

General device function, maintenance and installation manual

Drinking Water Separation Station Series 320 – 325

with full drinking water supply
for process and / or extinguishing water supply



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Please read before assembly!
Please adhere to all safety instructions!

This manual contains important information and warnings. It is essential that you read the operating setup instructions before installation, electrical connection and initial setup.

Further operating and installation instructions, the components and accessories for the drinking water separation station have to be considered additionally.

When receiving the goods, the device must be checked for possible transport damage. The manufacturer and/or supplier are not liable for damage in transit; rather the carrier. After acceptance of goods without complaint or commissioning of the drinking water separation station, transport damage can no longer be claimed.

If the packaging is damaged, the drinking water separation station is immediately placed in possession of the supplier, to be unpacked in order to detect any damage, which will be notified in writing to the carrier.

The goods must remain with the customer until the transport damage has been clarified.

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All information is subject to change without notice.

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Legend



Caution!

Non-observance of the instructions may result in damage to equipment!



Danger!

Failure to observe the instructions may result in personal injury!



Extinguishing water supply!

Only applicable when using the drinking water separation station for extinguishing water systems!

Non-observance of these instructions may result in personal injury and damage to equipment!



General information

Stone traps in accordance with DIN (German Institute for Standardization) 1988 Part 600 are to be used for extinguishing water systems.

The minimum outlet width of the stone catcher should be 2 mm, for external hydrants and sprinkler systems 5 mm.

In the further sections of this manual, only the graphic symbols will be displayed.

Foreword

You have purchased a high quality product for the supply of process water and extinguishing water and we would like to congratulate you on your decision. In order for you to enjoy your drinking water separation station for a long time, please read and observe the following the General Description of Device Functions, Maintenance and Installation Manual.

For installation and initial setup, please refer to the subject area "Installation Manual".

The product has been tested in our production in all operating situations. This means for you that the drinking water separating station was delivered without errors. If, however, a fault should occur during operation, please refer first to the „Error Message“ section. For other malfunctions, please contact your contract partner / dealer.



Responsibility

The operator is responsible for all measurements.

- of proper installation
- for the prevention of dangers due to improper operation

The device is approved for the operation of

- for voltage and rated current, see nameplate
- of operating and extinguishing water systems, chemical limit values in accordance with the Drinking Water OrGl-Sance (Trinkwasser-Verordnung) for permanent operation,
- in the vicinity of residential, business and commercial areas

Environmental conditions

- Environment according to DIN EN 60439, type: B, pollution degree 1
- Room temperature: + 4 °C, maximum 35 °C
- Device rated insulation voltage: 1000 V
- Device short-circuit resistance: 6 KA
- no explosive gases
- no condensing air humidity
- no corrosive gases

Questions about the device and spare part orders

- only contact your authorized dealer
- always indicate shipping address
- always state serial number



Health and safety

Depending on the size of the drinking water separation station and the drinking water supply pressure, sound levels of up to 95 dBA can occur.

Suitable measures must be taken. Ear protection must be worn when entering the installation room and when working on the system. The installation room must be marked accordingly.

General product description

Product name:

Drinking Water Separation Station Series 320 – 325

The drinking water separation station separates operating and extinguishing water networks hygienically safely from the drinking water network.

The pump system, the control system and a storage tank are also integrated. The control system realizes fully automatically all measuring, switching and monitoring tasks of the extinguishing and process water system.

In the plant, the following is intergrated:

- Free outlet according to DIN EN 1717
- Control unit
- Pumps
- Emergency overflow with siphon
- Safety valve circuit
- Emergency line

Hydraulically and electrically preconfigured on base plate(s):

- Pump system
- Storage Tank
- Control unit
- Pneumatic valves with compressed air generation
- Structure-borne sound isolation
- Measuring Instruments
- Stainless steel piping design

Drinking and process water can be connected directly to the drinking water separation station.

Drinking Water Separation Station Series 320 – 325 with housing

The drinking water separation station is a fully equipped system with an optional sheet steel housing for floor installation.

The integrated pressure boosting system supplies the connected consumers with reliable with process water.

The installation of the drinking water separation station can take place in rooms with medium user frequency. Password protection prevents the adjustment of the operating parameters by unauthorized persons.

Assembly is restricted to the placing of the device in the installation room and connecting fire extinguishing and /or the drinking water pipe.



Components and control design

Connection options

All electrical connections are ready-to-connect. A lockable repair switch with manual-off switch positions and a toggle switch for each pump with manual-automatic position ensure easy handling and function testing for all electrically connected devices.

The building control system can be controlled via potential free contacts.

Display

The display shows all message texts such as function parameters or operating and error messages.

For the operator, the operation is reduced to just one key. This enables the confirmation of the operational and error messages displayed.

Pumps

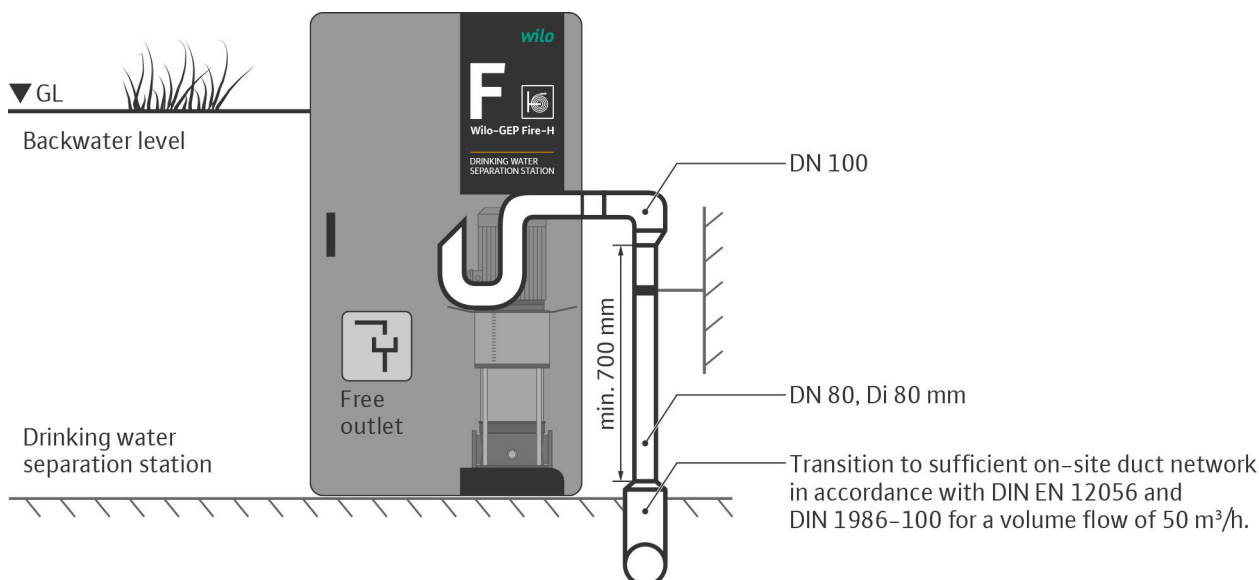
The integrated multi-pump system consists of multistage centrifugal pumps with a maintenance free mechanical seal.

Pump control of the drinking water separation station

The integrated pumps are switched on and off as required, according to the principle of internal cascade or optional speed control. A rotation circuit guarantees uniform operating hours for all pumps in the drinking water separation station. The pump control also includes an integrated dry-running monitoring system and a weekly function test.

Storage tank

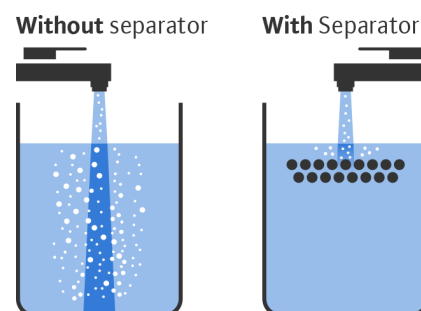
In the case of a water offtake in the downstream process or extinguishing water network, drinking water is fed in as required via a pneumatically operated valve. The replenishment occurs by a free outlet in accordance with DIN EN 1717, DIN 1988-100 as well as German Association of Engineers / German Association For Gas And Water VDI / DVGW 6023.



Separators are integrated in the storage tanks of the drinking water separation stations from WILO IndustrieSysteme.

The separator reduces the air input during the drinking water supply and reduces the incoming flow velocity of the water.

The procedure guarantees a safe suction of the pump, independent of the drinking water supply pressure and the quantity fed in, with the smallest size of the storage tank.



Password protection

Password protection protects the drinking water separation station against unauthorised access. Installation in public areas is possible.

Warning: The warranty expires if the allocated password protection is overwritten.



Stagnation water circuit

Stagnation water is automatically flushed in the individual connection pipe according to DIN 1988-600 and VDI / DVGW 6023. A standard setting for 10 m pipe length of the drinking water connection is used for this purpose. The standard value can be adapted to the local conditions during initial setup or before delivery.

Automatic function test

The drinking water separation station is equipped with an automatic function test of all relevant measuring, positioning and controlling elements. The automatic system automatically checks downstream components for the following active functions:

Weekly

- Level sensor
- Pressure sensor
- Pump(s)
- Overflow fitting
- Drinking water refill valve(s)
- General supply of compressed air

Emergency pump piping

All pumps require a minimum volume flow (10 % to 20 % of the nominal volume flow of the pump) to achieve sufficient cooling and prevent cavitation.

The use of a drinking water separation station to protect type F wall hydrants (according to DIN 14462) is based on a design volume flow of 18.00 m³/h or 36.00 m³/h for use by the fire brigade in high-rise buildings.

In case of fire, however, the self-help extinguishing water hose for people present is used first, with a water consumption of between 0.50 m³/h and 1.44 m³/h. The water consumption of the water hose for the fire brigade is between 0.50 m³/h and 1.44 m³/h. With this low volume flow, the cooling of the pump system is not guaranteed. This can result in cavitation or even failure of the drinking water separation station.

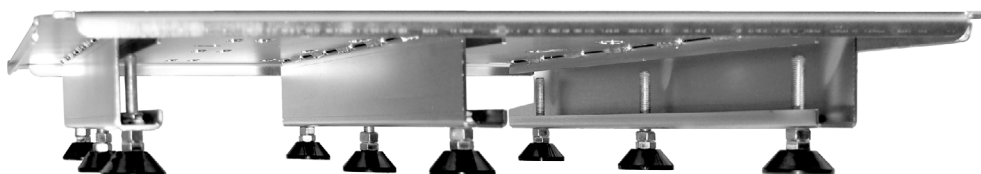
A pump emergency line is integrated into the drinking water separation stations from WILO IndustrieSysteme, which always guarantees a defined minimum flow rate for cooling the pump(s), thus preventing pump failure due to cavitation.

Assembly – General Information



General device installation

→ Each base plate is delivered with 9 adjustable feet as shown in the illustration.



The device is to be set up using the leveling feet in plumbline and balance.

→ The unit must be installed in such a way that 0.50 m space is available on the reverse side for maintenance purposes, with the exception of systems with full cladding. Here, 0.80 m must be kept free in the front area so that the doors can be opened by 90°.

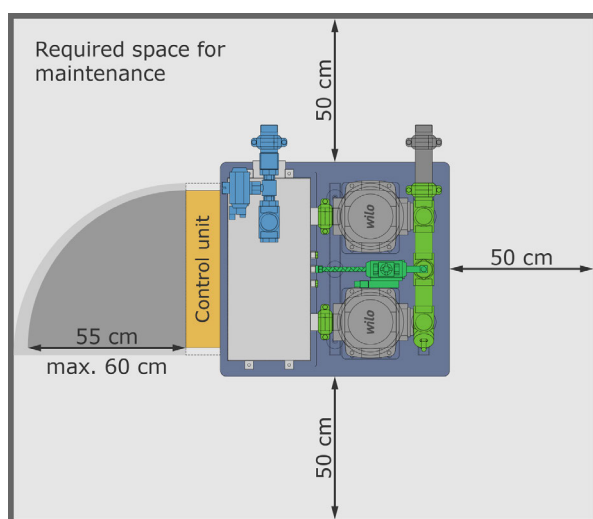


Figure: C 320–325 without full cladding

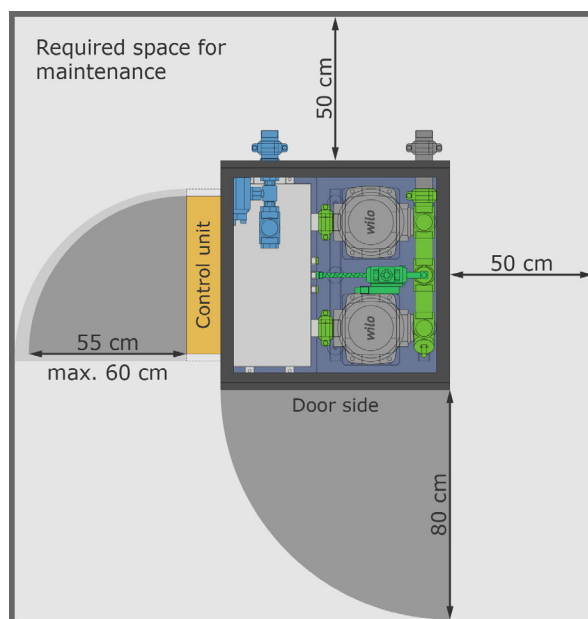


Figure: C 320–325 with full cladding

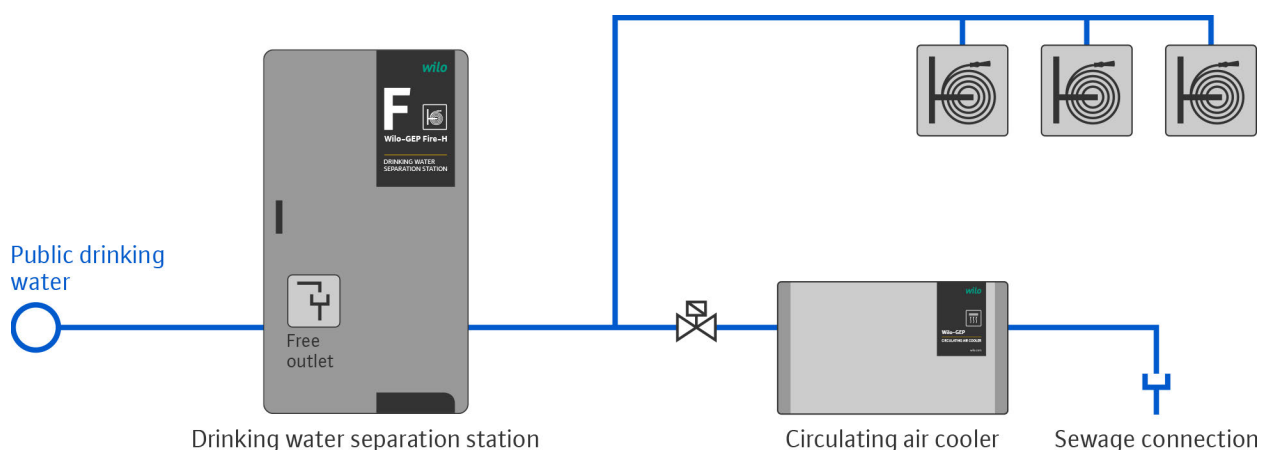
It must be ensured that the floor or the installation surface has sufficient load-bearing capacity in the installation room. The instructions of the manufacturer must be observed, under consideration of the water filling of the device. It must be ensured that there is no build-up of humidity in the installation room of the drinking water separation station.

Installation conditions according to MLAR as well as DIN 14462



The installation area of drinking water separation stations for the supply of extinguishing water must be designed in accordance with the requirements of MLAR and DIN 14462. This means that the installation must be in an **F90 room**, **flood-proof** and the electrical connection in **E90 functional reliability**.

- The maximum room temperature in the installation room must be limited to 35 °C for all units. In particular, the dissipated heat output of the pumps must be considered.



- Units with a compressed air connection must not be started until the compressed air generator has been switched on.
- The compressed air generator(s) can be used as a ground-level installation variant. For maintenance and optical reasons, wall mounting (see illustration) is possible.



Hydraulic connection of drinking water to process water pipeline network

After pressure testing and flushing of the on-site pipes, the marked pipe connections must be mounted tension-free using the Victaulic connections supplied separately.



The flow pressure at 1.2 times the operating volume flow rate in the drinking water connection line to the separation station is at least 3.0 bar (+/- 0.2 bar), at a maximum resting pressure of 5.0 bar. The replenished water quantity is at least 1.2 times the outgoing extinguishing / process water quantity. The actual required refill flow capacity can be found on the nameplate.



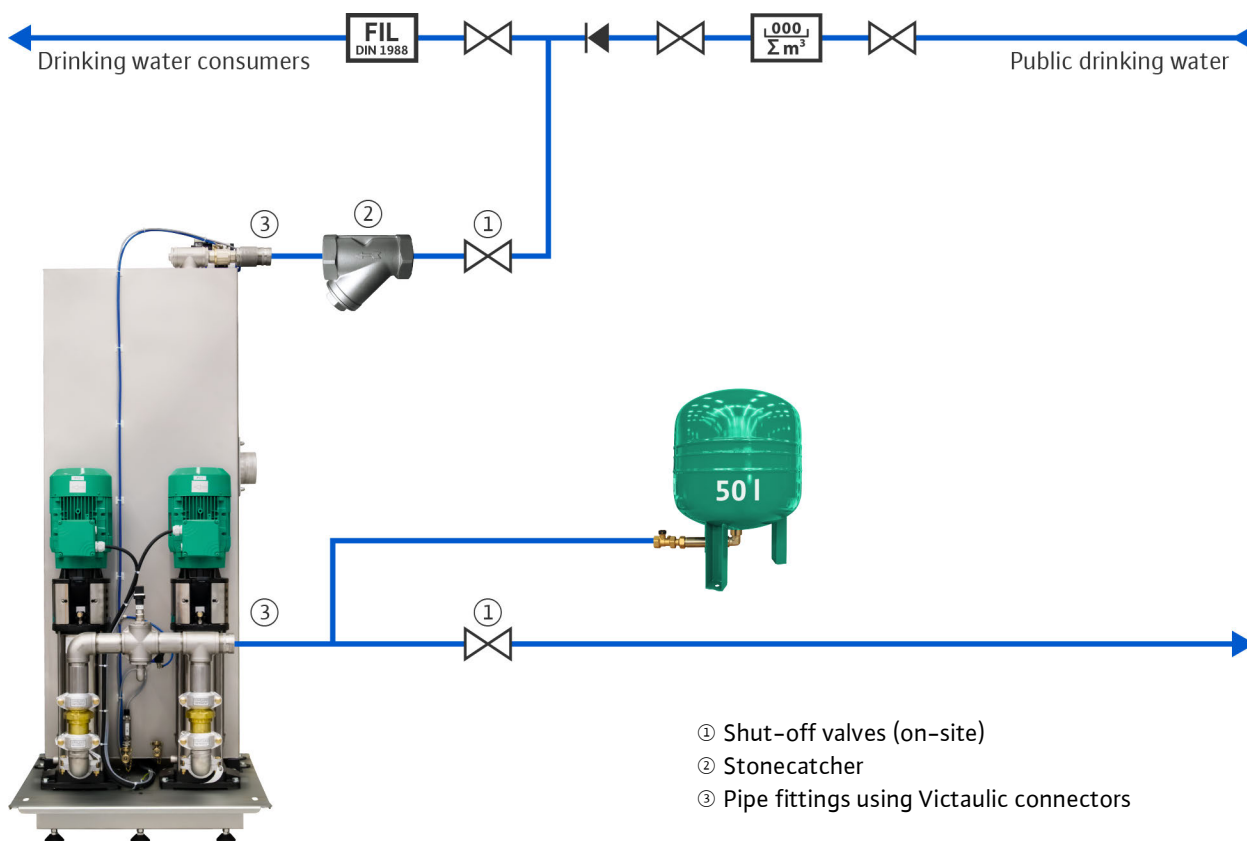
Minimum flow pressure at 1.2 times operating volume flow: 3.0 bar

Overview of Pneumatic Values

Drinking Water Separation Station	Pneumatic	Electric
Drinking Water Feeding Valves	Closed without pressure	Closed without electricity
Overflow Valves	Closed without pressure	Closed without electricity

K_v Value Valves

DN 15	7 m ³ /h	DN 20	13 m ³ /h	DN 25	22 m ³ /h
DN 32	31 m ³ /h	DN 40	53 m ³ /h	DN 50	104 m ³ /h





At flow pressures above 3.0 bar in the drinking water supply line, these must be throttled by means of a defined baffle plate in such a way that the water quantities produced can be discharged via the emergency overflow of the drinking water separation station and that no water escapes from the free outlet. The emergency overflow is tested by activating the test screw on the pneumatic feeding valve.

For flow pressures below 3.0 bar and resting pressures above 5.0 bar, please contact the factory.

The pressure line of the drinking water separation station is decoupled from structure-borne noise by using the pipe connection system with a roll groove seam.

Extinguishing water pipes, excluding those underground, must be made of non-combustible material.

If pipes (e.g. for drinking water installation) are laid out of combustible pipe materials or if drinking or process water consumers influence the supply of the drinking water isolating station with regard to the amount of water supplied (e.g. very large withdrawal quantities for flush valves etc.), these can be automatically closed off by the additional module "Drinking water shut-off" in case of fire. Further information can be found under: <https://wilo.com/wis/de/Löschwasserversorgung/Zusatzmodule/Automatische-Abschottung>.

If areas of the extinguishing water systems have to be designed frost-proof, the separation station can optionally be equipped with "Wet-dry modules" ex factory. These enable the pipe system to be flooded only in the case of fire. Further information can be found under: <https://wilo.com/wis/de/Löschwasserversorgung/Zusatzmodule/Nass-Trocken-Modul>.

Shut-off valves (on-site)

All inlet and outlet pipes have to be equipped with Shut-off valves for service and maintenance work. These must be secured against any unauthorised closing in extinguishing water systems.

Drinking water separation stations from WILO IndustrieSysteme can optionally be supplied with corresponding valve safety feature sets.

Stone catchers

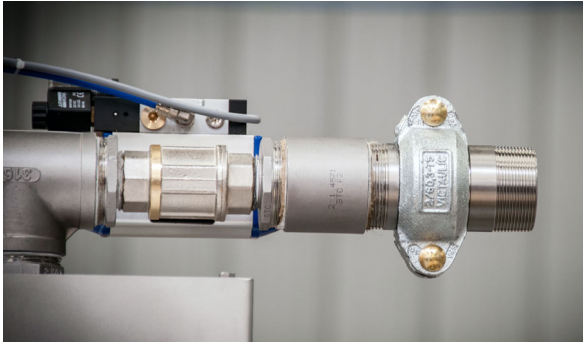
The extinguishing water system must be preceded by a stone catcher of the appropriate grain size. The mesh size must be at least 5 mm for sprinklers and 2 mm for all other systems.



Figure: Stone catcher DN50

Fine filters are not permitted in the individual supply line to extinguishing water systems.

Pipe connections using Victaulic connectors

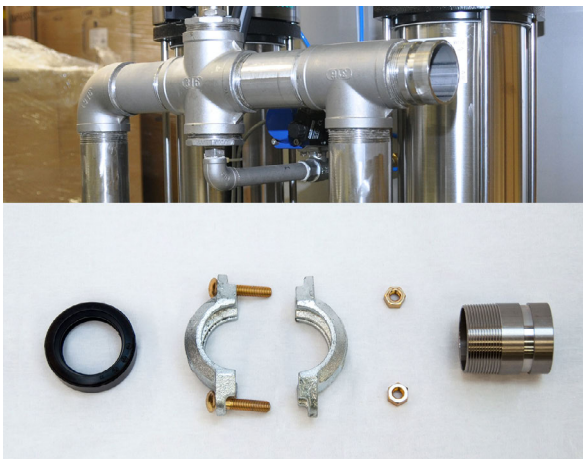


Drinking water pipe connection



Process water pipe connection

In the factory default setting, the cables end with a ring roll groove.



1. Adapter pieces and coupling are enclosed with the separation station.



2. Attach the pregreased sealing ring



3. Insert adapter piece.



4. Connect and tighten the coupling. The grooves of the coupling grip into the roll groove seam.

The Victaulic connections supplied loose are required for adjusting the system and for maintenance purposes.

Membrane expansion tank



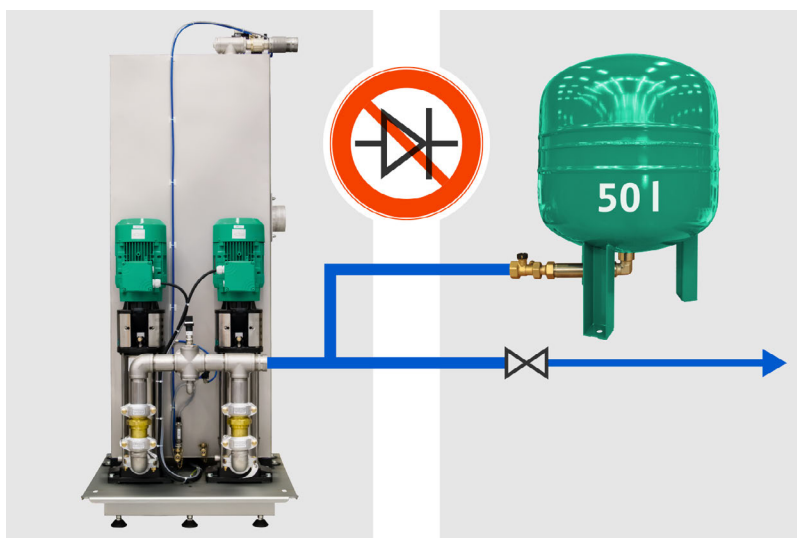
For drinking water separation stations, a membrane expansion tank of at least 50 l must be provided in the process water network. The air-side pressure have to be set 0.5 bar below the operating pressure of the extinguishing pipe.

The setting is made when there is no pressure in the connection to the process water line (for the setting value, refer to the label on the unit).

No backflow preventer must be connected downstream of the separation station.



Figure: Membrane expansion tank 50 l



Sizes of expansion tanks on the outlet pressure side

Individual pump output in kW	PN 10 without connection of process water appliances	PN 10 with connection of process water appliances	PN 16 without / with connection of process water appliances
≤ 4 kW	50 l	50 l	80 l
≤ 22 kW	50 l	80 l	80 l

For existing, large pipeline networks > 1000 m , it may be more economical to use larger expansion tanks as proposed above.

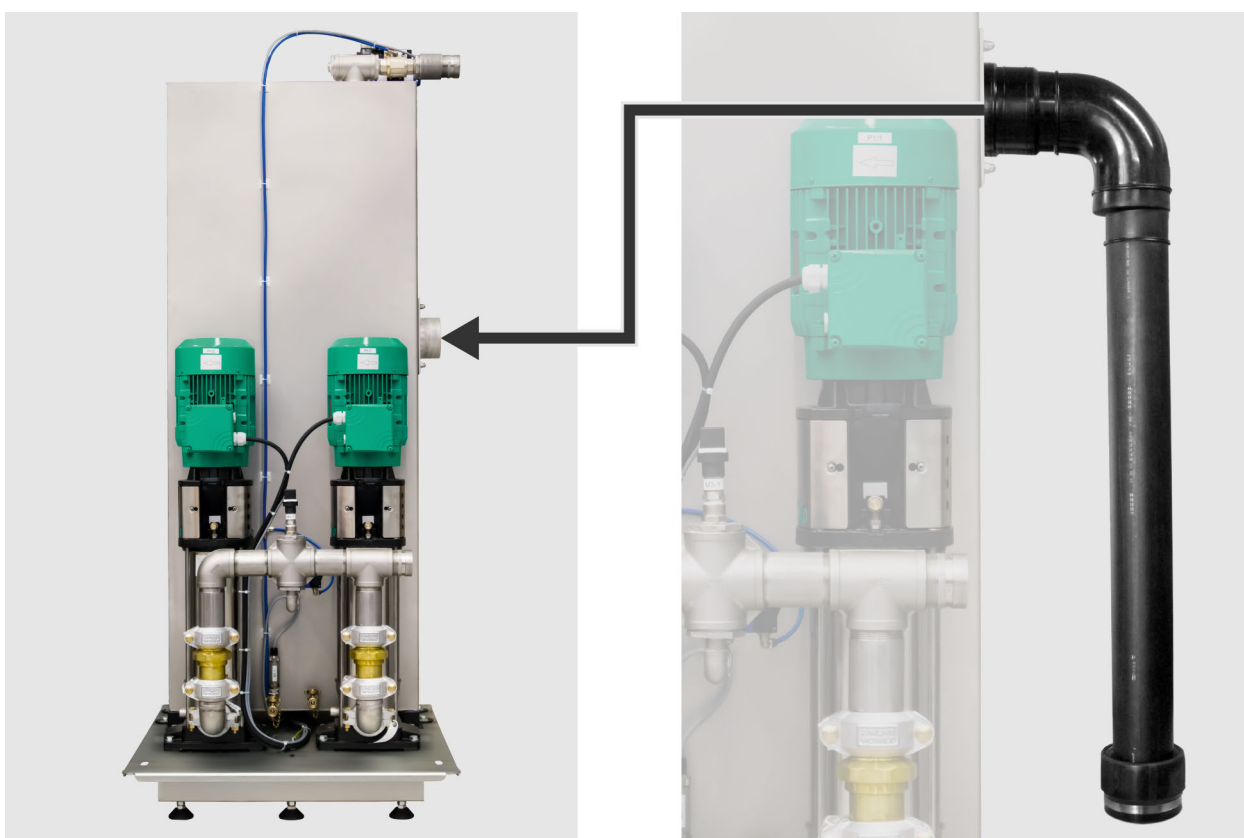
Drainage via emergency overflow

Device installation above the backwater level

General information

All kinds of safety valves for extinguishing water systems e.g. drinking water separation stations or wet-dry modules has to be placed in flood-proof installation rooms or above the backwater level according to DIN EN 1717, DIN 1988 and DIN 14462.

- In general, a flood-proof room is a room from which the entire volume of wastewater (1.2 times the volume of extinguishing water) can be safely discharged and from which water cannot be penetrated from the outside.
- The backwater level is the height up to which an overloaded sewer network can rise. This height usually corresponds to the respective street level. Find out about the exact height in your local statutes or from your drainage company.



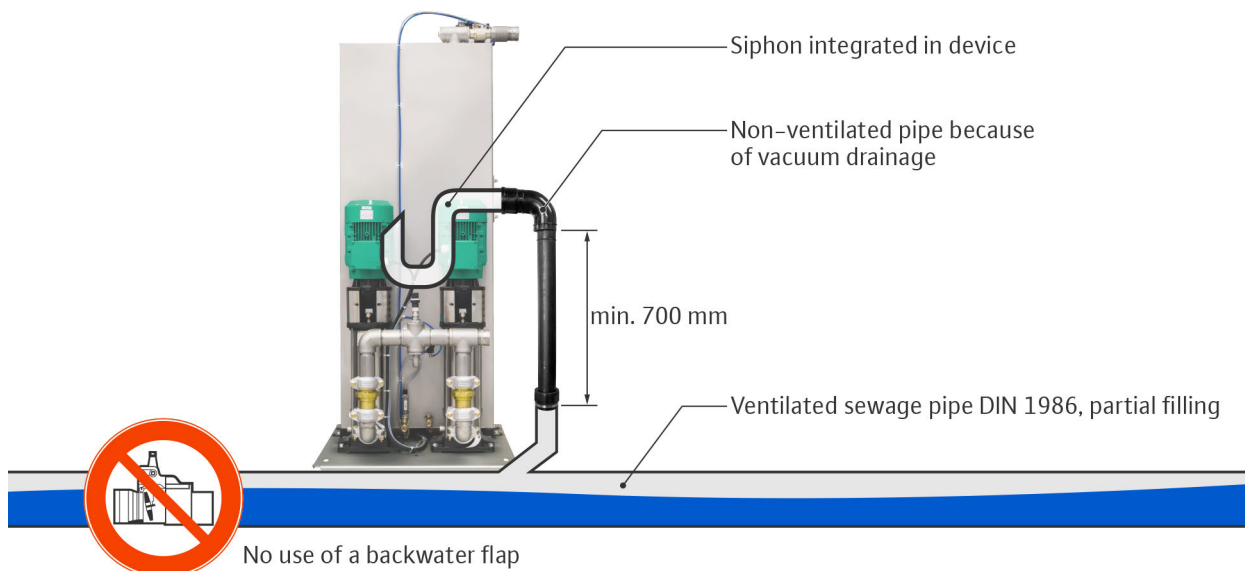
Standard

The safest method to discharge large quantities of water overflow is by a standard pressure drainage system into the downstream sewer network without additional energy. It's recommended to install a siphon at this pipe.

The prerequisite for this is a sufficient, object-related sewer connection or the possibility of drainage to an open area.

A suitable odour trap is already integrated in the separation station from WILO IndustrieSysteme.

Emergency overflow standard with pressure drainage



The device emergency overflow is based on the system of pressure drainage according to DIN EN 12056. In order to drain off any possible water quantities, it is absolutely necessary to install the emergency overflow connection according to the following diagram. If there is not a sufficient sewer connection or if a discharge as an free outlet is not possible, a redundant sewage lifting unit must be connected downstream in accordance with DIN EN 12056-4. The additional module “Emergency pump drainage” from WILLO IndustrieSysteme can be used to meet this requirement. Further information under: <https://wilo.com/wis/de/Löschwasserversorgung/Zusatzmodule/Pumpen-Notentwässerung>.

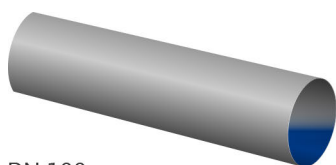
The maximum water volume of the emergency overflow can be adjusted to 1.2 times the extinguishing water volume flow. For this purpose, a baffle plate is mounted in the Victaulic coupling included in the delivery of the drinking water supply line.

The lines of the emergency overflow to the tank must be in DN 100. For the proper functioning of the vacuum drainage system, the drop section DN 80 should have a length of at least 700 mm and an in-side diameter of 80 mm.

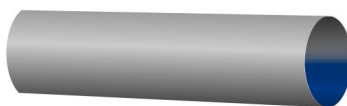
According to DIN EN 12056, the customer's underground pipe must be able to discharge the maximum amount of extinguishing water.

Minimum gradient of ground lines (DIN EN 12056 / DIN 1988-100)

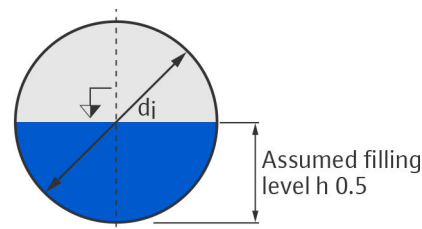
Example volume flow: $18 \text{ m}^3/\text{h} \approx 5 \text{ l/s}$



DN 100
d_i 97 mm
Minimum gradient 3.3 cm/m



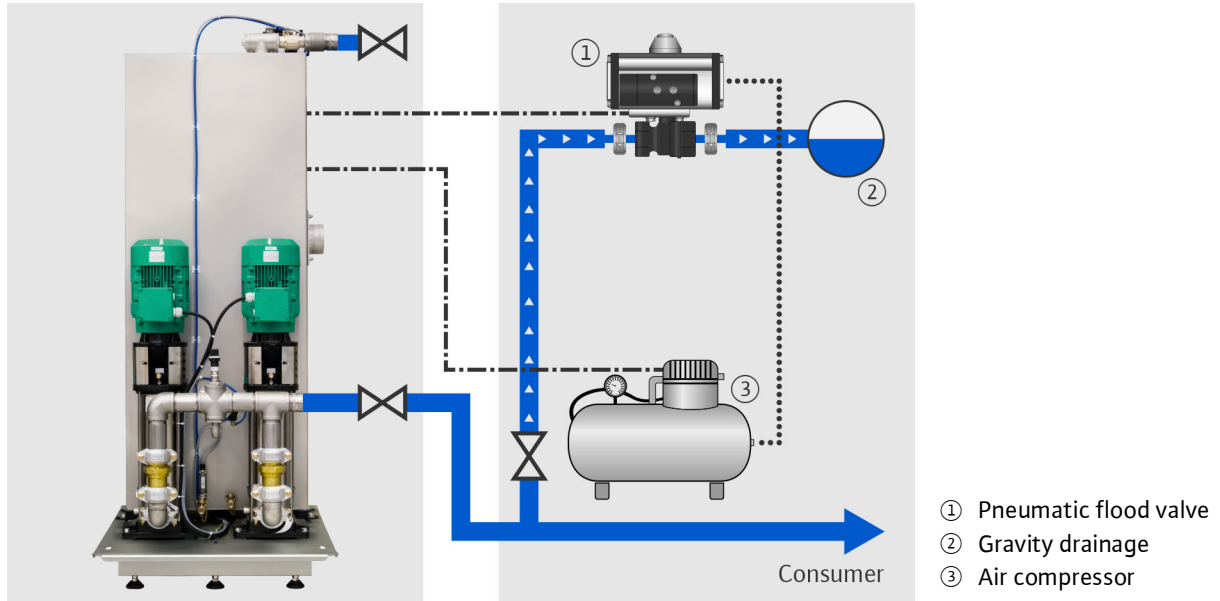
DN 150
d_i 146 mm
Minimum gradient 0.5 cm/m



No siphon must be connected downstream of the overflow connection. This is already integrated in the device.

For maintenance work, a sufficiently dimensioned floor inlet must be provided in the installation room of the separation station. Pipe feedthroughs through external walls lying in the ground must be sealed gas and water-tight according to the regulations.

Drainage via emergency pump drainage



Legend

Electrical cable

onsite, type H07RN-F 3 × 1,0 mm²

Pneumatic cable

for scope of delivery, see delivery note

Pressure line

onsite, according to DIN 1988-300

Minimum nominal size

see pressure line for drinking water isolating station

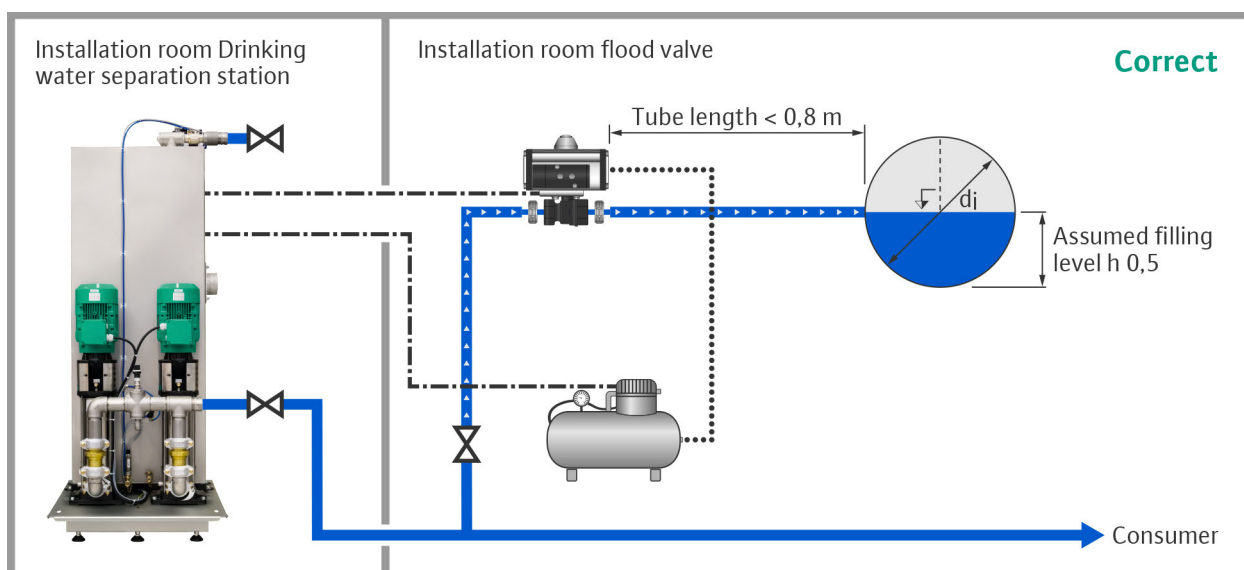
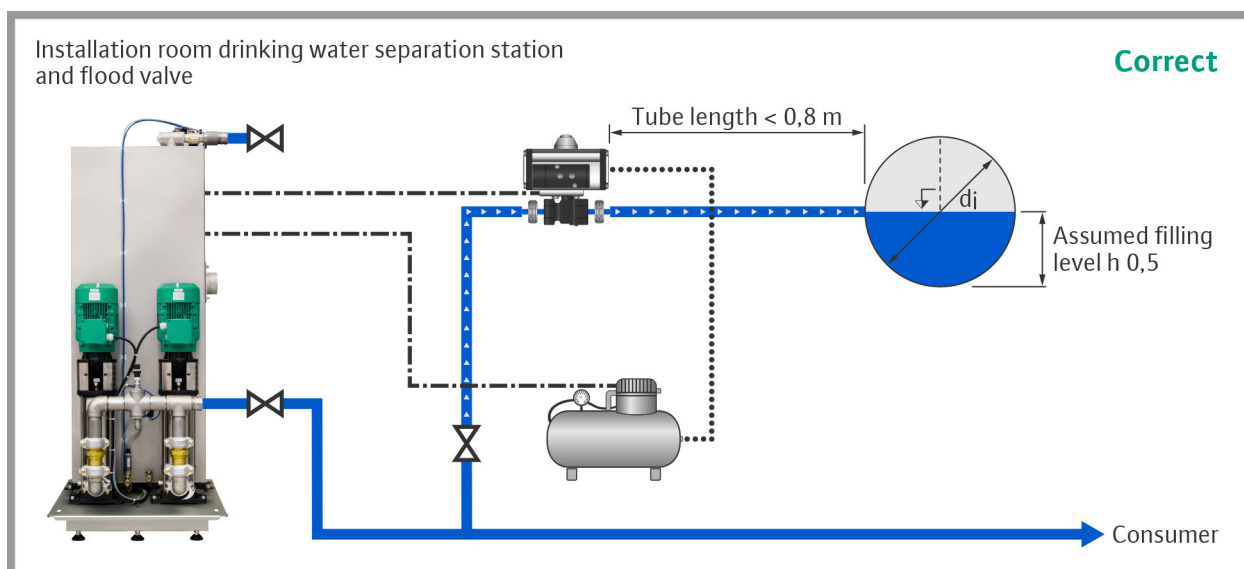
Emergency pump drainage is implemented via a single or, in the case of large volume flows, via several flood valves. Multiple valves can be hydraulically connected to a sufficiently dimensioned and ventilated drainage pipe. In systems with the emergency pump drainage module, the emergency overflow at the storage tank is closed.



Exemplary connection of pump emergency drainage to drainage installation.

The fitting(s) can be mounted horizontally or vertically in the pressure line. If several flood valves are used, they are individually electrically controlled (see enclosed wiring diagram).

The control takes place via the regulation of the drinking water separation station. The pneumatic connection is made via a separate compressed air generator..



Electropneumatic flood valves connection.



The pressureless line from the flood valve to a ventilated ground or collecting line must be limited to a length of 0.8 m (Fig. 3). It should be noted here that the downstream drainage system can safely drain off the water quantities produced. The sewage pipes are to be dimensioned for a filling degree of 0.5 (Table A.3, DIN 1986-100). The connection to the drainage system must be pressure-tight.

Furthermore, the pipe clamps must be designed in such a way that the forces arising from the energy conversion can be securely absorbed. The longitudinal frictional locking of the piping systems used must be ensured by suitable measures.

According to DIN EN 12056-4 and DIN 1986-100, lifting units are not permitted to be connected to waste water down-pipes. Lifting units have to be connected to ventilated ground or collector pipes.

Adjustment

During initial start up, it must be ensured that the maximum quantities of water produced can be discharged without endangering valuable and tangible assets.

If emergency pump drainage is triggered via manual operation, check that the water level in the storage tank drops when the drinking water feed is fully open.

If this is not the case, the quantity of water to be fed in must be adjusted to the quantity of water to be discharged. This is done by installing a defined baffle plate in the drinking water supply line of the drinking water separation station.



Caution

A hydraulic performance test of the process water consumers (e.g. hydrants DIN 14462) can only be carried out after the system has been adjusted as described above.

Maintenance

In order to exclude unnoticed water drainage, the flood valves shall be inspected at the discretion of the operator. WILO IndustrieSysteme recommends switching on an acoustic trigger signal. The existing signalling contact (see enclosed circuit diagram) must be used for this purpose.

Every month the operator must check the function of the flood valves by means of manual release. This is done directly from the associated control module in the switch cabinet.

Pneumatic connection

The switching of all valves of the drinking water separation station is realized by compressed air.
The supplied compressed air generator is connected to the isolating station by means of a plug connection.
To release the plug connection, press in the retaining ring and pull off the hose.

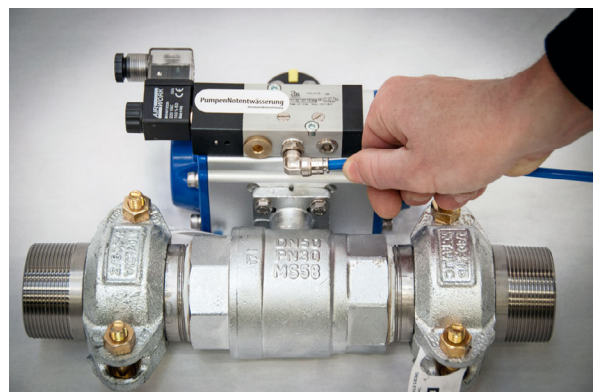
The compressed air connection hose can be adapted to the installation conditions.
For this purpose, it must be shortened rectangular with a clean cutting edge.



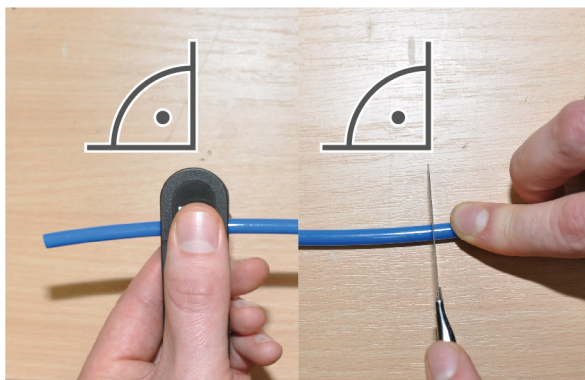
Illustrations: Scope of supply



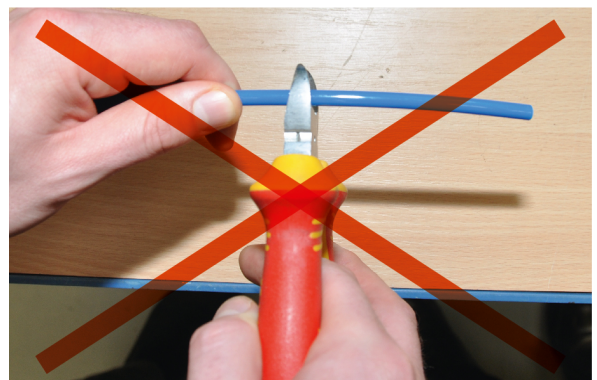
1. The supplied compressed air generator is connected to the isolating station by means of a plug connection.



2. To release the plug connection, press in the retaining ring and pull off the hose.



3. The compressed air connection hose can be adapted to the installation conditions. For this purpose it must be shortened rectangular with a clean cutting edge.



4. Do not use pliers or scissors, etc., as they could cut or squeeze the hose at an oblique angle.
A safe connection would no longer be possible.


Compressed air connection on-site

The drinking water separation station can be connected to a compressed air supply provided by the customer under the following conditions:

- Dry or oiled air, non-corrosive gases
- Switching pressure 6 to 8 bar
- Maximum pressure 8.5 bar (standard); maximum 10 bar when disassembling the integrated filters
- Filter fineness maximum particle diameter 30 µm (– 10 %)
- Air flow rate depending on system type 0.5 to 3 l/min
- Installation of compressed air generator in the installation room drinking water separation station
- Pipelines fireproof when installed outside the installation room
- Redundant design for high-rise buildings

For safety-relevant elements, such as the drinking water separation station, a compressed air supply must also be ensured in the event of a fire.

Electrical connection – Information for the qualified electrician

 pecart Steuerungen / software GmbH	
Nennbetriebsspannung: Nominal operating voltage:	400V
Stromart: Current type:	AC(3P/N/PE)
Nennfrequenz: Nominal frequency:	50 Hz
Nennstrom: Nominal Current:	28 A
Bemessungsstrom: Rated current:	18 A b.Psperrg 40 A 25 A b.Psperrg
Steuerspannungen: Control voltages:	24 V DC
Schaltplannummer: Wiring diagram No.:	P08- 064
Seriennummer: Serial No.:	110617 10/0635
Software- ID:	
Benennung: Name:	Trennstation
Vorschriften: Specifications:	IEC 60439-1
Schutzgrad: Verschmutzungsgrad	IP54 1 / Umgbg, B

Type plate Control DRINKING WATER SEPARATION STATION	
Position external pre-fuse ¹ _____	
Fuse rated current in A of the ext. pre-fuse ¹ _____	Fuse type of the external pre-fuse ¹ _____
Emergency power supply ¹ Yes <input type="checkbox"/> No <input type="checkbox"/>	
Date _____ Signature _____ Qualified worker electrical installation company	
Direct activation <input type="checkbox"/> Soft starter S1 <input type="checkbox"/> Soft starter S2 <input type="checkbox"/> Frequency converter <input type="checkbox"/>	
Software-side pump blocking Yes <input type="checkbox"/> No <input type="checkbox"/>	
Date _____ Signature _____ Service technician WIL0 IndustrieSysteme	
<small>¹to be filled in by the electrical installation company, in addition to the protocol according to VDE 0100-600</small>	
ServiceLine +49 371 49502500 wilo-gep.de	



The electrical connection must be carried out in accordance with the local regulations of the power supply company or the currently valid German Electrical Association (VDE). The sample cable systems (MLAR), high-rise building and hospital guidelines of the federal states or, in the absence of such guidelines, the corresponding sample guidelines must be complied with.

The supply voltage and the frequency can be found on the nameplate of the drinking water separation station. The voltage tolerance must be in the range +2% to -3% of the mains voltage. Ensure that the data on the nameplate corresponds to the existing power supply.

- An expert inspection before initial start-up must ensure that the required electrical protective measures are in place. The electrical connection of the device may only be carried out by qualified electricians, observing the local grid conditions of the power supply company. According to German Electrical Association (VDE) 0100 part 600, a commissioning test must be carried out and documented for all low-voltage, switchgear and distribution systems.
- E-connection see type plate on the outside of the switch cabinet.
- The specified voltage must correspond to the existing mains voltage:
400 V AC (3P/N/PE) Operating voltage, clockwise rotating field
- Make sure that the electrical plug connections are located in a flood-proof area or protected from moisture. Check mains cable and plug for damage before use.
- Standard systems must not be installed in explosion protection zones. Only special versions in accordance with ATEX must be installed in the above-mentioned areas.
- The drinking water separation station is to be connected with the building management system by integrated terminals.
- The electrical system must comply with the general installation regulations IEC 364 / VDE 0100. The device is designed for the TN-S system.
- For informational purposes, protection against electric shock in pump systems with frequency converters!
- The internal wiring between frequency converter and pump is connected in the control cabinet via a shielded cable with an output of up to and including 7.5 kW, where the shielding is used as a second separate PE. Systems above 7.5 kW are internally connected between the pump unit and the control cabinet via an additional protective conductor connection of at least 10 mm².
- Only one independent main protective device should be provided for the drinking water isolating station and its components. The maximum permissible rated current for the size selection of the main fuse is indicated on the nameplate of the switchgear combination, on the inside of the switch cabinet door.

Systems that are **not** used for fire water supply must be protected by an RCD device (residual current circuit breaker). Type A for fixed speed pumps, type B for pump systems with frequency converter.

Environmental conditions

- Environment according to DIN EN 60439, Type: B, Pollution degree 1
- Room temperature: + 4 °C, maximum 35 °C
- Rated device insulation voltage: 1.000 V
- Device short-circuit resistance: 6 kA

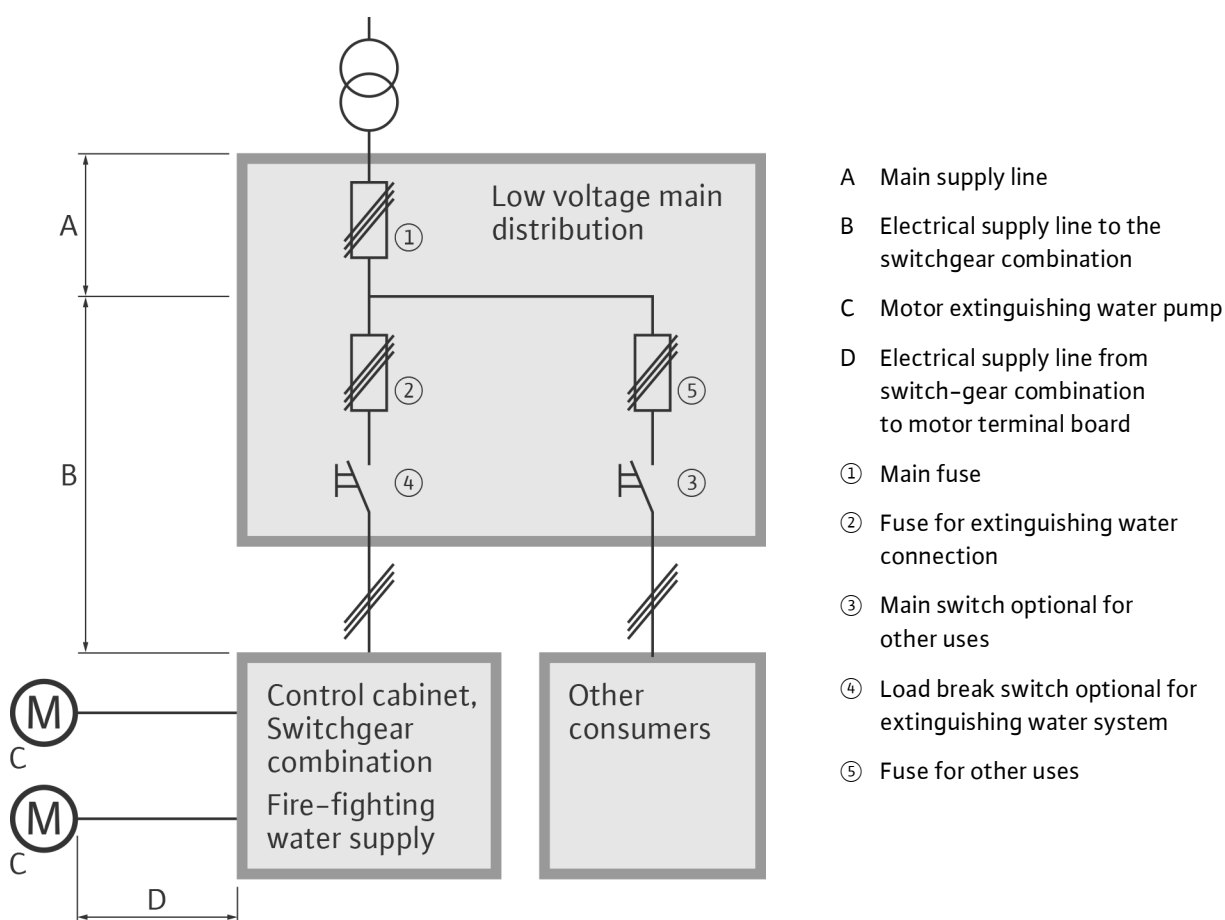
Additional requirements for extinguishing water supply systems



Drinking water separation stations for extinguishing water supply are additionally certified according to DIN 14462 and DIN EN 12845, as listed below, electrically.

The operational safety requirements must be taken from the fire protection concept (e.g. safety power supply, functional integrity, redundancy and fault indication).

- Electrical supply lines for extinguishing water systems outside the ground are to be laid in E90 design or provided with an F90 cladding.
- Exceptions apply to installation rooms F90 with low fire load or for installation in sprinkled areas.
- According to DIN EN 12845, at least rooms with fire resistance class F60 must be selected for the set-up of drinking water separation stations for the supply of sprinkler systems.
- The power supply must be connected with a separate connection upstream of the main switch disconnector. The separation station must be safeguarded in the low-voltage main distribution board. Only one fuse is permitted before this.



Design example for the electrical connection of the extinguishing water pressure booster system to the low-voltage main distribution board.

The electrical supply line to the switchgear combination (B) must be dimensioned according to the rated current. For safety-relevant systems, this current is designed to be 1.5 times the rated current, in deviation from the usual domestic installation (see rated current).

The system-related rated current is indicated on the nameplate of the switchgear combination. No main switch-disconnector may be connected upstream of the power supply of safety-relevant systems. The connection must be protected in the low-voltage main distribution board as shown in the previous figure ②. Only a fuse ① is permissible before this. The use of load break switches ④ is optional.

For safety-relevant systems RCD devices (FI or circuit breakers) are not permitted.

Rated current

According to VDE 0100, the electrical supply lines and the line fuses are designed according to the simple nominal or rated current. The rated current in pressure booster systems is mainly determined by the rated current of the pumps. The resulting rated current is determined by rounding up the rated current value to commercially available fuse sizes (e.g. according to VDE 0100: rated current 12 A = rated current 16 A).

For safety-relevant systems with pumps switched directly or via soft start, the determination of the rated current according to 1.5 times the rated motor current has established itself in practical implementation, according to German Standards For Sprinkler Systems (MLAR) and on the basis of guidelines for sprinkler systems. (Example: rated current 12 A \times 1,5 = 18 A, rated current 20 A).

Rated current for multi-pump systems

In multi-pump systems, the probability of failure must be considered during dimensioning the electrical supply line to the switchgear combination (B) from the low-voltage main distribution board to the pump control cabinet.

For the design of the redundancy, it is assumed that only one relevant component fails at one moment. This circumstance is to be considered for determining the size of the connected load or the system rated current. If several pumps are required to achieve the required flow rate, one pump must be counted towards 1.5 times the nominal flow rate and the other pumps towards the simple nominal flow rate. Blocked pumps that only start in the event of redundancy are not included in the power calculation.

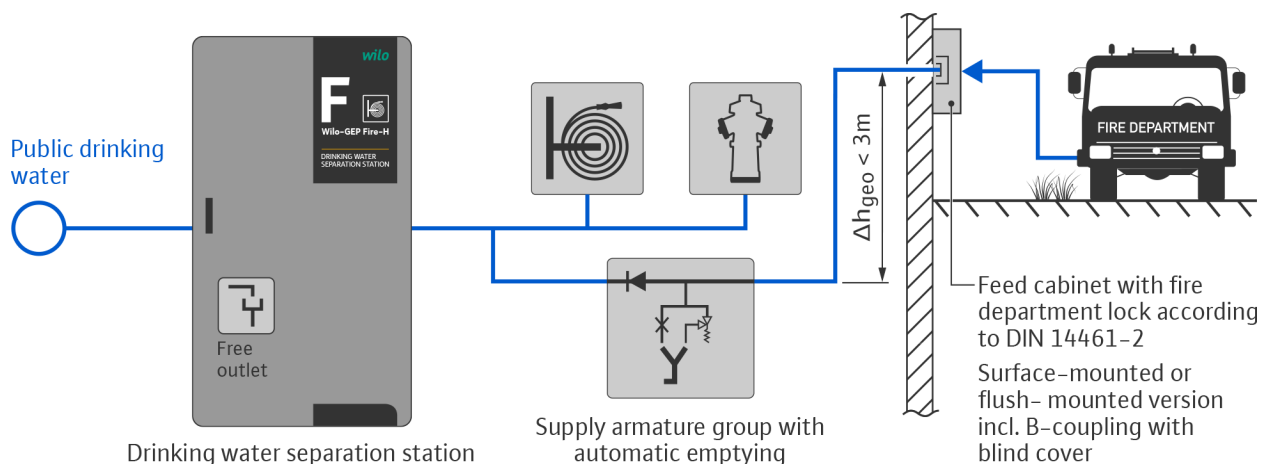
Fuse

WILO IndustrieSysteme GmbH recommends using NH fuses with tripping characteristics or operating class gG (old designation: gL).

- Before working on the system, the drinking water separation station must be disconnected from the main fuse.



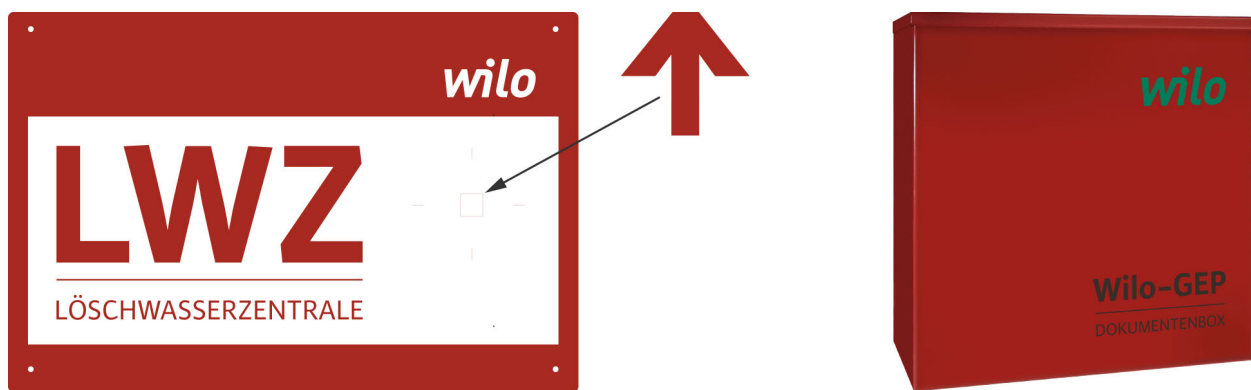
According to DIN 14462, a feed-in device according to DIN 14461-2 and an additional backflow preventer must be provided to ensure firefighting readiness (power failure)..



Labelling obligation

- Pipes and taps must be permanently marked in accordance with DIN 1989.
Use the labels supplied in the connection and safety package for this purpose.
- Process water lines must be marked.
- Taps with process water must be marked.

The position of the fire water control centre in the building must be marked.



Apply the supplied arrows as required. Fasten to plastered surfaces with the enclosed special nails.
On concrete surfaces the signs should be fixed with silicone or hot glue.

System documents must be stored directly on the device. As an option, WILO IndustrieSysteme offers a steel document box for wall mounting.

Maintenance and repair

Notes on maintenance measures



The drinking water separation station contains components for which inspection or maintenance work is necessary.

→ Inspections may be carried out by the operator of the system himself!



→ Maintenance and repair must be carried out by an installation company or competent operator!

Notice

The time intervals of the inspection and maintenance measures as well as the work steps specified should be observed by the operator according to his own interests!

Inspections and maintenance at the drinking water separation station



When cleaning the tank or the electrical components, switch off the isolating station and disconnect it from the mains! During this time, the separation station is not ready for operation!
If defects are found, they must be rectified!



Notice

If material defects are found, please contact your contract partner / dealer.

Deviating from the maintenance intervals listed below, for systems with high-rise control and more than 50 wall hydrants a half-yearly maintenance is prescribed (relevant items are marked with¹).

Servicing and maintenance / General information

Before any service / maintenance of the product, the device must be disconnected from the main fuse.
Cable extensions and opening of the product may only be carried out by authorised specialist personnel.

By opening the product or exceeding assigned password levels, any guarantee and other warranty on the part of the manufacturer expires. Assembly may only be carried out by authorised specialist personnel.

Drinking water separation station

Casing

Inspection:	<ol style="list-style-type: none"> 1. Check housing for correct fitting 2. Check housing for damage and safe contact of plugs 3. Clean the housing 4. Check function
Cleaning:	Remove dirt on the outside of the separation station with a damp cloth and a commercially available dishwashing detergent.
Notice:	Please make sure that no moisture gets into the plugs or switches!
Time period:	Yearly ¹
Implementation:	Operator

Safety circuits

Inspection period:	Yearly ¹
Implementation:	Contracting company

Storage Tank

Inspection:	<ol style="list-style-type: none"> 1. Check the storage tank for leaks, cleanliness, damage and sediment deposits 2. Check siphon for function 3. Check sediment deposition: <ul style="list-style-type: none"> – Briefly open the drain and check the turbidity of the water – In case of heavy turbidity, leave the drain open until the water becomes clearer 4. Cleaning the tank: <ul style="list-style-type: none"> – Remove dirt on the outside of the separation station with a damp cloth and a commercially available dishwashing detergent
Notice:	Please note that no liquid may get into the electrical components!
Time period:	Yearly ¹
Implementation:	Operator
Maintenance:	Yearly or having reached 2000 operational hours ¹
Implementation:	Contracting company

Level Sensor

Inspection:	Check the cable for cracks or other signs of aging
Time period:	Yearly ¹
Implementation:	Operator

Standard error messages on the display

Inspection:	Error messages are immediately shown on the display and at the interface to the building control system.
Time period:	Daily
Implementation:	Operator

Pressure Line

Inspection:	Check for damage, tightness and porous or worn areas. Replace hoses if necessary.
Notice:	If defects are found, please contact your contractual partner / dealer.
Time period:	Yearly ¹
Implementation:	Operator

Particle filter in feed lines

Inspection:	Cleaning / checking monthly
Implementation:	Operator
Maintenance:	Yearly or having reached 2000 operational hours ¹
Implementation:	Contracting company

Valves for drinking water supply

Inspection:	Check function
Notice:	If defects are found, please contact your contractual partner / dealer.
Time period:	Monthly
Implementation:	Operator
Maintenance:	Yearly or having reached 2000 operational hours ¹
Implementation:	Contracting company

Booster system

Inspection:	Function control / running control Pumps of the pressure booster system
Time period:	Monthly
Implementation:	Installation company / manufacturer
Maintenance:	Functional test
Time period:	Yearly or having reached 2000 operational hours ¹



Implementation: Contracting company / manufacturer

Inspections may be carried out by the operator of the system himself!



Maintenance and repair must be carried out by an installation company or competent operator!



For the maintenance of extinguishing water systems we recommend using the “Control book for acceptance and maintenance of fire extinguishing and fire protection systems” of the German SHK Association.

Notice: For other malfunctions, please contact your contractual partner / dealer.

Filter in compressed air line



Maintenance: Cleaning or replacement

Time period: Yearly¹

Implementation: Contracting company

Compressed air generator / compressed air supply

Inspection: – Function check / pressure gauge on pressure vessel 6 to 8 bar
– Emptying compressed air tank of condensate water

Time period: As required, but at least monthly

Implementation: Operator

Maintenance: Yearly or having reached 2000 operational hours¹
For operating instructions of the supplied compressed air generator see external operating instructions (note on delivery note).

Implementation: Contracting company

Performance test for extinguishing water system



A performance test in accordance with DIN 14462 must be carried out at least once a year for extinguishing water systems.

Notice!

If a fault should occur, see operating instructions Error coding.



For other malfunctions, please contact your contractual partner / dealer.

Inspections may be carried out by the operator of the system himself!



Maintenance and repair must be carried out by an installation company or competent operator!

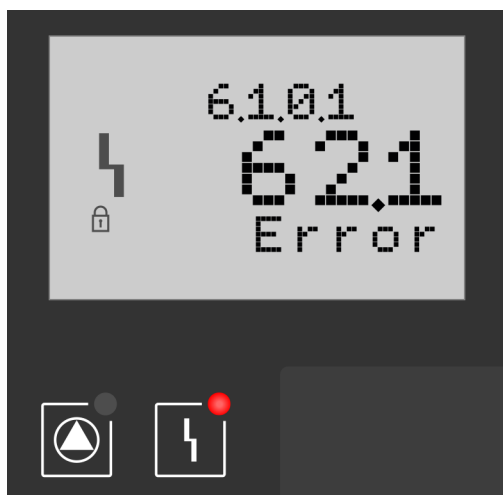
Error and operational messages

General information

The control system is user-friendly. Pushing the red button clears all error messages.

Error messages in the display of the SC controller

If several error messages occur, they are listed in error menu 6100.



Example: Coding 62.1, error in drinking water valve test

Overview error messages

Error message	Meaning	Solution
Code: E03.0 Temperature monitoring of pressure boosting system	The system temperature is too high. An automatic flushing has been started.	– Check the bypass armature and backflow preventer of the pumps
Code: E40.1 Sensor error Pressure 1	The pressure sensor, which records the pressure of the extinguishing or process water line transmits a faulty signal to the SC controller.	– Check cable entry
Code: E40.2 Sensor error Pressure 2	The pressure sensor for the pressure recording of the extinguishing or process water line transmits a faulty signal to the SC controller.	– Check cable entry
Code: E40.3 Sensor error Pressure 1	The pressure sensor for level detection of the storage tank transmits a faulty signal to the SC controller.	– Check cable entry

Overview error messages

Error message	Meaning	Solution
Code: E40.4 Sensor error Filling level 2	The pressure sensor which detects the level of the storage tank transmits a faulty signal to the SC controller.	<ul style="list-style-type: none"> – Check cable entry
Code: E40.6 Sensor error MID Volume flow meter	The MID volume flow meter transmits a faulty signal to the SC controller.	<ul style="list-style-type: none"> – Check cable entry – Check power supply
Code: E54.0 Error CAN (RTC)	Communication error SC to RTC circuit board.	<ul style="list-style-type: none"> – Restart of the system
Code: E61.0 Pump min. pressure	The pumps of the pressure boosting system operates outside their intended characteristic curve. This leads to damages of the pump.	<ul style="list-style-type: none"> – Check consumption values of the drinking water separation station
Code: E61.5 Pressure build-up pilot pump	Pilot pump does not reach its operating point.	<ul style="list-style-type: none"> – Check cable connection and pressure build-up of pumps – Check process water consumption
Code: E62.0 Dry operation of pressure boosting system	Level of storage tank is less then threshold value of dry-running protection.	<ul style="list-style-type: none"> – Checking the drinking water refill armatures – Check refill capacity
Code: E62.1 Error drinking water valve test	Automatically function test of drinking water refill armatures detects an error.	<ul style="list-style-type: none"> – Check cable entry and function of refill armatures
Code: E63.0 Leakage extinguishing / process water pipe	Low pressure drops were detected in the extinguishing / process water pipes.	<ul style="list-style-type: none"> – Inspection of the pipeline system after the drinking water separation station for leaks or small consumers
Code: E65.0 Error pump test	An error was detected during the automatic function test of the pumps.	<ul style="list-style-type: none"> – Check the cable connection and pressure build-up of the individual pumps – Check the cable connection and function of the bypass armature
Code: E66.0 Overflow of pressure boosting system	The maximum filling level of the storage tank has been exceeded.	<ul style="list-style-type: none"> – Check drinking water refill valves for leaks and function
Code: E67.0 Automatic shut-off	Triggering of the automatic shut-off by manual switch or by running the separation station at the operating point.	<ul style="list-style-type: none"> – Reset by button Red – Automatic reset after 2 hours

Overview error messages

Error message	Meaning	Solution
Code: E67.1 Error Valve test of pump emergency drainage	An error was detected during the automatic function test of the pump emergency drainage armatures.	<ul style="list-style-type: none"> – Check cable entry and function of armatures
Code: E80.1 Motor protection Pump 1	Tripping of the automatic fuse. Malfunction of soft starter. Malfunction of frequency converter.	<ul style="list-style-type: none"> – Check cable connection – Check pump for running stability – Check soft starter – Check frequency converter
Code: E80.2 Motor protection Pump 2	Tripping of the automatic fuse. Malfunction of soft starter. Malfunction of frequency converter.	<ul style="list-style-type: none"> – Check cable connection – Check pump for running stability – Check soft starter – Check frequency converter
Code: E80.3 Motor protection Pump 3	Tripping of the automatic fuse. Malfunction of soft starter. Malfunction of frequency converter.	<ul style="list-style-type: none"> – Check cable connection – Check pump for running stability – Check soft starter – Check frequency converter
Code: E80.4 Motor protection Pump 4	Tripping of the automatic fuse. Malfunction of soft starter. Malfunction of frequency converter.	<ul style="list-style-type: none"> – Check cable connection – Check pump for running stability – Check soft starter – Check frequency converter
Code: E80.5 Motor protection pilot pump	Tripping of the automatic fuse. Malfunction of soft starter. Malfunction of frequency converter.	<ul style="list-style-type: none"> – Check cable connection – Check pump for running stability – Check soft starter – Check frequency converter
Code: E100 Battery change / min.	Backup battery of RTC circuit board.	<ul style="list-style-type: none"> – Inform customer service
Code: E101 Room temperature exceeded	Room temperature in the installation room too high.	<ul style="list-style-type: none"> – Reduce room temperature
Code: E102 Room temperature undercut	Room temperature in the installation room too low.	<ul style="list-style-type: none"> – Increase room temperature
Code: E107 Residual Current Device of container	Tripping of the Residual Current Device of containers power supply (light, sockets, heating).	<ul style="list-style-type: none"> – Check the electrical cables of the container – Defect of an on-site connected device
Code: E109 Malfunction compressed air system	The pressure in the compressed air system has fallen below 5 bar.	<ul style="list-style-type: none"> – Check the compressed air generator and pressure reducer for proper function

General information

This product has been developed according to the state of the art, manufactured with the greatest care and is subject to constant quality control. This General Description of Device Functions, Maintenance and Installation Instructions is intended to make it easier to get to know the product and to use it for its intended purpose while observing the Operating and Setup Instructions.

The operating and installation instructions contain important information for operating the product safely, properly and economically. They must be observed to ensure the reliability and long service life of the product and to avoid hazards. This operating and installation instructions does not consider any local regulations. We would like to point out that the operator is responsible for compliance with the local regulations.

The product must not be operated above the values specified in the technical documentation with regard to pumped liquid, temperature or other instructions contained in the General Description of Device Functions, Maintenance and Installation Instructions as well as the Operating and Setup Instructions.

The nameplate indicates the series, the most important operating data and the factory / serial number, which must always be quoted in case of enquiries, repeat orders and, in particular, when ordering spare parts. If additional information or notes are required or in the event of damage, please contact your contractual partner / dealer.

Security

This manual contains basic instructions which must be observed during operation and maintenance (for installation, see installation instructions!). For this reason, the operating and installation instructions must be read by the operator before installation and commissioning and the operating instructions must always be available at the place of use of the product.

Not only the general safety instructions listed under the main point Safety must be observed, but also the special safety instructions listed under the other main points. The instructions attached directly to the product must be observed and kept in fully legible condition

Staff qualification and training

Personnel for operation, maintenance, inspection and assembly must have the appropriate qualifications for this work. Area of responsibility, responsibility and supervision of personnel must be precisely regulated by the operator.

If the personnel do not have the necessary knowledge, they must be trained and instructed. If necessary, this can be done by the manufacturer / supplier on behalf of the operator of the product. Furthermore, the operator must ensure that the contents of the General Equipment Function and Maintenance Description and the Installation Instructions as well as the Operating and Setup Instructions are fully understood by the personnel.

Dangers if the safety instructions are not observed

Non-observance of the safety instructions will result in the loss of any claims for damages.

In detail, non-observance can result in the following hazards, for example:

- Failure of important functions
- Failure of prescribed methods for maintenance and repair
- Danger to persons due to electrical and mechanical influences

Non-observance of the safety instructions can endanger both people, the environment and equipment.

Safety conscious work

The safety instructions given in the General Description of Device Functions, Maintenance and Installation Instructions as well as the Operating and Setup Instructions, the existing national accident prevention regulations and any internal work, operating and safety regulations of the operator must be observed.

Safety instructions for the operator

Danger from electrical energy must be excluded (for details, see also the country-specific regulations of the local authorities).

Safety instructions for maintenance, inspection and assembly work

The operator must ensure that all maintenance, inspection and installation work is carried out by authorised and qualified specialist personnel who have studied the General Equipment Function and Maintenance Description and Installation Instructions as well as the Operating and Setup Instructions in detail.

Immediately after completion of the work, all safety and protective devices must be refitted, or set in function. Before recommissioning, the following must be carried out as described in the section Setup Points to note.

Unauthorized conversion and production of spare parts

Modifications or changes to the product or unauthorized overwriting of passwords are not permitted. Original spare parts and accessories authorised by the manufacturer serve safety purposes. The use of any other parts will void any liability for the consequences thereof.

Illegal operation modes

The operational safety of the delivered product is only guaranteed if it is used as intended. The limit values stated in the data sheet must not be exceeded under any circumstances.



Transport / Intermediate storage

During transport, care must be taken not to knock or drop the device. The product must be stored in a dry, cool, sun-protected and frost-proof room.



Disposal

This product and parts thereof must be disposed of in an environmentally sound manner:

- The local public or private waste disposal companies should be used for this purpose.
- If no such organisation exists, or if the acceptance of the materials used in the product is refused, the product or any environmentally hazardous materials can be delivered to WILO IndustrieSysteme GmbH.

Certificates

The current test certificates for the drinking water separation station can be found at www.wilo-gep.de.