EN

Original installation and operation manual

QWIK-PURE®

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02-530

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1. Notes about the documentation

This documentation contains all the necessary steps for use of the product and the accessories.

1.1 Contact

Manufacturer	Customer service and tools
BEKO TECHNOLOGIES GmbH Im Taubental 7 | 41468 Neuss Phone: +49 2131 988-1000 info@beko-technologies.com www.beko-technologies.com	**BEKO** TECHNOLOGIES GmbH Im Taubental 7 | 41468 Neuss Phone: +49 2131 988-1000 service-eu@beko-technologies.com www.beko-technologies.com

INFORMATION	Country-specific manufacturer representatives
	You can contact the country-specific manufacturer's representative via the address listed in the address section on the rear cover or by using the contact form on the manufacturer's website.

1.2 Information about this installation and operation manual

INFORMATION	Copyright protection
	The contents of the installation and operation manual in the form of text, figures, illustrations, photographs, technical drawings, diagrams and other representations are protected by the copyright of the manufacturer. The distribution as well as the duplication of this document, the exploitation and the communication of its contents are prohibited unless expressly authorised.

Publication date	Revision	Version	Reason for change	Scope of change
30 March 2023	00	00	New document	New document
31 August 2023	01	03	Change to technical data	Maximum oil concentration at condensate drain port; FRC power consumption
31 October 2023	02	00	Change to technical data and type plate	IP rating
20 August 2024	03	00	Changes to content	Changes to content

The installation and operation manual, hereinafter referred to as the manual, must always be kept close to the product and be in a permanently legible condition.

The manual must be handed over along with the product if it is sold or passed on.

NOTE	Follow the instructions given in the manual
	This manual contains all the basic information required for safe operation of the product and must be read before any actions are performed. Otherwise personal and material hazards as well as malfunction and device failure are possible.

2. Safety

2.1 Use

2.1.1 Intended use

The **QWIK-PURE®**, also referred to below as the “product”, is used to treat demulsifiable compressor condensates from oil-lubricated and oil-free compressors. Physical processes are used to separate oils that can be directly separated from the corresponding water.

Any use of this system other than the use described in this manual is hereby deemed to be non-intended and can cause a hazard for the safety of people and the environment.

The following must be noted for intended use:

- Read and follow the manual.
- Use the product and the accessories exclusively within the operating parameters and agreed delivery conditions specified in section Technical data.
- Use the product and accessories exclusively with fluids that are free of caustic, aggressive, corrosive, toxic, flammable, oxidising and inorganic components.
  In cases of doubt an analysis must be carried out.
- Use the product and the accessories exclusively within a piping system designed in conformity with the operating parameters specified in section Technical data.
- Use the product and the accessories exclusively outside of areas exposed to mechanical loads and splash water.
- Only use the product and accessories outside potentially explosive atmospheres.
- Use the product and the accessories exclusively outside of areas exposed to direct sunlight and heat sources.
- Combine the product and the accessories only with the recommended manufacturer products and components indicated in this manual.
- Adhere to the prescribed maintenance schedule.

Before using the product and the accessories, the operating company must make sure that all conditions and prerequisites for intended use are given.

The product and the accessories have been exclusively designed for stationary use in a commercial or industrial area. All of the assembly, installation, operation, maintenance, disassembly and disposal work described must be performed exclusively by qualified skilled technical personnel.

2.1.2 Reasonably foreseeable inappropriate use

Reasonably foreseeable inappropriate use is deemed to have occurred if the product or the accessories are used in any other way than that described in the section “Intended use”. Reasonably foreseeable inappropriate use includes the use of the product or the accessories in a manner not intended by the manufacturer or supplier but which may result from foreseeable human behaviour.

Reasonably foreseeable inappropriate use includes:

- The execution of any kind of modification, in particular constructive and process-technology related interventions.
- The suspension, bridging or non-application of existing or recommended safety equipment.
- Use for filtering wastewater other than compressor condensate (e.g., industrial wastewater).
- Disposal of waste oils.
- Using the product on water vessels, railway vehicles and motor vehicles.

This list is not exhaustive as not all possible inappropriate use can be foreseen in advance. If the operating company is aware of any inappropriate use of the product or accessories which are not listed here, the manufacturer must be informed immediately.

2.2 Responsibility of the operating company

The responsible operating company must ensure the following to prevent accidents, incidents and adverse effects on the environment:

- Before all actions, check to ensure that the manual available does in fact belong to the product.
- The product and the accessories are used, serviced and repaired in accordance with the intended use.
- The product and accessories are only used with the recommended and fully operable safety equipment.
- All assembly, installation and maintenance work must be carried out exclusively by qualified skilled technical personnel.
- Personnel have the necessary personal protective equipment available and also use this equipment.
- Suitable technical safety measures are taken so that the permissible operating parameters are adhered to.
- Keep all safety symbols and the type plate on the product and accessories in a legible state. Replace damaged and illegible markings immediately.
- All locally applicable legal requirements and regulations regarding the protection of bodies of water, as well as the associated mandatory documentation obligations (e.g., results from turbidity test, retention periods), must be complied with.

2.3 Target group and personnel

This manual addresses the personnel listed below who are involved with work on the product or the accessories.

INFORMATION	Personnel requirements
	• Minors are strictly prohibited from working with and on the product and its accessories. • The personnel may not execute any actions on the product or the accessories when they are under the influence of drugs, medications, alcohol or other substances that may impair their consciousness.

Operating personnel

Operating personnel are persons who are able to operate the product and the accessories safely on the basis of knowledge of the manual and instruction at the product and accessories. Operating personnel can recognise possible malfunctions and dangerous situations independently and arrange for corresponding measures.

Skilled technical personnel - transport and storage

Skilled technical personnel - transport and storage are people who, due to their training, professional experience and qualifications, have all the necessary skills to safely execute all actions in connection with the transport and storage of the product, to instruct, to recognise possible dangerous situations independently and to execute measures to avoid danger.

The skills required include, in particular, experience operating hoists, forklifts and lifting equipment and familiarity with locally applicable laws, standards and guidelines relating to transport and storage.

Skilled technical personnel - pressure equipment and systems

Skilled technical personnel specialising in pressure equipment and systems are people who, as a result of their training, professional experience, qualifications and further training, have all the requisite skills to safely perform all actions related to pressurised fluids and systems, to instruct, to independently identify potentially hazardous situations, and to implement appropriate measures to avert any danger.

The skills required include, in particular, experience using measuring equipment and control equipment, as well as familiarity with locally applicable laws, standards and regulations for pressurised systems.

Skilled technical personnel - electrical
Skilled technical personnel specialising in electrical engineering are people who, as a result of their training, professional experience, qualifications and further training, have all the requisite skills to safely perform all actions related to electricity, to instruct and to independently identify potentially hazardous situations and to take appropriate measures to avert any danger. The skills required include, in particular, experience using electrical systems, measuring equipment and control equipment, as well as familiarity with locally applicable laws, standards and regulations regarding the use and handling of electrical equipment and systems.

Skilled technical personnel - product servicing
Skilled technical personnel - product servicing are people who have the skills and qualifications stated in all the skilled personnel definitions named above. Skilled technical personnel - product servicing must have documented proof of training and authorisation for all work on the product.

2.4 Explanation of the symbols used

The symbols used below indicate safety-relevant and important information which must be adhered to when handling the product and to ensure safe and optimum operation.

Symbol	Description / Explanation
	General warning symbol (danger, warning, caution)
	Warning: pressurised system
	Warning: electric voltage

Symbol	Description / Explanation
	Read and understand the installation and operation manual
	General mandatory requirement
	Wear safety footwear
	Use protective gloves (cut-proof and liquid-resistant)
	Wear safety goggles with side shields
	General information

2.5 Safety instructions and warning notices

This section provides an overview of all the important safety aspects for personal protection as well as for the safe and problem-free operation of the product and accessories.

The following sections list the dangers posed by this product and the accessories even with intended use. To minimise the risk of personal injury and damage to property and to avoid dangerous situations, observe the safety instructions listed and adhere to the warning notices in the other sections of this manual.

Basic warning notices and the necessary qualifications of skilled technical personnel are always listed at the beginning of the section in the “Warning notices“ section.

Warning notices related to specific actions are printed directly before potentially hazardous procedures or sequences of actions.

Failure to observe safety instructions and warning notices can result not only in personal injury, but also in malfunctions, device failure and damage to property.

2.5.1 Basic safety instructions

- Before starting work, refer to the technical documentation for the entire system and observe the overall operating instructions.
- Carry out a risk assessment before starting work on site (last minute risk assessment).
- Use suitable personal protective equipment for all work.
- Set up a safety area around the working area during all installation, maintenance and repair work.
- Use existing system-specific protection procedures (e.g., LOTO procedure) in order to safely de-energise and isolate the system or system sections.

2.5.2 Safe operation

The following actions may result in serious injury or death:

- Commissioning and operation of the product and accessories outside the permissible limit values and operating parameters
- Unauthorised interference and unauthorised modifications of the product and accessories

To guarantee the safe operation of the product and accessories, observe the following:

- Observe the limits and operating parameters specified on the type plate and in the manual.
- Check whether the permissible operating parameters have been changed or restricted by the use of accessories.
- Observe the requirements regarding installation location and ambient conditions.
- Adhere to the maintenance intervals.

2.5.3 Sudden escape of pressurised fluids

The following situations may result in serious injury or death:

- Contact with fast or suddenly escaping fluids
- Bursting system parts
- Pressurised hose and pipe whipping as a result of disconnection

For the safe handling of pressurised systems, observe the following:

- Observe the following safety rules during all work:
  1. Shut down the system or system section.
  2. Secure the system or system section against restarting.
  3. Reduce the pressure in the system or all system sections to the ambient pressure, e.g., by slowly relieving the pressure through relief valves in a controlled manner.
  4. Lock out and tag out the system or system section so that it cannot be pressurised again.

- Check the pressurised system or system section for safety, contamination and possible damage.
- Before pressurisation, check all system connections for leak tightness and tighten if necessary.
- Make absolutely sure to charge the system or system section with pressure slowly.
- Avoid pressure blows and high differential pressures.
- Compensate any vibrations occurring in the pipe network by using vibration dampers.

2.5.4 Electric voltage

Contact with live components may result in serious personal injury or death.

To ensure the safe handling of electrically live components, observe the following:

- Only connect the product and the accessories to the voltage supply if they are undamaged.
- Comply with all locally applicable legal requirements and regulations during installation.
- Provide a circuit breaker in the power supply within easy reach of the product.
  → The circuit breaker disconnects all current-carrying conductors.
- Connect the protective conductor (earth connection) according to regulations.
- Only operate the product and accessories with the cover complete and closed or the electronics housing closed.
- Before starting work on the product:
  1. Disconnect
     → Disconnect the product from all poles and all sides
  2. Secure against restarting.
  3. Determine the absence of voltage at all poles.
     → Using suitable and permissible measuring equipment (e.g. two-pole voltage tester)
  4. Earth and short circuit.
- Only the manufacturer is permitted to open the housing of the **FRC** control unit.

2.5.5 Transport and storage

Inappropriate transport or storage may result in personal injury or damage to property.

In order to ensure safety during the transport and storage of the product and accessories, observe the following:

- Use personal protective equipment during all work with packaging material.
- Handle packaging, the product and accessories carefully.
- Transport and handle the product and accessories according to the markings on the packaging.
- Use only suitable transportation, lifting and lashing equipment that is in good working condition and rated for the product's total weight.
- Always adhere to the permissible transport and storage parameters.
- Store the product and accessories only outside of areas exposed to direct sunlight, heat sources and splash water.

2.5.6 Installation

Inappropriate assembly or electrical installation of the product and accessories may result in personal injury and damage to property as well as impair operation.

For safe assembly and electrical installation, observe the following:

- Assemble the product and all the parts, accessories and materials used free of mechanical stress.
- Check all plug-type connections for a correct fit.
- Avoid stumbling risks by routing cables and hoses accordingly.
- Avoid mechanical strain on the cables.
- Fix and fasten hoses in such a way that they cannot flap around.
- Install inlet and drain lines as fixed pipes.

2.5.7 Maintenance

Improperly carrying out maintenance and repair work may result in serious injury or death.

For safe maintenance and repairs, observe the following:

- Before starting work, depressurise the pressurised product and accessories and secure them against unintentional pressurisation.
- Before starting work, isolate the product and accessories from the power source and secure them against being switched back on again unintentionally.
- Only use materials approved for the respective application.
- Use only suitable tools that are in proper working order.
- Only use cleaned pipes and hoses that are free of dirt and corrosion.
- Never use abrasive or aggressive cleaning agents or solvents which could damage the outer coating (e.g. markings, type plate, corrosion protection, etc.).
- Never clean the device with hard or pointed implements.
- Use only the specified materials and media for cleaning.
- Observe statutory, local and in-house hygiene regulations.
- Pay attention to order and cleanliness during maintenance and repair work. Prevent contamination from entering the opened product or accessories. Put dismounted components and accessories aside in a safe place immediately after dismounting.
- After completing maintenance and repair work, remove all tools and cleaning agents used, as well as all parts that are no longer needed, from the work area.
- Only dispose of the product and accessories when cleaned and freed of any media residue.
- Dispose of all components, parts, operating and auxiliary materials as well as cleaning agents professionally and in accordance with all locally applicable legal requirements and regulations.
- Dispose of electrical and electronic components using a specialist disposal company or return them to manufacturer.

2.5.8 Handling hazardous substances

Contact with condensate containing substances which endanger health and the environment can pose a health hazard, causing irritation and/or damage to the eyes, skin and mucous membranes. In addition, contaminated condensate must be prevented from entering the sewage system, bodies of water or the ground.

For the safe handling of contaminated condensate, observe the following:

- Use suitable personal protective equipment when handling condensate.
- Collect and dispose of any leaking or spilled condensate in accordance with locally applicable legal requirements and regulations.

2.5.9 Working on electronic components

Electrostatic discharge (ESD) can cause damage to electronic components, and malfunctions, device failures or material damage are possible.

- Take proper measures to prevent electrostatic discharge (e.g. earthing, potential equalisation, ESD-compatible dissipative work pads etc.).

2.5.10 Use of spare parts, accessories or materials

Use of incorrect spare parts, accessories, materials, auxiliary and operating materials, may result in death or serious injury. Malfunction, device failure or material damage may occur.

- Only use undamaged original parts, auxiliary and operating materials which are specified by the manufacturer to complete all work.
- Only use the materials approved for the respective application and suitable tools in proper working order.
- Only use cleaned pipes that are free of dirt and corrosion.
- Only use electric components and materials that comply with locally applicable legal requirements and regulations (standards, directives etc.) for electrical safety.

2.6 Warning notices

Warning notices warn against dangers when handling the product and accessories.
Observe the warning notices in order to avoid personal injury, damage to property and impaired operation.

Elements used in warnings:

SIGNAL WORD	Type and source of danger
 Symbol	Possible consequences if the danger is ignored • Measures to prevent the danger

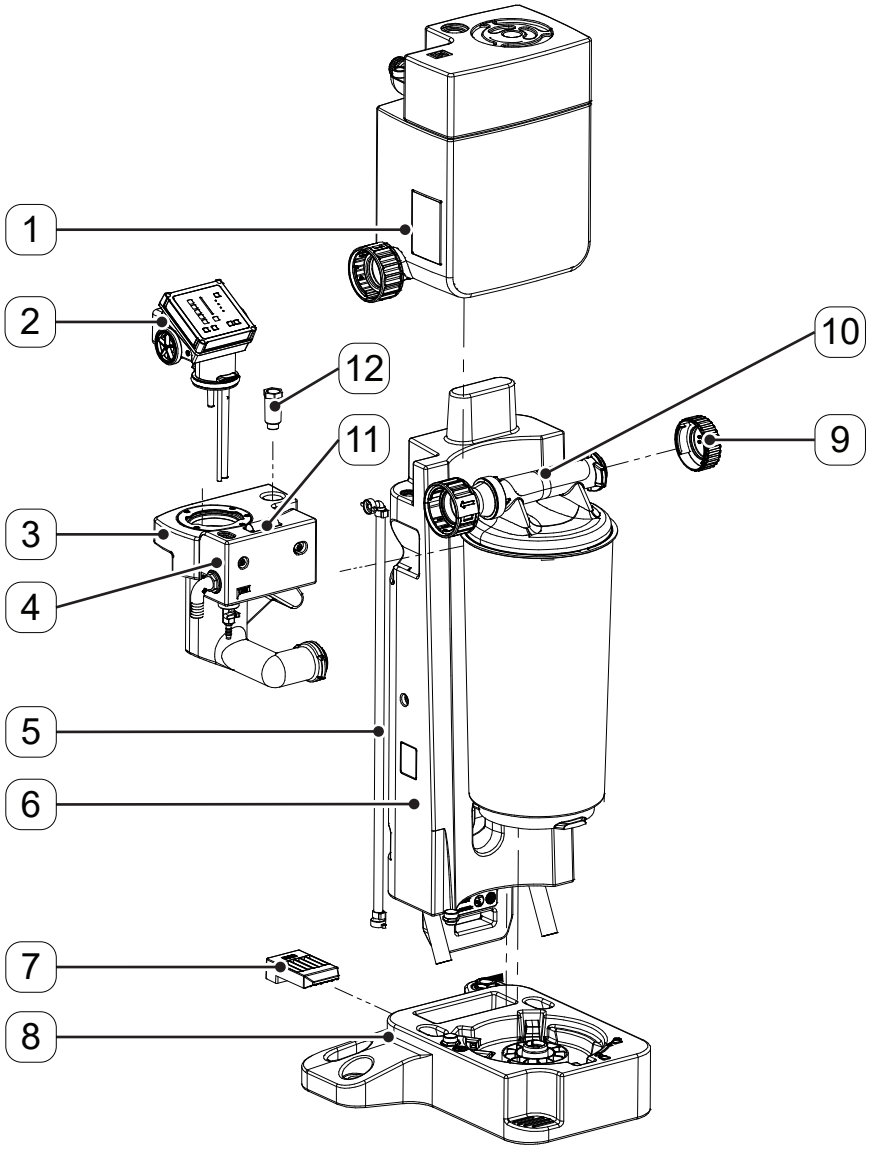
Signal words:

DANGER	**Imminent hazard** Consequences of non-compliance: Death or serious personal injury
WARNING	**Imminent hazard** Consequences of non-compliance: Death or serious personal injury are possible
CAUTION	**Potential hazard** Consequences of non-compliance: Personal injury is possible
NOTE	**Potential for damage to property** Consequences of non-compliance: Damage to property, malfunction and device failure are possible. No hazard to people or jeopardising of safe operation.

3. Product information

3.1 Product overview

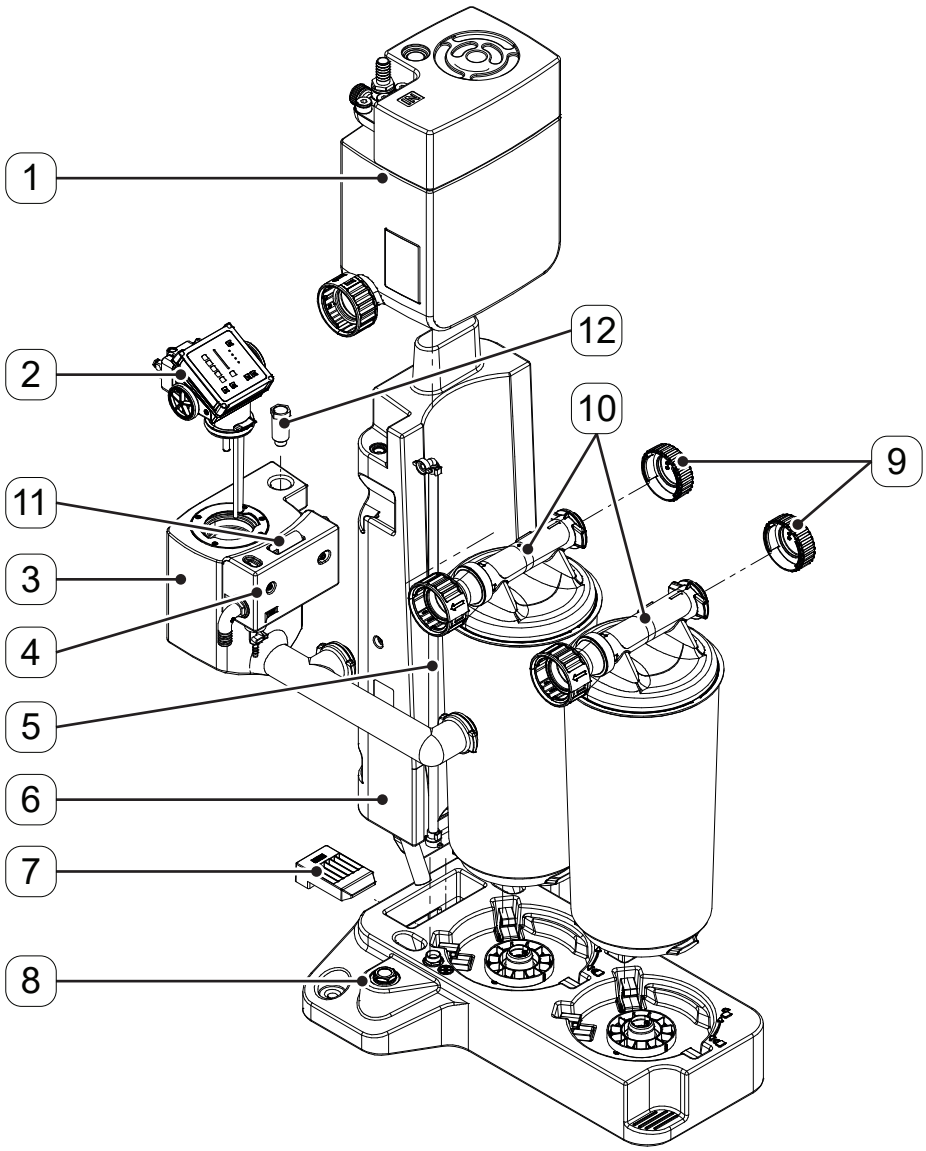
3.1.1 QWIK-PURE® 15



No.	Description / explanation
[1]	Pressure relief chamber
[2]	Flow regulation controller (**FRC**), control unit
[3]	Measuring chamber
[4]	Clean water tank
[5]	Riser duct
[6]	Foot

No.	Description / explanation
[7]	Locking device
[8]	Collector 1 x 1 filter cartridge
[9]	End cap
[10]	Filter cartridge
[11]	Reference turbidity tube
[12]	Fixing screw

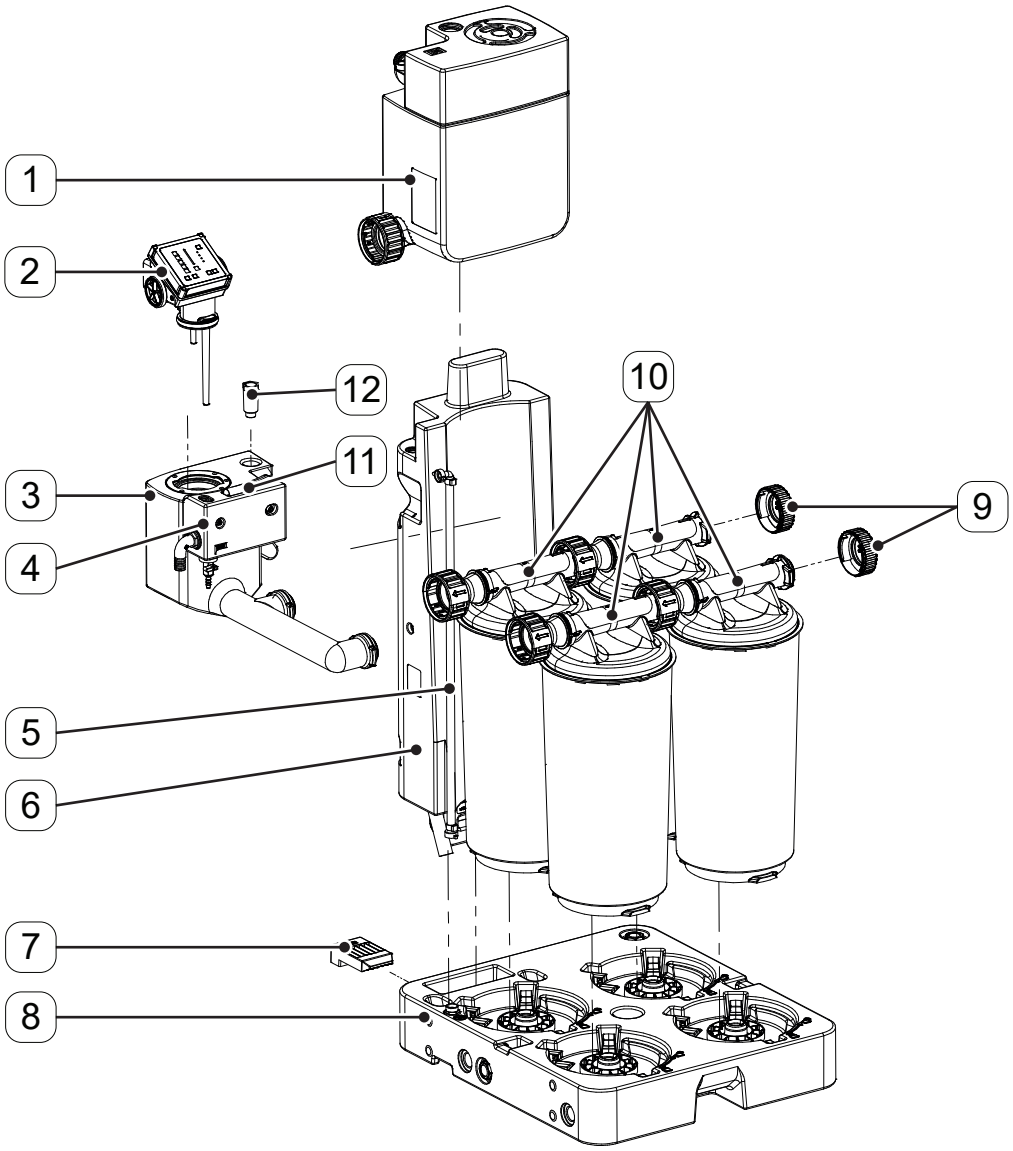
3.1.2 QWIK-PURE® 30



No.	Description / explanation
[1]	Pressure relief chamber
[2]	Flow regulation controller (**FRC**), control unit
[3]	Measuring chamber
[4]	Clean water tank
[5]	Riser duct
[6]	Foot

No.	Description / explanation
[7]	Locking device
[8]	Collector 1 x 2 filter cartridges
[9]	End cap
[10]	Filter cartridge
[11]	Reference turbidity tube
[12]	Fixing screw

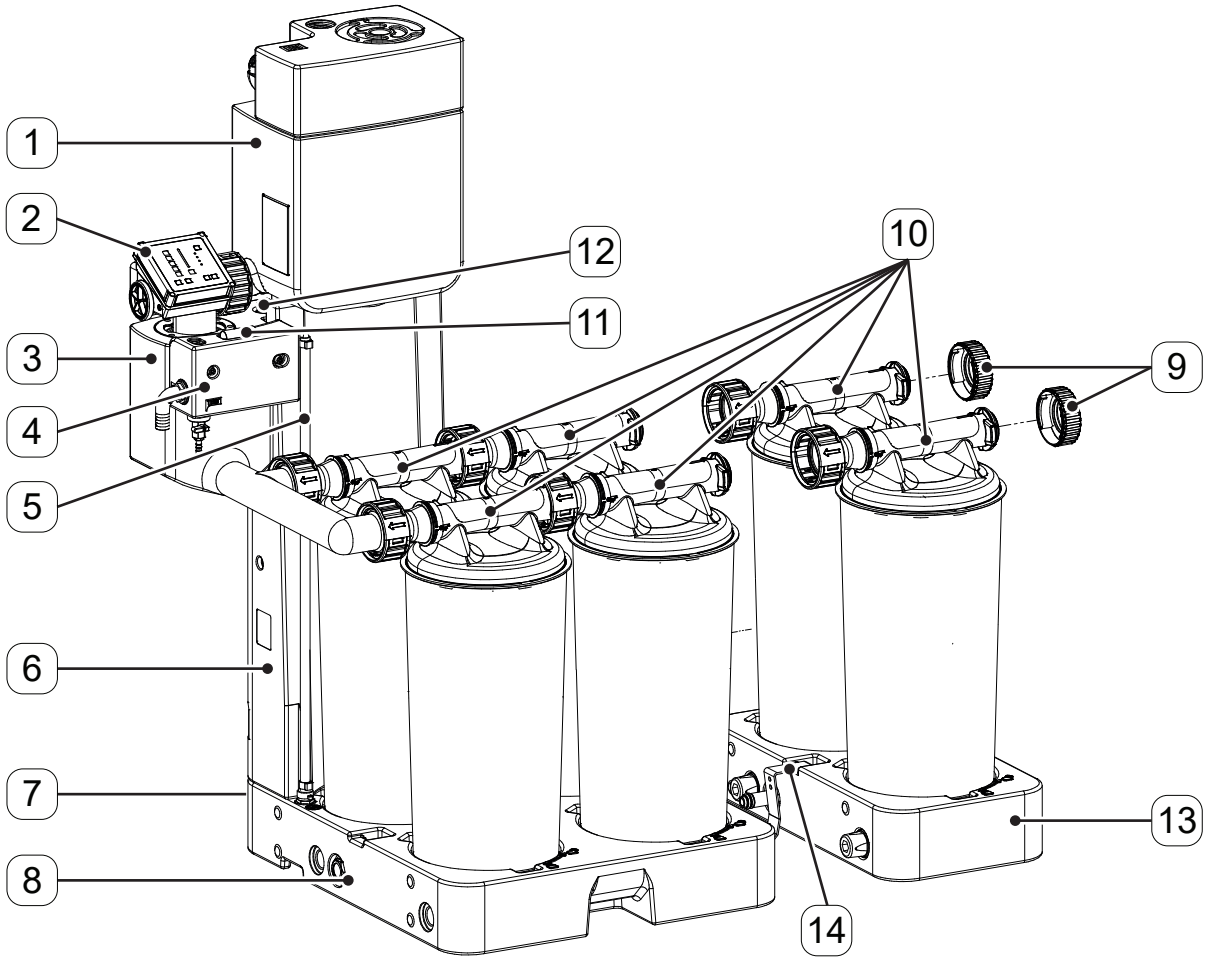
3.1.3 QWIK-PURE® 60



No.	Description / explanation
[1]	Pressure relief chamber
[2]	Flow regulation controller (**FRC**), control unit
[3]	Measuring chamber
[4]	Clean water tank
[5]	Riser duct
[6]	Foot

No.	Description / explanation
[7]	Locking device
[8]	Collector 2 x 2 filter cartridges
[9]	End cap
[10]	Filter cartridge
[11]	Reference turbidity tube
[12]	Fixing screw

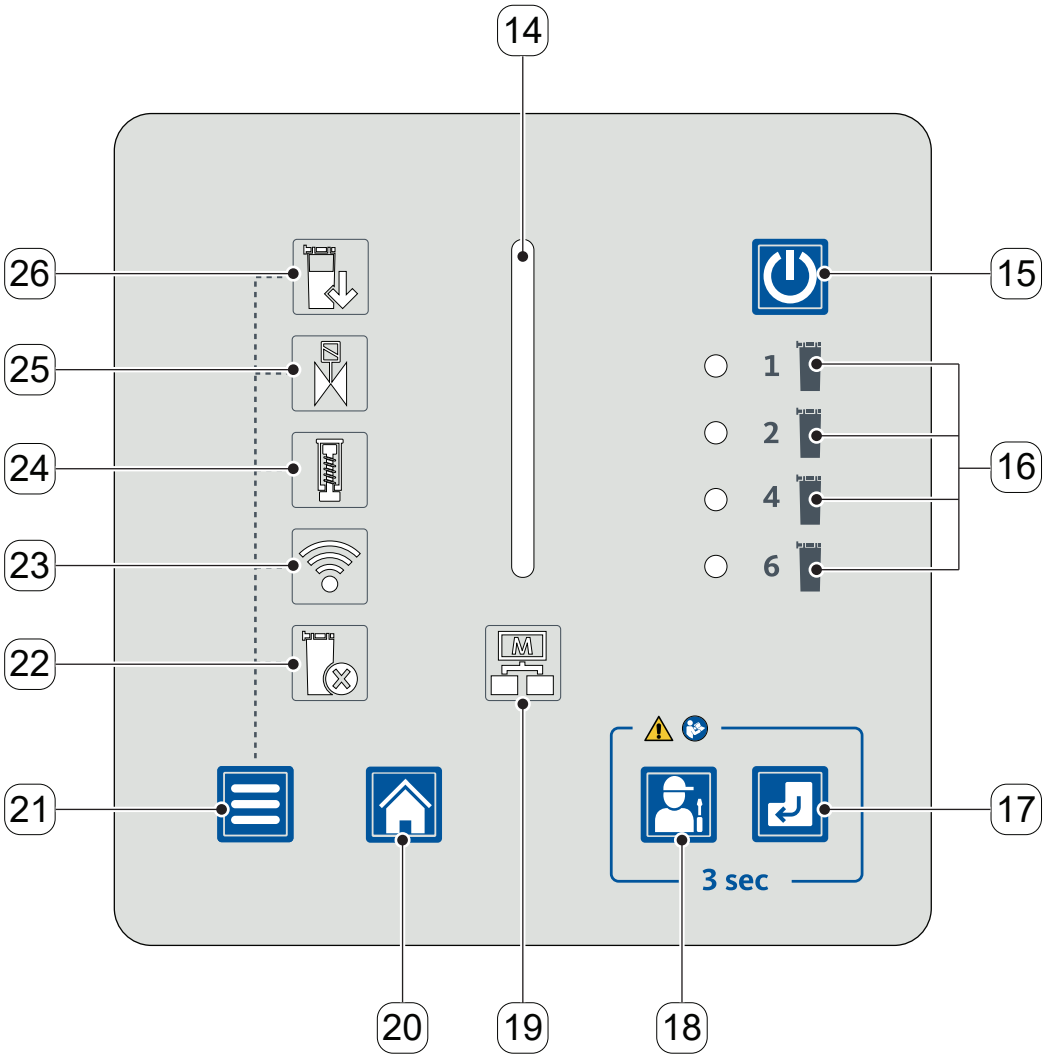
3.1.4 QWIK-PURE® 90



No.	Description / explanation
[1]	Pressure relief chamber
[2]	Flow regulation controller (**FRC**), control unit
[3]	Measuring chamber
[4]	Clean water tank
[5]	Riser duct
[6]	Foot
[7]	Locking device (not visible)

No.	Description / explanation
[8]	Collector 2 x 2 filter cartridges
[9]	End cap
[10]	Filter cartridge
[11]	Reference turbidity tube
[12]	Fixing screw
[13]	Extension module
[14]	Locking device

3.2 User interface

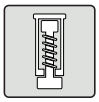
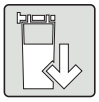


Display elements	
No.	**Description / explanation**
[14]	Status LED STATUS BAR
[16]	LED NUMBER OF FILTER CARTRIDGES
[19]	Status LED DATA TRANSFER
[22]	Status LED FILTER CARTRIDGE SELECTION
[23]	WLAN status LED
[24]	Status LED PISTON
[25]	Status LED SOLENOID VALVES
[26]	Status LED FILTER CARTRIDGES

Controls	
No.	**Description / explanation**
[15]	On-Off button
[17]	Enter button
[18]	Service button
[20]	Start Menu button
[21]	Menu button

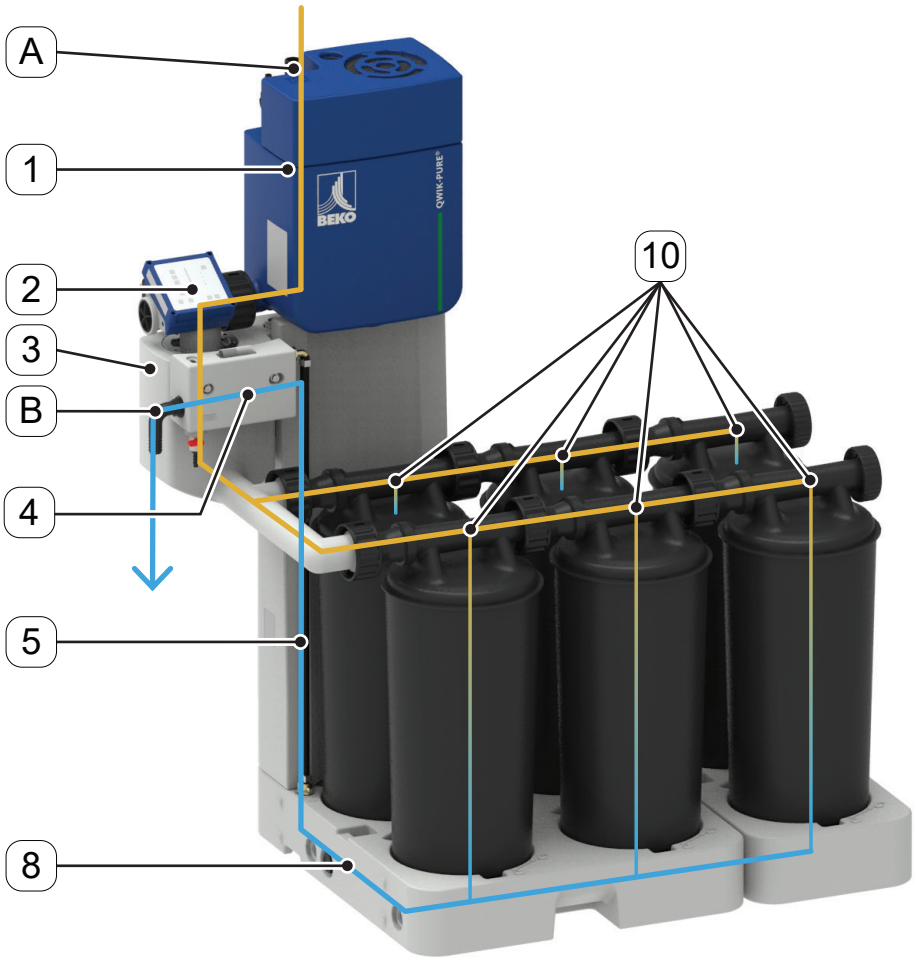
3.3 Description of the controls and displays

<table>
<tr><th>Illustration</th><th>Description / explanation</th></tr>
<tr><td>  </td><td>Status LED STATUS BAR
<table>
<tr><th>LED</th><th>Status bar</th></tr>
<tr><td>Flashing white</td><td>FRC in standby mode</td></tr>
<tr><td>Lights up blue</td><td>Function started by the operator is executed</td></tr>
<tr><td>Lights up green</td><td>The status of a selected function is displayed</td></tr>
<tr><td>Solid yellow light</td><td>Warning, FRC with restricted operation</td></tr>
<tr><td>Flashes red</td><td>Malfunction, FRC stopped, condensate separation without the use of auxiliary air</td></tr>
</table></td></tr>
<tr><td>  </td><td>On-Off button
• Switching the FRC on and off</td></tr>
<tr><td>  </td><td>LED NUMBER OF FILTER CARTRIDGES
<table>
<tr><th>LED</th><th>Number of filter cartridges</th></tr>
<tr><td>1 lights up green</td><td>1 filter cartridge</td></tr>
<tr><td>2 lights up green</td><td>2 filter cartridges</td></tr>
<tr><td>4 lights up green</td><td>4 filter cartridges</td></tr>
<tr><td>6 lights up green</td><td>6 filter cartridges</td></tr>
</table></td></tr>
<tr><td>  </td><td>Enter button
• Confirm entries</td></tr>
<tr><td>  </td><td>Service button
• Start service functions</td></tr>
<tr><td>  </td><td>Status LED DATA TRANSFER
<table>
<tr><th>LED</th><th>Data transfer status</th></tr>
<tr><td>Off</td><td>No data connection</td></tr>
<tr><td>Lights up green</td><td>Data connection established</td></tr>
</table></td></tr>
<tr><td>  </td><td>Start Menu button
• Call up the START MEMU screen
• Cancel operation actions</td></tr>
<tr><td>  </td><td>Menu button
• Used to switch between menu screens</td></tr>
</table>

Illustration	Description / explanation
	**Status LED FILTER CARTRIDGE** **LED** / **Filter Cartridge selection** Flashes green / Number of filter cartridges can be configured
	**WLAN status LED** **LED** / **WLAN status** Off / Deactivated Flashes blue / Active and a WLAN connection can be established
	**Status LED PISTON** **LED** / **Piston status** Lights up green / No service necessary Lights up red / Replace PISTON Service-Unit
	**Status LED SOLENOID VALVES** **LED** / **Status of solenoid valves** Lights up green / No service necessary Lights up red / Replace SOLENOID VALVES Service-Unit
	**Status LED FILTER CARTRIDGES** **LED** / **Status of filter cartridges** Lights up green / No service necessary Lights up red / Replacing filter cartridges

3.4 Function description

The product's condensate flow through is controlled and monitored by the **flow regulation controller** control unit, hereafter referred to as **FRC**.



The condensate is fed from the condensate collection line via the condensate inlet **[A]** into the pressure relief chamber **[1]**. In the pressure relief chamber **[1]**, entrained compressed air is separated before the condensate flows through the **FRC [2]** into the measuring chamber **[3]** and then into the filter cartridges **[10]**.

The **FRC [2]** monitors the filling level in the measuring chamber **[3]**with the following sensors:

- High Level Alarm (HLA) sensor
- High Level (HL) sensor
- Low Level (LL) sensor

When the filling level in the measuring chamber **[3]** reaches the High Level (HL) sensor, the condensate is passed through the filter cartridge **[10]** with auxiliary air. The **FRC [2]** will perform a discharge process with the following steps:

1. The PISTON solenoid valve is switched.
   → The piston in the **FRC [2]** is pressurised with auxiliary air and closes the connection to the pressure relief chamber **[1]**.
2. The PULSE solenoid valve is opened at intervals.
   → Auxiliary air is conveyed into the measuring chamber **[3]**.
3. The auxiliary air introduced displaces the condensate from the measuring chamber **[3]** and forces the condensate into the collector **[8]** through the filter cartridges **[10]**.

4. The auxiliary air supply is stopped as soon as the filling level in the measuring chamber **[3]** falls below the Low Level (LL) sensor.
5. The PISTON solenoid valve is switched.
   → The piston is depressurised and opens the connection to the pressure relief chamber **[1]**.
6. The measuring chamber **[3]** is filled with condensate.

The purified condensate is fed from the collector **[8]** via the riser duct **[5]** into the clean water tank **[4]**. The purified condensate is conveyed into the wastewater connection through the condensate drain **[B]** of the clean water tank **[4]** .

During operation, a layer of oil will settle on the condensate surface in the measuring chamber **[3]** and then be fed into the filter cartridges **[10]** during ongoing operation.

After a pre-set number of discharge cycles, the level of the condensate will be lowered until the oil layer comes into contact with the filter material.

If the oil layer on the condensate surface reaches the High Level Alarm (HLA) sensor, the **FRC [2]** will perform an unscheduled discharge cycle, referred to as an “oil cycle”. The oil cycle will lower the level of the condensate until the oil layer is in contact with the filter material.

The following reasons may cause the level to rise to the High Level Alarm (HLA) sensor:

- Excessive oil settles during the period of the set number of discharge cycles.
- The filter cartridges **[10]** are saturated and free oil can no longer be bound by an oil cycle in the filter cartridges **[10]**.
- Relatively large quantities of oil have entered the product from outside (e.g., an oil leak in the compressor)

If the filter cartridges **[10]** are saturated with oil, it is necessary to change the filter cartridges **[10]** (see section “10.3.2 Replacing filter cartridges” on page 96). Pressing the Service button reduces the condensate level in the product so that as little condensate as possible remains in the filter cartridges **[10]**.

In the de-energised state, in standby mode and in the event of a malfunction, the condensate is conveyed through the filter cartridges **[10]** by gravity alone, without the assistance of auxiliary air.

3.5 Modbus function

The control unit features an integrated Modbus RTU interface that can be used to read operating parameters and device information.

The control unit is operated in the client–server system with the Modbus-RTU operating mode.

Data is transmitted via an RS485 interface in binary format.

3.5.1 Default interface parameters

Value	Parameter
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	even
Server Address	247

3.5.2 Byte sequence

Data type	Modbus registers	Format
float	2 Register	ABCD
u32	2 Register	ABCD
u16	1 Register	AB
u8	1 Register	A
u8		B

3.5.3 Implemented functions

The following Modbus functions are supported:

1. Read Input Registers (0x04)
2. Read Device Identification (0x2B / 0x0E)
3. Changing interface parameters

3.5.3.1 Read Input Registers (0x04)

Modbus address	Content	Description / explanation	Format
1104	Piston valve operation counts, Hi-Word	Switching cycles, PISTON solenoid valve	u32
1105	Piston valve operation counts, Lo-Word		
1106	Pulse valve operation counts, Hi-Word	Switching cycles, PULSE solenoid valve	u32
1107	Pulse valve operation counts, Lo-Word		
1116	Operating hours	Operating time [h]	u32
1117	Operating hours		
1118	Uptime	Operating time [s] during which the product is connected to the voltage supply	u32
1119	Uptime		
1540	Temperature (PCB), Hi-Word	PCB temperature [°C]	float
1541	Temperature (PCB), Lo-Word		
1542	Temperature (PCB), Hi-Word	PCB temperature [°F]	float
1543	Temperature (PCB), Lo-Word		
1544	Voltage (PCB), Hi-Word	PCB voltage [V]	float
1545	Voltage (PCB), Lo-Word		
1700	LED displays	FILTER CARTRIDGES status LED LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1701	LED displays	SOLENOID VALVES status LED LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16

Modbus address	Content	Description / explanation	Format
1702	LED displays	PISTON status LED LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1703	LED displays	WLAN status LED LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1704	LED displays	FILTER CARTRIDGE SELECTION status LED LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1705	LED displays	DATA TRANSFER status LED LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1706 1707 1708 1709	LED displays	STATUS BAR 0/1/2/3 status LED LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1710 1711 1712 1713	LED displays	NUMBER OF FILTER CARTRIDGES 1/2/4/6 LED LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1760	Digital Input	On-Off button Not pressed = 0 Pressed = 1	u16
1761	Digital Input	Menu button Not pressed = 0 Pressed = 1	u16

Modbus address	Content	Description / explanation	Format
1762	Digital Input	Start Menu button Not pressed = 0 Pressed = 1	u16
1763	Digital Input	Service button Not pressed = 0 Pressed = 1	u16
1764	Digital Input	Enter button Not pressed = 0 Pressed = 1	u16
3200	Error Flags	All Error Flags 1 = Error active 0 = Error inactive	u16
3201	Error1 Flag	General code flash fault signal 1 = Error active 0 = Error inactive	u16
3202	Error2 Flag	General configuration fault signal 1 = Error active 0 = Error inactive	u16
3203	Error3 Flag	General adjustment fault signal 1 = Error active 0 = Error inactive	u16
3204	Error4 Flag	General hardware fault signal 1 = Error active 0 = Error inactive	u16
3205	Error5 Flag	General fault signal (1 ... 13) 1 = Error active 0 = Error inactive	u16
3206	Error6 Flag	General warning signal (1 ... 4) 1 = Error active 0 = Error inactive	u16
3217	System error mode state	General fault signal (1 ... 13)	u16
3218	System limp home mode state	General warning signal (1 ... 4) Bit 1 = Warning signal 1 Bit 2 = Warning signal 2 Bit 3 = Warning signal 3 Bit 4 = Warning signal 4	u16

Modbus address	Content	Description / explanation	Format
3310	Cartridge operation time left	Filter cartridges, remaining service time [%]	float
3312	Cartridge operation count left	Filter cartridges, remaining switching cycles [%]	float
3314	Piston operation count left	Piston, remaining switching cycles [%]	float
3316	Piston operation time left	Piston, remaining service time [%]	float
3318	Valve operation count left	Solenoid valves, remaining switching cycles [%]	float
3320	Valve operation time left	Solenoid valves, remaining service time [%]	float
3322	Operating hours at last service	Operating time the last time servicing was performed [s]	u32
3410	Amount of cartridges	Set number of filter cartridges	u16

3.5.3.2 Read Device Identification (0x2B / 0x0E)

The advanced **Read Device Identification** function can be used to read the following device-specific data.

Object ID	Alternate Input Register*1	Item name	Description / explanation	Format
0x00	6000 ... 6099	VendorName	Manufacturer	ASCII
0x01		ProductCode	Manufacturer part number for PCB	ASCII
0x02		MajorMinorRevision	Software version numbers*2	ASCII
0x03		VendorUrl	Manufacturer website	ASCII
0x04		ProductName	Product name	ASCII
0x05		ModelName	Product version	ASCII
0x06		UserApplicationName	Manufacturer serial number for PCB	ASCII
0x80	6100 ... 6199	n.a.	Production: Circuit board test date	ASCII
0x81		n.a.	Production: Circuit board adjustment date	ASCII
0x82		n.a.	Production: Circuit board calibration date	ASCII
0x83		n.a.	Production: free	ASCII
0x85	6200 ... 6298	n.a.	Manufacturer part number for product	ASCII
0x86		n.a.	Manufacturer serial number for product	ASCII

*1 ASCII strings will be separated by 0x00. Characters not used at the end of a string will be filled with 0x00.

*2 Legend: APP = application
BBS = Basic software
CFG = Configuration

3.5.3.3 Changing interface parameters

This process is used to change interface parameters required for communication.

1. Write the value 0xAC1D (decimal: 44061) to Holding Register 0x1392 (Decimal: 5010).
2. Write the parameter to the Holding Register 0x07D0 (decimal: 2000).

	Description / explanation
HighByte:	See the following table
LowByte:	Modbus server address 1 ... 246
Example value:	0x070A (decimal: 1802) For interface parameters see table Index 0x07 (decimal: 7) Server address 0x0A (decimal: 10)

3. To save the settings, write the value 0xBA5E (decimal: 47710) to Holding Register 0x139C (Decimal: 5020).
4. Switch the product off and switch it back on again.
   → The changes will go into effect approx. 10 seconds after the restart.

HighByte			
Selection	Baud Rate [Bd]	Parity	Stop Bit
0x00	4800	No	2
0x01	4800	Even	1
0x02	4800	Odd	1
0x03	9600	No	2
0x04	9600	Even	1
0x05	9600	Odd	1
0x06	19200	No	2
0x07	19200	Even	1
0x08	19200	Odd	1
0x09	38400	No	2
0x0A	38400	Even	1
0x0B	38400	Odd	1

HighByte			
Selection	Baud Rate [Bd]	Parity	Stop Bit
0x0C	57600	No	2
0x0D	57600	Even	1
0x0E	57600	Odd	1
0x0F	76800	No	2
0x10	76800	Even	1
0x11	76800	Odd	1
0x12	115200	No	2
0x13	115200	Even	1
0x14	115200	Odd	1

3.5.3.4 Error messages

Error code	Error message	Description / explanation
01	ILLEGAL FUNCTION	Function not implemented
02	ILLEGAL DATA ADDRESS	Requested address outside of valid range
03	ILLEGAL DATA VALUE	Incorrect data
04	SERVER DEVICE FAILURE	Unrecoverable error occurred during request

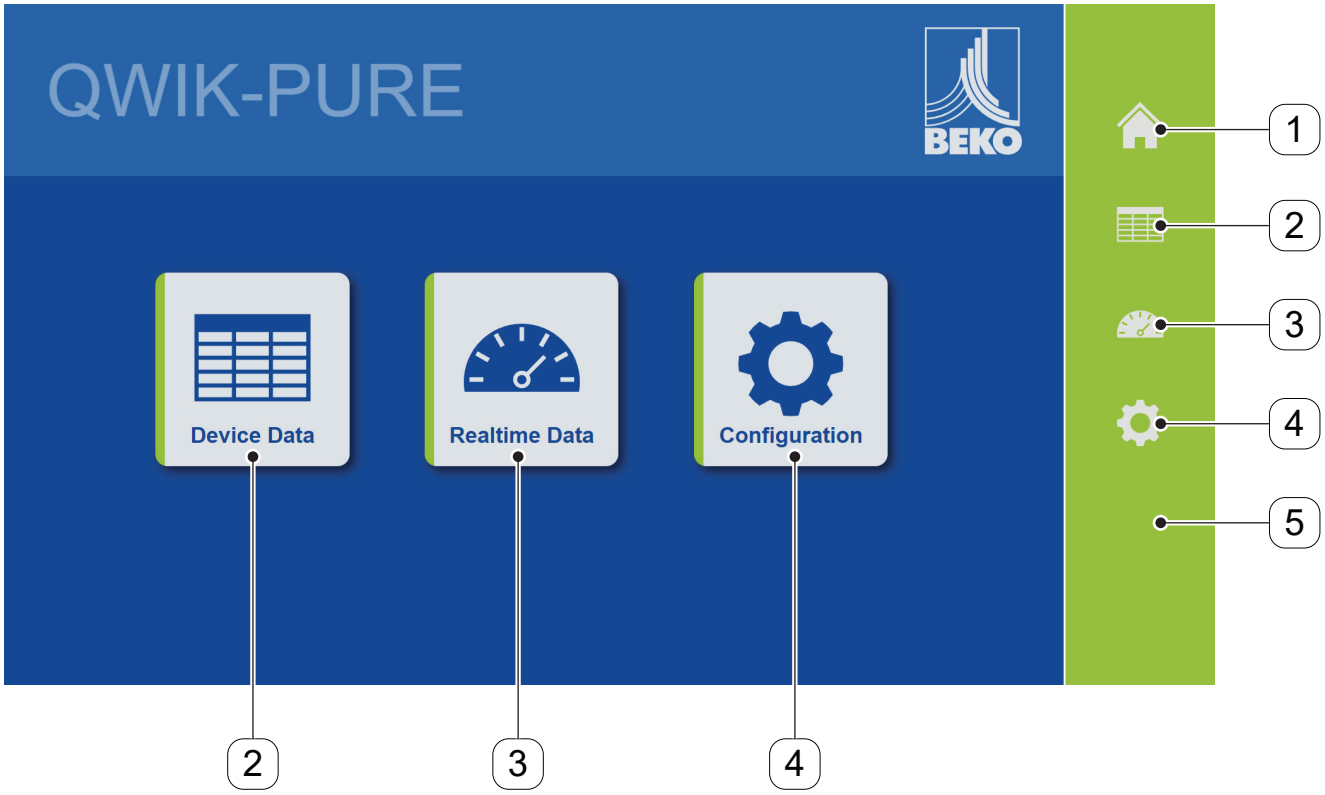
3.6 WLAN function

The **FRC** features an integrated password-protected WLAN interface through which the following functions can be called on the **FRC**:

- Display device data
- Displaying operating data in real time
- Change **FRC** settings

INFORMATION	Activating the WLAN interface
	The procedure for activating the WLAN interface is described in the section on WLAN activation (see section “9.2.6 Activating the WLAN” on page 87).

3.6.1 Home

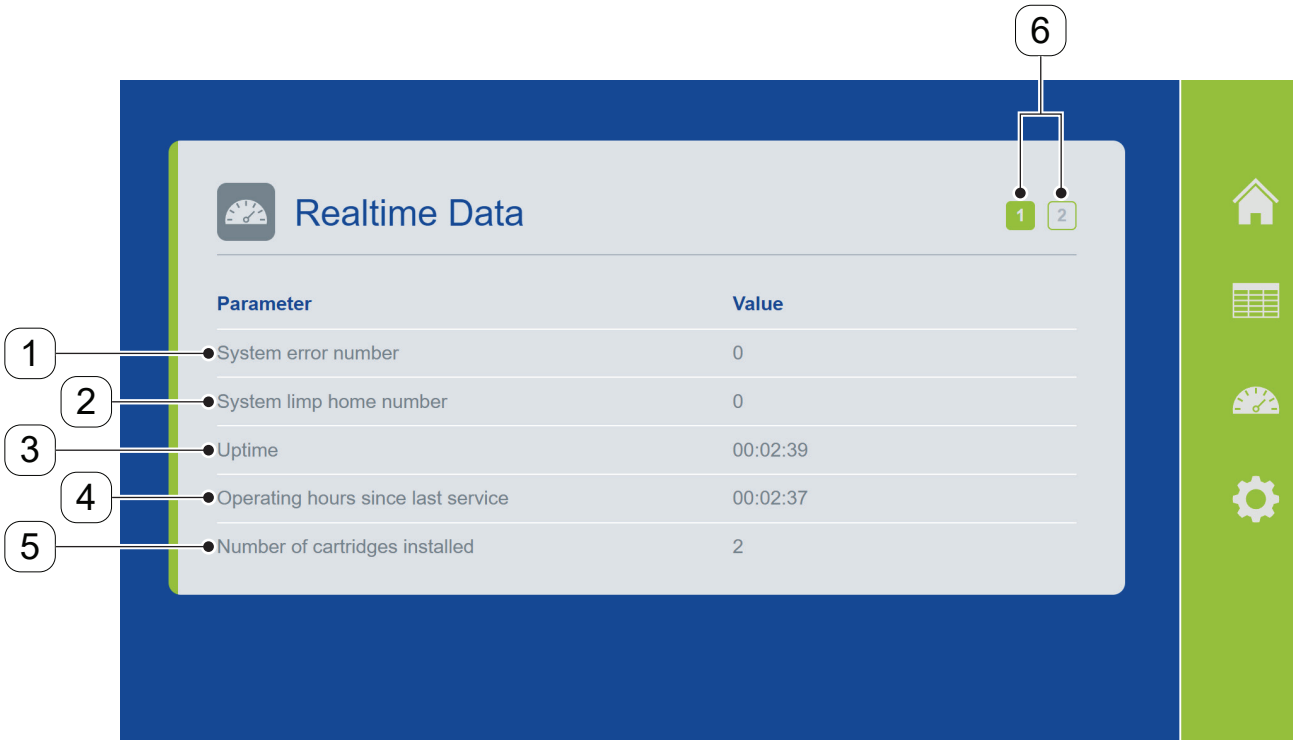


No.	Menu	Description / explanation
[1]	Home	Start menu
[2]	Device Data	Shows the device data
[3]	Realtime Data	Shows the operating data in real time
[4]	Configuration	Used to configure the interface parameters
[5]	Task bar	Menu bar for navigating between the individual menus

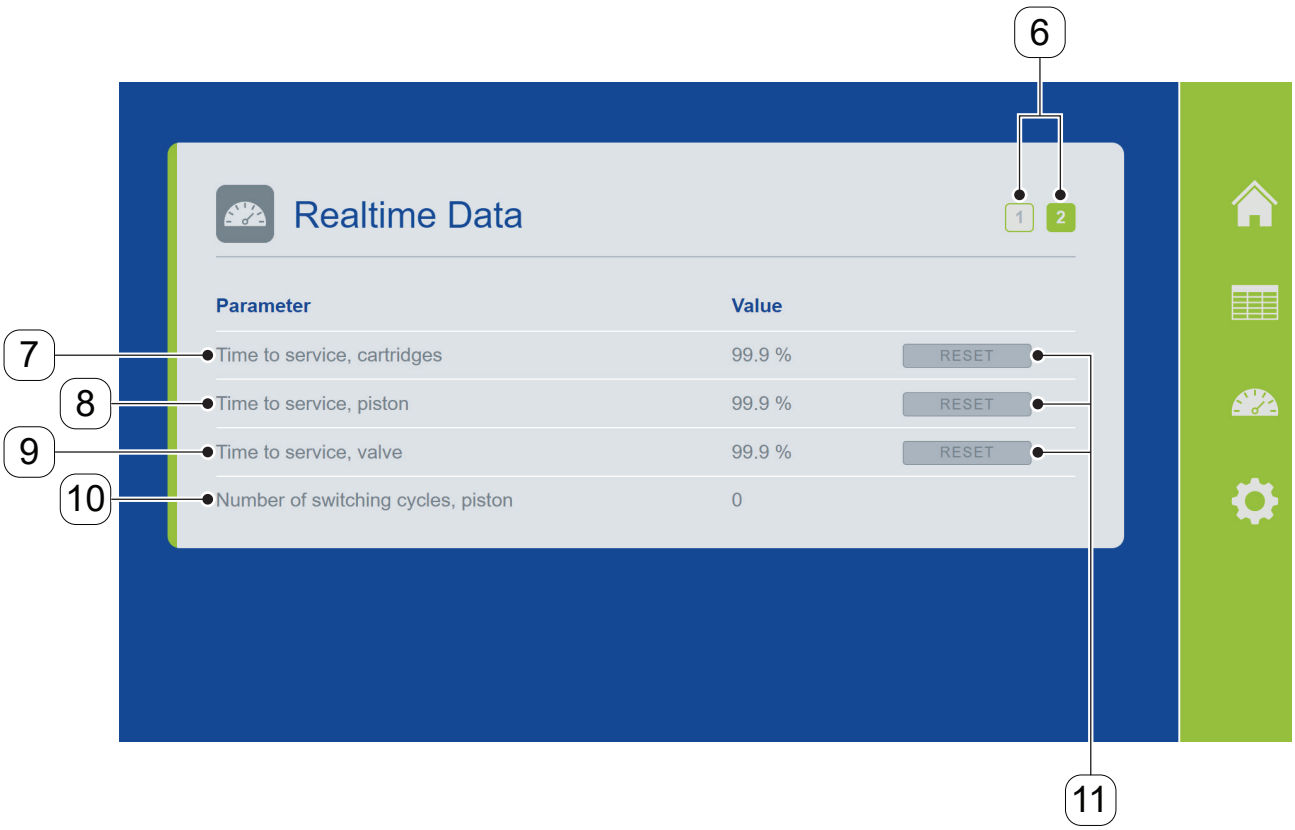
3.6.2 Device Data

No.	Content	Description / explanation
[1]	Firmware version	Software version numbers
[2]	Website version	Visualisation version number
[3]	Board serial number	PCB serial number
[4]	Device SAP number	Device part number
[5]	Device serial number	Device serial number

3.6.3 Realtime Data

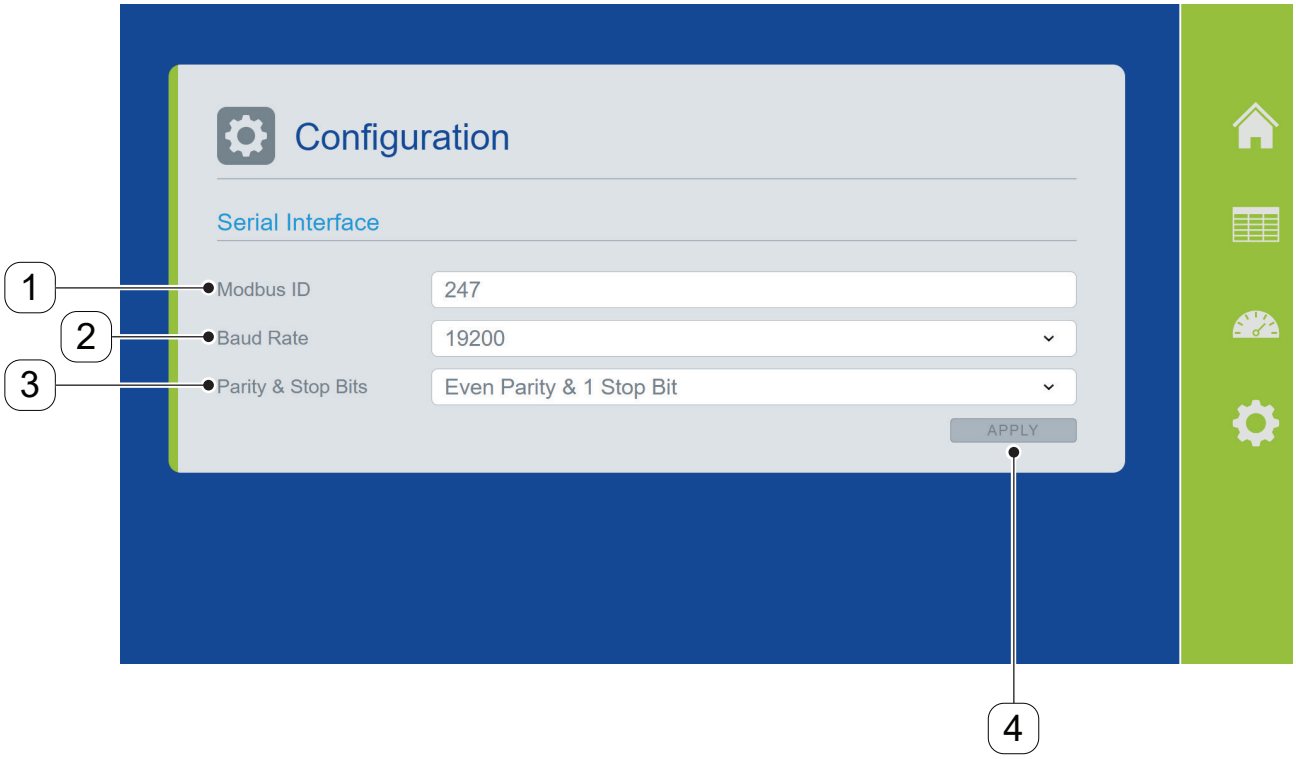


No.	Content	Description / explanation
[1]	System Error number	Shows the number of the current fault signal 0 = There are no fault signals.
[2]	System limp home number	Shows the number of the current warning 0 = There are no warnings.
[3]	Uptime	Operating time [hh:mm:ss] during which the product is connected to the voltage supply
[4]	Operating hours since last service	Operating time since the last time servicing was performed [hh:mm:ss]
[5]	Number of cartridges installed	Number of filter cartridges installed
[6]	Page	Shows the current page



No.	Content	Description / explanation
[6]	Page	Shows the current page
[7]	Time to service, cartridges	Remaining service time until next filter cartridge change [%]
[8]	Time to service, piston	Remaining service time until next piston change [%]
[9]	Time to service, valve	Remaining service time until next solenoid valve change [%]
[10]	Number of switching cycles, piston	Number of piston switching cycles
[11]	Reset	Pressing this button will reset the counter to 100%.

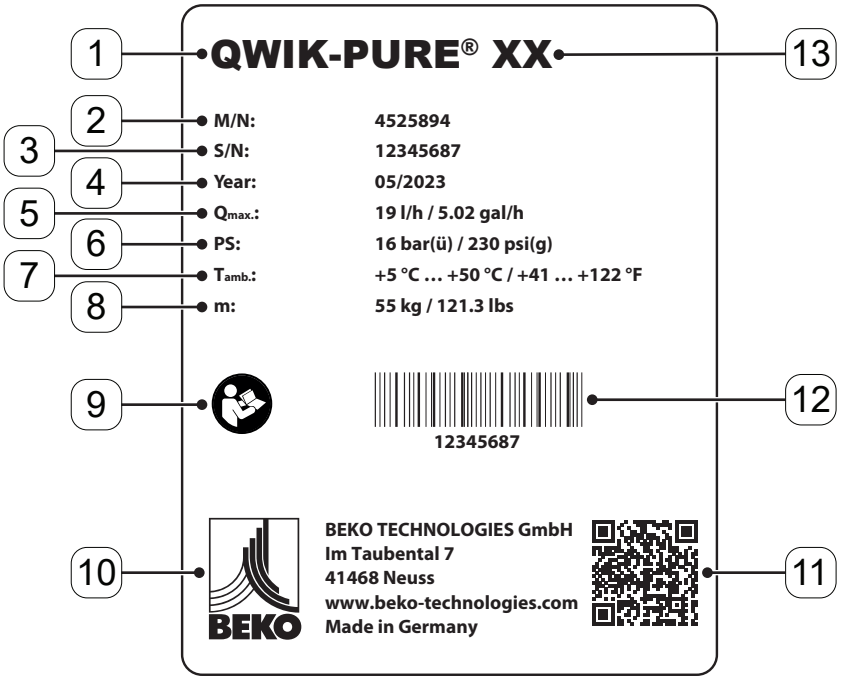
3.6.4 Configuration



No.	Content	Description / explanation
[1]	Modbus ID	Used to enter the server address 247 (default setting)
[2]	Baud Rate	Baud rate drop-down menu • 4800 • 9600 • 19200 (default setting) • 38400 • 57600 • 76800 • 115200
[3]	Parity & Stop Bits	Parity and stop bits drop-down menu • No parity & 2 stop bits • Even parity & 1 stop bit (default setting) • Odd parity & 1 stop bit
[4]	Apply	Tapping the button will apply all settings.

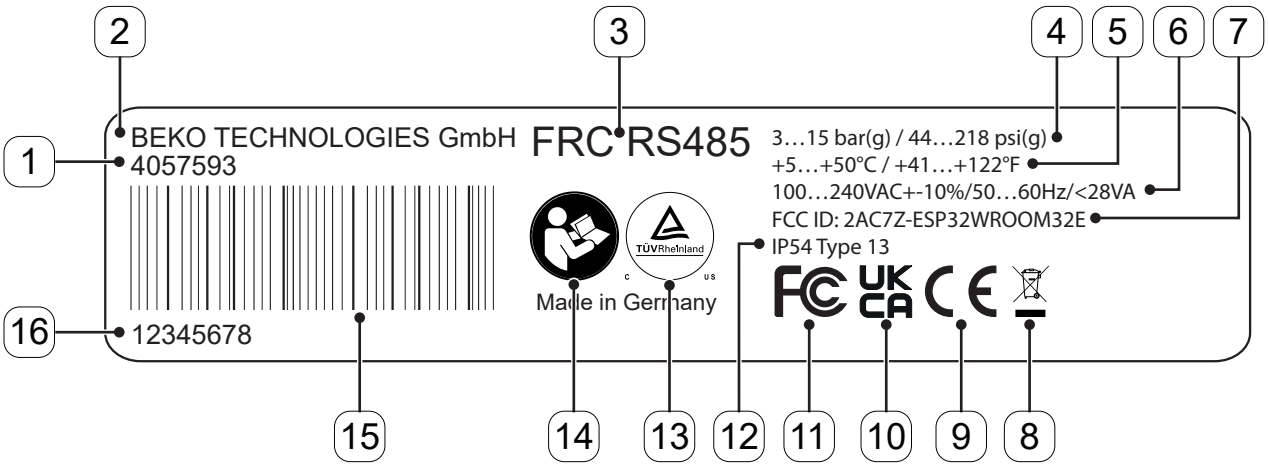
3.7 Type plate

3.7.1 QWIK-PURE® 15 ... 90



No.	Description / explanation
[1]	Product name
[2]	Material number
[3]	Serial number
[4]	Month and year of manufacture
[5]	Maximum condensate flow rate
[6]	Maximum operating pressure
[7]	Ambient temperature
[8]	Maximum operating weight
[9]	“Read and understand the installation and operation manual” instruction symbol
[10]	Manufacturer contact information
[11]	QR code for downloading the product-specific documentation
[12]	Bar code
[13]	Size (e.g. 15)

3.7.2 FRC control unit



No.	Description / explanation
[1]	Material number
[2]	Manufacturer name
[3]	Device name
[4]	Operating pressure
[5]	Operating temperature
[6]	Supply voltage / frequency range / maximum power consumption
[7]	FCC approval number
[8]	Marking for the disposal of electrical and electronic equipment
[9]	Approval mark
[10]	Approval mark
[11]	Approval mark
[12]	Degree of protection
[13]	Approval mark
[14]	“Read and understand the installation and operation manual” instruction symbol
[15]	Bar code
[16]	Serial number

3.8 Scope of delivery

INFORMATION	Scope of delivery
	The installation size and further delivery details are specified in the contractual documents.

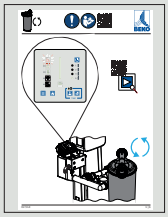
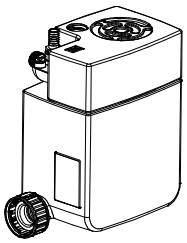
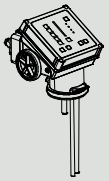
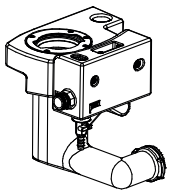
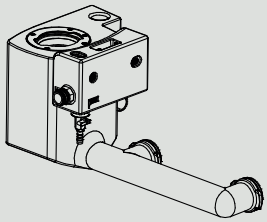
Illustration	Description / explanation	QWIK-PURE®			
		15	30	60	90
	Quick Start Guide	1	1	1	1
	Quick Start Guide	1	1	1	1
	Pressure relief chamber	1	1	1	1
	Flow regulation controller (**FRC**), control unit	1	1	1	1
	2.5 l (0.66 gal) measuring chamber, with clean water tank	1	—	—	—
	5 l (1.32 gal) measuring chamber, with clean water tank	—	1	1	1

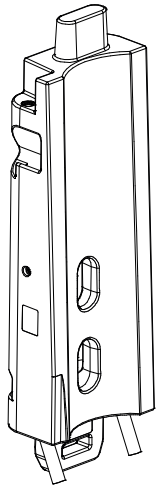
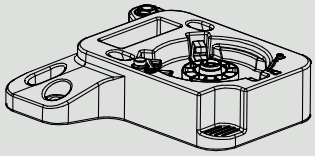
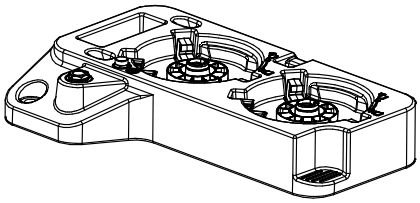
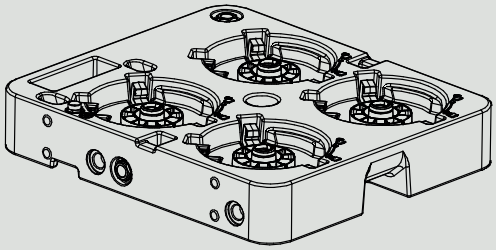
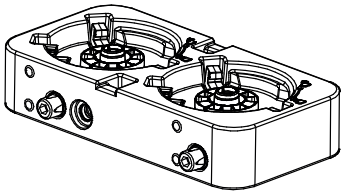
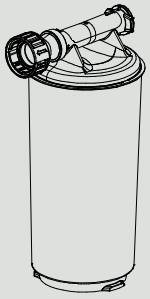
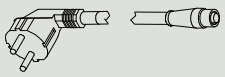
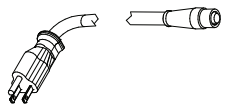
Illustration	Description / explanation	QWIK-PURE®			
		15	30	60	90
	Foot	1	1	1	1
	Collector 1 x 1 filter cartridge	1	—	—	—
	Collector 1 x 2 filter cartridges	—	1	—	—
	Collector 2 x 2 filter cartridges	—	—	1	1
	Expansion module 1 x 2 filter cartridges	—	—	—	1
	Filter cartridge	1	2	4	6

Illustration	Description / explanation	QWIK-PURE®			
		15	30	60	90
	Elbow connector with union nut and flat gasket	1	1	1	1
	Fixing screw	1	1	1	1
	Riser duct	1	1	1	1
	End cap	1	2	2	2
	Locking device, foot	1	1	1	1
	Locking unit, expansion module	—	—	—	1
	Connecting pipe, expansion modules	—	—	—	1
	Reference turbidity tube 5 mg/l (5 ppm) / 10 mg/l (10 ppm)	2	2	2	2
	Vaseline	1	1	1	1
	Power cord with M12 connector with S keying and safety contact plug IEC Type E +F, CEE 7/7	1	1	1	1
	Power supply cable with M12 connector with S keying and IEC Type B, NEMA 5-15 connector	1	1	1	1
	M12 connector with S keying, 2 conductors and PE	1	1	1	1

4. Technical data

4.1 QWIK-PURE® operating parameters

Parameter	QWIK-PURE®			
	15	30	60	90
Relative ambient air humidity	≤10 ... 80%, without condensation			
Maximum operating altitude above sea level*1	2000 m 2187.23 yd			
Maximum operating pressure at condensate inlet	16 bar(g) 230 psi(g)			
Minimum / maximum operating temperature, fluids and environment	+5 ... +50 °C +41 ... +122 °F			
Maximum condensate flow rate*2	19 l/h 5.02 gal/h	38 l/h 10.04 gal/h	76 l/h 20.08 gal/h	114 l/h 30.12 gal/h
Connection, condensate inlet	3 x G1/2", male, 1 x G1", male, hose connection: 1 x 25 mm (0.98 in) male, 1 x 13 mm (0.52 in) male			
Connection, condensate drain	25 mm (0.98 in), male, hose connection			
Media	Compressor condensate, oil-contaminated			
Maximum operating weight	55 kg 121.3 lbs	100 kg 220.5 lbs	180 kg 396.8 lbs	250 kg 551.2 lbs
Maximum oil concentration at condensate outlet *2	10 mg/l 10 ppm			

*1 Can be operated up to a maximum of 3000 m (3280.84 yd) above sea level

*2 In compliance with the standardised reference conditions issued by the Deutsches Institut für Bautechnik (DIBt / German technical approval body for the construction sector)

4.2 FRC operating parameters

Parameter	FRC control unit
Relative ambient humidity	≤10 ... 80%, without condensation
Maximum operating altitude above sea level*1	2000 m 2187.23 yd
Minimum / maximum operating pressure*1, compressed air	3 ... 15 bar(g) 44 ... 218 psi(g)
Purity class*2, compressed air	[2 : 4 : 2]
Minimum / maximum operating temperature, fluids and environment	+5 ... +50 °C +41 ... +122 °F
Connection, compressed air	Hose connection 8 mm (0.31 in), male
Operating voltage	90 ... 264 VAC / 24 VDC (See type plate on the **FRC** control unit)
Frequency range	50 – 60 Hz
Power consumption	28 VA
Degree of protection	IP54
Enclosure rating (UL50E)	Type 13
Overvoltage category (IEC 61010-1)	I
Degree of pollution (IEC 61010-1)	2
Recommended cable diameter, power supply	8 ... 10 mm 0.32 ... 0.33 in
Recommended wire cross-section, power supply	0.75 ... 1.5 mm² 20 ... 16 AWG
Recommended cable type, power supply	EU: H05VV-F 3G US: SJT
Recommended maximum cable length, power supply	3 m 10 ft
WLAN standard	IEEE 802.11 n/g/b
WLAN frequency range	2.4.GHz (24120 ... 2462.MHz)
Maximum WLAN transmission power	19.5 dBm / 89 mW
WLAN encryption	WPA2-PSK

*1 Can be operated up to a maximum of 3000 m (3280.84 yd) above sea level at operating pressures ≤4 bar(g)

*2 Purity class according to ISO 8573-1

4.3 Storage parameters

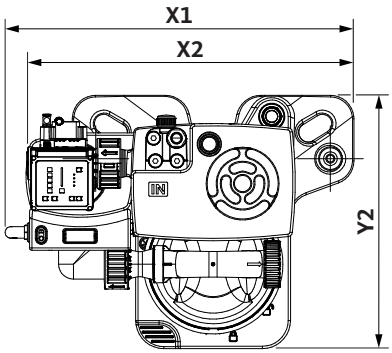
Parameter	QWIK-PURE®			
	15	30	60	90
Minimum / maximum temperature	+5 °C to +50 °C +33.8 °F ... +122 °F			
Relative ambient air humidity	≤10 ... 80%, without condensation			
Empty weight	16 kg 35.3 lbs	35 kg 77.2 lbs	45 kg 99.2 lbs	60 kg 132.3 lbs

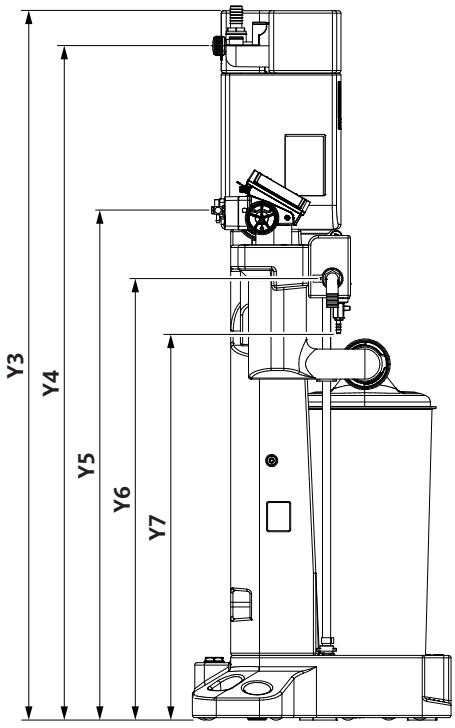
4.4 Materials

Component	Material
Filter cartridge	Plastic blend and cellulose
FRC	Plastic blend and electronics
Pressure relief chamber	PE
Condensate inlet	PA/PP/VA
Measuring chamber	PE
Clean water tank	PE
Foot	PE
Collector	PE
Additional module	PE

4.5 Dimensions

4.5.1 QWIK-PURE® 15

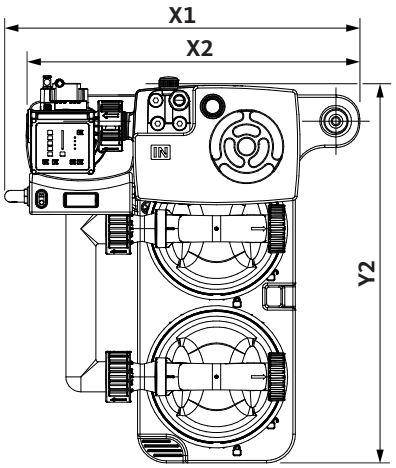


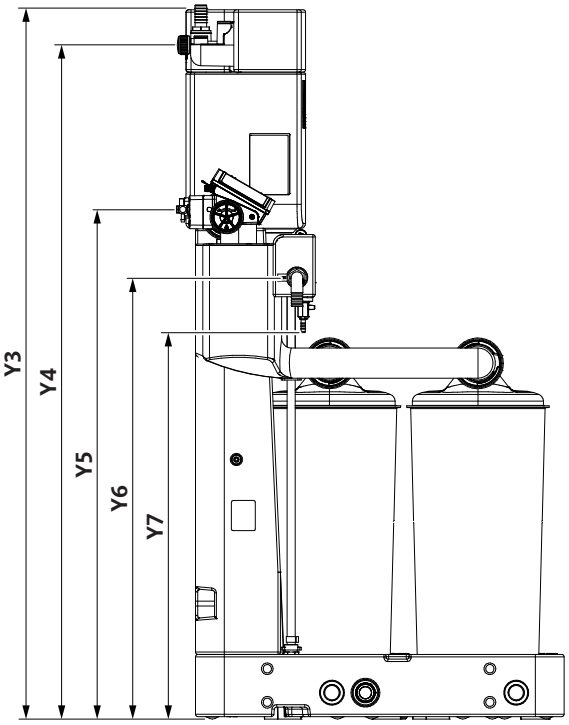


No.	[mm]	[in]
[X1]	744	29.29
[X2]	699	27.52
[X3]	--	--
[Y1]	--	--
[Y2]	540	21.26

No.	[mm]	[in]
[Y3]	1482	58.35
[Y4]	1408	55.43
[Y5]	1065	41.93
[Y6]	922	36.30
[Y7]	807	31.78

4.5.2 QWIK-PURE® 30

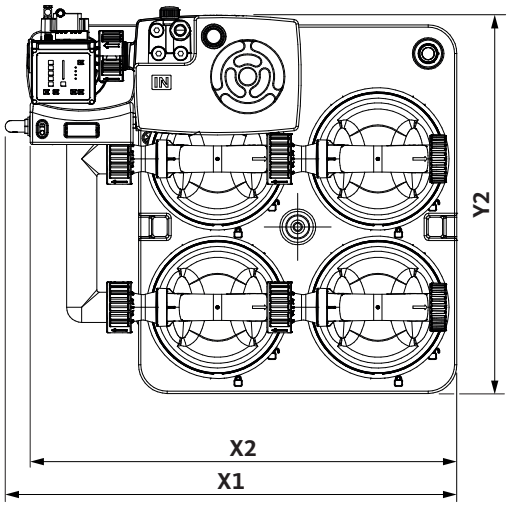


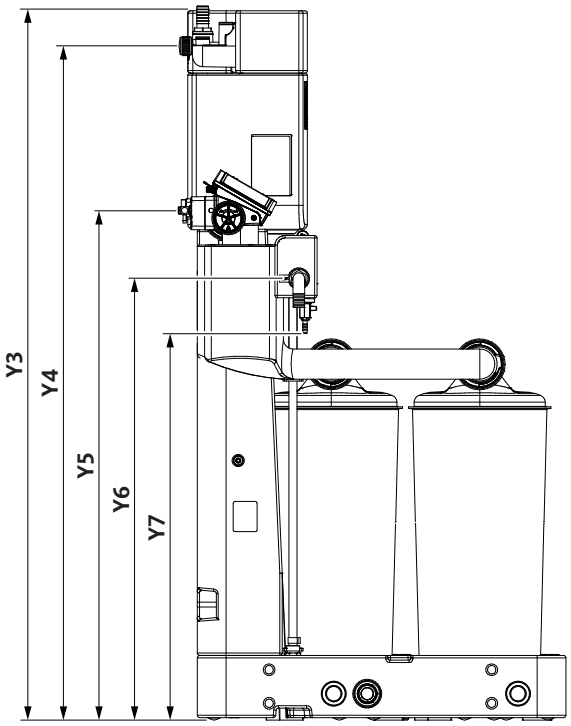


No.	[mm]	[in]
[X1]	744	29.29
[X2]	699	27.52
[X3]	--	--
[Y1]	--	--
[Y2]	790	31.10

No.	[mm]	[in]
[Y3]	1482	58.35
[Y4]	1408	55.43
[Y5]	1065	41.93
[Y6]	922	36.30
[Y7]	807	31.78

4.5.3 QWIK-PURE® 60

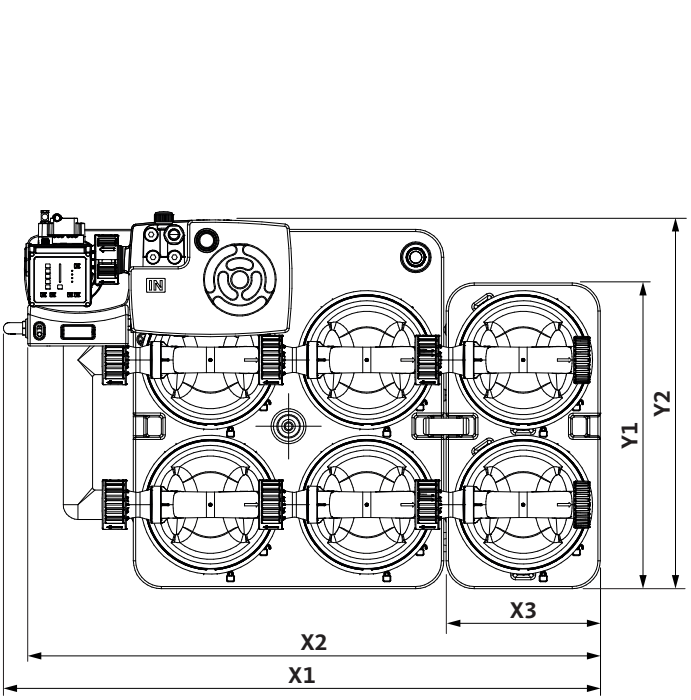


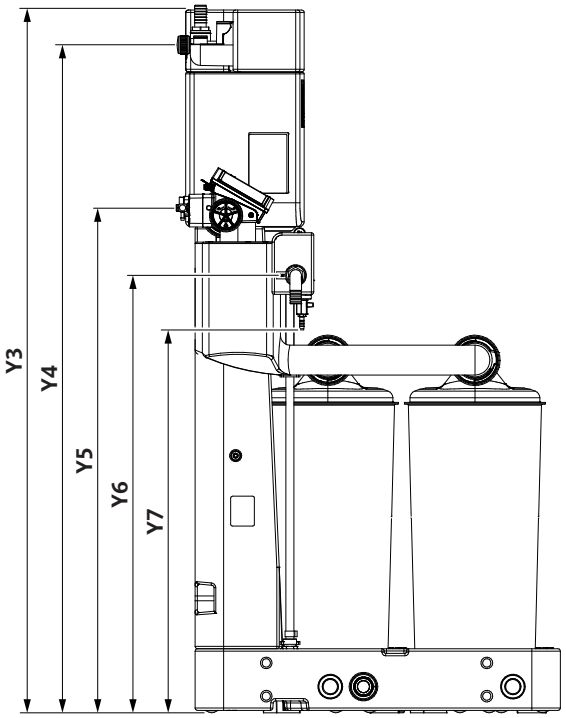


No.	[mm]	[in]
[X1]	943	37.13
[X2]	899	35.39
[X3]	--	--
[Y1]	--	--
[Y2]	790	31.10

No.	[mm]	[in]
[Y3]	1482	58.35
[Y4]	1408	55.43
[Y5]	1065	41.93
[Y6]	922	36.30
[Y7]	807	31.78

4.5.4 QWIK-PURE® 90

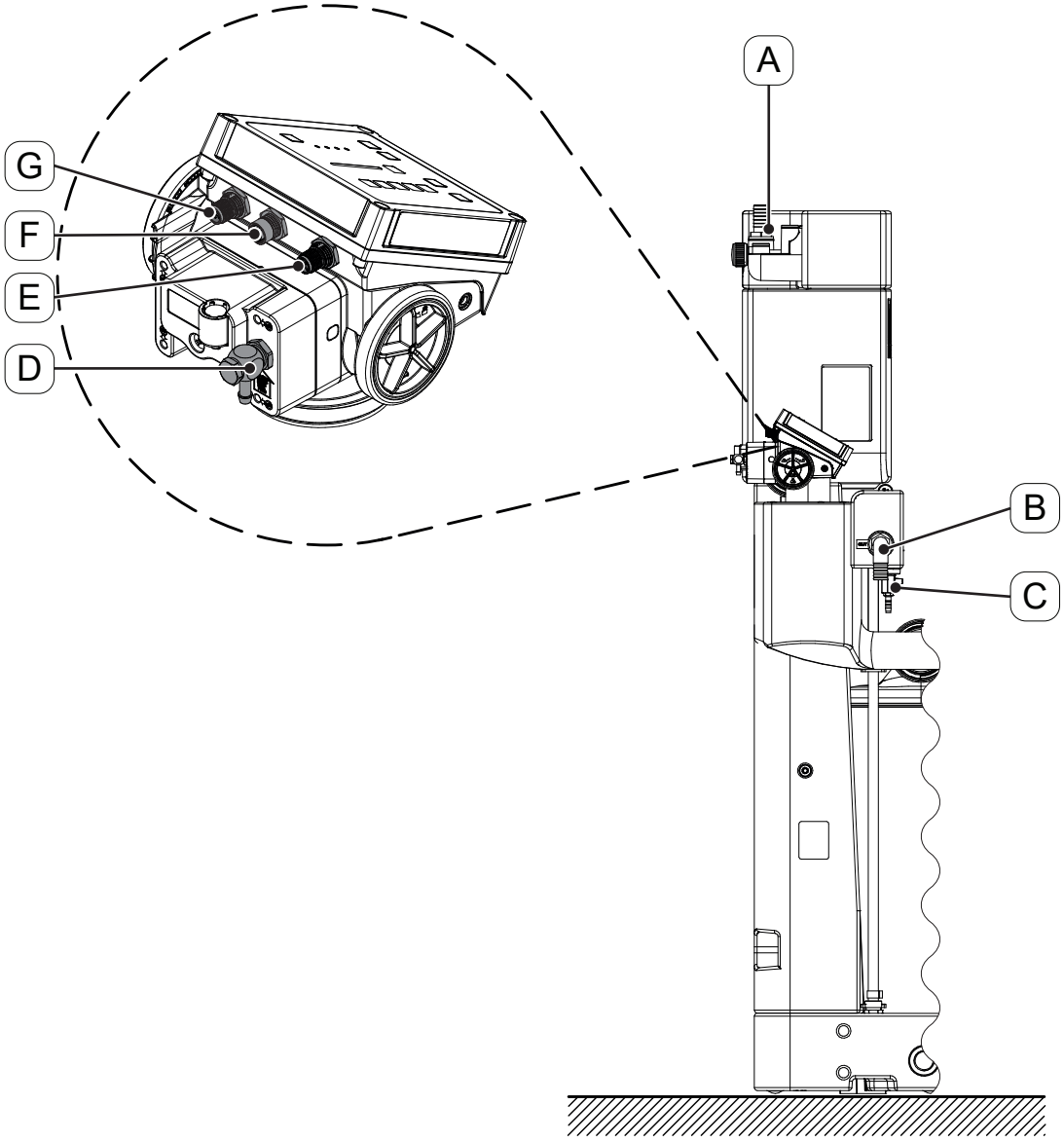




No.	[mm]	[in]
[X1]	1278	50.32
[X2]	1234	48.58
[X3]	335	13.19
[Y1]	655	25.79
[Y2]	790	31.10

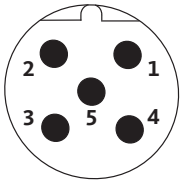
No.	[mm]	[in]
[Y3]	1482	58.35
[Y4]	1408	55.43
[Y5]	1065	41.93
[Y6]	922	36.30
[Y7]	807	31.78

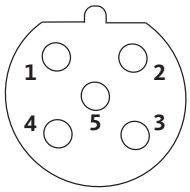
4.6 Connections

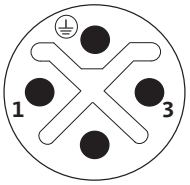


No.	Connection	Quantity	Description / explanation
[A]	25 mm (0.98 in)	1	Hose connection, connection for the condensate inlet
	13 mm (0.52 in)	1	Hose connection, connection for the condensate inlet
	G1/2"	2	Connection for the condensate inlet
[B]	25 mm (0.98 in)	1	Elbow connector, connection for draining the purified condensate
[C]	12 mm (0.47 in)	1	Service valve and hose connection
[D]	8 mm (0.32 in)	1	Elbow connector, connection for compressed air
[E]	M12	1	Plug, connection for external power supply
[F]	M12	1	Plug, connection for Modbus output
[G]	M12	1	Plug, connection for Modbus input

4.7 Pinouts

Modbus input				
Illustration	**Connection [G]**	**Pin**	**Signal**	**Description / explanation**
	M12, external thread B keying, male	1	VP	+5 VDC, power for bus connection
		2	Data +	RS485-A, data line
		3	GND	Earth connection
		4	Data -	RS485-B, data line
		5	V+	+24 VDC, supply voltage

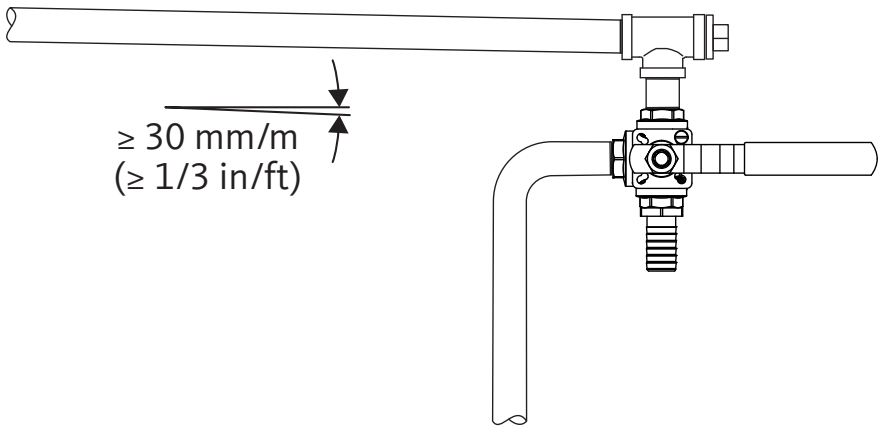
Modbus output				
Illustration	**Connection [F]**	**Pin**	**Signal**	**Description / explanation**
	M12, internal thread B keying, female	1	VP	+5 VDC, power for bus connection
		2	Data +	RS485-A, data line
		3	GND	Earth connection
		4	Data -	RS485-B, data line
		5	V+	+24 VDC, supply voltage

External power supply				
Illustration	**Connection [E]**	**Pin**	**Signal**	**Description / explanation**
	M12, internal thread S keying, male	1	L	Phase
		2	--	Not used
		3	N	Neutral conductor
			PE	Protective earthing conductor

4.8 Installation conditions

Observe the following conditions when setting up and selecting the place of installation:

- The place of installation must meet the following conditions:
  - → Indoors
  - → Protected from mechanical loads
  - → Protected from splash water
  - → Protected from direct sunlight and areas exposed to heat sources
  - → Protected from frost
  - → Outside of hazardous locations
- The setup area must be level (gradient ≤10 mm/m (1/8 in/ft)) and smooth.
- The setup area's load capacity must be suitable for the maximum operating weight of the product (see section "4.1 QWIK-PURE® operating parameters" on page 45).
- The setup area must be sealed, or a suitable spill protection basin must be in place.
  - → In the event of damage, no untreated condensate or oil may get into the sewer system or the soil.
  - → All locally applicable legal requirements and regulations regarding the protection of bodies of water must be complied with.
- Bumper guards must be installed if the product is being set up in the vicinity of traffic routes.
- A compressed air supply line provided by the customer must be available and equipped with a maintenance unit (pressure reducer and filter).
- The cross-sectional area of the condensate collection line must be greater than G1" (Ø = 25 mm).
- Route the condensate collection line with a gradient ≥30 mm/m (2/3 in/ft) to the place of installation for the product.
- The manufacturer recommends installing a P-trap at the wastewater connection in order to prevent unpleasant odours.
- The manufacturer recommends installing a 3-way valve at the tapping point on the condensate collection line to divert the condensate inlet into a separate container during maintenance work.
- Provide a circuit breaker in the power supply within easy reach of the product. The circuit breaker disconnects all current-carrying conductors.



Example illustration

5. Transport and storage

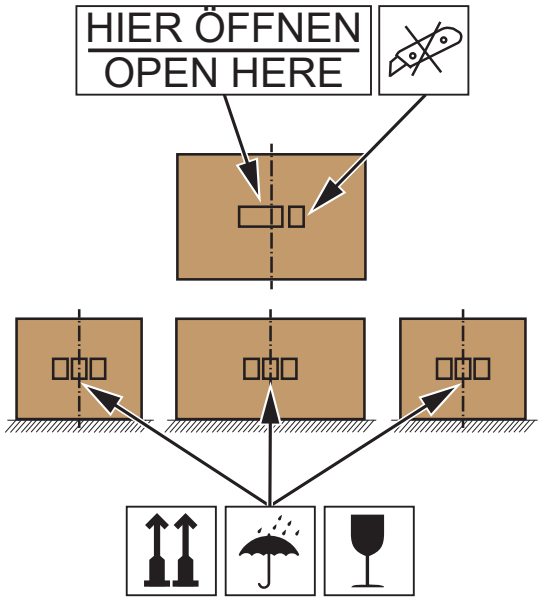
Personnel
Skilled technical personnel - transport and storage (see section “2.3 Target group and personnel” on page 9)

5.1 Warning notices

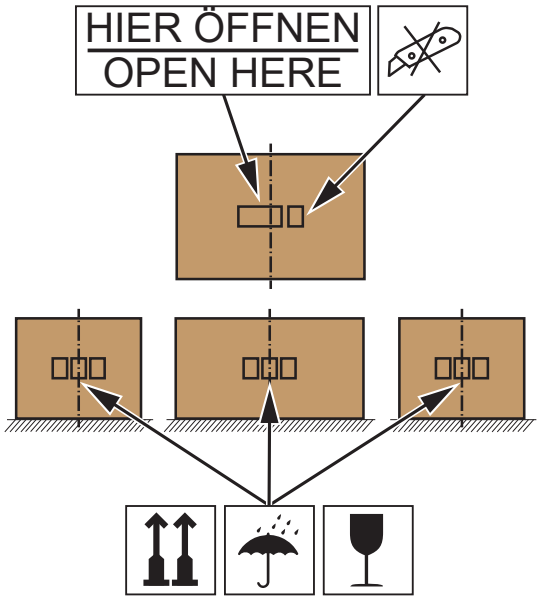
CAUTION	Inappropriate transport or storage
	Inappropriate transport or storage may result in personal injury.
	• Use personal protective equipment during all work with packaging material. • Handle packaging, the product and accessories carefully. • Use only proper transportation, lifting and lashing equipment that is in proper working order.

NOTE	Handling packaging material
	Inappropriate disposal of packaging materials can cause environmental damage.
	• Dispose of the packaging material in accordance with the applicable legal requirements and provisions of the country and place of use.

5.2 Transport

Transport steps	
Illustration	Description / explanation
	• Only transport the product and accessories in their original packaging or packed using suitable shockproof material. • Transport and handle the product and accessories according to the markings on the packaging. • Secure the product and accessories in an upright position on a pallet so that they will not fall or shift during transportation. • Do not tilt the product or the accessories.

5.3 Storage

Storage steps	
Illustration	**Description / explanation**
	• Only store the product and accessories in their original and undamaged packaging. • Adhere to the storage conditions in section “4.3 Storage parameters”. • The storage location is dry, frost-free and lockable. • Protect the product and accessories from external weather influences, direct sunlight and sources of heat. • Secure the product and accessories at the storage location so that they will not topple over or vibrate.

6. Assembly

Personnel
Skilled technical personnel - pressure equipment and systems (see section “2.3 Target group and personnel” on page 8)

6.1 Warning notices

DANGER	Sudden escape of pressurised fluids
	There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.
	• Before starting work, depressurise the pressurised system and secure it against unintentional pressurisation. • Assemble all pipes and hoses free of mechanical stress.

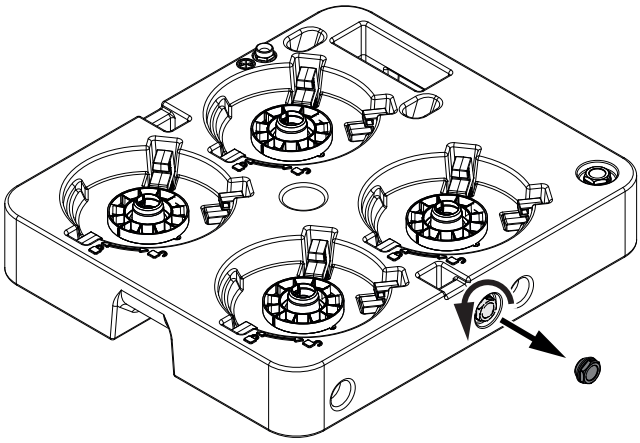
6.2 Assembly work

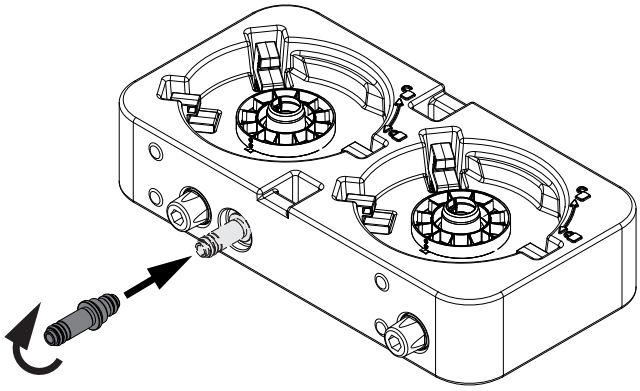
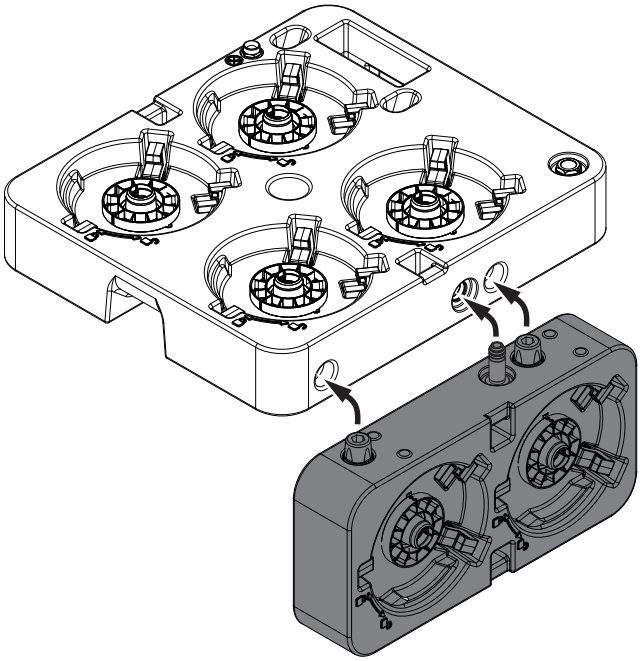
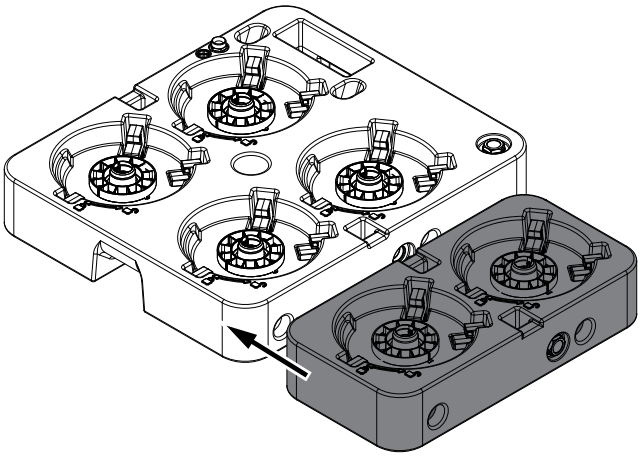
For assembly work to be carried out, the following prerequisites must be fulfilled and the preparatory tasks must have been completed.

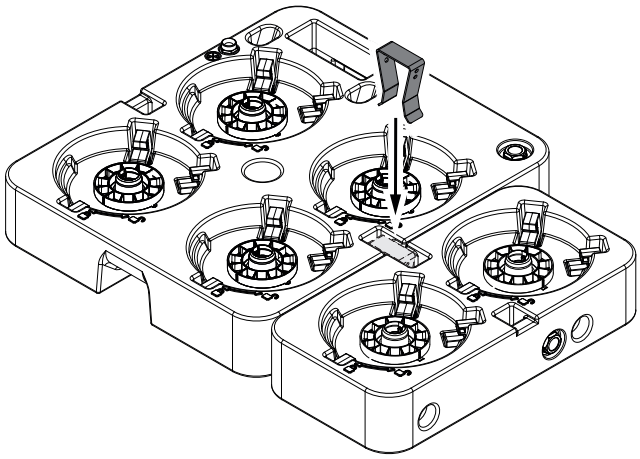
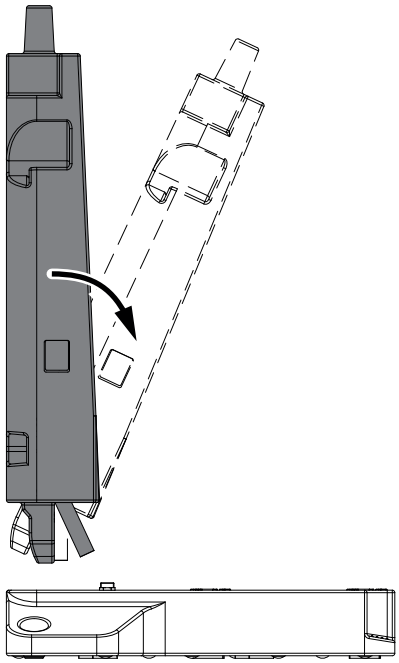
Prerequisites		
Tools	**Material**	**Protective equipment**
• Adjustable spanner • Water pump pliers • Spirit level	• Sealing material (e.g. PTFE tape) for sealing the condensate connections provided by the customer • Hose clamps • Hose for condensate and compressed air • Vaseline supplied	**Always to be worn:** 

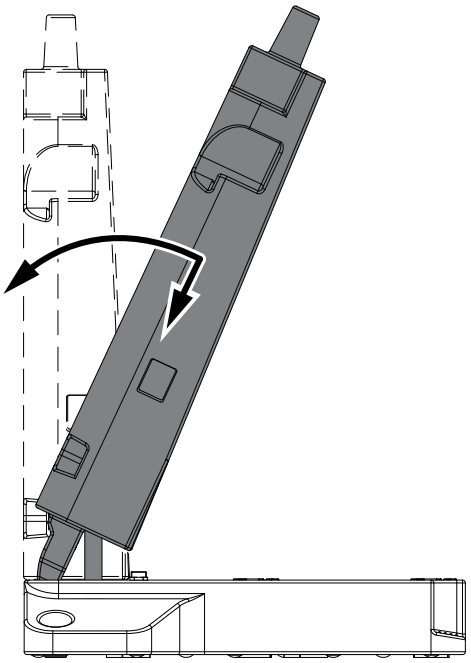
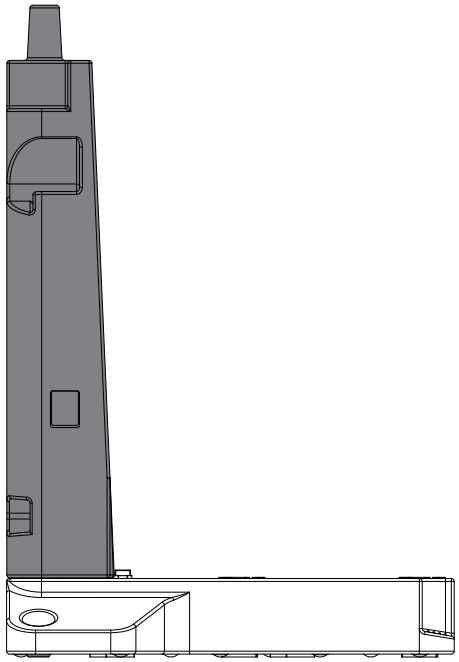
Preparatory tasks	
1.	Select and set up the installation location according to the specifications in section “4.8 Installation conditions” on page 54.
2.	The condensate inlet line provided by the customer must be depressurised and locked and tagged out to prevent unintentional pressurisation.
3.	Have the necessary tools and materials ready.
4.	Prepare the required connection materials suitable for the pressure and temperature range.
5.	Check the product for damage. Only use the product in an undamaged state.

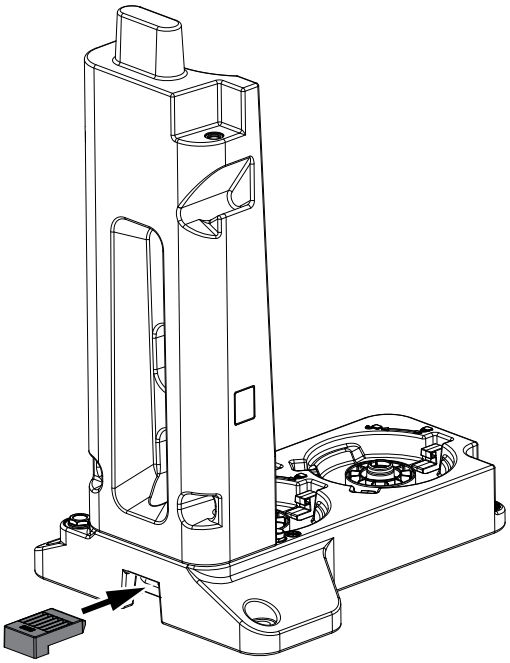
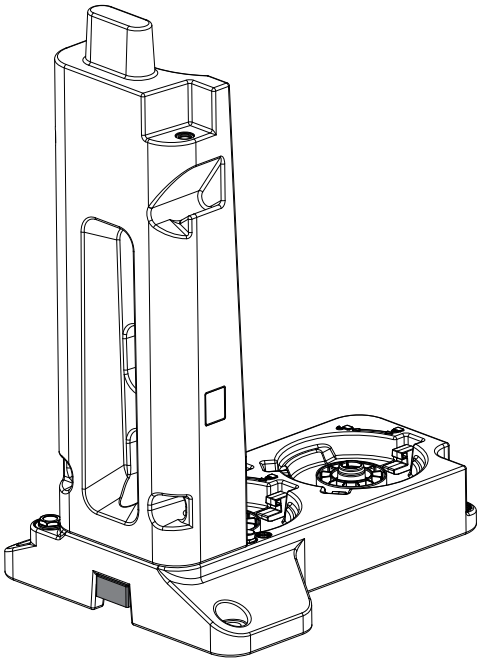
INFORMATION	QWIK-PURE® 15 ... 60 assembly
	Start assembling the **QWIK-PURE® 15 ... 60** from step 8. The collector of the **QWIK-PURE® 15 ... 60** is delivered ready for installation. Skip steps 1 through 7.

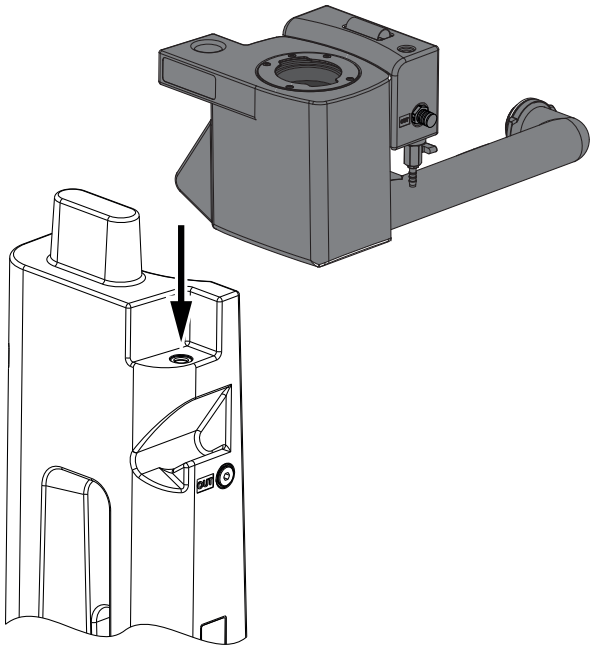
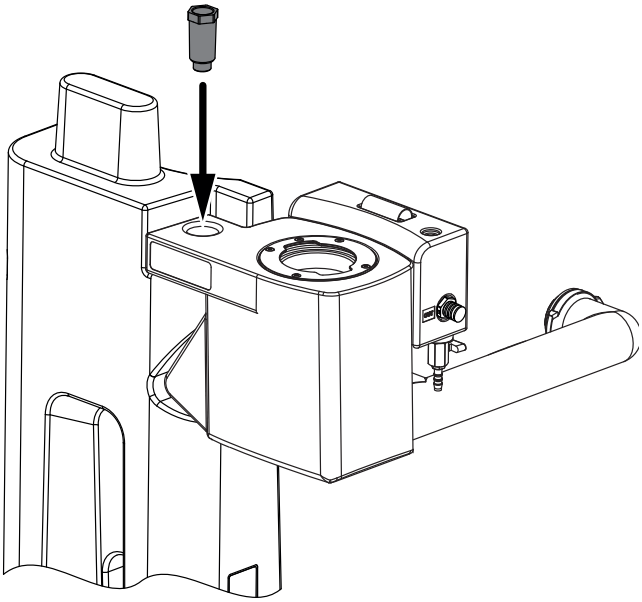
Assembly work	
Illustration	**Description / explanation**
	1. Position the collector on a flat surface. 2. Remove the plug from the collector’s expansion connection anticlockwise.

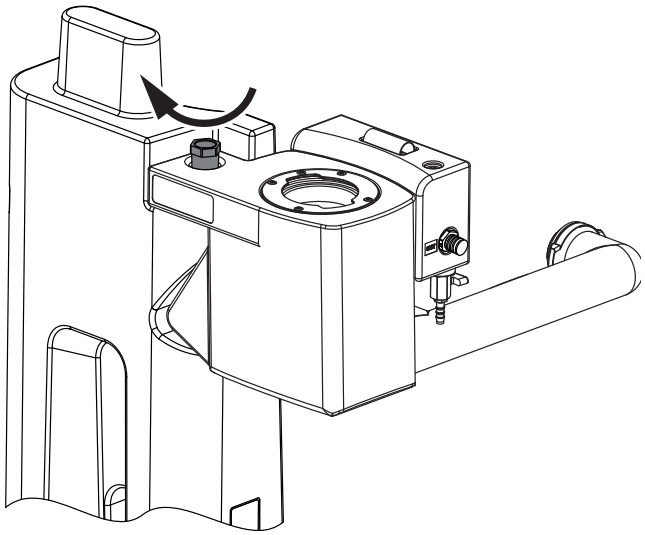
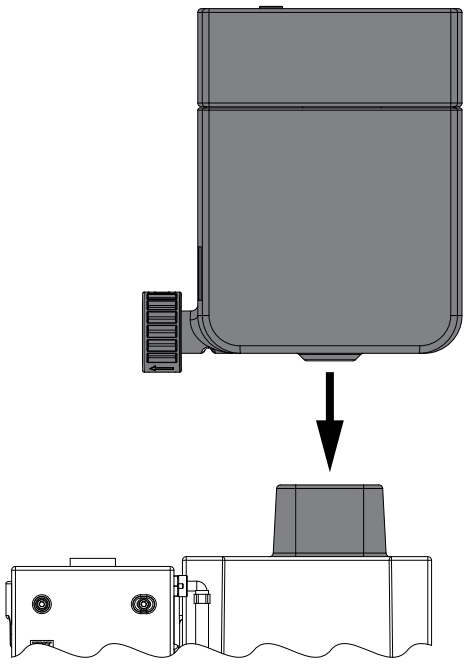
Assembly work	
Illustration	**Description / explanation**
	3. Insert the connecting pipe into the expansion module. 4. Screw in the connecting pipe clockwise by hand all the way and tighten hand-tight.
	5. Align the expansion module with the collector. → Insert the connecting pipe into the collector's expansion connection. → Insert the expansion module's positioning pins into the position openings on the collector.
	6. Push the expansion module and the collector together. → The expansion module must fully abut the collector.

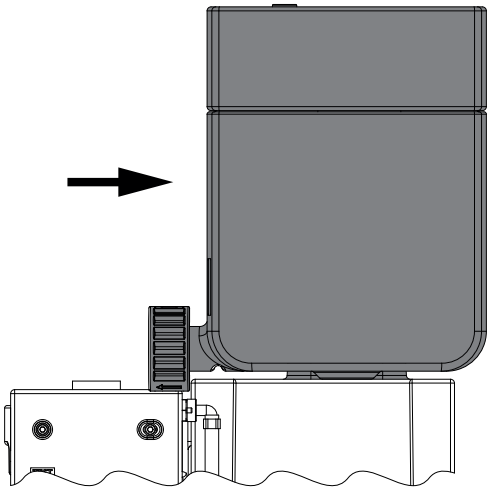
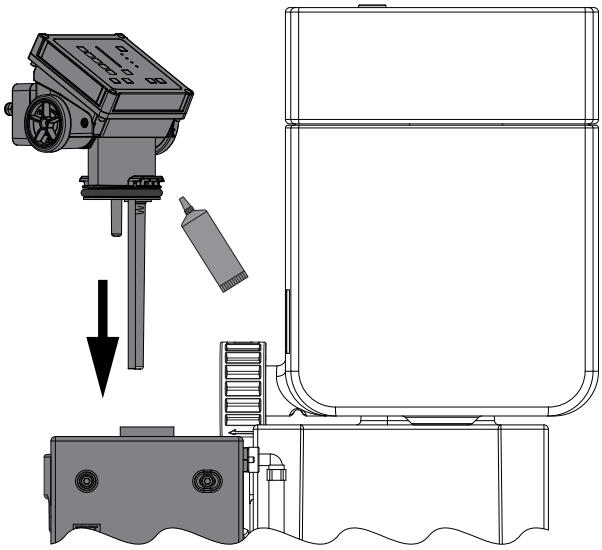
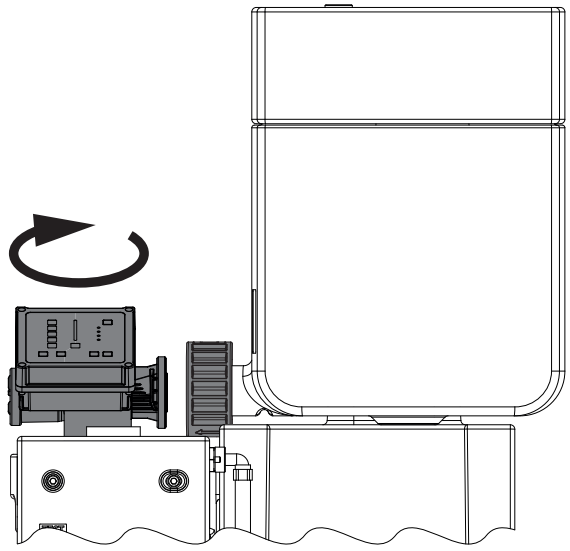
Assembly work	
Illustration	**Description / explanation**
	7. Insert the locking unit and push it down all the way.
	8. Position the collector on a flat surface at the installation location. 9. Align the foot with the positioning tubes facing downwards and position it over the assembly opening. 10. Tilt the upper end of the foot towards the filter cartridge holder until the positioning tubes are vertical.

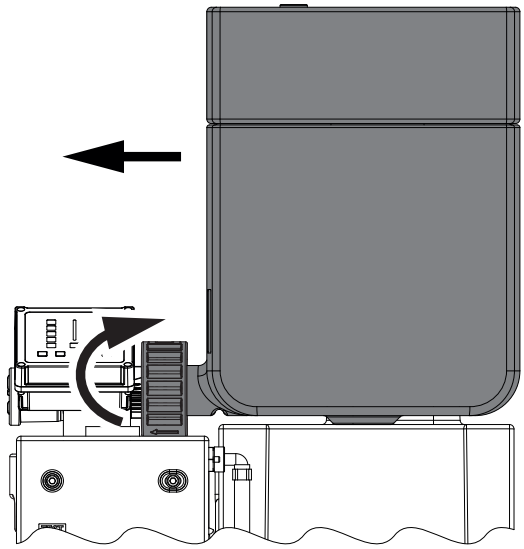
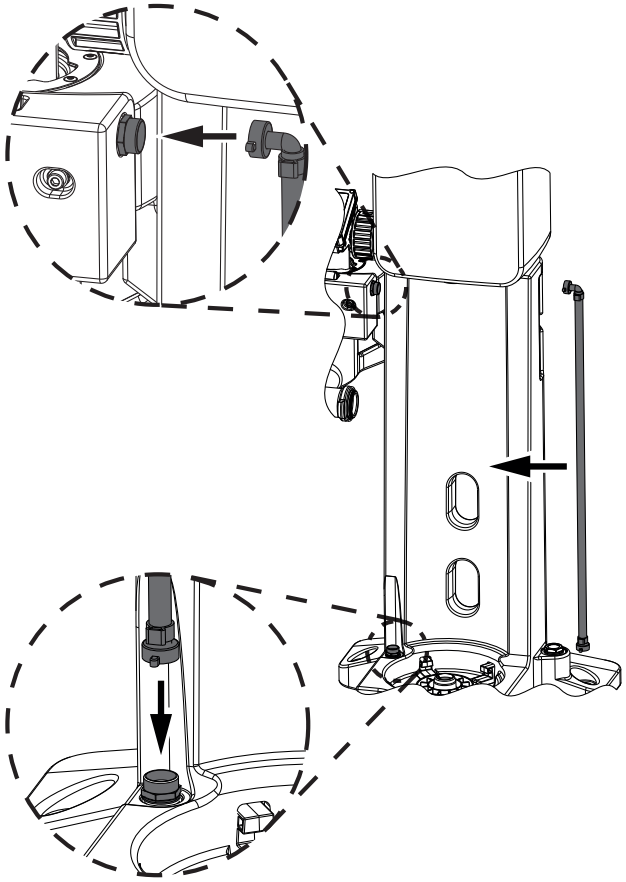
Assembly work	
Illustration	**Description / explanation**
	11. Carefully insert the foot into the installation openings while straightening it at the same time.
	

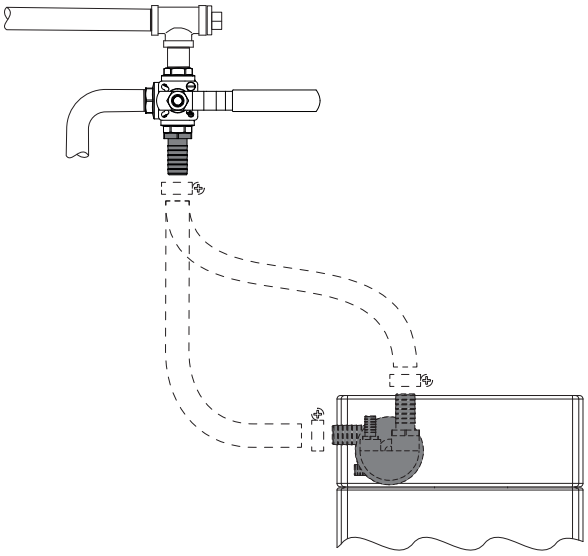
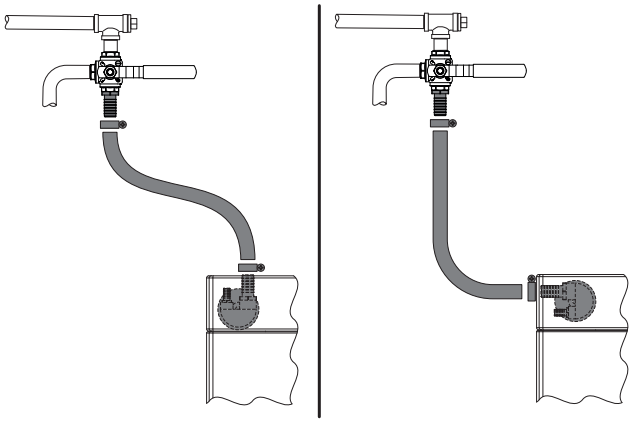
Assembly work	
Illustration	**Description / explanation**
	12. Align the locking device with the heel facing downwards and insert it into the locking device opening in the collector.
	13. Press the locking device into the locking device opening as far as it will go.

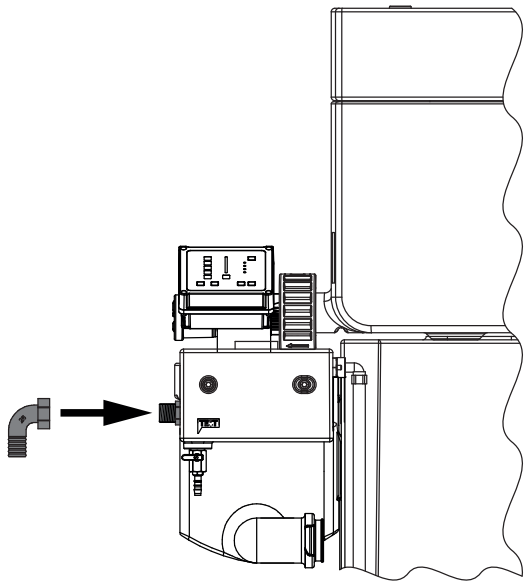
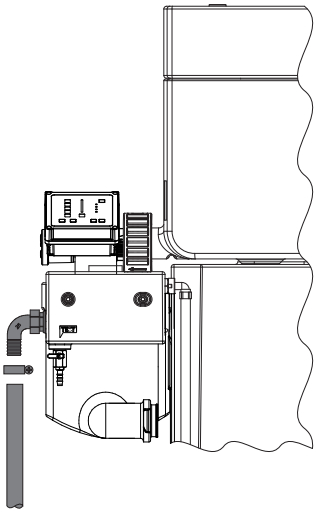
Assembly work	
Illustration	**Description / explanation**
	14. Insert the measuring chamber into the holder in the foot.
	15. Insert the fixing screw into the fixing hole of the measuring chamber.

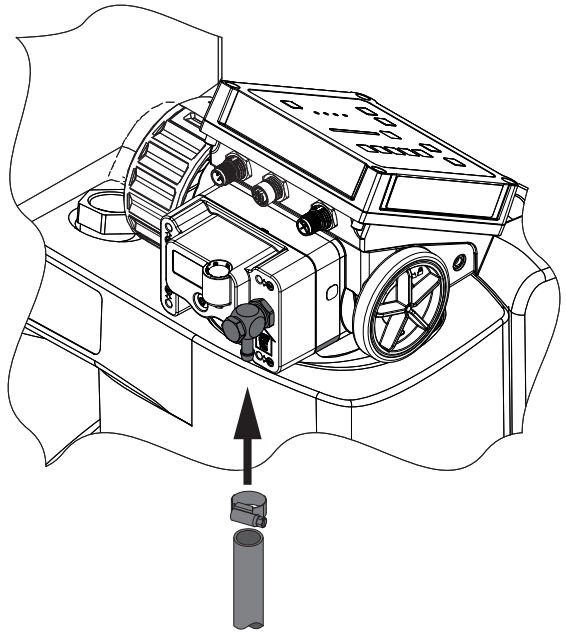
Assembly work	
Illustration	**Description / explanation**
NOTE 	**Thread overloading** Using tools to tighten the fixing screw, or tilting it when positioning it, can overload the thread on the fixing screw and in the foot and cause serious damage (e.g., plastic parts breaking, the thread being pulled out). • Place the fixing screw vertically and screw it in. • Tighten the fixing screw by hand only.
	16. Screw in the fixing screw clockwise by hand all the way and tighten hand-tight.
	17. Place the pressure relief chamber on the foot. → Align the connection in the direction of the measuring chamber.

Assembly work	
Illustration	**Description / explanation**
	18. Slide the pressure relief chamber as far away from the measuring chamber as possible.
	19. Check the sealing surfaces on the measuring chamber for damage and dirt. → Remove any dirt. → If there is any damage, contact the manufacturer's customer service department (see section "1.1 Contact" on page 5). 20. Apply a thin layer of the Vaseline supplied to the O-ring on the **FRC**. 21. Align the **FRC** with the assembly opening in the measuring chamber and insert it.
	22. Turn the **FRC** clockwise until the **FRC** connection is aligned with the pressure relief chamber connection.

Assembly work	
Illustration	**Description / explanation**
	23. Push the pressure relief chamber towards the **FRC** until the connection of the pressure relief chamber comes into contact with the connection of the **FRC**. 24. Slide the bayonet catch over the **FRC** connection and turn it clockwise as far as it will go.
	25. Install the riser duct between the collector and the measuring chamber. → Place the riser duct's straight fitting on the connection in the collector and tighten it clockwise by hand. → Place the elbow union of the riser duct on the connection in the measuring chamber and tighten it clockwise by hand.

Assembly work	
Illustration	**Description / explanation**
NOTE 	**Damage due to incorrect hose routing** Incorrect hose routing can result in property and environmental damage, as well as impaired operation. • Route all hoses in the shortest possible way. • Install all hoses in such a way that they are free of mechanical stress and without any kinks. • Lay all hoses in such a way that no mechanical stresses are transferred to the condensate inlet and the minimum bending radii of the respective hose are observed. • Do not lay the hoses in a slack manner (sagging).
	26. Set up the assembled product with an offset from the tapping point. → For optimal hose routing, the knurled screw can be loosened in order to rotate the condensate inlet up to 90 degrees by hand. After turning it, tighten the knurled head screw hand-tight.
	27. Connect the tapping point with the condensate inlet of the pressure relief chamber with a hose and secure it against slipping with a hose clamp. → Do not lay the hose in a slack manner (sagging). 28. Tighten the hose clamps hand-tight.

Assembly work	
Illustration	**Description / explanation**
	29. Screw the supplied elbow connector with the mounted flat gasket clockwise as far as it will go onto the condensate outlet of the product and position it so that the outlet of the elbow connector is pointing downwards.
NOTE 	**Overflow of the clean water tank** If there is no gradient towards the wastewater system connection, or if there are cross-sectional constrictions in the water outlet hose, this can lead to the clean water tank overflowing. • The connection to the wastewater system is located below the condensate outlet. • Route the water outlet hose with a steady slope and without any kinks to the connection to the wastewater system.
	30. Attach a water outlet hose to the angled elbow connector on the condensate drain and secure it against slipping off with a hose clamp. 31. Tighten the hose clamp hand-tight. 32. Route the water outlet hose with a steady slope and without any kinks to the connection to the wastewater system.

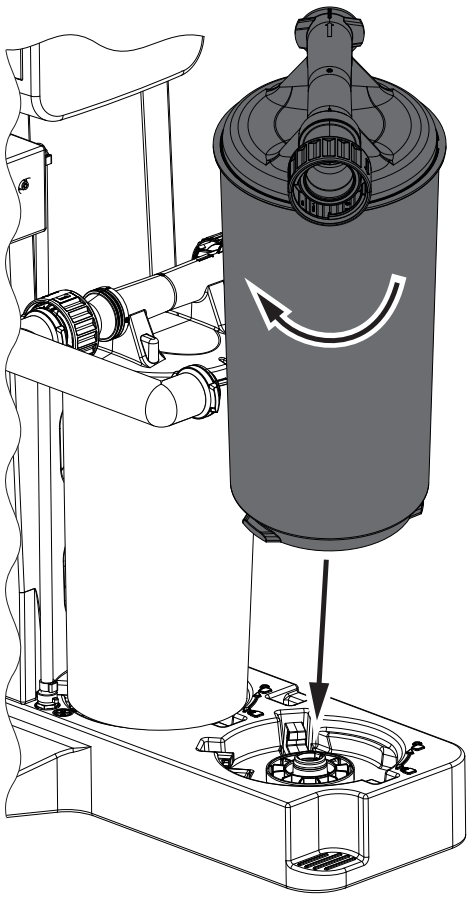
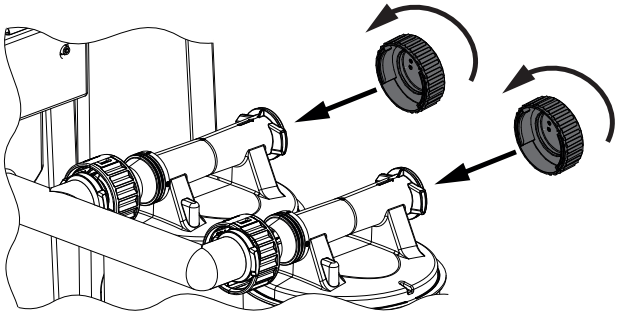
Assembly work	
Illustration	**Description / explanation**
	33. Connect **FRC** to the compressed air system. Attach a compressed air hose to the compressed air connection and secure it against slipping with a hose clamp. 34. Tighten the hose clamp hand-tight.

NOTE

Filter cartridge insertion

Use of incorrect filter cartridges or incorrect insertion of the filter cartridges can cause damage or leakage to the collector and the filter cartridges.

- Before inserting the filter cartridges, check to make sure that the filter cartridge is the right one for the product.
  - → The colour of the cap at the bottom of the filter cartridge must be identical to the colour of the cap in the collector.
- Insert the filter cartridges vertically and carefully into the collector.

Assembly work	
Illustration	**Description / explanation**
	35. Insert the first filter cartridge into the mount on the foot with the bayonet mount facing the measuring chamber outlet. 36. Turn the filter cartridge clockwise all the way. 37. Align the connecting filter cartridge's connection with the connection on the measuring chamber outlet. 38. Slide the bayonet mount over the connection and turn it clockwise as far as it will go. 39. Insert the other filter cartridges into the holders and connect them together using the bayonet catches.
	40. Place the end caps on the last filter cartridge in each row and turn them clockwise all the way.

Final steps	
1.	Before pressurisation, check all system connections for leak tightness and tighten if necessary.
2.	Slowly pressurise the system.

7. Electrical installation

Personnel
Skilled technical personnel - electrical engineering (see section “2.3 Target group and personnel” on page 9)

7.1 Warning notices

DANGER	Electric voltage
	Contact with electrically live components can result in death or serious injury.
	• Only carry out installation, maintenance and repair work on the product and accessories after they have been isolated from the power source and secured against being switched back on again unintentionally. • Comply with all locally applicable legal requirements and regulations during installation. • Connect the protective conductor (earth connection) according to regulations.

WARNING	Ingress of moisture or foreign bodies
	Water and foreign objects can get into the opened FRC control unit or into the opened electrical connections if the FRC control unit is opened or if the electrical connections are disconnected. This can lead to accidents and personal injury.
	• Protect the control unit and the electrical connections from splash water and moisture. • Open the control unit and disconnect the electrical connections in a dry location only. • Do not insert any foreign objects into the openings of the control unit. • Keep all contact surfaces and openings free of dirt and moisture.

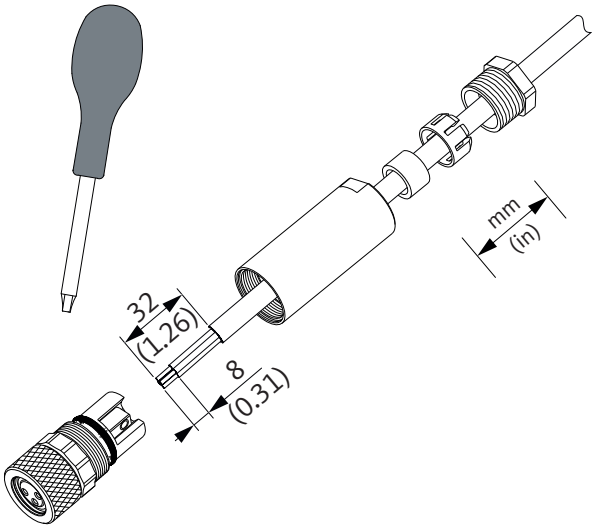
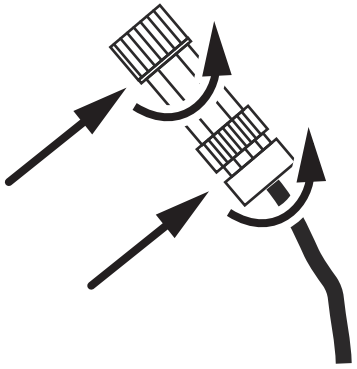
7.2 Connection work

For electrical installation work to be carried out, the following prerequisites must be fulfilled and the preparatory tasks must have been completed.

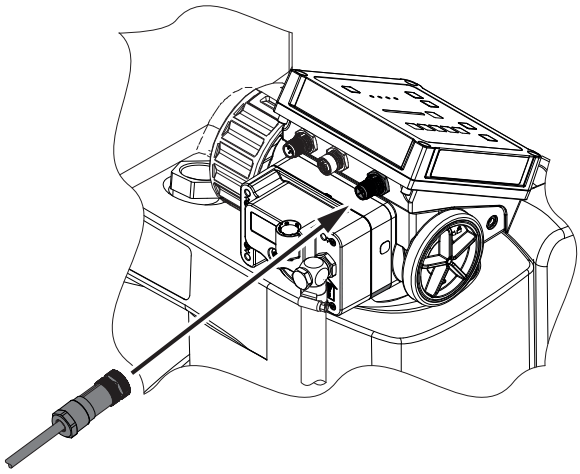
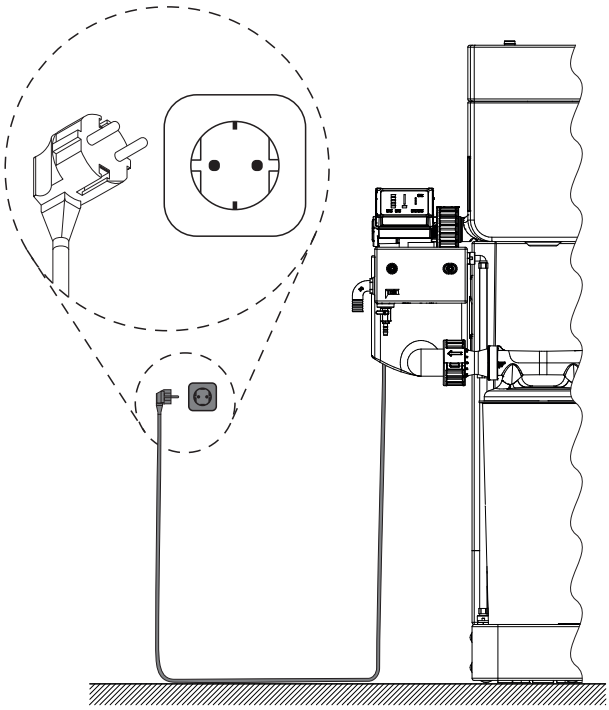
Prerequisites		
Tools	**Material**	**Protective equipment**
• 1.5 mm slotted screwdriver • Wire stripping pliers	• Cable for the power supply • Modbus cable • Included connector	**Always to be worn:** 

Preparatory tasks	
1.	A protective-contact power socket is installed within reach (<3 m (19 ft)) of the product's installation location.
2.	The fusing for the protective contact socket is adequately dimensioned for the corresponding power consumption.
3.	The product has been fully installed.

7.2.1 Assembling the power supply cable

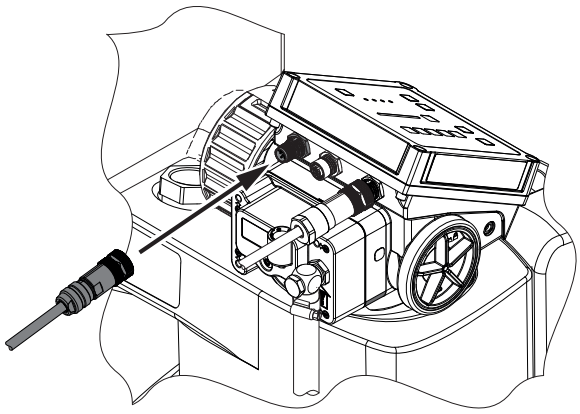
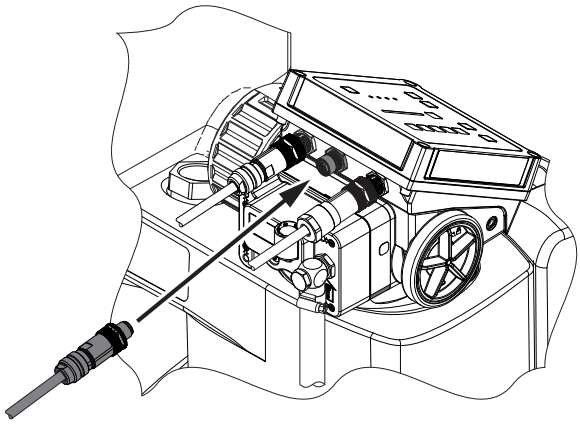
Connection work	
Illustration	**Description / explanation**
	1. Strip the end of cable outer sheathing by a maximum of 32 mm (1.26 in). 2. Strip the insulation from the wire ends to expose 8 mm (0.315 in). 3. Insert the wire ends into the connector in conformity with the pinout (see "4.7 Pinouts" on page 53). 4. Tighten the threaded connections with a torque of 0.06 to 0.08 Nm (0.04 ft-lb to 0.06 ft-lb).
	5. Tighten the sealing nut with a torque of 0.4 to 0.6 Nm (0.29 ft-lb to 0.44 ft-lb). 6. Tighten the plug-in connection with a torque of 0.3 to 0.4 Nm (0.21 ft-lb to 0.29 ft-lb).

7.2.2 Connecting the external power supply

Connection work	
Illustration	**Description / explanation**
	1. Plug the power supply cable's threaded connection onto the power supply connection and tighten the union nut clockwise hand-tight.
	2. Route the power supply cable all the way to the protective contact socket. → Route the cable in such a way that it is free of any mechanical stress. → Prevent trip hazards by routing the cable appropriately. 3. Plug the protective contact plug into the protective contact socket. → The **FRC** will start and the SET NUMBER OF FILTER CARTRIDGES menu will be shown.

7.2.3 Modbus

NOTE	Interference caused by signal reflection
	If there is no termination at the end of a daisy chain of several consecutive Modbus-capable devices, this will result in signal reflections. These signal reflections will lead to data transmission faults and impaired operation.
	• Connect a terminating resistor at the end of the daisy chain of several consecutive Modbus-capable devices.

Connection work	
Illustration	**Description / explanation**
	1. Plug the Modbus signal cable onto the Modbus input connection and tighten the union nut clockwise hand-tight. → Route the cable in such a way that it is free of any mechanical stress. → Prevent trip hazards by routing the cable appropriately.
	2. Plug the Modbus signal cable onto the Modbus output connection and tighten the union nut clockwise hand-tight. → Route the cable in such a way that it is free of any mechanical stress. → Prevent trip hazards by routing the cable appropriately.

8. Commissioning

Personnel
Skilled technical personnel - pressure equipment and systems and skilled technical personnel - electrical (see section “2.3 Target group and personnel” on page 9)

8.1 Warning notices

DANGER	Sudden escape of pressurised fluids
	There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.
	• Before pressurisation, check all system connections for leak tightness and tighten if necessary. • Slowly pressurise the system.

DANGER	Electric voltage
	Contact with electrically live components can result in death or serious injury.
	• Only operate the product and accessories with the cover complete and closed or the electronics housing closed.

NOTE	Restricted function of the filter cartridges
	When the clean water tank’s ventilation opening is closed, the draining water will produce a negative pressure in the clean water tank. This negative pressure will result in the condensate being sucked through the filter cartridges in an uncontrolled manner. This uncontrolled flow will reduce the performance of the filter cartridges.
	• Keep the clean water tank’s ventilation opening open.

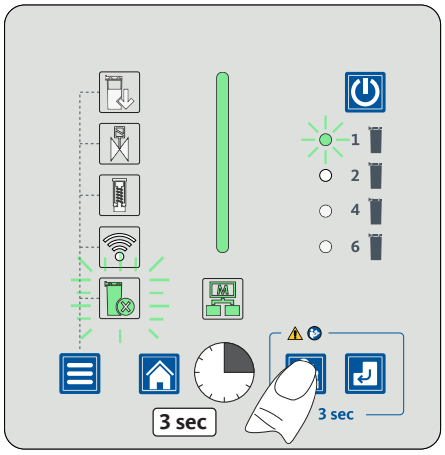
8.2 Initial commissioning

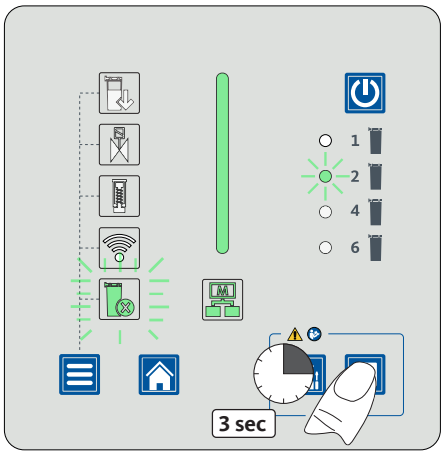
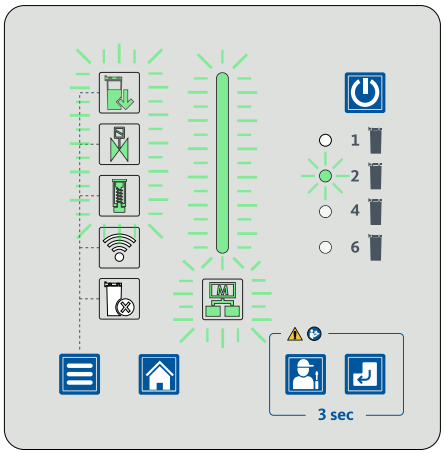
For initial commissioning be carried out, the following prerequisites must be fulfilled, and the preparatory tasks must have been completed.

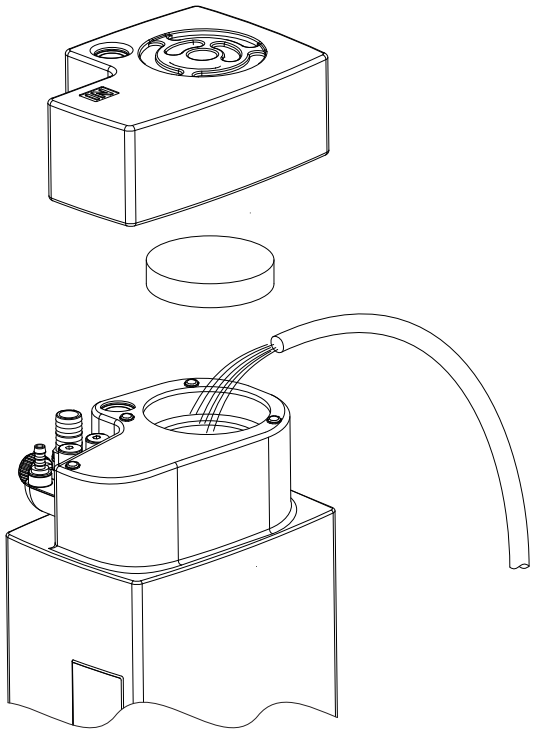
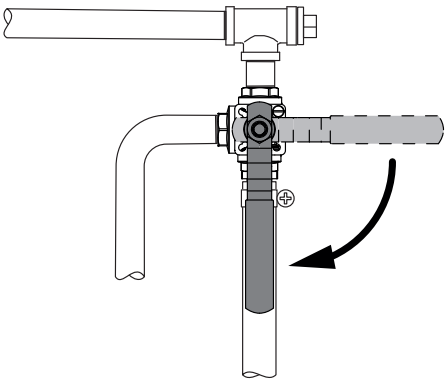
Prerequisites		
Tools	**Material**	**Protective equipment**
• No tool necessary	• No material necessary	**Always to be worn:** 

Preparatory tasks	
1.	The product has been fully installed.
2.	The product has been fully electrically installed.

NOTE	Setting the number of filter cartridges
	Entering the wrong number of filter cartridges may result in property damage, environmental damage or impaired operation.
	• Make sure to set the correct number of filter cartridges being used.

Commissioning steps	
Illustration	**Description / explanation**
	As soon as the power supply is established, the LED FILTER CARTRIDGE SELECTION and the LED NUMBER OF FILTER CARTRIDGES will flash green. 1. Press the Service button and hold it down for 3 seconds in order to set the number of filter cartridges being used. → The LED NUMBER OF FILTER CARTRIDGES will switch from the current flashing number to the next higher number (e.g., from 1 to 2). 2. Repeat this step until the correct number of installed filter cartridges is set.

Commissioning steps	
Illustration	**Description / explanation**
	3. Press and hold the Enter button for 3 seconds. → The set number of filter cartridges will be saved. → The LED NUMBER OF FILTER CARTRIDGES for the set number of filter cartridges will light up green. → The FILTER CARTRIDGE SELECTION status LED will turn off. → The display will switch to the START MENU screen.
	4. The **FRC** is set up and controls the condensate flow. → The status LED STATUS BAR lights up green. → The CARTRIDGE status LED lights up green. → The SOLENOID VALVES status LED lights up green. → The PISTON status LED lights up green. → The DATA TRANSFER status LED lights up green. → The LED NUMBER OF FILTER CARTRIDGES will light up green.

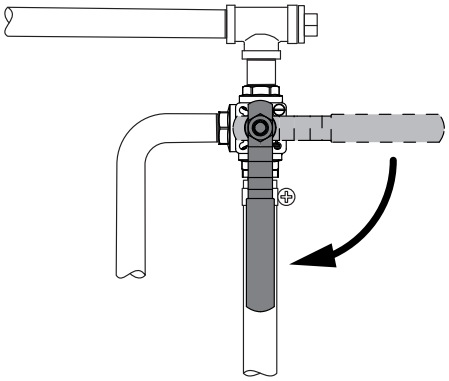
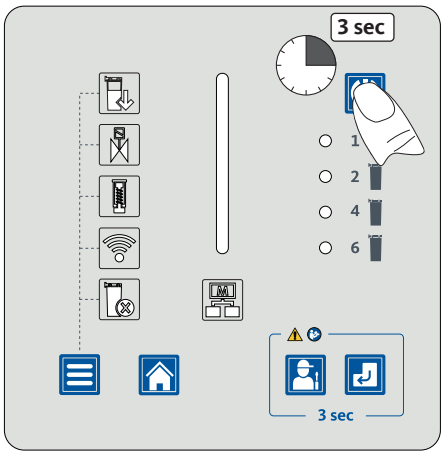
Commissioning steps	
Illustration	**Description / explanation**
	5. Remove the cover from the pressure relief chamber and remove the activated carbon mat from the vent of the pressure relief chamber. 6. Fill the pressure relief chamber with tap water via the vent. → Stop filling as soon as the **FRC** performs a discharge process. 7. Insert the activated carbon mat into the vent of the pressure relief chamber and place the cover on the pressure relief chamber.
	8. Slowly open the condensate feed. 9. Check all hoses and connections for leaks (see section “10.3.7 Leakage test” on page 116). 10. The commissioning procedure has been completed, and the condensate flowing into the product is being treated.

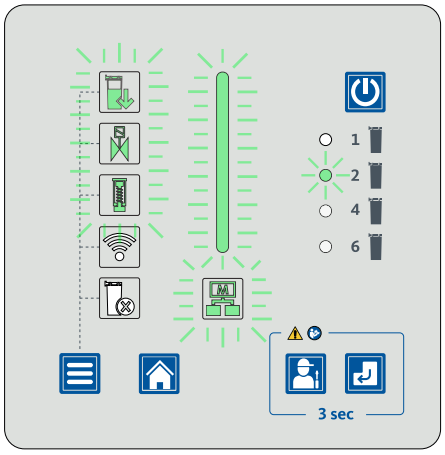
8.3 Recommissioning

For recommissioning work to be carried out, the following prerequisites must be fulfilled and the preparatory tasks must have been completed.

Prerequisites		
Tools	**Material**	**Protective equipment**
• No tool necessary	• No material necessary	**Always to be worn:** 

Preparatory tasks	
1.	The work or troubleshooting on the product has been completed.
2.	The compressed air supply and voltage supply have been established.
3.	The Modbus connection has been established.

Commissioning steps	
Illustration	**Description / explanation**
	1. Slowly open the condensate feed.
	2. Press and hold down the ON/OFF button on the **FRC** for 3 seconds. → The **FRC** switches from standby mode to normal mode.

Commissioning steps	
Illustration	**Description / explanation**
NOTE 	**Setting the number of filter cartridges** Entering the wrong number of filter cartridges may result in property damage, environmental damage or impaired operation. • Make sure to set the correct number of filter cartridges being used.
	3. The commissioning procedure has been completed, and the condensate flowing into the product is being treated. → The status LED STATUS BAR lights up green. → The CARTRIDGE status LED lights up green. → The SOLENOID VALVES status LED lights up green. → The PISTON status LED lights up green. → The DATA TRANSFER status LED lights up green. → The LED NUMBER OF FILTER CARTRIDGES will light up green.

9. Operation

Personnel
Operating personnel (see section 2.3 “Target group and personnel” on page 10)

9.1 Warning notices

DANGER	Electric voltage
	Contact with electrically live components can result in death or serious injury.
	• Only operate the product and accessories with the cover complete and closed or the electronics housing closed.

NOTE	Restricted function of the filter cartridges
	When the clean water tank’s ventilation opening is closed, the draining water will produce a negative pressure in the clean water tank. This negative pressure will result in the condensate being sucked through the filter cartridges in an uncontrolled manner. This uncontrolled flow will reduce the performance of the filter cartridges.
	• Keep the clean water tank’s ventilation opening open.

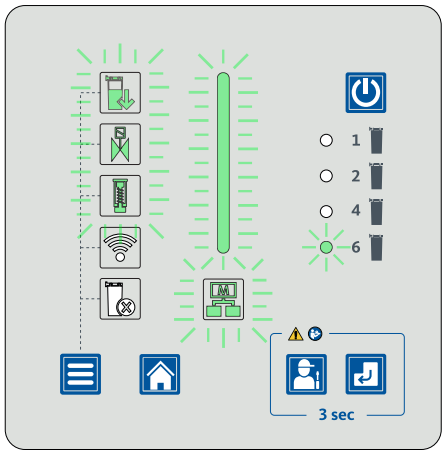
9.2 Menu screens

In order to operate the product, the preparatory tasks must have been completed.

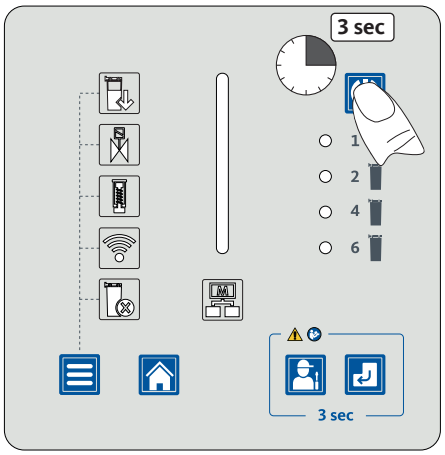
Preparatory tasks	
1.	The product has been set up and connected to the condensate collection line and the drain.
2.	The **FRC** is connected to the power supply and switched on.
3.	The **FRC** is connected to the compressed air supply and has been set up.
4.	The **FRC** is connected to the MODBUS system.

INFORMATION	Cancel operating action
	Actions can be cancelled at any time by pressing the Start Menu button. Any changes made are not saved when you cancel.

9.2.1 Start menu

Illustration	Description / explanation
	**START MENU** → Status LED STATUS BAR lights up green → Status LED FILTER CARTRIDGES lights up green → Status LED SOLENOID VALVES lights up green → Status LED PISTON lights up green → Status LED DATA TRANSFER lights up green → The LED NUMBER OF FILTER CARTRIDGES for the set number of filter cartridges lights up green

9.2.2 Switching the FRC on and off

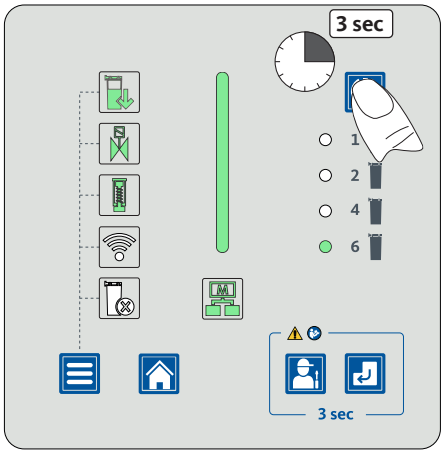
Illustration	Description / explanation
	**Switching on the FRC** Press and hold down the ON/OFF button for 3 seconds. → The **FRC** switches from standby mode to normal mode. → The START MENU will appear. → The **FRC** regulates the product's condensate flow.

INFORMATION

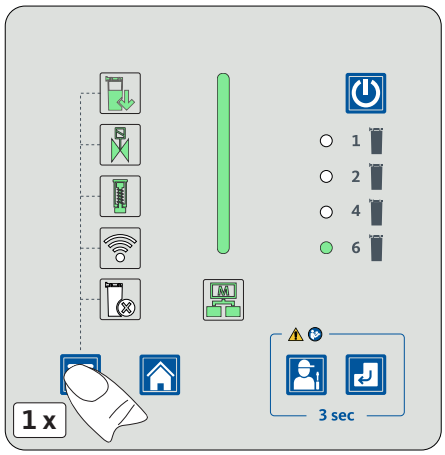
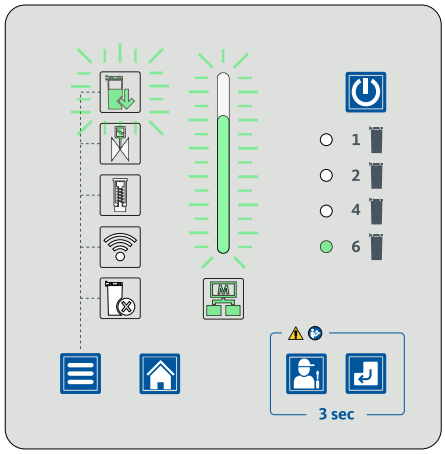
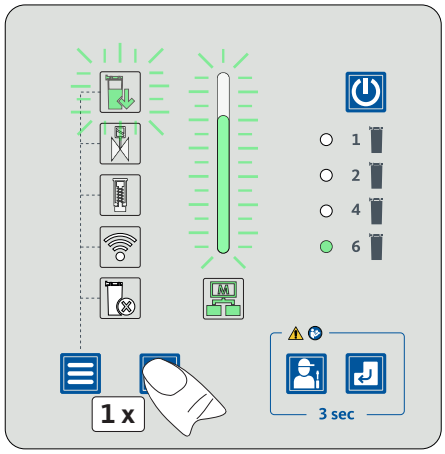
Initial commissioning

The **FRC** will start with the SET NUMBER OF FILTER CARTRIDGES menu during initial commissioning only, and the status LED FILTER CARTRIDGE SELECTION will flash green.

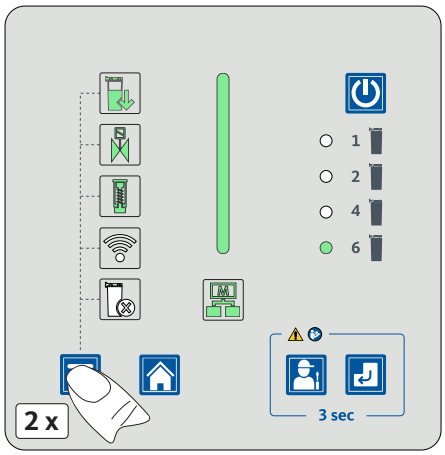
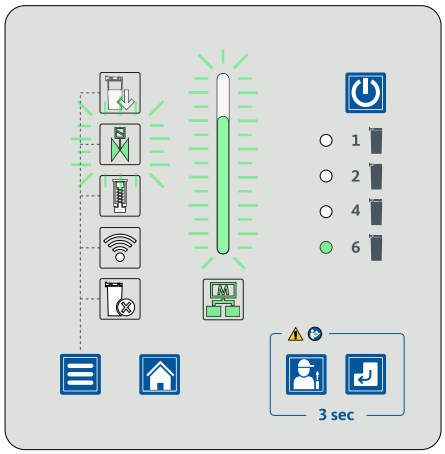
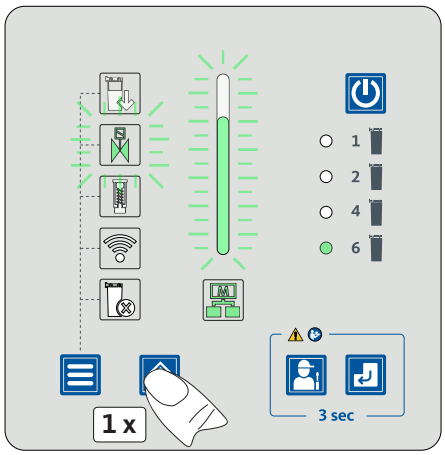
- Set the number of filter cartridges in order to get to the START MENU.

Illustration	Description / explanation
	**Switching the FRC off** Press and hold down the ON/OFF button for 3 seconds. → The **FRC** switches to standby mode. → All LEDs go out and the status LED STATUS BAR flashes white at regular intervals. → The condensate is conveyed through the filter cartridges by gravity only.

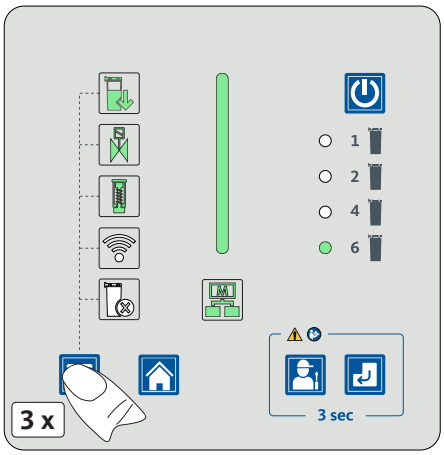
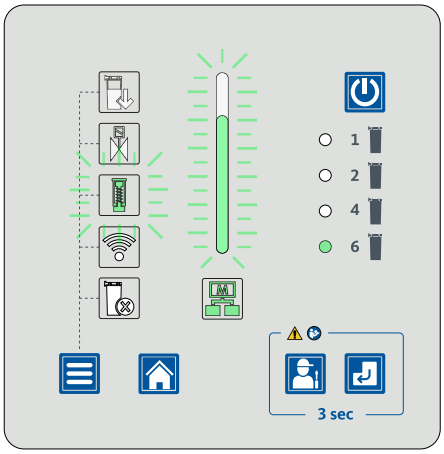
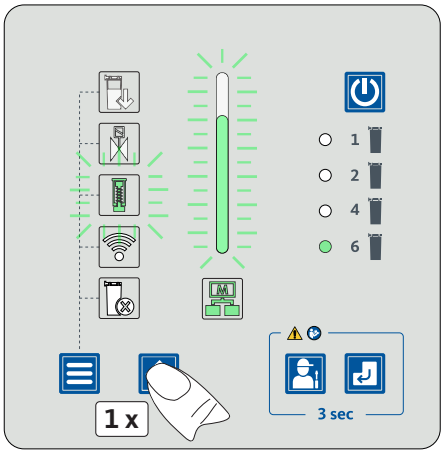
9.2.3 Querying filter cartridge status

<table>
<tr><th>Illustration</th><th>Description / explanation</th></tr>
<tr><td> 
</td><td>1. Press the menu button once.</td></tr>
<tr><td> 
</td><td>The remaining lifetime of the filter cartridges is displayed.
→ The status LED FILTER CARTRIDGES will flash green.
<table>
<tr><th>Status LED STATUS BAR</th><th>Lifetime of the filter cartridges</th></tr>
<tr><td>4/4 of the length lights up green</td><td>100%</td></tr>
<tr><td>3/4 of the length lights up green</td><td>75%</td></tr>
<tr><td>2/4 of the length lights up green</td><td>50%</td></tr>
<tr><td>1/4 of the length lights up green</td><td>25%</td></tr>
<tr><td>1/4 of the length flashes red</td><td>Exceeded</td></tr>
</table>
→ If the FILTER CARTRIDGES status LED flashes red, replace the filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96).</td></tr>
<tr><td> 
</td><td>2. Press the start menu button to exit the menu.</td></tr>
</table>

9.2.4 Querying the solenoid valve status

<table>
<tr><th>Illustration</th><th>Description / explanation</th></tr>
<tr><td> 
</td><td>1. Press the menu button twice.</td></tr>
<tr><td> 
</td><td>The time remaining until replacement of the solenoid valves is displayed.
→ The status LED SOLENOID VALVES flashes green.
<table>
<tr><th>Status LED STATUS BAR</th><th>Lifetime of the solenoid valves</th></tr>
<tr><td>4/4 of the length lights up green</td><td>100%</td></tr>
<tr><td>3/4 of the length lights up green</td><td>75%</td></tr>
<tr><td>2/4 of the length lights up green</td><td>50%</td></tr>
<tr><td>1/4 of the length lights up green</td><td>25%</td></tr>
<tr><td>1/4 of the length flashes red</td><td>Exceeded</td></tr>
</table>
→ If the SOLENOID VALVES status LED flashes red, replace the SOLENOID VALVES Service-Unit (see section “10.3.3 Replacing solenoid valves” on page 102).</td></tr>
<tr><td> 
</td><td>2. Press the start menu button to exit the menu.</td></tr>
</table>

9.2.5 Querying piston status

<table>
<tr><th>Illustration</th><th>Description / explanation</th></tr>
<tr><td> 
</td><td>1. Press the menu button three times.</td></tr>
<tr><td> 
</td><td>The time remaining until replacement of the piston is displayed.
➞ The status LED PISTON flashes green.
<table>
<tr><th>Status LED STATUS BAR</th><th>Lifetime of the piston</th></tr>
<tr><td>4/4 of the length lights up green</td><td>100%</td></tr>
<tr><td>3/4 of the length lights up green</td><td>75%</td></tr>
<tr><td>2/4 of the length lights up green</td><td>50%</td></tr>
<tr><td>1/4 of the length lights up green</td><td>25%</td></tr>
<tr><td>1/4 of the length flashes red</td><td>Exceeded</td></tr>
</table>
➞ If the PISTON status LED flashes red, replace the PISTON Service-Unit (see section “10.3.4 Replacing the piston” on page 106).</td></tr>
<tr><td> 
</td><td>2. Press the start menu button to exit the menu.</td></tr>
</table>

9.2.6 Activating the WLAN

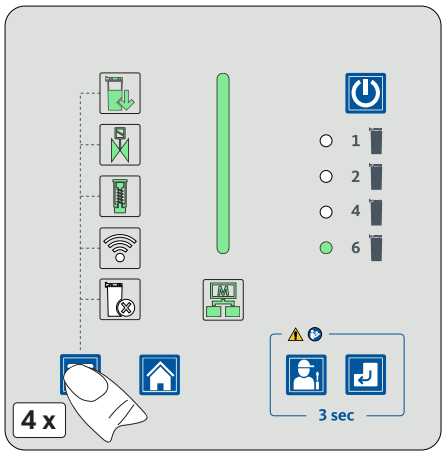
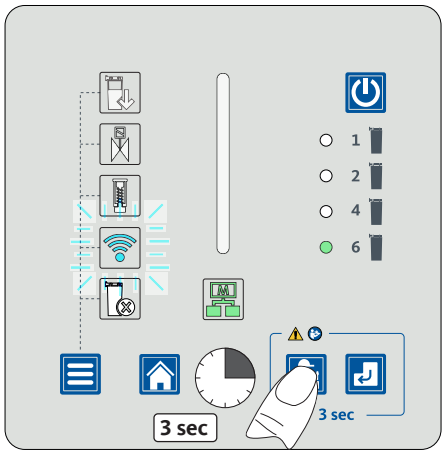
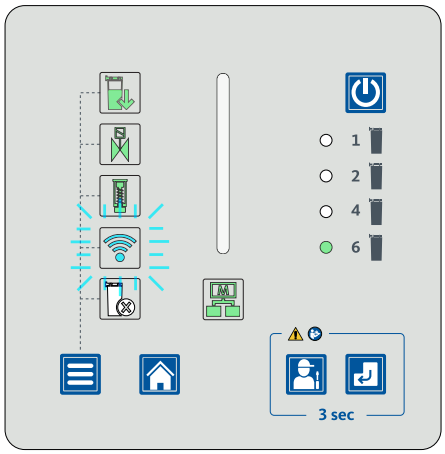
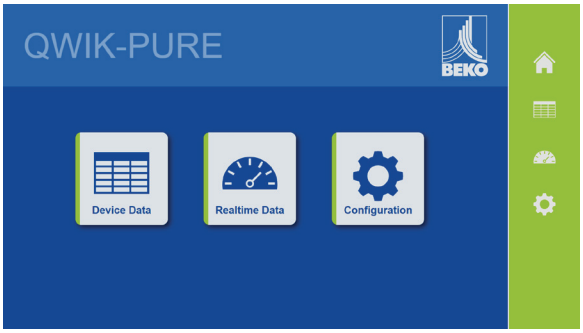
Illustration	Description / explanation
	1. Press the menu button four times.
	The WLAN status is displayed. → The status LED WLAN flashes blue. 2. Press and hold the Service button for 3 seconds.
	The WLAN is active. → The status LED WLAN flashes blue. → The FILTER CARTRIDGES status LED lights up green. → The SOLENOID VALVES status LED lights up green. → The PISTON status LED lights up green. → The status LED STATUS BAR lights up green. 3. Select the **QWIK-PURE 2...** network. 4. Enter the password into the security prompt. **Password:** → The last 10 digits of the network name (e.g. QWIK-PURE **2000002393**) → Scan the QR code on the control unit's housing The WLAN is automatically deactivated after 5 minutes.

Illustration	Description / explanation
	5. Enter address http://192.168.4.1 into a browser. → The start menu will appear.

9.2.7 Setting the number of filter cartridges

NOTE	Setting the number of filter cartridges
	Entering the wrong number of filter cartridges may result in property damage, environmental damage or impaired operation.
	• Make sure to set the correct number of filter cartridges being used.

INFORMATION	Initial commissioning
	Start from step 3 for initial commissioning. The LED NUMBER OF FILTER CARTRIDGES and the status LED FILTER CARTRIDGE SELECTION flash green at the same time. Skip steps 1 and 2.

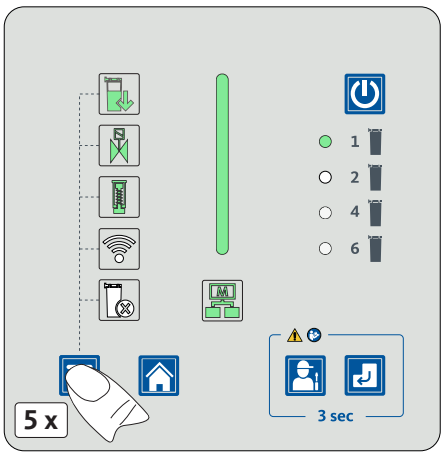
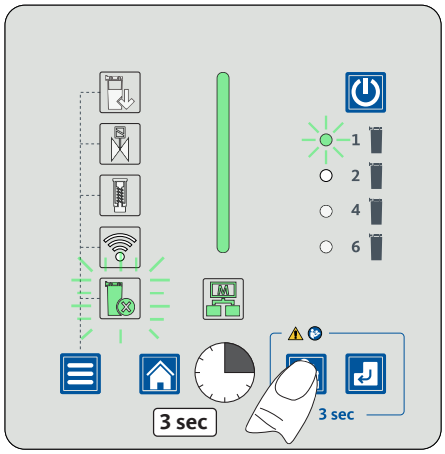
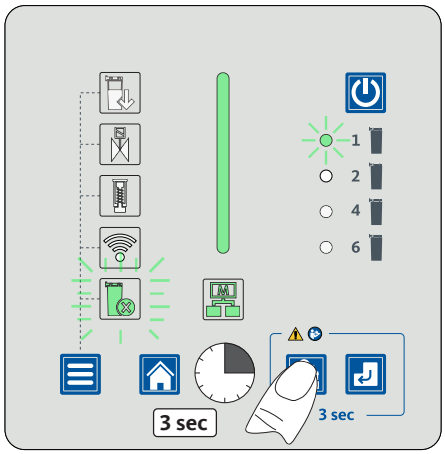
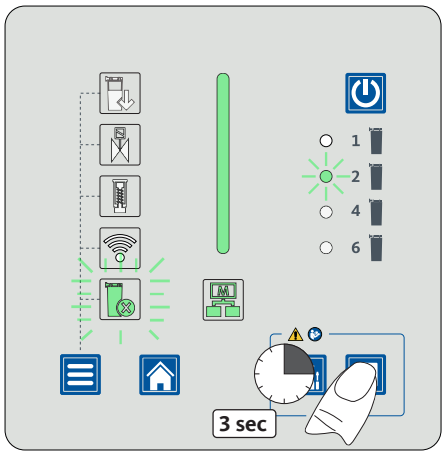
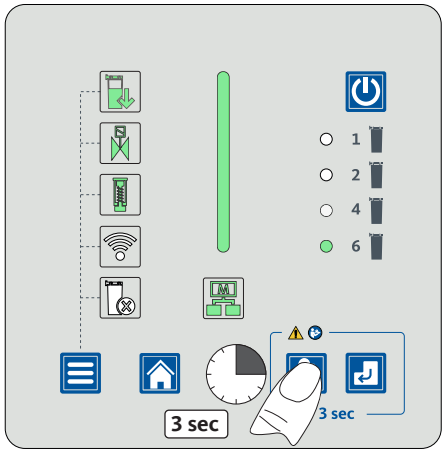
Illustration	Description / explanation
	1. Press the menu button five times. → The status LED FILTER CARTRIDGE SLECTION flashes green.

Illustration	Description / explanation
	2. Press and hold the Service button for 3 seconds. → The LED NUMBER OF FILTER CARTRIDGES flashes green.
	3. Press and hold the Service button for 3 seconds. → The LED NUMBER OF FILTER CARTRIDGES will switch from the current flashing number to the next higher number (e.g., from 1 to 2). 4. Repeat this step until the correct number of installed filter cartridges is set.
	5. Press and hold the Enter button for 3 seconds. → The set number of filter cartridges will be saved. → The LED NUMBER OF FILTER CARTRIDGES for the set number of filter cartridges will light up green. → The FILTER CARTRIDGE SELECTION status LED will turn off. → The display will switch to the START MENU screen.

9.2.8 Manually starting a discharge process

Illustration	Description / explanation
	1. Press and hold the Service button for 3 seconds. → The piston in the **FRC** will close the condensate inlet from the pressure relief chamber into the **FRC**. → The measuring chamber is supplied with auxiliary air at timed intervals. → The condensate is passed through the filter cartridges. 2. If the filling level in the measuring chamber has fallen below the Low Level (LL) sensor, the discharge process will stop. → The measuring chamber is no longer pressurised with auxiliary air. → The piston in the **FRC** will open the condensate inlet from the pressure relief chamber into the **FRC**.

9.2.9 Resetting IP settings

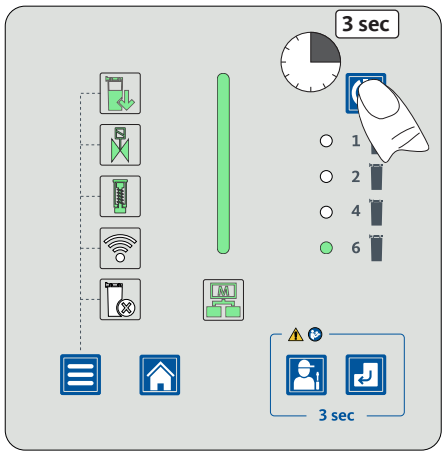
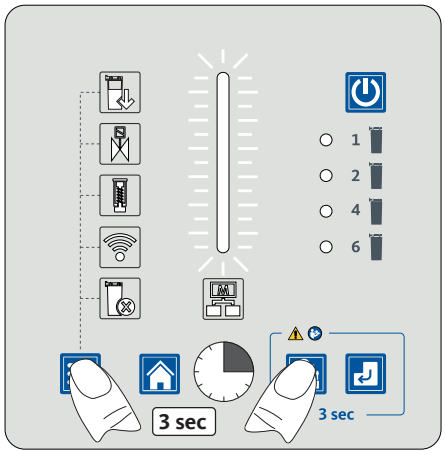
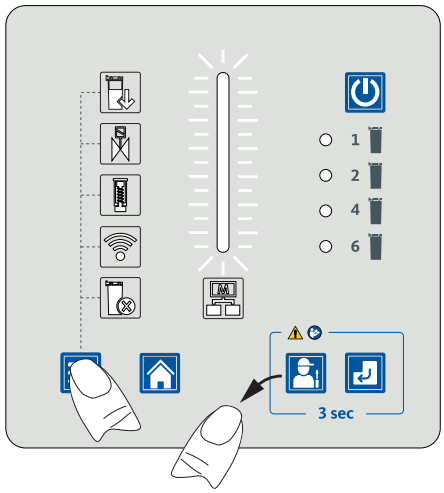
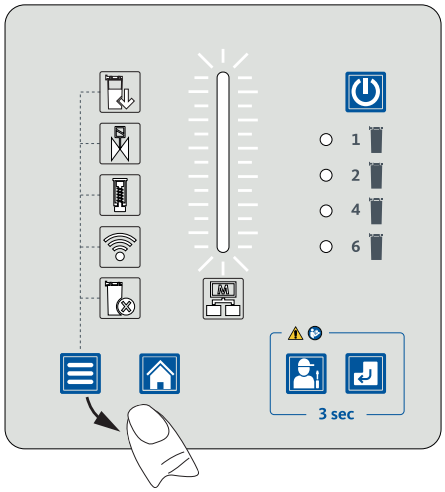
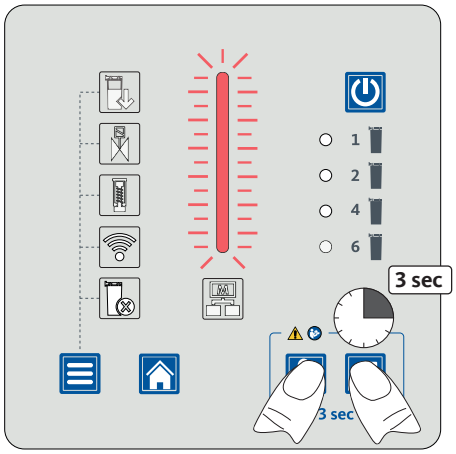
Illustration	Description / explanation
	1. Press and hold down the ON/OFF button for 3 seconds.

Illustration	Description / explanation
	The **FRC** switches to standby mode. → All LEDs go out and the status LED STATUS BAR flashes white at regular intervals. → The condensate passes through the filter cartridges only by gravity. 2. Press and hold down the Service button and the menu button simultaneously for 3 seconds.
	3. Release the Service button only.
	4. Release the menu button. → The IP settings are reset to the factory settings. 5. Press and hold down the ON/OFF button for 3 seconds. → The **FRC** switches from standby mode to normal mode.

9.2.10 Resetting error messages

Illustration	Description / explanation
	1. Read the error message via the WLAN function (see section “3.6 WLAN function” on page 34) or the Modbus function (see section “3.5 Modbus function” on page 27). 2. Determine the cause of the error and rectify the error (see section “15. Troubleshooting” on page 131). If you cannot fix the cause of the error, contact the manufacturer’s customer service department (see section “1.1 Contact” on page 5). 3. Press and hold down the Service button and the Enter button simultaneously for 3 seconds. → The error message will be reset. → The display will switch to the START MENU screen.

10. Maintenance

Personnel
Skilled technical personnel – product servicing (see section “2.3 Target group and personnel” on page 9)

10.1 Warning notices

DANGER	Sudden escape of pressurised fluids
	There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.
	• Before starting work, depressurise the pressurised system and secure it against unintentional pressurisation.

WARNING	Ingress of moisture or foreign bodies
	Water and foreign objects can get into the opened **FRC** control unit or into the opened electrical connections if the **FRC** control unit is opened or if electrical connections are disconnected. Ingress of water or foreign bodies can lead to accidents and personal injury.
	• Protect the **FRC** control unit and the electrical connections from splash water and moisture. • Open the **FRC** control unit and disconnect the electrical connections in a dry location only. • Do not insert any foreign objects into the openings of the **FRC** control unit. • Keep all contact surfaces and openings free of dirt and moisture.

10.2 Maintenance schedule

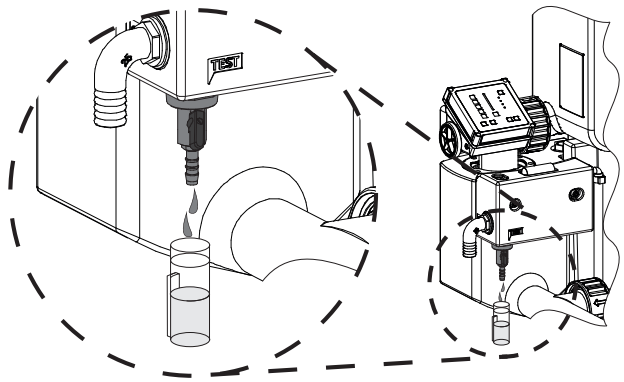
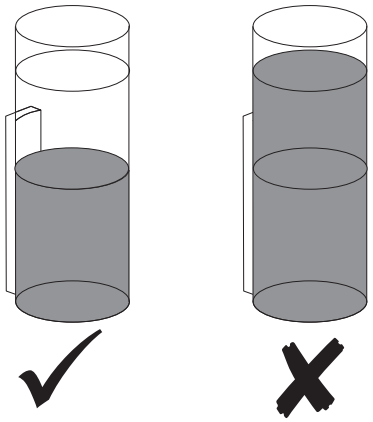
Maintenance	Interval
Turbidity test of wastewater and documenting the result	• Weekly
Visual inspection	• Weekly
Replacing the filter cartridges and activated carbon mat	• Mandatory in case of a negative result of the turbidity test • Maximum lifetime of the filter cartridges reached, see section “9.2.3 Querying filter cartridge status” • At least annually
Replacing the piston	• Maximum lifetime of the piston reached, see section “9.2.5 Querying piston status” • At least every two years
Replacing solenoid valves	• Maximum lifetime of the solenoid valves, see section “9.2.4 Querying the solenoid valve status” • At least every five years
Leakage test	• Recommendation: After all assembly and maintenance work on the product

10.3 Maintenance work

For maintenance work to be carried out, the following prerequisites must be fulfilled and the respective preparatory tasks must have been completed.

10.3.1 Turbidity test of the purified condensate

Prerequisites		
Tools	**Material**	**Protective equipment**
• No tool necessary	• No material necessary	**Always to be worn:** 

Illustration	Description
	1. Remove the reference turbidity tube from the holder and fill it with a water sample from the service valve.
	2. Compare the sample with the reference turbidity on the lower half of the reference turbidity tube. **The sample is clearer than the reference turbidity:** → The product is working properly. **The sample is equally or more turbid than the reference turbidity** → Replace the filter cartridges immediately. 3. Document the result of the turbidity test.

NOTE	High condensate turbidity
	If the condensate discharged from the condensate outlet is highly turbid, clean the product. See section “10.3.5 Cleaning” on page 110.

10.3.2 Replacing filter cartridges

INFORMATION	Cancel operating action
	Actions can be cancelled at any time by pressing the Start Menu button. Any changes made are not saved when you cancel.

Prerequisites		
Tools	**Material**	**Protective equipment**
• No tool necessary	• Filter cartridges • Activated carbon mat	**Always to be worn:** 

Preparatory tasks	
1.	Have the required number of new filter cartridges and the activated carbon mat ready next to the product.
2.	Remove the plugs from the packaging of the new filter cartridges and place them near the product.

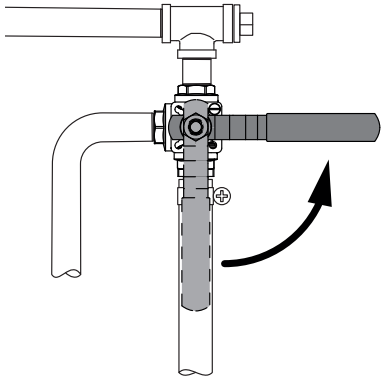
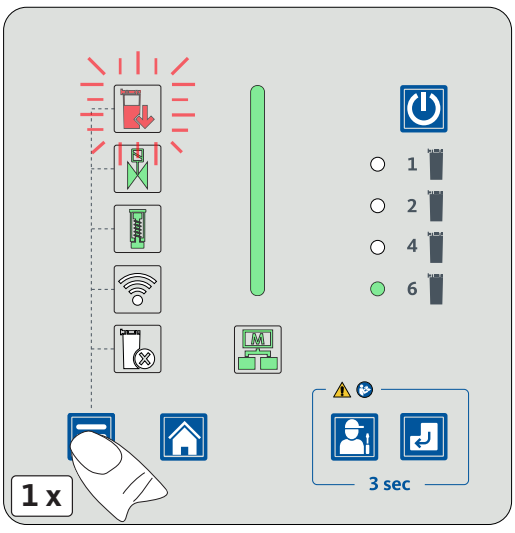
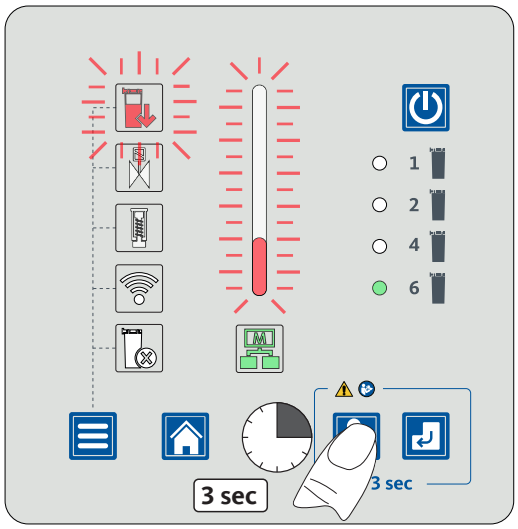
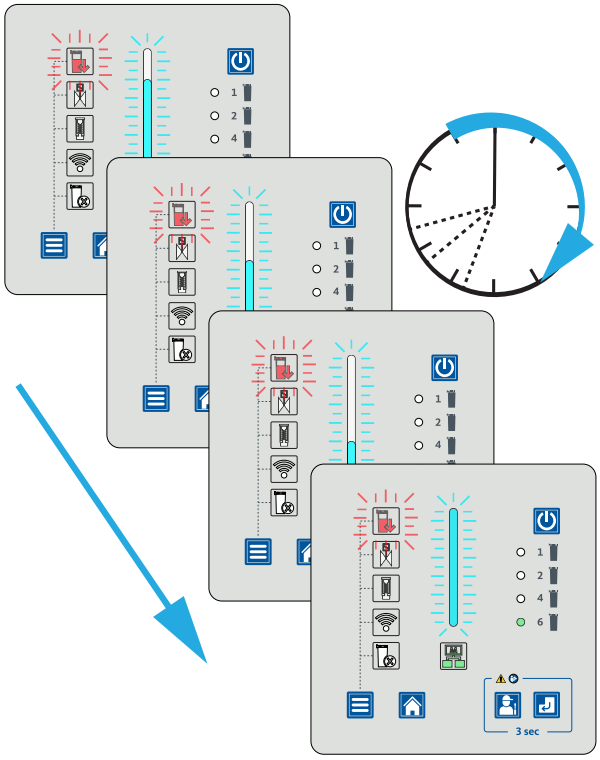
Illustration	Description / explanation
	1. Cut off the condensate feed to the product and divert the condensate into a separate container.
	2. Press the menu button once.

Illustration	Description / explanation
	The current status of the filter cartridges is displayed. → The status LED FILTER CARTRIDGES will flash red. → The status LED STATUS BAR lights up red. 3. Press and hold the Service button for 3 seconds.
	The discharge process is started. → The piston in the **FRC** will close the condensate inlet from the pressure relief chamber into the **FRC**. → The measuring chamber is supplied with auxiliary air at timed intervals. → The condensate is passed into the filter cartridges. This process will take several minutes. → The status LED STATUS BAR flashes blue and indicates the remaining time until the filter cartridge needs to be changed. When the remaining time has elapsed, the discharge process stops. → The status LED STATUS BAR lights up blue. → The measuring chamber is no longer pressurised with auxiliary air.

Status LED STATUS BAR	Remaining time
4/4 of the length flashes blue	100%
3/4 of the length flashes blue	75%
2/4 of the length flashes blue	50%
1/4 of the length flashes blue	25%

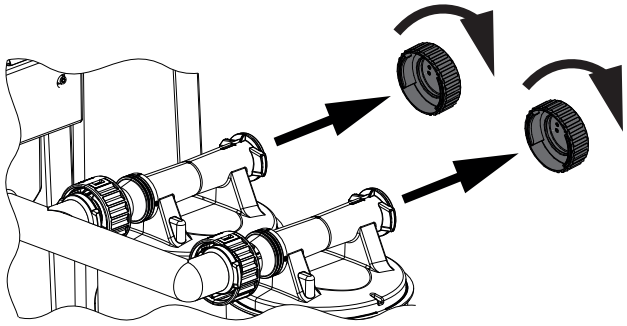
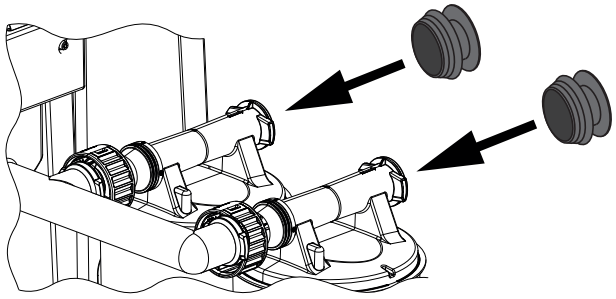
Illustration	Description / explanation
	4. Turn the end caps on the filter cartridges anticlockwise and remove them. → Put the end caps to the side, as they will be screwed back on the new filter cartridges.
	5. Seal the filter cartridges with the plugs.

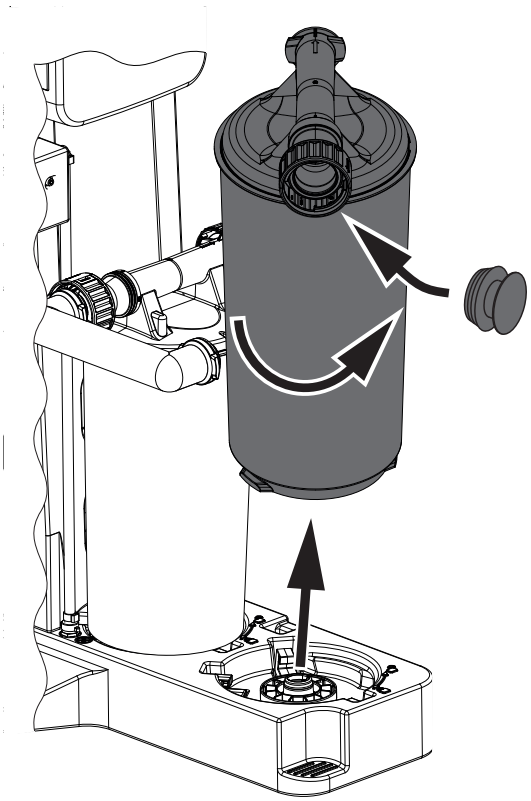
Illustration	Description / explanation
CAUTION 	**Risk of personal injury as a result of lifting the full filter cartridge in an ergonomically inappropriate manner.** Lifting the full filter cartridge in an ergonomically incorrect manner can result in personal injury. • Lift the full cartridge in an ergonomically correct manner close to your body. • Use two people to lift the full cartridge over obstacles.
	6. Turn the bayonet catch of the filter cartridges anticlockwise and pull it off the connection at the measuring chamber outlet. 7. Starting with the last filter cartridge in the front row, turn the filter cartridges 45 degrees anticlockwise and seal them with the plugs provided. 8. Lift the filter cartridge out of the collector and dispose of it properly (see section “14. Disposal” on page 129). 9. Check the sealing surfaces of the connection at the measuring chamber outlet for damage and dirt. → Remove any dirt. → If there is any damage, contact the manufacturer’s customer service department (see section “1.1 Contact” on page 5).

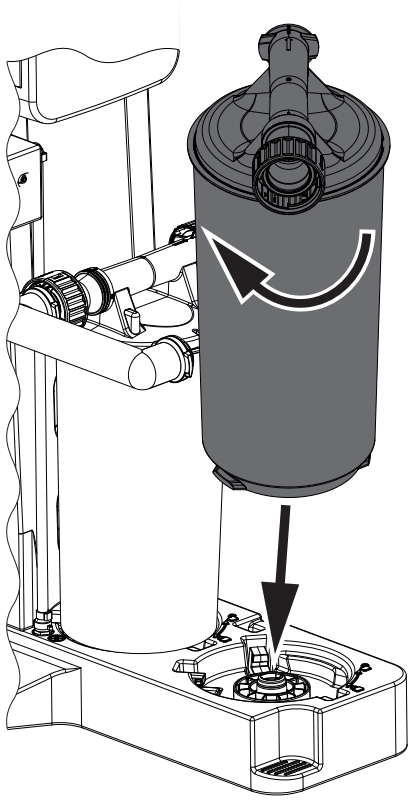
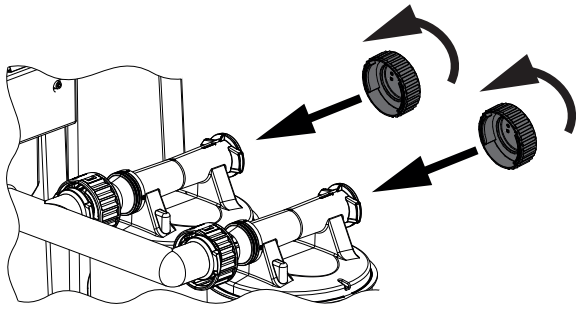
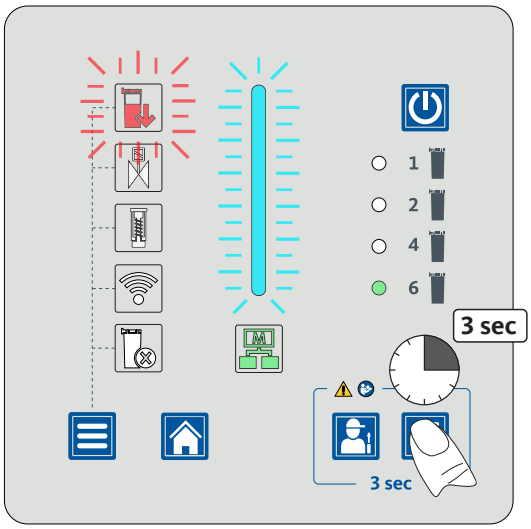
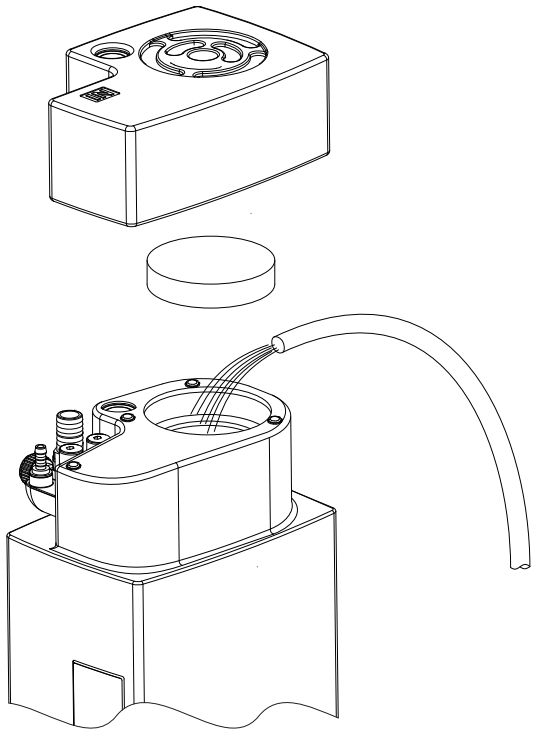
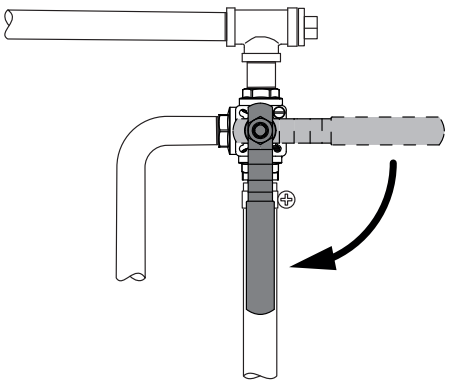
Illustration	Description / explanation
NOTE	**Filter cartridge insertion** Use of incorrect filter cartridges or incorrect insertion of the filter cartridges can cause damage or leakage to the collector and the filter cartridges. • Before inserting the filter cartridges, check to make sure that the filter cartridge is the right one for the product. → The colour of the cap at the bottom of the filter cartridge must be identical to the colour of the cap in the collector. • Insert the filter cartridges vertically and carefully into the collector.
	10. Insert the first filter cartridge into the mount on the foot with the bayonet mount facing the measuring chamber outlet. 11. Turn the filter cartridge clockwise all the way. 12. Align the connecting filter cartridge's connection with the connection on the measuring chamber outlet. 13. Slide the bayonet mount over the connection and turn it clockwise as far as it will go. 14. Insert the other filter cartridges into the holders and connect them together using the bayonet catches.
	15. Place the end caps on the last filter cartridge in each row and turn them clockwise all the way.

Illustration	Description / explanation
	16. After replacing the filter cartridges, press and hold down the Enter button for 3 seconds. → The piston in the **FRC** will open the condensate inlet from the pressure relief chamber into the **FRC**. → The status LED STATUS BAR lights up green. → The display will switch to the START MENU screen.
	17. Remove the cover from the pressure relief chamber and remove the activated carbon mat from the vent of the pressure relief chamber. 18. Dispose of the activated carbon mat properly (see section “14. Disposal” on page 129). 19. Lift the filter cartridge out of the collector and dispose of it properly (see section “14. Disposal” on page 129). 20. Fill the product with tap water through the vent. → Stop filling as soon as the **FRC** performs a discharge process. 21. Insert the new activated carbon mat into the vent of the pressure relief chamber and place the cover on the pressure relief chamber.
	22. Slowly open the condensate feed. 23. Check all hoses and connections for leaks (see section “10.3.7 Leakage test” on page 116).

10.3.3 Replacing solenoid valves

INFORMATION	Cancel operating action
	Actions can be cancelled at any time by pressing the Start Menu button. Any changes made are not saved when you cancel.

Prerequisites		
Tools	**Material**	**Protective equipment**
• Allen key, 2.5 mm	• SOLENOID VALVES Service-Unit • Adsorption materials	**Always to be worn:** 

Preparatory tasks	
1.	Provide the required SOLENOID VALVES Service-Unit.

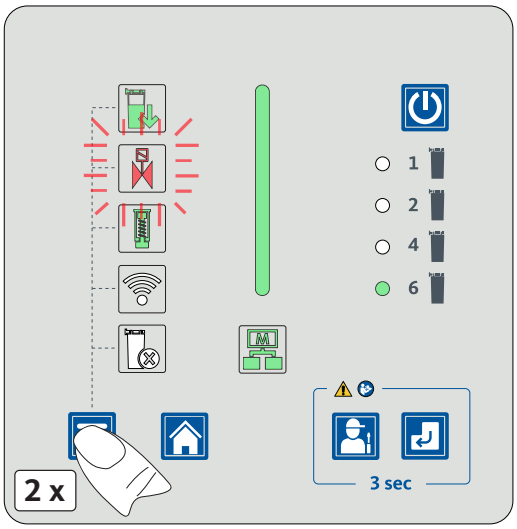
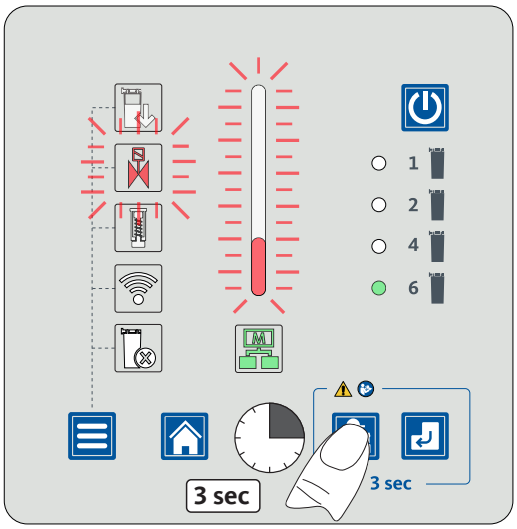
Illustration	Description / explanation
	1. Press the menu button twice.
	The current status of the solenoid valves is displayed. → The status LED SOLENOID VALVES flashes red. → The status LED STATUS BAR lights up red. 2. Press and hold the Service button for 3 seconds.

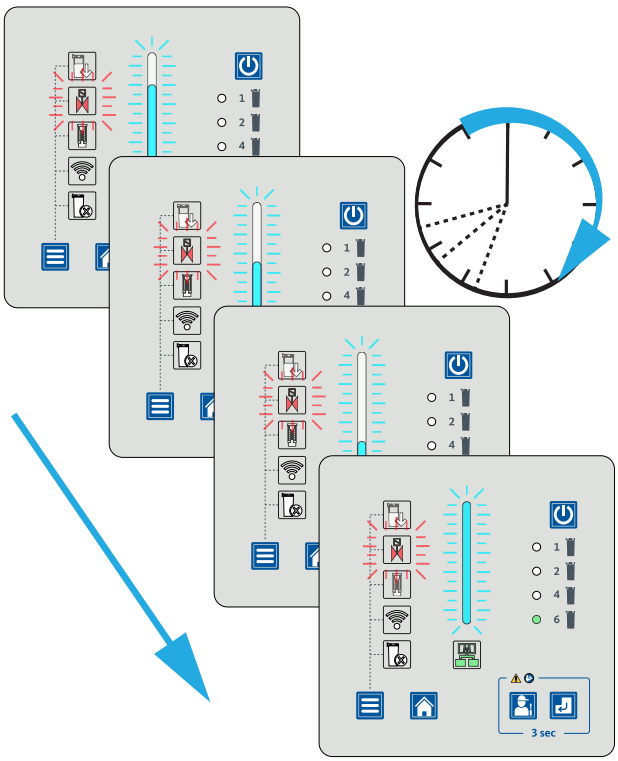
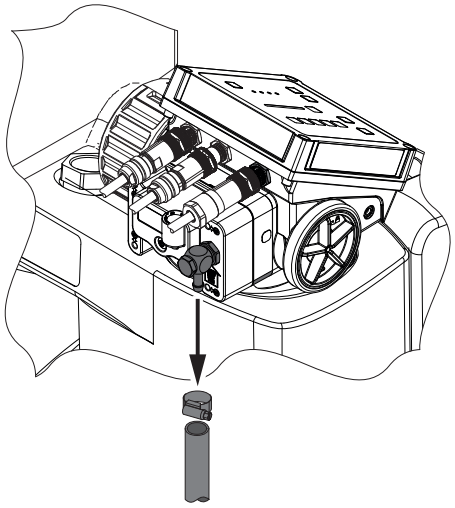
Illustration	Description / explanation
	The discharge process is started. → The piston in the **FRC** will close the condensate inlet from the pressure relief chamber into the **FRC**. → The measuring chamber is supplied with auxiliary air at timed intervals. → The condensate is passed into the filter cartridges. This process will take several minutes. → The status LED STATUS BAR flashes blue and indicates the remaining time until the service. **Status LED STATUS BAR** / **Remaining time** 4/4 of the length flashes blue — 100% 3/4 of the length flashes blue — 75% 2/4 of the length flashes blue — 50% 1/4 of the length flashes blue — 25% When the minimum filling level in the measuring chamber is reached, the discharge process stops. → The piston in the **FRC** will open the condensate inlet from the pressure relief chamber into the **FRC**. → The status LED STATUS BAR is permanently lit blue. → The measuring chamber is no longer pressurised with auxiliary air.
	3. Cut off the compressed air supply and secure it against unintentional opening. 4. Carefully depressurise the compressed air hose at the compressed air connection. 5. Disassemble the compressed air hose.

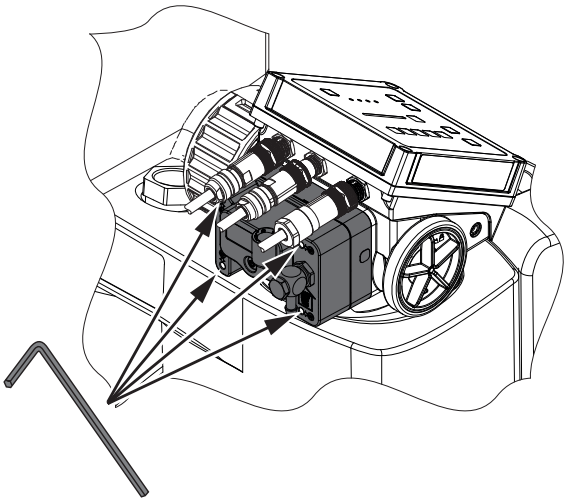
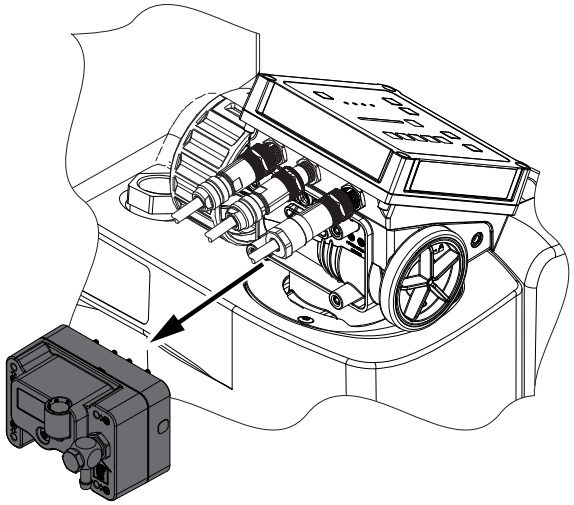
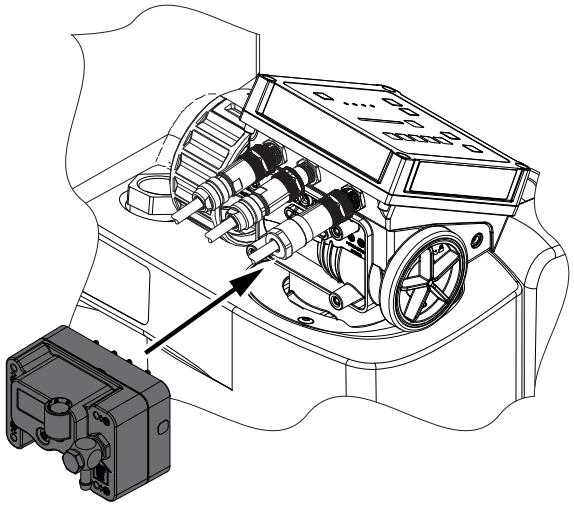
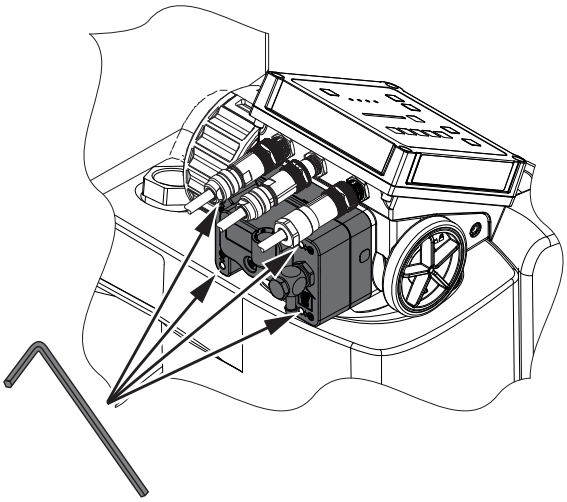
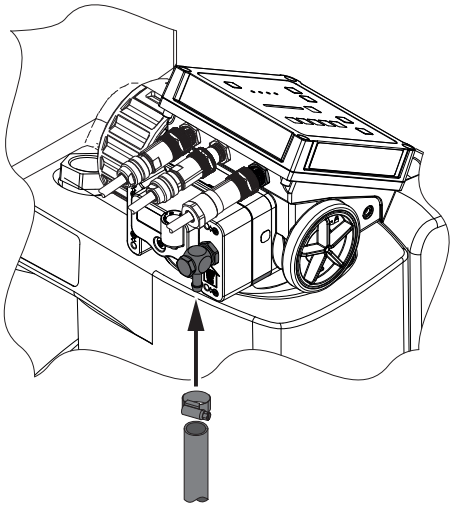
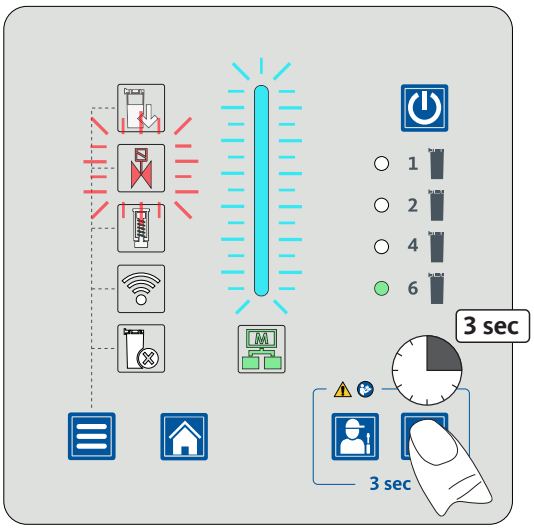
Illustration	Description / explanation
	6. Loosen the 4 hexagon socket screws until the SOLENOID VALVES Service-Unit can be removed from the **FRC**. → The 4 hexagon socket screws are secured in such a way that they cannot fall out from the Service-Unit.
	7. Remove the SOLENOID VALVES Service-Unit. 8. Dispose of the removed SOLENOID VALVES Service-Unit properly (see section “14. Disposal” on page 129). 9. Check the sealing surfaces in the **FRC** for damage and dirt. → Remove any dirt. → If there is any damage, contact the manufacturer’s customer service department (see section “1.1 Contact” on page 5).
	10. Mount the new SOLENOID VALVES Service-Unit and secure it with the 4 hexagon socket screws.

Illustration	Description / explanation
	11. Tighten the 4 hexagon socket screws with a tightening torque of 1 Nm ±0.1 Nm (0.74 ft-lb ±0.74 ft-lb).
	12. Install the compressed air connection. 13. Tighten the hose clamp hand-tight. 14. Restore the compressed air supply.
	15. After completing the service on the solenoid valves, press and hold down the Enter button for 3 seconds. → The status LED STATUS BAR lights up green. → The display will switch to the START MENU screen.

10.3.4 Replacing the piston

INFORMATION	Cancel operating action
	Actions can be cancelled at any time by pressing the Start Menu button. Any changes made are not saved when you cancel.

Prerequisites		
Tools	**Material**	**Protective equipment**
• Combination pliers with rubber-covered handles	• PISTON Service-Unit • Adsorption materials	**Always to be worn:** 

Preparatory tasks	
1.	Provide the required PISTON Service-Unit.

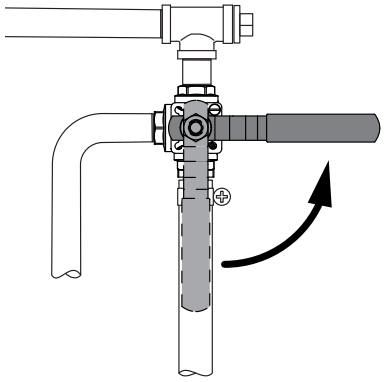
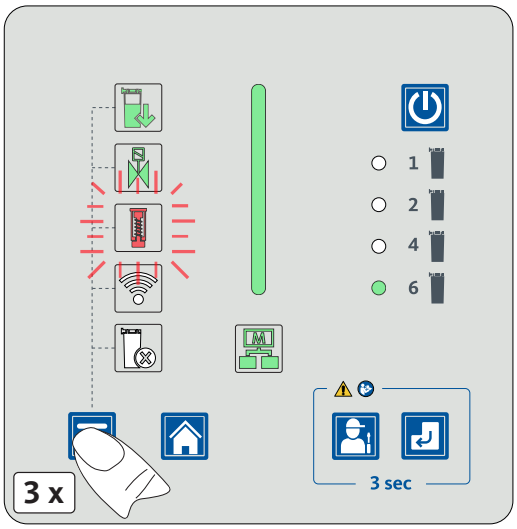
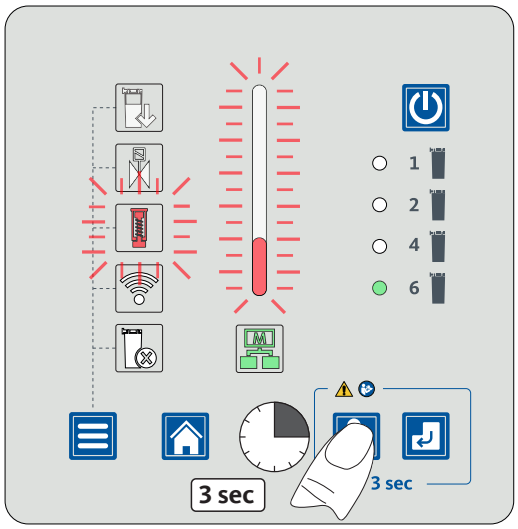
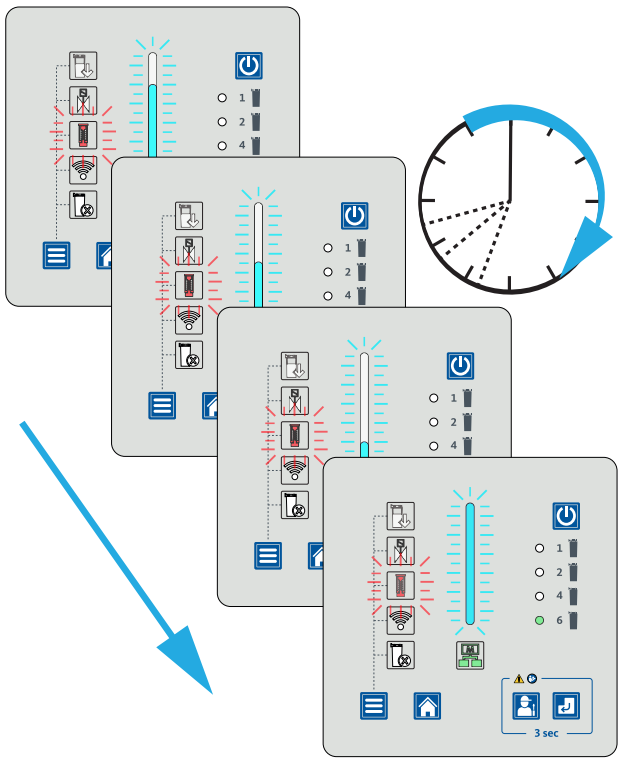
Illustration	Description / explanation
	1. Cut off the condensate feed to the product and divert the condensate into a separate container.
	2. Press the menu button three times.

Illustration	Description / explanation
	The current status of the piston is displayed. → The status LED PISTON flashes red. → The status LED STATUS BAR lights up red. 3. Press and hold the Service button for 3 seconds.
	The discharge process is started. → The piston in the **FRC** will close the condensate inlet from the pressure relief chamber into the **FRC**. → The measuring chamber is supplied with auxiliary air at timed intervals. → The condensate is passed into the filter cartridges. This process will take several minutes. → The status LED STATUS BAR flashes blue and indicates the remaining time until the service. When the minimum filling level in the measuring chamber is reached, the discharge process stops. → The piston in the **FRC** will open the condensate inlet from the pressure relief chamber into the **FRC**. → The status LED STATUS BAR is permanently lit blue. → The measuring chamber is no longer pressurised with auxiliary air.

Status LED STATUS BAR	Remaining time
4/4 of the length flashes blue	100%
3/4 of the length flashes blue	75%
2/4 of the length flashes blue	50%
1/4 of the length flashes blue	25%

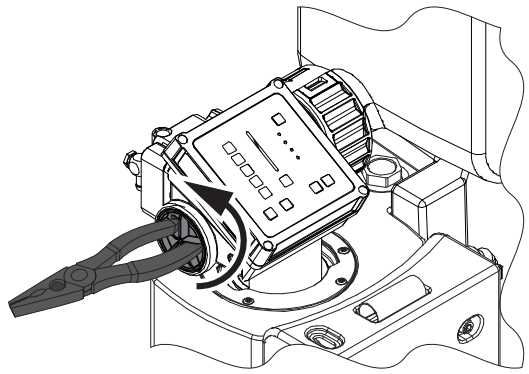
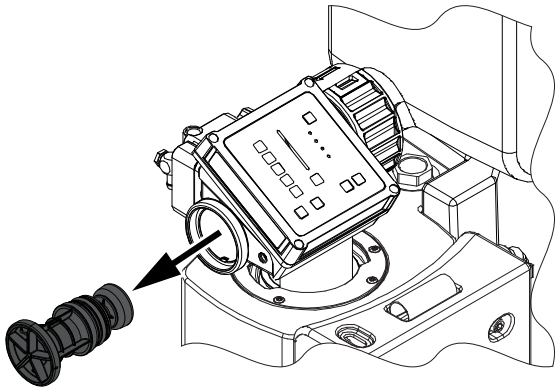
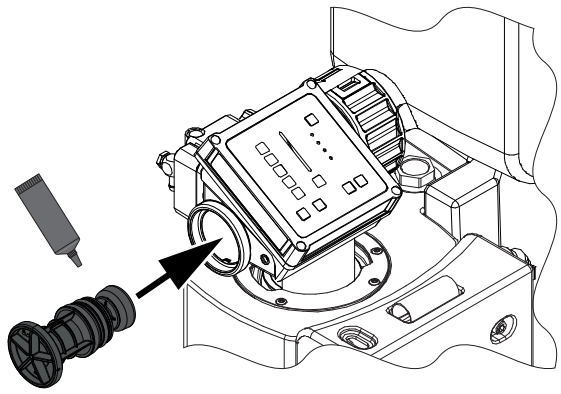
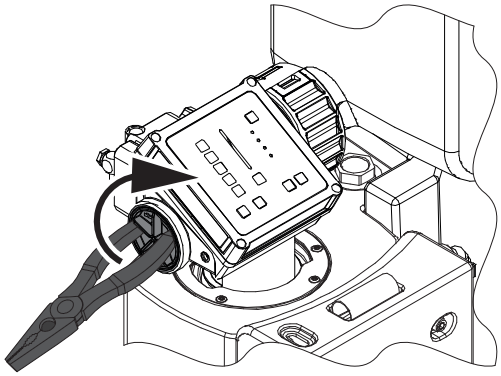
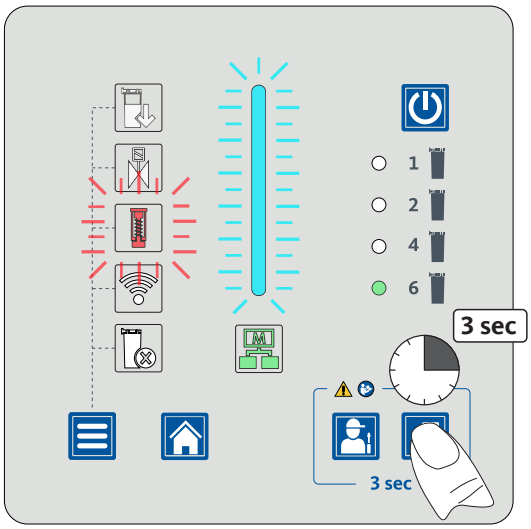
Illustration	Description / explanation
	4. Loosen the piston cap anticlockwise and unscrew it completely. → Insert the handle ends of a pair of linesman pliers into the star-shaped handle of the piston cap and carefully turn it anticlockwise.
	5. Pull out the complete PISTON Service-Unit from the **FRC**. → Collect and dispose of any leaking or spilled condensate in accordance with locally applicable legal requirements and regulations. → Dispose of the removed PISTON Service-Unit properly (see section “14. Disposal” on page 129). 6. Check the sealing surfaces in the **FRC** for damage and dirt. → Remove any dirt. → If there is any damage, contact the manufacturer’s customer service department (see section “1.1 Contact” on page 5).
	7. Lightly lubricate the O-rings of the new PISTON Service-Unit with the Vaseline supplied. 8. Insert the new PISTON Service-Unit in the **FRC**.

Illustration	Description / explanation
	9. Screw in the piston cap clockwise as far as it will go. → Insert the handles of a pair of linesman pliers into the star-shaped handle of the piston cap and carefully turn clockwise.
	10. After completing the service on the piston, press and hold down the Enter button for 3 seconds. → The status LED STATUS BAR lights up green. → The display will switch to the START MENU screen. 11. Restore the condensate feed from the condensate collection line to the pressure relief chamber.

10.3.5 Cleaning

10.3.5.1 Warning notices

DANGER	**Electric voltage**
	Contact with electrically live components can result in death or serious injury.
	• Only carry out maintenance and repair work on the product when it has been isolated from the power source and locked and tagged out.

CAUTION	**Personal injury due to inappropriate use of cleaning media**
	Inappropriate use of cleaning media may result in minor injuries and damage to health.
	• Use personal protective equipment. • Use cleaning media in accordance with the manufacturer's instructions.

CAUTION	**Lifting heavy loads**
	Lifting the collector in an ergonomically incorrect manner while it is filled with flushing water can result in personal injury.
	• Lift the water-filled collector in an ergonomically correct manner close to your body. • Depending on its weight and size, use two people to lift and move the collector when it is filled with flushing water.

NOTE	**Damage due to inappropriate cleaning**
	Inappropriate cleaning can cause damage to components.
	• Only ever flush the product at normal (i.e. low) tap pressure. • Never clean the device with hard or pointed implements. • Do not clean using pressure washers or steam cleaners.

NOTE	**Observe local hygiene regulations**
	In addition to the cleaning instructions listed, any regionally applicable or company-specific hygiene regulations must be observed.

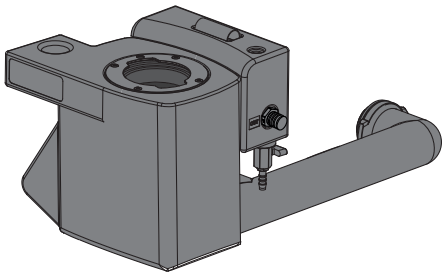
NOTE	**Inappropriate disposal of cleaning water**
	Do not return cleaning water containing detergent to the device. The introduction of cleaning water containing detergents into the device can cause the filter cartridges to malfunction due to the surfactants it contains.
	• Dispose of the cleaning water properly and in compliance with all locally applicable legal requirements and regulations.

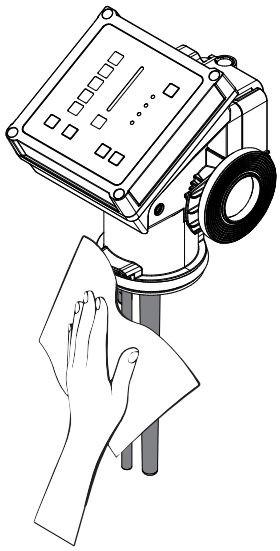
INFORMATION	**Heavy soiling and deposit build-ups in the collector**
	Replace the collector if it is heavily soiled with solid deposits and very large quantities of oil.

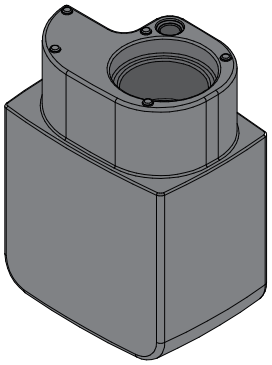
10.3.5.2 Cleaning work

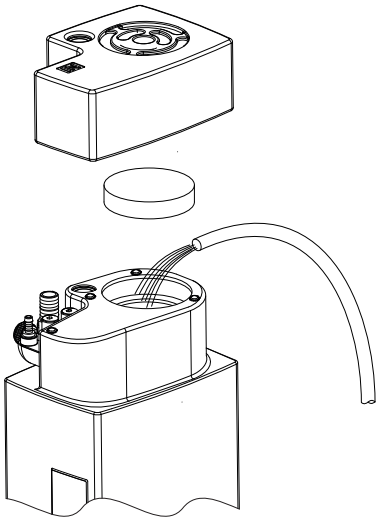
For cleaning work to be carried out, the following prerequisites must be fulfilled and the respective preparatory tasks must have been completed.

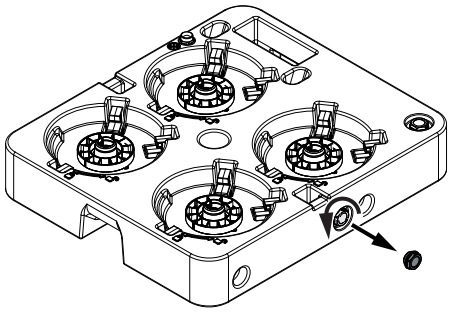
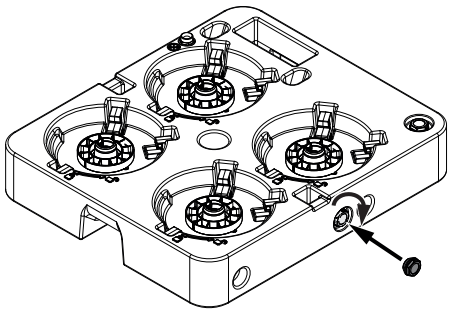
Prerequisites		
Tools	**Material**	**Protective equipment**
Heavy soiling: • Collecting container	**Light soiling:** • Warm water • Cotton or disposable cloth **Heavy soiling:** • Warm water • Normal, commercially available detergent	**Always to be worn:** 

Degree of soiling	Illustration	Description / explanation
Measuring chamber soiled		**Preparatory tasks:** 1. The product has been decommissioned. 2. The assembly unit to be cleaned has been dismounted (see section “13. Disassembly” on page 121). 3. Bring the assembly unit to be cleaned to a washing station with an integrated oil separator. **Cleaning:** • Flush the measuring chamber with warm water. **Final steps:** 1. Dry the cleaned assembly with a cotton cloth. 2. Transport the cleaned and dried assembly unit to the product installation location and mount it (see section “6. Assembly” on page 57). 3. Put the product back into operation (see section “8. Commissioning” on page 75).

Degree of soiling	Illustration	Description / explanation
FRC control unit soiled		**Preparatory tasks:** 1. The product has been decommissioned. 2. The assembly unit to be cleaned has been dismounted (see section “13. Disassembly” on page 121). 3. Bring the assembly unit to be cleaned to a washing station with an integrated oil separator.
		Cleaning: • Carefully wipe clean the sensor tubes of the sensors with a damp cloth.
		Final steps: 1. Dry the cleaned assembly with a cotton cloth. 2. Transport the cleaned and dried assembly unit to the product installation location and mount it (see section “6. Assembly” on page 57). 3. Put the product back into operation (see section “8. Commissioning” on page 75).

Degree of soiling	Illustration	Description / explanation
Pressure relief chamber soiled		**Preparatory tasks:** 1. The product has been decommissioned. 2. The assembly unit to be cleaned has been dismounted (see section “13. Disassembly” on page 121). 3. Bring the assembly unit to be cleaned to a washing station with an integrated oil separator. **Cleaning:** • Flush the pressure relief chamber with warm water. **Final steps:** 1. Dry the cleaned assembly with a cotton cloth. 2. Transport the cleaned and dried assembly unit to the product installation location and mount it (see section “6. Assembly” on page 57). 3. Put the product back into operation (see section “8. Commissioning” on page 75).

Degree of soiling	Illustration	Description / explanation
Collector lightly soiled, high water turbidity at condensate outlet		**Preparatory tasks:** • Remove the cover from the pressure relief chamber and remove the activated carbon mat from the vent of the pressure relief chamber. **Cleaning:** • To clean, fill approx. 40 l of tap water at normal pressure via the vent and flush the unit with it → Collect the condensate until the target turbidity is reached. → During the flushing process, keep the water fill level as high as possible and allow the water to drain. **Final steps:** 1. Fill the product with tap water through the vent. → Stop filling it as soon as water comes out from the condensate outlet. → Feed the condensate back in via the vent. 2. Insert the activated carbon mat into the vent of the pressure relief chamber and put the cover back on the pressure relief chamber.

Degree of soiling	Illustration	Description / explanation
Collector heavily soiled, solid deposits and large amounts of oil in the collector		**Preparatory tasks:** 1. The product has been decommissioned. 2. The assembly unit to be cleaned has been dismounted (see section “13. Disassembly” on page 121). 3. Bring the assembly unit to be cleaned to a washing station with an integrated oil separator.
		Cleaning: 1. Remove the cap (if present) from the collector discharge opening and empty the collector. → Collect or vacuum-extract the condensate. 2. Mix tap water with detergent and fill it into the collector discharge opening. 3. Carefully shake the collector with the discharge opening facing upwards until the deposits are loosened. → Depending on the size and weight of the collector, get a second person to help.
		4. Fill and empty the collector several times with fresh water at normal pressure until the desired cleaning result is achieved. 5. Collect the dirty flushing water and dispose of it separately. Return the cap to the collector discharge opening.
		Final steps: 1. Fit the product with new cartridges (see section “10.3.2 Replacing filter cartridges” on page 96).

10.3.6 Visual inspection

During the visual inspection, check all components for mechanical damage and leaks. Replace damaged components immediately.

10.3.7 Leakage test

A leakage test is only possible if the product is completely filled with water.

1. Fill the product with tap water through the vent until the **FRC** performs a discharge process.
2. Check all hose and other connections for leaks.

Error or fault pattern	Measure
Leaky hose connection	• Tighten the hose clamp. • Replace hardened hose and respective hose clamps.
Bayonet catch leaking	• Check the fit of the seal and correct if necessary. • Check the seal for damage and replace if necessary. • Tighten the bayonet fitting. • Check the seal for damage and replace if necessary.
End cap leaking	• Check the fit of the seal and correct if necessary. • Check the seal for damage and replace if necessary. • Tighten the end cap.

11. Consumables, accessories and spare parts

11.1 Order information

The manufacturer's customer service department requires the following details for enquiries or orders:

- Product name and size (see type plate)
- Serial number (see type plate)
- Part number and designation of the expansion module (see type plate)
- Material number and designation of the accessory
- Required quantity of accessories to be delivered

The contact data for the relevant manufacturer customer services are listed in section "1.1 Contact" on page 5.

11.2 Wear parts

Designation	Material number
Filter cartridge, including two plastic plugs	4051809
SOLENOID VALVES Service-Unit	4058649
PISTON Service-Unit	4058648
Activated carbon mat, pressure relief chamber	4058539

11.3 Accessories

Designation	Material number
QWIK-PURE® 15/**QWIK-PURE® 30** spill protection basin 900 mm x 800 mm (35.43 in x 31.5 in)	4047643
QWIK-PURE® 60spill protection basin 1100 mm x 900 mm (43.31 in x 35.43 in)	4047644
QWIK-PURE® 90spill protection basin 1400 mm x 900 mm (55.12 in x 35.43 in)	4058714
Alarm sensor, changeover	4058541
Expansion kit, 10 to 15	4058650
Expansion kit, 15 to 30	4058554
Expansion kit, 30 to 60	4058557
Expansion kit, 60 to 90	4058511
Termination resistor, 5-pole	4056525
High pressure relief chamber	2801292

11.4 Spare parts

Designation	Material number
Pressure relief chamber 25 l (6.6 gal)	4058519
Cover, pressure relief chamber	4059531
Float, pressure relief chamber	4058544
Condensate inlet, rotatable, including fixing screw	4058538
2.5 l (0.66 gal) **QWIK-PURE® 15** measuring chamber, including clean water tank	4058522
5 l (1.32 gal) **QWIK-PURE® 30 ... 90** measuring chamber, including clean water tank	4058515
Foot	4058517
Collector 1 x 1 filter cartridge	4058532
Collector 1 x 2 filter cartridges	4058535
Collector 2 x 2 filter cartridges	4058528
Expansion module 1 x 2 filter cartridges	4058546
Plug for collector	4058545
Flow regulation controller (**FRC**), control unit**,** Modbus RS485, complete	4058543
FRC control unit seal kit	4058529
Reference turbidity tube 5 ppm	4010073
Reference turbidity tube 10 ppm	4001471
Elbow connector with union nut, reducer fitting and flat gasket	4059172
Fixing screw	4059164
Riser duct	4058552
End cap	4058550
Locking device, foot	4058548
Locking unit, expansion module	4058553
Connecting pipe, expansion modules	4058549
Bayonet insert, collector	4058542
Seal kit: • G1" flat gasket • Condensate inlet O-ring • Filter cartridge seal • Clean water tank outlet seal • Pressure relief chamber outlet seal • **FRC** control unit seal	4058536
Plug-type connector, M12, 4-pin	4055860
Schuko power cable	4056043
NEMA power cable	4056045

12. Decommissioning

Personnel
Skilled technical personnel - product servicing (see section “2.3 Target group and personnel” on page 9)

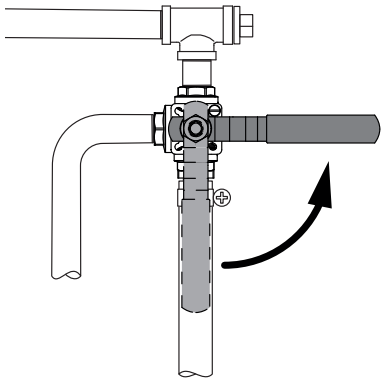
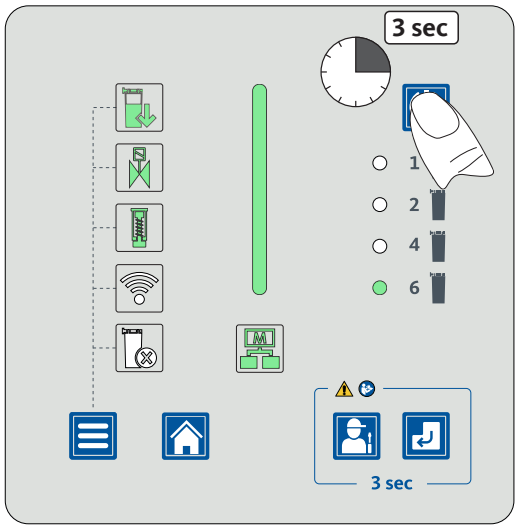
The product must be removed from service for prolonged periods of non-operation, e.g.:

- Repairs to the product or accessories
- Longer standstill of the entire system due to planned work (e.g. conversion work, major repairs, decommissioning of the overall system)

12.1 Warning notices

DANGER	Sudden escape of pressurised fluids
	There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.
	• Before starting work, depressurise the pressurised system and secure it against unintentional pressurisation.

12.2 Decommissioning steps

Illustration	Description / explanation
	1. Cut off the condensate feed to the product and divert the condensate into a separate container.
	2. Switch off the **FRC**. Press and hold down the ON/OFF button for 3 seconds. → The **FRC** switches to standby mode. → All LEDs go out and the status LED STATUS BAR flashes white at regular intervals. 3. Close the compressed air supply and lock and tag it out so that it cannot be opened again.

13. Disassembly

Personnel
Skilled technical personnel - product servicing (see section “2.3 Target group and personnel” on page 9)

13.1 Warning notices

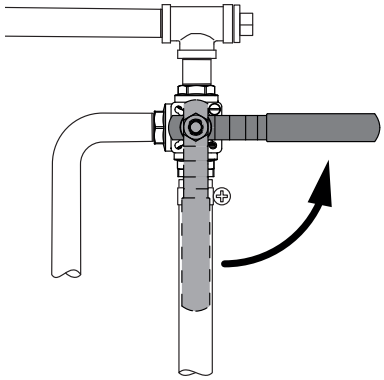
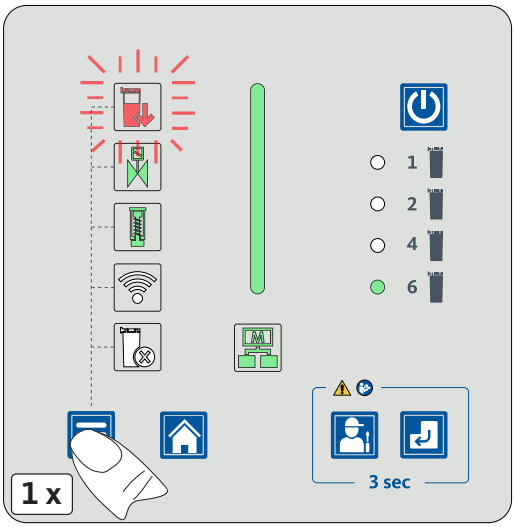
DANGER	Sudden escape of pressurised fluids
	There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.
	• Before starting work, depressurise the pressurised system and secure it against unintentional pressurisation.

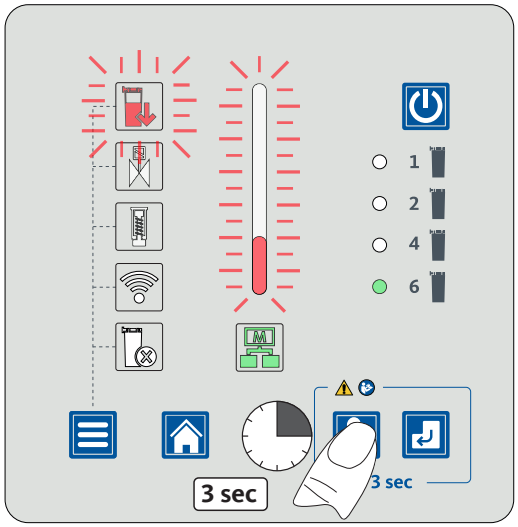
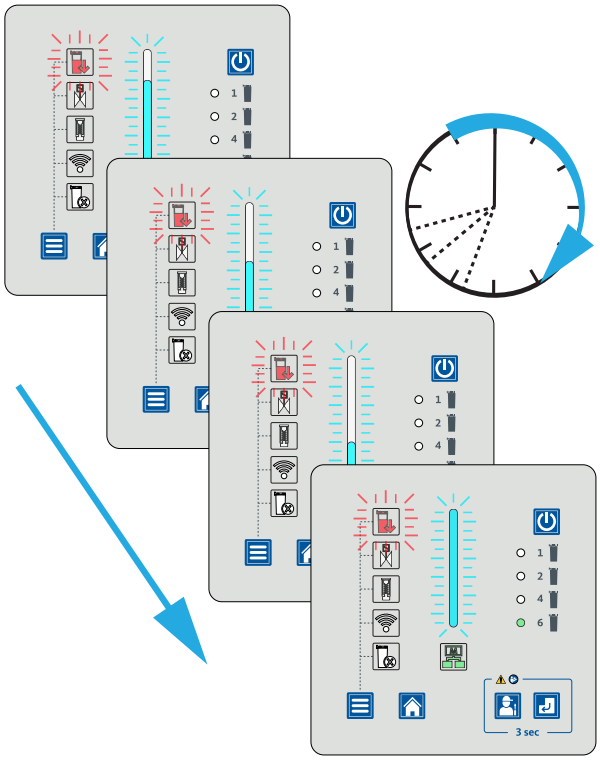
DANGER	Electric voltage
	Contact with electrically live components can result in death or serious injury, as well as malfunction, device failure or material damage.
	• Before starting work, isolate the product and accessories from the power source and secure them against being switched back on again unintentionally.

13.2 Disassembly work

For disassembly work to be carried out, the following prerequisites must be fulfilled and the preparatory tasks must have been completed.

Prerequisites		
Tools	**Material**	**Protective equipment**
• Adjustable spanner • Water pump pliers	• No material necessary	**Always to be worn:** 

Disassembly work	
Illustration	**Description / explanation**
	1. Cut off the condensate feed to the **QWIK-PURE®** and divert the incoming condensate into a separate container.
	2. Press the menu button once.

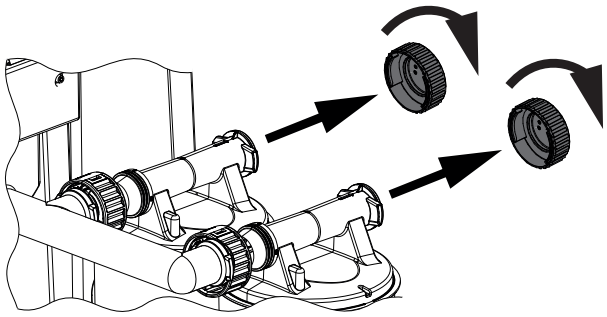
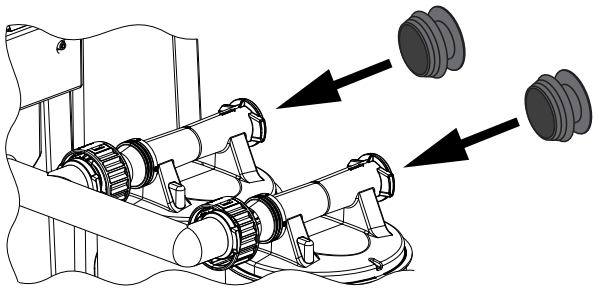
Disassembly work	
Illustration	**Description / explanation**
	The current status of the filter cartridges is displayed. → The status LED FILTER CARTRIDGES will flash red. → The status LED STATUS BAR lights up red. 3. Press and hold the Service button for 3 seconds.
	The discharge process is started. → The piston in the **FRC** will close the condensate inlet from the pressure relief chamber into the **FRC**. → The measuring chamber is supplied with auxiliary air at timed intervals. → The condensate is passed into the filter cartridges. This process will take several minutes. → The status LED STATUS BAR flashes blue and indicates the remaining time until the filter cartridge needs to be removed.

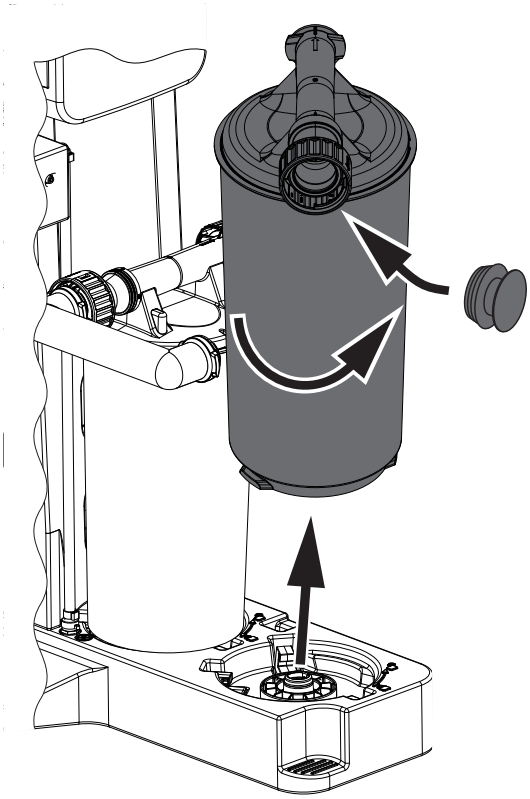
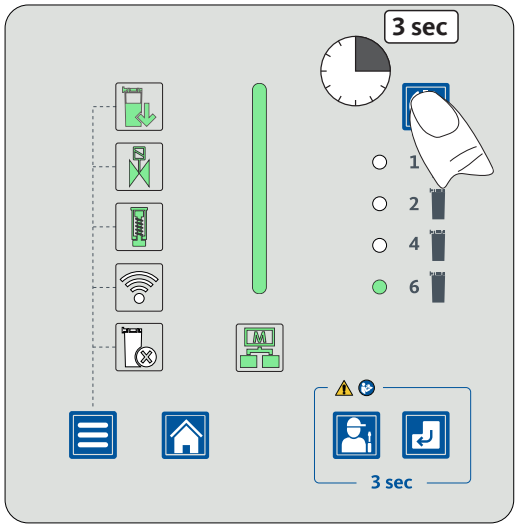
Status LED STATUS BAR	Remaining time
4/4 of the length flashes blue	100%
3/4 of the length flashes blue	75%
2/4 of the length flashes blue	50%
1/4 of the length flashes blue	25%

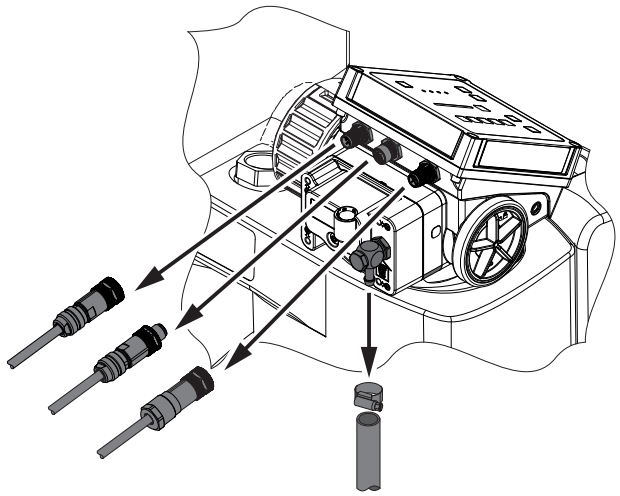
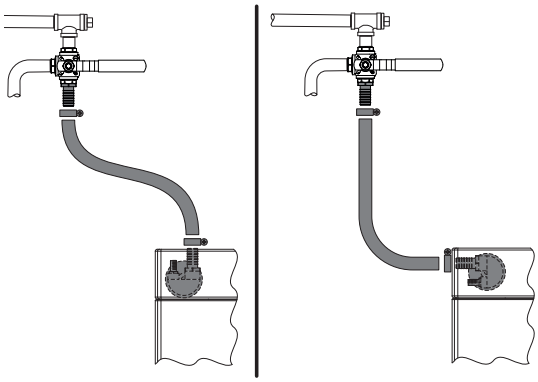
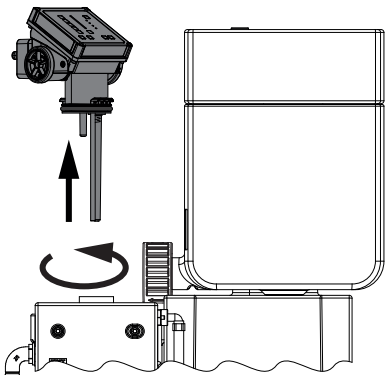
When the remaining time has elapsed, the discharge process stops.

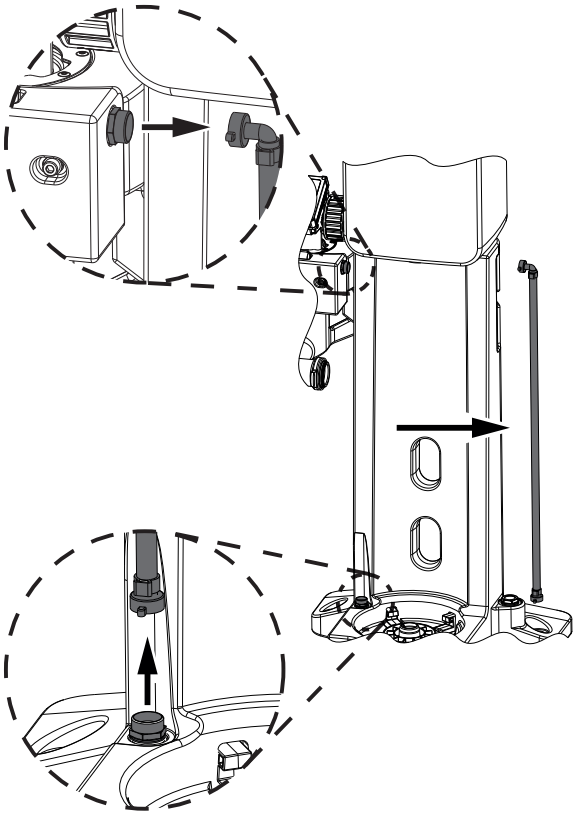
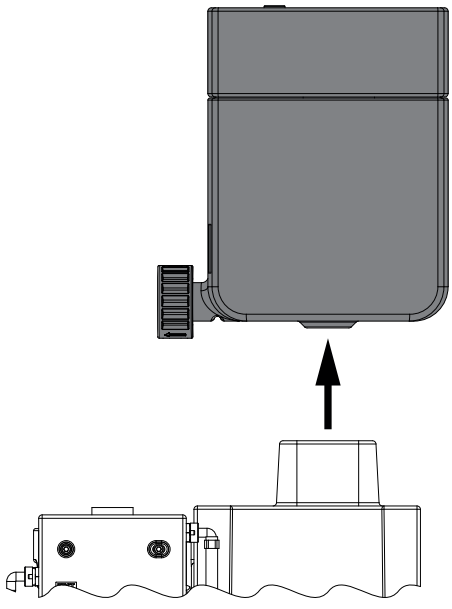
→ The status LED STATUS BAR lights up blue.

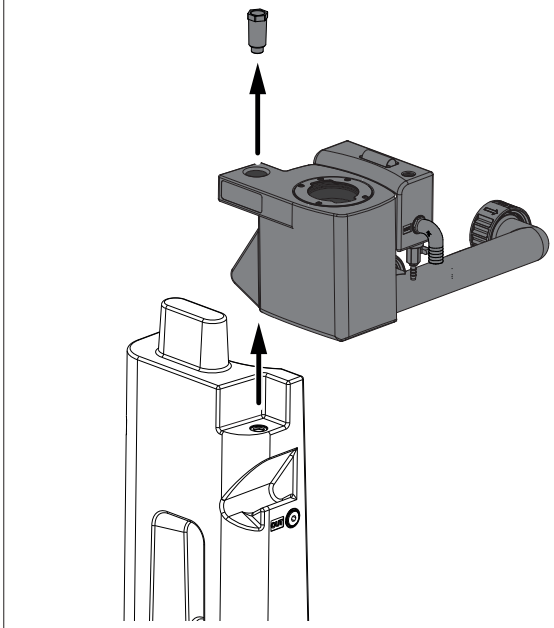
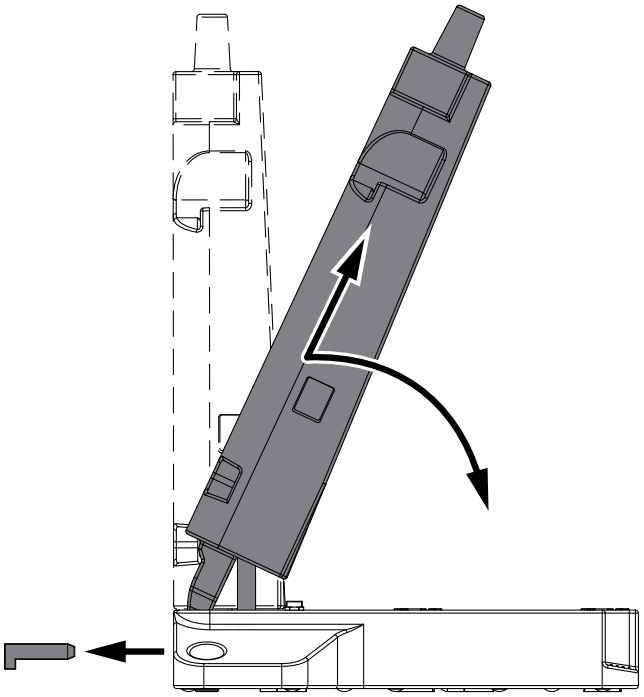
→ The measuring chamber is no longer pressurised with auxiliary air.

Disassembly work	
Illustration	**Description / explanation**
	4. Turn the end caps on the filter cartridges anticlockwise and remove them. → Dispose of the end caps properly (see section “14. Disposal” on page 129).
	5. Seal the filter cartridges with the plugs.

Disassembly work	
Illustration	**Description / explanation**
CAUTION 	**Lifting heavy loads** Lifting the full filter cartridge in an ergonomically incorrect manner can result in personal injury. • Lift the full cartridge in an ergonomically correct manner close to your body. • Use two people to lift the full cartridge over obstacles.
	6. Turn the bayonet catch of the filter cartridges anticlockwise and pull it off the connection at the measuring chamber outlet. 7. Starting with the last filter cartridge in the front row, turn the filter cartridges 45 degrees anticlockwise and seal them with the plugs provided. 8. Lift the filter cartridge out of the collector and dispose of it properly (see section “14. Disposal” on page 129).
	9. **Switching the** FRC **off** → Press and hold down the ON/OFF button for 3 seconds. → The **FRC** switches to standby mode. → All LEDs go out and the status LED STATUS BAR flashes white at regular intervals. 10. Cut off the compressed air supply and lock and tag it out so that it cannot be opened again. 11. Carefully depressurise the compressed air hose at the compressed air connection.

Disassembly work	
Illustration	**Description / explanation**
DANGER 	**Electric voltage** Contact with electrically live components can result in death or serious injury, as well as malfunction, device failure or material damage. • Before starting work, isolate the product and accessories from the power source and secure them against being switched back on again unintentionally.
	12. Cut off the power supply and lock and tag it out. 13. Loosen the union nut of the power supply cable on the **FRC** anticlockwise and remove it from the connection. 14. Loosen the union nuts of the Modbus wiring on the **FRC** anticlockwise and remove them from the connection. 15. Disassemble the compressed air hose.
	16. Remove the hose between the tapping point and the pressure relief chamber.
	17. Remove and clean the **FRC** (see section “10.3.5 Cleaning” on page 110).

Disassembly work	
Illustration	**Description / explanation**
	18. Remove and clean the riser duct.
	19. Empty and remove the pressure relief chamber. 20. Clean the pressure relief chamber (see section “10.3.5 Cleaning” on page 110).

Disassembly work	
Illustration	**Description / explanation**
	21. Remove and clean the measuring chamber (see section “10.3.5 Cleaning” on page 110).
	22. Remove the locking device from the foot. 23. Remove the foot from the collector. Make sure to tilt the foot in the direction of the filter cartridge mount. 24. Empty and clean collector. 25. Dispose of the dismantled components properly (see section “14. Disposal” on page 129).

14. Disposal

At the end of their useful life the product and the accessories must be sent for disposal e.g. by a specialist company. Materials such as glass, plastics and some chemical compounds are mostly recoverable, reusable or recyclable.

14.1 Warning notices

NOTE	Inappropriate disposal
	The improper disposal of parts, components, operating and auxiliary materials, and cleaning products can cause environmental damage.
	• Dispose of all components, parts, operating and auxiliary materials as well as cleaning agents professionally and in accordance with all locally applicable legal requirements and regulations. • Dispose of electrical and electronic components using a specialist disposal company or return them to the manufacturer. • In case of doubt, consult a local disposal company before disposal.

NOTE	Inappropriate storage
	The improper storage of parts, components, operating materials and auxiliary materials, as well as cleaning media, can cause environmental damage.
	• Store all components, parts, operating and auxiliary materials as well as cleaning media properly and in accordance with all locally applicable legal requirements and regulations. • Store used filter cartridges in one spill protection basin only.

INFORMATION	Disposal of electrical and electronic equipment
	Electrical and electronic equipment (EEE) contains materials, components and substances which can be dangerous and harmful to human health and the environment if the waste from electrical and electronic equipment (WEEE) is not disposed of properly. Electrical and electronic equipment is marked with the crossed-out rubbish bin symbol. The crossed-out rubbish bin symbolises that electrical and electronic equipment must be collected separately and must not be disposed of together with unsorted household waste. For additional information regarding locally applicable legal requirements and regulations concerning recycling electrical and electronic products, contact your local disposal companies or the responsible municipal authority.

14.2 Disposal of operating and auxiliary materials

Operating material / auxiliary material	EU waste code
Adsorption materials, filter materials, cleaning wipes and protective clothing – contaminated by oils or other hazardous substances	15 02 02
Adsorption materials, filter materials, cleaning wipes and protective clothing – with the exception of those classified under 15 02 02	15 02 03
Packaging – paper and cardboard	15 01 01
Packaging – plastic materials	15 01 02
Waste oil – mineral	13 02 05
Waste oil – synthetic	13 02 06

14.3 Disposal of components

Ensure the following prerequisites are met before disposal:

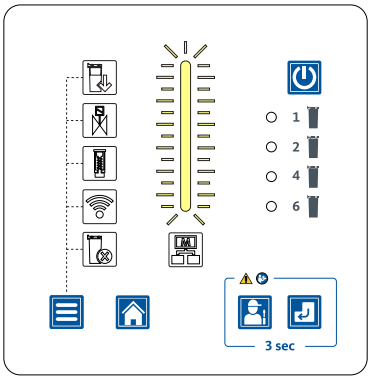
Prerequisites	
1.	The product and the accessories have been decommissioned and disassembled.
2.	The product and the accessories have been cleaned and any fluid residue has been removed from them.

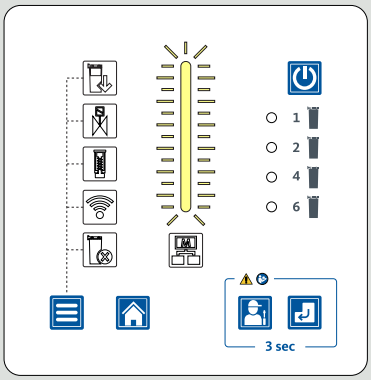
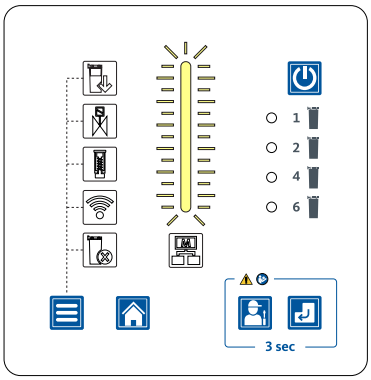
Components	EU waste code
Electrical and electronic devices with the exception of those covered by 20 01 21, 20 01 23 and 20 01 35	20 01 36
Plastic material	20 01 39
Metals	20 01 40

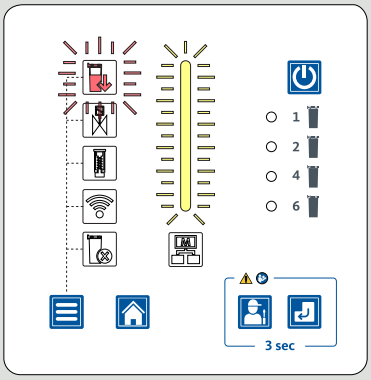
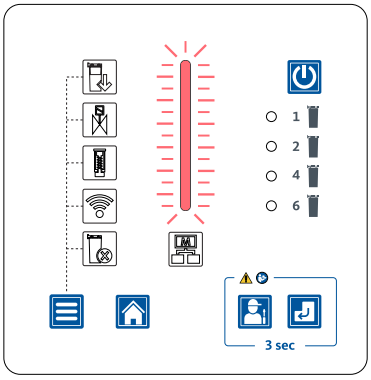
15. Troubleshooting

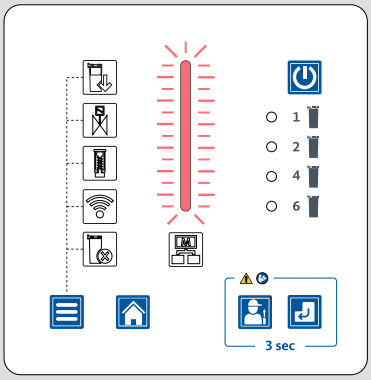
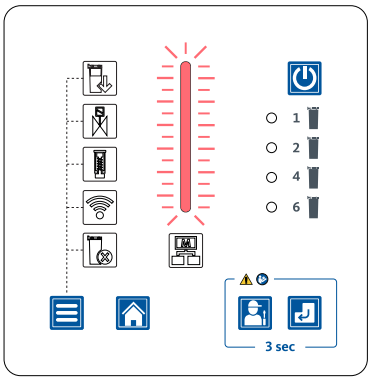
Read the error message via the WLAN function (see section “9.2.6 Activating the WLAN” on page 87) or the Modbus function (see section “3.5 Modbus function” on page 27).

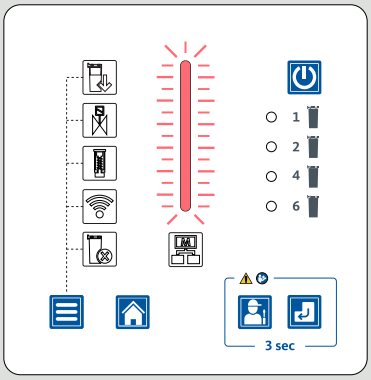
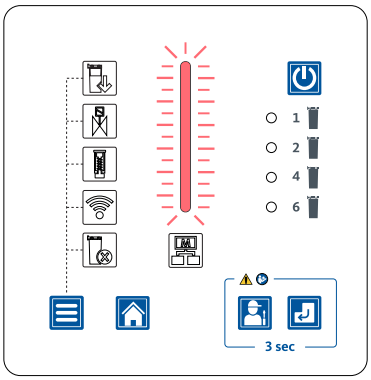
In the event of any malfunctions which are not described, malfunctions which cannot be eliminated or questions, contact the manufacturer’s customer service department (see “1.1 Contact” on page 5).

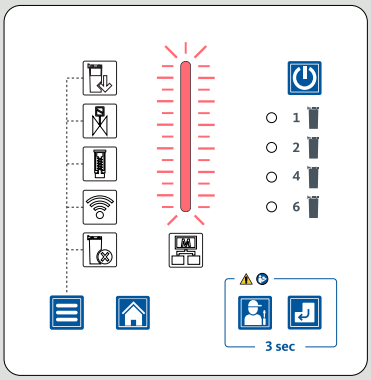
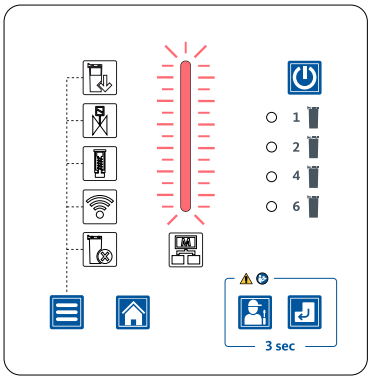
Error or fault pattern	Possible cause	Measure
WARNING 1 High Level (HL) sensor remains covered for too long after a discharge process has been started 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. No compressed air supply	Switch on compressed air
	3. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	4. Filling level far above the sensor after start of **FRC**	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge process” on page 90)
	5. Filter cartridges are clogged 6. During the discharge process, a hissing sound can be heard at the **FRC** pressure relief valves.	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)
	8. Riser duct clogged	Clean or replace the riser duct

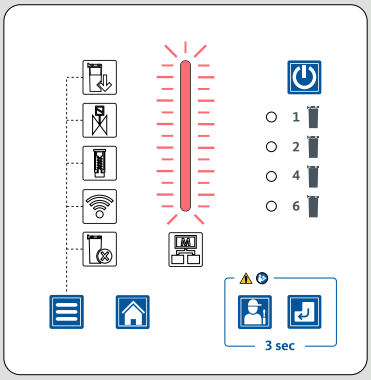
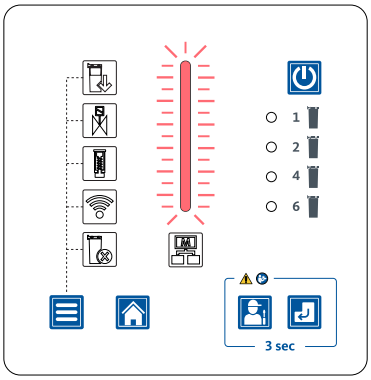
Error or fault pattern	Possible cause	Measure
WARNING 2 High Level Alarm (HLA) sensor remains covered for too long after discharge process has been started 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. No compressed air supply	Switch on compressed air
	3. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	4. Filling level far above the sensor after start of **FRC**	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge process” on page 90)
	5. Filter cartridges are clogged 6. During the discharge process, a hissing sound can be heard at the **FRC** pressure relief valves.	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)
	8. Riser duct clogged	Clean or replace the riser duct
WARNING 3 Illogical sensor values (e.g. High Level (HL) sensor and High Level Alarm (HLA) sensor covered but Low Level (LL) sensor uncovered) 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. Very large quantity of oil in the measuring chamber due to a large oil inflow (e.g., oil leaking)	Monitor whether the error message disappears after a few discharge cycles. Contact the manufacturer’s customer service department (see “1.1 Contact” on page 5)

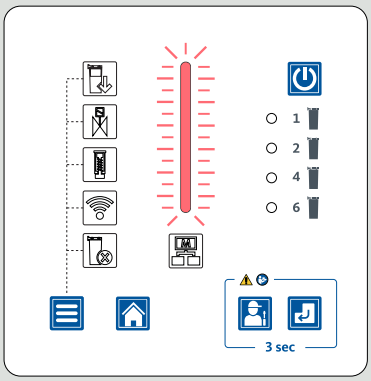
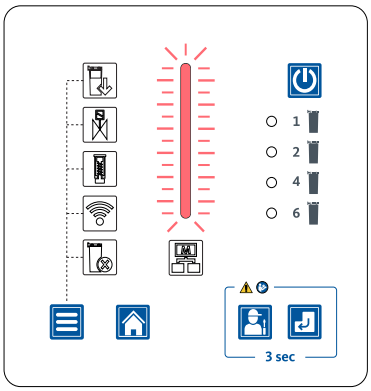
Error or fault pattern	Possible cause	Measure
WARNING 4 Permanently high oil quantity detected in measuring chamber 	1. Filter cartridges can no longer absorb oil	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	2. Permanently high quantity of oil in the measuring chamber due to a large oil inflow (e.g., oil leaking)	Check oil content in condensate inlet
FAULT 1 High Level (HL) sensor remains covered for too long after a discharge process has been started 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. No compressed air supply	Switch on compressed air
	3. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	4. Filling level far above the sensor after start of **FRC**	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge process” on page 90)
	5. Filter cartridges are clogged 6. During the discharge process, a hissing sound can be heard at the **FRC** pressure relief valves.	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)
	8. Riser duct clogged	Clean or replace the riser duct

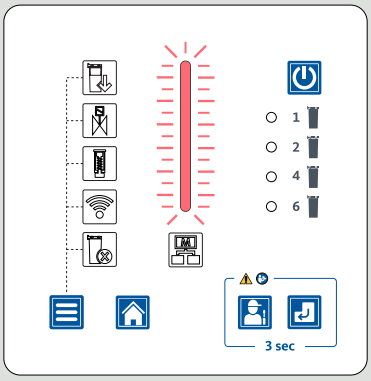
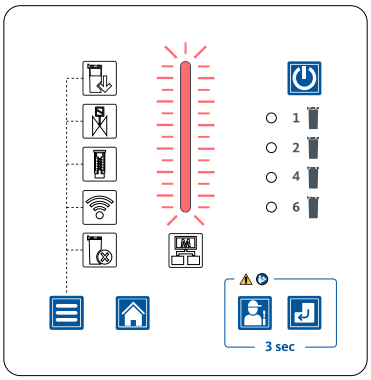
Error or fault pattern	Possible cause	Measure
FAULT 2 High Level (HL) sensor and High Level Alarm (HLA) sensor remain covered for too long after a discharge process has been started 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. No compressed air supply	Switch on compressed air
	3. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	4. Filling level far above the sensor after start of **FRC**	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge process” on page 90)
	5. Filter cartridges are clogged 6. During the discharge process, a hissing sound can be heard at the **FRC** pressure relief valves.	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)
	8. Riser duct clogged	Clean or replace the riser duct
FAULT 3 High Level Alarm (HLA) sensor remains covered for too long after discharge process has been started 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. No compressed air supply	Switch on compressed air
	3. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	4. Filling level far above the sensor after start of **FRC**	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge process” on page 90)
	5. Filter cartridges are clogged 6. During the discharge process, a hissing sound can be heard at the **FRC** pressure relief valves.	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)
	8. Riser duct clogged	Clean or replace the riser duct

Error or fault pattern	Possible cause	Measure
FAULT 4 High Level Alarm (HLA) sensor and High Level (HL) sensor remain covered for too long after a discharge process has been started 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. No compressed air supply	Switch on compressed air
	3. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	4. Filling level far above the sensor after start of **FRC**	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge process” on page 90)
	5. Filter cartridges are clogged 6. During the discharge process, a hissing sound can be heard at the **FRC** pressure relief valves.	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)
	8. Riser duct clogged	Clean or replace the riser duct
FAULT 5 Illogical sensor values (e.g. High Level (HL) sensor and High Level Alarm (HLA) sensor covered but Low Level (LL) sensor uncovered) 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. Very large quantity of oil in the measuring chamber due to a large oil inflow (e.g. oil leaking)	Observe whether the error message disappears after a few discharge cycles

Error or fault pattern	Possible cause	Measure
FAULT 6 Low Level (LL) sensor remains covered for too long after a discharge process has been started 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	3. The minimum compressed air operating pressure is being fallen below during operation	Check compressed air volume
	4. Filter cartridges are clogged 5. During the discharge process, a hissing sound can be heard at the **FRC** pressure relief valves.	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	6. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)
	7. Riser duct clogged	Clean or replace the riser duct
FAULT 7 Low Level (LL) sensor becomes free too quickly during discharge 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	2. Excessively high compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	3. SOLENOID VALVES Service-Unit malfunction (e.g. due to contaminated compressed air)	Remove SOLENOID VALVES Service-Unit and check whether it is working properly (see section “10.3.3 Replacing solenoid valves” on page 102)
	4. Piston assembly defective	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)

Error or fault pattern	Possible cause	Measure
FAULT 8 Oil quantity in the measuring chamber permanently too high 	1. Filter cartridges can no longer absorb oil	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	2. Very high quantity of oil constantly in the measuring chamber due to a large oil inflow (e.g., oil leaking)	Check oil content in inlet
FAULT 9 Oil quantity in the measuring chamber permanently too high and High Level Alarm (HLA) sensor remains covered for too long after a discharge process has been started 	1. Filter cartridges can no longer absorb oil	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	2. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	3. No compressed air supply	Switch on compressed air
	4. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	5. Filling level far above the sensor after start of **FRC**	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge process” on page 90)
	6. Filter cartridges are clogged 7. During the discharge process, a hissing sound can be heard at the **FRC** pressure relief valves.	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	8. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)
	9. Riser duct clogged	Clean or replace the riser duct

Error or fault pattern	Possible cause	Measure
FAULT 10 Oil quantity in the measuring chamber permanently too high and Low Level (LL) sensor remains covered for too long after a discharge process has been started 	1. Filter cartridges can no longer absorb oil	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	2. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
	3. Too little pressure	Select correct pressure range (see section “4. Technical data” on page 45)
	4. Pressure drops during discharge	Check compressed air volume
	5. Filter cartridges are clogged 6. During the discharge process, a hissing sound can be heard at the **FRC** pressure relief valves.	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96)
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 106)
	8. Riser duct clogged	Clean or replace the riser duct
FAULT 11 Permanently excessively high oil quantity detected in measuring chamber 	1. Filter cartridges can no longer absorb oil	Replace filter cartridges (see section “10.3.2 Replacing filter cartridges” on page 96) and reset error message (see section “9.2.10 Resetting error messages” on page 92)
	2. Permanently high quantity of oil in the measuring chamber due to a large oil inflow (e.g., oil leaking)	Check oil content in condensate inlet

Error or fault pattern	Possible cause	Measure
FAULT 12 Permanently excessively high oil quantity detected in measuring chamber 	1. Too much oil has been added to the system 2. The system has been operated for a prolonged period without power, using only gravity	Vacuum extract the excess oil from the measuring chamber and reset the error message (see section “9.2.10 Resetting error messages” on page 92)
FAULT 13 Plausibility test of sensors failed 	1. Soiled **FRC** sensors	**Clean the FRC** sensors (see section “10.3.5 Cleaning” on page 110)
		Restart **FRC** control unit
	2. Defective **FRC** sensors	Replace **FRC** control unit

16. Notes

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