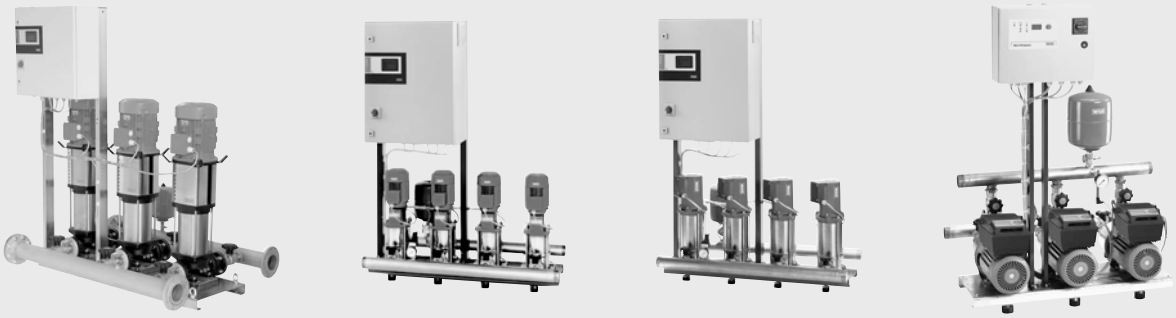

Wilo-Economy
Wilo-Comfort, -Comfort-N
Wilo-Vario

D Einbau- und Betriebsanleitung

GB Installation and operating instructions

F Notice de montage et de mise en service

NL Inbouw- en bedieningsvoorschriften

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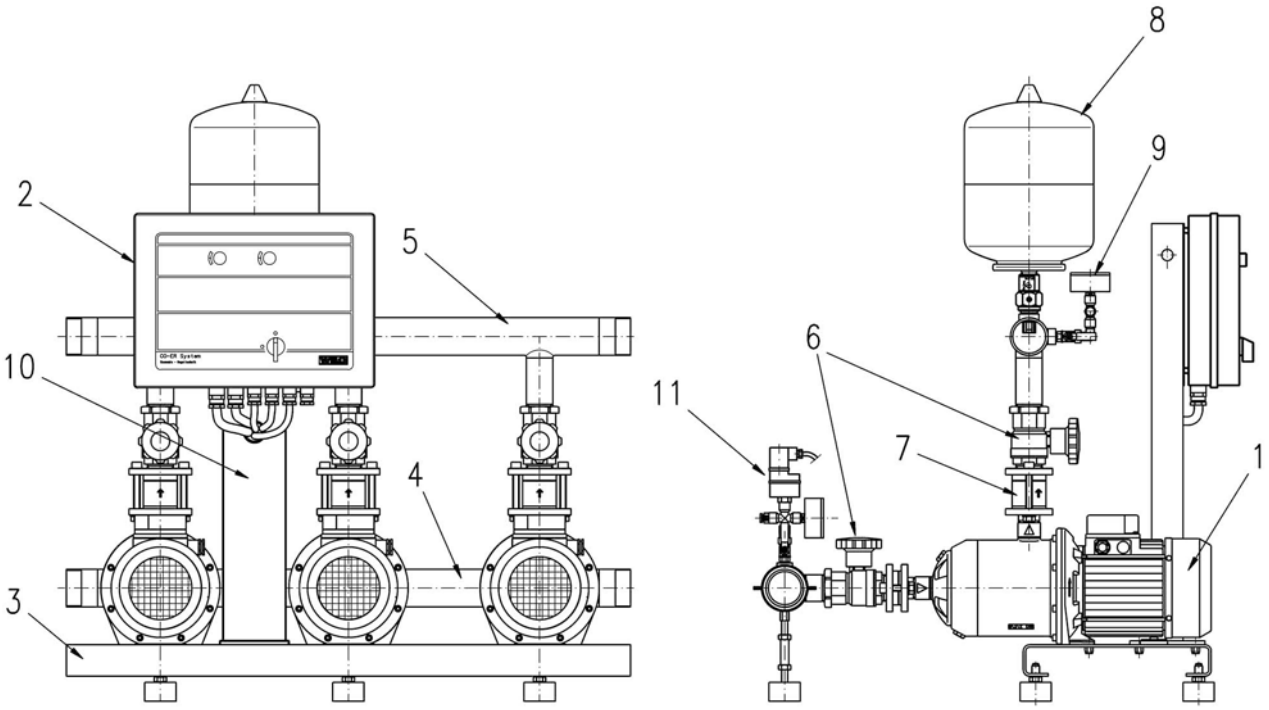
Fig. 1a:



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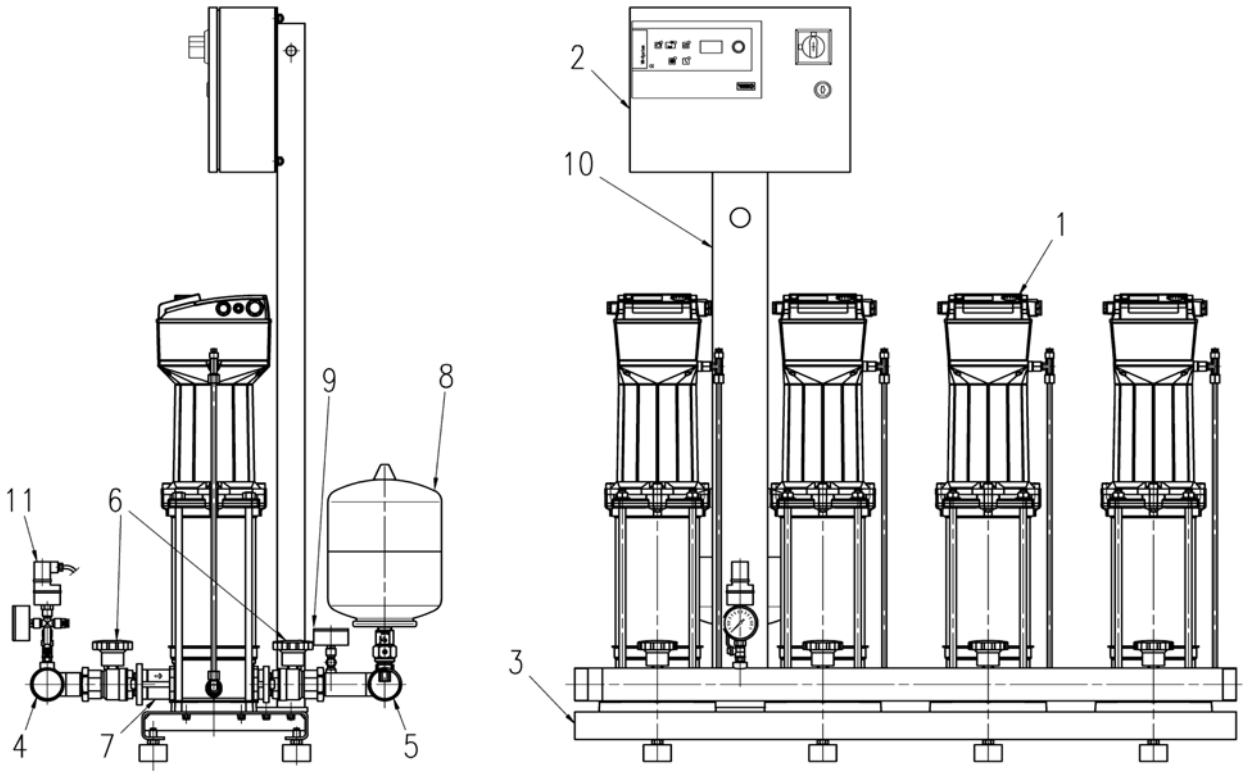

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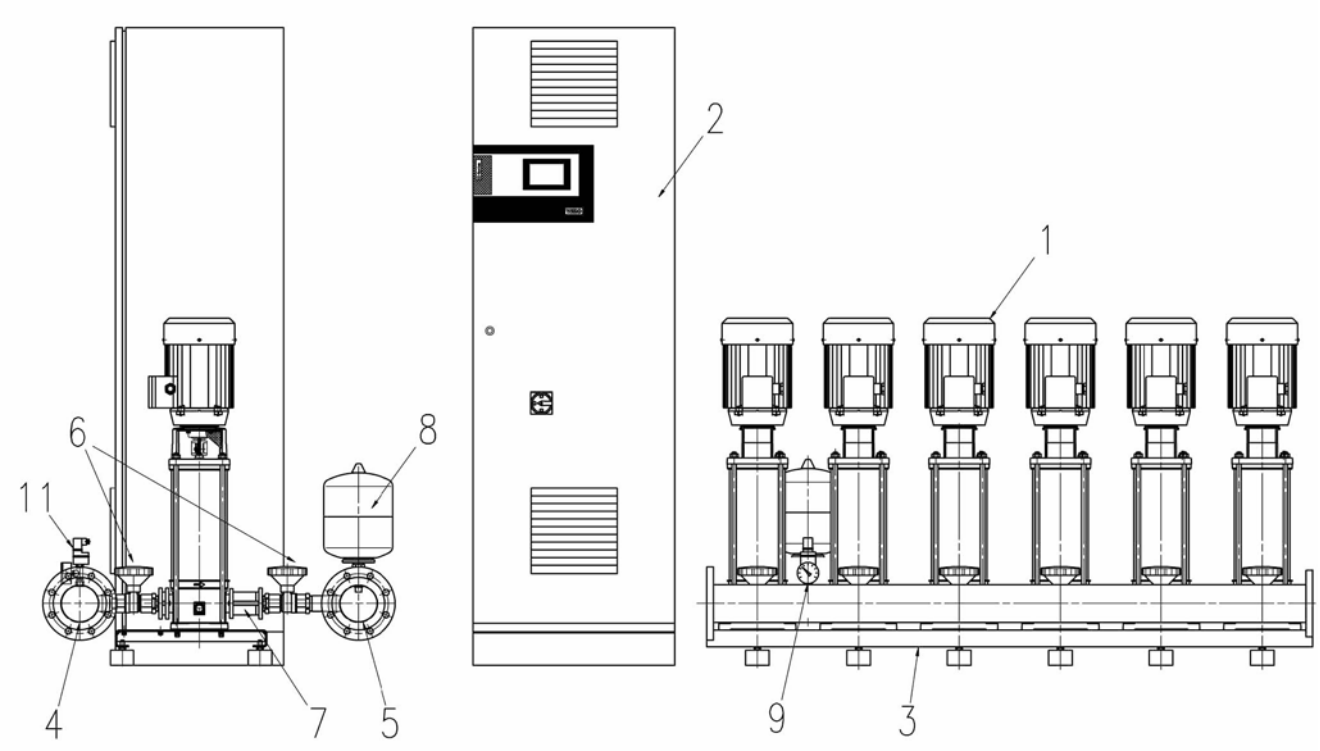

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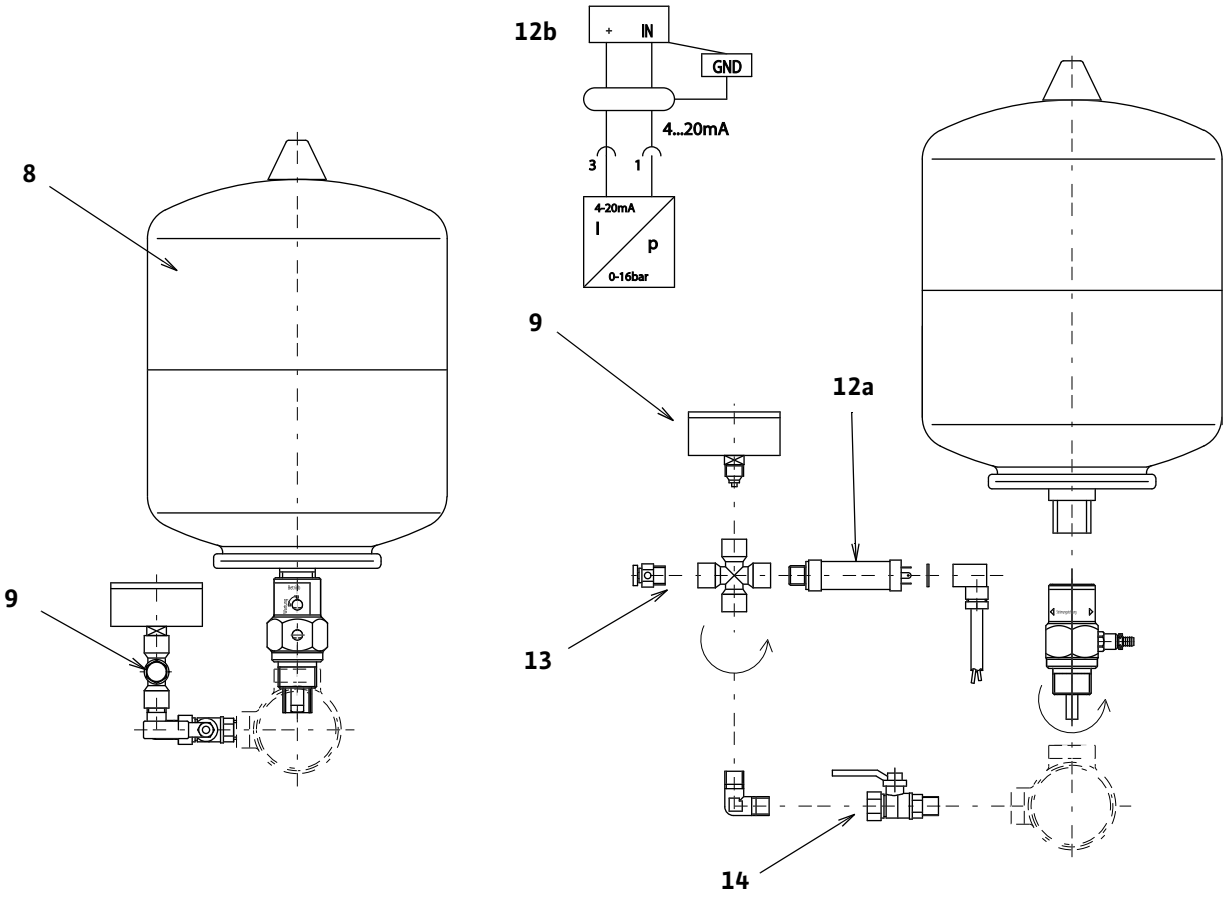

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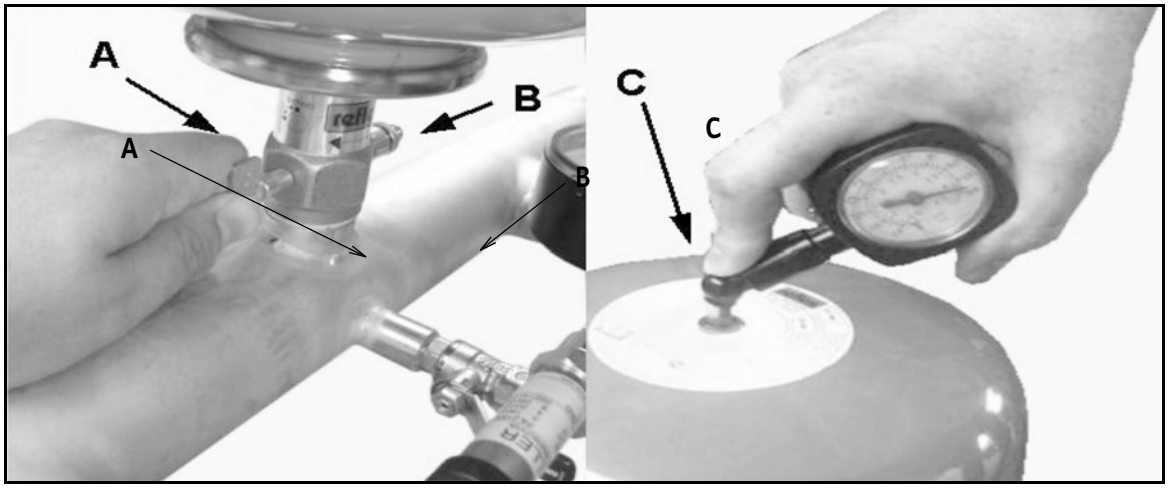

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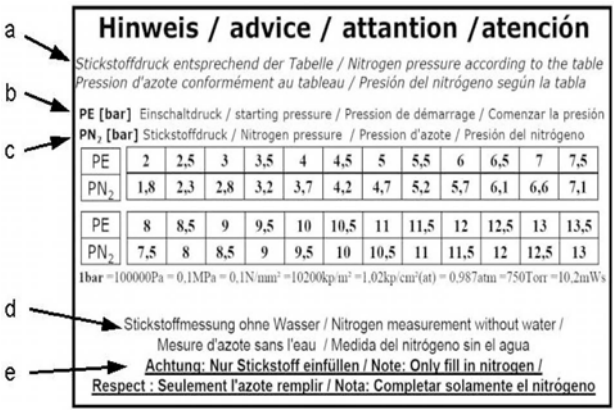

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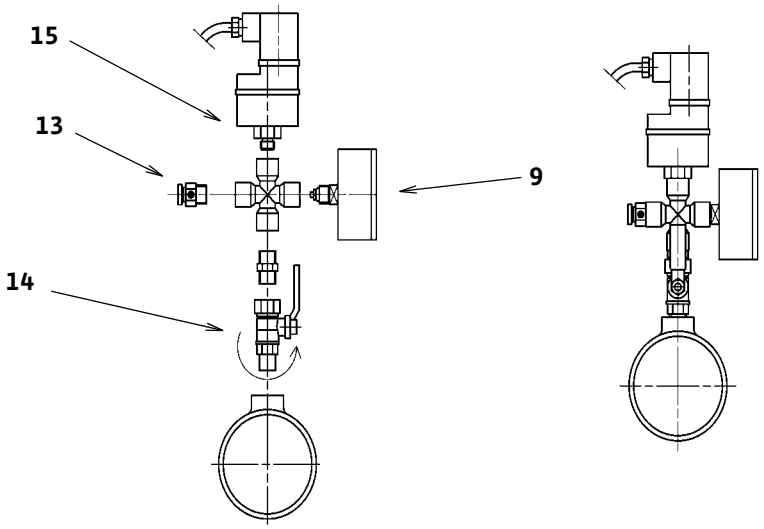
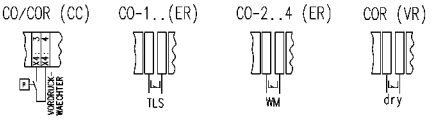


15a

15b



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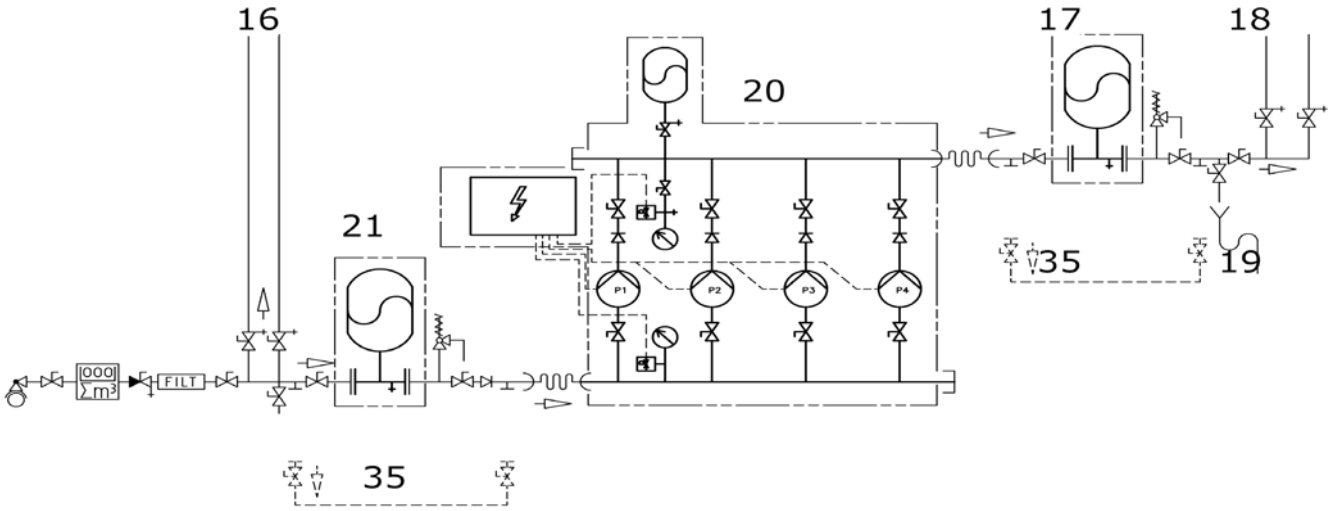

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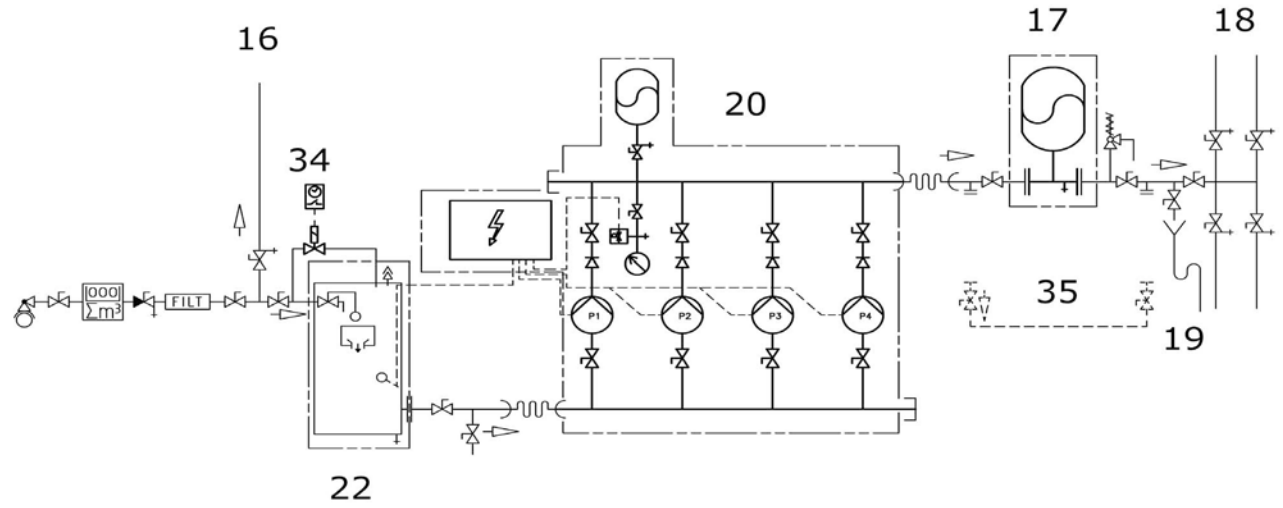

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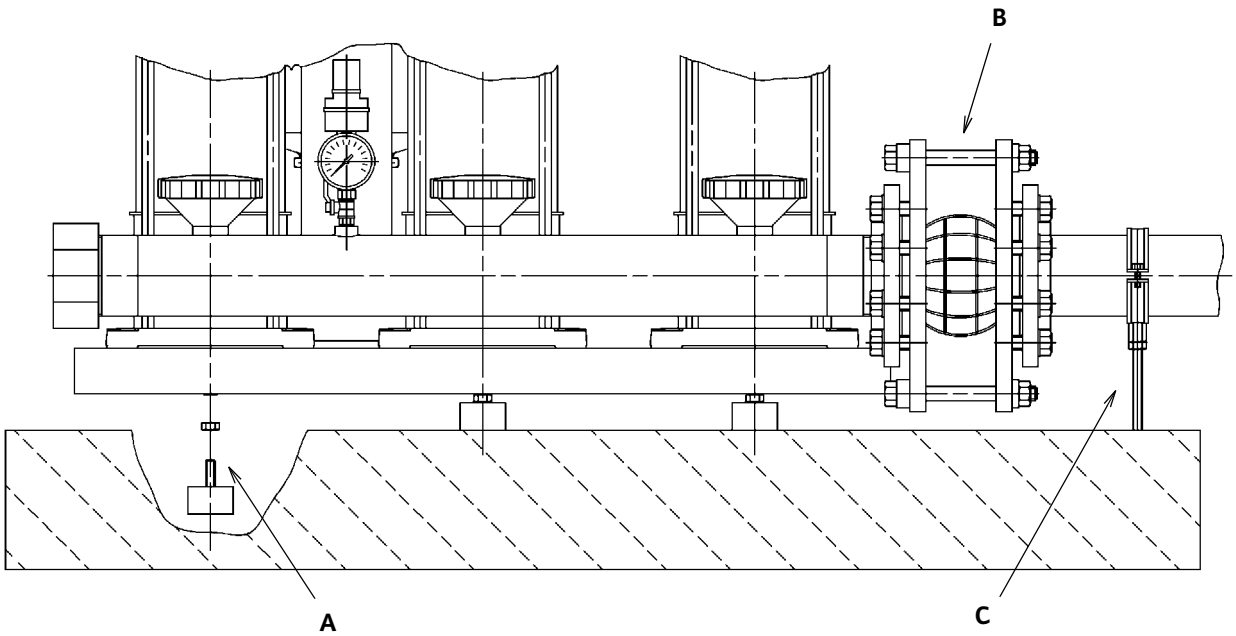

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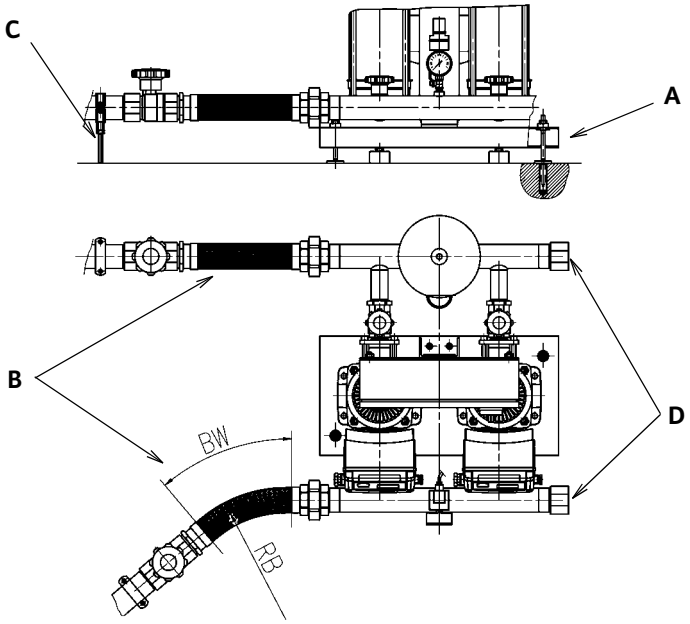
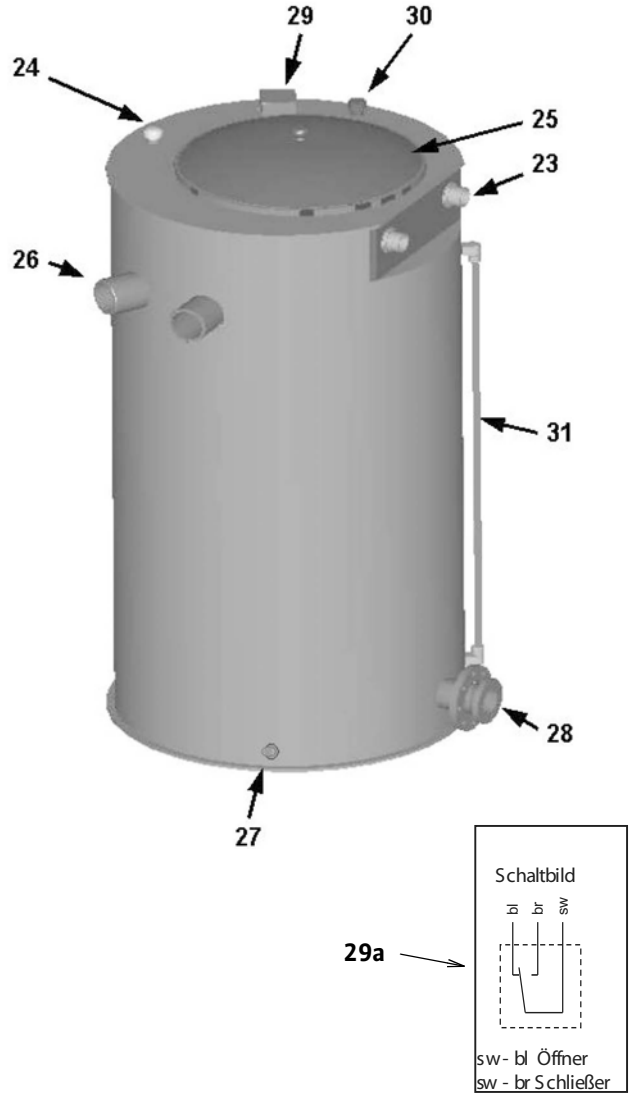


Fig. 8:

Fig. 9:



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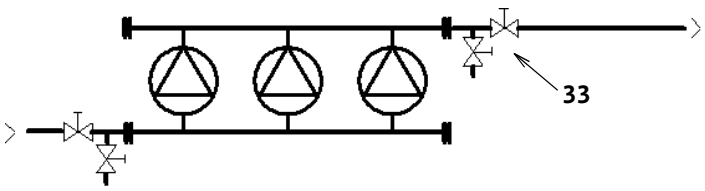

Captions:

Fig. 1a Fig. 1b Fig. 1c	Example of a pressure boosting system with MHI pumps and ER switchgear Example of a pressure boosting system with MVISE and VR switchgear Example of a pressure boosting system with MVI and CC switchgear (floor model SG)
1	Pumps
2	Control equipment
3	Base frame
4	Inlet manifold pipe
5	Pressure manifold pipe
6	Check valve
7	Non-return valve
8	Diaphragm pressure vessel with throughflow fitting
9	Pressure sensor/pressure gauge
10	Standard bracket
11	Low-water cut-out switchgear (WMS), optional

Fig. 2a	Pressure sensor and diaphragm pressure vessel kit
8	Diaphragm pressure vessel
9	Pressure gauge
12	Pressure sensor
12a	Electrical connection, pressure sensor
13	Draining/venting
14	Stop valve

Fig. 2b	Throughflow fitting operation/pressure testing the diaphragm pressure vessel
A	Open/close
B	Draining
C	Check supply pressure

Fig. 3	Information table: nitrogen pressure, diaphragm pressure vessel (example)
a	Nitrogen pressure according to the table
b	Start-up pressure, base load pump in bar PE
c	Nitrogen pressure in bar PN2
d	Nitrogen measurement without water
e	Important! Introduce nitrogen only

Fig. 4	Protection against low water level (WMS) kit
13	Draining/venting
14	Stop valve
15	Pressure switch
15a	Pressure switch setting Factory setting: ON 1.3 bar/OFF 1.0 bar Clockwise (+), increase switching points Anti-clockwise (–), reduce switching points Switching difference (0.3 bar maintained!)
15b	Connection in control device (see terminal diagram)

Fig. 5 Fig. 6	Example of direct connection (hydraulic diagram) Example of indirect connection (hydraulic diagram)
16	Consumer connections upstream of the DEA
17	Diaphragm pressure vessel on the end pressure side with bypass
18	Consumer connections downstream of DEA
19	Drainage connection for flushing the system
20	DEA with 4 pumps
21	Diaphragm pressure vessel on the inlet side with by-pass
22	Unpressurised break tank on the inlet side
34	Flushing apparatus for the inlet connection of the break tank
35	Bypass for revision/maintenance (not permanently installed)

Fig. 7a	Assembly: vibration damper and compensator
A	Screw the vibration damper into the threaded inserts provided and secure with locking nuts
B	Compensator with extension limiters (accessories)
C	Fixation of pipes downstream of the DEA, e.g. with pipe clips (onsite)

Fig. 7b	Assembly: flexible connection lines
A	Floor fixing, structure-borne noise insulation (onsite)
B	Compensator with extension limiters (accessories)
C	Fixation of pipes downstream of the DEA, e.g. with pipe clips (onsite)
D	Threaded valves (accessories)

Fig. 8	Manifold pipe support using vibration damper

Fig. 9	Break tank (example)
23	Inlet with float valve (accessories)
24	Air supply/extraction with insect protection
25	Inspection opening
26	Overflow Ensure adequate drainage. Protect siphon or valve against ingress of insects. Do not connect directly to sewer system (free outlet according to EN 1717)
27	Draining
28	Extractor (connection for DEA)
29	Low-water signal generator with terminal box
29a	Circuit diagram bl = blue sw - bl = NC contact br = brown sw - br = NO contact sw = black
30	Connection for flushing apparatus, inlet
31	Level display

Fig. 10	Drainage pipe for flushing
33	Drainage pipe
	Nominal diameter = pump connection nominal diameter or a nominal diameter smaller than the pump connection nominal diameter
Note:	If a diaphragm pressure vessel is arranged on the end pressure side, arrange the drainage directly downstream of the diaphragm pressure vessel.

1 General

Installation and commissioning by qualified personnel only!

1.1 About this document

These installation and operating instructions are an integral part of the product. They must be kept readily available at the place where the product is installed. Strict adherence to these instructions is a precondition for the proper use and correct operation of the product.
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.

2 Safety

These operating instructions contain basic information which must be adhered to during installation and operation. For this reason, these operating instructions must, without fail, be read by the service technician and the responsible 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 pump/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.

2.2 Personnel qualifications

The installation personnel must have the appropriate qualifications for this work.

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 pump/unit. Non-observance of the safety instructions can result in the loss of any claims to damages.
In detail, non-observance can, for example, result in the following risks:

- Failure of important pump/unit functions
- Failure of required maintenance and repair procedures
- Danger to persons from electrical, mechanical and bacteriological influences
- Property damage

2.4 Safety instructions for the operator

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 local power supply companies must be adhered to.

2.5 Safety instructions for inspection and installation work

The operator must ensure that all inspection and installation work is carried out by authorised and qualified personnel, who are sufficiently informed from their own detailed study of the operating instructions.
Work to the pump/unit must only be carried out when at a standstill.

2.6 Unauthorised modification and manufacture of spare parts

Modifications to the pump/unit are only permissible after consultation with the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure safety. The use of other parts can nullify the liability from the results of their usage.

2.7 Improper use

The operating safety of the supplied pump/unit 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

The DEA is supplied on a pallet, on transport boards or in a crate and is film-wrapped to protect it against moisture and dust. Transport and storage instructions marked on the packing must be observed.

CAUTION! Risk of damage!
The equipment must be transported by means of authorised load carriers. Stability of the load must be ensured, since the pumps have been constructed in a way that shifts their centre of gravity the top (top-heavy) . Transport straps or ropes must be secured to the existing transport lugs or placed around the base frame. The pipes are not designed to withstand loads and should not be used to secure loads in transit.

CAUTION! Risk of leakage!
Loading the pipes in transit can result in leakage!

The transport dimensions, weights and necessary passageways or transport space of the unit are given in the attached installation plan or other documentation.

CAUTION! Risk of damage!
The system must be protected against moisture, frost and heat and also mechanical damage by means of suitable measures!

If damage to the packing is determined when unpacking the DEA and accessories included in the shipment that may have been caused by falling or a similar event,

- carefully inspect the DEA or the accessory parts for possible defects and
- notify the delivery company (forwarder) or Wilo after-sales service, even if there is initially no obvious damage.

After removing the packing, store or install the unit according to the installation conditions described (see section entitled Installation).

4 Intended use

Pressure boosting systems (referred to as DEA) are designed for boosting and maintaining the pressure of larger water supply systems. They are used as:

- Potable water supply systems, primarily in high-rise apartments, hospitals, offices and industrial buildings, the structure, function and requirements which comply with the following standards, guidelines and directives:
  - DIN 1988
  - DIN 2000
  - EU Directive 98/83/EC
  - Drinking Water Ordinance – TrinkwV2001
  - DVGW regulations,
- Industrial water supply and cooling systems,
- Fire extinguishing water supply systems,
- Irrigation and sprinkling systems.

The automatically controlled multiple pump systems are either supplied from the public potable water mains directly (connected directly) or indirectly (connected indirectly) using a break tank. These break tanks are sealed and are not pressurised, i.e. they are under atmospheric pressure.

5 Product information

5.1 Type key

e.g.: CO-2 MHI 4 05/ER-EB	
CO	**CO**mpact pressure boosting system
2	Number of pumps
MHI	Pump series reference (see attached pump documentation)
4	Nominal flow rate Q [m^3/h] (2-pole type/50 Hz)
05	Number of pump stages
ER	Control unit, in this case the **E**conomy **C**ontroller
EB	Additional reference, in this case, **E**uropean **B**ooster, for example

e.g.: CO [R]-3 MVI S 8 04/CC-EB	
CO	**CO**mpact pressure boosting system
[R]	**C**ontroller, at least one pump controlled by frequency converter
3	Number of pumps
MVI	Pump series reference (see attached pump documentation)
S	Glandless pump motor
8	Nominal flow rate Q [m^3/h] (2-pole type/50 Hz)
04	Number of pump stages
CC	Control unit, in this case, **C**omfort **C**ontroller
EB	Additional reference, in this case, **E**uropean **B**ooster, for example

e.g.: CO-6 Helix V 36 02/2/CC	
CO	**CO**mpact pressure boosting system
3	Number of pumps
Helix V	Pump series reference (see attached pump documentation)
36	Nominal flow rate Q [m^3/h] (2-pole type/50 Hz)
02	Number of pump stages
2	Number of reduced stages
CC	Control unit, in this case, **C**omfort **C**ontroller

e.g.: COR-4 Helix VE 22 03/VR	
CO	**CO**mpact pressure boosting system
R	**C**ontroller, at least one pump controlled by frequency converter
4	Number of pumps
Helix VE	Pump series reference (see attached pump documentation) **VE** for **v**ertical pump with **e**lectronic speed control
22	Nominal flow rate Q [m^3/h] (2-pole type/50 Hz)
03	Number of pump stages
VR	Control unit, in this case, **V**ario **c**ontroller

6 Description of the product and accessories

6.1 General description

The DEA is a compact system that is supplied completely tubed and ready to connect (except for separate floor model SG). The only connections that have to be made are for the inlet and pressure pipes and the power mains connection. It may also be necessary to install accessories ordered separately but included in the delivery.
The DEA with non-self-priming pumps can be connected both indirectly (Figure 6 – system separated by a non-pressurised water break tank) and directly (Figure 5 – connection without separation of the system) to the water supply mains. Self-priming pumps may only be connected indirectly (system separated by non-pressurised break tank) to the public water supply mains. You will find notes on the pump type used in the attached installation and operating instructions for the pump.
Observe the relevant, applicable regulations and standards for using the potable water supply and/or fire extinguishing supply.
The systems must be operated and maintained in accordance with the relevant regulations (in Germany, according to DIN 1988 (DVGW)) so that the operational security of the water supply is permanently ensured and neither the public water supply nor other consumption installations are disrupted.
The relevant instructions or standards (see section 1.1) on connection and the type of connection to the public water mains must be observed; and supplemented by **regulations of water companies or the responsible fire protection authorities**, as required. In addition, local conditions (e.g. a supply pressure that is too high or fluctuates sharply and which might require the installation of a pressure relief valve) must also be observed.

6.2 Components of the pressure boosting system (DEA)

The complete system is made up of three main components. The scope of delivery includes separate installation and operating instructions for the parts/components relevant to operation (also see attached installation plan).

Mechanical and hydraulic system components (Figure 1a, 1b and 1c) :
The compact unit is mounted on a **base frame** with **vibration damper (3)**. It consists of a group of 2 to 6 **high-pressure multistage centrifugal pumps (1)**, which are combined by means of an inlet **manifold pipe (4)** and **a delivery manifold pipe (5)**. A **check valve (6)** and a **non-return valve (7)** are fitted on the inlet or delivery side of each pump. A unit with a **pressure sensor and manometer (8)** that can be shut off and an **8-litre diaphragm pressure vessel (9) with a through-flow fitting** that can be shut off (for throughput

according to DIN 4807, part 5) is installed on the delivery manifold pipe. As an option, a unit for **protection against low water level (WMS) (11)** can be installed or retrofitted on the inlet manifold pipe.
In the case of small to medium systems, the **control unit (2)** is installed on the base frame by means of a **stand (10)** and completely wired to the electrical components of the system. In the case of larger systems, the control unit is accommodated in a separate floor model SG (Fig. 1c) and the electrical components are pre-wired to the corresponding connecting cable. For the separate SG floor model, the final wiring is done onsite (see section 5.3 and the documentation included with the control unit). The present Installation and operating instructions contain only a general description of the complete system.

High-pressure multistage centrifugal pump (1):
Different types of high-pressure multistage centrifugal pumps are installed in the DEA depending on the application and the performance parameters required. The number of these pumps can vary between 2 to 4 (pumps with integrated frequency converter) or 2 to 6 (pumps without integrated frequency converter). The attached installation and operating instructions provide information on the pumps.

Control unit (2):
Different switching and control units of different types and different comfort levels can be supplied and installed to activate and control the DEA. The attached installation and operating instructions provide information on the control unit installed in this DEA.

Pressure sensor/diaphragm pressure vessel set (Fig. 2a):
- Diaphragm pressure vessel **(8)**
- Pressure gauge **(9)**
- Pressure sensor **(12)**
- Electrical connection, pressure sensor **(13)**
- Draining/venting **(14)**
- Stop valve **(15)**

6.3 Function of pressure boosting system (DEA)

Wilo pressure boosting systems are equipped with non-self-priming, high-pressure multistage centrifugal pumps as standard. These are supplied with water via the inlet manifold pipe. If self-priming pumps are used, or generally in the case of suction mode from lower-lying tanks, a separate, vacuum-proof and pressure-proof suction line with a foot valve has to be installed for each pump. It should be positioned at a constant incline from the tank to the system. The pumps increase the pressure and pump the water to the consumer via the delivery manifold pipe. To do this, they are switched on and off or controlled depending on the pressure. The pressure sensor continuously measures the actual pressure value, converts it into a current signal and transmits it to the control unit at hand. Depending on demand and the type of control system, the control unit switches the pumps on, in or off or changes the speed of one or more pumps until the set control parameters are reached. (A more precise description of the control mode and the control process is given in the installation and operating instructions for the control unit.)
The total delivery volume of the system is distributed over several pumps. This has the big advantage that the system output is adapted very precisely to the actual demand and the pumps are operated in the most favourable power range in each case. This design delivers a high level of efficiency and an economical energy consumption for the system. The first pump that starts up is called the base load pump. The remaining pumps needed to reach the system operating point are called peak load pump(s). If the system is configured to supply potable water according to DIN 1988, one pump must be designated as a standby pump, i.e. at maximum extraction, one pump is always decommissioned or on stand-by. To ensure that all the pumps are used equally, the control unit exchanges the pumps continuously, i.e. the order of switching on and the allocation of the base load/peak load or reserve pump functions change regularly.
The **diaphragm pressure vessel** installed (total content approx. 8 litres) performs a certain buffer function on the pressure sensor and prevents oscillation of the control system when switching the system on and off. It also guarantees low water extraction (e.g. for very small leaks) from the storage volume at hand without switching on the base load pump. This reduces the switching frequency of the pumps and stabilises the operating status of the DEA.

CAUTION!
To protect the axial face seal or slide bearing, do not allow the pumps to run dry. Dry run may cause the pumps to leak!
Protection against low water level (WMS) (Fig. 4) that monitors the supply pressure is provided as an accessory for direct connection to the public water mains. Its switching signal is processed by the control unit. An installation point for this purpose is provided as standard at the inlet manifold pipe.
In the case of an indirect connection (system separation through non-pressurised break tank), a level-dependent signal transducer, which is inserted in the storage tank, is planned as a dry-running protection device. If a Wilo break tank is used, a float switch is already included in the scope of delivery. For existing onsite tanks, you will find various signal transmitters in the Wilo range that can be retrofitted (e.g. float switch WA65 or low-water warning electrodes with level relay SK 277).

WARNING!
Materials that do not adversely affect the quality of the water must be used for potable water systems!

6.4 Noise

As can be seen in point 1.2.1, DEA are supplied with different types of pumps and a variable number of pumps. Consequently, the overall noise level of all DEA variants cannot be listed here. However, it is possible to approximate the overall noise level using the noise value for an individual pump of the type supplied. To do this, use the individual pump noise value from the installation and operating instructions for the pumps or from the catalogue information on the pumps.

Example (DEA with 5 pumps)		
Single pump	50	dB(A)
5 pumps, total	+7	dB(A)
Overall noise level =	57	dB(A)

Calculation		
Individual pump =	...	dB(A)
2 pumps, total	+3	dB(A)
3 pumps, total	+4.5	dB(A)
4 pumps, total	+6	dB(A)
5 pumps, total	+7	dB(A)
6 pumps, total	+7.5	dB(A)
Overall noise level =	...	dB(A)

6.5 Scope of delivery

- Pressure boosting system,
- Installation and operating instructions of the DEA,
- Installation and operating instructions of the pumps,
- Installation and operating instructions of the control unit,
- Works acceptance test certificate (in accordance with EN 10204 3.1.B),
- Installation plan as required,
- Electrical circuit diagram as required,
- Installation and operating instructions of the frequency converter as required,
- Additional sheet with the frequency converter factory settings as required,
- Installation and operating instructions of the signal transmitter as required,
  Spare parts list as required.

6.6 Accessories

Accessories must be ordered separately if needed. The accessories included in the Wilo range are, for example:

- Open break tank,
- Larger diaphragm pressure vessel (on the primary side or the discharge side),
- Safety valve,
- Dry-running protection system:
  - Protection against low water level (WMS) (Fig.4) in supply mode (at least 1.0 bar) (already fitted to the DEA if part of the order),
  - Float switch,
  - Low-water warning electrodes with level relay,
  - Electrodes for tank operation (special accessories on request),
- Flexible connection lines,
- Compensators,
- Threaded flanges and caps,
- Sound-insulating unit casing (special accessories on request).

7 Installation

7.1 Installation location

- The system is installed in the technical control room or in a dry, well ventilated and frost-proof, separate room that can be locked (requirement of DIN 1988).
- Adequately dimensioned floor drainage (sewer connection or similar) must be provided in the installation room.
- No harmful gases must penetrate the room or be present there.
- Adequate space must be provided for maintenance work. The main dimensions are given on the attached installation plan. The installation should be freely accessible from at least two sides.
- The installation surface must be horizontal and flat.
- The system is designed for a maximum ambient temperature of +0 °C to 40 °C with a relative atmospheric humidity of 50%.
- Installation and operation in the vicinity of living rooms and bedrooms is not recommended.
- To avoid the transmission of structure-borne noise and to ensure a stress-free connection to upstream and downstream pipes, compensators with extension limiters or flexible connecting pipes should be used!

7.2 Installation

7.2.1 Foundation/bearing surface

The DEA is constructed for installation on flat concrete floors. The base frame is mounted on height-adjustable vibration dampers to prevent structure-borne noise.

NOTE:
The vibration dampers will probably not be fitted when the equipment is delivered for transport reasons. Before installing the DEA, check whether all the vibration dampers are fitted and locked by the threaded nut. (also see Figure 7a).
If additional onsite fixation is required, suitable measures must be taken to avoid structure-borne noise.

7.2.2 Hydraulic connection and pipes

- When connecting to the public potable water mains, the requirements of the local water supply company must be met.
- First perform all the welding and soldering work and the necessary flushing and, if necessary, disinfecting of the pipe system and the boosting system delivered (see 5.2.3) before connecting the system.
- The onsite pipes have to be installed stress-free. Compensators with extension limiters or flexible connecting lines are recommended for this purpose in order to avoid stress on the pipe connections and minimise the transmission of system vibrations to the building installation. In order to prevent the transmission of structure-borne noise to the building, do not secure the pipe clamps to the DEA pipes (see Fig. 7 for example).
- The connection is made either on the right or left of the system, depending on the site conditions. It may be necessary to move blind flanges or thread caps that are already fitted.
- In the case of boosting systems with horizontal pumps, the pipes on the suction side in particular must be supported so that the tilting moment that a shift in the system's centre of gravity can generate are safely absorbed (see Fig. 8).
- The flow resistance of the suction line must be kept as low as possible (i.e. short pipe, few elbows and sufficiently large check valves), otherwise the protection against low water level may respond through severe pressure losses in the event of high volume flows. (Observe NPSH of the pump, avoid pressure loss and cavitation).

7.2.3 Hygiene (TrinkwV 2001)

The DEA technology you have received equals the current state of the art, in particular DIN 1988, and has been checked at the factory to make sure it functions perfectly.
When used for potable water applications, the complete potable water supply system has to be transferred to the operator in a perfectly hygienic condition. Also observe the corresponding specifications in DIN 1988 Part 2 section 11.2 and the comments on the DIN.
According to TwVO § 5, paragraph 4 , this also includes microbiological requirements, flushing if necessary and also disinfecting under some circumstances.
The limit values to be met are given in TwVO § 5.

WARNING! Contaminated potable water is a health hazard!
Flushing the pipes and the system reduces the risk of adversely affecting the potable water quality.
The water must be completely replaced after a longer period of system standstill.
For the simple flushing of the system, we recommend the installation of a T-piece on the discharge side of the DEA (if there is a diaphragm pressure vessel on the discharge side, immediately behind it) in front of the next shut-off device. Its branch, provided with a shut-off device, drains into the waste water system during the flushing process and has to be dimensioned according to the maximum volume flow of an individual pump (see Fig. 10). If it is not possible to achieve free drainage, the explanations in DIN 1988 T5 must be observed when connecting a hose, for example.

7.2.4 Dry-running protection system and protection against low water level (accessory)

- To fit the dry-running protection system:
  - Direct connection to the public water mains: Screw the protection against low water level (WMS) into the socket provided on the suction manifold pipe and seal (if retrofitting) and make the electrical connection in the control unit according to the installation and operating instructions and the control unit wiring diagram.
  - In the case of an indirect connection, i.e. for operating with onsite tanks: Fit the float switch in the tank so that if the water level drops to approximately 100 mm above the extraction connection, the "low-water" switching signal is transmitted. (If break tanks from the Wilo range are used, a float switch is already installed).
    Alternative: install 3 submersible electrodes in the storage tank.
    Arrange them as follows:
    a firstthe first electrode is placed just above the floor of the tank as an earth electrode (must always be submerged) and for the bottom switching level (low-water) a second electrode is placed approximately 100 mm above the draw-off connection.
    For the top switching level (low-water signal cancelled), a third electrode must be placed at least 150 mm above the bottom electrode.
    Make the electrical connection in the control unit according to the installation and operating instructions and the control unit wiring diagram.

7.2.5 Diaphragm pressure vessel (accessory)

For transport reasons, the diaphragm pressure vessel (8 litre) that is part of the scope of delivery of the DEA may be not be fitted upon delivery, i.e. it was separately packed. Before commissioning, this must be mounted on the flow valve (see Fig. 2a and 2b).

NOTE:
Ensure that the throughflow fitting is not twisted. The valve is fitted correctly when the drainage valve (also see C; Fig. 2b) and the printed flow direction arrows run parallel to the manifold pipe.
If an **additional, larger diaphragm pressure vessel** has to be installed, observe the corresponding installation and operating instructions. In the case of a potable water system, use a through-flow diaphragm vessel according to DIN 4807. When installing diaphragm vessels, also make sure there is enough room for maintenance work or replacement.

NOTE:
Diaphragm pressure vessels require regular testing according to directive 97/23/EC (In Germany, also according to the Operating Safety Ordinance §§ 15(5) and 17 as well as appendix 5).
A check valve has to be provided upstream and downstream of the tank for tests, overhaul and maintenance work on the pipe. Special maintenance and test notes are given in the installation and operating instructions of the relevant diaphragm pressure vessel.
If the maximum volume flow of the system is greater than the maximum recommended volume throughput of the diaphragm pressure vessel (see table 1 and information on the type plate and the installation and operating instructions for the tank), the volume flow must be divided, i.e. a by-pass pipe must be installed. (Examples are given in the diagram in Fig. 5 and 6). The installation conditions and delivery data of the DEA must be taken into account when dimensioning. An adequate through-flow of the diaphragm vessel must be ensured.

Nominal diameter	DN20	DN25	DN32	DN50	DN65	DN80	DN100
Connection	(Rp3/4")	(Rp1")	(Rp11/4")	Flange	Flange	Flange	Flange
Max. volume flow (m^3/h)	2.5	4.2	7.2	15	27	36	56

Table 1

7.2.6 Safety valve (accessory)

A component-tested safety valve must be installed on the discharge side if the sum of the maximum possible supply pressure and the maximum delivery pressure of the DEA can exceed the admissible positive pressure of an installed system component. The safety valve must be designed so that the DEA delivery flow that occurs at 1.1-times the admissible positive pressure is drained off (design data are given in the data sheets/characteristic curves of the DEA). The outflow must be drained away safely. The corresponding installation and operating instructions and the relevant conditions must be observed during the installation of the safety valve.

7.2.7 Non-pressurised break tank (accessory)

To connect the DEA indirectly to the public potable water mains, it must be installed together with a non-pressurised break tank according to DIN 1988. The rules for the DEA apply to the installation of the break tank as well (see 7.1).
The entire bottom of the tank must be in contact with a solid bearing surface.
The maximum volume of the tank concerned must be considered when designing the load-bearing capacity of the bearing surface. When installing, sufficient space must be allowed for overhaul work (at least 600 mm above the tank and 1000 mm on the connection sides). The tank must not slant when full, because an uneven load can lead to its destruction.

The non-pressurised enclosed PE tank (i.e. under atmospheric pressure), which we supply as an accessory, must be installed according to the transport and installation instructions included with the tank.
The following procedure is generally applicable:
The tank must be connected free from mechanical stress before commissioning. This means that the connection must be made using flexible components such as compensators or hoses. The tank overflow must be connected according to the applicable regulations (in Germany, DIN 1988/T3).
Heat transmission through the connecting pipes must be avoided by taking suitable measures.
PE tanks in the WILO range are designed to accommodate clean water only. The maximum temperature of the water must not exceed 50 °C.

CAUTION!
The tanks are statically designed for the nominal content. Subsequent changes can adversely affect the statics and lead to the inadmissible deformation or even destruction of the tank.
The electrical connection (protection against low water level) to the system's control unit must also be made before the DEA is commissioned (see the details contained in the installation and operating instructions for the control unit).

NOTE:
The tank must be cleaned and flushed before it is filled.

CAUTION!
Do not walk on plastic tanks. Walking on the cover or loading it can result in damage.

7.2.8 Compensators (accessory)

For stress-free installation of the DEA, the pipes must be connected with compensators (Fig. 7a). The compensators must be equipped with a structure-borne noise-insulating extension limiter to absorb the reaction forces that occur. The compensators must be installed stress-free in the pipes. Alignment errors or pipe displacement may not be compensated for with compensators. When installing, the screws must be tightened uniformly crosswise. The ends of the screws must not project beyond the flange. If welding work is done nearby, the compensators must be covered for protection (sparks and radiated heat). The rubber parts of compensators must not be painted and must be protected from oil. In the system, the compensators must be accessible for inspection at all times and therefore should not be included in the pipe insulation.

NOTE:
Compensators are subject to wear. It is necessary to regularly check for cracks or blisters, exposed fabric or other defects (see recommendations in DIN 1988).

7.2.9 Flexible connection lines (accessory)

In the case of pipes with threaded connections, flexible connection lines can be used for stress-free installation of the DEA and in the event of slight pipe displacement (Fig. 7b). The flexible connection lines in the WILO range consist of a high quality stainless steel corrugated hose with stainless steel braiding. A flat-sealing, stainless steel screw connection with female thread is provided on one end for fitting to the DEA. An external pipe thread is provided at the other end to connect to continuing pipework. Depending on the respective size, certain maximum admissible deformation values must be met (see table 2 and Fig. 7b). Flexible connection lines are not suitable for absorbing axial vibrations and compensating corresponding movements. A suitable tool must prevent kinking or twisting during installation. In the case of angular displacement of the pipes, it is necessary to fix the system to the floor, taking into account suitable measures to reduce structure-borne noise.
The compensators in the system must be accessible for inspection at any time and therefore should not be included in the pipe insulation.

Nominal diameter Connection	Screwed connection thread	Tapered male thread	Max. radius of curvature RB in mm	Max. bending angle BW in °
DN40	Rp1 1/2"	R1 1/2“	260	60
DN50	Rp 2"	R 2“	300	50
DN65	Rp 2 1/2"	R 2 1/2“	370	40

Table 2

NOTE:
Flexible connecting pipes are subject to wear in operation. Check regularly for leaks or other defects (see recommendations in DIN 1988).

7.2.10 Pressure reducer (accessory)

The use of a pressure reducer is necessary with pressure fluctuations in the supply pipe of more than 1 bar or if the supply pressure fluctuation is so great that the system has to be switched off or the total pressure (supply pressure and pump head at the zero volume point – see characteristic curve) of the system exceeds the nominal pressure. The pressure relief valve can only perform its function if there is a minimum pressure gradient of approx. 5 m or 0.5 bar. The pressure downstream of the pressure reducer (back-pressure) is the basis for the total head calculation of the DEA. When installing a pressure reducer, there should be an installation section of approximately 600 mm on the supply pressure side.

7.3 Electrical connection

DANGER! Risk of fatal injury!
The electrical connection must be made according to the local regulations (VDE regulations) by an electrical installation engineer approved by local electricity supply companies.
The DEA can be equipped with different types of control units. To make the electrical connection, the corresponding installation and operating instructions and attached electrical circuit diagrams must be observed. General points to be considered are listed below:

- The type of current and voltage of the mains connection must comply with the details on the type plate and the wiring diagram of the control unit,
- The electrical connection line must be adequately dimensioned according to the total power of the DEA (see type plate and data sheet),
- External protection must be provided according to DIN 57100/VDE 0100 Part 430 and Part 523 (see data sheet and wiring diagrams),
- As a protective measure, the DEA must be earthed according to regulation (i.e. according to the local regulations and circumstances). The connections intended for this purpose are identified accordingly (see wiring diagram).

DANGER! Risk of fatal injury!
As a protective measure against dangerous contact voltages:
- **If the DEA is without a frequency converter, a residual-current-operated protection switch (FI switch) with a trigger current of 30 mA or**
- **If the DEA is with a frequency converter, a universal-current-sensitive residual-current-operated protection switch with a trigger current of 300 mA must be installed.**
- The protection class of the system and of the individual components are indicated by the type plates and/or data sheets,
- Further measures/settings, etc. are described in the installation and operating instructions and also the wiring diagram of the control unit.

8 Commissioning/decommissioning

We recommend that Wilo's after-sales service initially commissions the system. Contact your dealer, the nearest WILO representative or contact our central customer service department directly for details.

8.1 General preparations and checking

Before switching the system on for the first time:
- Check that onsite wiring has been done correctly, particularly the earthing
- Check that the pipe joints are stress-free,
- Fill the system and check visually for leakage,
- Open the check valves on the pumps and in the suction line and pressure pipe,
- Open the pump vent screws and slowly fill the pumps with water so that the air can escape completely.

CAUTION! Risk of damage!
Do not allow the pump to run dry. Dry-running destroys the axial face seal (MVI(E), Helix V(E)) or leads to motor overload (MVIS(E)).
- In suction mode (i.e. negative level difference between break tank and pumps), the pump and the suction line must be filled via the opening in the vent screw (use a funnel as required).
- Check the **diaphragm pressure vessel** to make sure that the **supply pressure** is correct (see Fig. 2b). To do this, depressurise the tank on the water side (close the flow-through fixture (A, Fig. 2b) and allow the residual water to drain (B, Fig. 2b). Now check the gas pressure at the air valve (top, remove protective cap) of the diaphragm pressure vessel using an air pressure gauge (C, Fig. 2b). If necessary, correct the pressure if it is too low. (P_{N2} = pump switch-on pressure p_{min} less 0.2-0.5 bar or the value according to the table on the tank (see also Fig. 3)) by topping up with nitrogen (WILO after-sales service). If the pressure is too high, discharge nitrogen at the valve until the required value is reached. Then replace the protective cap, close the drain valve on the flow-through fixture and open the flow-through fixture.
- With system pressures > PN16, observe the manufacturer's filling instructions according to the installation and operating instructions for the diaphragm pressure vessel,
- In the case of an indirect connection, check that the water level in the break tank is adequate, or with a direct connection, that the inlet pressure is adequate (minimum inlet pressure 1 bar),
- Correct installation of the proper dry-running protection system (section 7.2.4.),
- In the break tank, position the float switch or electrodes for the protection against low water level so that the DEA is switched off at minimum water level (section 7.2.4),
- Rotation direction monitoring of pumps with a standard motor (without integrated frequency converter): Switch on briefly and verify that the direction of rotation of the pumps (Helix V, MVI or MHI) corresponds to the arrow on the pump housing. In the case of type MVIS pumps, the correct direction of rotation is signalled by the operating lamp in the terminal box lighting up. Change over 2 phases if the direction of rotation is incorrect.

DANGER! Risk of fatal injury!
Switch off the system's main switch before changing over the phases.
- Check the motor protection switch in the control unit to make sure that the correct nominal current is set according to the specifications on the motor type plate.
- The pumps should only run against the closed gate valve on the pressure side briefly.
- Check and set the operating parameters required on the control unit according to the attached installation and operating instructions.

8.2 Protection against low water level (WMS)

The protection against low water level (WMS) (Fig. 4) for monitoring the supply pressure is permanently factory-set to 1 bar (switched off if below) and 1.3 bar (switched on again if above).

8.3 Commissioning the system

After all the preparations and checks according to section 8.1 have been made, switch on the main switch and set the control system to automatic mode. The pressure sensor measures the pressure at hand and transmits a corresponding current signal to the control unit. If the pressure is less than the set switch-on pressure, depending on the parameter settings and the type of control, it first switches on the base load pump and, as required, the peak load pump (s) until the consumer pipes are filled with water and the set pressure has built up.

WARNING! Health hazard!
If the system has not been flushed up to now, flush it well now at the latest.
(see section 7.2.3.)

8.4 Decommissioning

If the DEA has to be taken out of service for maintenance, repair or other measures, proceed as follows:

- Switch off the voltage supply and secure to prevent it from being switched on again without authorisation,
- Close the gate valve upstream and downstream of the system,
- Shut off the diaphragm pressure vessel at the throughflow fitting and drain.
- Drain the system completely if necessary.

9 Maintenance

To guarantee maximum operational reliability at the lowest possible operating cost, we recommend inspecting and maintaining the DEA regularly (see DIN 1988). It is advisable to conclude a maintenance agreement with a specialist company or with our central after-sales service department.

The following inspections should be made regularly:

- Check that the DEA is ready to operate,
- Check the axial mechanical seal of the pump. The axial mechanical seals need water for lubrication. A small quantity of it can leak out of the seal. If the leakage becomes very obvious, change the mechanical seal.

Check the **diaphragm pressure vessel** (every 3 months is recommended) to make sure that the **supply pressure** is set correctly (see Fig. 2b).

CAUTION! Risk of damage!

If the supply pressure is incorrect, the function of the diaphragm pressure vessel is not guaranteed, which increases diaphragm wear and can lead to system faults.

To do this, depressurise the tank on the water side (close the flow-through fitting (A, Fig. 2b) and allow the residual water to drain (B, Fig. 2b). Now check the gas pressure at the valve (top, remove protective cap) of the diaphragm pressure vessel using an air pressure gauge (C, Fig. 2b) and correct the pressure by topping off with nitrogen as required. (P_{N2} = pump switch-on pressure p_{min} less 0.2-0.5 bar or the value according to the table on the tank, Fig. 3) (WILO after-sales service). If the pressure is too high, discharge nitrogen at the valve.

- In the case of systems with a frequency converter, the inlet and outlet filters of the fan must be cleaned if they are very dirty.

If the system is out of service for a long period, proceed as described in 8.1 and drain all the pumps by opening the drainage plug on the pump base.

10 Faults, causes and remedies

Faults, particularly those affecting the pumps or control system, should only be remedied by Wilo's after-sales service or a specialist company.

NOTE:

The general safety instructions must be observed when doing any maintenance or repair work. Also follow the installation and operating instructions of the pumps and the control unit.

Fault	Cause	Remedies
Pump(s) do not start	No mains voltage	Inspect fuses, cables and connections
	Main switch "OFF"	Switch on main switch
	Water level in storage tank too low, i.e. low-water level reached	Check break tank inlet valve/inlet pipe
	Low-water level switch has triggered	Check inlet pressure
	Low-water level switch defective	Check, if necessary replace the low-water level switch
	Electrodes incorrectly connected or supply pressure switch incorrectly set	Check installation or setting and correct
	Inlet pressure exceeds switch-on pressure	Check default values, correct if necessary
	Check valve closed at pressure sensor	Inspect, open check valve if necessary
	Switch-on pressure set too high	Check setting and correct if necessary
	Fuse defective	Check fuses and replace if necessary
	Motor protection has triggered	Check set values against the pump or motor data, measure current values and correct setting if necessary. Check motor for defects and replace if necessary
	Contactor defective	Check and replace if necessary
	Turn-to-turn fault in motor	Check, if necessary replace motor or have repaired

Fault	Cause	Remedies
Pump(s) do not switch off	Inlet pressure fluctuates sharply	Check inlet pressure, if necessary take measures to stabilise supply pressure (e.g. pressure reducer)
	Inlet pipe blocked or shut off	Check inlet pipe, if necessary remove blockage or open check valve
	Nominal diameter of inlet pipe too small	Check the inlet pipe, increase the cross-section for the inlet pipe if necessary
	Inlet pipe incorrectly installed	Check inlet pipe, if necessary change pipe guide
	Air in inlet	Check, if necessary seal pipe. Vent pumps
	Impellers blocked	Check pump, if necessary replace or send for repair
	Non-return valve leaking	Check, if necessary replace seal or replace non-return valve
	Non-return valve blocked	Check, if necessary remove blockage or replace non-return valve
	Gate valve in system closed or not sufficiently open	Check, open the check valve completely if necessary
	Volume flow too large	Check pump data and default values and correct if necessary
	Check valve closed at pressure sensor	Inspect, open check valve if necessary
	Switch-off pressure set too high	Check setting and correct if necessary
	Direction of motor rotation false	Check the direction of rotation and correct by changing over the phases if necessary
Switching frequency too high or fluttering	Inlet pressure fluctuates sharply	Check inlet pressure, if necessary take measures to stabilise supply pressure (e.g. pressure reducer)
	Inlet pipe blocked or shut off	Check inlet pipe, if necessary remove blockage or open check valve
	Nominal diameter of inlet pipe too small	Check the inlet pipe, increase the cross-section for the inlet pipe if necessary
	Inlet pipe incorrectly installed	Check inlet pipe, if necessary change pipe guide
	Check valve closed at pressure sensor	Inspect, open check valve if necessary
	Supply pressure at diaphragm pressure vessel incorrect	Check supply pressure and correct if necessary
	Valve on diaphragm pressure vessel closed	Check valve and open if necessary
	Set switching difference too small	Check setting and correct if necessary

Fault	Cause	Remedies
Pump(s) not stable and/or make unusual noises	Inlet pressure fluctuates sharply	Check inlet pressure, if necessary take measures to stabilise supply pressure (e.g. pressure reducer)
	Inlet pipe blocked or shut off	Check inlet pipe, if necessary remove blockage or open check valve
	Nominal diameter of inlet pipe too small	Check the inlet pipe, increase the cross-section for the inlet pipe if necessary
	Inlet pipe incorrectly installed	Check inlet pipe, if necessary change pipe guide
	Air in inlet	Check, if necessary seal pipe. Vent pumps
	Air in the pump	Vent pump, check suction line for leaks and seal if necessary
	Impellers blocked	Check pump, if necessary replace or have repaired
	Volume flow too large	Check pump data and default values and correct if necessary
	Direction of motor rotation false	Check direction of rotation and correct by changing over phases if necessary
	Mains voltage: a phase is missing	Inspect fuses, cables and connections
	Pump not adequately secured to base frame	Check fixation, tighten screws if necessary
	Bearing damage	Check pump/motor, replace if necessary or have repaired
Motor or pump become too warm	Air in inlet	Check, if necessary seal pipe. Vent pumps
	Gate valve in system closed or not sufficiently open	Check, open the check valve completely if necessary
	Impellers blocked	Check pump, if necessary replace or have repaired
	Non-return valve blocked	Check, if necessary remove blockage or replace non-return valve
	Check valve closed at pressure sensor	Inspect, open check valve if necessary
	Switch-off point set too high	Check setting and correct if necessary
	Bearing damage	Check pump/motor, replace if necessary or have repaired
	Turn-to-turn fault in motor	Check, if necessary replace motor or have repaired
	Mains voltage: a phase is missing	Inspect fuses, cables and connections
Current consumption too high	Non-return valve leaking	Check, if necessary replace seal or replace non-return valve
	Volume flow too large	Check pump data and default values and correct if necessary
	Turn-to-turn fault in motor	Check, if necessary replace motor or have repaired
	Mains voltage: a phase is missing	Inspect fuses, cables and connections
Motor protection switch triggers	Non-return valve defective	Check, if necessary replace non-return valve
	Volume flow too large	Check pump data and default values and correct if necessary
	Contactor defective	Check and replace if necessary
	Turn-to-turn fault in motor	Check, if necessary replace motor or have repaired
	Mains voltage: a phase is missing	Inspect fuses, cables and connections

Fault	Cause	Remedies
Pump(s) produces no or too little power	Inlet pressure fluctuates sharply	Check inlet pressure, if necessary take measures to stabilise supply pressure (e.g. pressure reducer)
	Inlet pipe blocked or shut off	Check inlet pipe, if necessary remove blockage or open check valve
	Nominal diameter of inlet pipe too small	Check the inlet pipe, increase the cross-section for the inlet pipe if necessary
	Inlet pipe incorrectly installed	Check inlet pipe, if necessary change pipe guide
	Air in inlet	Check, if necessary seal pipe. Vent pumps
	Impellers blocked	Check pump, if necessary replace or have repaired
	Non-return valve leaking	Check, if necessary replace seal or replace non-return valve
	Non-return valve blocked	Check, if necessary remove blockage or replace non-return valve
	Gate valve in system closed or not sufficiently open	Check, open the check valve completely if necessary
	Low-water level switch has triggered	Check inlet pressure
	Direction of motor rotation false	Check direction of rotation and correct by changing over phases if necessary
	Turn-to-turn fault in motor	Check, if necessary replace motor or have repaired
Dry-running protection system switches off, although water is present	Inlet pressure fluctuates sharply	Check inlet pressure, if necessary take measures to stabilise supply pressure (e.g. pressure reducer)
	Nominal diameter of inlet pipe too small	Check the inlet pipe, increase the cross-section for the inlet pipe if necessary
	Inlet pipe incorrectly installed	Check inlet pipe, if necessary change pipe guide
	Volume flow too large	Check pump data and default values and correct if necessary
	Electrodes incorrectly connected or supply pressure switch incorrectly set	Check installation or setting and correct
	Low-water level switch defective	Check, if necessary replace the low-water level switch
Dry-running protection does not switch off, although lack of water	Electrodes incorrectly connected or supply pressure switch incorrectly set	Check installation or setting and correct
	Low-water level switch defective	Check, if necessary replace the low-water level switch
Rotation direction warning light on (not for all pump types)	Direction of motor rotation false	Check direction of rotation and correct by changing over phases if necessary

You will find information on pump or control unit faults not dealt with here in the attached documentation for the components concerned.

11 Spare parts

Spare parts or repairs may be ordered from 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 with each order.

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 : **Wilo-COE-1...n* /MVI/MVIS**
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 2006/95/EG werden gemäß Anhang I, Nr. 1.5.1 der Maschinenrichtlinie 2006/42/EG eingehalten.
The protection objectives of the low-voltage directive 2006/95/EC *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 2006/95/CE *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 806, EN 809, EN1717,**
Applied harmonized standards, in particular: **EN ISO 14121-1, 60204-1,**
Normes harmonisées, notamment: **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
Quality Department
Anderslebener Str. 161
39387 Oschersleben

Dortmund, 25.06.2010

i. V.
Erwin Prieß
Quality Manager

WILO SE
Nortkirchenstraße 100
44263 Dortmund
Germany

Document: 210728.1

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,
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(Die Seriennummer ist auf dem Typenschild des Produktes angegeben. /
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Wilo Economy-CO-1 Helix V.../CE
Wilo Comfort-N-CO-1...6 MVIS.../CC
Wilo Comfort-Vario-COR-1 Helix VE.../GE
Wilo Comfort-CO-1...6 MVI/Helix V.../CC

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

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39387 Oschersleben

Dortmund, 25.06.2010

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Document: 210729.1

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

De veiligheidsdoelstellingen van de laagspanningsrichtlijn worden overeenkomstig bijlage I, nr. 1.5.1 van de machinerichtlijn 2006/42/EG aangehouden.

Elektromagnetische compatibiliteit 2004/108/EG

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

Gli obiettivi di protezione della direttiva macchine vengono rispettati secondo allegato I, n. 1.5.1 dalla direttiva macchine 2006/42/CE.

Compatibilità elettromagnetica 2004/108/EG

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

Se cumplen los objetivos en materia de seguridad establecidos en la Directiva de Baja tensión según lo especificado en el Anexo I, punto 1.5.1 de la Directiva de Máquinas 2006/42/CE.

Directiva sobre compatibilidad electromagnética 2004/108/EG

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

Os objectivos de protecção da directiva de baixa tensão são cumpridos de acordo com o anexo I, nº 1.5.1 da directiva de máquinas 2006/42/CE.

Compatibilidade electromagnética 2004/108/EG

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

Produkten uppfyller säkerhetsmålen i lågspänningsdirektivet enligt bilaga I, nr 1.5.1 i maskindirektiv 2006/42/EG.

EG–Elektromagnetisk kompatibilitet – riktlinje 2004/108/EG

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

Lavspenningsdirektivets vernemål overholdes i samsvar med vedlegg I, nr. 1.5.1 i maskindirektivet 2006/42/EF.

EG–EMV–Elektromagnetisk kompatibilitet 2004/108/EG

anvendte harmoniserte standarder, særlig:

se forrige side

FIN

CE-standardinmukaisuusseloste

Ilmoitamme täten, että tämä laite vastaa seuraavia asiaankuuluvia määräyksiä:

EU–konedirektiivit: 2006/42/EG

Pienjännitedirektiivin suojatavoitteita noudatetaan konedirektiivin 2006/42/EY liitteen I, nro 1.5.1 mukaisesti.

Sähkömagneettinen soveltuvuus 2004/108/EG

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

Lavspændingsdirektivets mål om beskyttelse overholdes i henhold til bilag I, nr. 1.5.1 i maskindirektivet 2006/42/EF.

Elektromagnetisk kompatibilitet: 2004/108/EG

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

A kisfeszültségű irányelv védelmi előírásait a 2006/42/EK gépekre vonatkozó irányelv I. függelékének 1.5.1. sz. pontja szerint teljesíti.

Elektromágneses összeférhetőség irányelv: 2004/108/EK

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

Cíle týkající se bezpečnosti stanovené ve směrnici o elektrických zařízeních nízkého napětí jsou dodrženy podle přílohy I, č. 1.5.1 směrnice o strojních zařízeních 2006/42/ES.

Směrnice o elektromagnetické kompatibilitě 2004/108/ES

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

Przestrzegane są cele ochrony dyrektywy niskonapięciowej zgodnie z załącznikiem I, nr 1.5.1 dyrektywy maszynowej 2006/42/WE.

dyrektywą dot. kompatybilności elektromagnetycznej 2004/108/WE

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

Требования по безопасности, изложенные в директиве по низковольтному напряжению, соблюдаются согласно приложению I, № 1.5.1 директивы в отношении машин 2006/42/EG.

Электромагнитная устойчивость 2004/108/EG

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

Οι απαιτήσεις προστασίας της οδηγίας χαμηλής τάσης τηρούνται σύμφωνα με το παράρτημα I, αρ. 1.5.1 της οδηγίας σχετικά με τα μηχανήματα 2006/42/ΕG.

Ηλεκτρομαγνητική συμβατότητα ΕΚ-2004/108/ΕΚ

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

Alçak gerilim yönergesinin koruma hedefleri, 2006/42/AT makine yönergesi Ek I, no. 1.5.1'e uygundur.

Elektromanyetik Uyumluluk 2004/108/EG

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

Sunt respectate obiectivele de protecție din directiva privind joasa tensiune conform Anexei I, Nr. 1.5.1 din directiva privind maşinile 2006/42/CE.

Compatibilitatea electromagnetică – directiva 2004/108/EG

standarde armonizate aplicate, îndeosebi:

vezi pagina precedentă

EST

EÜ vastavusdeklaratsioon

Käesolevaga tõendame, et see toode vastab järgmistele asjakohastele direktiividele:

Masinadirektiiv 2006/42/EÜ

Madalpingedirektiivi kaitse-eesmärgid on täidetud vastavalt masinate direktiivi 2006/42/EÜ I lisa punktile 1.5.1.

Elektromagnetilise ühilduvuse direktiiv 2004/108/EÜ

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

Zemsprieguma direktīvas drošības mērķi tiek ievēroti atbilstoši Mašīnu direktīvas 2006/42/EK pielikumam I, Nr. 1.5.1.

Elektromagnētiskās savietojamības direktīva 2004/108/EK

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

Laikomasi Žemos įtampos direktyvos keliamų saugos reikalavimų pagal Mašinų direktyvos 2006/42/EB I priedo 1.5.1 punktą.

Elektromagnetinio suderinamumo direktyvą 2004/108/EB

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

Bezpečnostné ciele smernice o nízkom napätí sú dodržiavané v zmysle prílohy I, č. 1.5.1 smernice o strojových zariadeniach 2006/42/ES.

Elektromagnetická zhoda – smernica 2004/108/ES

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

Cilji Direktive o nizkonapetostni opremi so v skladu s prilogo I, št. 1.5.1 Direktive o strojih 2006/42/EG doseženi.

Direktiva o elektromagnetni združljivosti 2004/108/ES

uporabljeni harmonizirani standardi, predvsem:

glejte prejšnjo stran

BG

ЕО-Декларация за съответствие

Декларираме, че продуктът отговаря на следните изисквания:

Машинна директива 2006/42/ЕО

Целите за защита на разпоредбата за ниско напрежение са съставени съгласно. Приложение I, № 1.5.1 от Директивата за машини 2006/42/ЕС.

Електромагнитна съвместимост – директива 2004/108/ЕО

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

L-objettivi tas-sigurta tad-Direttiva dwar il-Vultaġġ Baxx huma konformi mal-Anness I, Nru 1.5.1 tad-Direttiva dwar il-Makkinarju 2006/42/KE.

Kompatibbiltà elettromanjetika – Direttiva 2004/108/KE

kif ukoll standards armonizzati b'mod partikolari:

ara l-paġna ta' qabel

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Stand Februar 2009

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