Pioneering for You

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Wilo-Helix V 2-4-6-8-10-16 Wilo-Helix FIRST V 2-4-6-8-10-16





- de Einbau- und Betriebsanleitung
- **en** Installation and operating instructions
- fr Notice de montage et de mise en service
- **nl** Inbouw– en bedieningsvoorschriften
- ru Инструкция по монтажу и эксплуатации
- es Instrucciones de instalación y funcionamiento
- it Istruzioni di montaggio, uso e manutenzione
- **pt** Manual de Instalação e funcionamento
- el Οδηγίες εγκατάστασης και λειτουργίας
- tr Montaj ve kullanma kılavuzu
- sv Monterings- och skötselanvisning
- no Monterings- og driftsveiledning
- fi Asennus- ja käyttöohje

- da Monterings- og driftsvejledning
- hu Beépítési és üzemeltetési utasítás
- pl Instrukcja montażu i obsługi
- cs Návod k montáži a obsluze
- et Paigaldus- ja kasutusjuhend
- lv Uzstādīšanas un ekspluatācijas instrukcija
- It Montavimo ir naudojimo instrukcija
- sk Návod na montáž a obsluhu
- sl Navodila za vgradnjo in obratovanje
- hr Upute za ugradnju i uporabu
- sr Uputstvo za ugradnju i upotrebu
- ro Instrucțiuni de montaj și exploatare
- bg Инструкция за монтаж и експлоатация



Fig. 1







Fig. 4



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			(mm)									
	Туре	А	В	С	D	Е	F	G	Н	J	К	
	HELIX V2	PN16	100	212	180	162	160	50	D32	75	2xM10	4xØ13
	HELIX V4	PN16	100	212	180	162	160	50	D32	75	2xM10	4xØ13
4	HELIX V6	PN16	100	212	180	162	160	50	D32	75	2xM10	4xØ13
ш	HELIX V10	PN16	130	251	215	181	200	80	D50	100	2xM12	4xØ13
	HELIX V16	PN16	130	251	215	181	200	90	D50	100	2xM12	4xØ13



	T			(mm)									
	Туре		А	В	С	D	Е	F	G	Н	J	К	
	HELIX V2	PN25/PN30	100	212	180	172	250	75	D25	85	4xM12	4xØ13	
1	HELIX V4	PN25/PN30	100	212	180	172	250	75	D25	85	4xM12	4xØ13	
	HELIX V6	PN25/PN30	100	212	180	172	250	75	D32	100	4xM16	4xØ13	
-	HELIX V10	PN25/PN30	130	252	215	187	280	80	D40	110	4xM16	4xØ13	
	HELIX V16	PN25/PN30	130	252	215	187	300	90	D50	125	4xM16	4xØ13	





Fig. 7





Fig. 6

1. General

1.1 About this document

The language of the original operating instructions is English. 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 instructions contain important information which must be followed when installing and operating the pump. It is therefore imperative that they be read by both the installer and the operator before the circulator is installed or started up. Both the general safety instructions in the 'Safety precautions' section and those in subsequent sections indicated by danger symbols should be carefully observed.

2.1 Symbols and signal words used in these operating instructions

Symbols

General safety symbol.

Hazards from electrical causes.

NOTE:

Signal words:

DANGER! Imminently hazardous situation. Will result in death or serious injury if not avoided.

WARNING! Risk of (serious) injury. 'Warning' implies that failure to comply with the safety instructions is likely to result in (severe) personal injury.

CAUTION! Risk of damage to the pump/installation. 'Caution' alerts to user to potential product damage due to non-compliance with the safety instructions.

NOTE: Useful information on the handling of the product.

It alerts the user to potential difficulties.

2.2 Personnel qualification

The personnel installing the pump must have the appropriate qualification for this work.

2.3 Risks incurred by failure to comply with the safety instructions

Failure to comply with the safety precautions could result in personal injury or damage to the pump or installation. Failure to comply with the safety precautions could also invalidate any claim for damages.

In particular, failure to comply with these safety instructions could give rise, for example, to the following risks:

- the failure of important parts of the pump or installation,
- personal injury due to electrical and mechanical causes,
- material damage.

2.4 Safety consciousness on the job

Existing regulations for the prevention of accidents must be observed.

National Electrical Codes, local codes and regulations must be followed.

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.
- 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 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 limit values must on no account fall under or exceed those specified in the catalogue/data.

3. Transport and interim storage

When receiving the material, check that there has been no damage during the transport. If shipping damage has occurred, take all necessary steps with the carrier within the allowed time.

5. Technical data

5.1 Pump designation

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CAUTION! Outside influences may cause damages. If the delivered material is to be installed later on, store it in a dry place and protect it from impacts and any outside influences (humidity, frost etc.).

The product should be cleaned thoroughly before it is put into temporary storage. The product can be stored for at least one year.

Handle the pump carefully so as not to damage the unit prior to installation.

4. Application

This pump's basic function is to pump hot or cold water, water with glycol or other low viscosity fluids that contain no mineral oil, solid or abrasive substances, or materials having long fibres. The manufacturer's approval is required for use to pump corrosive chemicals.

CAUTION! Risk of explosion!

Do not use this pump to handle flammable or explosive liquids.

4.1 Applications areas

- water distribution and pressure boosting,
- industrial circulation systems,
- process fluids,
- cooling-water circuits,
- fire-fighting and washing stations,
- irrigation systems, etc.

Example: Helix V1605-1/16/E/KS/400-50xxxx								
Helix V Helix FIRST V	Vertical high-pressure multistage centrifugal pump in in-line design							
16	Nominal flow in m3/h							
05	Number of impellers							
1	Pump material code 1 = Pump housing Stainless steel 1.4301 (AISI 304) + Hydraulics 1.4307 (AISI 304) 2 = Pump housing Stainless steel 1.4404 (AISI 316L) + Hydraulics 1.4404 (AISI 316L) 5 = Pump housing Cast Iron EN-GJL-250 (standard coating) + Hydraulics 1.4307 (AISI 304)							
16	Pipe connection 16 = oval flanges PN16 25 = round flanges PN25 30 = round flanges PN40							
E	Seal type code E = EPDM V = FKM							
кѕ	KS K = Cartridge seal, versions without "K" are equipped with simple mechanical seal S = Lantern orientation align with suction pipe X = X-Care version							
v	Vith motor		Bare-s	haft pump (without motor)				
400 - 460	Motor electrical voltage (V)	OR	50 - 60	Motor frequency (Hz)				
50 - 60	Motor frequency (Hz)		-38FF265	Ø motor shaft – lantern size				
хххх	xxx Options code (if any)							

5.2 Data table

Maximum operating pressure											
Pump casing	16,2	25 οι	u 30 bars	deper	nd on	n th	e mo	del			
Maximum suction pressure	10 bars Note : real inlet pressure (Pinlet)+ pressure at 0 flow delivered by the pump must be below the maximum operating pressure of the pump. In case of exceeding maximum operating pressure, the ball bearing and the mechanical seal could be damaged or lifetime could decrease. P Inlet + P at 0 flow ≤ Pmax pump See pump nameplate to know the maximum operating pressure: Pmax										
Temperature range											
Liquid temperatures	-30°C to +120 °C -15°C to +90° C (wiht FKM seal) -20°C to + 120°C (with cast iron casing)										
Ambient temperature	-15° to +40 °C Other temperature on request										
Electrical data											
Motor efficiency	Mot	or ac	cording t	o IEC	6003	34-	30				
Motor Protection index	IP 55	5									
Insulation class	155	(F)									
Frequency	See	moto	or plating								
Electrical voltage	See	moto	or plating								
Other data											
Humidity	< 90	% sa	ans conde	ensati	on						
Altitude	< 1000 m (> 1000m on request)										
Maximum suction head	acco	ordin	g to NPSH	H of th	ne pu	Imp)				
Sound pressure level dB(A) 0/+3 dB(A)	50Hz	56	0.55 0.75 57	58	6	2.2 52 57	Po 3 4 64 6 71 7	8 69	11 15 71 78	18.5 22 74	30 37 45 76 84
	60Hz	60	61	63	6	57	/1 /	2 74	/8	81	04

5.3 Scope of supply

- Multistage pump.
 Installation and operating instructions.
 Counterflange + screws and o'rings for PN16 configuration.

5.4 Accessories

Original accessories are available for HELIX range:

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Designation	Article nº.
2x oval counterflanges, stainless steel 1.4301 (screwing) (PN16 – 1")	4016168
2x round counterflanges in stainless steel 1.4404 (screwing) (PN40 – DN25)	4016165
2x round counterflanges in steel (welding) (PN40 – DN25)	4016162
2x oval counterflanges in stainless steel 1.4301 (screwing)(PN16 – 1" 1/4)	4016169
2x round counterflanges in stainless steel 1.4404 (screwing) (PN40 – DN32)	4016166
2x round counterflanges in steel (welding) (PN40 – DN32)	4016163
2x oval counterflanges in stainless steel 1.4301 (screwing)(PN16 – 1" 1/2)	4016170
2x round counterflanges in stainless steel 1.4404 (screwing) (PN40 – DN40)	4016167
2x round counterflanges in steel (welding) (PN40 – DN40)	4016164
2x oval counterflanges in stainless steel 1.4301 (screwing)(PN16 – 2")	4055063
2x round counterflanges in stainless steel 1.4404 (screwing) (PN40 – DN50)	4038589
2x round counterflanges in steel (welding) (PN40 – DN50)	4038588
Bypass kit 25 bar	4146786
Bypass kit (with pressure gauge 25 bar)	4146788
Baseplate with dampers for pumps up to 5,5 kW	4157154

The use of new accessories is recommended.

6. Description and function

6.1 Product description

FIG. 1

- 1 Motor connection bolt
- 2 Coupling guard
- 3 Mechanical seal
- 4- Hydraulic stage casing
- 5 Impeller
- 6 Pump shaft
- 7 Motor
- 8 Coupling
- 9 Lantern
- 10 Tube liner
- 11 Flange
- 12 Pump housing
- 13 Base plate

FIG. 2.3

- 1 Strainer
- 2 Pump suction valve
- 3 Pump discharge valve
- 4 Check valve
- 5 Drain + priming plug
- 6 Air bleed screw + Filling plug
- 7 Tank
- 8 Foundation block
- 10 Lifting hook

6.2 Design of product

- HELIX pumps are vertical high pressure non-self priming pumps with inline connection based on multistage design.
- · HELIX pumps combine use of both high efficiency hydraulics and motors.
- · All metallic parts in contact with water are made of stainless steel.
- For models equipped with heaviest motor (>40 kgs), a specific coupling allows to change the

seal without removing the motor. A cartridge seal is then used in order to ease maintenance.

· Special handling devices are integrated in order to facilitate pump installation (Fig. 7).

7. Installation and electrical connection

Installation and electrical work in compliance with any local codes and by qualified personnel only.



WARNING! Bodily injury!

Existing regulations for the prevention of accidents must be observed.

WARNING! Electrical shock hazard!

Dangers caused by electrical energy must be excluded.

7.1 Commissioning

Unpack the pump and dispose of the packaging in an environmentally-responsible manner.

7.2 Installation

The pump must be installed in a dry, well-ventilated and frost-free place.



CAUTION! Possible damage of the pump!

Dirt and solder drops in to the pump body can effect the pump operation.

- It is recommended that any welding and solder-
- ing work be done before installing the pump. • Thoroughly flush the system out before

installing the pump.

- The pump must be installed in an easily accessible position to facilitate inspection or replacement.

- For heavy pumps, install a lifting hook (Fig. 2, item 10) above the pump in order to ease its disassembly.



WARNING! Risk of accident by hot surfaces!

The pump must be positioned so that someone cannot come into contact with the hot pump surfaces while operation.

- Install the pump in a dry place protected from frost, on a flat concrete block using appropriate accessories. If possible, use an insulating material under the concrete block (cork or reinforced rubber) to avoid any noise and vibration transmission into the installation.



WARNING! Risk of fall!

The pump must be correctly screwed to the ground.

- Install the pump in a dry and frost-free place on a flat concrete block using appropriate accessories. If possible, use an insulating material under the concrete block (cork or reinforced rubber) to avoid any noise and vibration transmission into the installation.

CAUTION! Risk of parts inside the pump!

Take care to remove closure members of the pump housing before installation.







- The installation and connection dimensions are given § 5.2.
- Lift the pump carefully by using the integrated hooks rings, if necessary with a hoist and suitable slings according to the current hoist guidelines.

WARNING! Risk of fall!

Take care to pump fixations especially for the highest pumps whose centre of gravity may lead to risk during pump handling.



WARNING! Risk of fall!

Use integrated rings only if they are not damaged (no corrosion ...). Replace them if needed.



WARNING! Risk of fall!

The pump must be never carried by using motor hooks: these are only designed to lift the motor alone.

7.3 Pipe connection

CAUTION!

 Connect the pump to the pipes by using appropriate counterflanges, bolts, nuts and gaskets.

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Tightening of screws or bolts must not exceed.

Configuration PN16 / PN25					
M10 – 20 N.m	M12 – 30 N.m				
Configuration PN	140				
M12 – 50 N.m	M16 – 80 N.m				

Use of impact wrench is prohibited.

- The circulation sense of the fluid is indicated on the identification label of the pump.
- Pump must be installed in such a way that it is not stressed by the pipework. The pipes must be attached so that the pump does not bear their weight.
- It is recommended that isolation valves be installed on the suction and discharge side of the pump.
- Use of expansion joints may mitigate noise and vibration of the pump.
- As regards the nominal cross-section of the suction pipe, we recommend a cross-section at least as large as that of the pump connection.
- A check valve could be placed on the discharge pipe in order to protect the pump against hammer shock.
- For direct connection to a public drinking water system, the suction pipe must also have a check valve and a guard valve.
- For indirect connection via a tank, the suction pipe must have a strainer to keep any impurities out of the pump and a check valve.

- 7.4 Motor connection for bare-shaft pump (without motor)
 - Remove coupling guards.

NOTE: Coupling guards can be removed without entirely unscrewing screws.

 Install the motor on the pump by using screws (FT lantern size – see product designation) or bolts, nuts and handling devices (FF lantern size – see product designation) provided with the pump : check motor power and dimension in WILO catalogue.



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NOTE: Depending on fluid characteristics, motor power could be modified. Contact WILO Customer Services if needed.

- Close the coupling guards by screwing all screws provided with the pump.

7.5 Electrical connection



WARNING! Electrical shock hazard!

Dangers caused by electrical energy must be excluded.

• Electrical work by a qualified electrician only!

• All electrical connections must be performed after the electrical supply has been switched off and secured against unauthorized switching.

• For safe installation and operation a proper grounding of the pump to the power supply's grounding terminals is required.

- Check that operating current, voltage and frequency used comply with motor plating data.
- The pump must be connected to the power supply by a solid cable equipped with a grounded plug-connection or a main power switch.
- Three-phase motors must be connected to an approved motor starter. The set nominal current must correspond to the electrical data on the pump motor name plate.
- The supply cable must be laid so that it never touches the pipework and/or the pump and motor casing.
- The pump/installation should be grounded in compliance with local regulations. A ground fault interrupter can be used as extra protection.
- The connection to the network must be in accordance with the connection plan (Fig. 5).

7.6 Operation with frequency converter

- Motors used can be connected to a frequency converter in order to adapt pump performance to duty point.
- The converter must not generate voltage peaks at motor terminals higher than 850V and dU/dt slope higher than 2500 V/ $\!\mu s.$
- In case of higher value, an appropriate filter must be used: contact converter manufacturer for this filter definition and selection.
- Strictly follow instructions provided by the converter manufacturer data sheet for installation.
- Minimum variable speed should not be set below 40% of pump nominal speed.

8. Start up

8.1 System filling - Venting



CAUTION! Possible damage of the pump!

Never operate the pump dry. The system must be filled before starting the pump.

8.1.1 Air evacuation process – Pump with sufficient supply pressure (Fig. 3)

- Close the two guard valves (2, 3).
- Unscrew the air bleed screw from filling plug (6a).
- Slowly open the guard valve on the suction side (2).
- Retighten the air-bleed screw when air escapes at the air bleed screw and the pumped liquid flows (6a).



WARNING!

When the pumped liquid is hot and the pressure high, the stream escaping at the air bleed screw may cause burns or other injuries.

- Open the guard valve on the suction side completely (2).
- Start the pump and check if direction of rotation matches the one printed on pump plating. If this is not the case, interchange two phases in the terminal box.

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CAUTION!

A wrong direction of rotation will cause bad pump performances and possibly coupling damage.

- Open the guard valve on the discharge side (3).

8.1.2 Air evacuation process – Pump in suction (Fig. 2)

- Close the guard valve on the discharge side (3).
 Open the guard valve on the suction side (2).
- Remove the filling plug (6b).
- Open the drain-priming plug not completely (5b).
- Fill the pump and the suction pipe with water.
- Make sure that there is no air in the pump and in the suction pipe : refilling until complete removal of air is required.
- Close the filling plug with air bleed screw (6b).
- Start the pump and check if direction of rotation matches the one printed on pump plating. If this is not the case, interchange two phases in the terminal box.



CAUTION!

A wrong direction of rotation will cause bad pump performances and possibly coupling damage.

- Open the guard valve on the discharge side a little (3).
- Unscrew the air bleed screw from filling plug for air venting (6a).
- Retighten the air-bleed screw when air escapes at the air bleed screw and the pumped liquid flows.



WARNING!

When the pumped liquid is hot and the pressure high, the stream escaping at the air bleed screw may cause burns or other injuries.

- Open the guard valve on the discharge side completely (3).
- Close the drain-priming plug (5a).



CAUTION!

The pump must not operate at zero flow (closed discharge valve).



WARNING! Risk of injury!

When the pump runs, coupling guards must be in place, tightened with all appropriate screws.



WARNING! Important noise!

Noise emitted by most powerful pumps could be very high : protection must be used in case of long stay close to the pump.



WARNING!

Installation must be designed in order that no one could be hurt in case of fluid leakage (mechanical seal failure ...).

9. Maintenance - Service

All servicing should be performed by an authorized service representative!



WARNING! Electrical shock hazard!

Dangers caused by electrical energy must be excluded.

All electrical work must be performed after the electrical supply has been switched off and secured against unauthorized switching.



WARNING! Risk of scalding!

At high water temperatures and system pressure close isolating valves before and after the pump. First, allow pump to cool down.

- These pumps are maintenance free. Nevertheless a regular check is recommended every 15 000 hours.
- In option, mechanical seal could be easily replace on some models thanks to its cartridge seal design. Insert its adjusting wedge in its housing (Fig. 6) once mechanical seal position is set.
- Always keep the pump perfectly clean.
- Pumps which are not being used during periods of frost should be drained to avoid damage: Close the guard valves, open completely the drain-priming plug and the air bleed screw.
- Service life: 10 years depending on the operating conditions and whether all requirements described in the operation manual have been met.

10. Defects - causes - remedies



WARNING! Electrical shock hazard!

Dangers caused by electrical energy must be excluded.

All electrical work must be performed after the electrical supply has been switched off and secured against unauthorized switching.

WARNING! Risk of scalding!

At high water temperatures and system pressure close isolating valves before and after the pump. First, allow pump to cool down.

Defects	Causes	Remedies
Pump fails to operate	No current	Check the fuses, the wiring, and the connectors
	The thermistor tripping device has trip- ped out, cutting off power	Eliminate any cause of overloading of the motor
Pump runs but delivers too little	Wrong direction of rotation	Check the direction of rotation of the motor and correct it if necessary
	Parts of the pump are obstructed by for- eign bodies	Check and clean the pipe
	Air in suction pipe	Make the suction pipe airtight
	Suction pipe too narrow	Install a larger suction pipe
	The valve is not open far enough	Open the valve properly
Pump delivers unevenly	Air in pump	Evacuate the air in the pump; check that the suction pipe is airtight. If required, start the pump 20–30s – open the air bleed screw in order to move air away – close the air bleed screw and repeat it several times until no more air is going out of the pump
Pump vibrates or is noisy	Foreign bodies in pump	Remove the foreign bodies
	Pump not properly attached to ground	Retighten the screws
	Bearing damaged	Call Wilo Customer Service
Motor overheats. Its protection trips out	A phase is open-circuit	Check the fuses, the wiring, and the connectors
	Ambient temperature too high	Provide cooling
Mechanical seal is leaking	Mechanical seal is damaged	Replace the mechanical seal

If the fault cannot be solved, please contact WILO customer services.

11. Spare parts

All spare parts must be ordered through WILO Customer Services.

In order to avoid any mistakes, please specify the name plate data for orders.

Spare parts catalogue is available at www.wilo. com.

12. Safe 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 organizations 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 pump must not be disposed of along with household waste. Further information on recycling can be found at www.wilo-recycling.com.

Subject to technical alterations!

Wilo – International (Subsidiaries)

Argentina

WILO SALMSON Argentina S.A. C1295ABI Ciudad Autónoma de Buenos Aires T+ 54 11 4361 5929 info@salmson.com.ar

Australia

WILO Australia Pty Limited Murrarrie, Queensland, 4172 T +61 7 3907 6900 chris.dayton@wilo.com.au

Austria

WILO Pumpen Österreich GmbH 2351 Wiener Neudorf T +43 507 507-0 office@wilo.at

Azerbaijan

WILO Caspian LLC 1014 Baku T +994 12 5962372 info@wilo.az

Belarus

WILO Bel OOO 220035 Minsk T +375 17 2535363 wilo@wilo.by

Belgium

WILO SA/NV 1083 Ganshoren T +32 2 4823333 info@wilo.be

Bulgaria

WILO Bulgaria Ltd. 1125 Sofia T +359 2 9701970 info@wilo.bg

Brazil

WILO Brasil Ltda Jundiaí – SP – CEP 13.201-005 T + 55 11 2817 0349 wilo@wilo-brasil.com.br Canada WILO Canada Inc. Calgary, Alberta T2A 5L4 T +1 403 2769456 bill.lowe@wilo-na.com China

WILO China Ltd. 101300 Beijing T +86 10 58041888 wilobj@wilo.com.cn

Croatia WILO Hrvatska d.o.o. 10090 Zagreb T +38 51 3430914 wilo-hrvatska@wilo.hr

Czech Republic WILO Praha s.r.o. 25101 Cestlice T +420 234 098711

info@wilo.cz Denmark WILO Danmark A/S 2690 Karlslunde T +45 70 253312 wilo@wilo.dk

Estonia WILO Eesti OÜ 12618 Tallinn T +372 6 509780 info@wilo.ee

Finland WILO Finland OY

02330 Espoo T +358 207401540 wilo@wilo.fi

France WILO S.A.S. 78390 Bois d'Arcy T +33 1 30050930 info@wilo.fr

Great Britain WILO (U.K.) Ltd. DE14 2WJ Burton-Upon-Trent T +44 1283 523000 sales@wilo.co.uk **Greece** WILO Hellas AG 14569 Anixi (Attika) T +302 10 6248300 wilo.info@wilo.gr

Hungary WILO Magyarország Kft 2045 Törökbálint (Budapest) T +36 23 889500 wilo@wilo.hu

India WILO India Mather and Platt Pumps Ltd. Pune 411019 T +91 20 27442100 service@ pun.matherplatt.co.in

Indonesia WILO Pumps Indonesia Jakarta Selatan 12140 T +62 21 7247676 citrawilo@cbn.net.id

Ireland WILO Ireland Limerick T +353 61 227566 sales@wilo.ie

Italy WILO Italia s.r.l. 20068 Peschiera Borromeo (Milano) T +39 25538351

wilo.italia@wilo.it **Kazakhstan** WILO Central Asia 050002 Almaty

T +7 727 2785961 info@wilo.kz

Korea WILO Pumps Ltd. 621–807 Gimhae Gyeongnam T +82 55 3405890 wilo@wilo.co.kr Latvia WILO Baltic SIA 1019 Riga T +371 7 145229 mail@wilo.lv

Lebanon WILO SALMSON Lebanon 12022030 El Metn T +961 4 722280 wsl@cyberia.net.lb

Lithuania WILO Lietuva UAB 03202 Vilnius T +370 5 2136495 mail@wilo.lt

Morocco WILO Maroc SARLQUARTIER INDUSTRIEL AIN SEBAA 20250 CASABLANCA T +212 (0) 5 22 660 924 contact@wilo.ma

The Netherlands WILO Nederland b.v. 1551 NA Westzaan T +31 88 9456 000 info@wilo.nl

Norway WILO Norge AS 0975 Oslo T +47 22 804570 wilo@wilo.no

Poland WILO Polska Sp. z.o.o. 05–090 Raszyn T +48 22 7026161 wilo@wilo.pl

Portugal Bombas Wilo-Salmson Portugal Lda. 4050-040 Porto T +351 22 2080350 bombas@wilo.pt

Romania WILO Romania s.r.l. 077040 Com. Chiajna Jud. Ilfov T +40 21 3170164 wilo@wilo.ro

Russia WILO Rus ooo 123592 Moscow T +7 495 7810690 wilo@wilo.ru

Saudi Arabia WILO ME - Riyadh Riyadh 11465 T +966 1 4624430 wshoula@wataniaind.com

Serbia and Montenegro WILO Beograd d.o.o. 11000 Beograd

T + 381 11 2851278 office@wilo.co.yu

WILO Slovakia s.r.o. 83106 Bratislava T +421 2 33014511 wilo@wilo.sk

Slovenia WILO Adriatic d.o.o. 1000 Ljubljana T +386 1 5838130 wilo.adriatic@wilo.si

South Africa Salmson South Africa 1610 Edenvale T +27 11 6082780 errol.cornelius@ salmson.co.za

Spain

WILO Ibérica S.A. 28806 Alcalá de Henares (Madrid) T +34 91 8797100 wilo.iberica@wilo.es Sweden WILO Sverige AB 35246 Växjö T +46 470 727600 wilo@wilo.se

Switzerland

EMB Pumpen AG 4310 Rheinfelden T +41 61 83680-20 info@emb-pumpen.ch

Taiwan WILO-EMU Taiwan Co. Ltd. 110 Taipeh T +886 227 391655 nelson.wu@ wiloemutaiwan.com.tw

Turkey WILO Pompa Sistemleri San. ve Tic. A.Ş. 34956 İstanbul T +90 216 2509400

> Ukraina WILO Ukraina t.o.w. 01033 Kiew T +38 044 2011870 wilo@wilo.ua

wilo@wilo.com.tr

United Arab Emirates WILO Middle East FZE Jebel Ali Free Zone – South – Dubai T +971 4 880 91 77 info@wilo.ae

USA WILO USA LLC Rosemont, IL 60018 T +1 866 945 6872 info@wilo-usa.com

Vietnam WILO Vietnam Co Ltd. Ho Chi Minh City, Vietnam T +84 8 38109975 nkminh@wilo.vn

wilo

WILO SE Nortkirchenstraße 100 D-44263 Dortmund Germany T +49(0)231 4102-0 F +49(0)231 4102-7363 wilo@wilo.com www.wilo.com