

# wilo



## Wilo-SB Range

**en** Installation and operating instructions

Fig. 1:

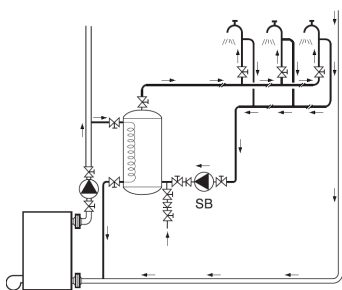


Fig. 2:

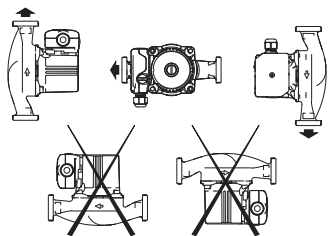


Fig. 3:

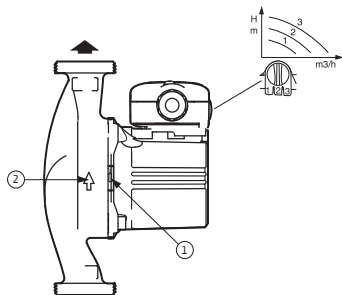


Fig. 4:

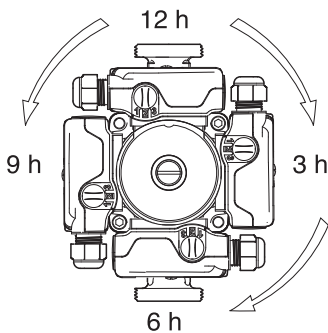


Fig. 5:

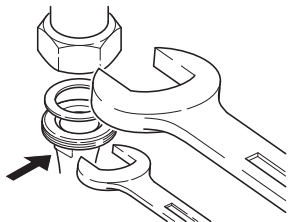


Fig. 6:

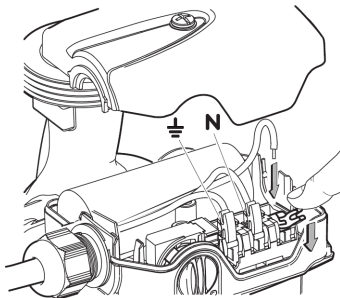


Fig. 7:

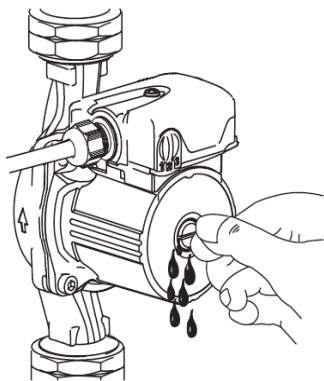
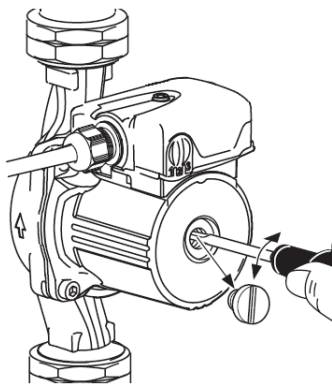


Fig. 8:





## 1 General

### About this document

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.

The installation and operating instructions correspond to the relevant version of the product and the underlying safety regulations and 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 Indication of instructions in the operating instructions

### Symbols:

**General danger symbol**



**Danger due to electrical voltage**



Note:



**Signal words:**

### **DANGER!**

**Acutely dangerous situation.**

**Failure to follow instructions could lead to serious injury or death.**

### **WARNING!**

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

### **CAUTION!**

**There is a risk of damaging the product/unit. "Caution" concerns possible damage to the product that could occur if this note 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
- identification for connections
- 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 from electrical, mechanical and bacteriological influences
- 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/the 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 the shaft seals) of hazardous fluids (which are explosive, toxic or hot) must be led away so that no danger to persons or to the environment arises. National statutory provisions are to be complied with.
- Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and 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 due to their own detailed study of the installation and operating instructions.

Work to 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 operating safety of the supplied product is only guaranteed for conventional use in accordance with Section 4 of the operating instructions. The limit values must on no account fall under or exceed those specified in the catalogue/data sheet.

## 3 **Transport and interim storage**

Immediately after receiving the product:

- Check the product for damage in transit
- In the event of damage in transit, take the necessary steps with the forwarding agent within the respective time limits.



**CAUTION! Risk of damage to property!**

**Incorrect transport and interim storage can cause damage to the product.**

- **The pump should be protected from moisture, frost and mechanical damage due to impact during transport and interim storage.**

## 4 **Intended use**

This circulator is suitable for drinking water only.

Series Wilo SB circulating pumps are suitable of handling liquids in the fields of service/drinking water and food-related liquids.

## 5 Product information

### 5.1 Technical data

Connection voltage	1 ~ 230 V ± 10 %
Mains frequency	50 Hz
Input power $P_1$	See rating plate
Protection class IP	See rating plate
Max. motor speed	See rating plate
Water temperatures at max. ambient temperature of +40 °C	Service water systems +2 °C to +65 °C
Max. ambient temperature	+40 °C
Max. operating pressure	10 bar (1000 kPa)
Minimum inlet pressure <sup>1)</sup> at +40 °C/+65 °C	0.5 bar / 0.2 bar (50 kPa / 20 kPa)
Pipe connection size (BSPM)	SB 5 = 1" SB 30(G) = 1½"(1¼") SB 60 = 1½"
Port-to-port length	SB 5 = 130 mm SB 30(G) = 130 mm (150 mm) SB 60 = 180 mm
Variable speed control	3 stages

<sup>1)</sup> The values apply up to 300 m above sea level; Addition for higher altitudes: 0.01 bar/100 m increase in height. To prevent cavitation noises, be sure to maintain the minimum inlet pressure at the suction port of the pump.

### 5.2 Scope of delivery

- Complete circulation pump
- 2 flat gaskets
- Installation and operating instructions

### 5.3 Accessories

Accessories must be ordered separately:

- Union for pipe connections,
- S1R-h plug-in timer module for 1-phase motors only,  
See catalogue for detailed list.

## 6 Description and function

### 6.1 Description of the product

Series SB circulating water service pumps have been specially designed for use in conjunction with domestic/ drinking water service systems. They are, by material selection and design, corrosion proofed against any residual parts in domestic/drink- ing water.

The pump consists of a hydraulic system, a glandless pump motor with terminal box. All the rotating parts in the glandless pump are in contact with the fluid, this is also true for the motor rotor. A shaft sealing, which is subject to wear, is not necessary. The fluid lubricates the slide bearings and cools the bearing and the rotor. Motor protection is not necessary. Even the maximum overload current cannot damage the motor. The motor is blocking-current proof.

### 6.2 Function of the product

#### **Variable speed control (Fig. 3)**

The pump's speed is switched in three stages [1 – 2 – 3] using a rotary knob. The speed in the smallest stage is approx. 40 to 50 % of the maximum speed with a reduction of the current consumption to 50 %.

## 7 Installation and electrical connection



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

**Improper installation and electrical connection can result in fatal injury.**

- **Installation and electrical connection may only be carried out by qualified personnel and in accordance with the applicable regulations.**
- **Adhere to regulations for accident prevention**

## 7.1 Installation

- Install directly on a horizontal or vertical pipe, on the distribution circuit return, after the draw off points (Fig. 1).
- Only install the pump after all welding and soldering work has been completed and, if necessary, the pipe system has been flushed through.
- Install the pump in a readily accessible place for easy inspection and dismantling.
- Install gate valves upstream and downstream of the pump to facilitate a possible pump replacement.
  - Perform installation so that any leaking water cannot drip onto the control module.
  - To do this, align the upper gate valve laterally.
- Install with the power switched off and the pump motor always in a horizontal position.  
See Fig. 2 for installation positions of the pump.
- Direction arrows on the pump housing indicate the direction of flow (Fig. 3, item 1).
- In thermal insulation work, make sure that the pump motor and the module are not insulated. The condensate-drain openings must remain uncovered (Fig. 3, item 2).
- Use a open-end wrench to prevent the pump from twisting (Fig. 5).
- The motor housing can be twisted after undoing the motor attachment screws if it is necessary to position the terminal box (Fig. 4).



Note: Generally, turn the motor head before the system is filled. When turning the motor head in an installation which is already filled, do not pull the motor head out of the pump housing. Turn the motor head with a small amount of pressure on the motor unit so that no water can come out of the pump.



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

**The gasket may be damaged when the motor housing is turned. Replace defective gaskets immediately:  
Ø 86 x Ø 76 x 2.0 mm EP.**

## 7.2 Electrical connection



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

**A fatal shock may occur if the electrical connection is not made correctly.**

- **Only allow the electrical connection to be made by an electrician approved by the local power supply company and in accordance with the local regulations in force.**
- **Disconnect the power supply before any work.**
- The current type and voltage must correspond to the details on the rating plate.
- The electrical connection must be made via a fixed connected load. The latter is provided with a plug device or an all-pole switch with a contact opening width of at least 3 mm.
- To ensure drip protection and strain relief at the PG screwed connection, a connected load with an adequate outer diameter is necessary (e.g. H05W-F3G1.5 or AVMH-3x1.5).
- The connected load is to be installed in such a way that it can under no circumstances come into contact with the piping and/or the pump and motor housing.
- Make the mains connection corresponding to the terminals of the circulator: Live (L), Neutral (N), and Earth ( $\perp$ ) to (Fig. 6).
- The connection cable can be taken through the cable feed-in right or left. Exchange dummy plugs and cable feed-in as necessary. When the terminal box is positioned laterally, always arrange the cable feed-in from below.



### **CAUTION! Risk of short circuit!**

**Once electrical connection is complete and in order to protect the terminal box from moisture, the terminal box cover must be sealed according to regulations.**

- Earth the pump/system according to regulations.

## 8 Commissioning



**WARNING! Risk of injury and damage to property!**  
Incorrect commissioning can lead to injuries to persons and damage to property.

- Commissioning by qualified personnel only!
- Depending on the operating status of the pump or system (fluid temperature), the entire pump can become very hot. Touching the pump can cause burns!

### 8.1 Filling and venting

Fill and vent the system correctly.

The pump does not pump any water if there is air in the pump room. The pump rotor compartment is vented automatically after a short operating period.

Dry running for short periods will not harm the pump.

Please proceed as follows if it is necessary to vent the rotor room:

- Switch off the pump.



**WARNING! Danger of personal injury!**  
Depending on the operating status of the pump or system (fluid temperature), the entire pump can become very hot. Touching the pump can cause burns!

- Close the gate valve on the pressure side piping.



**WARNING! Danger of personal injury!**  
Depending on the temperature of the fluid and system pressure, when the venting screw is opened, hot liquid or gaseous fluid may escape or shoot out at high pressure. Escaping fluid can cause scalding!

- Undo the venting screw carefully a few turns (Fig. 7).
- Protect electrical parts from any escaping water.

- Switch on the pump.



Note: The pump may jam if the venting screw is undone, depending on the operating pressure level.

- Screw the venting screw back in again after 15 to 30 seconds.
- Open the gate valve again.

## 8.2 Variable speed control

The circulator flowrate is adjusted by changing the speed of rotation of the motor using the selector switch (see Fig. 3).

## 9 Maintenance



**DANGER! Risk of fatal injury!**

**A fatal shock may occur when working on electrical equipment.**

- **The pump should be electrically isolated and secured against unauthorised switch-on during any maintenance or repair work.**
- **Any damage to the connection cable should always be rectified by a qualified electrician only.**

After successful maintenance and repair work, install and connect the pump according to the “Installation and electrical connection” chapter. Switch on the pump according to the “Commissioning” chapter.

## 10 Faults, causes and remedies

**Only have faults remedied by qualified personnel.**

**Observe the safety instructions in chapter 9!**

Faults	Causes	Remedy
Pump is not running although the power supply is switched on.	Electrical fuse defective.	Check fuses.
	Pump has no voltage.	Check the voltage on the pump. (Observe the rating plate) Restore power after interruption
	Capacitor defective	Check capacitor (Observe rating plate) Replace condenser
	Motor is blocked, e.g. by deposits from the heating water	Unscrew the venting screw completely and check the ease of movement of the pump rotor or make it easy to move by turning the slotted end of the shaft with a screwdriver (Fig. 8). <b>ATTENTION!</b> Close the gate valves upstream and downstream to the pump at high water temperatures and system pressures. Allow the pump to cool down beforehand.
Pump is making noises.	Cavitation due to insufficient suction pressure.	Increase the system suction pressure within the permissible range.
		Check the speed setting and switch to a lower speed as necessary.

**If the fault cannot be remedied, please consult the specialist technician or the Wilo factory after-sales service.**



## 11 Disposal

Damage to the environment and risks to personal health are avoided by the proper disposal and appropriate recycling of this product.

1. Use public or private disposal organisations when disposing of the entire product 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.

**Subject to change without prior notice!**

**de EG – Konformitätserklärung**  
**en EC – Declaration of conformity**  
**fr Déclaration de conformité CE**

*(gemäß 2004/108/EG Anhang IV.2 und 2006/95/EG Anhang III.B,  
according 2004/108/EC annex IV.2 and 2006/95/EC annex III.B,  
conforme 2004/108/CE appendice IV.2 et 2006/95/CE appendice III B)*

Hiermit erklären wir, dass die Bauarten der Baureihe : **SB Range**  
*Herewith, we declare that this product:*  
*Par le présent, nous déclarons que cet produit :*

in der gelieferten Ausführung folgenden einschlägigen Bestimmungen entspricht:  
*in its delivered state complies with the following relevant provisions:*  
*est conforme aux dispositions suivants dont il relève:*

**Elektromagnetische Verträglichkeit – Richtlinie** **2004/108/EG**  
**Electromagnetic compatibility – directive**  
**Compatibilité électromagnétique – directive**

**Niederspannungsrichtlinie** **2006/95/EG**  
**Low voltage directive**  
**Directive basse-tension**

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

Angewendete harmonisierte Normen, insbesondere: **EN 60335-2-51**  
*Applied harmonized standards, in particular:*  
*Normes harmonisées, notamment:*

Bei einer mit uns nicht abgestimmten technischen Änderung der oben genannten Bauarten, verliert diese Erklärung ihre Gültigkeit.  
If the above mentioned series are technically modified without our approval, this declaration shall no longer be applicable.  
Si les gammes mentionnées ci-dessus sont modifiées sans notre approbation, cette déclaration perdra sa validité.

Dortmund, 28.11.2012

*i. A. C. Brasse*

Claudia Brasse  
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