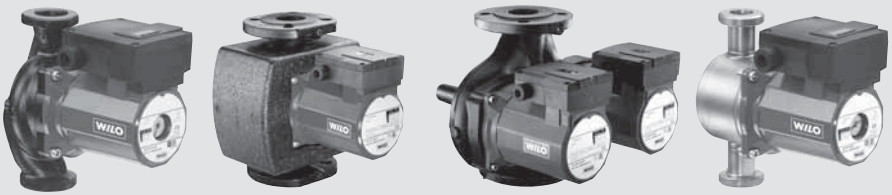


Wilo-TOP-S/-SD/-Z/-D/-RL/-I

D Einbau- und Betriebsanleitung

GB Installation and operating instructions

F Notice de montage et de mise en service

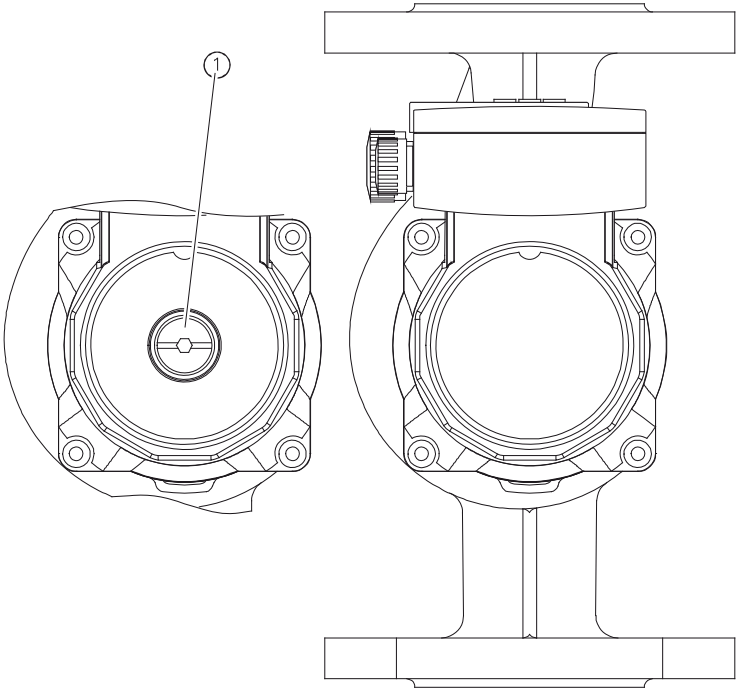
NL Inbouw- en bedieningsvoorschriften

E Instrucciones de instalación y funcionamiento

I Istruzioni di montaggio, uso e manutenzione

2 115 933-Ed.03/2011-05

Fig. 1:



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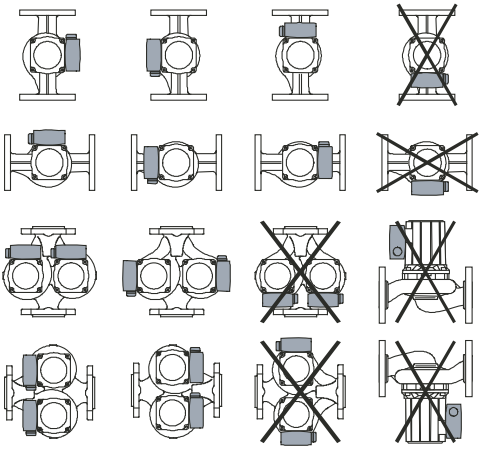

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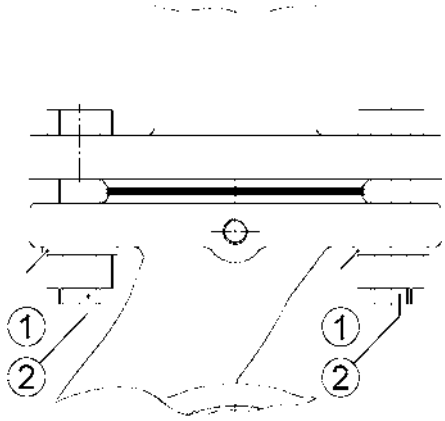
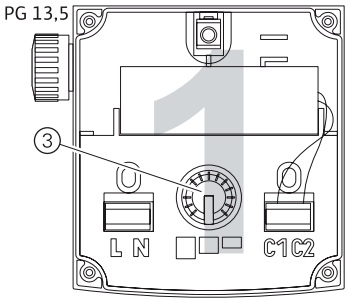
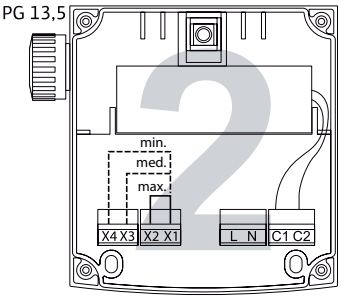
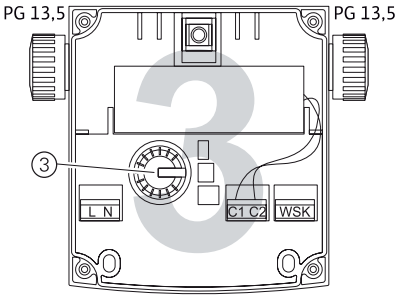
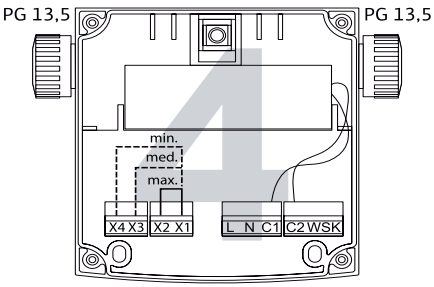


Fig. 4: 1~


PG 13,5
1
3
L N
C1 C2


PG 13,5
2
min.
med.
max.
X4 X3
X2 X1
L N
C1 C2


PG 13,5
PG 13,5
3
3
L N
C1 C2
WSK


PG 13,5
PG 13,5
4
min.
med.
max.
X4 X3
X2 X1
L N C1
C2 WSK

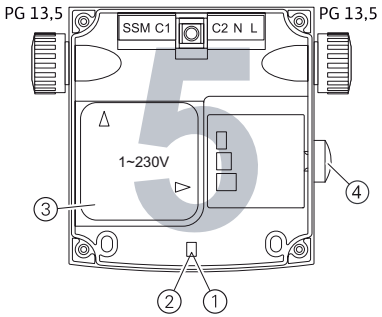
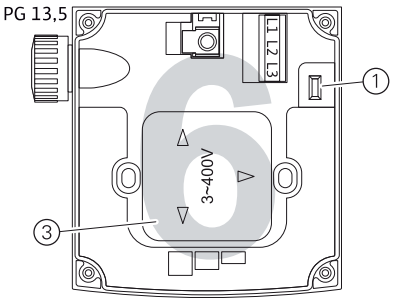

PG 13,5
PG 13,5
SSM C1
C2 N L
5
1~230V
3
4
2
1

Fig. 4: 3~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L1 L2 L3
1
6
3~400V
3

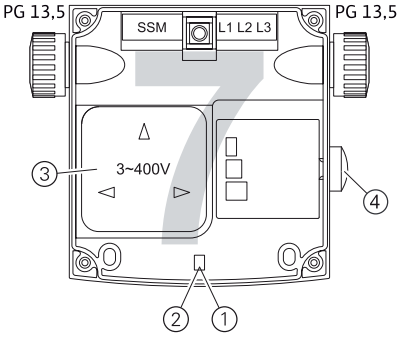
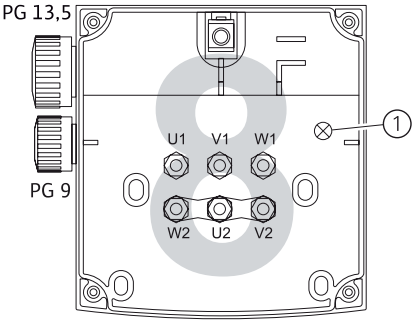
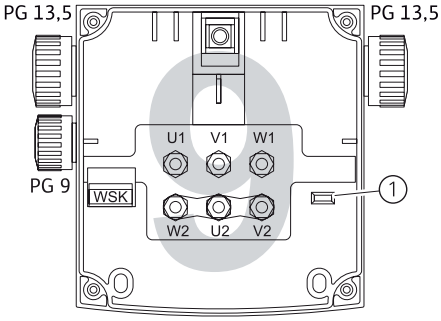

PG 13,5
PG 13,5
SSM
L1 L2 L3
7
3
3~400V
4
2
1

Fig. 4: 1~/3~ (3~400 V/3~230 V/1~230 V)





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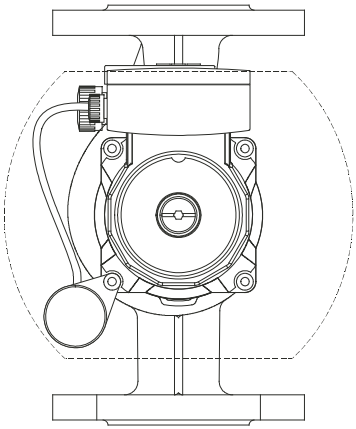

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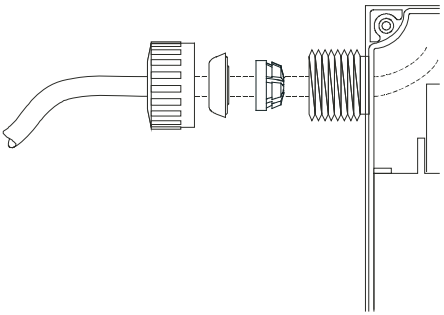

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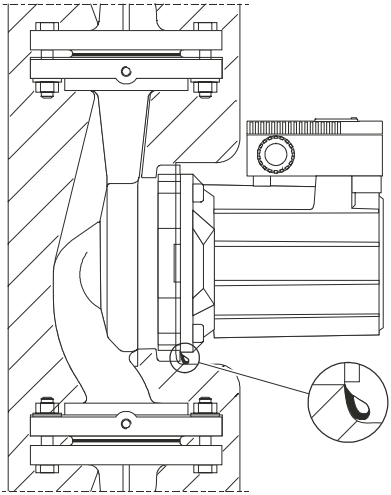


Fig. 8: a

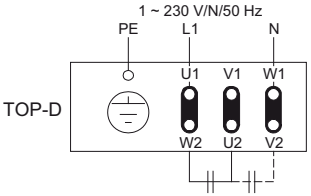


Fig. 8: b

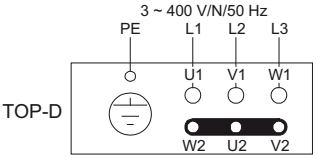


Fig. 8: c

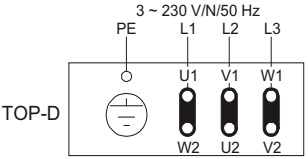


Fig. 8: d

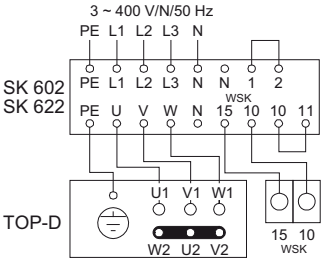


Fig. 8: e

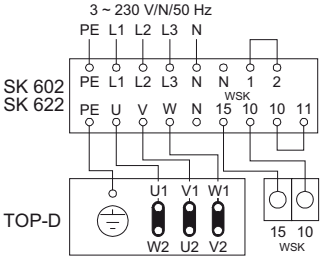


Fig. 8: f

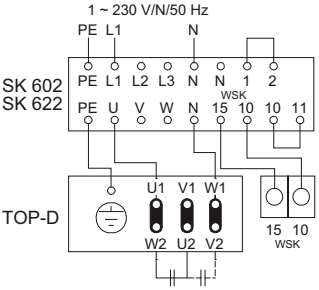


Fig. 8: g

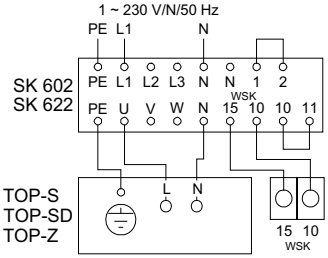
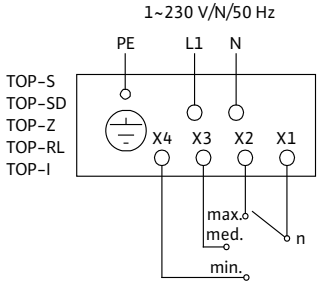


Fig. 8: h



1 General

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, 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 from electrical voltage

USEFUL 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
- Identification for fluid connections
- Name 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 particular, lack of care may lead to problems such as:
- Danger to persons due to electrical, mechanical and bacteriological influences,
- damage to the environment due to leakage of hazardous materials,
- damage to property,
- 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 power 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 operating safety of the supplied product is only guaranteed for conventional use in accordance with Section 4 of the operating instructions. The values in operation must on no account undershoot or overshoot the limit values specified in the catalogue/data sheet.

3 Transport and interim storage

On arrival, immediately check the product and its packaging for damage in transit. If damage is found, the necessary actions involving the forwarding agent must be taken within the specified period.

CAUTION! Risk of injuries to personnel and damage to the product! Incorrect transport and interim storage can cause damage to the product and injury to personnel.

- **The pump and its packaging must be protected against moisture, frost and mechanical damage during transport and interim storage.**
- **Packaging that has become weakened loses its strength and call allow the product to fall out, causing injury to personnel.**
- **When the pump must be transported, it may be carried only by the motor/pump housing. Never carry it by the module/terminal box, cable or external capacitor.**

4 Intended use

Circulation pumps are used for delivering liquids in

- hot water heating systems
- underfloor heating (recommendation TOP-Z and TOP-I)
- cooling and cold water circuits
- closed-circuit industrial circulation systems

WARNING! Health hazard!
Because of the materials used in their construction, pumps of the TOP-S/-SD/-D/-RL range are unsuitable for use in applications involving drinking water or foodstuffs.

Pumps of the TOP-Z and TOP-I range are additionally suitable for use in

- drinking water circulation systems

5 Product information

5.1 Type key

Example: TOP-S 25/5 EM	
TOP	Circulation pump, glandless
S	-S/-RL=Standard type -SD = Standard type, twin-head pump -Z = Single-head pump for drinking water circulation systems -D = Constant speed (max. 1400 rpm) -I = Industrial type
25	Threaded connection [mm]:20 (Rp ¾), 25 (Rp 1), 30 (Rp 1¼) Flange connection: DN 32, 40, 50, 65, 80, 100, 125 Combination flange (PN 6/10): DN 32, 40, 50, 65
/5	Maximum delivery head in [m] Q = 0 m^3/h
EM	EM = single-phase motor DM = three-phase motor

5.2 Technical data

Max. flow rate	Depends on the pump type (see catalogue)
Max. delivery head	Depends on the pump type (see catalogue)
Speed	Depends on the pump type (see catalogue)
Mains voltage	1~230 V to DIN IEC 60038 3~400 V to DIN IEC 60038 3~230 V* to DIN IEC 60038 (optionally with change-over switch) ***Exception:** TOP-S/-SD 80/15 and 80/20 For other voltages see name plate
Nominal current	See name plate
Frequency	See name plate (50 or 60 Hz)
Insulation class	See name plate
Protection class	See name plate
Power consumption P_1	See name plate
Nominal diameters	See type key
Connection flange	See type key
Pump weight	Depends on the pump type (see catalogue)
Permitted ambient temperature	-20 °C to +40 °C
Max. rel. humidity	≤ 95%

5.2 Technical data	
Approved fluids TOP-S/-SD/-Z/-D/-RL/-I	Heating water (to VDI 2035) water/glycol mixtures, max. mixing ratio 1:1 (for mixtures with glycol the conveying data of the pump should be corrected to those for the higher viscosity, depending on the percentage mixing ratio) Only use brand-name goods with corrosion protection inhibitors; comply with the manufacturer's specifications and safety data sheets. The pump manufacturer's approval must be obtained for use of other fluids. Special versions with fluids-resistant materials (e.g. versions for use with oil) available on request.
TOP-Z/-I	Drinking water and water for foodstuff applications to EC drinking water directive. In systems to the German drinking water regulations 2001 and DIN 50930-6, pumps with housings of bronze (CC 499K) or stainless steel must be used.
Permissible fluid temperature	Heating water: TOP-S/-SD/-D/-RL: -20 °C to +130 °C (for a short time (2h): +140 °C) **Exception:** TOP-S 25/13; TOP-S/-SD 80/15 and 80/20: -20 °C to +110 °C TOP-Z/-I: -20 °C to +110 °C TOP-S/-SD/-RL: If used with Wilo-Protect module C: -20 °C to +110 °C
	Drinking water: TOP-Z/-I: to 24 °e: max. +80 °C (for a short time (2h): +110 °C) **Exception:** TOP-Z/TOP-I 20/4 and 25/6: to 22 °e: max. +65 °C (for a short time (2h): +80 °C)
Max. permissible operating pressure	See name plate
Emission sound-pressures level	< 50 dB(A) (depending on the pump type)
Emission of interference	EN 61000-6-3
Resistance to interference	EN 61000-6-2

CAUTION! Risk of injuries to personnel and damage to the product! Impermissible fluids can damage the pump and also cause injury to persons. Comply strictly with the relevant safety data sheets and manufacturer's data!

Minimum inlet pressure (above atmospheric pressure) at the pump suction port in order to avoid cavitation noises (at fluids temperature T_{Med}):

TOP-S/-SD/-RL								
T_{Med}	Rp ¾	Rp 1	Rp 1¼	DN 32/40	DN 50	DN 65	DN 80	DN 100
+50 °C	0.05 bar				0.3 bar			
+95 °C	0.5 bar				1.0 bar			
+110 °C	1.1 bar				1.6 bar			
+130 °C	2.4 bar(*)				2.9 bar(*)			

(*) not applicable to TOP-S 25/13, TOP-S/-SD 80/15, TOP-S/-SD 80/20

TOP-Z, TOP-I							
T_{Med}	Rp ¾	Rp 1	Rp 1¼	DN 40	DN 50	DN 65	DN 80
+50 °C	0.5 bar				0.8 bar		
+80 °C	0.8 bar				1.0 bar		
+110 °C	2.0 bar				3.0 bar		

TOP-D								
T_{Med}	Rp 1	Rp 1¼	DN 32/40	DN 50	DN 65	DN 80	DN 100	DN 125
+50 °C	0.05 bar							
+95 °C	0.2 bar					0.3 bar		
+110 °C	0.8 bar					0.9 bar		
+130 °C	2.1 bar					2.2 bar		

The values apply up to 300 m above sea level; addition for higher locations: 0.01 bar/100 m increase in height.

5.3 Scope of delivery

- Pump, complete
  - Two seals for threaded connection
  - Two-part thermal insulation shell (only single-head pump); not for TOP-RL and TOP-I
  - Eight M12 washers
    (for M12 flange bolts for DN 32-DN 65 combination flanged version)
  - Eight M16 washers
    (for M16 flange bolts for DN 32-DN 65 combination flanged version)
  - Installation and operating instructions

5.4 Accessories

Accessories must be ordered separately:

- Wilo-Protect module C
- Change-over switch for 3~230 V
- ClimaForm cold water insulation for pump
- For TOP-D for single-phase connection:
  - External capacitor with installation accessories

See catalogue for detailed list.

6 Description and function

6.1 Description of the pump

The pump is fitted with a glandless motor (single-phase (1~) or three-phase (3~), **for main connection voltage and mains frequency see the name plate**, in which all the rotating parts are in contact with the fluid. The design relies on the fluid to provide lubrication for the plain bearings of the rotor shaft.
The motor speed can be switched over (not for TOP-D). The speed switching is executed in different ways depending on the terminal box. The ways are either by a speed selection switch, by plugging in the change-over plug differently or by an internal or external jumpering of the contacts. (see commissioning/speed change-over).
A suitable change-over switch is available as an accessory for the voltage 3 ~230 V.
The assignment of terminal boxes to the individual pump types is described in the section "Terminal boxes" (chapter 6.2).

TOP-SD:
For a twin-head pump the two motor impeller units are fitted identically and accommodated in a common pump housing.

TOP-Z:
The selected materials and designs of the pumps of this series comply with the relevant guidelines (TrinkwV2001, ACS,WRAS) and are specially intended for use under the operating conditions found in drinking water circulation systems. In systems to the German drinking water regulations 2001, pumps with housings of bronze (CC 499K) or stainless steel must be used. If pumps of the series Wilo-TOP-Z in GG (pump housing of grey cast iron) are used in drinking water circulation systems, the national regulations and guidelines should be complied with as necessary.

TOP-D:
The maximum speed is 1400 rpm, constant speed.

6.2 Terminal boxes

There are nine terminal boxes (Fig. 4) covering all the pump types. Table 1 lists the assignment of terminal boxes to pump types:

Mains connection	Max. power consumption P_1 (see name plate data)	Terminal box type TOP-RL TOP-I	TOP-S TOP-SD	TOP-Z	TOP-D
1~	P_1max ≤ 85 W	–	–	–	8
	95 W ≤ P_1max ≤ 265 W	1	1/2	1	9
	320 W ≤ P_1max ≤ 400 W	–	3/4/5	3	9
	650 W ≤ P_1max ≤ 960 W	–	5	–	–
3~	P_1max ≤ 90 W	–	–	–	8
	100 W ≤ P_1max ≤ 270 W	6	6	6	9
	305 W ≤ P_1max ≤ 3125 W	–	7	7	9

Table 1: Assignment of terminal box types to pump types (see also Fig.4)

The fittings for the terminal boxes can be found in Table 2:

Terminal box type	Direction of rotation indicator light (Fig. 4, item 1)	Fault signal light (Fig. 4, item 2)	Variable speed control (Fig. 4, item 3)
1	–	–	Speed selection switch, 3-step
2	–	–	Internal or external, jumpering the contacts “x1-x2” or “x1-x3” or “x1-x4”
3	–	–	Speed selection switch, 3-step
4	–	–	Internal or external, jumpering the contacts “x1-x2” or “x1-x3” or “x1-x4”
5	– [2)]	X [1)]	Change-over switch, 2-step
6	X (internal)	–	Change-over switch, 3-step
7	X [1)]	X [1)]	Change-over switch, 3-step
8	X (internal)	–	–
9	X (internal)	–	–

Table 2: Fitting of terminal boxes

1) The light indicator signals are carried by a common fibre optic cable to the cover, so that the signals are visible from outside.

2) When mains voltage is present, the lamp lights up green

- The direction of rotation indicator light lights up green when mains voltage is present and the direction of rotation is correct; if the direction of rotation is incorrect, the indicator light goes out (see chapter “Commissioning”).
- The fault indicator light lights up red if the integral motor protection has tripped.

7 Installation and electrical connection

DANGER! Danger of death!
Incorrect installation and inexpert electrical connection can pose a risk of fatal injury. Danger from electrical current must be eliminated.

- **The installation and electrical connection may only be carried out by qualified personnel in accordance with the applicable regulations!**
- **Accident prevention regulations must be observed!**
- **Comply with the regulations of the local power supply company!**
  Pumps with pre-assembled cable:
- **Never pull on the pump cable**
- **Do not kink the cable.**
- **Do not place any objects on the cable**

7.1 Installation

WARNING! Danger of personal injury!
Incorrect installation can result in personal injury.

- **There is a crush hazard**
- **There is an injury hazard due to sharp edges/burrs. Wear appropriate protective clothing (e.g. safety gloves)!**
- **There is an injury hazard due to the pump/the motor falling. Use suitable lifting gear to secure the pump/motor against falling.**

CAUTION! Risk of damage!
Incorrect installation can result in damage to the product.

- **Only use qualified personnel for the installation work!**
- **Observe national and regional regulations!**

- Installation within a building
  - Install the pump in a dry, well-ventilated, frost-free room.
- Installation outside a building (outdoor installation):
  - Install the pump in a sump (e.g. light sump, annular sump) with cover or in a cupboard/housing as weather protection.
  - Avoid exposure of the pump to direct sunlight.
  - Protect the pump against rain. Dripping water from above is permitted provided that the electrical connection has been established in accordance with the installation and operating instructions and the terminal box has been properly sealed

CAUTION! Risk of damage!
Ensure sufficient ventilation/heating if the ambient temperature exceeds/falls below the permitted limit values.

- Carry out all welding and soldering work prior to the installation of the pump.

CAUTION! Risk of damage!
Contamination from the pipe system can damage the pump during operation. Before installing the pump, flush the pipe system.

- Provide shut-off valves upstream and downstream of the pump.
- Attach pipework to the floor, ceiling or wall using appropriate fittings so that the pump does not bear the weight of the pipework.
- If installed at the inlet to an open system, the safety inlet must branch off at the pump's discharge side.
- If necessary remove the two half shells of the thermal insulation before installing the single-head pump.
- Install the pump at an easily accessible location to allow it to be easily checked or replaced at a later time.
- Precautions during installation:
  - Perform assembly such that the pump shafts are horizontal and not under strain (see the installation positions shown in Fig. 2). The motor terminal box must not face downward. If necessary, slacken the socket-head screws and rotate the motor housing (see chapter 9).
  - The direction of flow of the fluid must correspond to the direction arrow on the pump housing or the pump flange.

7.1.1 Installation of a threaded pipe union pump

- Install appropriate pipe unions before installing the pump.
- Use the supplied flat gaskets between the suction/pressure ports and pipe unions when installing the pump.
- Screw union nuts onto the threads of the suction/pressure ports and tighten them using a monkey wrench or pipe wrench.

CAUTION! Risk of damage!
When tightening the pipe unions, keep the pump in position by gripping the motor. Not the module/terminal box!

- Check the pipe unions for leaks.
- Single-head pump:
  Fit the two half-shells of the thermal insulation before commissioning and push them together so that the guide pins engage in the opposing holes.

7.1.2 Installation of a flanged pump

Installation of pumps with PN6/10
combination flange (flange–end pumps D32 up to DN 65 inclusive)

WARNING! Risk of injury and material damage!
The flange connection can be damaged and develop leaks. There is an injury hazard/risk of damage by the escape of a hot fluid.

- **Never connect two combination flanges to each other!**
- **Pumps with combination flanges are not suitable for operating pressures PN16.**
- **The use of securing elements (e.g. spring rings) can leads to leaks at the flange connection. They are therefore not permissible. The washers supplied (Fig. 3, item 1) must be inserted between screw heads/nuts and the combination flange.**
- **The permissible tightening torques listed in the table below must not be exceeded, even if screws of higher strength (≥ 4.6) are used, since otherwise splintering can occur at the edges of the long holes. This causes the screws to lose their preload and the flange connection can become leaky.**
- **Use screws of sufficient length. The screw thread must protrude at least one thread turn beyond the nut (Fig. 3, item 2).**

DN 32, 40, 50, 65	Rated pressure PN 6	Rated pressure PN 10/16
Screw diameter	M12	M16
Tensile strength class	≥ 4.6	≥ 4.6
Permitted tightening torque	40 Nm	95 Nm
Min. screw length for		
• DN 32/DN 40	55 mm	60 mm
• DN 50/DN 65	60 mm	65 mm

DN 80, 100, 125	Rated pressure PN 6	Rated pressure PN 10/16
Screw diameter	M16	M16
Tensile strength class	≥ 4.6	≥ 4.6
Permitted tightening torque	95 Nm	95 Nm
Min. screw length for		
• 80	65 mm	65 mm
• 100	70 mm	70 mm
• 125	70 mm	75 mm

- Install appropriate flat gaskets between pump and counter flanges.
- Tighten the flange bolts across diagonals in two steps to the prescribed tightening torque (see Table 7.1.2).
  - Step 1: 0.5 x permissible tightening torque
  - Step 2: 1.0 x permissible tightening torque
- Check the flange connections for leaks.
- Single-head pump:
  Fit the two half-shells of the thermal insulation before commissioning and push them together so that the guide pins engage in the opposing holes.

7.1.3 Insulation of the pump in refrigeration/air-conditioning systems

- The series TOP-S/-SD/-RL are suitable for use in refrigeration and air-conditioning systems with temperatures of the fluid down to -20 °C.
- The thermal insulation shells included in the scope of delivery of the individual pumps may however only be used in heating systems at fluid temperatures of +20 °C or higher, since these thermal insulation shells do not enclose the pump housing in a diffusion-proof manner.
- For applications in refrigeration and air-conditioning systems, Wilo-ClimaForm diffusion-proof thermal insulation shells or other commercially-available diffusion-proof thermal insulation materials must be used.

CAUTION! Risk of damage!
If the diffusion-proof insulation is applied by the customer, the pump housing may be insulated only up to the motor separation joint, so that the condensate drain openings remain open and allow the condensate accumulating in the motor to flow out without obstruction (Fig. 7).Otherwise condensate can accumulate in the motor, eventually causing an electrical defect.

7.2 Electrical connection

DANGER! Danger of death!
Improper electrical connections pose a risk of fatal injury due to electric shock.

- **Only allow the electrical connection to be made by an electrician approved by the local electricity supplier and in accordance with the local regulations in force.**
- **Before working on the pump, all poles of the power supply must be disconnected. Because voltages hazardous to persons persist for some time (in capacitors), no work may be commenced on the module until 5 minutes have elapsed (applies only to 1~ systems). Check to ensure all connections (including potential-free contacts) are voltage-free.**

CAUTION! Risk of damage!
If the wrong voltage is applied, the motor can be damaged!

- The current type and voltage of the mains connection must correspond to the specifications on the name plate.
- The electrical connection must be established via a fixed connection line equipped with a connector device or an all-pole switch with a contact opening width of at least 3 mm.
- Mains-side fuse protection: 10 A, slow.
  - Twin-head pumps: provide a separate mains connection cable and a separate fuse on the mains side for both motors of the twin-head pump.
- The pumps can also be used without restriction in existing installations with and without FI-protection switches. When dimensioning the FI-protection switch, consider the number of pumps connected and their motor currents.
- When pumps are used in systems with water temperatures above 90°C, a suitable heat-resistant supply cable must be used.
- The supply cable is to be placed in such a way that under no circumstances can it come into contact with the pipe and/or the pump and motor housing.
- To ensure protection against dripping water and to provide the cable sheath with strain relief, (PG 13.5), a connection cable with an outside diameter of 10 - 12 mm should be used, and fitted as shown in Fig. 6. In addition, the cable near the threaded cable gland should be bent into the form of a drip loop, to from which any accumulated drips will fall. Unused cable glands should be blanked off with the sealing plates provided, and screwed up tight.
- Commission pumps only if they are fitted with the correct modular cover. Check that the cover gasket is correctly seated.
- Earth the pump/system according to regulations.
- TOP-D pumps for all connection voltages are fitted with three-phase motors:
  - For single-phase operation 1~230 V in a Steinmetz circuit (Fig. 8 a).
    The capacitor available as an accessory is attached to one of the motor securing screws, using the attachment strap supplied (Fig. 5). In this area, the thermal insulation is cut back to from a collar. The capacitor connection cable is fed though the second cable gland (PG 9).
  - For three-phase operation 3~400 V in star arrangement (Fig. 8 b),
  - For three-phase operation 3~230 V in Δ arrangement (Fig. 8 b),
    For voltage change-over from 400 V to 230 V the respective star-Δ jumpers must be swapped over (Fig. 8 a to 8 c).

7.2.1 Collective fault signal (SSM)

DANGER! Danger of death!
Improper electrical connections pose a risk of fatal injury due to electric shock.
If the mains leads and SSM lead are brought together in a 5-core cable, the SSM-lead must not be monitored using a protective low voltage.

For pumps with terminal boxes of types 5 and 7 (Fig. 4) a collective fault signal "SSM" for connection to the building automation system is available as a potential-free NC relay (max. contact loading 250 VAC/1A). The contacts open if the integral motor protection trips to disconnect the motor. After a manual reset (Fig. 4, item 4) at the pump, the contacts close again and the fault signal is acknowledged.
If the collective fault signal "SSM" is connected to an external Wilo switch/control unit using the "WSK" (terminal 15, 10) facility, any fault that occurs should first be acknowledged at the pump and then at the switch/control unit.

7.2.2 Motor protection

CAUTION! Risk of damage!
If the winding protection contact (WSK) of the pump is not connected to a motor protection system, the motor can be damaged due to thermal overload!

Pump with terminal box type		Tripping	SSM	Fault acknowledgement
TOP-S TOP-SD TOP-Z TOP-RL TOP-I 1~230 V	1 (P_1max ≤ 265 W)	Internal switching off of motor voltage	–	Automatically, after the motor has cooled down
	2 (P_1max ≤ 265 W)	Internal switching off of motor voltage	–	Automatically, after the motor has cooled down
	3 (320 W ≤ P_1max ≤ 400 W)	WSK and external tripping unit (SK602/ SK622 or other switch/ control unit)	–	Manually at the tripping unit, after the motor has cooled down
	4 (320 W ≤ P_1max ≤ 400 W)	WSK and external tripping unit (SK602/ SK622 or other switch/ control unit)	–	Manually at the tripping unit, after the motor has cooled down
	5 (650 W ≤ P_1max ≤ 960 W)	All-pole switching off by the integral tripping electronics	Tripping the SSM is performed in parallel with switching off of the integral tripping electronics	Manually at the pump, after the motor has cooled down

Pump with terminal box type		Tripping	SSM	Fault acknowledgement
TOP-S TOP-SD TOP-Z TOP-I 3~400 V	6 (P_1max ≤ 270 W)	Internal switching off of a motor phase	–	• Switch off mains voltage • Allow motor to cool down • Switch on mains voltage
	7 (305 W ≤ P_1max ≤ 3125 W)	All-pole switching off by the integral tripping electronics	Tripping the SSM is performed in parallel with switching off of the integral tripping electronics	Manually at the pump, after the motor has cooled down

Pump with terminal box type		Tripping	SSM	Fault acknowledgement
TOP-D	8 (P_1max ≤ 85 W)	-	–	–
	9 (85 W ≤ P_1max ≤ 550 W)	WSK and external tripping unit (SK602/ SK622 or other switch/ control unit)	–	Manually at the tripping unit, after the motor has cooled down

- The setting of any thermal tripping that is fitted must correspond to the maximum current (see name plate) of the speed step at which the pump is being operated.

Motor protection triping devices
If Wilo tripping units SK 602/SK 622 are present in existing systems, pumps with full motor protection (WSK) can be connected to them. Perform the mains connection and also the tripping unit connection (refer to the name plate data) in accordance with the circuit diagrams (Fig. 8 d to 8 g).

TOP-D:
Fig. 8 d:
3~400 V: 100 W ≤ P_1max ≤ 550 W, motor terminals in star connection, with WSK,
Fig. 8e:
3~230 V: 100 W ≤ P_1max ≤ 550 W, motor terminals in Δ connection, with WSK,
Fig. 8f:
1~230 V: 95 W ≤ P_1max ≤ 360 W, motor terminals in Δ connection, with WSK, capacitor fitted

TOP-S/-SD/-Z:
Fig. 8g:
1~230 V: 320 W ≤ P_1max ≤ 400 W, with WSK

7.2.3 Frequency converter operation

Three-phase motors of the series TOP-S/-SD/-D/-Z/-I can be connected to a frequency converter. When operating with frequency converters, output filters should be used to reduce noise and to avoid damage due to voltage spikes.
For noise reduction, it is recommended that sine filters (LC filters) are used rather than du/dt filters (RC filters).
The following limit values should be complied with:

- Rate of voltage rise du/dt <500 V/µs
- Voltage spikes û < 650 V

The following limit values at the connection terminals of the pump must not be exceeded:

- U_{min} = 150 V
- f_{min} = 30 Hz,

At low output frequencies from the frequency converter, the direction of rotation indicator light at the pump may go out.

8 Commissioning

WARNING! Risk of injury and material damage!
Commissioning the pump without the sealing screw including the gasket in not permissible, since escaping fluid can cause damage!

8.1 Filling and bleeding

Prime and aerate the system as required. Aeration of the pump rotor cavity is carried out automatically after a short operating period. Dry running for short periods will not harm the pump.

WARNING! Risk of injury and material damage!
It is not permissible to remove the motor head for purposes of bleeding the system!

- **Touching the pump can cause burns!**
  Depending on the pump or system operating conditions (fluid temperature), the entire pump can become very hot.
- **There is a risk of scalding!**
  Escaping fluid can lead to injuries to persons and damage to the product. When the vent screw is opened, hot fluid may escape at high pressure in liquid of vapour form.

Pumps with vent screws (visible on the motor head; Fig. 1, item 1) can be bled as follows if required:

- Switch off the pump
- Close the check valve on the pressure side.
- Protect electrical parts from any escaping water.
- Cautiously open the vent screw (Fig. 1, item 1) using a suitable tool.

CAUTION! Risk of damage!
Depending on the operating pressure, the pump may jam when the vent screw is open.
The necessary intake pressure must be present at the suction side of the pump!

- Carefully push back the motor shaft with a screwdriver several times.
- After 15 to 30 seconds, screw the vent screw back in.
- Switch on the pump.
- Open the check valve again.

NOTE: Incomplete bleeding will give rise to noises in the pump. Repeat the procedure if necessary.

8.2 Rotation direction monitoring

- Direction of rotation check for 3~:
  Depending on the terminal box, the direction of rotation is indicated by a light on or in the terminal box (Fig. 4, item 1). If the direction of rotation is correct, the light lights up green. If the direction of rotation is incorrect, the light remains dark. To check the direction of rotation, briefly switch the pump on. If the direction of rotation is incorrect, proceed as follows:
  - Electrically isolate the pump.
  - Interchange 2 phases in the terminal box.
  - Three-phase motor which are connected to single-phase mains using the Steinmetz circuit can rotate in the incorrect direction if the capacitor connection is incorrect. In this case the capacitor connections W2 and V2 should be interchanged (the dashed line in Fig. 8 a and 8 f).
    Restart the pump.

  The direction of rotation of the motor must correspond to the direction of rotation arrow on the name plate.

8.2.1 Variable speed control

DANGER! Danger of death!
When working on the open terminal box, there is a danger of electric shock from touching the live terminals.

- **Disconnect the system from the power supply and secure it against being switched on again.**
- **It is not permissible to perform a stage change-over whilst in operation.**
- **Only specialist personnel may perform a step change-over.**

For 1~ pumps with terminal box type 1, 3 (Fig. 4):
Undo the terminal box cover screws, then remove the terminal box cover, switch the 3-step rotary switch within the box (Fig. 4, item 3) to the symbol for the desired speed step, then correctly refit the terminal box cover.
When the terminal box cover is closed, the speed step setting can be viewed through the viewing window.

For 1~ pumps with terminal box type 2, 4 (Fig. 4):

- Speed change-over in the terminal box:
  - Undo the terminal box cover screws, then remove the terminal box cover, select the desired speed step for the terminal box type 2/4 by changing over the cable jumpers, then correctly refit the terminal box cover.
- External speed change-over outside the terminal box (pump with cable version):
  - For an external change-over of the speed steps, a cable can be connected as shown in the circuit diagram Fig. 8h. Undo the terminal box cover screws then remove the terminal box cover, remove the cable jumpers, feed in the cable through the PG cable gland and connect it, then correctly refit the terminal box cover. The cable end should be connected to an external 3-step switch.

NOTE: If the cable jumpers are not connected or incorrectly connected, the pump will not start. Make the connections for terminal box type 2/4 and circuit diagram Fig. 8h.

For 1~ and 3~ pumps with terminal box type 5, 6, 7 (Fig. 4):
The change-over switch in the terminal box can be set to one of a maximum of two or three steps (depending on the terminal box type).
Undo the terminal box cover screws then remove the terminal box cover, pull off the change-over switch (Fig. 4, item 3) only with the pump switched off, then replace it so that the symbol for the desired speed step in the terminal box is indicated by the respective marking of the change-over plug.
When the terminal box cover is closed, the speed step setting can be viewed through the viewing window.

NOTE: If on a twin-head pump both the individual pumps are in operation at the same time, the selected speeds must be identical for both pumps.

8.3 Decommissioning

The pump must be decommissioned before performance of maintenance or repair work or disassembly.

DANGER! Danger of death!
There is a mortal danger through shock when working on electrical equipment.

- **Before starting any maintenance and repair work, disconnect the pump from the power supply, and make sure it cannot be switched back on by unauthorised persons.**
- **Have work on the electrical part of the pump carried out only by a qualified electrician as a basic principle.**

WARNING! Risk of burns!
Depending on the operating status of the system, the entire pump can become very hot. Touching the pump can cause burns.
Allow the unit and pump to cool to room temperature.

9 Maintenance

Before carrying out maintenance/cleaning work and repairs, refer to the "Decommissioning" chapter. The safety instructions in the chapter 2.6 must be complied with.

After maintenance and repair work, install and connect the pump as described in the chapter "Installation and electrical connection". Switch on the system as described in the "Commissioning" chapter.

9.1 Deinstallation/installation of the motor

WARNING! Danger of personal injury!

- **Touching the pump can cause burns!**
  Depending on the pump or system operating conditions (fluid temperature), the entire pump can become very hot.
- **At high fluid temperatures and system pressures there is risk of scalding due to escaping hot fluid.**
  Before deinstallation of the motor, close the existing check valves on both sides of the pump, allow the pump to cool to room temperature, and drain the isolated branch of the system. If no check valves are fitted, drain the whole system.
- **Risk of injury due to the motor falling when the securing screws have been undone.**
  Comply with national regulations for accident prevention and also with the operator's internal works, company and safety regulations. If necessary, wear protective clothing and equipment!

- **During installation/deinstallation of the motor head, the rotor unit can fall out and injure personnel. Do not hold the motor head with the impeller facing downward.**

  The motor does not have to be completely removed from the pump housing if only the terminal box is to be repositioned. The motor can be rotated to the desired position whilst still attached to the pump housing (see Fig. 2 for the permissible installation positions).

CAUTION! Risk of damage!
If for maintenance or repair work the motor head is detached from the pump housing, the O-ring located between the motor head and pump housing must be replaced with a new one. When installing the motor head, check that the O-ring is correctly seated.

- The release the motor, undo 4 socket-head screws. Tools that may be required:
  - Angled hexagonal recess screwdriver
  - Ball-head hexagonal recess screwdriver
  - ¼-inch ratchet wrench with appropriate bit

CAUTION! Risk of damage!
Do not damage the O-ring located between the motor head and the pump housing. The O-ring must lie in the angled end shield that faces towards the impeller, and must not be twisted.

- After the installation tighten the 4 socket-head screws again, working across diagonals.

10 Faults, causes and remedies

Have faults remedied only by qualified personnel! Observe the safety instructions in chapter 9!

Fault	Cause	Remedy
The system is noisy.	Air in the system	Bleed the system.
	The flow rate at the pump is too high.	Reduce the pump power by switching to a lower speed.
	The pump delivery head is too high.	Reduce the pump power by switching to a lower speed.
Pump is noisy.	Cavitation due to insufficient supply pressure	Check pressure stability/supply pressure and if necessary increase them within the permissible range.
	Foreign bodies in the pump housing or impeller.	After deinstallation of the motor impeller unit, remove the foreign body.
	Air within the pump.	Bleed the pump/system.
	The check valves in the system are not fully open.	Fully open the check valves.
The pump power is too low.	Foreign bodies in the pump housing or impeller.	After deinstallation of the motor impeller unit, remove the foreign body.
	Incorrect flow direction.	Interchange the pressure side and suction side of the pump. Refer to the direction arrow on the pump housing or pump flange.
	The check valves in the system are not fully open.	Fully open the check valves.
	Incorrect direction of rotation	Correct the electrical connections in the terminal box: Refer to the direction of rotation arrow on the name plate
	(only for 3~) terminal box type 6/7:	
	Indicator light off	Interchange two phases at the mains supply terminals.
	(only for 1~) terminal boxes type 8/9:	
	Indicator light off	Correct the connection of the capacitor.
	(only for 3~) terminal boxes type 8/9:	
	Indicator light off	Interchange two phases at the mains supply terminals.

Fault	Cause	Remedy
With the power switched on, the pump does not run	MCB tripped/defective.	Exchange/switch on the MCB. If the MCB trips again: • Check the pump for electrical defects. • Check the mains cable to the pump and check the electrical connections.
	FI protection switch has tripped.	Switch on the FI protection switch. If the FI protection switch trips again: • Check the pump for electrical defects. • Check the mains cable to the pump and check the electrical connections.
	Undervoltage	Check the voltage at the pump (refer to the name plate).
	Damage to the windings	Ask for after-sales
	Terminal box defective.	Ask for after-sales
	capacitor defective (only for 1~). Terminal box type 1/2/3/4/5/8/9	Exchange the capacitor.
	Cable jumper for speed change-over not fitted/ wrongly fitted. Terminal box type 2/4	Fit the cable jumper correctly, see Fig. 4
	Speed selection plug is not fitted. Terminal box type 5/6/7	Fit the speed selection plug.
	Jumpers not fitted/ wrongly fitted. Terminal box type 8/9 in 1~/3~ operation: Green indicator light on	Fit the jumpers correctly, see connection diagrams Fig. 8 a-f.

Fault	With the power switched on, the pump does not run								
Cause	**Motor protection has switched the pump off, because:**								
	a) Switch off because of hydraulic over-loading of the pump.		**b)** Switch off because of obstruction within the pump.			**c)** Switch off because of excessive fluid temperature.		**d)** Switch off because of excessive ambient temperature.	
Remedy	**a)** Throttle the pump at the pressure side to an operating point on the performance curve.		**b)** If necessary remove the vent screw (visible from outside) from the pump and check the free running of the pump rotor by turning the slotted shaft end, using a screwdriver; unblock if necessary. **Alternatively:** Deinstallation of the motor head check; if necessary perform deblocking by rotating the impeller. If the obstruction cannot be cleared, contact after-sales.			**c)** Reduce the temperature of the fluid, see name plate data.		**d)** Reduce the ambient temperature , e.g. by insulating the pipework and fittings.	
Display	Displays of the lights in the terminal box type								
	1	2	3	4	5	6	7	8	9
	–	–	–	–	red	green	red	green	green
Fault acknowledgement	**Terminal box type 1/2:** Auto-reset; after the motor has cooled down, the pump restarts automatically.								
	Terminal box type 5/7: After the motor has cooled down, press the reset button for a manual reset of the fault. The pump will restart.								
	Terminal box type 3/4/9 It the WSK was connected to external switchgear, this must be reset.								
	Terminal box type 6/: After the motor protection has tripped, switch off the mains power supply. Allow the pump to cool down approx. 8 to 10min, then switch the power supply on again.								

If the operating fault cannot be remedied, please consult skilled craft firms or the nearest Wilo after-sales service point or representative.

11 Spare parts

Spare parts may be ordered via local professional technicians and/or the Wilo after-sales service.

To avoid queries and incorrect orders, all data on the name plate should be submitted for each order.

12 Disposal

Disposing of this product properly prevents damage to the environment and risks to personnel health.

1. Draw on public or private waste management companies for the disposal of the product or components.
2. For more information on the correct 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!

D EG – Konformitätserklärung
GB EC – Declaration of conformity
F Déclaration de conformité CE

(gemäß 2006/42/EG Anhang II,1A und2004/108/EG Anhang IV,2,
according 2006/42/EC annex II,1A and2004/108/EC annex IV,2,
conforme 2006/42/CE appendice II,1A et 2004/108/CE appendice IV,2)

Hiermit erklären wir, dass die Bauart der Baureihe : **TOP-S/-SD/-Z/-D/-I/-RL**
Herewith, we declare that the product type of the series:
Par le présent, nous déclarons que l'agrégat de la série :

(Die Seriennummer ist auf dem Typenschild des Produktes angegeben. /
The serial number is marked on the product site plate. /
Le numéro de série est inscrit sur la plaque signalétique du produit.)

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

EG-Maschinenrichtlinie **2006/42/EG**
EC-Machinery directive
Directives CE relatives aux machines
Die Schutzziele der Niederspannungsrichtlinie werden gemäß Anhang I, Nr. 1.5.1 der Maschinenrichtlinie 2006/42/EG eingehalten.
The protection objectives of the low-voltage directive are realized according annex I, No. 1.5.1 of the EC-Machinery directive 2006/42/EC.
Les objectifs protection de la directive basse-tension sont respectées conformément à appendice I, n° 1.5.1 de la directive CE relatives aux machines 2006/42/CE.

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

Angewendete harmonisierte Normen, insbesondere: **EN 809**
Applied harmonized standards, in particular: **EN 12100-1**
Normes harmonisées, notamment: **EN 12100-2**
EN 14121-1
EN 60335-1
EN 60335-2-51
EN 61000-6-1
EN 61000-6-2
EN 61000-6-3
EN 61000-6-4

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.

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen ist:
Authorized representative for the completion of the technical documentation:
Mandataire pour le complément de la documentation technique est :

WILO SE
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Dortmund, 21.02.2011

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NL

EG-verklaring van overeenstemming

Hiermede verklaren wij dat dit aggregaat in de geleverde uitvoering voldoet aan de volgende bepalingen:

EG-richtlijnen betreffende machines 2006/42/EG

Elektromagnetische compatibiliteit 2004/108/EG

en overeenkomstige nationale wetgeving

gebruikte geharmoniseerde normen, in het bijzonder:
zie vorige pagina

I

Dichiarazione di conformità CE

Con la presente si dichiara che i presenti prodotti sono conformi alle seguenti disposizioni e direttive rilevanti:

Direttiva macchine 2006/42/EG

Compatibilità elettromagnetica 2004/108/EG

e le normative nazionali vigenti

norme armonizzate applicate, in particolare:
vedi pagina precedente

E

Declaración de conformidad CE

Por la presente declaramos la conformidad del producto en su estado de suministro con las disposiciones pertinentes siguientes:

Directiva sobre máquinas 2006/42/EG

Directiva sobre compatibilidad electromagnética 2004/108/EG

y la legislación nacional vigente

normas armonizadas adoptadas, especialmente:
véase página anterior

P

Declaração de Conformidade CE

Pela presente, declaramos que esta unidade no seu estado original, está conforme os seguintes requisitos:

Directivas CEE relativas a máquinas 2006/42/EG

Compatibilidade electromagnética 2004/108/EG

e respectiva legislação nacional

normas harmonizadas aplicadas, especialmente:
ver página anterior

S

CE- försäkran

Härmed förklarar vi att denna maskin i levererat utförande motsvarar följande tillämpliga bestämmelser:

EG–Maskindirektiv 2006/42/EG

EG–Elektromagnetisk kompatibilitet – riktlinje 2004/108/EG

och gällande nationell lagstiftning

tillämpade harmoniserade normer, i synnerhet:
se föregående sida

N

EU-Overensstemmelseserklæring

Vi erklærer hermed at denne enheten i utførelse som levert er i overensstemmelse med følgende relevante bestemmelser:

EG–Maskindirektiv 2006/42/EG

EG–EMV–Elektromagnetisk kompatibilitet 2004/108/EG

og tilsvarende nasjonal lovgivning

anvendte harmoniserte standarder, særlig:
se forrige side

FIN

CE-standardinmukaisuusseloste

Ilmoitamme täten, että tämä laite vastaa seuraavia asiaankuuluvia määräyksiä:

EU–konedirektiivit: 2006/42/EG

Sähkömagneettinen soveltuvuus 2004/108/EG

ja vastaavaa kansallista lainsäädäntöä

käytetyt yhteensovitetut standardit, erityisesti:
katso edellinen sivu.

DK

EF-overensstemmelseserklæring

Vi erklærer hermed, at denne enhed ved levering overholder følgende relevante bestemmelser:

EU–maskindirektiver 2006/42/EG

Elektromagnetisk kompatibilitet: 2004/108/EG

og gældende national lovgivning

anvendte harmoniserede standarder, særligt:
se forrige side

H

EK-megfelelőségi nyilatkozat

Ezennel kijelentjük, hogy az berendezés megfelel az alábbi irányelveknek:

Gépek irányelv: 2006/42/EK

Elektromágneses összeférhetőség irányelv: 2004/108/EK

valamint a vonatkozó nemzeti törvényeknek és

alkalmazott harmonizált szabványoknak, különösen:
lásd az előző oldalt

CZ

Prohlášení o shodě ES

Prohlašujeme tímto, že tento agregát v dodaném provedení odpovídá následujícím příslušným ustanovením:

Směrnice ES pro strojní zařízení 2006/42/ES

Směrnice o elektromagnetické kompatibilitě 2004/108/ES

a příslušným národním předpisům

použité harmonizační normy, zejména:
viz předchozí strana

PL

Deklaracja Zgodności WE

Niniejszym deklarujemy z pełną odpowiedzialnością, że dostarczony wyrób jest zgodny z następującymi dokumentami:

dyrektywą maszynową WE 2006/42/WE

dyrektywą dot. kompatybilności elektromagnetycznej 2004/108/WE

oraz odpowiednimi przepisami ustawodawstwa krajowego

stosowanymi normami zharmonizowanymi, a w szczególności:
patrz poprzednia strona

RUS

Декларация о соответствии Европейским нормам

Настоящим документом заявляем, что данный агрегат в его объеме поставки соответствует следующим нормативным документам:

Директивы ЕС в отношении машин 2006/42/EG

Электромагнитная устойчивость 2004/108/EG

в соответствии с национальным законодательством

Используемые согласованные стандарты и нормы, в частности:
см. предыдущую страницу

GR

Δήλωση συμμόρφωσης της ΕΕ

Δηλώνουμε ότι το προϊόν αυτό σ' αυτή την κατάσταση παράδοσης ικανοποιεί τις ακόλουθες διατάξεις :

Οδηγίες ΕΚ για μηχανήματα 2006/42/ΕΚ

Ηλεκτρομαγνητική συμβατότητα ΕΚ-2004/108/ΕΚ

καθώς και την αντίστοιχη κρατική νομοθεσία

Εναρμονισμένα χρησιμοποιούμενα πρότυπα, ιδιαίτερα:
Βλέπε προηγούμενη σελίδα

TR

CE Uygunluk Teyid Belgesi

Bu cihazın teslim edildiği şekliyle aşağıdaki standartlara uygun olduğunu teyid ederiz:

AB-Makina Standartları 2006/42/EG

Elektromanyetik Uyumluluk 2004/108/EG

ve söz konusu ulusal yasalara.

kısmen kullanılan standartlar için:
bkz. bir önceki sayfa

RO

EC-Declarație de conformitate

Prin prezenta declarăm că acest produs aşa cum este livrat, corespunde cu următoarele prevederi aplicabile:

Directiva CE pentru maşini 2006/42/EG

Compatibilitatea electromagnetică – directiva 2004/108/EG

şi legislaţia naţională respectivă

standarde armonizate aplicate, îndeosebi:
vezi pagina precedentă

EST

EÜ vastavusdeklaratsioon

Käesolevaga tõendame, et see toode vastab järgmistele asjakohastele direktiividele:

Masinadirektiiv 2006/42/EÜ

Elektromagnetilise ühilduvuse direktiiv 2004/108/EÜ

ja vastavalt asjaomastele siseriiklikele õigusaktidele

kohaldatud harmoneeritud standardid, eriti:
vt eelmist lk

LV

EC – atbilstības deklarācija

Ar šo mēs apliecinām, ka šis izstrādājums atbilst sekojošiem noteikumiem:

Mašīnu direktīva 2006/42/EK

Elektromagnētiskās savietojamības direktīva 2004/108/EK

un atbilstošai nacionālajai likumdošanai

piemēroti harmonizēti standarti, tai skaitā:
skatīt iepriekšējo lappusi

LT

EB atitikties deklaracija

Šiuo pažymima, kad šis gaminys atitinka šias normas ir direktyvas:

Mašinų direktyvą 2006/42/EB

Elektromagnetinio suderinamumo direktyvą 2004/108/EB

bei atitinkamamiems šalies įstatymams

pritaikytus vieningus standartus, o būtent:
žr. ankstesniame puslapyje

SK

ES vyhlásenie o zhode

Týmto vyhlasujeme, že konštrukcie tejto konštrukčnej série v dodanom vyhotovení vyhovujú nasledujúcim príslušným ustanoveniam:

Stroje – smernica 2006/42/ES

Elektromagnetická zhoda – smernica 2004/108/ES

a zodpovedajúca vnútroštátna legislatíva

používané harmonizované normy, najmä:
pozri predchádzajúcu stranu

SLO

ES – izjava o skladnosti

Izjavljamo, da dobavljene vrste izvedbe te serije ustrezajo sledečim zadevnim določilom:

Direktiva o strojih 2006/42/ES

Direktiva o elektromagnetni združljivosti 2004/108/ES

in ustrezno nacionalnim zakonom

uporabljeni harmonizirani standardi, predvsem:
glejte prejšnjo stran

BG

ЕО-Декларация за съответствие

Декларираме, че продуктът отговаря на следните изисквания:

Машинна директива 2006/42/ЕО

Електромагнитна съвместимост – директива 2004/108/ЕО

и съответното национално законодателство

Хармонизирани стандарти:
вж. предната страница

M

Dikjarazzjoni ta' konformità KE

B'dan il-mezz, niddikjaraw li l-prodotti tas-serje jissodisfaw id-dispożizzjonijiet relevanti li ġejjin:

Makkinarju – Direttiva 2006/42/KE

Kompatibbiltà elettromanjetika – Direttiva 2004/108/KE

kif ukoll standards armonizzati adottati fil-leġiżlazzjoni nazzjonali

b'mod partikolari:

ara l-paġna ta' qabel

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