frost/dust-free, well-ventilated and vibration-insulated environment which is not potentially explosive.
- Install the pump in a place that is easy to access so that later inspections, maintenance (e.g. the mechanical seal) or replacement is easily possible.
- Provide space for minimum axial distance between a wall and the fan cover of the motor: Free removal dimension of at least 200 mm + diameter of the fan cover.

## Base

- For a vibration-insulated installation, a simultaneous isolation of the base block itself from the building structure by an elastic intermediate layer (e.g. cork or Mafund pad) is required for few pump types.



**CAUTION! Risk of property damage!**  
**Danger of damage due to unsuitable foundation/incorrect handling.**

- **A missing base or an incorrect installation of the unit on the base can lead to a malfunction of the pump; this is excluded from the guarantee.**

## Positioning/alignment

- A hook or eyelet with the corresponding bearing capacity is to be installed vertically above the pump (for the total weight of the pump: see catalogue/data sheet), to which hoisting gear or similar aids can be attached when conducting maintenance or repair work on the pump.



**CAUTION! Risk of property damage!**  
**Risk of damage due to incorrect handling.**

- **Only use lifting eyes on the motor for carrying the weight of the motor and not for carrying the entire pump.**
- **Lift the pump using permitted lifting gear (see chapter 3 "Transport and interim storage" on page 33).**
- Shut-off devices shall be installed in front of and behind the pump, in order to avoid having to drain the entire system when checking, servicing or replacing the pump. If need be, the necessary non-return valves are to be provided.
- The lantern has an opening on the underside which allows a drainage pipe for condensation water/condensate to be connected (e.g. when used in air-conditioning or cooling systems). The condensate generated can then be effectively drained.
- **Installation position:** All installation positions except for "motor facing down" are allowed.
- The air vent valve (Fig. 1/2/3/4/5, item 1.31) must always face upwards.



NOTE:

The installation position with horizontal motor shaft is permitted for the IL and DL series only up to a motor power of 15 kW (Fig. 12). A motor support is not necessary. Only the installation position with vertical motor shaft is intended for a motor power > 15 kW. BL series monobloc pumps are to be mounted on a sufficiently strong base or mounting brackets (Fig. 13).

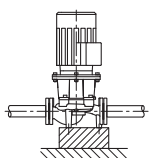
- For pumps of BL type, the motor must be supported from a motor power of 18.5 kW, see installation examples BL (Fig. 14).

**Only pump type design B:** From 37 kW four pole or 45 kW two pole, the pump housing and motor must be supported. Suitable supports from the Wilo accessories range can be used for this purpose.

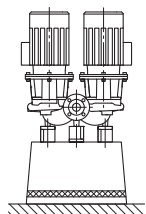


NOTE:

The motor terminal box must not face downward. If necessary, the motor or motor impeller unit can be rotated once the hexagon head screws have been loosened. While rotating the motor or motor impeller unit, ensure that the housing O-ring seal does not become damaged.



IL



DL

Fig. 12: IL/DL

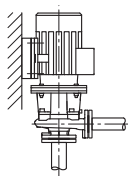
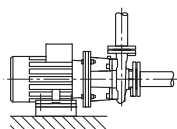
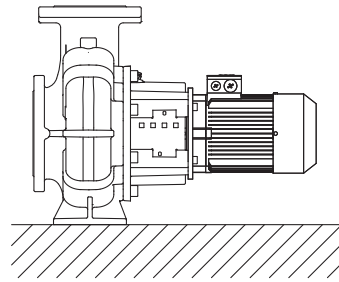
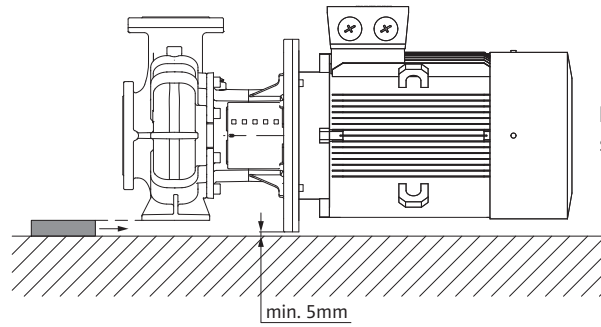


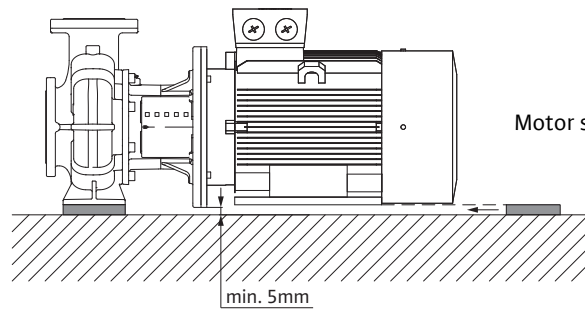
Fig. 13: BL



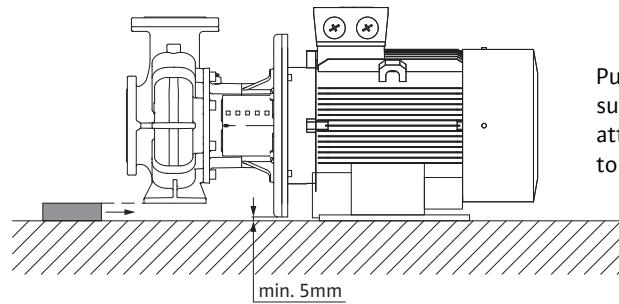
No support required



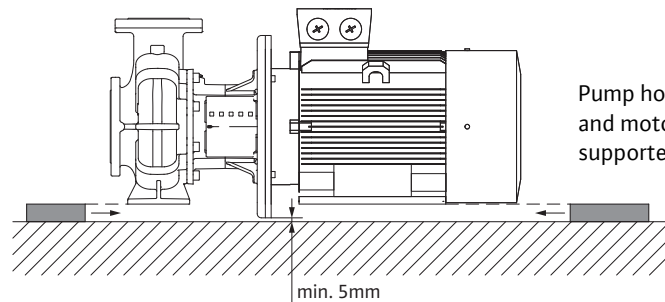
Pump housing supported



Motor supported



Pump housing supported, motor attached to a foundation



Pump housing and motor supported

Fig. 14: Installation examples BL



**CAUTION! Risk of property damage!**  
**Risk of damage due to incorrect handling.**

- When pumping out a tank, ensure that the fluid level is always high enough above the suction port of the pump so that the pump never runs dry. The minimum inlet pressure must be observed.



NOTE:

In the case of insulated systems, only the pump housing may be insulated, not the lantern and motor.

#### Example of a foundation screwed connection (Fig. 15):

- Align the whole unit when installing on the foundation with the help of the spirit level (at the shaft/pressure port).
- Always put the washers (B) to the left and right directly at the fixation material (e.g. stone bolts (A)) between the baseplate (E) and foundation (D).
- Evenly and firmly tighten the fixation material.
- For distances > 0.75 m, support the baseplate at the centre between the fixation elements.

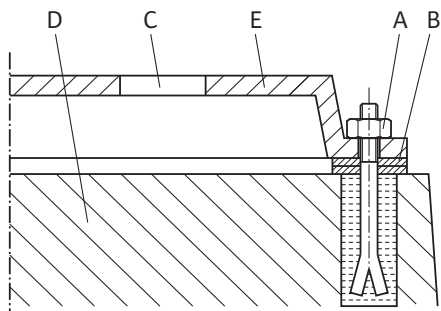


Fig. 15: Example of a foundation screwed connection

#### Connection of the pipes



**CAUTION! Risk of property damage!**  
**Risk of damage due to incorrect handling.**

- Under no circumstances may the pump be used as a fixed point for the pipe.
- The present NPSH of the system always has to be greater than the required NPSH of the pump.
- The forces and torques being exerted by the pipe system on the pump flange (e.g., by warping, thermal expansion) may not exceed the permitted forces and torques.
- Brace the pipes directly before the pump and connect them without tension. Their weight must not put a strain on the pump.
- The inlet pipe is to be kept as short as possible. Lay the inlet pipe to the pump so that it continuously rises while the intake falls. Avoid possible air entry points.
- If a dirt trap in the inlet pipe is required, then its free cross-section has to be 3 – 4 times the cross-section of the piping.
- For short pipes, the nominal diameters should be at least that of the pump connections. The long pipes, the most economical nominal diameter is to be determined on a case-by-case basis.
- Adapters for larger nominal diameters should be made with a flaring angle of about 8° to prevent greater pressure losses.



NOTE:

A settling section must be provided before and after the pump, in the form of a straight pipe. The length of this settling section should be at least 5 x DN (5 times of the nominal diameter) of the pump flange (Fig. 16). This measure serves to avoid flow cavitation.

- Remove the flange covers at the suction and pressure ports of the pump before attaching the piping.

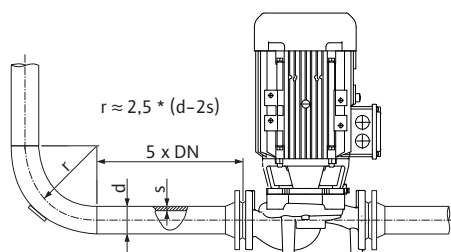


Fig. 16: Settling section in front of and behind the pump

**Final check**

Check the alignment of the unit again as described in chapter 7.1 "Installation" on page 40.

- Tighten the foundation bolts if necessary.
- Check all connections for correctness and function.
- It must be possible to turn the coupling/shaft by hand.

Do not allow the coupling/shaft to turn:

- Release the coupling and re-tighten with the prescribed torque.

In case this measure is not successful:

- Remove the motor (see chapter 9.2.3 "Changing the motor" on page 52).
- Clean the motor centring and flange.
- Reinstall the motor.

**7.2 Electrical connection**

**Safety**



**DANGER! Risk of fatal injury!**

**Incorrect electrical connections can cause fatal electric shocks.**

- **Have the electrical connection set up by an electrician approved by the local electricity supplier only and in accordance with local regulations.**
- **Observe the installation and operating instructions for the accessories!**



**DANGER! Risk of fatal injury!**

**Contact voltage hazardous to human life.**

**Work on the terminal box may only be started once 5 minutes have passed, due to the dangerous residual contact voltage (capacitors).**

- **Before working on the pump, disconnect the supply voltage and wait for 5 minutes.**
- **Check whether all connections (including potential-free contacts) are voltage-free.**
- **Never use an object to poke around the openings on the terminal box and never insert anything into the terminal box!**



**WARNING! Risk of mains overload!**

**An inadequate mains design can lead to system failures and even to cable fires due to mains overload.**

- **When designing the mains, with regard to the cable cross-sections and fuses, give special consideration to the fact that short-term simultaneous operation of all pumps is possible in multi-pump operation.**

**Preparation/notes**

- The electrical connection must be made in accordance with VDE 0730/part 1 via a fixed mains connection cable, which is provided with a plug device or an all-pole switch with a contact opening width of at least 3 mm.
- In order to ensure drip protection and strain relief on the threaded cable connection, cables are to be used which have a sufficient outer diameter and are to be screwed sufficiently tightly.
- To get rid of any drips that accumulate, the cables are to be bent into a drain loop near the threaded cable connection.
- By positioning the threaded cable connection or by laying the cables accordingly, ensure that no drips can enter the terminal box. Non-assigned threaded cable connections must remain sealed with the plugs provided by the manufacturer.
- The connection pipe is to be placed in such a way that it can under no circumstances come into contact with the pipe and/or the pump and motor housing.

- When pumps are used in systems with water temperatures above 90 °C, a suitably heat-resistant mains connection cable must be used.
- Check the current type and voltage of the mains connection.
- Observe the rating plate information for the pump. The current type and voltage of the mains connection must correspond to the details on the rating plate.
- Fuse protection on mains side: Dependent on rated motor current.
- Take additional earthing into account!
- The motor must be secured against overloading using a motor protection switch or the PTC thermistor tripping unit (see chapter 5.4 "Accessories" on page 36).



## NOTE:

The connection diagram for electrical connections is in the cover of the terminal box cover (see also Fig. 17).

### Adjusting the motor protection switch

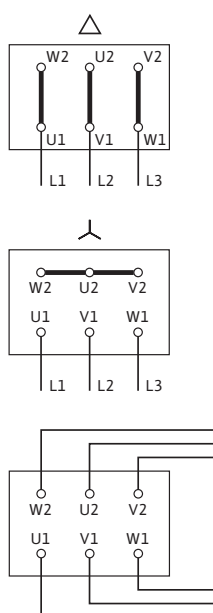


Fig. 17: Mains connection

- Adjust according to the rated motor current specified on the rating plate of the motor, Y-Δ starting: If the motor protection switch is switched in the supply line to a Y-Δ contactor combination, set the switch as for direct starting. If the motor protection switch is switched in a thread of the motor supply line (U1/V1/W1 or U2/V2/W2), set the motor protection switch to 0.58 x rated motor current.
  - The special version of the motor is equipped with PTC thermistor sensors. Connect the PTC thermistor sensors to the PTC thermistor tripping unit.
- CAUTION! Risk of property damage!**  
**Risk of damage due to incorrect handling.**
- **Only a maximum voltage of 7.5 V DC may be applied to the PTC thermistor sensor terminals. A higher voltage will destroy the PTC thermistor sensor.**
  - The mains connection is dependent on the motor power  $P_2$ , the mains voltage and the activation type. The recommended switching arrangement of the connection bridges in the terminal box should be taken from the following list "Table 4: Connection terminal assignment" on page 45 and Fig. 17.
  - When connecting automatic switchgears, observe the relevant installation and operating instructions.



Activation type	Motor power $P_2 \leq 3 \text{ kW}$		Motor power $P_2 \geq 4 \text{ kW}$
	Mains voltage 3~ 230 V	Mains voltage 3~ 400 V	Mains voltage 3~ 400 V
Direct	Δ-connection (Fig. 17 top)	Y-connection (Fig. 17 centre)	Δ-connection (Fig. 17 top)
Y-Δ starting	Remove connection bridges (Fig. 17 below)	not possible	Remove connection bridges (Fig. 17 below)

Table 4: Connection terminal assignment



## NOTE:

Use of soft starters is recommended to limit the starting current and preventing tripping of excess current protection devices.

### 7.3 Anti-condensation heater connection

We recommend an anti-condensation heater for motors which, due to climatic conditions, are at a risk of condensation (e.g. stationary motors in moist atmospheres, or motors exposed to extreme variations in temperature). Corresponding motor variations, which are equipped with an anti-condensation heater at the factory, can be ordered as a special version. The anti-condensation heater is used to protect the motor windings against condensation water inside the motor.

- The anti-condensation heater is connected to the terminals HE/HE in the terminal box (connection voltage: 1~ 230 V/50 Hz).



**CAUTION! Risk of property damage!**  
**Risk of damage due to incorrect handling.**

- **The anti-condensation heater may not be switched on during motor operation.**

## 8 Commissioning

### Safety



**DANGER! Risk of fatal injury!**  
**Failure to install safety devices on the terminal box or near the coupling can cause electrical shock or contact with rotating parts, potentially resulting in life-threatening injuries.**

- **Before commissioning, all safety devices (such as terminal box covers or coupling covers) that were removed must be reinstalled.**
- **Keep a safe distance from the pump during commissioning.**



**WARNING! Danger of injury!**  
**If the pump/system is installed improperly, fluid may be ejected during commissioning. Individual components may also become loose.**

- **Keep a safe distance from the pump during commissioning.**
- **Wear protective clothing, protective gloves and protective goggles.**

### Preparation

The pump has to reach ambient temperature before commissioning.

### 8.1 Initial commissioning

- Check whether the shaft can be rotated without any grinding. In case the impeller is blocked or grinds, loosen the coupling screws and tighten them with the specified torque (see list "Table 5: Screw tightening torques" on page 53).
- Prime and vent the unit correctly.



**WARNING! Danger due to extremely hot or extremely cold pressurised fluid!**  
**Depending on the temperature of the fluid and the system pressure, when the venting screw is opened completely, extremely hot or extremely cold fluid in liquid or vapour form may escape or shoot out at high pressure.**

- **Always exercise caution when opening the venting screw.**



**CAUTION! Risk of property damage!**  
**Running dry will destroy the mechanical seal.**

- **Make sure that the pump does not run dry.**

To avoid cavitation noises and damage, a minimum inlet pressure must be guaranteed at the suction port of the pump. This minimum inlet pressure depends on the operation situation and the duty point of the pump, and must be defined accordingly.

The main parameters for defining the minimum inlet pressure are the NPSH of the pump at its duty point and the vapour pressure of the fluid.

- By briefly switching on, check whether the direction of rotation agrees with the arrow on the fan cover. If the direction of rotation is incorrect, proceed as follows:
  - For direct starting: Swap 2 phases on the motor terminal board (e.g. L1 for phase L2),
  - For Y- $\Delta$  start: Swap the winding start and winding end of 2 windings on the motor terminal board (e.g. V1 for V2 and W1 for W2).

### 8.1.1 Activation

- The unit may only be switched on when the shut-off device on the pressure side is closed! Only after full speed has been reached may the shut-off device be slowly opened and be adjusted to the duty point. The unit must run smoothly and free of vibration.

The mechanical seal ensures that a seal will not leak and requires no special setting. Should there be a small leakage at the beginning, it will stop when the initial inlet phase of the gasket is over.

- Immediately after the conclusion of all work, all the provided safety and protection equipment items must be properly installed and put into operation.



#### **DANGER! Risk of fatal injury!**

**Failure to install safety devices on the terminal box or near the coupling can cause electrical shock or contact with rotating parts, potentially resulting in life-threatening injuries.**

- **Immediately after maintenance, all previously removed safety devices, such as terminal box covers or coupling covers, must be reinstalled!**

### 8.1.2 Switching off

- Close the shut-off device in the pressure pipe.



#### NOTE:

In case a non-return valve is installed in the pressure pipe, the shut-off device can remain open insofar as a counter pressure is present.



#### **CAUTION! Risk of property damage!**

**Risk of damage due to incorrect handling.**

- **When switching off the pump, the shut-off device in the inlet pipe may not be closed.**
- Switch off the motor and allow it to coast down completely. Ensure the coasting is smooth.
- For longer downtimes, close the shut-off device in the inlet pipe.
- For longer periods of non-use and/or danger of freezing, drain the pump and secure it against freezing.
- After removing the pump, keep it in a dry and dust-free storage.

### 8.1.3 Operation



#### NOTE:

The pump should always run smoothly and vibration-free and not be operated in conditions other than those specified in the catalogue/ data sheet.



#### **DANGER! Risk of fatal injury!**

**Failure to install safety devices on the terminal box or near the coupling can cause electrical shock or contact with rotating parts, potentially resulting in life-threatening injuries.**

- **Immediately after maintenance, all previously removed safety devices, such as terminal box covers or coupling covers, must be reinstalled!**



#### **DANGER! Risk of burns or freezing to the pump when body parts come into contact with the pump!**

**Depending on the pump or system operating conditions (fluid temperature), the entire pump can become very hot or very cold.**

- **Keep a safe distance during operation!**



- **In the case of high water temperatures and system pressures, allow the pump to cool down before all work.**
- **Always wear protective clothing, protective gloves and protective goggles when working.**

Depending on the different operating conditions and the degree of installation's automation, the pump can be switched on and off in different ways. Observe the following:

**Stop procedure:**

- Prevent return flow to the pump.
- Do not work too long with an insufficient volume flow.

**Start procedure:**

- Be sure that the pump is completely filled up.
- Do not work too long with an insufficient volume flow.
- Larger pumps require a minimum flow rate amount to operate properly.
- Operating against a closed shut-off device can lead to overheating in the centrifugal chamber and to damage of the shaft seal.
- Ensure a continual flow to the pump with a sufficiently large NPSH.
- Prevent insufficient counter pressure leading to a motor overload.



**NOTE:**

To prevent significant increases in motor temperature and excessive load on the pump, coupling, motor, gaskets and bearings, no more than 10 switch-on procedures should be performed per hour.

**Double pump operation:**



**NOTE:**

To ensure the operational standby of the standby pump, the standby pump must be operated every 24 h at least once a week.

## 9 Maintenance

### Safety

**Have maintenance and repair work carried out by qualified personnel only!**

It is recommended to have the pump serviced and checked by Wilo customer service.



**DANGER! Risk of fatal injury!**

There is a risk of fatal injury from electric shock when working on electrical equipment.

- Work on electrical equipment may only be done by electricians approved by the local electricity supplier.
- Before working on electrical equipment, switch it off and secure it against being switched on again.
- Any damage to the connection cable of the pump should always be rectified by a qualified electrician only.
- Never use an object to poke around the openings on the terminal box or motor and never insert anything into the module or motor!
- Follow the installation and operating instructions for the pump, level control device and other accessories!



**DANGER! Risk of fatal injury!**

Failure to install safety devices on the terminal box or near the coupling can cause electrical shock or contact with rotating parts, potentially resulting in life-threatening injuries.

- Immediately after maintenance, all previously removed safety devices, such as terminal box covers or coupling covers, must be reinstalled!



**DANGER! Risk of fatal injury!**

The pump itself and pump parts can be extremely heavy. Falling parts pose a risk of cuts, crush injuries, bruises or impacts, which may lead to death.

- Always use suitable lifting equipment and secure parts against falling.
- Never stand underneath a suspended load.
- Make sure the pump is securely positioned and is stable during storage and transport as well as prior to all installation and other assembly work.



**DANGER! Risk of fatal injury!**

The tools used during maintenance work on the motor shaft can be flung out if they come into contact with rotating parts, and cause serious or even fatal injuries.

- The tools used during maintenance work must be removed completely before the pump is started up.



**DANGER! Risk of burns or freezing to the pump when body parts come into contact with the pump!**

Depending on the pump or system operating conditions (fluid temperature), the entire pump can become very hot or very cold.

- Keep a safe distance during operation!
- In the case of high water temperatures and system pressures, allow the pump to cool down before all work.
- Always wear protective clothing, protective gloves and protective goggles when working.

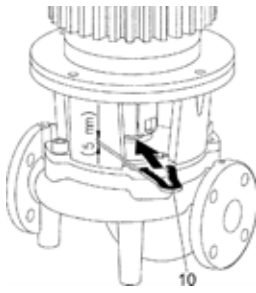


Fig. 18: Forked spacer for setting work



**NOTE:**

For all installation work, the forked spacer (Fig. 18, item 10) is a mandatory requirement for setting the correct impeller position in the pump housing!

**9.1 Air supply**

- The air supply to the motor housing must be checked at regular intervals. In case of contamination, ensure that an air supply is re-established in order to allow the motor to cool sufficiently.

**9.2 Maintenance tasks**



**DANGER! Risk of fatal injury!**

**Falling pumps or pump parts may result in life-threatening injuries.**

- **When performing maintenance work, protect the pump components against falling.**



**DANGER! Risk of fatal injury!**

**There is a risk of fatal injury from electric shock when working on electrical equipment.**

- **Check for absence of voltage and cover or cordon off adjacent live parts.**

**9.2.1 On-going maintenance**

Replace all gaskets that have been removed for maintenance.

**9.2.2 Replacing the mechanical seal**

There may be a slight amount of drip leakage during the running-in period. Even during normal operation of the pump, slight leakage involving occasional drops is common. Once in a while, however, a visual inspection is required. If there is clearly detectable leakage, the gasket is to be changed.

Wilo offers a repair kit which contains the necessary parts for replacement.

**Changeover**

**Dismantling:**

- Disconnect the system from the power supply and secure it against being switched back on again.
- Make sure it is not live.
- Earth the work area and short-circuit.
- Close the shut-off device upstream and downstream of the pump.
- Depressurise the pump by opening the air vent valve (Fig. 1/2/3/4/5, item 1.31).



**DANGER! Risk of scalding!**

**Due to high fluid temperatures there is a danger of scalding.**

- **If the fluid is hot, allow it to cool down before all work.**



**NOTE**

When tightening screw connections in conjunction with the work described in the following: Observe the screw tightening torque for the thread type (see list "Table 5: Screw tightening torques" on page 53).

- Disconnect the motor or mains connection cables if the cable for dismantling the drive is too short.
- Dismantle the coupling guard (Fig. 1/2/3/4/5, item 1.32).
- Loosen the coupling screws (Fig. 1/2/3/4/5, item 1.5) on the coupling unit.

- Loosen the motor fastening screws (Fig. 1/2/3/4/5, item 5) on the motor flange and lift the drive off the pump with suitable hoisting gear. On few BL pumps, the adapter ring comes loose (Fig. 3, item 8).
- By loosening the lantern fastening screws (Fig. 1/2/3/4/5, item 4), dismantle the lantern unit with coupling, shaft, mechanical seal and impeller from the pump housing.
- Loosen the impeller fixation nut (Fig. 1/2/3/4/5, item 1.11), remove the washer (Fig. 1/2/3/4/5, item 1.12) beneath it and pull the impeller (Fig. 1/2/3, item 1.13) from the pump shaft.
- Dismantle the shim (Fig. 4/5, item 1.16) and if required the key (Fig. 4/5, item 1.43).
- Pull the mechanical seal (Fig. 1/2/3/4/5, item 1.21) off the shaft.
- Pull the coupling (Fig. 1/2/3/4/5, item 1.5) with the pump shaft out of the lantern.
- Thoroughly clean the sliding/seat surfaces of the shaft. If the shaft is damaged, it must be replaced.
- Remove the stationary ring of the mechanical seal with the sealing collar from the lantern flange, as well as the O-ring (Fig. 1/2/3/4/5, item 1.14) and clean the gasket seats.

#### Installation:

- Press a new mechanical seal stationary ring with collar into the gasket seat of the lantern flange. A commercially available dishwashing liquid can be used as a lubricant.
- Install a new O-ring in the groove of the O-ring seat of the lantern.
- Check the coupling sliding surfaces, if necessary, clean and slightly oil them.
- Pre-install coupling shells on the pump shaft with shims inserted in between and insert the pre-assembled coupling/shaft unit carefully into the lantern.
- Pull a new mechanical seal onto the shaft. A commercially available dishwashing liquid can be used as a lubricant (if required, insert the key and the shim again).
- Install the impeller with washer(s) and nut, countering at the impeller's outer diameter while doing so. Avoid damage to the mechanical seal due to jamming.
- Insert the pre-assembled lantern unit carefully into the pump housing and screw together. As you do so, hold onto the rotating parts of the coupling to avoid damage to the mechanical seal.
- Slightly loosen the coupling screws. Slightly open the pre-assembled coupling.
- Install the motor with suitable hoisting gear and screw the lantern/motor (and adapter ring for few BL pumps) connection together.
- Slide the forked spacer (Fig. 19, item 10) between the lantern and coupling. The forked spacer must sit there without any play.
- First, slightly tighten the coupling screws (Fig. 1/2/3/4/5, item 1.41) until the coupling half-shells are in contact with the shims.
- Afterwards, screw the coupling together evenly. In doing so, the specified distance between the lantern and the coupling of 5 mm is automatically adjusted via the forked spacer.
- Remove the forked spacer.
- Install the coupling guard.
- Connect the motor or mains connection cables.

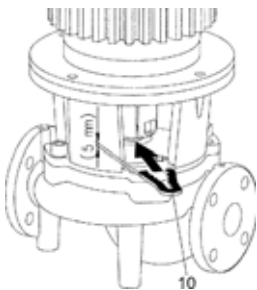


Fig. 19: Positioning the forked spacer

### 9.2.3 Changing the motor

The motor bearings are maintenance-free. Increased bearing noises and unusual vibrations indicate bearing wear. The bearing or motor must then be changed. The drive may only be replaced by the Wilo customer service.

- Disconnect the system from the power and secure it against being switched on.
- Make sure it is not live.
- Earth the work area and short-circuit.
- Close the shut-off device upstream and downstream of the pump.
- Depressurise the pump by opening the air vent valve (Fig. 1/2/3/4/5, item 1.31).

#### Dismantling:



#### **DANGER! Risk of scalding!**

**Due to high fluid temperatures there is a danger of scalding.**

- **If the fluid is hot, allow it to cool down before all work.**



#### NOTE:

- When tightening screw connections in conjunction with the work described in the following: Observe the screw tightening torque for the thread type (see list "Table 5: Screw tightening torques" on page 53).

- Disconnect the motor connection cables.
- Dismantle the coupling guard (Fig. 1/2/3/4/5, item 1.32).
- Dismantle the coupling (Fig. 1/2/3/4/5, item 1.5).
- Loosen the motor fastening screws (Fig. 1/2/3/4/5, item 5) on the motor flange and lift the motor off the pump with suitable hoisting gear. On BL pumps, the adapter ring comes loose (Fig. 3, item 8).
- Install the new motor with suitable hoisting gear and screw the lantern/motor (and adapter ring for BL pumps) connection together.
- Check the coupling and shaft sliding surfaces. If necessary, clean and lightly oil them.
- Pre-install coupling shells on the shafts with shims inserted in between them.
- Slide the forked spacer (Fig. 19, item 10) between the lantern and coupling. The forked spacer must sit there without any play.
- First, slightly tighten the coupling screws until the coupling half-shells are in contact with the shims.
- Afterwards, screw the coupling together evenly. In doing so, the specified distance between the lantern and the coupling of 5 mm is automatically adjusted via the forked spacer.
- Remove the forked spacer.
- Install the coupling guard.
- Connect the motor cable.

## Screw tightening torques

Screw connection		Tightening torque Nm $\pm$ 10 %	Installation information
Post	Size/tensile strength class		
Impeller — shaft	M10	30	Lubricate the thread with Molykote® P37 or comparable
	M12	60	
	M16	100	
	M20	100	
	M14	70	
	M18	145	
	M24	350	
Pump housing — lantern	M16	100	Tighten evenly and diagonally
	M20	170	
Lantern — motor	M8	25	
	M10	35	
	M12	70	
	M16	100	
	M20	170	
Coupling	M6	12	Tighten the screws uniformly, keep the gap even on both sides
	M8	30	
	M10	60	
	M12	100	
	M14	170	
	M16	230	

Table 5: Screw tightening torques

## 10 Faults, causes and remedies

**Have faults remedied by qualified personnel only! Observe the safety instructions in chapter 9 "Maintenance" on page 49.**

- **If the malfunction cannot be rectified, consult a specialist technician or the nearest customer service or representative office**

Fault	Cause	Remedy
Pump does not start or stops working	Pump blocked	Disconnect motor from power supply, remove cause of blockage; if motor blocked: Overhaul/replace motor/motor impeller unit
	Cable terminal loose	Check all cable connections
	Fuses defective	Check fuses; replace faulty fuses
	Motor damaged	Have the motor checked by Wilo customer service or a specialised service centre and serviced if necessary
	Motor protection switch has triggered	Throttle the pump to the rated volume flow on the pressure side
	Motor protection switch set incorrectly	Set the motor protection switch to the correct rated current (see the rating plate)
	Motor protection switch affected by excessive ambient temperature	Move the motor protection switch or protect it using heat insulation
	PTC thermistor tripping unit has triggered	Check the motor and fan cover for contaminants and clean if necessary, check ambient temperature and ensure an ambient temperature of $\leq 40$ °C by forced venting if necessary
Pump runs at reduced performance	Incorrect direction of rotation	Check direction of rotation, change if necessary
	Stop valve on the pressure side throttled	Slowly open the stop valve
	Speed too slow	Remedy incorrect terminal bridging (Y instead of $\Delta$ )
	Air in the inlet pipe	Repair leaks on flanges, vent the pump, change the mechanical seal in case of visible leakage
Pump making noises	Cavitation due to insufficient supply pressure	Increase supply pressure, observe minimum pressure at the suction port, check slide valve and filter on the suction side and clean if need be
	Motor has bearing damage	Have the pump checked by Wilo customer service or a specialised service centre and repaired if necessary
	Impeller grinding	Check faces and centrings and between lanterns and motor and lantern and pump housing, clean if necessary. Check the coupling and shaft sliding surfaces. If necessary, clean and lightly oil them.

Table 6: Faults, causes, remedies

## 11 Spare parts

Spare parts may be ordered via a local specialist and/or Wilo customer service.

To avoid queries and incorrect orders, all data from the rating plate of the pump and the motor must be specified with every order.



**CAUTION! Risk of property damage!**

**Trouble-free pump operation can only be guaranteed when original spare parts are used.**

- **Use only genuine Wilo spare parts.**
- **Each component is identified in the table below.**
- **Information to be provided when ordering spare parts:**
  - **Spare part number**
  - **Name/description of the spare part**
  - **All data on the pump and motor rating plate**



NOTE

For all installation work, the forked spacer is required for setting the correct impeller position in the pump housing!

## Spare parts table

For the allocation of assemblies, see Fig. 1/2/3/4/5 (no./parts depend on the pump type design A/B).

No.	Part	Details	No.	Part	Details	
1	Exchange kit (complete)		1.4	Coupling/shaft (kit)		
1.1	Impeller (kit) with:		1.11	with:	Nut	
1.11		Nut	1.12		Conical spring washer	
1.12		Conical spring washer	1.14		O-ring	
1.13		Impeller	1.41		Complete coupling/shaft	
1.14		O-ring	1.42		Circlip	
1.15		Shims	1.43		Key	
1.16		Shims	1.5		Coupling (complete)	
1.2		Mechanical seal (kit)			2	Motor
1.11	with:	Nut	3	Pump housing (kit) with:		
1.12		Conical spring washer	1.14		O-ring	
1.14		O-ring	3.1		Pump housing (IL, DL, BL)	
1.15		Shims	3.2		Stopper for pressure measurement connections	
1.21		Mechanical seal	3.3		Switchover valve $\leq$ DN 80 (only DL pumps)	
1.3		Lantern (kit) with:			3.4	Switchover valve $\geq$ DN 100 (only DL pumps)
1.11	Nut		4	Fastening screws for lantern/pump housing		
1.12	Conical spring washer		5	Fastening screws for motor/lantern		
1.14	O-ring		6	Nut for motor/lantern fixation		
1.15	Shims		7	Washer for motor/lantern fixation		
1.31	Air vent valve		8	Adapter ring (only BL pumps)		
1.32	Coupling guard		9	Pump supporting foot for motor size $\leq$ 4 kW (only BL pumps)		
1.33	Lantern		10	Forked spacer (Fig. 19)		

Table 7: Spare parts table



## 12 Disposal

Proper disposal and recycling of this product prevents damage to the environment and risks to personal health.

Disposal in accordance with the regulations requires the product to be drained and cleaned.

Lubricants must be collected. The pump components are to be separated according to material (metal, plastic, electronics).

1. Use public or private disposal organisations when disposing of all or part of the product.
2. For more information on proper disposal, please contact your local council or waste disposal office or the supplier from whom you obtained the product.



**NOTE:**

The product or any of its parts must not be disposed of with household waste!

For further information on recycling, visit [www.wilo-recycling.com](http://www.wilo-recycling.com)

**Subject to change without prior notice!**



**EU/EG KONFORMITÄTSERKLÄRUNG**  
**EU/EC DECLARATION OF CONFORMITY**  
**DECLARATION DE CONFORMITE UE/CE**

Als Hersteller erklären wir hiermit, dass die Pumpenbauarten der Baureihen  
*We, the manufacturer, declare that the pump types of the series*  
*Nous, fabricant, déclarons que les types de pompes des séries*

**IL**  
**DL**  
**BL**

(Die Seriennummer ist auf dem Typenschild des Produktes nach Punkten b) & c) von §1.7.4.2 und §1.7.3 des Anhanges I der Maschinenrichtlinie angegeben. / The serial number is marked on the product site plate according to points b) & c) of §1.7.4.2 and §1.7.3 of the annex I of the Machinery directive. / Le numéro de série est inscrit sur la plaque signalétique du produit en accord avec les points b) & c) du §1.7.4.2 et du §1.7.3 de l'annexe I de la Directive Machines.)

in der gelieferten Ausführung folgenden einschlägigen Bestimmungen entsprechen :  
*In their delivered state comply with the following relevant directives :*  
*dans leur état de livraison sont conformes aux dispositions des directives suivantes :*

**\_ Maschinenrichtlinie 2006/42/EG**  
**\_ Machinery 2006/42/EC**  
**\_ Machines 2006/42/CE**

und gemäss Anhang 1, §1.5.1, werden die Schutzziele der Niederspannungsrichtlinie 2014/35/EU ab 20 April 2016 eingehalten  
*and according to the annex 1, §1.5.1, comply with the safety objectives of the Low Voltage Directive 2014/35/EU from April 20th 2016*  
*et, suivant l'annexe 1, §1.5.1, respectent les objectifs de sécurité de la Directive Basse Tension 2014/35/UE à partir du 20/04/2016*

**\_ Elektromagnetische Verträglichkeit-Richtlinie 2014/30/EU ab 20 April 2016**  
**\_ Electromagnetic compatibility 2014/30/EU from April 20th 2016**  
**\_ Compatibilité électromagnétique 2014/30/UE à partir du 20 avril 2016**

**\_ Richtlinie energieverbrauchsrelevanter Produkte 2009/125/EG**  
**\_ Energy-related products 2009/125/EC**  
**\_ Produits liés à l'énergie 2009/125/CE**

Nach den Okodesign-Anforderungen der Verordnung 640/2009 für Ausführungen mit einem einstufigen Dreiphasen - 50Hz - Käfigläufer - Induktionselektromotor, der Verordnung 4/2014 "Geänderte / Nach den Okodesign-Anforderungen der Verordnung 547/2012 für Wasserpumpen,  
*This applies according to eco-design requirements of the regulation 640/2009 to the versions with an induction electric motor, squirrel cage, three-phase, single speed, running at 50Hz, amended by Regulation 4/2014 " / This applies according to eco-design requirements of the regulation suivant les exigences d'éco-conception du règlement 640/2009 aux versions comportant un moteur électrique à induction à cage d'écureuil, triphasé, mono-vitesse, fonctionnant à 50Hz, amendé par le règlement 4/2014" / suivant les exigences d'éco-conception du règlement 547/2012*

und entsprechender nationaler Gesetzgebung,  
*and with the relevant national legislation,*  
*et aux législations nationales les transposant,*

sowie auch den Bestimmungen zu folgenden harmonisierten europäischen Normen :  
*comply also with the following relevant harmonized European standards :*  
*sont également conformes aux dispositions des normes européennes harmonisées suivantes :*

**EN 809+A1**

**EN 60034-1**  
**EN 60204-1**

**EN 60034-30-1**

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen ist:

*Person authorized to compile the technical file is :*

*Personne autorisée à constituer le dossier technique est :*

Dortmund,

**H. HERCHENHEIN**  
**Senior Vice President - Group ITQ**

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**wilo**

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**EU/EG KONFORMITÄTSERKLÄRUNG**  
**EU/EC DECLARATION OF CONFORMITY**  
**DECLARATION DE CONFORMITE UE/CE**

Als Hersteller erklären wir hiermit, dass die Pumpenbauarten der Baureihen  
*We, the manufacturer, declare that the pump types of the series*  
*Nous, fabricant, déclarons que les types de pompes des séries*

**BL80/...**  
**BL100/...**  
**BL125/...**  
**BL150/...**

(Die Seriennummer ist auf dem Typenschild des Produktes nach Punkten b) & c) von §1.7.4.2 und §1.7.3 des Anhanges I der Maschinenrichtlinie angegeben. / The serial number is marked on the product site plate according to points b) & c) of §1.7.4.2 and §1.7.3 of the annex I of the Machinery directive. / Le numéro de série est inscrit sur la plaque signalétique du produit en accord avec les points b) & c) du §1.7.4.2 et du §1.7.3 de l'annexe I de la Directive Machines.)

in der gelieferten Ausführung folgenden einschlägigen Bestimmungen entsprechen :  
*In their delivered state comply with the following relevant directives :*  
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– **Maschinenrichtlinie 2006/42/EG**  
– **Machinery 2006/42/EC**  
– **Machines 2006/42/CE**

und gemäss Anhang 1, §1.5.1, werden die Schutzziele der Niederspannungsrichtlinie 2014/35/EU ab 20 April 2016 eingehalten\*  
*and according to the annex 1, §1.5.1, comply with the safety objectives of the Low Voltage Directive 2014/35/EU from April 20th 2016 \**  
*et, suivant l'annexe 1, §1.5.1, respectent les objectifs de sécurité de la Directive Basse Tension 2014/35/UE à partir du 20/04/2016 \**

– **Elektromagnetische Verträglichkeit-Richtlinie 2014/30/EU ab 20 April 2016\***  
– **Electromagnetic compatibility 2014/30/EU from April 20th 2016\***  
– **Compatibilité électromagnétique 2014/30/UE à partir du 20 avril 2016\***

– **Richtlinie energieverbrauchsrelevanter Produkte 2009/125/EG**  
– **Energy-related products 2009/125/EC**  
– **Produits liés à l'énergie 2009/125/CE**

Nach den Okodesign-Anforderungen der Verordnung 640/2009\* für Ausführungen mit einem einstufigen Dreiphasen - 50Hz - Käfigläufer - Induktionselektromotor, der Verordnung 4/2014\* Geänderte / Nach den Okodesign-Anforderungen der Verordnung 547/2012 für Wasserpumpen, This applies according to eco-design requirements of the regulation 640/2009 \* to the versions with an induction electric motor, squirrel cage, three-phase, single speed, running at 50Hz, amended by Regulation 4/2014 \* / This applies according to eco-design requirements of the suivant les exigences d'éco-conception du règlement 640/2009 \* aux versions comportant un moteur électrique à induction à cage d'écureuil, triphasé, mono-vitesse, fonctionnant à 50Hz, amendé par le règlement 4/2014 \* / suivant les exigences d'éco-conception du règlement 547/2012

und entsprechender nationaler Gesetzgebung,  
*and with the relevant national legislation,*  
*et aux législations nationales les transposant,*

sowie auch den Bestimmungen zu folgenden harmonisierten europäischen Normen :  
*comply also with the following relevant harmonized European standards :*  
*sont également conformes aux dispositions des normes européennes harmonisées suivantes :*

**EN 809+A1**

**EN 60034-1\***  
**EN 60204-1\***

**EN 60034-30-1\***

\*

**Nicht anwendbar auf Barshaft Ausführungen (Pumpen ohne Elektromotor)**  
*Not applicable on Barshaft versions (pumps without electric motor)*  
*Non applicable sur les versions Bareshaft (pompes sans moteur électrique)*

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen ist:  
*Person authorized to compile the technical file is :*  
*Personne autorisée à constituer le dossier technique est :*

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<p align="center"><b>(BG) - български език</b> <b>ДЕКЛАРАЦИЯ ЗА СЪОТЕТСТВИЕ ЕО</b></p> <p>WILO SE декларира, че продуктите посочени в настоящата декларация съответстват на разпоредбите на следните европейски директиви и приелите ги национални законодателства:</p> <p>Машини 2006/42/ЕО ; Електромагнитна съвместимост 2014/30/ЕО ; Продукти, свързани с енергопотреблението 2009/125/ЕО</p> <p>както и на хармонизираните европейски стандарти, упоменати на предишната страница.</p>	<p align="center"><b>(CS) - Čeština</b> <b>ES PROHLÁŠENÍ O SHODĚ</b></p> <p>WILO SE prohlašuje, že výrobky uvedené v tomto prohlášení odpovídají ustanovením níže uvedených evropských směrnic a národním právním předpisům, které je přejímají:</p> <p>Stroje 2006/42/ES ; Elektromagnetická Kompatibilita 2014/30/ES ; Výrobků spojených se spotřebou energie 2009/125/ES</p> <p>a rovněž splňují požadavky harmonizovaných evropských norem uvedených na předcházející stránce.</p>
<p align="center"><b>(DA) - Dansk</b> <b>EF-OVERENSSTEMMELSESERKLÆRING</b></p> <p>WILO SE erklærer, at produkterne, som beskrives i denne erklæring, er i overensstemmelse med bestemmelserne i følgende europæiske direktiver, samt de nationale lovgivninger, der gennemfører dem:</p> <p>Maskiner 2006/42/EF ; Elektromagnetisk Kompatibilitet 2014/30/EF ; Energirelaterede produkter 2009/125/EF</p> <p>De er ligeledes i overensstemmelse med de harmoniserede europæiske standarder, der er anført på forrige side.</p>	<p align="center"><b>(EL) - Ελληνικά</b> <b>ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ ΕΚ</b></p> <p>WILO SE δηλώνει ότι τα προϊόντα που ορίζονται στην παρούσα ευρωπαϊκά δηλωσή είναι σύμφωνα με τις διατάξεις των παρακάτω οδηγιών και τις εθνικές νομοθεσίες στις οποίες έχει μεταφερθεί:</p> <p>Μηχανήματα 2006/42/ΕΚ ; Ηλεκτρομαγνητικής συμβατότητας 2014/30/ΕΚ ; Συνδεδόμενα με την ενέργεια προϊόντα 2009/125/ΕΚ</p> <p>και επίσης με τα εξής εναρμονισμένα ευρωπαϊκά πρότυπα που αναφέρονται στην προηγούμενη σελίδα.</p>
<p align="center"><b>(ES) - Español</b> <b>DECLARACIÓN CE DE CONFORMIDAD</b></p> <p>WILO SE declara que los productos citados en la presenta declaración están conformes con las disposiciones de las siguientes directivas europeas y con las legislaciones nacionales que les son aplicables :</p> <p>Máquinas 2006/42/CE ; Compatibilidad Electromagnética 2014/30/CE ; Productos relacionados con la energía 2009/125/CE</p> <p>Y igualmente están conformes con las disposiciones de las normas europeas armonizadas citadas en la página anterior.</p>	<p align="center"><b>(ET) - Eesti keel</b> <b>EÜ VASTAVUSDEKLARATSIOONI</b></p> <p>WILO SE kinnitab, et selles vastavustunnistuses kirjeldatud tooted on kooskõlas alljärgnevat Euroopa direktiivide sätetega ning riiklike seadusandlustega, mis nimetatud direktiivid üle on võtnud:</p> <p>Masinaid 2006/42/EÜ ; Elektromagnetilist Ühilduvust 2014/30/EÜ ; Energiatõrjuga toodete 2009/125/EÜ</p> <p>Samuti on tooted kooskõlas eelmisel leheküljel ära toodud harmoniseeritud Euroopa standarditega.</p>
<p align="center"><b>(FI) - Suomen kieli</b> <b>EY-VAATIMUSTENMUKAISUUSVAKUUTUS</b></p> <p>WILO SE vakuuttaa, että tässä vakuutuksessa kuvutat tuotteet ovat seuraavien eurooppalaisten direktiivien määräysten sekä niihin sovellettavien kansallisten lakiasetusten mukaisia:</p> <p>Koneet 2006/42/EY ; Sähkömagneettinen Yhteensopivuus 2014/30/EY ; Energiaan liittyvien tuotteiden 2009/125/EY</p> <p>Lisäksi ne ovat seuraavien edellisellä sivulla mainittujen yhdenmukaistettujen eurooppalaisten normien mukaisia.</p>	<p align="center"><b>(GA) - Gaeilge</b> <b>EC DEARBHÚ COMHLÍONTA</b></p> <p>WILO SE ndearbhaíonn an cur síos ar na táirgí atá i ráiteas seo, siad i gcomhréir leis na forálacha atá sna treoracha seo a leanas na hEorpa agus leis na dlíthe náisiúnta is infheidhme orthu:</p> <p>Innealra 2006/42/EC ; Comhoiriúnacht Leictreamaighnéadach 2014/30/EC ; Fuinneamh a bhaineann le táirgí 2009/125/EC</p> <p>Agus siad i gcomhréir le forálacha na caighdeáin chomhchuibhithe na hEorpa dá dtagraítear sa leathanach roimhe seo.</p>
<p align="center"><b>(HR) - Hrvatski</b> <b>EZ IZJAVA O SUKLADNOSTI</b></p> <p>WILO SE izjavlja da su proizvodi navedeni u ovoj izjavi u skladu sa sljedećim prihvaćenim europskim direktivama i nacionalnim zakonima:</p> <p>EZ smjernica o strojevima 2006/42/EZ ; Elektromagnetna kompatibilnost - smjernica 2014/30/EZ ; Smjernica za proizvode relevantne u pogledu potrošnje energije 2009/125/EZ</p> <p>i usklađenim europskim normama navedenim na prethodnoj stranici.</p>	<p align="center"><b>(HU) - Magyar</b> <b>EK-MEGFELELŐSÉGI NYILATKOZAT</b></p> <p>WILO SE kijelenti, hogy a jelen megfelelőségi nyilatkozatban megjelölt termékek megfelelnek a következő európai irányelvek előírásainak, valamint azok nemzeti jogrendbe átültetett rendelkezéseinek:</p> <p>Gépek 2006/42/EK ; Elektromágneses összeférhetőségre 2014/30/EK ; Energiával kapcsolatos termékek 2009/125/EK</p> <p>valamint az előző oldalon szereplő, harmonizált európai szabványoknak.</p>
<p align="center"><b>(IS) - Íslenska</b> <b>EB LEYFISYFIRLÝSING</b></p> <p>WILO SE lýsir því yfir að vörurnar sem um getur í þessari yfirlýsingu eru í samræmi við eftirfarandi tilskipunum ESB og landslögum hafa samþykkt:</p> <p>Vélartilskipun 2006/42/EB ; Rafseguls-samhæfni-tilskipun 2014/30/EB ; Tilskipun varðandi vörur tengdar orkunotkun 2009/125/EB</p> <p>og samhæfða evrópska staðla sem nefnd eru í fyrri síðu.</p>	<p align="center"><b>(IT) - Italiano</b> <b>DICHIARAZIONE CE DI CONFORMITÀ</b></p> <p>WILO SE dichiara che i prodotti descritti nella presente dichiarazione sono conformi alle disposizioni delle seguenti direttive europee nonché alle legislazioni nazionali che le traspongono :</p> <p>Macchine 2006/42/CE ; Compatibilità Elettromagnetica 2014/30/CE ; Prodotti connessi all'energia 2009/125/CE</p> <p>E sono pure conformi alle disposizioni delle norme europee armonizzate citate a pagina precedente.</p>
<p align="center"><b>(LT) - Lietuvių kalba</b> <b>EB ATITIKTIES DEKLARACIJA</b></p> <p>WILO SE pareiškia, kad šioje deklaracijoje nurodyti gaminiai atitinka šių Europos direktyvų ir jas perkeliančių nacionalinių įstatymų nuostatus:</p> <p>Mašinos 2006/42/EB ; Elektromagnetinis Suderinamumas 2014/30/EB ; Energija susijusiems gaminiams 2009/125/EB</p> <p>ir taip pat harmonizuotas Europos normas, kurios buvo cituotos ankstesniame puslapyje.</p>	<p align="center"><b>(LV) - Latviešu valoda</b> <b>EK ATBILSTĪBAS DEKLARĀCIJU</b></p> <p>WILO SEdeklarē, ka izstrādājumi, kas ir nosaukti šajā deklarācijā, atbilst šeit uzskaitīto Eiropas direktīvu nosacījumiem, kā arī atsevišķu valstu likumiem, kuros tie ir ietverti:</p> <p>Mašinas 2006/42/EK ; Elektromagnētiskās Saderības 2014/30/EK ; Energiju saistītiem ražojumiem 2009/125/EK</p> <p>un saskaņotajiem Eiropas standartiem, kas minēti iepriekšējā lappusē.</p>

<p align="center"><b>(MT) - Malti</b> <b>DIKJARAZZJONI KE TA' KONFORMITÀ</b></p> <p>WILO SE jiddikjara li l-prodotti speċifikati f'din id-dikjarazzjoni huma konformi mad-direttivi Ewropej li jsegwu u mal-leġislazzjonijiet nazżjonali li japplikawhom:</p> <p>Makkinarju 2006/42/KE ; Kompatibbiltà Elettromanjetika 2014/30/KE ; Prodotti relatati mal-enerġija 2009/125/KE</p> <p>kif ukoll man-normi Ewropej armonizzati li jsegwu imsemija fil-paġna preċedenti.</p>	<p align="center"><b>(NL) - Nederlands</b> <b>EG-VERKLARING VAN OVEREENSTEMMING</b></p> <p>WILO SE verklaart dat de in deze verklaring vermelde producten voldoen aan de bepalingen van de volgende Europese richtlijnen evenals aan de nationale wetgevingen waarin deze bepalingen zijn overgenomen:</p> <p>Machines 2006/42/EG ; Elektromagnetische Compatibiliteit 2014/30/EG ; Energiegerelateerde producten 2009/125/EG</p> <p>De producten voldoen eveneens aan de geharmoniseerde Europese normen die op de vorige pagina worden genoemd.</p>
<p align="center"><b>(NO) - Norsk</b> <b>EU-OVERENSSTEMMELSESERKLAERING</b></p> <p>WILO SE erklærer at produktene nevnt i denne erklæringen er i samsvar med følgende europeiske direktiver og nasjonale lover:</p> <p>EG-Maskindirektiv 2006/42/EG ; EG-EMV-Elektromagnetisk kompatibilitet 2014/30/EG ; Direktiv energirelaterte produkter 2009/125/EF</p> <p>og harmoniserte europeiske standarder nevnt på forrige side.</p>	<p align="center"><b>(PL) - Polski</b> <b>DEKLARACJA ZGODNOŚCI WE</b></p> <p>WILO SE oświadcza, że produkty wymienione w niniejszej deklaracji są zgodne z postanowieniami następujących dyrektyw europejskich i transponującymi je przepisami prawa krajowego:</p> <p>Maszyn 2006/42/WE ; Kompatybilności Elektromagnetycznej 2014/30/WE ; Produktów związanych z energią 2009/125/WE</p> <p>oraz z następującymi normami europejskich zharmonizowanymi podanymi na poprzedniej stronie.</p>
<p align="center"><b>(PT) - Português</b> <b>DECLARAÇÃO CE DE CONFORMIDADE</b></p> <p>WILO SE declara que os materiais designados na presente declaração obedecem às disposições das diretivas europeias e às legislações nacionais que as transcrevem :</p> <p>Máquinas 2006/42/CE ; Compatibilidade Electromagnética 2014/30/CE ; Produtos relacionados com o consumo de energia 2009/125/CE</p> <p>E obedecem também às normas europeias harmonizadas citadas na página precedente.</p>	<p align="center"><b>(RO) - Română</b> <b>DECLARAȚIE DE CONFORMITATE CE</b></p> <p>WILO SE declară că produsele citate în prezenta declarație sunt conforme cu dispozițiile directivelor europene următoare și cu legislațiile naționale care le transpun :</p> <p>Mașini 2006/42/CE ; Compatibilitate Electromagnetică 2014/30/CE ; Produselor cu impact energetic 2009/125/CE</p> <p>și, de asemenea, sunt conforme cu normele europene armonizate citate în pagina precedentă.</p>
<p align="center"><b>(RU) - русский язык</b> <b>Декларация о соответствии Европейским нормам</b></p> <p>WILO SE заявляет, что продукты, перечисленные в данной декларации о соответствии, отвечают следующим европейским директивам и национальным предписаниям:</p> <p>Директива ЕС по машинному оборудованию 2006/42/ЕС ; Директива ЕС по электромагнитной совместимости 2014/30/ЕС ; Директива о продукции, связанной с энергопотреблением 2009/125/ЕС</p> <p>и гармонизированным европейским стандартам, упомянутым на предыдущей странице.</p>	<p align="center"><b>(SK) - Slovenčina</b> <b>ES VYHLÁSENIE O ZHODE</b></p> <p>WILO SE čestne prehlasuje, že výrobky ktoré sú predmetom tejto deklarácie, sú v súlade s požiadavkami nasledujúcich európskych direktív a odpovedajúcich národných legislatívnych predpisov:</p> <p>Strojových zariadeniach 2006/42/ES ; Elektromagnetickú Kompatibilitu 2014/30/ES ; Energeticky významných výrobkov 2009/125/ES</p> <p>ako aj s harmonizovanými európskych normami uvedenými na predchádzajúcej strane.</p>
<p align="center"><b>(SL) - Slovenščina</b> <b>ES-IZJAVA O SKLADNOSTI</b></p> <p>WILO SE izjavlja, da so izdelki, navedeni v tej izjavi, v skladu z določili naslednjih evropskih direktiv in z nacionalnimi zakonodajami, ki jih vsebujejo:</p> <p>Stroji 2006/42/ES ; Elektromagnetno Združljivostjo 2014/30/ES ; Izdelkov, povezanih z energijo 2009/125/ES</p> <p>pa tudi z usklajenimi evropskih standardi, navedenimi na prejšnji strani.</p>	<p align="center"><b>(SV) - Svenska</b> <b>EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE</b></p> <p>WILO SE intyggar att materialet som beskrivs i följande intyg överensstämmer med bestämmelserna i följande europeiska direktiv och nationella lagstiftningar som inför dem:</p> <p>Maskiner 2006/42/EG ; Elektromagnetisk Kompatibilitet 2014/30/EG ; Energirelaterade produkter 2009/125/EG</p> <p>Det överensstämmer även med följande harmoniserade europeiska standarder som nämnts på den föregående sidan.</p>
<p align="center"><b>(TR) - Türkçe</b> <b>CE UYGUNLUK TEYID BELGESİ</b></p> <p>WILO SEbu belgede belirtilen ürünlerin aşağıdaki Avrupa yönetmeliklerine ve ulusal kanunlara uygun olduğunu beyan etmektedir:</p> <p>Makine Yönetmeliği 2006/42/AT ; Elektromanyetik Uyumluluk Yönetmeliği 2014/30/AT ; Eko Tasarım Yönetmeliği 2009/125/AT</p> <p>ve önceki sayfada belirtilen uyumlaştırılmış Avrupa standartlarına.</p>	



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