Pioneering for You

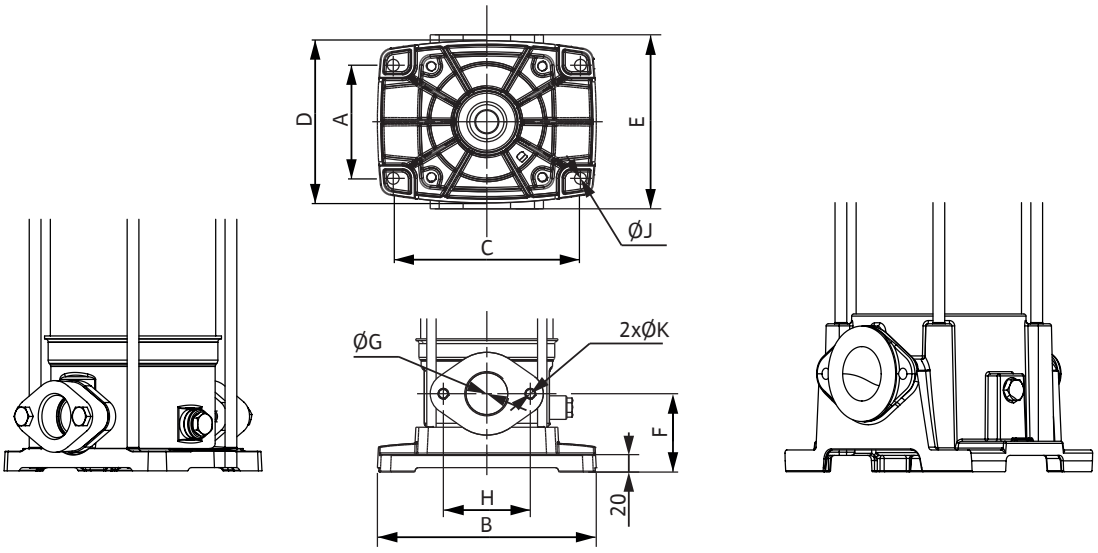
Wilo-Medana XCV1

en Installation and operating instructions

4245266 • Ed.03/04/2023 4245266

Fig. 1

PN16



PN20

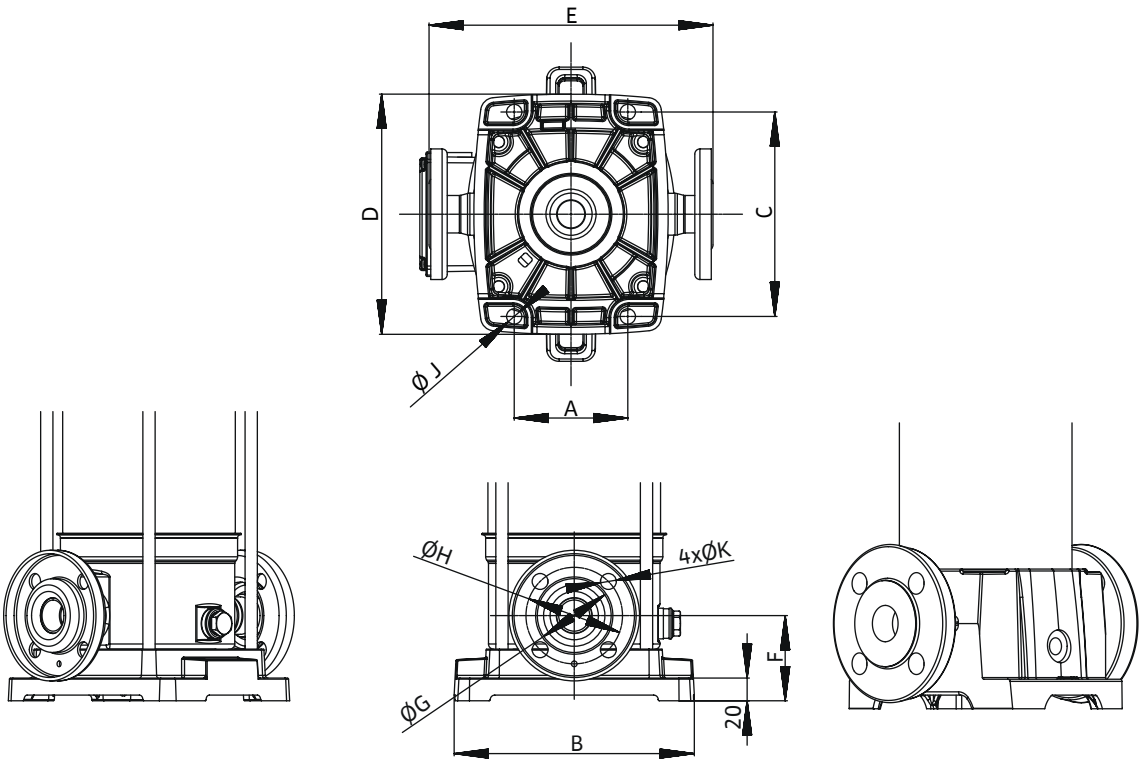


Fig. 2

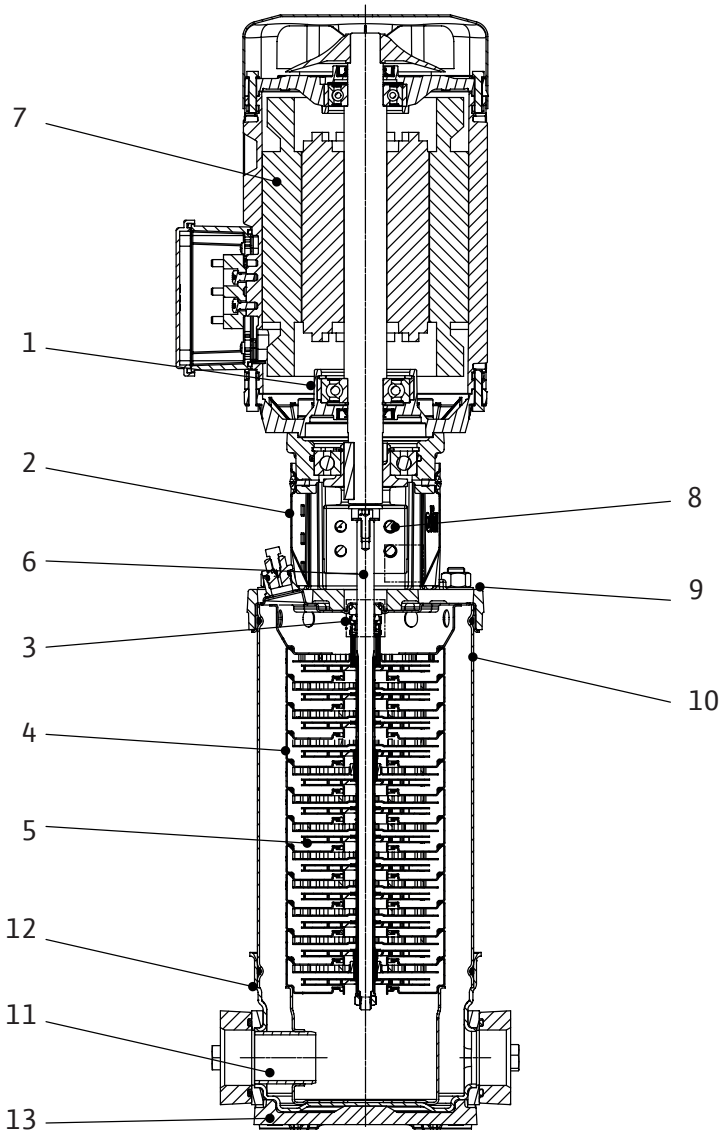
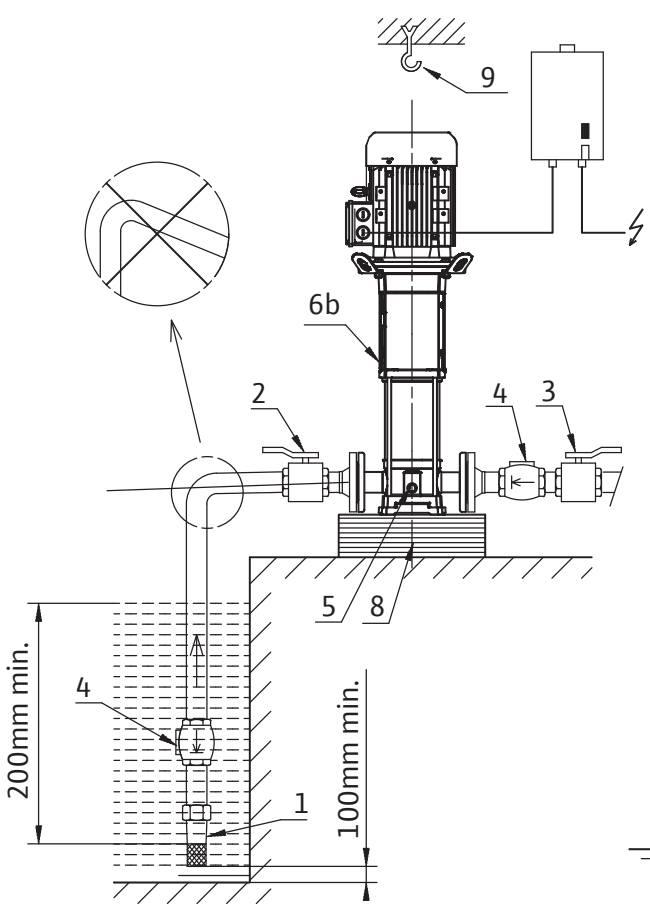


Fig. 3



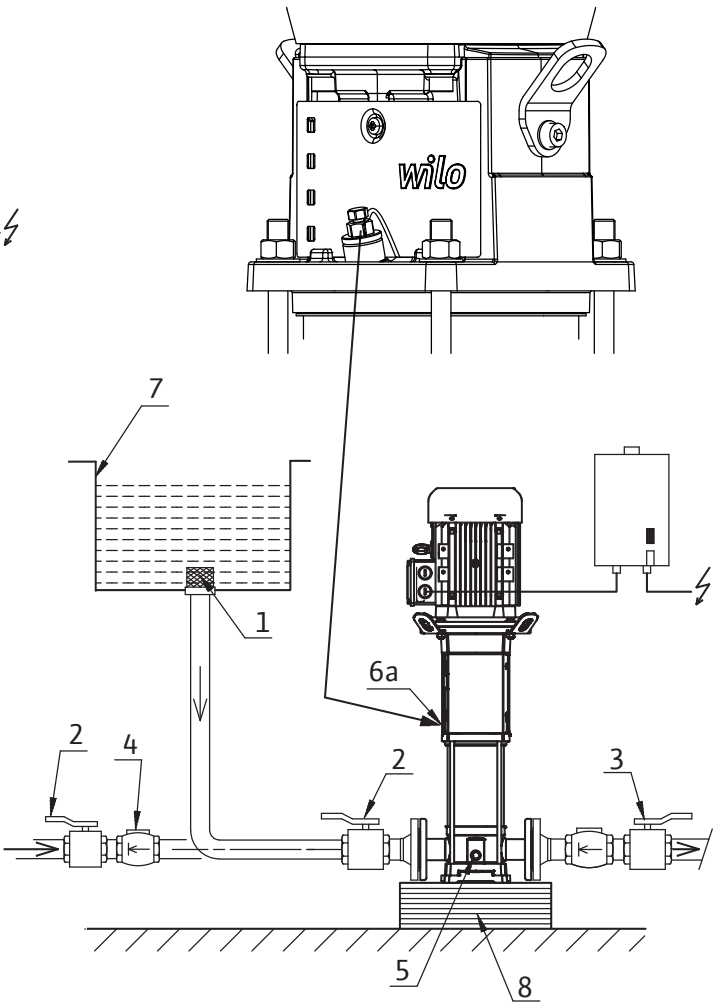


Fig. 4

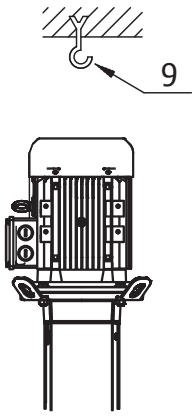


Fig. 5

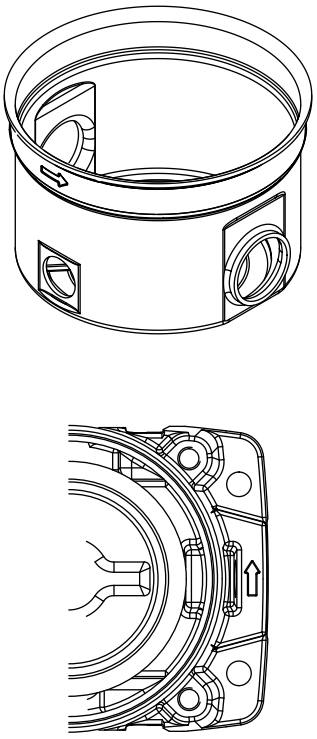
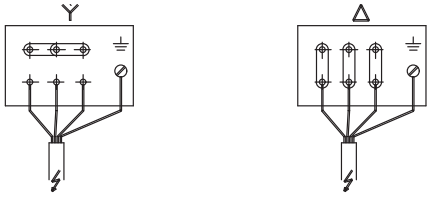


Fig. 6

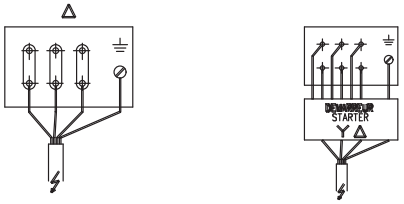
MOT. 230–400V (220–380V/240–415V)
≤4 KW



3x400V
(3x380V/3x415V)

3x230V
(3x220V/3x240V)

MOT. 400V (380VΔ/415VΔ)
>4 KW



3x400V
(3x380V/3x415V)

3x400V
(3x380V/3x415V)

Fig. 7

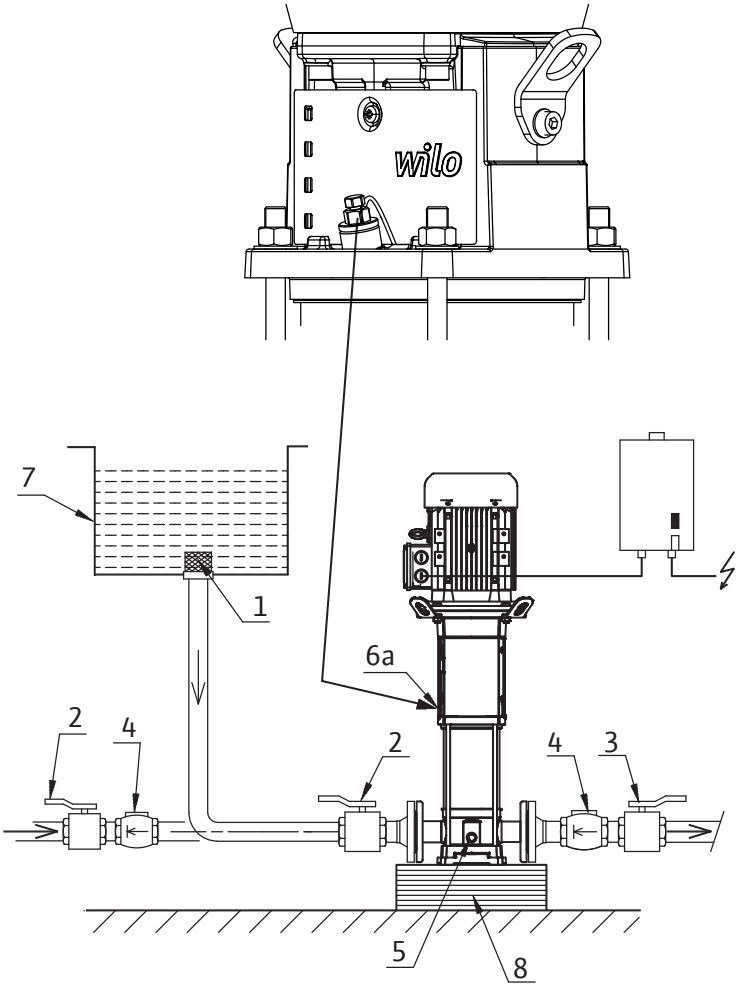
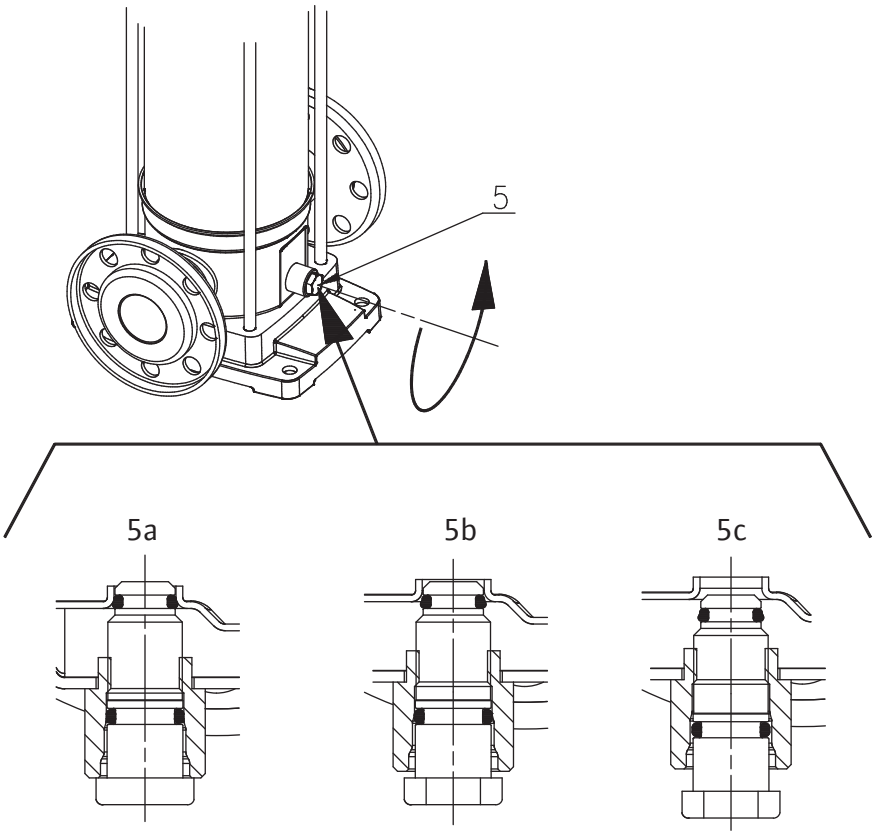


Fig. 8



Contents

1 General

1.1 About this document

The installation and operating instructions are an integral part of the product. Read these instructions before carrying out any work and keep them at hand at all times. Strict adherence to these instructions is a precondition for the correct installation and application of the product. Comply with all indications and signs that appear on the product.

The language of the original installation and operating instructions is English. All other languages of these instructions are translations of the original installation and operating instructions.

2 Safety

This chapter contains essential instructions that must be followed during the different phases of the pump's service life. Non-observance of these instructions may constitute a danger to persons, the environment and the product, and may invalidate the warranty. Non-observance may lead to the following hazards:

- Injuries due to electrical, mechanical and bacteriological factors and electromagnetic fields.
- Damage to the environment due to leakage of hazardous materials.
- Damage to the installation.
- Failure of important product functions.

Also comply with the indications and safety instructions in other chapters!

2.1 Symbols

Symbols:

WARNING

General safety symbol

WARNING

Electrical risks

NOTICE

Notes

Warnings:

DANGER

Imminent danger.
May result in death or severe injuries if the hazard is not prevented.

WARNING

Non-observance may result in (very) severe injury.

CAUTION

The product risks becoming damaged. “Caution” is used when there is a risk to the product if the user does not observe procedures.

NOTICE

Note containing useful information for the user about the product. It assists the user in the case of an issue.

2.2 Personnel qualifications

The installation, application and maintenance personnel must have the appropriate qualifications to complete this work. The operator must ensure the personnel’s areas of responsibility, terms of reference and their supervision. If the personnel are not in possession of the necessary knowledge, they are to be trained and instructed. If necessary, this training can be carried out by the product’s manufacturer on the operator’s behalf.

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

Non-observance of the safety instructions may constitute a danger to persons, the environment and the product/unit. Non-observance of the safety instructions also results in the loss of any claims to damages. More specifically, non-observance can result in the following risks:

- danger to persons from 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 processes.

2.4 Safety consciousness on the job

The existing directives for accident prevention must be adhered to. Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from local energy supply companies must be respected.

2.5 Safety instructions for the operator

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

Children must be supervised to ensure that they do not play with the device.

- If hot or cold components of the product or installation pose a danger, it is the customer’s responsibility to guard them against being touched.

- Guards protecting against touching moving components (such as the coupling) must not be removed whilst the product is in operation.
- Hazardous fluids (i.e. which are explosive, toxic or hot) which have leaked (e.g. from the shaft seals) must be disposed of so that they pose no danger to persons or to the environment. National statutory provisions must be respected.
- Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from local energy supply companies must be respected.

2.6 Safety instructions for installation and maintenance work

The operator must ensure that all maintenance and installation work is carried out by authorised and qualified personnel, who are sufficiently informed from their own detailed study of the installation and operating instructions. Work on the product/unit must only be carried out when at a standstill. The procedures described in the installation and operating instructions for deactivating the product/installation must always be complied with.

Immediately on conclusion of the work, all safety and protective devices must be put back in position and recommissioned.

2.7 Unauthorised modification of components and use of unauthorised spare parts

Unauthorised modification of components and use of unauthorised spare parts will impair the safety of the product/personnel, and will render the manufacturer's declarations regarding safety void. Modifications to the product are only permissible following consultation with the manufacturer.

Original spare parts and accessories authorised by the manufacturer ensure safety. The use of other parts absolves the manufacturing company of any and all liability.

2.8 Improper use

The operational reliability of the supplied product is only guaranteed for conventional use in accordance with Chapter 4 of the Installation and operating instructions. The limit values must on no account fall below or exceed the values specified in the catalogue/data sheet.

3 Product information

3.1 Type key

Example:	Medana XCV1-C.606-5/E/E/16O
Wilo	Brand
Medana	Product family – Surface pump
X	Compact design with coupling
C	Commercial series
V	Vertical pump
1	Series level (1 = entry level, 3 = standard level, 5 = premium level)
C	Cast housing
6	Volume flow in m^3/h

Example:	Medana XCV1-C.606-5/E/E/16O
06	Number of impellers
5	1 = Pump housing in stainless steel (1.4301) 5 = Pump housing in cast iron (GJL250)
E	E = EPDM seal
E	E = 230/400 V - Frequency 50 Hz – Three-phase
16	Nominal pressure in bar 16 = PN 16 20 = PN 20
O	O = oval flange F = round flange

3.2 Technical data

Maximum utilisation pressure	
Pump housing	16 bar or 20 bar
Maximum suction pressure: The discharge pressure must not exceed the maximum pressure of the pump	10 bar
Temperature range	
Fluid temperature	-20 °C to +120 °C with EPDM seals -15 °C to +90 °C with FKM gasket (optional)
Ambient temperature	max. -15 °C to +50 °C
Electrical data	
Motor protection rating	IP55
Insulation class	F
Frequency	See motor plate
Voltage	See motor plate
Motor efficiency	In accordance with IEC 60034-30

Sound-pressure level dB(A) 0/+3 dB(A)

Power (kW)	1.5	2.2	3	4	5.5
Noise level (dB(A))	61	61	180	157	204

Size and connection dimensions in mm (Fig. 1)

Cast iron baseplate + stainless steel housing (PN 16)										
Type	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**
2/4 m^3/h	100	212	180	157	204	50	DN 32	75	4x M12	2x M10
6 m^3/h	100	212	180	157	204	50	DN 32	75	4x M12	2x M10

Cast housing (PN 16)										
Type	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**
2/4 m^3/h	100	212	180	162	166	50	DN 32	75	4x M12	2x M10
6 m^3/h	130	251	215	181	208	80/90	DN 50	100	4x M12	4x M14

Cast iron baseplate + stainless steel housing (PN 20)										
Type	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**
2/4 m^3/h	100	212	180	171	250	75	DN 32	63	4x M12	4x M14
6 m^3/h	100	212	180	171	250	80	DN 40	74	4x M12	4x M18

Cast housing (PN 20)										
Type	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**
2/4 m^3/h	100	223	215	169	25	75	DN 32	85	4x M14	4x M14

Cast housing (PN 20)										
Type	A	B	C	D	E	F	G	H	J	K
6 m^3/h	130	258	215	178	280	80	DN 40	110	4x M13	4x M19

3.3 Scope of delivery

For PN 16 connection:
- High-pressure multistage centrifugal pump
- Installation and operating instructions
- Oval counter flanges + screws and O-rings for PN 16 connection

For PN 20 connection:
- High-pressure multistage centrifugal pump
- Installation and operating instructions

3.4 Accessories

The following original accessories are available for the MEDANA XCV1 (2/4/6) PN 16 series:

Type key	Article
2 oval stainless steel 1.4301 counter flanges (screwing) (PN 16 – 1")	416168
2 oval stainless steel 1.4301 counter flanges (screwing) (PN 16 – 1"$^{1/4}$)	416169

Use only accessories that are new. Please contact the Wilo customer service for the list of accessories.

4 Transport and interim storage

When receiving the product, check that it has not been damaged during transport. If any damage is found, take all necessary measures with the carrier in the time provided.

CAUTION

Risk of material damage

If the delivered material is to be installed at a later date, store it in a dry place and protect it from impacts and any external influences (humidity, frost etc.). Temperature range for transport and storage: -30 °C to +60 °C.

Handle the product with care so as not to damage it prior to installation.

5 Application

This pump has been designed to pump hot or cold water, potable or non-potable water, water/glycol mixtures or other low-viscosity fluids that are free of mineral oil, solid or abrasive substances, or materials containing long fibres. Pumping corrosive chemicals requires the manufacturer's prior approval.

DANGER

Risk of explosion

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

Fields of application:

MEDANA XCV1
Steam boiler
Reverse osmosis system
Pressure-maintaining system
Industrial cooling
Industrial circulation systems
Industrial processes
Cleaning systems
Water supply and pressure boosting

NOTICE

Depending on the fluid properties, please contact the Wilo customer service for material compatibility if necessary.

6 Description and function

6.1 Description of the product

See Fig. 2

1. Motor fixation bolt
2. Coupling guard
3. Mechanical seal
4. Hydraulic stage housing
5. Impellers
6. Pump shaft
7. Motor
8. Coupling
9. Lantern
10. Sleeve
11. Flange
12. Pump housing
13. Baseplate

See Fig. 3

1. Strainer
2. Valve on the suction side
3. Valve on the discharge side
4. Non-return valve
5. Drain/priming plug
6. a-b Filling plug and venting plug
7. Tank
8. Foundation block
9. Lifting hook

6.2 Product features

MEDANA XCV1 pumps are vertical non-self-priming high-pressure multistage centrifugal pumps for in-line connection. All metal components in contact with the fluid are made of stainless steel or coated grey cast iron. MEDANA XCV1 pumps are equipped with a simple mechanical seal. Special handling devices are integrated to facilitate pump installation.

7 Installation and electrical connection

All installation and electrical connection work must be carried out solely by authorised and qualified personnel, in accordance with applicable regulations.

WARNING

Physical injuries

The applicable regulations for the prevention of accidents must be complied with.

WARNING

Risk of electric shock

Hazards from electric current must be prevented.

7.1 Receipt of the product

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

7.2 Installation

The pump must be installed in a dry, well-ventilated location free of frost.

CAUTION

Risk of damaging the pump

The presence of foreign matter or impurities in the pump housing may affect the functioning of the product.

It is recommended to perform any welding and soldering work before installing the pump.

Rinse the circuit completely before installing and commissioning the pump.

- The pump must be installed in a place easy to access for the purposes of inspection or replacement.
- For heavy pumps, install a lifting hook (rep9) above the pump to facilitate its dismantling (Fig. 4).

WARNING

Risk of accident due to hot surfaces!

The pump must be installed in such a way that no one can touch the hot surfaces of the product when it is in operation.

- 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 unit.

WARNING

Risk of tipping

Ensure that the pump is secured to a flat, rigid surface.

- The pump must be installed in an easily accessible location to facilitate inspection and maintenance work. The pump must always be installed perfectly upright on a concrete baseplate.

CAUTION

Risk of foreign matter in the pump

Ensure that all blanking plugs are removed from the pump housing before installation.

NOTICE

All pumps are factory-tested for their hydraulic properties and may therefore contain a small amount of residual water. For hygiene purposes, it is recommended to rinse the pump before installing it in any potable water supply.

- For installation and connection dimensions, see section 5.2.
- Lift the pump only with appropriate lifting devices and suitable hoists and slings in compliance with lifting regulations.

WARNING

Risk of tipping

There is a high risk of tipping due to the high centre of gravity, especially for larger pumps. Take special care over the safe fixation of the pump when handling.

WARNING

Risk of tipping

Use integrated lifting hooks only if they are not damaged (e.g. by corrosion). Replace them if required.

WARNING

Risk of tipping

Never lift the complete pump using the motor hooks as these are designed to lift the motor only.

7.3 Mains connection

Connect the pump to the pipes by using only the counter flange accessories supplied with the product.

CAUTION

Risk of damaging the pump

Tightening of screws or bolts must not exceed:

Tightening torque PN 16 = M10 – 20 Nm / PN 20 = M12 – 30 Nm

The use of an impact wrench is prohibited.

- The flow direction of the fluid is indicated on the pump housing – cast iron/stainless steel (Fig. 5).
- The suction and discharge pipe sockets must be installed so that they do not induce any stress into the pump. The pipes must be attached so that the pump does not bear their weight.
- We recommend installing gate valves on the suction and pressure sides of the pump.
- Use expansion joints to mitigate noise and vibration from the pump if required.
- The pipe cross-section must be at least equal to the diameter of the suction opening.
- The installation of a non-return valve in the discharge pipe is recommended to protect the pump against pressure surges.
- If connected directly to the public drinking water mains, the suction pipe socket must also be fitted with a non-return valve and a stop valve.
- If connected indirectly via a tank, the suction pipe socket must be fitted with a suction strainer to stop impurities from entering the pump, and a non-return valve.

7.4 Electrical connection

DANGER

Risk of electrocution

In case of a non-compliant electrical connection, there is a risk of electrocution.

Danger from electrical current must be eliminated.

■ Have the electrical connection established by an electrician approved by the local energy supply company in accordance with local regulations.

■ Prior to the electrical connection, the pump must be voltage-free and protected against unauthorised restart.

■ To ensure safe installation and operation, the unit must be earthed correctly with the earth terminals of the power supply.

- Check that the rated current, voltage and frequency used match the information on the motor.
- The pump must be connected to the power supply by means of a solid cable fitted with a male connector or a main power switch.
- The three-phase motors must be connected to an authorised protection system. The setting rated current must match the value indicated on the motor label.
- The connection cable must be placed in such a way that it never comes into contact with the main sewer system and/or the pump housing and motor frame.

- The pump/installation should be earthed in accordance with local regulations. A circuit breaker can be used as additional protection.
- The power supply connection must comply with the wiring diagram (Fig. 6).

7.5 Operation with a frequency converter

- The pumps' electric motors can be connected to a frequency converter in order to adapt the product's performance to the design duty point.
- It must not generate voltage spikes over 850 V or variations of dU/dt over 2500 V/µs at the motor terminals.
- For higher values, an appropriate filter must be used: please contact the converter manufacturer for the definition and selection of this filter.
- Please follow the converter manufacturer's instructions carefully.
- The minimum variable speed must not fall below 40 % of the rated speed of the pump.

8 Commissioning

8.1 Filling and degassing the system

Check whether the water level in the tank and the inlet pressure are sufficient.

CAUTION

Risk of damage to the pump

Never run the pump dry. The pump must be filled before starting.

Venting process – Pump in inlet mode (Fig. 7)

- Close the gate valves.
- Open the drain cock of the filling plug [6a].
- Slowly open the valve on the suction side [2].
- Close the drain cock again once the air has been removed and the liquid flows from the pump [6a].

WARNING

Risk of burns

If the pumped fluid is hot and under high pressure, the fluid escaping at the drain cock may cause burns or other injuries.

- Open the valve on the suction side completely [2].
- Start the pump and check that the direction of rotation complies with the specification indicated on the pump label.

CAUTION

Risk of damaging the pump

An incorrect direction of rotation will cause poor pump performance and may damage the coupling.

- Open the valve on the discharge side [3].

Venting process – Pump in suction mode (Fig. 8)

- Close the valve on the discharge side [3]. Open the valve on the suction side [2].
- Remove the filling plug [6a].
- Partially open the priming/drain plug [5b].
- Fill the pump and the suction pipe with water.
- Ensure that there is no air trapped in the pump or suction pipe. Fill the system completely until all air is removed.
- Close the filling plug [6a].
- Start the pump and check that the direction of rotation complies with the specification indicated on the pump label.

CAUTION

Risk of damaging the pump

An incorrect direction of rotation will cause poor pump performance and may damage the coupling.

- Slightly open the valve on the discharge side [3].
- Unscrew the drain cock to remove the air [6a].
- Close the drain cock once the air has escaped and the liquid is flowing in the pump.

WARNING

Risk of burns

If the pumped fluid is hot and under high pressure, the fluid escaping at the drain cock may cause burns or other injuries.

- Open the valve on the discharge side fully [3].
- Close the priming/drain plug [5].

8.2 Starting

CAUTION

Risk of damaging the pump

The pump must not be operated at a zero flow rate (valve on the discharge side closed).

WARNING

Risk of injury

Coupling guards must be in place and properly secured by all required screws when the pump is running.

WARNING

High noise levels

High-power pumps may emit a high noise level. Use appropriate protection when working close to the pump for any extended period.

WARNING

The installation must be designed in such a way that there is no risk of injury in case of fluid leakage (e.g. caused by mechanical seal failure).

9 Maintenance

All maintenance work must be carried out by authorised and qualified personnel!

WARNING

Risk of electric shock

Danger from electrical current must be eliminated. Ensure that the pump's power supply is switched off and secured against unauthorised reactivation before performing any work on the electric system.

WARNING

Risk of burns

In case of high water temperatures and high system pressures, close the guard valves upstream and downstream of the pump. First, allow pump to cool down.

- No special maintenance required during operation.
- For replacement of the mechanical seal, please contact the Wilo customer service.
- Always keep the pump perfectly clean.
- Pumps that are not being used during periods of frost should be drained to avoid damage.
  Close the guard valves, open the drain/priming plug completely and the drain cock.

10 Faults, causes and remedies

WARNING

Risk of electric shock

Danger from electrical current must be eliminated. Ensure that the pump's power supply is switched off and secured against unauthorised reactivation before performing any work on the electric system.

WARNING

Risk of burns

In case of high water temperatures and high system pressures, close the guard valves upstream and downstream of the pump. First, allow pump to cool down.

Faults	Causes	Remedies
The pump is not functioning	No electrical power supply	Check the fusible cut-outs, the wiring and the connections
	The motor protection device has cut off the power	Eliminate any motor overload
The pump is functioning but is failing to reach its duty point	Wrong direction of rotation	Check the direction of rotation and correct it if necessary
	Parts of the pump are obstructed by foreign bodies	Check and clean the pump
	Presence of air in the suction pipe	Make the suction pipe air-tight
	Suction pipe too narrow	Install a wider suction pipe
	The valve on the suction side is not open enough	Open the valve completely
The output of the pump is irregular	Presence of air in the pump	Remove the air from the pump and ensure that the suction pipe is sealed. Possibly start the pump for 20 – 30 s. Open the drain cock to let air escape. Close the drain cock and repeat the process several times until no more air comes out of the drain cock
The pump is vibrating or is noisy	Foreign matter in the pump	Remove foreign matter
	The pump is not correctly secured to the ground	Tighten the anchor screws
	Bearing damaged	Contact Wilo customer service
The motor is overheating, the motor protection engages	A phase is interrupted	Check the fusible cut-outs, the wiring and the connections
	Ambient temperature too high	Provide cooling
The mechanical seal is leaking	The mechanical seal is faulty	Replace the mechanical seal

If the fault cannot be resolved, please contact the Wilo customer service.

11 Spare parts

All spare parts should be ordered directly from the Wilo customer service. To prevent errors, always quote the data on the pump's rating plate when making an order. The spare parts catalogue is available at www.wilo.com

12 Disposal

Information on the collection of used electrical and electronic products.

Proper disposal and appropriate recycling of this product prevents damage to the environment and dangers to your personal health.

NOTICE

Disposal as domestic waste is forbidden!

In the European Union, this symbol can appear on the product, the packaging or the accompanying documentation. It means that the electrical and electronic products in question must not be disposed of along with domestic waste.

To ensure proper handling, recycling and disposal of the used products in question, please note the following points:

- Only hand over these products at designated, certified collecting points.
- Observe the locally applicable regulations! Please consult your local municipality, the nearest waste disposal site, or the dealer who sold the product to you for information on proper disposal. For further information on recycling, go to www.wilo-recycling.com.

Subject to change without prior notice.

wilo

Pioneering for You

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