

Pioneering for You

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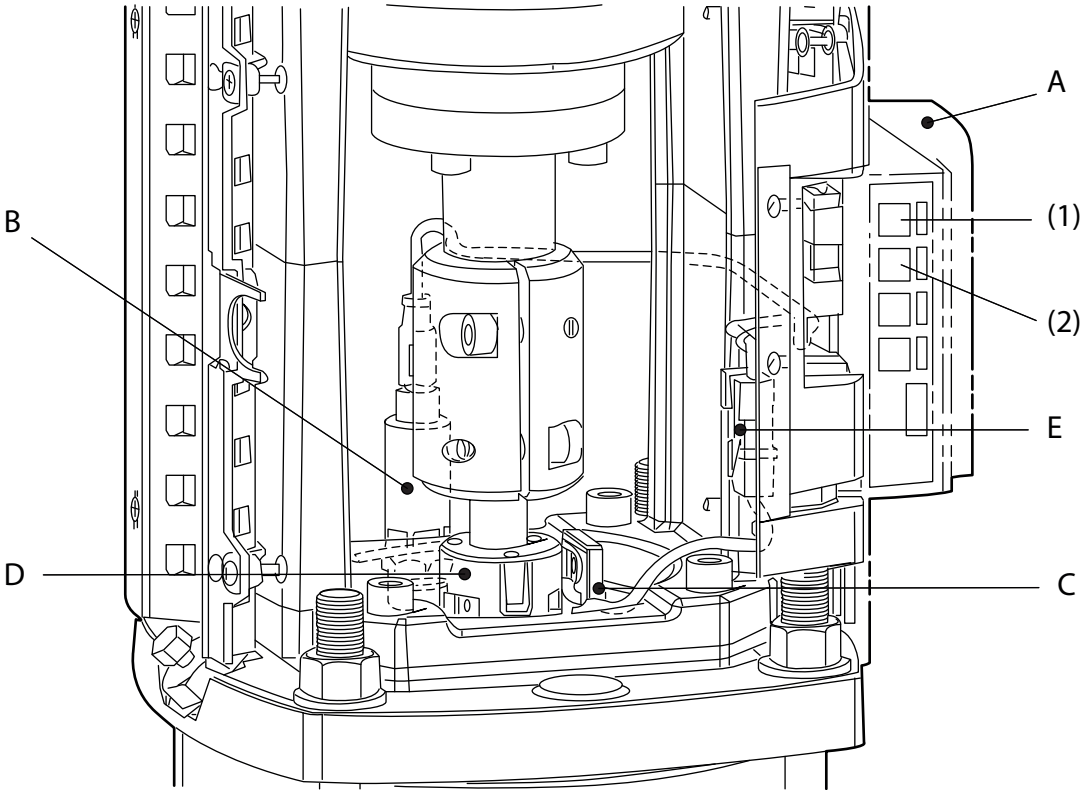
Wilo-Helix-V X-Care



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

Fig. 1



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 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.

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,
- Identifiers for 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 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.
- 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 sheet.

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.



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.).

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

4. Application

This equipment is used to monitor and record data related to Helix pump operations for all kinds of application.

5. Technical data

5.1 X-Care pump designation

Helix V2207 - 3 / 25 / E / X / 400 - 50

X = X-Care

5.2 Data table

Maximum operating pressure	
Maximum pressure	16 or 25 bar depending on pump maximum pressure
Temperature range	
Liquid temperature	-20 to +120 °C -30 to +120 °C if full stainless steel
Ambient temperature	Storage: -20 to +40°C Operation: -10 to +40°C
Ambient humidity	< 90% for 55°C
Electrical data	
Motor Protection index	IP 55
Overvoltage category	II
Electromagnetic compatibility : • residential emission • industrial immunity	EN 61000-6-3 EN 61000-6-2
Operating voltages	1~ ; 100 / 240V ±10% ; 50 / 60Hz ±5%
Power consumption	< 4.2W
Power cable section	Conductor: 0,2 to 2,5 mm ² stranded or rigid wires Insulating diameter : 5 to 10 mm

5.3 Scope of supply

- Installation and operating instructions .
- G1/2 filling plug with o-ring (to be used in case of pressure sensor replacement).

5.4 Accessories

Original accessories are available for X-Care.

Designation	Article no.
IR-module: infrared communication interface for PDA (SDIO slot)	2066810

Please contact your Wilo sales office for accessories list.

6. Description and function

6.1 Product description

FIG. 1

- A – X-Care
- B – Pressure sensor
- C – Speed sensor
- D – Cartridge seal
- E – Cartridge seal connector

6.2 Design of product

- X-Care device is available on all Helix pumps.
- It detects abnormal operations like dry running or remaining air at the top of the pump that could lead to mechanical seal failure.
- One dry contact relay allows defect monitoring if selected. When it is wired to a supply contactor that could protect pump in an effective way.
- Communication features allow status and data exchange to supervisory control system.

6.3 Description of display

Display overview



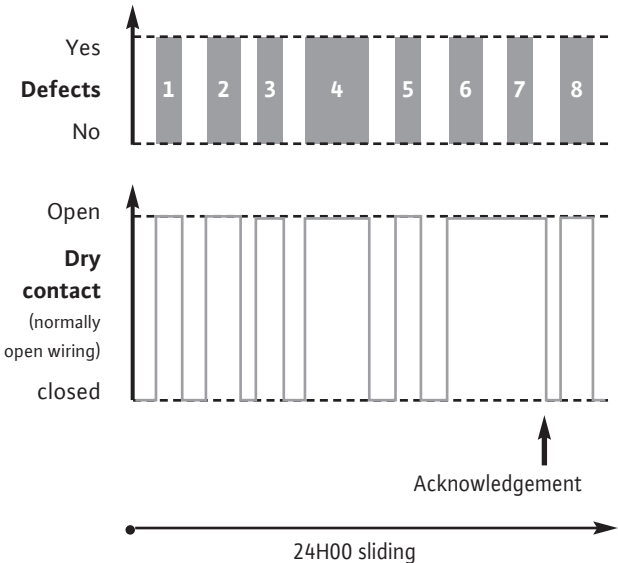
Pos.	Description
1	Power supply indicator
2	Direction of rotation indicator
3	Other defects indicator
4	Dry-running detection indicator
5	Infrared window
6	Infrared data transfer led

Display description

Symbol	Colour	Description
	OFF	X-Care power OFF
	White	X-Care power ON
	OFF	Pump is deactivated
	Green	Direction of rotation is correct
	Red	Direction of rotation is not correct
	OFF	No defect
	Red	Occurrence of one defect (out of dry-running detection)
	OFF	No defect
	Red	Dry-running detection
	OFF	Infrared communication is inactive
	Green	Infrared communication is enabled
	Blinking Green (2Hz)	Infrared communication is in progress

6.2 Relay operations

- X-Care is equipped with one dry contact relay in order to prevent any defect occurrence. To protect pump efficiently, it must be wired to pump power supply.
- Relay could be set as ‘normally opened mode or ‘normally closed’ mode depending on the cabling.
- Every defect has got a maximum number of occurrences per day, starting from X-Care power on (see chapter 10 faults, causes and remedies). Once this maximum number is reached, relay stays blocked until any involved adjustment to keep it re-active again (see chapter 10 faults, causes and remedies).



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

Take care to install the pump as described in its installation and operating instruction manual.

7.3 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 for both, pump and X-Care, 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.



DANGER! Risk of injury or electrical shock hazard!

Electrical connections of pump and X-Care are totally independent: power supplies of both, pump and X-Care, must be turned off before any operations.



In particular, X-Care power on indicator [1] does not mean that pump is also switched off.

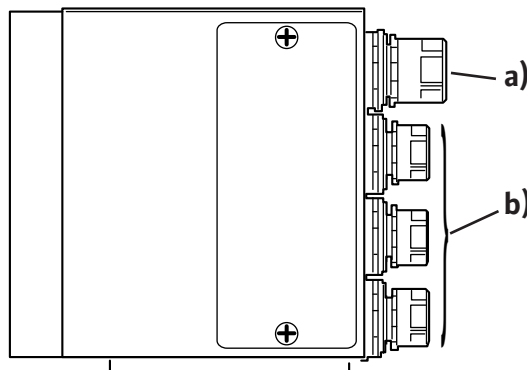


WARNING! Possible damages.

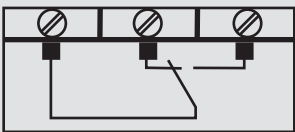
A wrong electrical connection could damage X-Care.

- Do not place the supply cables of the X-Care in contact with the pipe/or pump housing or motor casing.
- X-Care should be grounded in compliance with local regulations.
- A thermomagnetic ground fault circuit-protector specified as circuit-breaker and installed close to X-Care must be used as an additional protection device. This circuit-protector must be put upstream in the building electrical installation and on both supply cables (L and N) of X-Care. This circuit-breaker must comply with EN60947-2 standard.
- Check that electrical network comply with X-Care requirements.
- Loosen the screws and remove X-Care cover.

- The power cable (phase + neutral + earth) must be fed through PG11 cable glands (a).
- Relay and CAN bus cables must be fed through PG9 cable glands (b).

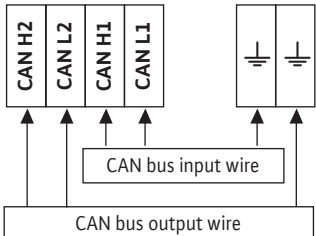
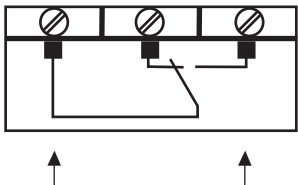


- Non-allocated cable glands must remain sealed with plugs provided by the manufacturer.

Designation	Allocation	Notes
	Earth connection	
L, N	Mains connection voltage	Single phase network
SSM	Defect post relay 	After several occurrences (up to 6 depending on fault configuration) of one single defect, relay is disabled. Dry-contact features : minimum: 12 V DC, 10 mA maximum: 250 V AC, 1 A
	Earth connection for CAN bus	
CAN L1	CAN Low	CAN bus input wire
CAN L2	CAN Low	CAN bus output wire
CAN H1	CAN High	CAN bus input wire
CAN H2	CAN High	CAN bus output wire

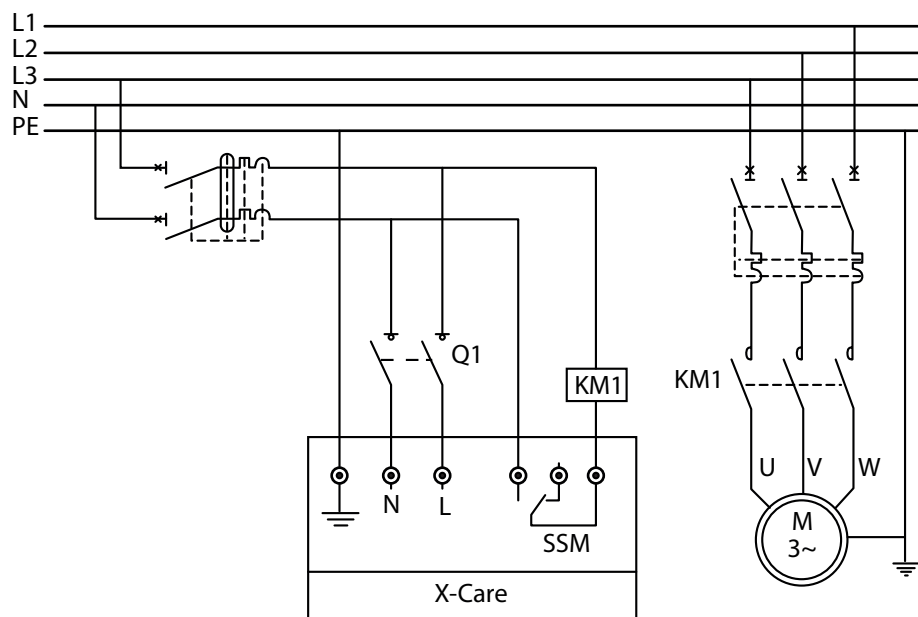


NOTE: CAN terminals (L1, L2, H1, H2 and Earth) are compliant with "reinforced insulation" (as described in EN61010-1) compare to main (L, N) and SSM terminals (and vice-versa).

Connection to mains supply	Terminals
Connect the 3 wire cables on the power terminals and earth.	
Connection of input / output	Terminals
Connect CAN bus cables. Use 2-wires shielded cable (0.2 to 2.5 mm ² stranded or rigid). Insulating diameter : 5 to 8 mm	
Defect post relay connection. Use 2-wires cable (0,2 to 2.5mm ² stranded or rigid). Insulating diameter : 5 to 8mm	
CAN bus DIP switch settings	
CAN bus input cable only.	 Example: – One single product is connected to CAN bus . – Last device of a CAN network (bus termination).
CAN bus (input / output).	 Example: Every devices of a CAN network except termination.

– Screw X-Care cover.

- Example of one wiring diagram .



8. Commissioning

8.1 Configuration settings

- X-Care is configured in factory with a set of default value, ready for use.
- List of available parameters and default values.

Parameters	Range of value	Default value	Description
Type of power supply	Mains	Mains	Type of power supply used for dry-running detection optimization
	Variable speed inverter		
Defect post when :	Setting		If yes, dry-contact relay is set when defect occurred and 'other defect' indicator is turned ON
• Low speed	Yes	No	See "Maximum speed" parameter
	No		
• Direction of rotation	Yes	Yes	
	No		
• X-Care temperature	Yes	Yes	Defect occurred when X-Care internal temperature exceeds 70°C
	No		
• Over-pressure	Yes	Yes	See "Maximum head" parameter
	No		
• Ambient temperature sensor disconnected	Yes	Yes	
	No		
CAN bus address	OFF	OFF	When OFF, CAN bus is inactive
	1 to 64		
Maximum head	0 to P max. (16 or 25 bar)	P max. (16 or 25 bar)	Over-pressure threshold
Maximum speed	0 to V max	0	Low-speed threshold used to detect any occurred abnormal speed level

8.2 X-Care settings

- In case of customization, it is recommended to set up X-Care before any pump starts.
- Turn X-Care on.
- X-Care settings is possible by using infrared communication or CAN bus facilities.

8.2.1 Infrared communication

- Requirements:
PDA with one SDIO slot,
IR-module (available as accessories),
IR-module setup software (available from Wilo web site).
- When communication between PDA and X-Care is set, one click on  button displays configuration settings menu.

8.2.2 CAN bus

- CAN interface is developed according to ISO 11898 standard and data transfer rate could reach up to Mbit/s.
- On this basis, profiles have been developed for several product ranges and allows a uniform use of products. CiA 450 profile defines properties for pumps. Wilo CAN bus interface is already compliant with future product profile based on DS CiA 301 communication protocol.



NOTE: Use of optocoupler is recommended when distance between 2 CAN devices exceeds 100 m.

- Requirements :
CAN library (available from Wilo web site) ,
Optocoupleur if necessary.
- See "Configuration" paragraph of CAN library documentation to access to the same parameters than those available through infrared communication.

8.3 System filling – Venting



CAUTION! Possible damage of the pump!

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

- Take care to prepare pump according to its installation and operating instructions.
- Correct direction of rotation will be shown by "Direction of rotation" indicator [2] lit with GREEN light.

8.4 Starting the pump

- Take care to start pump according to its installation and operating instructions.

9. Maintenance

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 power supplies have been switched off for both, pump and X-Care, and secured against unauthorized switching.



WARNING! Risk of scalding!

In case of high water temperatures and high system pressure close the isolating valves located in front of and behind the pump. First, allow pump to cool down.

- Helix pumps have been designed for low-maintenance.
- If needed, mechanical seal is easily replaceable thanks to its cartridge seal design. Turn both pump and X-Care off. Disconnect [E] connector for dismantling. After cartridge seal replacement, take care to connect [A] before pump start.
- Always keep the pump and X-Care perfectly clean.
- If required, clean X-Care only with a wet rag.



WARNING!

Do not use alcohol, solvent or acid solution to clean X-Care.

- Take care to maintain pump according to its installation and operating instructions.

10. Faults, causes and remedies

WARNING! Electrical shock hazard!

Dangers caused by electrical energy must be excluded.

All electrical work must be performed after power supplies of both, pump and X-Care, have been switched off and secured against unauthorized switching.



DANGER! Risk of injury or electrical shock hazard!

Electrical connections of pump and X-Care are totally independent: power supplies of both, pump and X-Care, must be turned off before any operations.

In particular, X-Care power on indicator [1] does not mean that pump is also turned off.



WARNING! Risk of scalding!

In case of high water temperatures and high system pressure close the isolating valves located in front of and behind the pump. First, allow pump to cool down.

- All defects mentioned below activate the "defect" indicator and the dry-contact relay but only if the "Defect post" parameter is set (see §8.1).



NOTE: Both "Defect" indicators show dry-contact relay status.

Defect no.	Indicator	Delay time before defect activation	Delay time before automatic restart (if any)	Maximum defect number per 24h	Defects / causes	Remedies
E01		60s	60s	6	Pump speed is too low	Fluid viscosity is too high
					Pump is faulty	Dismantle the pump, clean and change defective parts
					Defective pump shaft coupling	Check torque for coupling screws
					Wrong threshold for low speed parameter	Modify low speed parameter
E11		5s	60s	6	Air-binding or dry running of the pump	Prime the pump again (refer to installation and operating instructions manual provided with the pump) Check tightness of seals and gaskets on suction side
E16		60s	No restart	1	Wrong direction of rotation	Invert 2 phase wires for pump power supply
E30		60s	300s	6	Ambient temperature is too high	X-Care is specified not to work for an internal ambient temperature greater than +70°C Check fluid temperature that must not be above 120°C
E42		5s	No restart	1	Pressure sensor wire is cut (4-20mA)	Check sensor wire
E44		5s	No restart	1	Speed sensor wire is cut (4-20mA)	Check sensor wire
E47		5s	No restart	1	X-Care temperature sensor is damaged	Call customer services
E50					CAN bus failure	Check connections
E53					Duplicated CAN address	Check all the devices connected to the CAN bus have all different addresses
E54					CAN bus disconnected	Check CAN network
E60		15s	60s	6	Total pump head is too high for the pump	Use a pressure reducing valve at suction to limit maximum head
					Wrong threshold for maximum head parameter	Modify maximum head parameter
E71		< 1s	No restart	1	EEPROM failure	Call customer services

10.1 Defect acknowledgement



CAUTION! Possible damages!

Cancel defects only when their causes have been removed.

- Only authorized service representative are allowed to remove defects .
- Defect acknowledgement could be done:

– Either by infrared communication in Service/Error menu.

– Or by CAN bus (20C0h parameter)

– Or by switching X-Care off.

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

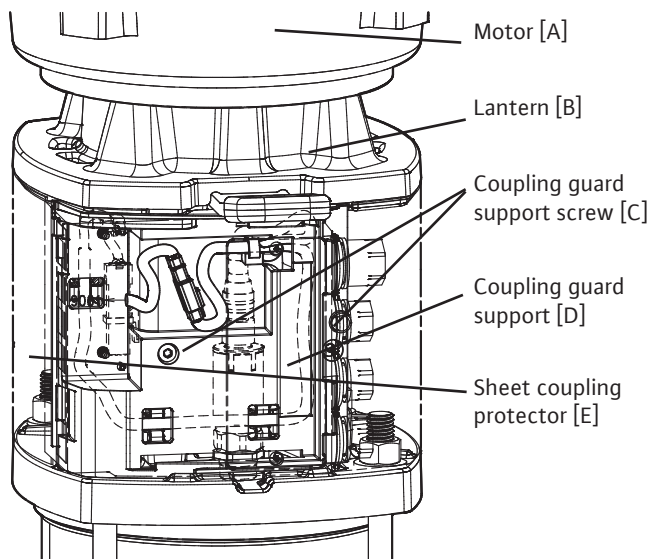
11. Spare parts

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. Assembly instruction

12.1 X-Care service panel replacement



X-Care service panel disassembly

- Unscrew and remove the sheet coupling protector [E]
- Remove the panel screws [H]
- Slide the panel [I] and disconnect it to remove it.

X-Care service panel assembly

- Connect the panel [I] and slide it into the coupling guard support [D]
- Put the panel screws [H]
- Position and screw the sheet coupling protector [E].

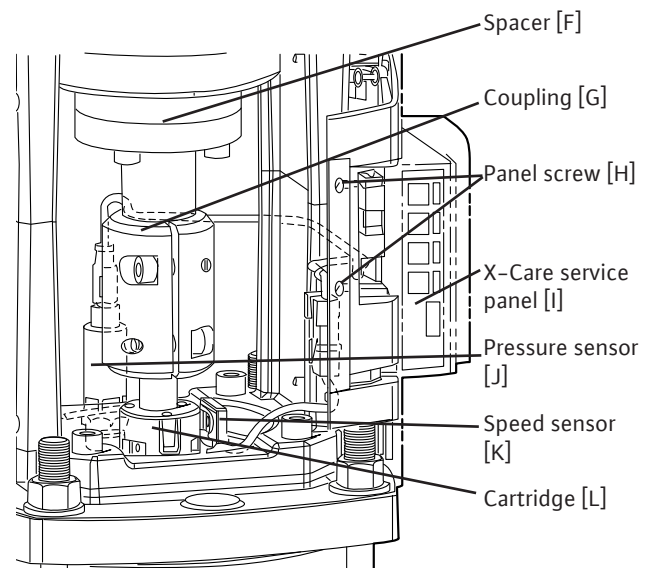
12.2 Pressure sensor replacement

Pressure sensor disassembly

- Remove the X-Care service panel (12.1.1)
- Remove the screws [C] and put off the coupling guard support [D]
- Disconnect and remove the pressure sensor [J] to remove it.

Pressure sensor assembly

- Screw the pressure sensor [J] and connect it
- Put in place the coupling guard support [D] and screw it [C]
- Assemble the X-Care service panel (12.1.2).



12.3 Cartridge replacement (FT flange motor: from 0.37 to 5.5 kW)

Cartridge disassembly

- Unscrew and remove the sheet coupling protector [E]
- Unscrew the coupling [G]
- Disconnect the speed sensor [K]
- Unscrew and remove the sub-assembly motor-lantern-coupling [B][A][G]
- Unscrew and put off the cartridge [L].

Cartridge assembly

- Position the cartridge [L] and screw it
- Put in place and screw the sub-assembly motor-lantern-coupling [B][A][G]
- Connect the speed sensor [K]
- Screw the coupling [G]
- Position and screw the sheet coupling protector [E].

12.4 Cartridge replacement (FF flange motor: from 7.5 kW)

Cartridge replacement

- Unscrew and remove the sheet coupling protector [E]
- Remove the screw and put off the half split coupling [G]
- Unscrew and remove the spacer [F]
- Disconnect the speed sensor [K]
- Unscrew and put off the cartridge [L].

Cartridge assembly

- Position the cartridge [L] and screw it
- Put in place and screw the spacer [F]
- Position and screw the half split coupling [G]
- Connect the speed sensor [K]
- Put in place and screw the sheet coupling protector [E].