



**SULLIVAN
PALATEK**

Original installation and operating manual

EN-US



iPOWS Pure Oil Water Separator

- > iPOWS 550
- > iPOWS 1100
- > iPOWS 2200
- > iPOWS 3300

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1. Information on documentation

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

1.1 Contact

Manufacturer	Service and tools
<div>SULLIVAN PALATEK AIR COMPRESSORS</div> <div>1201 West US Highway 20 Michigan City, Indiana 46360 Phone: 219.874.2497 Fax: 219.809.0203 info@palatek.com www.sullivan-palatek.com</div>	<div>SULLIVAN PALATEK AIR COMPRESSORS</div> <div>1201 West US Highway 20 Michigan City, Indiana 46360 Phone: 219.874.2497 Fax: 219.809.0203 info@palatek.com www.sullivan-palatek.com</div>


1.2 Installation information and operating manual

INFORMATION	Copyright protection!
	The content of this installation and operating manual, in the form of text, images, photos, drawings, diagrams, and other illustrations, is copyright protected by the manufacturer. Unless expressly permitted, the dissemination and reproduction of this document, as well as the exploitation and disclosure of its contents, are strictly prohibited.

Publication date	Revision	Version	Reason for change	Scope of change
06/13/2024	00	00	Initial creation	Initial creation
7/10/2024	01	00	Content changes	“3.8 Scope of delivery” on page 39

The installation and operating manual, referred to as the manual in the following, must be kept near the product at all times and must always be in a legible condition.

The manual must be included if the product is sold or handed over to another party.

NOTICE	Observe the manual!
	This manual contains all basic information required to safely operate the product, and operators must read the manual before carrying out all work. Otherwise, the product may pose hazards to personnel and materials, and functional and operational disruptions may occur.

2. Safety

2.1 Use

2.1.1 Intended use

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

Any other use besides that described in this manual is deemed improper and poses a risk to personnel and the environment.

The following must be noted for intended use:

- Read and observe this 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, oxidizing and inorganic components.
In case of doubt, analyze the media or accessories.
- 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 of explosion hazard areas.
- 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.
- Comply with the specified maintenance plan.

Before using the product and accessories, the operator must ensure that all conditions and requirements for ensuring intended use are available.

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

2.1.2 Foreseeable misuse

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”. Foreseeable misuse includes using the product or accessories in a manner that is not intended by the manufacturer or suppliers but that may occur due to foreseeable human behavior.

Foreseeable misuse includes:

- Carrying out modifications of all kinds, especially constructive and process-related alterations.
- Disabling or failing to use available 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 does not claim to be exhaustive, since it is not possible to indicate all possible misuses in advance. If the operator knows of misuses of the product or accessories that are not listed here, the manufacturer must be informed of these promptly.


2.2 Responsibility of the operator

The operator must ensure the following in order to avoid accidents, disruptions and environmental impacts:

- Before taking any action, check whether this manual belongs to the product.
- The product and accessories are used, maintained and serviced properly.
- The product and accessories are used only with recommended and functional safety equipment.
- All assembly work, installation work, and maintenance work is carried out exclusively by qualified skilled technical personnel.
- Personnel have the required personal protective equipment, and this equipment is used.
- Suitable technical safety measures are taken to ensure that the permissible operating parameters are observed.
- Keep all safety labels and the type plate on the product and accessories in legible condition. Replace damaged and illegible markings immediately.
- All locally applicable standards 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 is intended for the personnel listed below who are involved in working on the product or its accessories.

INFORMATION	Personnel requirements!
	<ul style="list-style-type: none"> • 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” refers to personnel that is able to safely operate the product and accessories based on its familiarity with the manual and briefing on the product and accessories. The operating personnel is able to recognize possible malfunctions and dangerous situations independently and to initiate appropriate measures.

Skilled technical personnel - Transport and storage

“Skilled technical personnel specialized in transport and storage” refers to personnel whose training, professional experience and qualifications have given them all the skills necessary to safely complete any actions associated with transportation, to recognize potential hazards independently and take measures to prevent those hazards.

These skills include, in particular, experience handling hoists, forklifts, lifting equipment, and lifting devices, as well as familiarity with all regionally applicable regulations, standards and directives related to transportation and storage.

Skilled technical personnel specialized in pressure equipment and systems

"Skilled technical personnel specialized in pressure equipment and systems" refers to personnel whose training, professional experience, and qualifications have provided them with all the skills necessary to safely complete any work associated with pressurized fluids and systems, provide instructions, identify potential hazards independently, and take measures to prevent those hazards.

These skills include, above all, experience with the use of measuring equipment, control equipment, and regulation equipment, as well as familiarity with all regionally applicable regulations, standards, and directives for pressurized systems.

Skilled technical personnel - electrical

"Skilled technical personnel - Trained electricians" refers to personnel whose basic and advanced training, professional experience, and qualifications have provided them with all the skills necessary to safely complete any work involving electricity, identify potential hazards independently, and take measures to prevent those hazards.










These skills include, in particular, experience handling electrical equipment, measuring equipment, control equipment, and regulation equipment, as well as familiarity with all regionally applicable regulations, standards, and directives for electrical and electronic equipment.

Skilled technical personnel - customer service

Skilled technical personnel - customer service personnel are persons who have the skills and qualifications as defined in all the aforementioned definitions concerning skilled technical personnel. Skilled technical personnel - customer service must have documented proof of training for all work on the product and be authorized.

2.4 Explanation of the symbols used

The symbols used in the following indicate important and safety-related information that must be observed in handling the product and to ensure safe and optimal operation.

Symbol	Description/explanation
	General warning symbol (danger, warning, caution)
	Warning of pressurized system
	Warning of electrical voltage
	Read and understand the installation and operation manual
	General mandatory requirement
	Wear safety shoes
	Wear protective gloves (cut-resistant and liquid-resistant)
	Wear safety glasses with side protection (goggles)
	General information

2.5 Safety instructions and warning notices

This section provides an overview of all important safety aspects for the protection of persons and for the safe and trouble-free operation of the product and accessories.

The following sections list the dangers that arise from this product and the accessories even when used as intended. To minimize the risk of personal injury and property damage and to avoid dangerous situations, observe the safety instructions listed and comply with 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.

Action-specific warnings are located directly before potentially dangerous action steps or action sequences.

2.5.1 Generally applicable safety instructions

- Before starting work, consult the technical documents for the entire system and make sure to observe the general operating manual.
- Before starting work, carry out a last minute risk assessment.
- Use appropriate personal protective equipment for all work.
- A safe area must be set up around the work area during all installation, maintenance and repair work.
- Use existing system-specific protection procedures (e.g., LOTO procedure) in order to safely de-energize 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
- Unauthorized tampering and unauthorized modifications to 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 operating parameters are changed or restricted through the use of permitted accessories.
- Observe the installation conditions and ambient conditions.
- Observe the maintenance intervals.

2.5.3 Pressurized systems

The following situations may result in serious injury or death:

- Contact with fluids that escape quickly or abruptly
- Bursting system components
- Pressurized hose and pipe whipping as a result of disconnection

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

- Observe the following safety rules for 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.
By slowly releasing the pressure in a controlled manner with relief valves, for example
 4. Lock out and tag out the system or system section so that it cannot be pressurized again.
- Check the pressurized system or system section for safety, contamination and possible damage.
- Before pressurization, check all system connections for leak tightness and retighten them if necessary.
- Make absolutely sure to charge the system or system section with pressure slowly.
- Avoid pressure shocks.
- Compensate vibrations occurring in the pipeline network by using vibration dampers.

2.5.4 Electrical voltage

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

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

- Connect the product and accessories to a power supply only if they are in proper working order.
- Comply with all regionally applicable regulations and requirements during installation.
- The power supply must have a disconnect device that is easily accessible and close to the product.
 - This disconnect device must disconnect all live cables.
- Connect the equipment protective conductor (earthing) in accordance with applicable regulations.
- Only operate the product and accessories with a complete and closed cover or closed electronic housing.
- Before starting work on the product:
 1. De-energize
 - Disconnect the product from all poles and all sides
 2. Secure against restarting.
 3. Determine the absence of voltage at all poles.
 - With an appropriate and approved measuring device (e.g., two-pole voltage tester)
 4. Earth and short circuit.
- Only the manufacturer is allowed to open the housing of the control unit control unit.

2.5.5 Transport and storage

Improper transport or storage can lead to personal injury or damage to property.

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

- Handle the packaging, the product and accessories carefully.
- Transport and handle the packaged product and accessories according to the labeling on the packaging (observe attachment points for hoists, center of gravity and orientation such as holding vertically, do not throw, etc.).
- Use proper, functional transportation equipment and hoists.
- Always adhere to the permissible storage parameters.
- Store the product and accessories only outside of areas exposed to direct sunlight, heat sources and splash water.
- Empty the assembled product before transporting it.

2.5.6 Installation

The improper assembly or electrical installation of the product and accessories may result in personal injury and damage to property and 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 connections are correctly fitted.
- Avoid stumbling risks by routing cables and hoses accordingly.
- Avoid mechanical stress on the cables.
- Fasten and fix all hoses in such a way that they cannot make any percussive movements.
- Install the inlet and drain lines for condensate and compressed air 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, bleed the pressurized product and accessories and lock them out so that they cannot be pressurized by accident.
- Before starting work, cut off the condensate feed to the product and divert the incoming condensate into a separate container.
- Before starting work, de-energize the product and accessories from the power supply and lock and tag them out.
- Only use materials approved for the respective application.
- Use only suitable tools in perfect condition.
- Only use cleaned pipes and hoses that are free of dirt and corrosion.
- Do not use abrasive or aggressive cleaning agents or solvents that could damage the external coating (e.g. labels, type plate, corrosion protection, etc.).
- Do not clean or operate the device with hard or pointed implements.
- Make sure to only use the specified materials and fluids for cleaning.
- Comply with all applicable hygiene regulations and regional and internal hygiene rules and standards.

- Ensure order and cleanliness during maintenance and repair work. Prevent impurities from penetrating into the opened product or accessories. Store dismantled components and accessories directly in a safe place.
- 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 once they have been cleaned and are free of any residual fluids.
- All components, assemblies, operating, auxiliary materials and cleaning agents must be disposed of appropriately and according to regional statutory specifications and provisions.
- Dispose of electrical and electronic components through a specialized disposal company or return them to the manufacturer.

2.5.8 Handling hazardous substances

Substances contained in the condensate that are hazardous to health and the environment can irritate and damage the skin, eyes and mucous membranes on contact. In addition, condensate contaminated with pollutants must not be allowed to enter the sewerage system, water bodies or the ground.

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

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

2.5.9 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 specified by the manufacturer in carrying out all work.
- Only use materials permitted for the specific purpose and suitable tools in proper condition.
- Only use cleaned pipelines free from dirt and corrosion.
- Only use electrical components and materials that comply with the regionally applicable legal requirements and regulations (standards, directives, etc.) for electrical safety.

2.6 Warning notices

Warning notices caution against dangers in handling the product and accessories.

Observe the warning notices in order to avoid accidents, personal injury and property damage as well as impairments in operation.

Structural design:

SIGNAL WORD	Type and source of danger!
 Symbol	Possible consequences if the hazard is not observed
	<ul style="list-style-type: none"> Measures to avoid the hazard

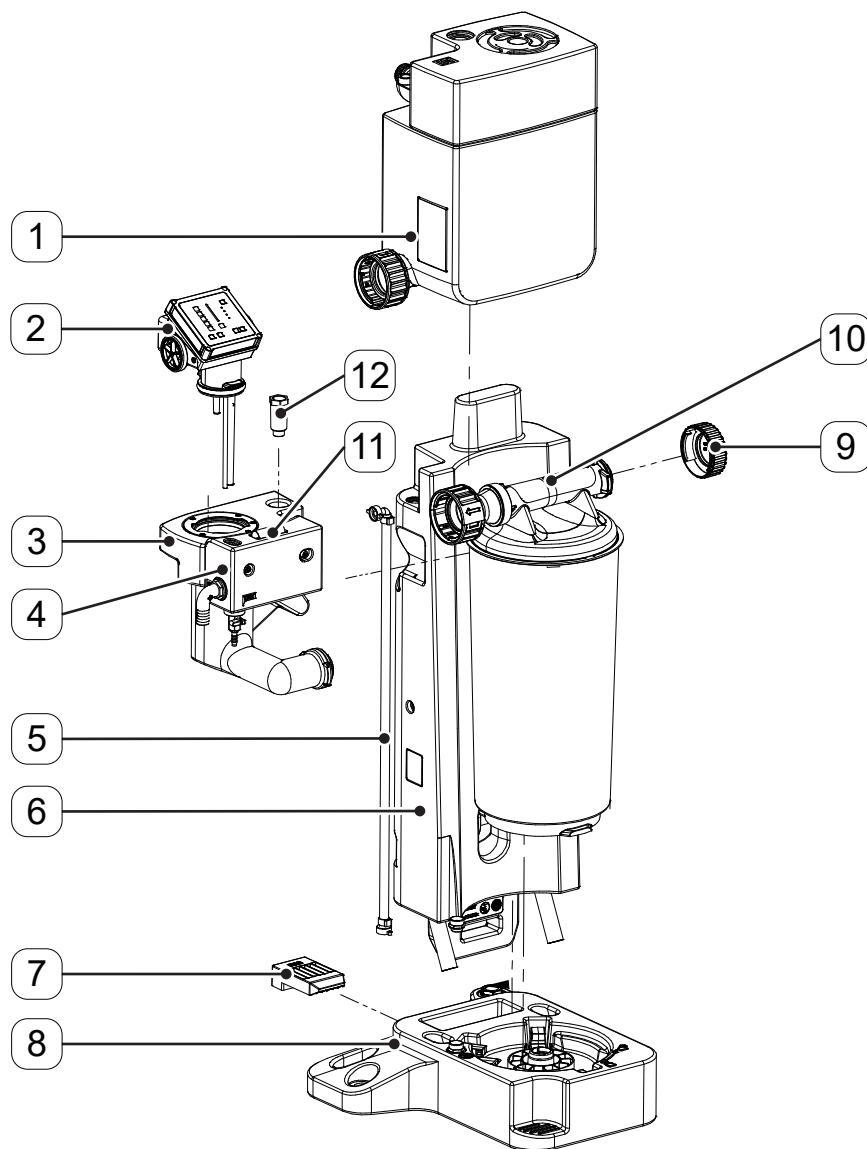
Signal words:

DANGER	Imminent danger Consequences of non-compliance: Death or severe personal injury
WARNING	Imminent danger Consequences of non-compliance: Death or severe personal injury are possible
CAUTION	Potential danger Consequences of non-compliance: Personal injury or damage to property is possible
NOTICE	Additional information Consequences of non-compliance: Property damage and disadvantages in operation are possible. No danger to personnel or safe operation.

3. Product information

3.1 Product overview

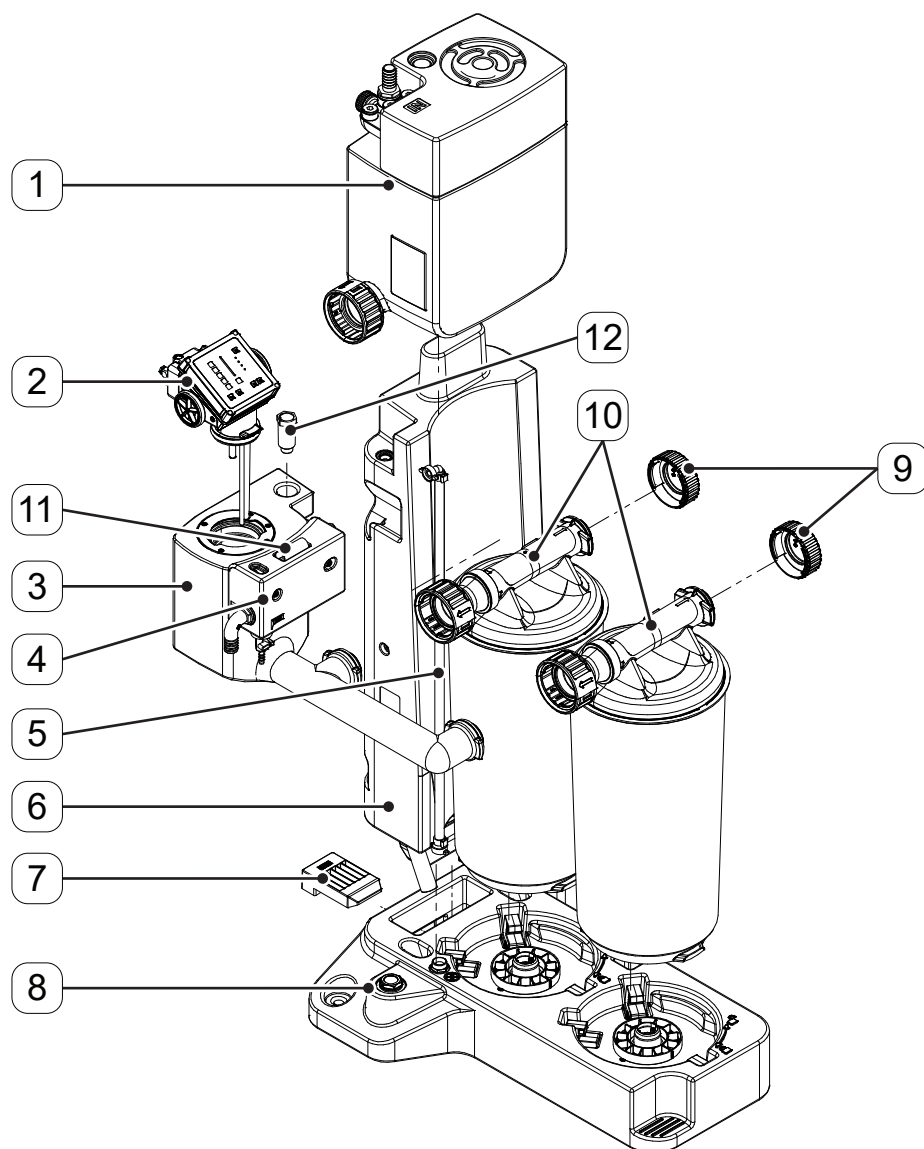
3.1.1 iPOWS 550



No.	Description / explanation
[1]	Pressure relief chamber
[2]	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

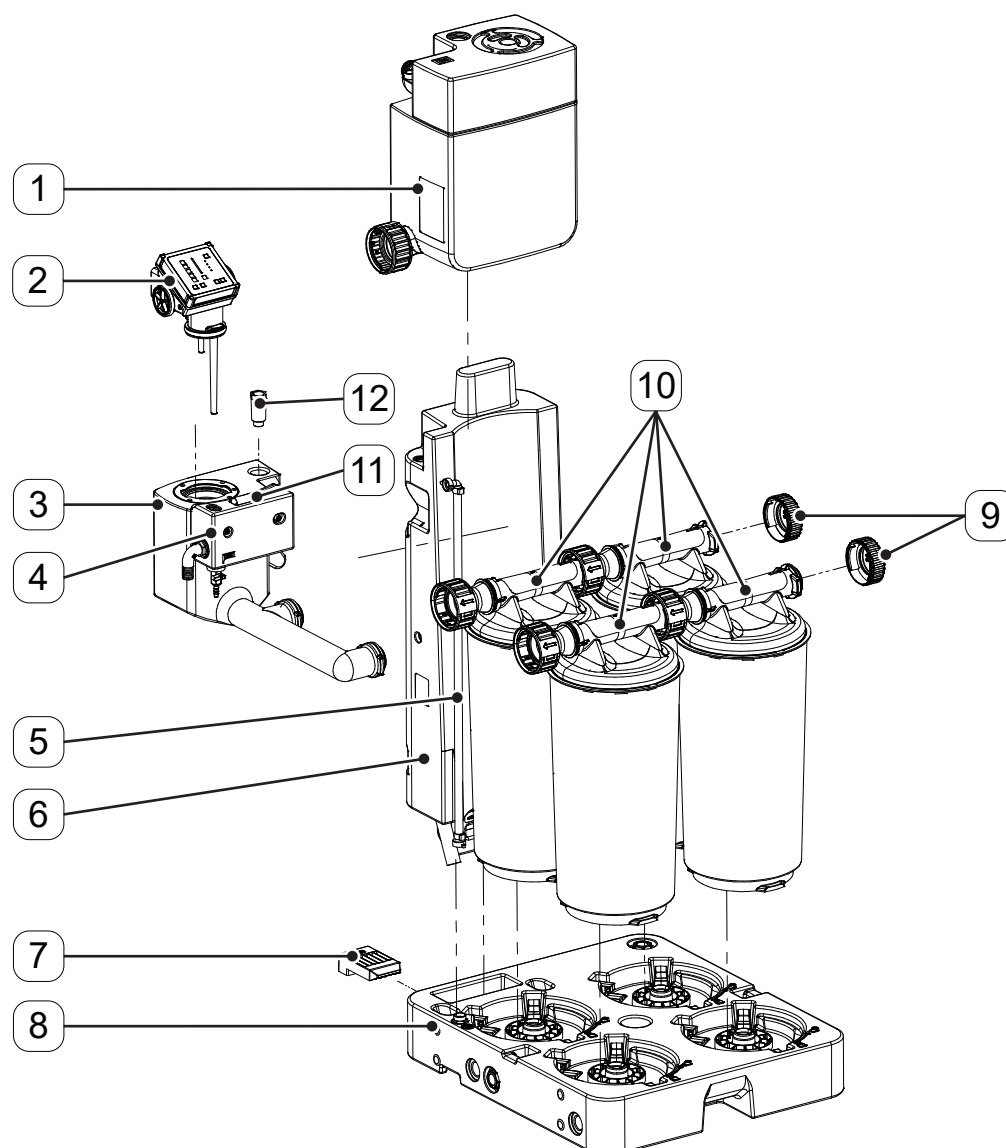
3.1.2 iPOWS 1100



No.	Description / explanation
[1]	Pressure relief chamber
[2]	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

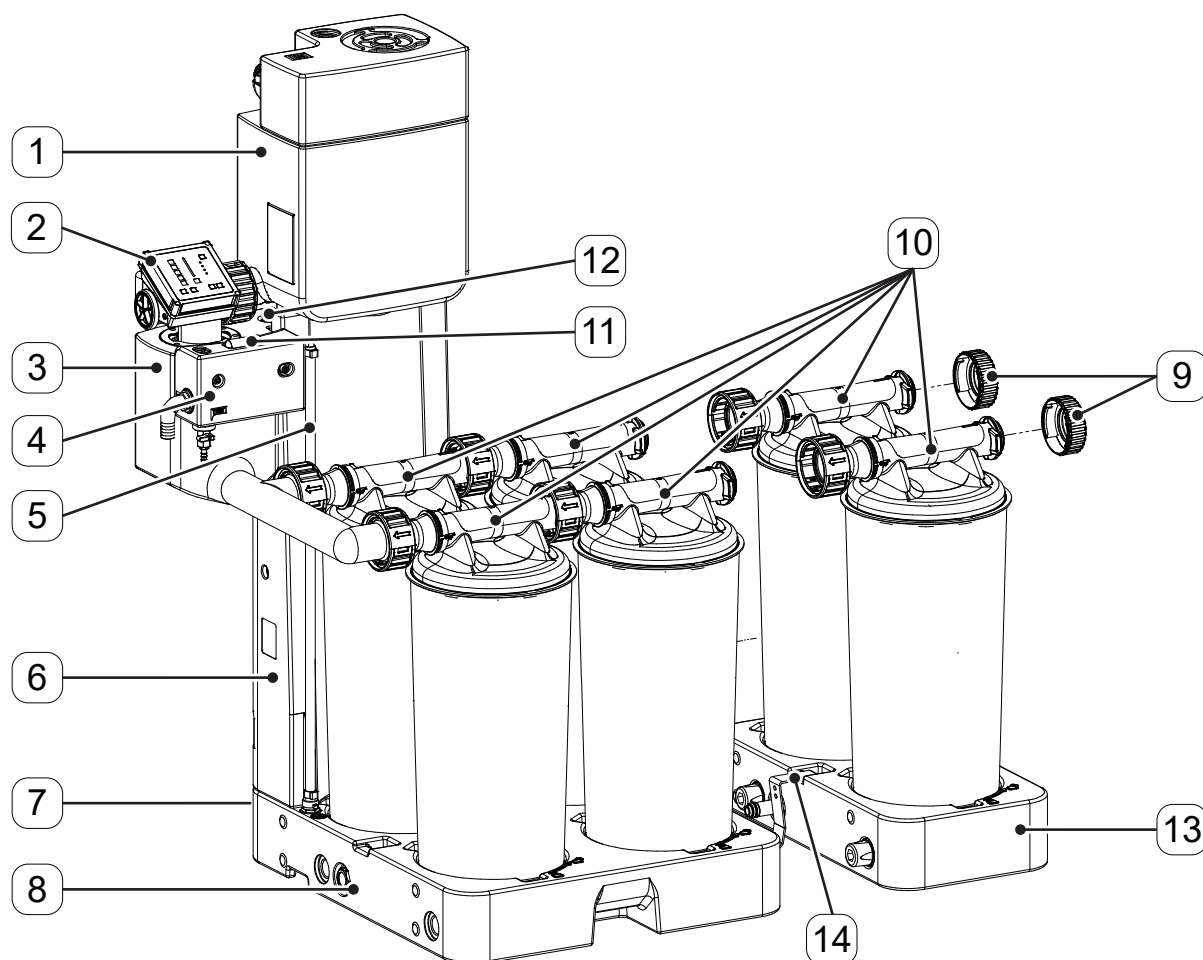
3.1.3 iPOWS 2200



No.	Description / explanation
[1]	Pressure relief chamber
[2]	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

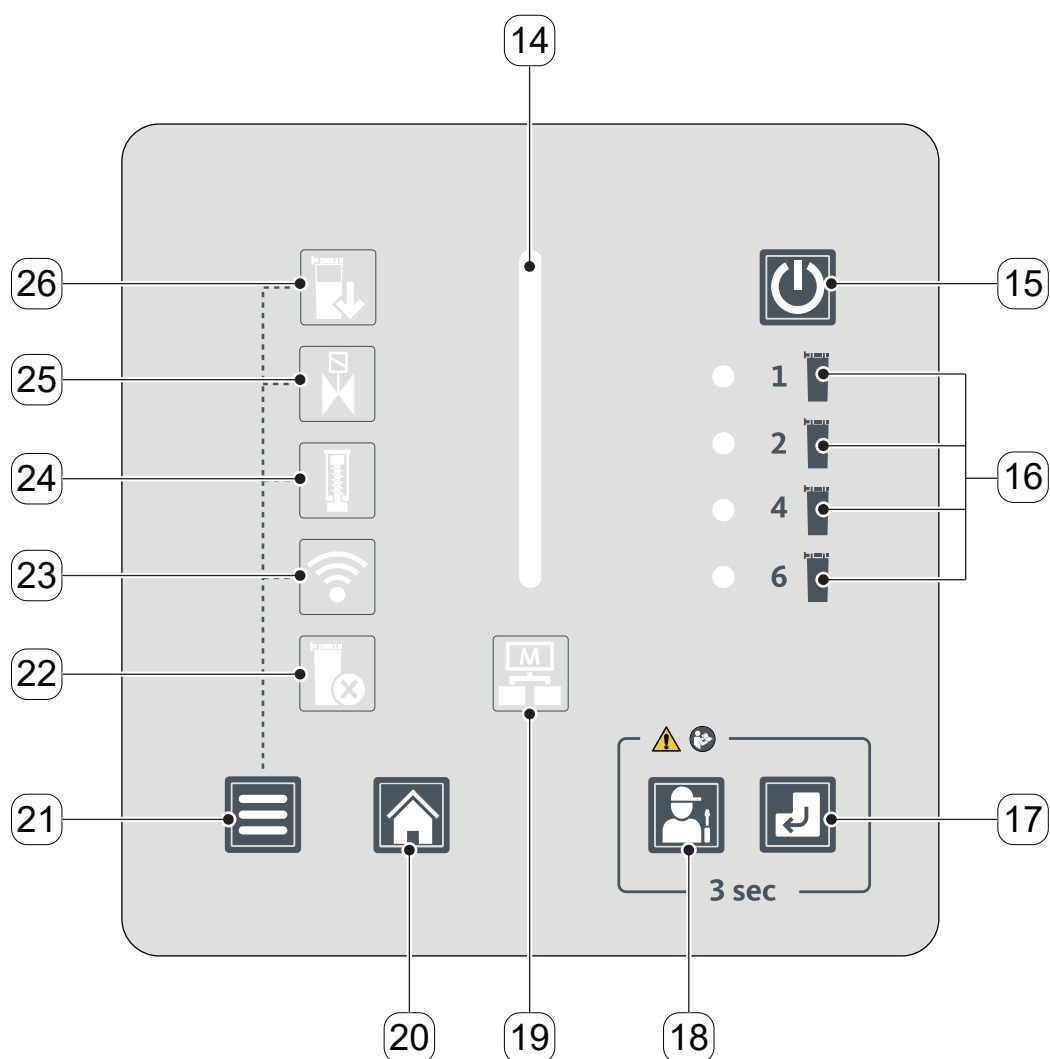
3.1.4 iPOWS 3300



No.	Description / explanation
[1]	Pressure relief chamber
[2]	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		Controls	
No.	Description / explanation	No.	Description / explanation
[14]	Status LED STATUS BAR	[15]	On-Off button
[16]	LED NUMBER OF FILTER CARTRIDGES	[17]	Enter button
[19]	Status LED DATA TRANSFER	[18]	Service button
[22]	Status LED FILTER CARTRIDGE SELECTION	[20]	Start Menu button
[23]	WLAN status LED	[21]	Menu button
[24]	Status LED PISTON		
[25]	Status LED SOLENOID VALVES		
[26]	Status LED FILTER CARTRIDGES		

3.3 Description of the controls and displays



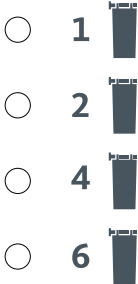










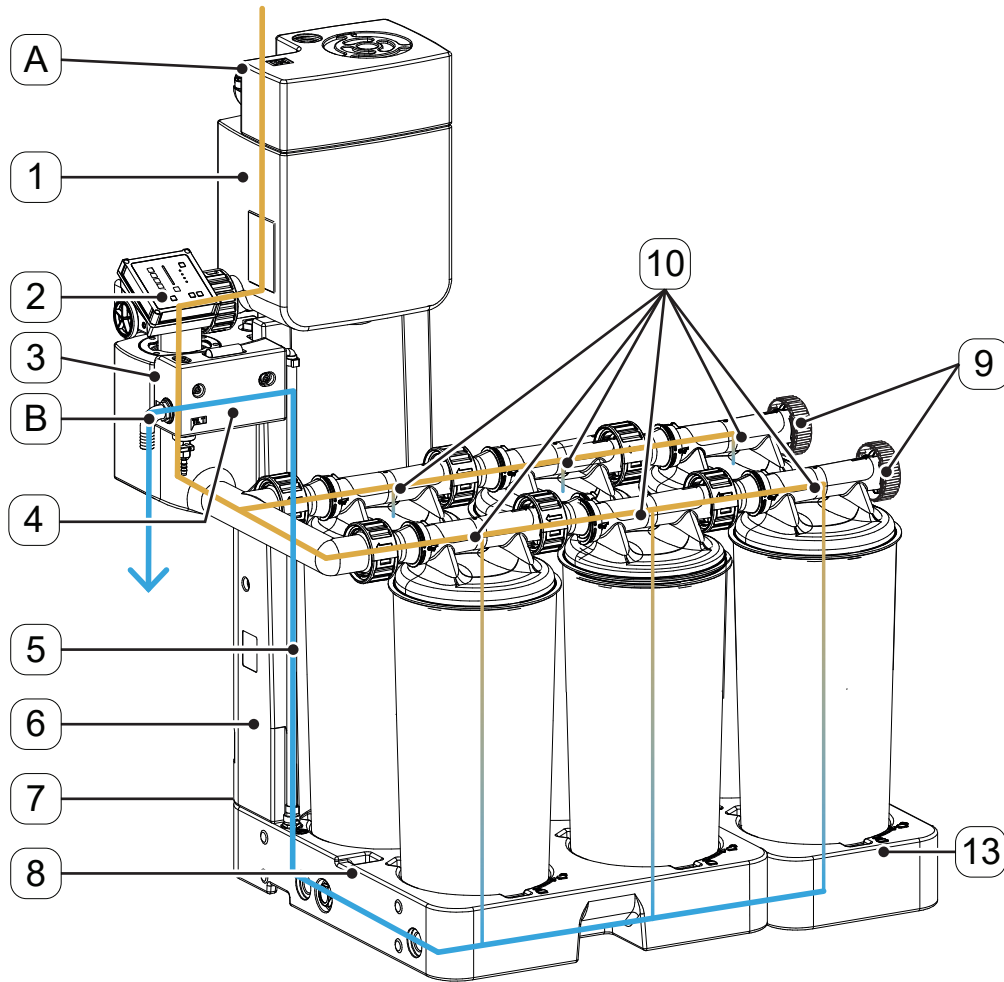
Image	Description / explanation												
	Status LED STATUS BAR <table border="1"> <thead> <tr> <th>LED</th><th>Status bar</th></tr> </thead> <tbody> <tr> <td>Flashing white</td><td>Control unit in standby mode</td></tr> <tr> <td>Lights up blue</td><td>Function started by the operator is executed</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, control unit with restricted operation</td></tr> <tr> <td>Flashes red</td><td>Malfunction, control unit stopped, condensate separation without the use of auxiliary air</td></tr> </tbody> </table>	LED	Status bar	Flashing white	Control unit in standby mode	Lights up blue	Function started by the operator is executed	Lights up green	The status of a selected function is displayed	Solid yellow light	Warning, control unit with restricted operation	Flashes red	Malfunction, control unit stopped, condensate separation without the use of auxiliary air
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Solid yellow light	Warning, control unit with restricted operation												
Flashes red	Malfunction, control unit stopped, condensate separation without the use of auxiliary air												
	On-Off button <ul style="list-style-type: none"> Switching the control unit on and off 												
	LED NUMBER OF FILTER CARTRIDGES <table border="1"> <thead> <tr> <th>LED</th><th>Number of filter cartridges</th></tr> </thead> <tbody> <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> </tbody> </table>	LED	Number of filter cartridges	1 lights up green	1 filter cartridge	2 lights up green	2 filter cartridges	4 lights up green	4 filter cartridges	6 lights up green	6 filter cartridges		
LED	Number of filter cartridges												
1 lights up green	1 filter cartridge												
2 lights up green	2 filter cartridges												
4 lights up green	4 filter cartridges												
6 lights up green	6 filter cartridges												
	Enter button <ul style="list-style-type: none"> Confirm entries 												
	Service button <ul style="list-style-type: none"> Start service functions 												
	Status LED DATA TRANSFER <table border="1"> <thead> <tr> <th>LED</th><th>Data transfer status</th></tr> </thead> <tbody> <tr> <td>Off</td><td>No data connection</td></tr> <tr> <td>Lights up green</td><td>Data connection established</td></tr> </tbody> </table>	LED	Data transfer status	Off	No data connection	Lights up green	Data connection established						
LED	Data transfer status												
Off	No data connection												
Lights up green	Data connection established												
	Start Menu button <ul style="list-style-type: none"> Call up the START MENU screen Cancel operation actions 												
	Menu button <ul style="list-style-type: none"> Used to switch between menu screens 												

Image	Description / explanation						
	Status LED FILTER CARTRIDGE SELECTION <table border="1"> <thead> <tr> <th data-bbox="826 271 1054 315">LED</th><th data-bbox="1054 271 1469 315">Filter Cartridge Selection</th></tr> </thead> <tbody> <tr> <td data-bbox="826 315 1054 394">Flashes green</td><td data-bbox="1054 315 1469 394">Number of filter cartridges can be configured</td></tr> </tbody> </table>	LED	Filter Cartridge Selection	Flashes green	Number of filter cartridges can be configured		
LED	Filter Cartridge Selection						
Flashes green	Number of filter cartridges can be configured						
	WLAN status LED <table border="1"> <thead> <tr> <th data-bbox="826 456 1054 501">LED</th><th data-bbox="1054 456 1469 501">Status WLAN</th></tr> </thead> <tbody> <tr> <td data-bbox="826 501 1054 546">Off</td><td data-bbox="1054 501 1469 546">Deactivated</td></tr> <tr> <td data-bbox="826 546 1054 624">Flashes blue</td><td data-bbox="1054 546 1469 624">Active and a WLAN connection can be established</td></tr> </tbody> </table>	LED	Status WLAN	Off	Deactivated	Flashes blue	Active and a WLAN connection can be established
LED	Status WLAN						
Off	Deactivated						
Flashes blue	Active and a WLAN connection can be established						
	Status LED PISTON <table border="1"> <thead> <tr> <th data-bbox="826 689 1054 734">LED</th><th data-bbox="1054 689 1469 734">Status piston</th></tr> </thead> <tbody> <tr> <td data-bbox="826 734 1054 779">Lights up green</td><td data-bbox="1054 734 1469 779">No service necessary</td></tr> <tr> <td data-bbox="826 779 1054 824">Lights up red</td><td data-bbox="1054 779 1469 824">Replace PISTON Service-Unit</td></tr> </tbody> </table>	LED	Status piston	Lights up green	No service necessary	Lights up red	Replace PISTON Service-Unit
LED	Status piston						
Lights up green	No service necessary						
Lights up red	Replace PISTON Service-Unit						
	Status LED SOLENOID VALVES <table border="1"> <thead> <tr> <th data-bbox="826 882 1054 927">LED</th><th data-bbox="1054 882 1469 927">Status solenoid valves</th></tr> </thead> <tbody> <tr> <td data-bbox="826 927 1054 972">Lights up green</td><td data-bbox="1054 927 1469 972">No service necessary</td></tr> <tr> <td data-bbox="826 972 1054 1050">Lights up red</td><td data-bbox="1054 972 1469 1050">Replace SOLENOID VALVES Service-Unit</td></tr> </tbody> </table>	LED	Status solenoid valves	Lights up green	No service necessary	Lights up red	Replace SOLENOID VALVES Service-Unit
LED	Status solenoid valves						
Lights up green	No service necessary						
Lights up red	Replace SOLENOID VALVES Service-Unit						
	Status LED FILTER CARTRIDGES <table border="1"> <thead> <tr> <th data-bbox="826 1115 1054 1160">LED</th><th data-bbox="1054 1115 1469 1160">Status filter cartridges</th></tr> </thead> <tbody> <tr> <td data-bbox="826 1160 1054 1205">Lights up green</td><td data-bbox="1054 1160 1469 1205">No service necessary</td></tr> <tr> <td data-bbox="826 1205 1054 1238">Lights up red</td><td data-bbox="1054 1205 1469 1238">Replace filter cartridges</td></tr> </tbody> </table>	LED	Status filter cartridges	Lights up green	No service necessary	Lights up red	Replace filter cartridges
LED	Status filter cartridges						
Lights up green	No service necessary						
Lights up red	Replace filter cartridges						

3.4 How it works

The condensate flow through the **iPOWS** is controlled and monitored by the control unit.



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 control unit **[2]** into the measuring chamber **[3]** and then into the filter cartridges **[10]**.

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

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

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 control unit **[2]** will perform a discharge operation with the following steps:

1. The PISTON solenoid valve is switched.
 - The piston in the control unit **[2]** is pressurized 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 depressurized 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 fed into the waste water connection via the condensate drain port [B] of the clean water tank [4].

During the operation of the iPOWS, 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 control unit [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 iPOWS 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 Replace filter cartridges” on page 93). Pressing the Service button reduces the condensate level in the iPOWS to such an extent that as little condensate as possible will remain in the filter cartridges [10].

In the de-energized 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 the operating parameters and device information.

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

Data is transmitted via an RS485 interface in binary format.

3.5.1 Preset 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 register	Division
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. Modification of interface parameters

3.5.3.1 Read Input Registers (0x04)

Modbus address	Contents	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 power supply	u32
1119	Uptime		
1540	Temperature (PCB), Hi-Word	Circuit board temperature [°C]	float
1541	Temperature (PCB), Lo-Word		
1542	Temperature (PCB), Hi-Word	Circuit board temperature [°F]	float
1543	Temperature (PCB), Lo-Word		
1544	Voltage (PCB), Hi-Word	Circuit board voltage [V]	float
1545	Voltage (PCB), Lo-Word		
1700	LED displays	Status LED FILTER CARTRIDGES LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1701	LED displays	Status LED SOLENOID VALVES LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16

Modbus address	Contents	Description / explanation	Format
1702	LED displays	Status LED PISTON 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	Status LED FILTER CARTRIDGE SELECTION LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1705	LED displays	Status LED DATA TRANSFER LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1706 1707 1708 1709	LED displays	Status LED STATUS 0/1/2/3 LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1710 1711 1712 1713	LED displays	LED NUMBER OF FILTER CARTRIDGES 1/2/4/6 LED off = 0 LED 100% = 1 LED 50% = 2 LED flashes = 3	u16
1760	Digital Input	On-Off button not activated = 0 activated = 1	u16
1761	Digital Input	Menu button not activated = 0 activated = 1	u16

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

Modbus address	Contents	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 at last service [s]	u32
3410	Amount of cartridges	The set number of filter cartridges	u16

3.5.3.2 Read Device Identification (0x2B / 0x0E)

The extended function **Read Device Identification** is used to read out 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's material number, circuit board	ASCII
0x02		MajorMinorRevision	Software version numbers ^{*2}	ASCII
0x03		VendorUrl	Manufacturer's website	ASCII
0x04		ProductName	Product name	ASCII
0x05		ModelName	Product variant	ASCII
0x06		UserApplicationName	Manufacturer's serial number, circuit board	ASCII
0x80	6100 ... 6199	n.a.	Production: Date of board test	ASCII
0x81		n.a.	Production: Date of board adjustment	ASCII
0x82		n.a.	Production: Date of board calibration	ASCII
0x83		n.a.	Production: free	ASCII
0x85	6200 ... 6298	n.a.	Manufacturer's material number, product	ASCII
0x86		n.a.	Manufacturer's serial number, product	ASCII

*1 ASCII strings are separated by 0x00. Unused characters at the ends of strings are filled with 0x00.

*2 legend:
 APP = Application
 BSS = Basic Software
 CFG = Configuration

3.5.3.3 Modification of interface parameters

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

1. Write the value 0xAC1D (decimal: 44061) to the 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) Interface parameters see table Index 0x07 (decimal: 7) Client address 0x0A (decimal: 10)

4. To save the settings, write the value 0xBA5E (decimal: 47710) to the holding register 0x139C (decimal: 5020).
5. Switch the product off and on again.
→ The changes take effect approx. 10 seconds after the restart.

Parameter 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

Parameter 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 out of valid range
03	ILLEGAL DATA VALUE	Faulty data
04	SERVER DEVICE FAILURE	Unrecoverable error occurred during the request

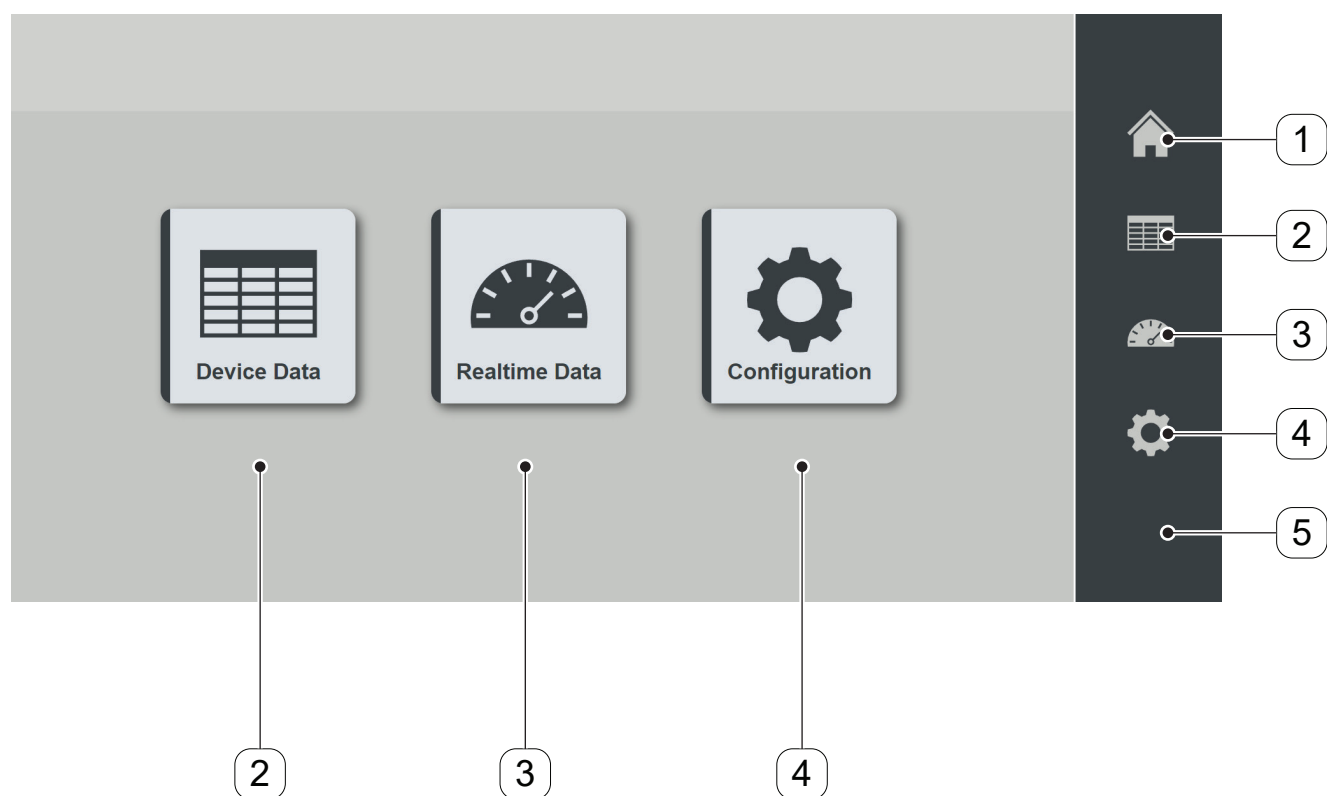
3.6 WLAN function

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

- Display device data
- Showing operating data in real time
- Change control unit settings

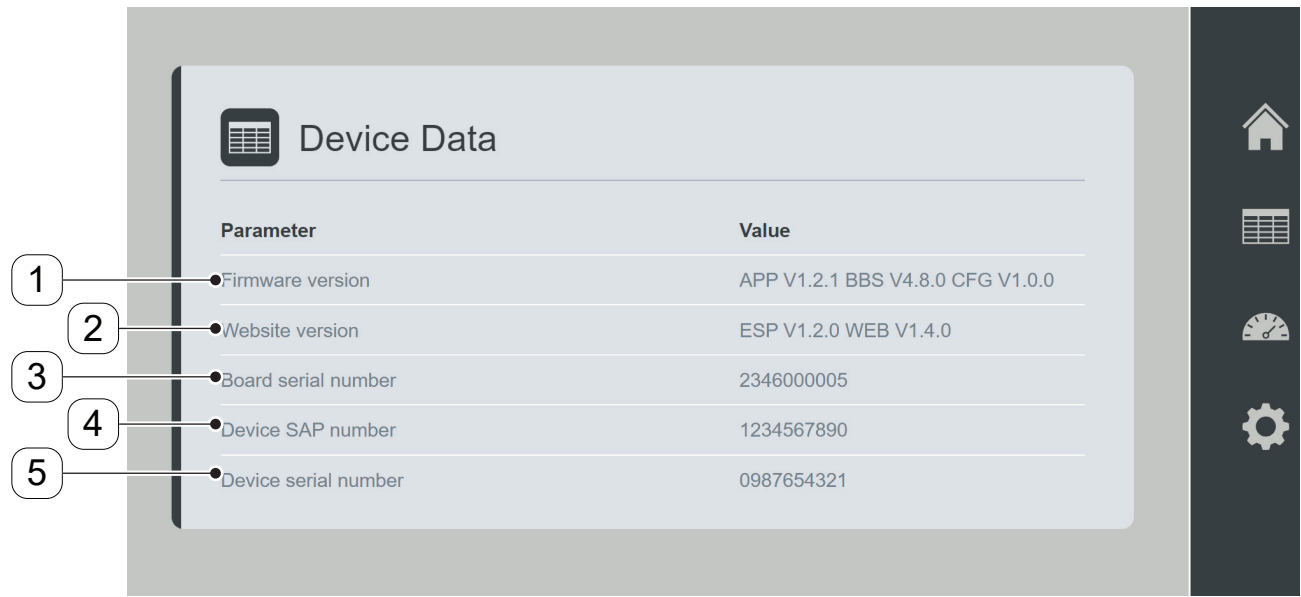
INFORMATION	Activating the WLAN interface
	The process for activating the WLAN interface is described in section Activating the WLAN (see section “9.2.6 Activating the WLAN” on page 84).

3.6.1 Home



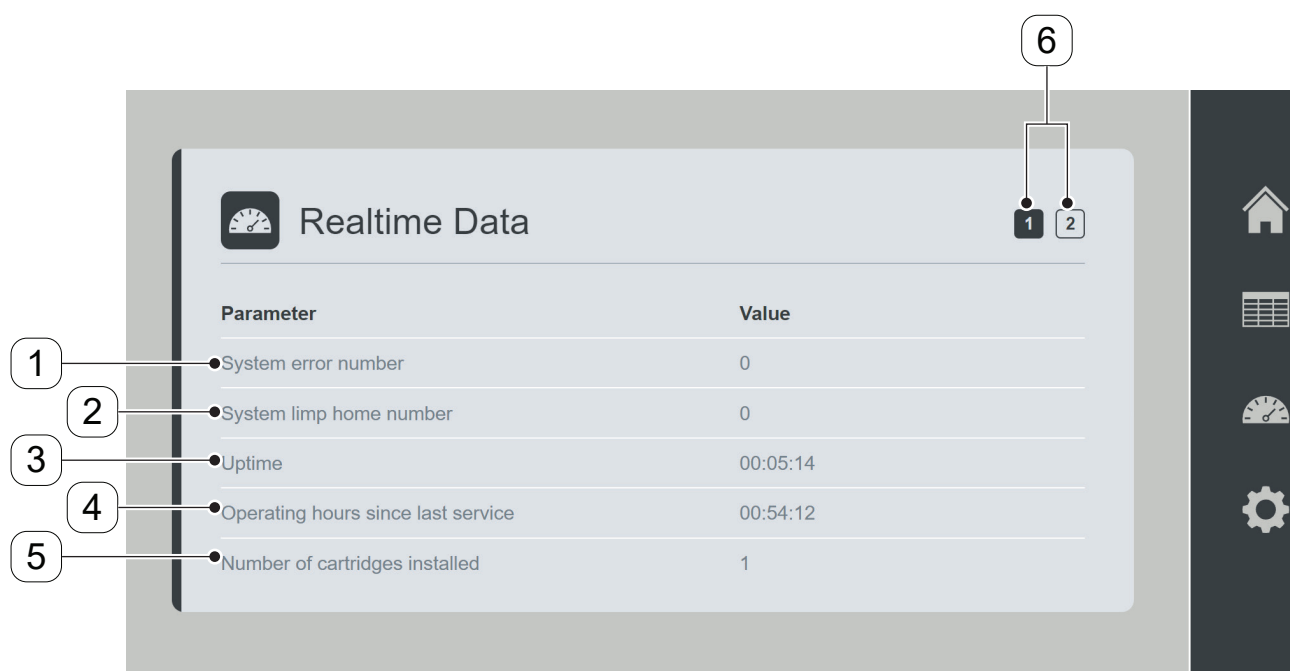
No.	Menu	Description / explanation
[1]	Home	Start menu
[2]	Device Data	Menu for showing device data
[3]	Realtime Data	Menu for showing operating data in real time
[4]	Configuration	Menu for configuring interface parameters
[5]	Task bar	Task bar for navigating between the individual menus

3.6.2 Device Data

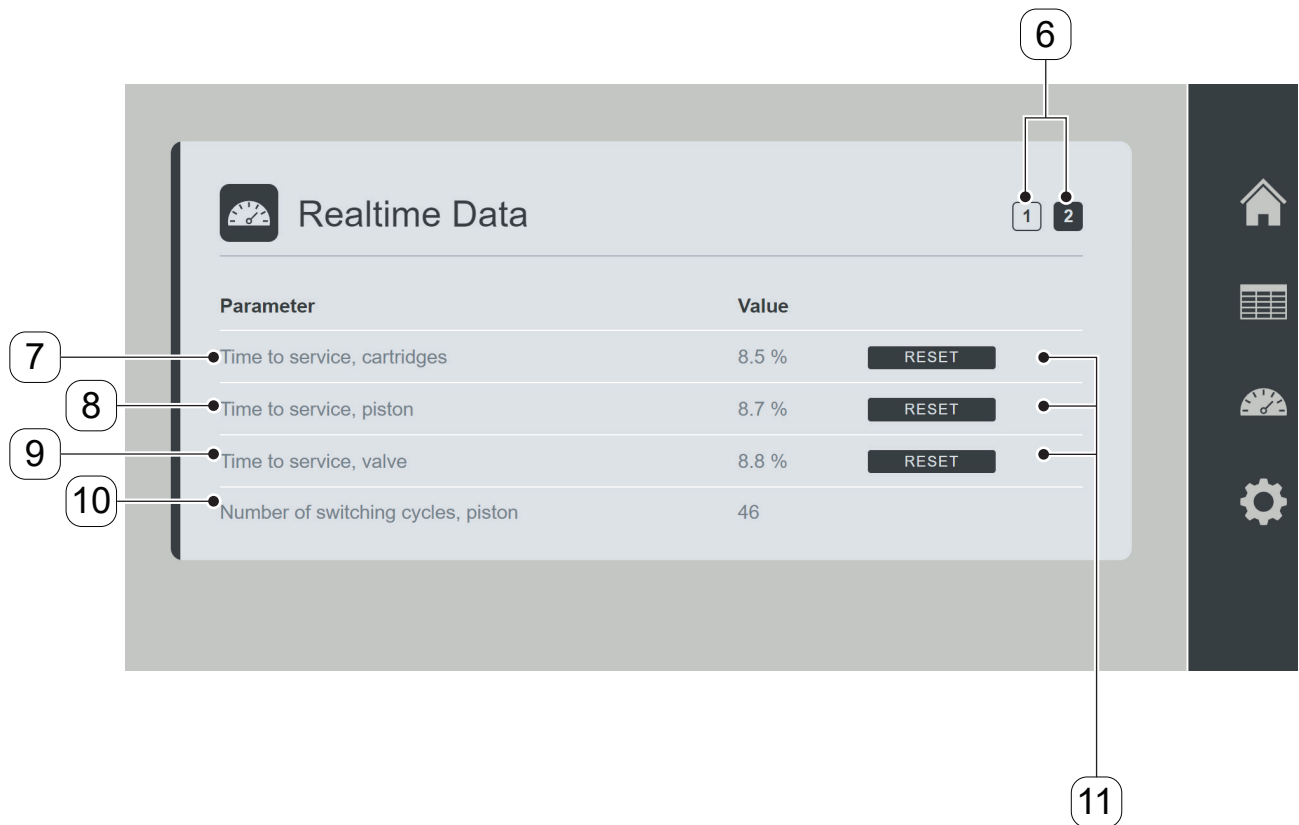


No.	Contents	Description / explanation
[1]	Firmware version	Firmware version number
[2]	Website version	Web interface version number
[3]	Board serial number	Circuit board serial number
[4]	Device SAP number	Device material number
[5]	Device serial number	Device serial number

3.6.3 Realtime Data

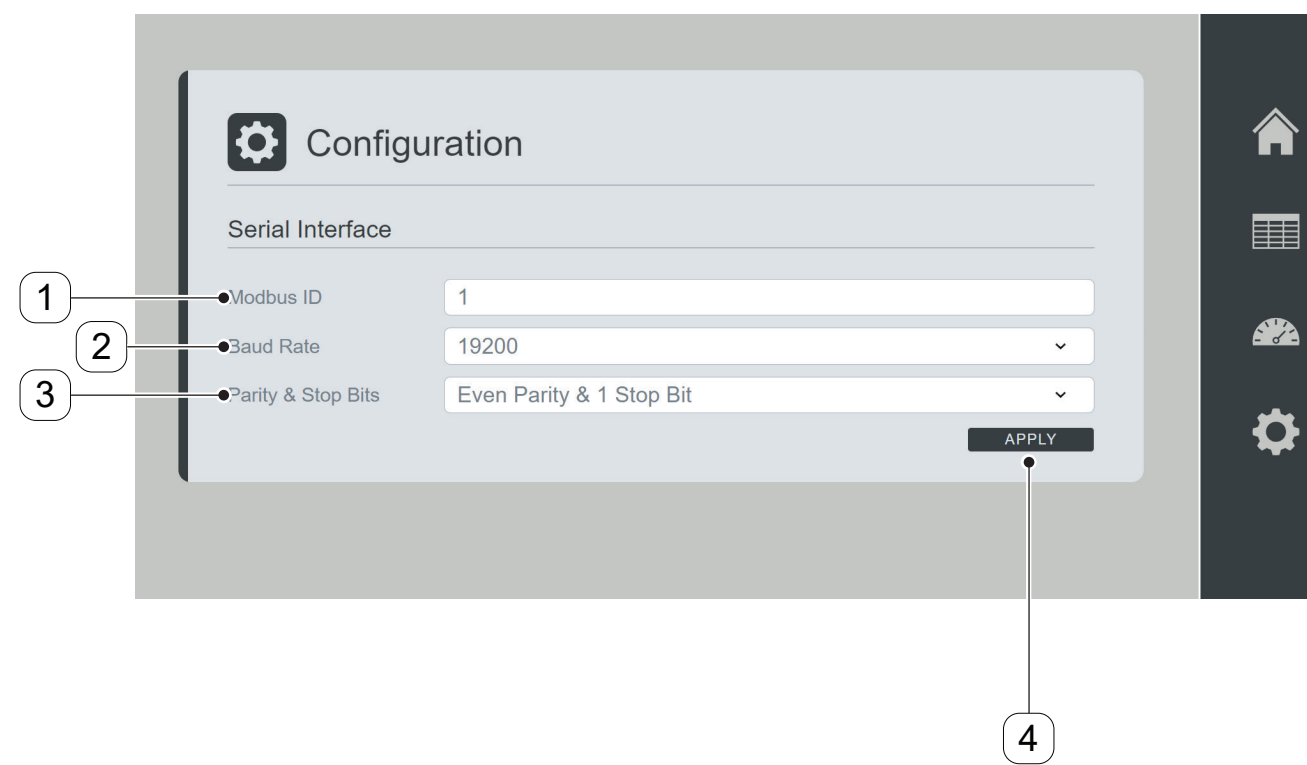


No.	Contents	Description / explanation
[1]	System Error number	Displays the number of the fault message in question. 0 = there is no fault message.
[2]	System limp home number	Displays the number of the warning message in question. 0 = there is no warning message.
[3]	Uptime	Operating time [hh:mm:ss] during which the product is connected to the power supply
[4]	Operating hours since last service	Operating time since last service [hh:mm:ss]
[5]	Number of cartridges installed	Number of filter cartridges installed
[6]	Page	Indicates the current menu page



No.	Contents	Description / explanation
[6]	Page	Indicates the current menu page
[7]	Time to service, cartridges	Service time remaining until filter cartridge needs to be changed [%]
[8]	Time to service, piston	Service time remaining until piston needs to be changed [%]
[9]	Time to service, valve	Service time remaining until solenoid valve needs to be changed [%]
[10]	Number of switching cycles, piston	Number of switching cycles, piston
[11]	Reset	Press this button to reset the counter to 100%.

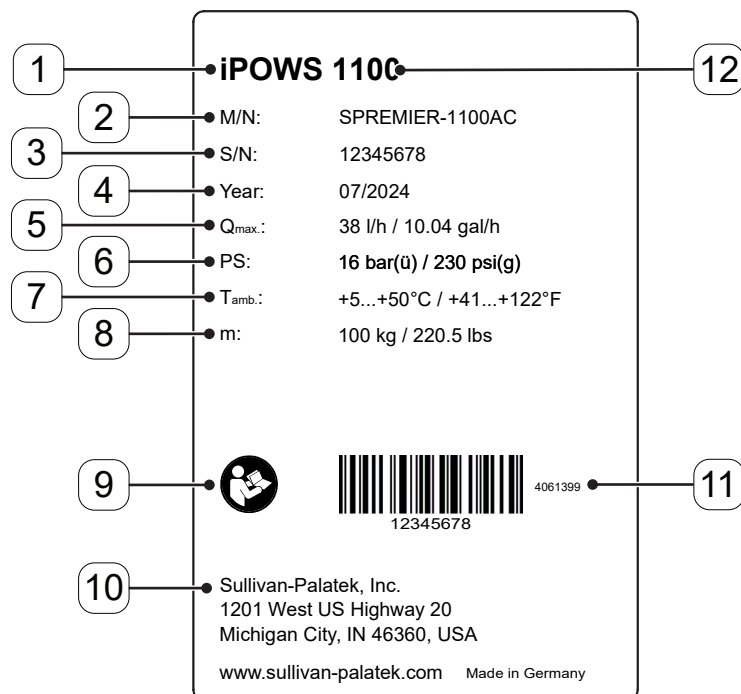
3.6.4 Configuration



No.	Contents	Description / explanation
[1]	Modbus ID	Input server address 247 (factory setting)
[2]	Baud Rate	Drop-down list for selecting baud rate <ul style="list-style-type: none"> • 4800 • 9600 • 19200 (factory setting) • 38400 • 57600 • 76800 • 115200
[3]	Parity & Stop Bits	Drop-down list for selecting parity and stop bits <ul style="list-style-type: none"> • No parity & 2 stop bits • Even parity & 1 stop bit (factory setting) • Odd parity & 1 stop bit
[4]	Apply	Press this button to apply all settings.

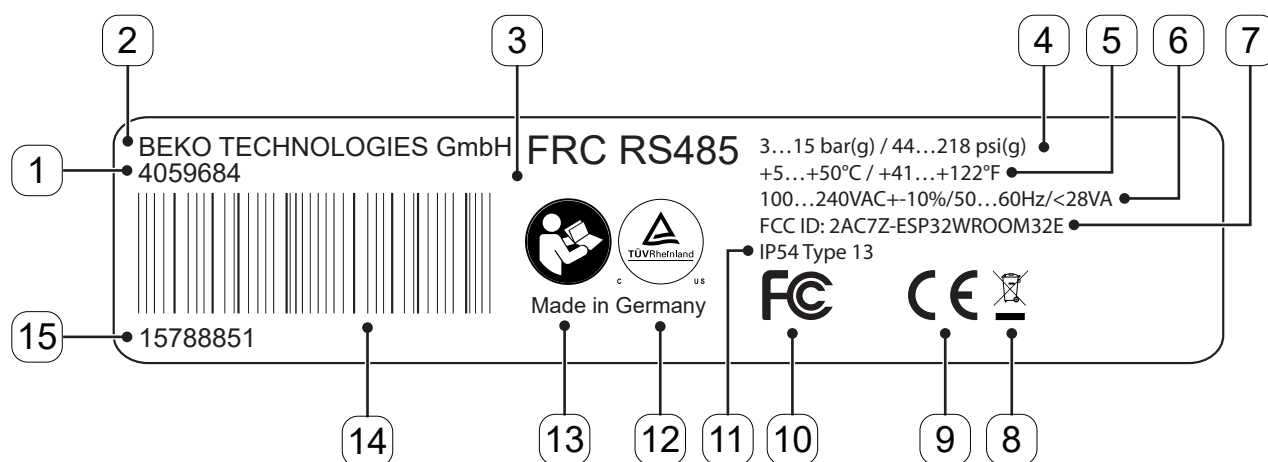
3.7 Type plate

3.7.1 iPOWS-550 ... 3300



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]	Bar code
[12]	Size (e.g. 1100)

3.7.2 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]	Degree of protection
[12]	Approval mark
[13]	"Read and understand the installation and operation manual" instruction symbol
[14]	Bar code
[15]	Serial number

3.8 Scope of delivery


INFORMATION	Scope of delivery!
	The size and further delivery details are provided in the contractual documents.

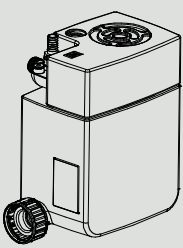
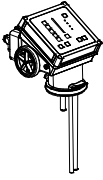
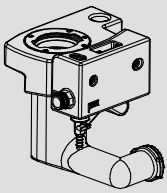
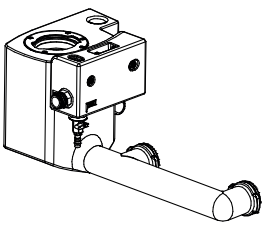
Image	Description / explanation	iPOWS			
		550	1100	2200	3300
	Quick Start Guide	1	1	1	1
	Pressure relief chamber	1	1	1	1
	Control unit	1	1	1	1
	2.5 l (0.66 gal) measuring chamber, with clean water tank	1	—	—	—
	5 l (1.32 gal) measuring chamber, with clean water tank	—	1	1	1


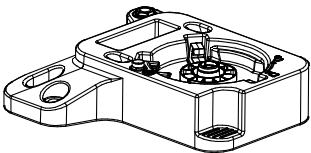
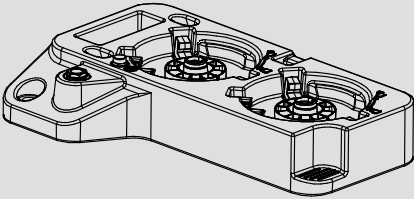
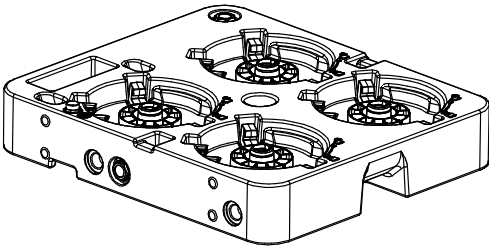
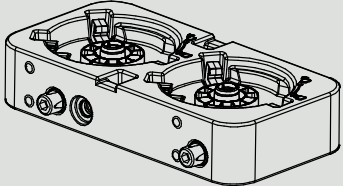
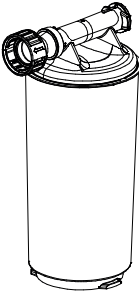









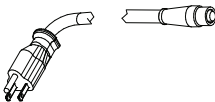
Image	Description / explanation	iPOWS			
		550	1100	2200	3300
	Foot	1	1	1	1
	Collector 1 x 1 filter cartridge	1	—	—	—
	Collector 1 x 2 filter cartridges	—	1	—	—
	Collector 2 x 2 filter cartridges	—	—	1	1
	Expansion module 1 x 2 filter cartridges	—	—	—	1

Image	Description / explanation	iPOWS			
		550	1100	2200	3300
	Filter cartridge	1	2	4	6
	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	2	2	2	2
	Power supply cable with M12 connector with S keying and IEC Type B, NEMA 5-15 connector	1	1	1	1

4. Technical data

4.1 iPOWS operating parameters

Parameter	iPOWS			
	550	1100	2200	3300
Relative ambient air humidity	≤10 ... 80%, without condensate			
Maximum operating altitude above sea level	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 ^{*1}	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
Condensate inlet port	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			
Condensate drain port	25 mm (0.98 in), male hose connection			
Fluids	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 drain port ^{*1}	10 mg/l 10 ppm			

^{*1} In compliance with the standardised reference conditions of the Deutsche Institut für Bautechnik (DIBt / German institute for construction technique approvals and assessments)

4.2 Control unit operating parameters

Parameter	Control unit
Relative ambient humidity	≤10 ... 80%, without condensate
Maximum operating height	2000 m 2187.23 yd
Minimum / maximum operating pressure, compressed air	3 ... 15 bar(g) 44 ... 218 psi(g)
Contamination 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 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 millimeters 0.32 ... 0.33 in
Recommended wire cross-section, power supply	0.75 to 1.5 mm ² 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

^{*2} contamination class in conformity with ISO 8573-1

4.3 Storage parameters

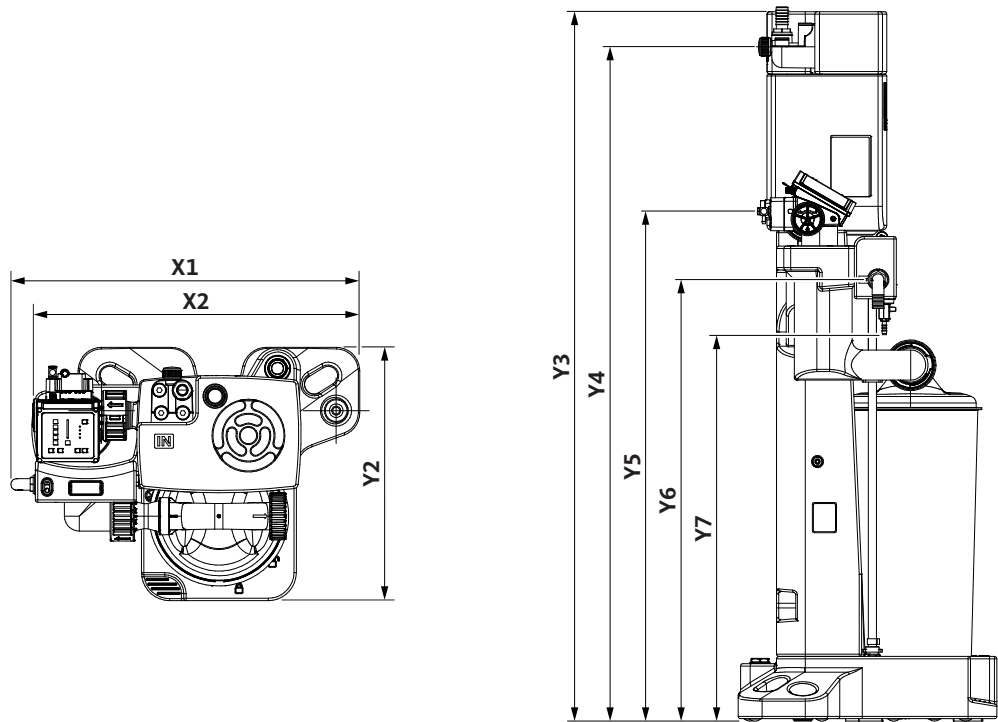
Parameter	iPOWS			
	550	1100	2200	3300
Minimum / maximum temperature	+5 °C ... +50 °C +33.8 °F ... +122 °F			
Relative ambient air humidity	≤10 ... 80%, without condensate			
Empty weight	16 kg 35.3 lbs	35 kg 77.2 lbs	45 kg 99.2 lbs	60 kg 132.3 lbs

4.4 Materials

Component	Material
Filter cartridge	Plastic blend and cellulose
Control unit	Plastic blend and electronics
Pressure relief chamber	Polyethylene (PE)
Condensate inlet	Polyamide (PA) Polypropylene (PP) Stainless steel (VA)
Measuring chamber	Polyethylene (PE)
Clean water tank	Polyethylene (PE)
Foot	Polyethylene (PE)
Collector	Polyethylene (PE)
Additional module	Polyethylene (PE)

4.5 Dimensions

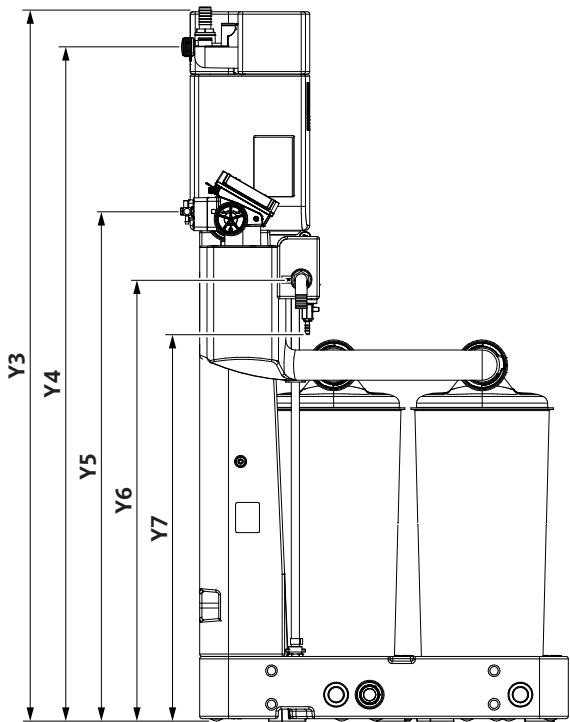
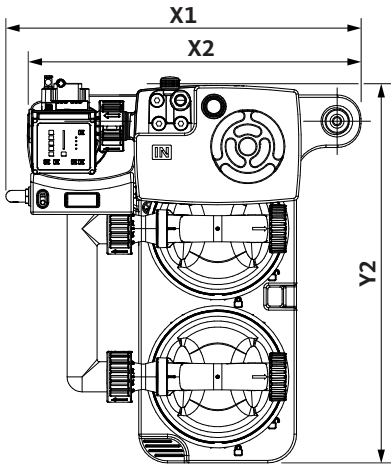
4.5.1 iPOWS 550



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

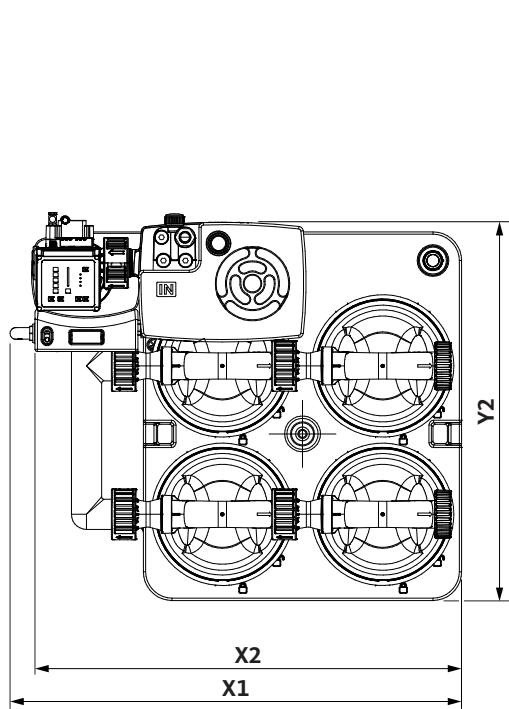
4.5.2 iPOWS 1100



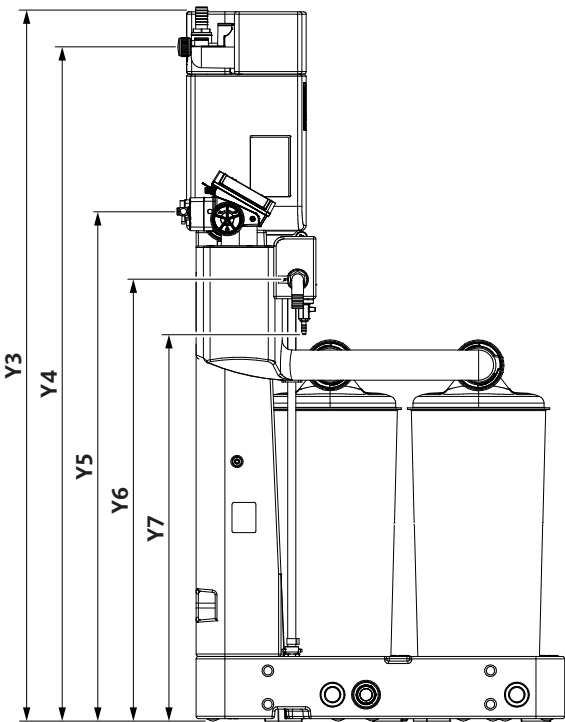
No.	[mm]	[in]
[X1]	744	29.29
[X2]	699	27.52
[X3]	--	--
[Y1]	--	--
[Y2]	790	31.10

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 iPOWS 2200

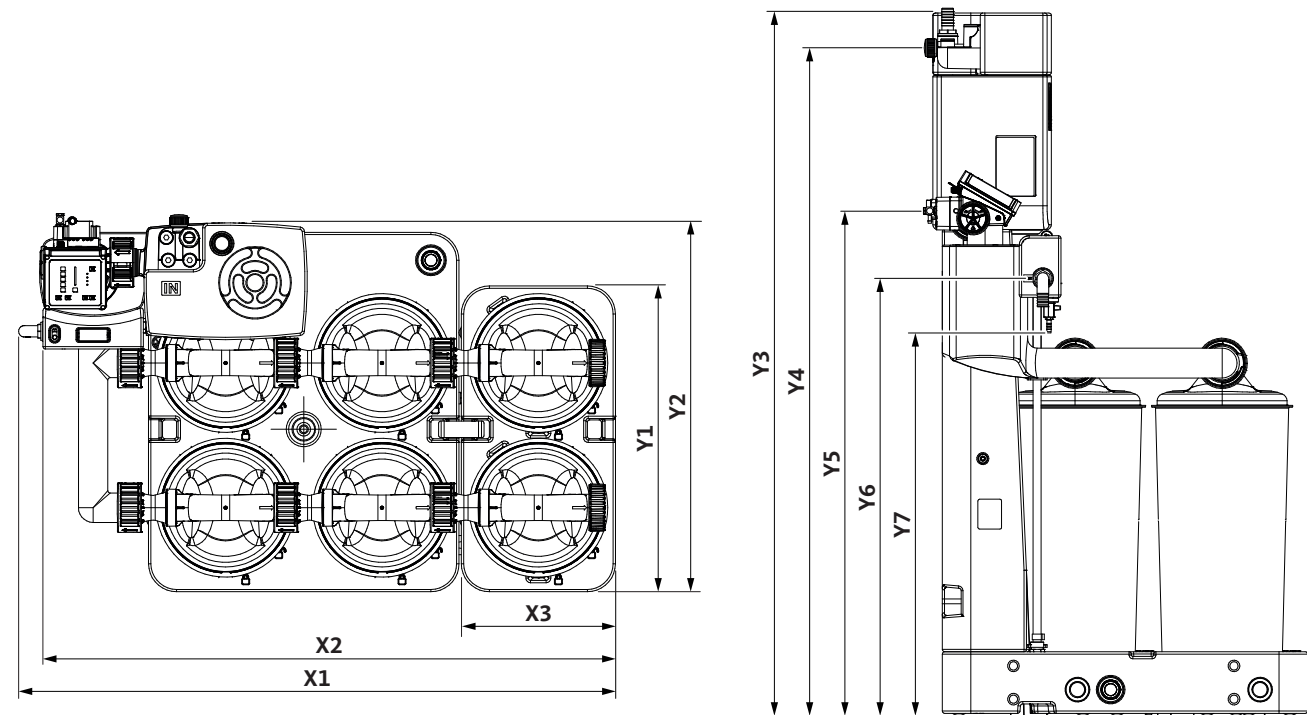


No.	[mm]	[in]
[X1]	943	37.13
[X2]	899	35.39
[X3]	--	--
[Y1]	--	--
[Y2]	790	31.10



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

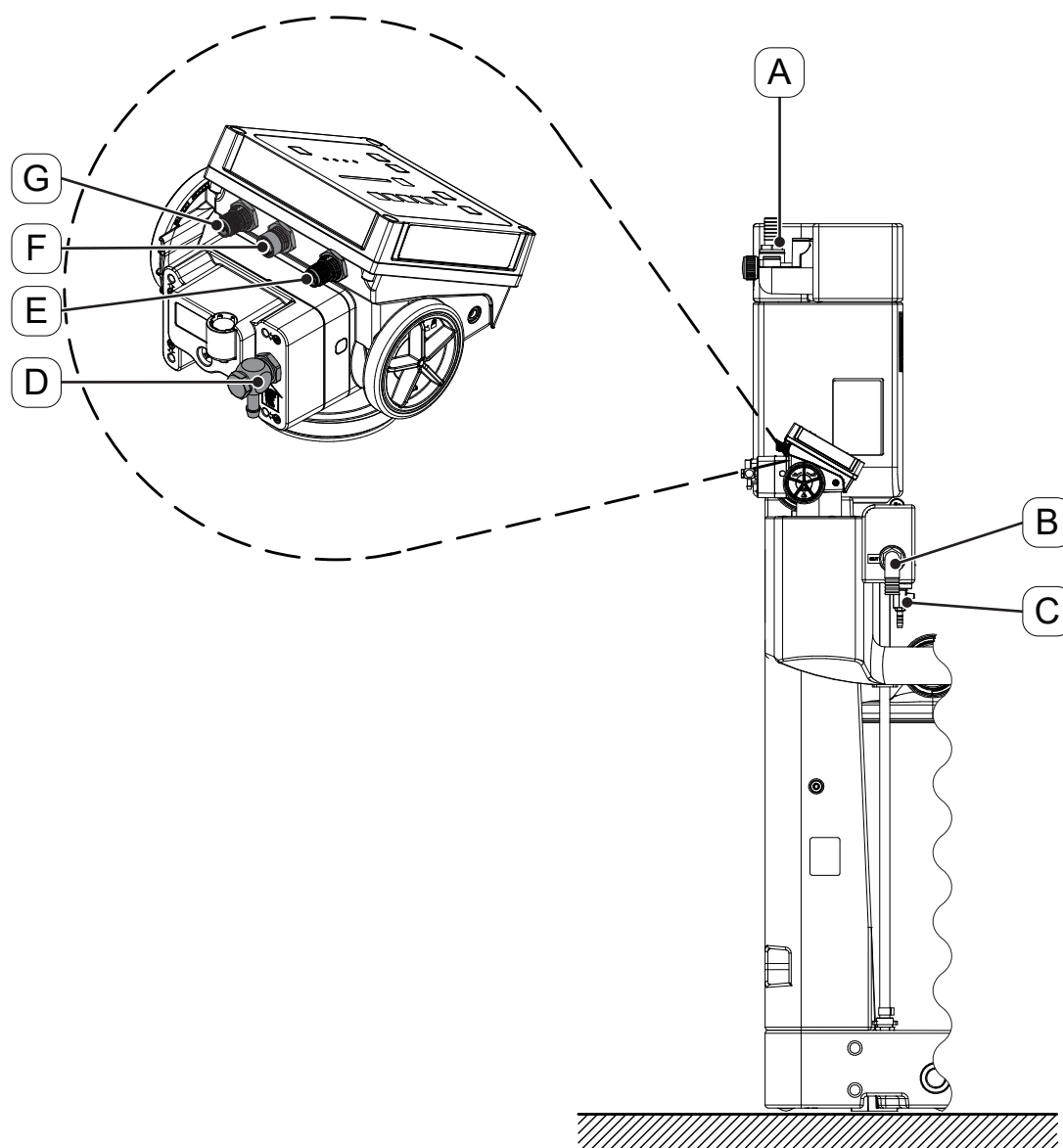
4.5.4 iPOWS 3300



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

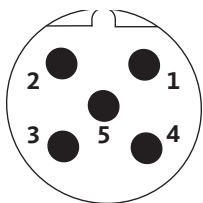
No.	[mm]	[in]
[Y3]	1482	58.35
[Y4]	1408	55.43
[Y5]	1065	41.93
[Y6]	922	36.30
[Y7]	807	31.78

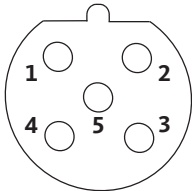
4.6 Connections

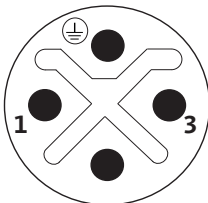



No.	Connection	Qty.	Description / explanation
[A]	25 mm (0.98 in)	1	Hose connection, connection for the condensate inlet
	13 mm (0.52 in)	1	Hose connection, connection for the condensate inlet
	G1/2"	2	Connection for the condensate inlet
[B]	23 mm (0.91 in)	1	Elbow connector, connection for draining 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 [G]				
Image	Connection	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

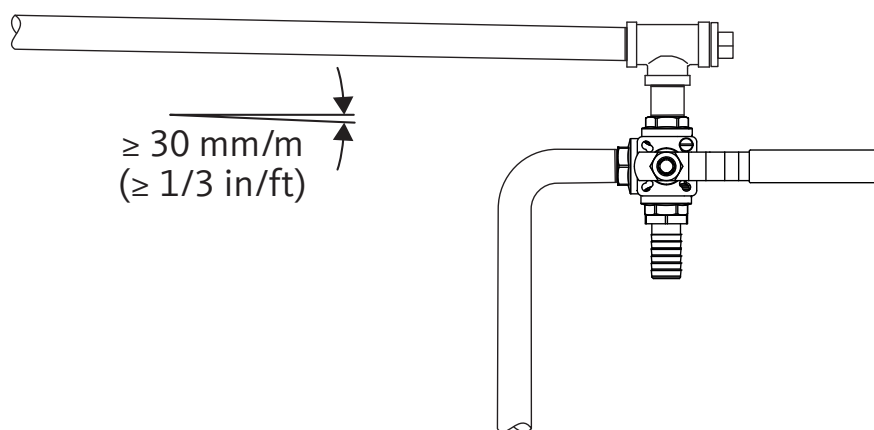
Modbus output [F]				
Image	Connection	Pin	Signal	Description / explanation
	M12, internal thread B keying, female	1	VP	+5 VDC, power for bus connection
		2	Data +	RS485-A, data line
		3	GND	Earth connection
		4	Data -	RS485-B, data line
		5	V+	+24 VDC, supply voltage

External voltage supply [E]				
Image	Connection	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 Assembly 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 **iPOWS** (refer to section "4.1 iPOWS operating parameters" on page 42).
- 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 standards 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" ($\varnothing = 25$ mm).
- Route the condensate collection line with a gradient ≥ 30 mm/m (1/3 in/ft) to the place of installation for the **iPOWS**.
- The manufacturer recommends installing a P-trap at the wastewater connection in order to prevent unpleasant odors.
- 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.



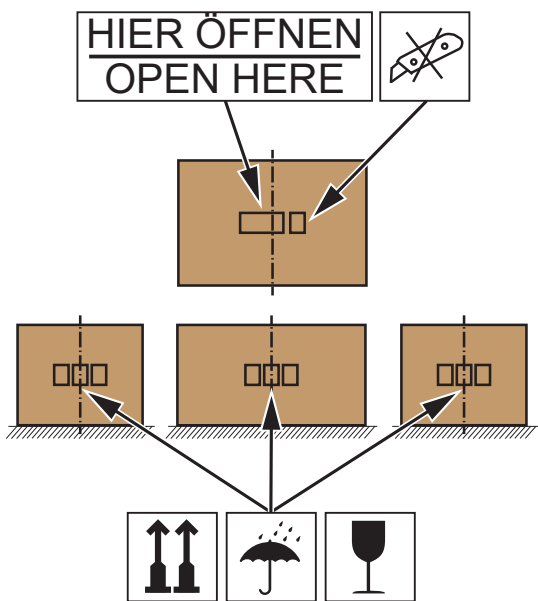
Example image

5. Transport and storage

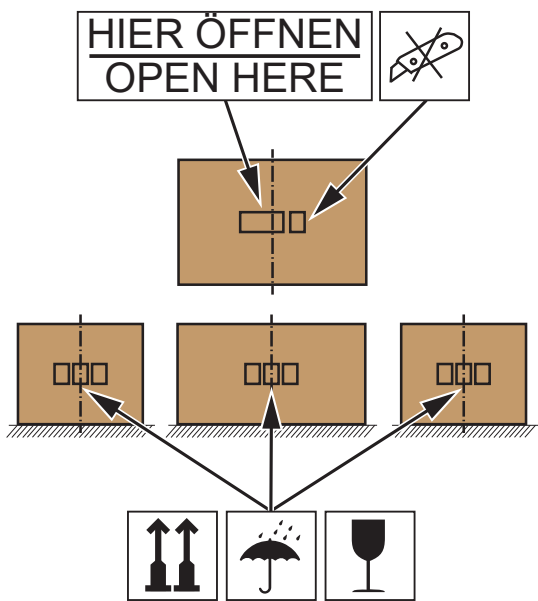
5.1 Warning notices

WARNING	Insufficient qualification!
	<p>If personnel have insufficient qualifications, this may result in accidents, personal injury and property damage as well as operating disruptions while working on the product or its accessories.</p> <ul style="list-style-type: none"> The work on the product and accessories described in the following may only be carried out by transportation and storage skilled technical personnel and must be documented.
CAUTION	Improper transportation or storage!
 	<p>Improper transportation or storage may result in personal injury or property damage.</p> <ul style="list-style-type: none"> Use personal protective equipment for all work with packaging material. Handle the packaging, product and accessories with care. Package all parts with suitable materials in a shock-resistant manner. Transport and handle the packaging in conformity with all markings and labels (note lifting gear attachment points, the center of gravity and the direction, e.g. keep vertical, do not throw, etc.). Use proper, functional transportation equipment and hoists. Always adhere to the permissible transport and storage parameters. Store the product and accessories only outside of areas exposed to direct sunlight and heat sources.
NOTICE	Handling packaging materials!
	<p>Inappropriate disposal of packaging materials can cause environmental damage.</p> <ul style="list-style-type: none"> Dispose of the packaging material in accordance with the applicable legal requirements and provisions of the country and place of use.

5.2 Transport





Transportation work	
Image	Description / explanation
	<ul style="list-style-type: none"> • Only transport the product and the accessories in their original 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 work	
Image	Description / explanation
	<ul style="list-style-type: none"> • Only store the product and accessories in their original, undamaged packaging. • Observe the storage conditions in section “4.3 Storage parameters”. • The storage location must be 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

6.1 Warning notices


DANGER	Use of incorrect replacement element, accessories or materials!
	<p>Use of the incorrect spare parts, accessories or materials, as well as auxiliary and operating materials, may result in death or serious injury. Malfunctions and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> • Only use undamaged original parts, auxiliary and operating materials specified by the manufacturer in carrying out all work. • Only use materials permitted for the specific purpose and suitable tools in proper condition. • Only use pipelines free from dirt, damage and corrosion.
DANGER	Pressurized system!
	<p>The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.</p> <ul style="list-style-type: none"> • Before starting work, bleed the pressurized system and secure it against unintentional pressurization. • A safe area must be set up around the work area during all assembly, installation, maintenance and repair work. • Mount all pipelines free of mechanical tension. • Before pressurization, check all pipe connections of the system for leak tightness and retighten them if necessary. • Pressurize the system slowly. • Avoid pressure surges and high pressure differentials.
WARNING	Insufficient qualification!
	<p>If personnel have insufficient qualifications, this may result in accidents, personal injury and property damage as well as operating disruptions while working on the product or its accessories.</p> <ul style="list-style-type: none"> • All work on the product and accessories must be carried out exclusively by skilled technical personnel specialized in pressure equipment and systems.
WARNING	Improper installation!
	<p>Improper assembly of the product and accessories can result in personal injury and property damage as well as impairments in operation.</p> <ul style="list-style-type: none"> • Install the product, the accessories and all parts and materials used so that they are not subject to mechanical tension. • Fasten and fix hoses in such a way that they cannot make any percussive movements.

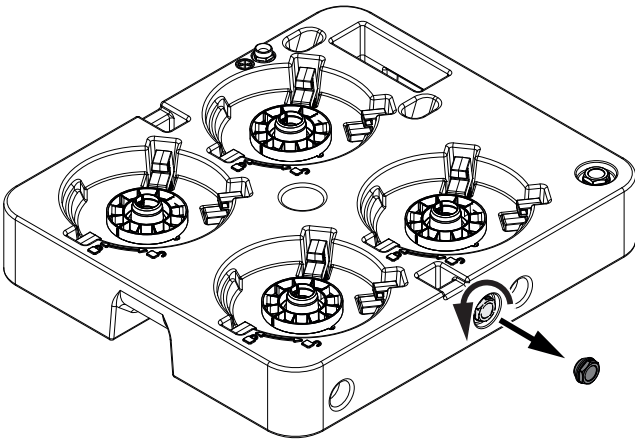
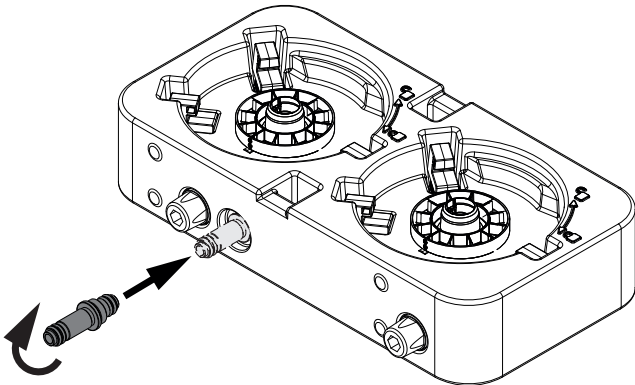
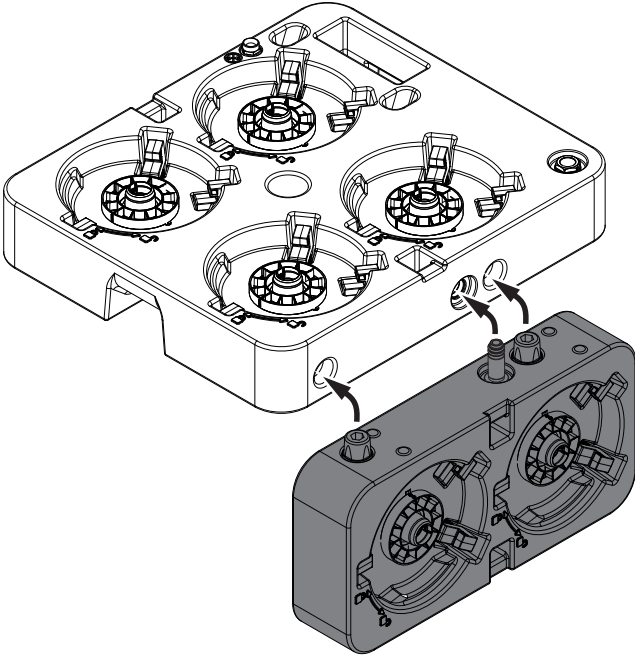
6.2 Installation work

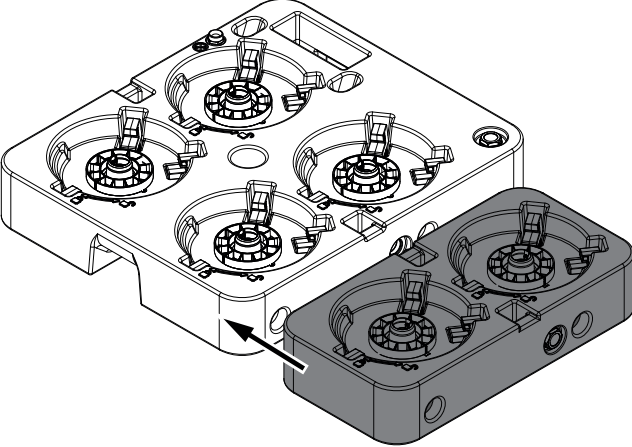
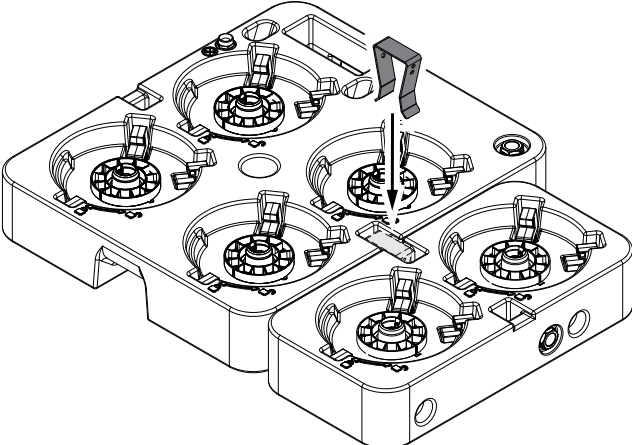
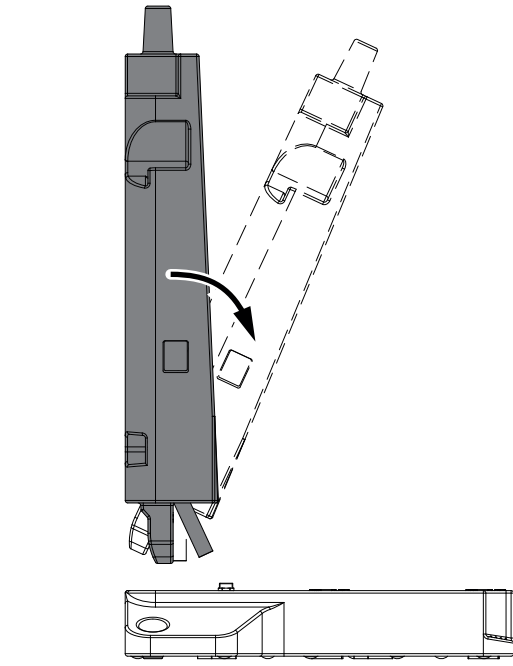
The following prerequisites must be met before carrying out assembly work, and all preparation work must be completed first.

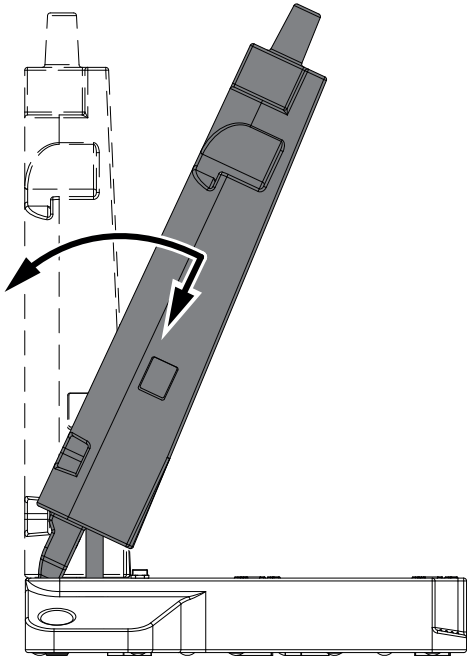
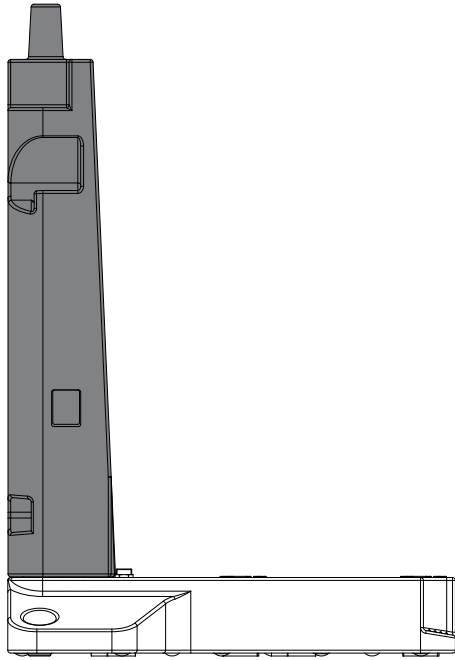
Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none"> Adjustable wrench Water pump pliers Spirit level 	<ul style="list-style-type: none"> Sealing material (e.g. PTFE tape) for sealing the condensate connections provided by the customer Hose clamps Hose for condensate and compressed air Vaseline supplied 	To be worn at all times: 

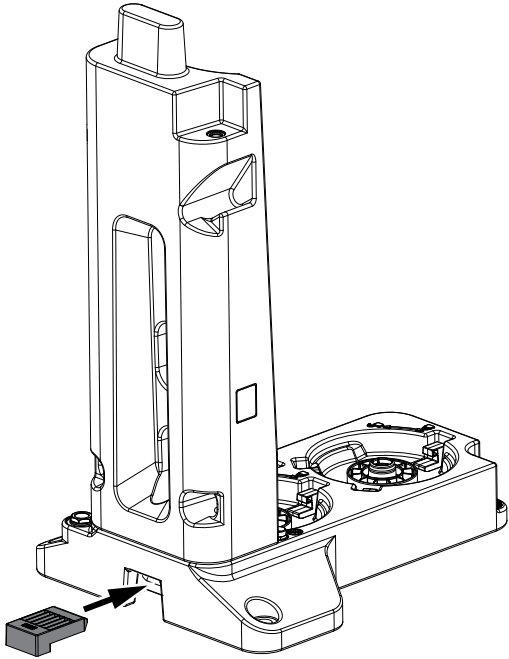
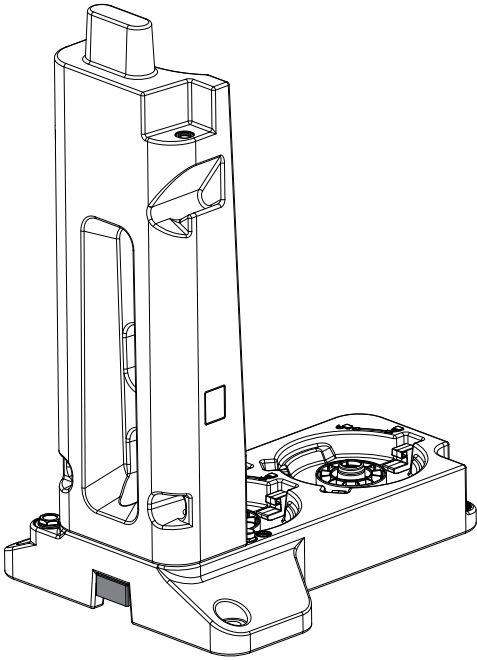
Preparatory work	
1.	Select and set up the place of installation according to the specifications in section “4.8 Assembly conditions” on page 51.
2.	The condensate inlet line provided by the customer must be depressurized and locked and tagged out to prevent unintentional pressurization.
3.	Have the necessary tools and materials ready.
4.	Provide required connection materials suitable for the pressure range and temperature range.
5.	Check the product for damage. Use the product only in undamaged condition.

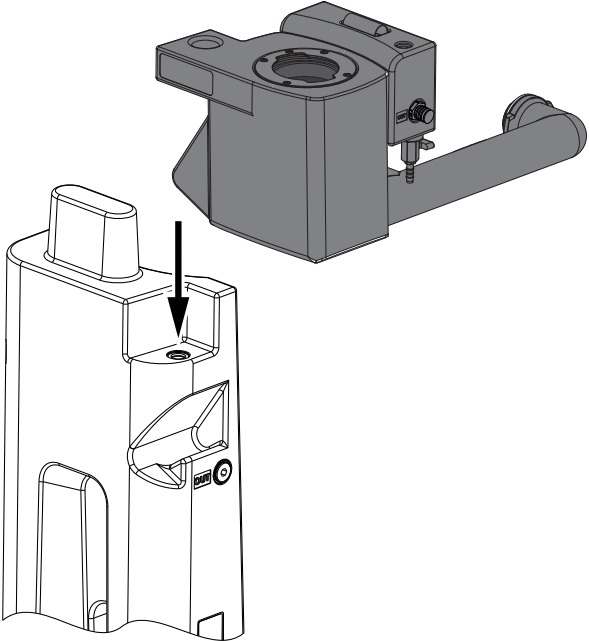
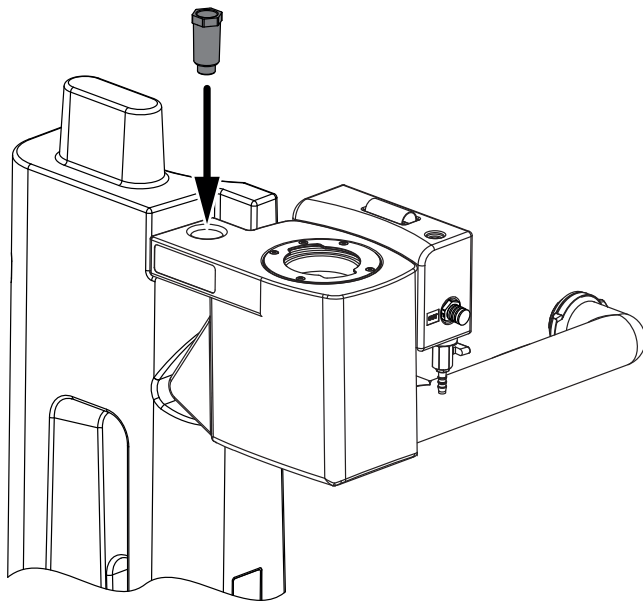
INFORMATION	iPOWS 550 ... 2200 assembly!
	<p>Start assembling the iPOWS 550 ... 2200 from step 8.</p> <p>The collector of the iPOWS 550 ... 2200 is delivered ready for installation. Skip steps 1 through 7.</p>


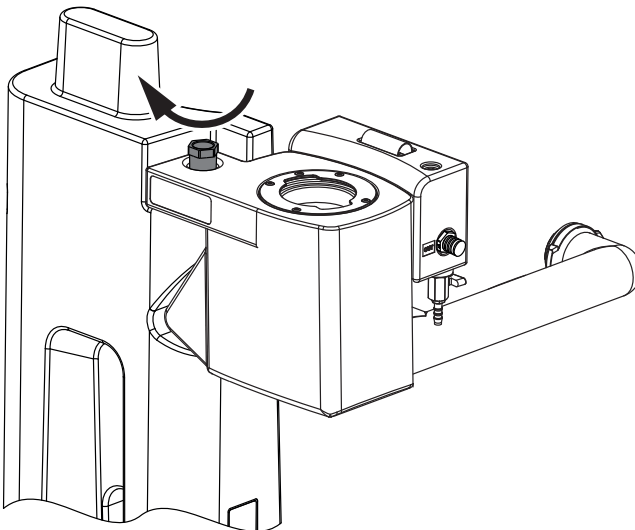
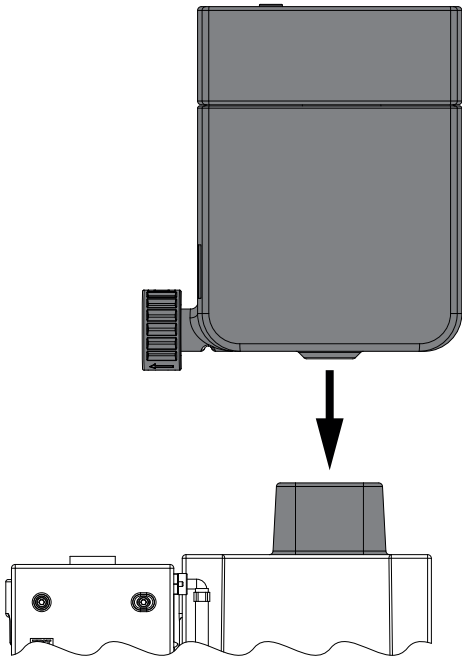
Installation work	
Image	Description / explanation
	<ol style="list-style-type: none"> 1. Position the collector on a flat surface. 2. Remove the plug from the collector's expansion connection anticlockwise.
	<ol style="list-style-type: none"> 3. Insert the connecting pipe into the expansion module. 4. Screw in the connecting pipe clockwise by hand all the way and tighten hand-tight.
	<ol style="list-style-type: none"> 5. Align the expansion module with the collector. <ul style="list-style-type: none"> → Insert the connecting pipe into the collector's expansion connection. → Insert the expansion module's positioning pins into the position openings on the collector.

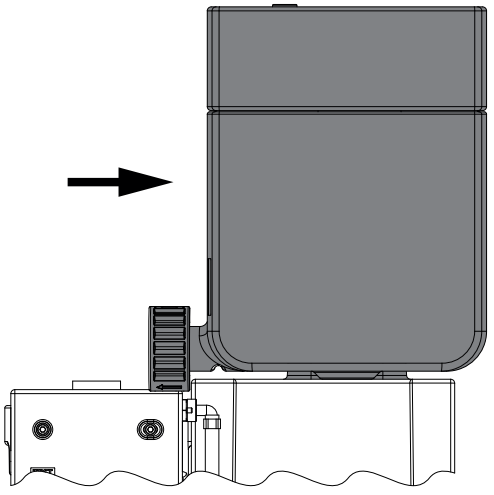
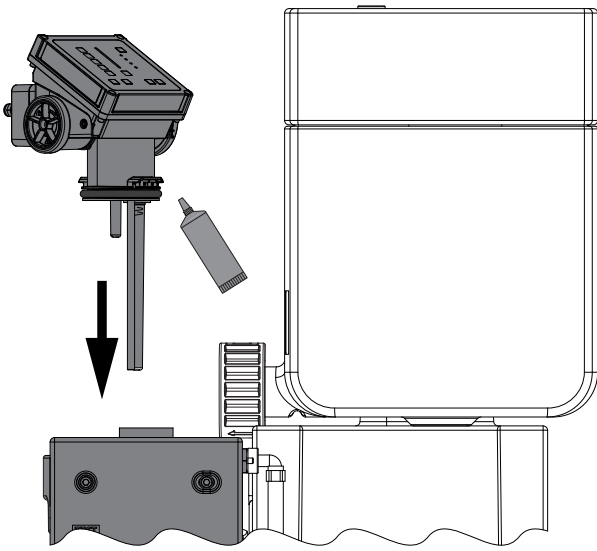
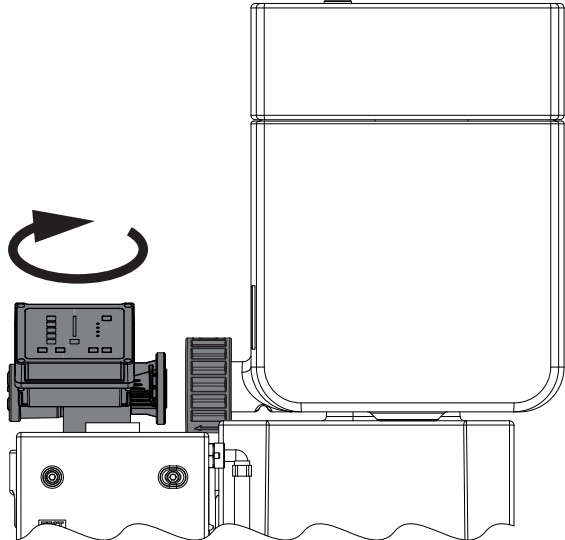
Installation work	
Image	Description / explanation
	<p>6. Push the expansion module and the collector together.</p> <p>→ The expansion module must fully abut the collector.</p>
	<p>7. Insert the locking unit and push it down all the way.</p>
	<p>8. Position the collector on a flat surface at the installation location.</p> <p>9. Align the foot with the positioning tubes facing downwards and position it over the assembly opening.</p> <p>10. Tilt the upper end of the foot towards the filter cartridge holder until the positioning tubes are vertical.</p>

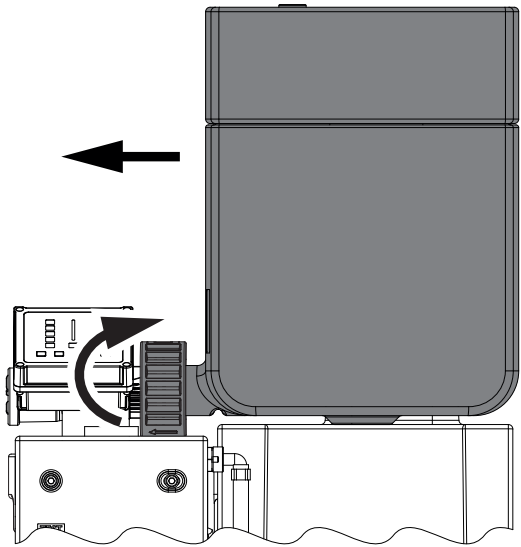
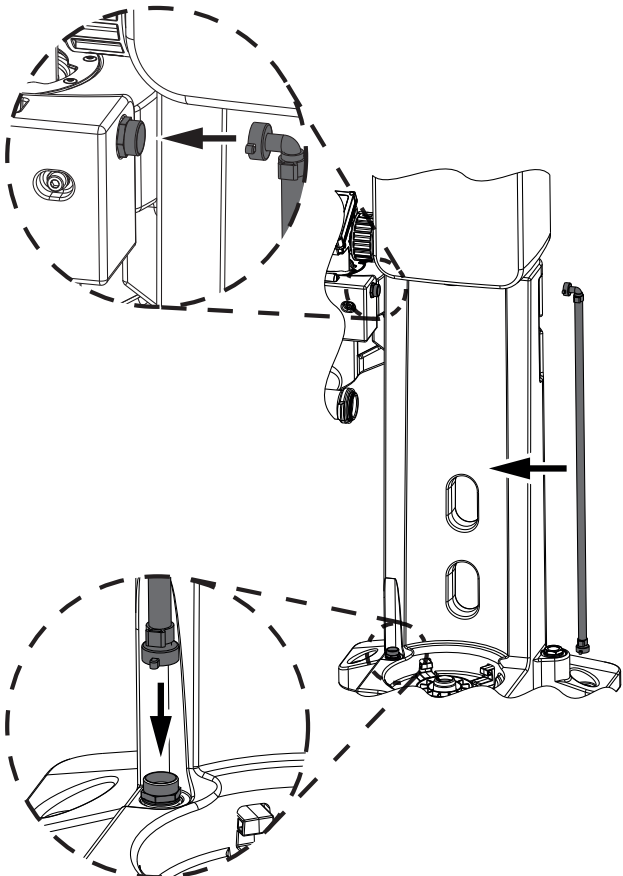
Installation work	
Image	Description / explanation
	11. Carefully insert the foot into the installation openings while straightening it at the same time.
	


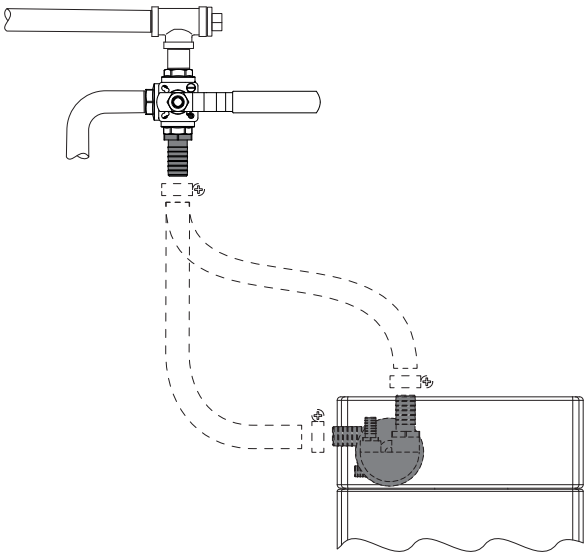
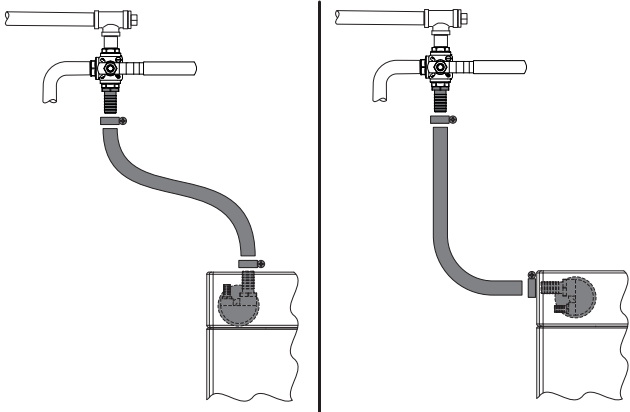
Installation work	
Image	Description / explanation
 A line drawing of a mechanical assembly. It consists of a vertical rectangular frame with a handle on the left and a circular component on the right. A small rectangular locking device is shown at the bottom left, with an arrow pointing towards a slot in the base of the frame.	<p>12. Align the locking device with the heel facing downwards and insert it into the locking device opening in the collector.</p>
 A line drawing of the same mechanical assembly as in the previous image. The small rectangular locking device is now inserted into the slot in the base of the frame.	<p>13. Press the locking device into the locking device opening as far as it will go.</p>

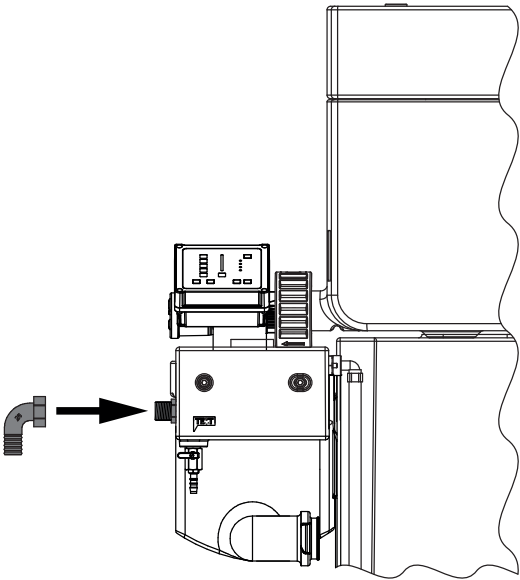

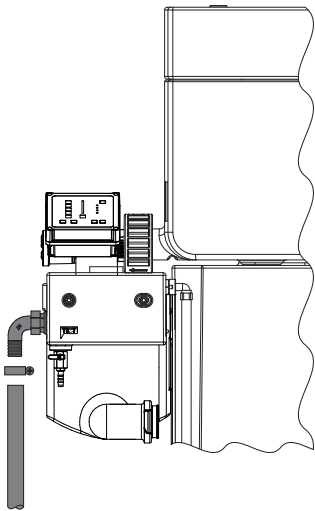
Installation work	
Image	Description / explanation
 A line drawing showing a measuring chamber being inserted into a holder. The holder is part of a larger assembly, and the measuring chamber is being placed into a specific slot. An arrow points to the insertion point.	14. Insert the measuring chamber into the holder in the foot.
 A line drawing showing a fixing screw being inserted into the fixing hole of the measuring chamber. The screw is being placed into a hole on the side of the measuring chamber. An arrow points to the screw.	15. Insert the fixing screw into the fixing hole of the measuring chamber.

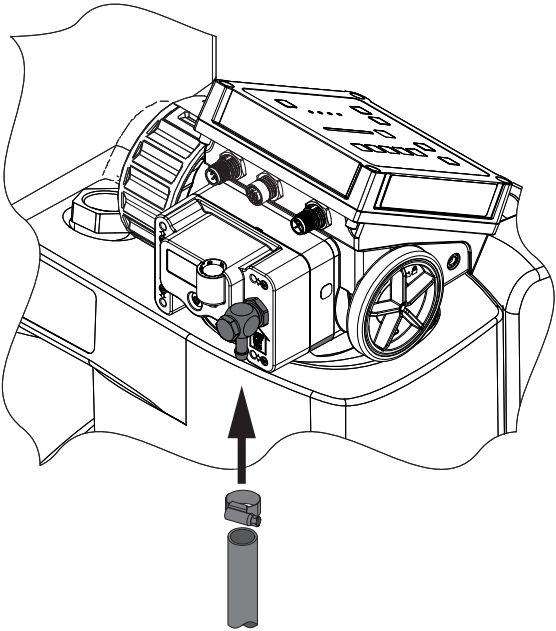

Installation work	
Image	Description / explanation
<p>NOTICE</p> 	<p>Thread overloading!</p> <p>Using tools to tighten the fixing screw, or tilting it when positioning it, can overload the thread on the fixing screw and in the foot and cause serious damage (e.g., plastic parts breaking, the thread being pulled out).</p> <ul style="list-style-type: none">• Place the fixing screw vertically and screw it in.• Tighten the fixing screw by hand only.
	<p>16. Screw in the fixing screw clockwise by hand all the way and tighten hand-tight.</p>
	<p>17. Place the pressure relief chamber on the foot.</p> <p>→ Align the connection in the direction of the measuring chamber.</p>

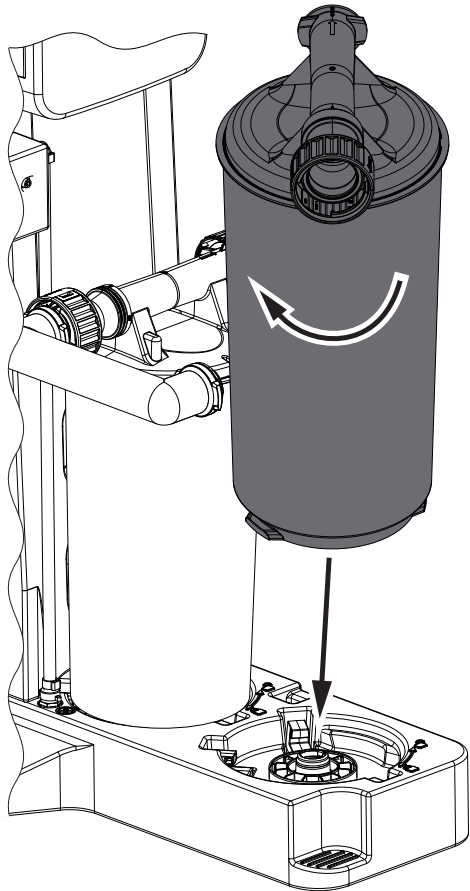
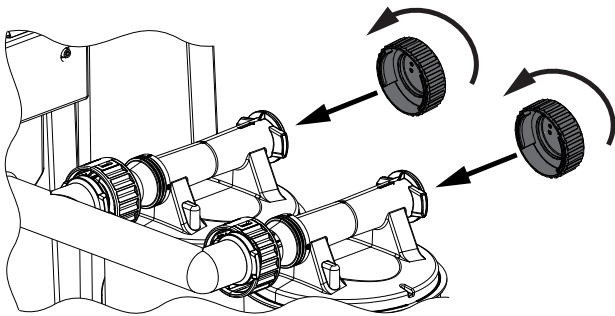
Installation work	
Image	Description / explanation
	<p>18. Slide the pressure relief chamber as far away from the measuring chamber as possible.</p>
	<p>19. Check the sealing surfaces on the measuring chamber for damage and dirt.</p> <ul style="list-style-type: none"> → Remove any dirt. → If there is any damage, contact manufacturer's Service (see section "1.1 Contact" on page 5). <p>20. Apply a thin layer of the Vaseline supplied to the O-ring on the control unit.</p> <p>21. Align the control unit with the assembly opening in the measuring chamber and insert it.</p>
	<p>22. Turn the control unit clockwise until the control unit connection is aligned with the pressure relief chamber connection.</p>

Installation work	
Image	Description / explanation
	<p>23. Push the pressure relief chamber towards the control unit until the connection of the pressure relief chamber comes into contact with the connection of the control unit.</p> <p>24. Slide the bayonet catch over the control unit connection and turn it clockwise as far as it will go.</p>
	<p>25. Install the riser duct between the collector and the measuring chamber.</p> <ul style="list-style-type: none"> → 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.

Installation work	
Image	Description / explanation
<p>NOTICE</p>  <p>Damage due to incorrect hose routing.</p> <p>Incorrect hose routing can result in property and environmental damage, as well as impaired operation.</p> <ul style="list-style-type: none"> • 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 iPOWS and the minimum bending radii of the respective hose are observed. • Do not lay the hoses in a slack manner (sagging). 	
	<p>26. Set up the assembled iPOWS offset from the tapping point.</p> <p>→ For optimal hose routing, the knurled head 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.</p>
	<p>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.</p> <p>→ Do not lay the hose in a slack manner (sagging).</p> <p>28. Tighten the hose clamps hand-tight.</p>




Installation work	
Image	Description / explanation
	<p>29. Screw the supplied elbow connector with the mounted flat gasket clockwise as far as it will go onto the condensate drain of the iPOWS and position it so that the outlet is pointing downwards.</p>
<div><div>NOTICE </div><div>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.<ul style="list-style-type: none">• The connection to the wastewater system is located below the condensate drain.• Route the water outlet hose with a steady slope and without any kinks to the connection to the wastewater system.</div></div>	
	<p>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.</p> <p>31. Tighten the hose clamp hand-tight.</p> <p>32. Route the water outlet hose with a steady slope and without any kinks to the connection to the wastewater system.</p>



Installation work	
Image	Description / explanation
	<p>33. Connect the iPOWS to the compressed air system. Attach a compressed air hose to the compressed air connection and secure it against slipping with a hose clamp.</p> <p>34. Tighten the hose clamp hand-tight.</p>
<p>NOTICE</p> 	<p>Filter cartridge insertion!</p> <p>Use of incorrect filter cartridges or incorrect insertion of the filter cartridges can cause damage or leakage to the collector and the filter cartridges.</p> <ul style="list-style-type: none"> Before inserting the filter cartridges, check to make sure that the filter cartridge is the right one for the product. <ul style="list-style-type: none"> → The color of the cap at the bottom of the filter cartridge must be identical to the color of the cap in the collector. Insert the filter cartridges vertically and carefully into the collector.

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

7. Electrical installation


7.1 Warning notices

DANGER	Use of incorrect replacement element, accessories or materials!
	<p>The use of incorrect spare parts, accessories or materials, as well as auxiliary and operating materials, may pose a mortal danger or the danger of severe injuries. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> • Only use undamaged original parts, auxiliary and operating materials specified by the manufacturer in carrying out all work. • Only use materials permitted for the specific purpose and suitable tools in proper condition. • Only use electrical components and materials that comply with the regionally applicable legal requirements and regulations for electrical safety.
DANGER	Electrical voltage!
	<p>Components in contact with electrical voltage may pose a mortal danger or the danger of severe injuries. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> • Only complete installation, maintenance and repair work on products and accessories for which the power has been shut down, and secure them against unintentional restart. • A safe area must be set up around the work area during all installation, maintenance and repair work. • Comply with all regionally applicable regulations and requirements during installation. • The power supply must have a disconnect device that is easily accessible and close to the product. This disconnect device must disconnect all live cables. • Connect the protective conductor (earthing) according to regulations.
WARNING	Insufficient qualification!
	<p>If personnel have insufficient qualifications, this may result in accidents, personal injury and property damage as well as operating disruptions while working on the product or its accessories.</p> <ul style="list-style-type: none"> • All work on the product and accessories may only be carried out by professional technicians - trained electricians.

WARNING	Improper electrical installation!
	<p>Improper electrical installation of the product and the accessories can lead to personal injury and damage to property as well as impair operation when working on the product and accessories.</p>
	<ul style="list-style-type: none"> • Check all plug connections are correctly fitted. • Avoid danger of tripping by routing the cables accordingly. • Avoid mechanical stress on the cables.
WARNING	Ingress of moisture or foreign objects!
	<p>Water and foreign objects can get into the opened control unit or into the opened electrical connections if electrical connections are disconnected or if the control unit is opened. The ingress of water or foreign objects can result in accidents, personal injury and property damage, and problems during operation.</p>
	<ul style="list-style-type: none"> • Protect the control unit unit and the electrical connections from splash water and moisture. • Open the control unit 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 impurities and moisture.

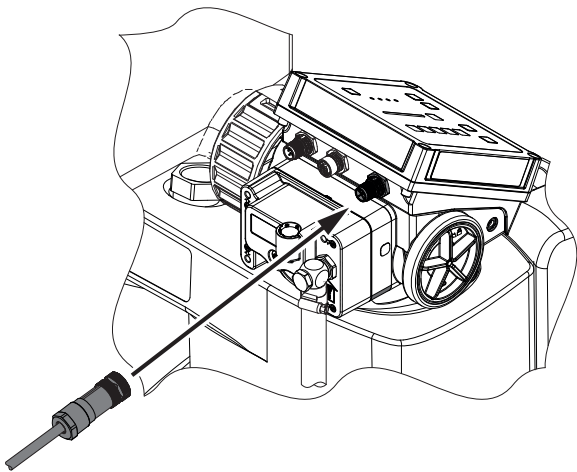
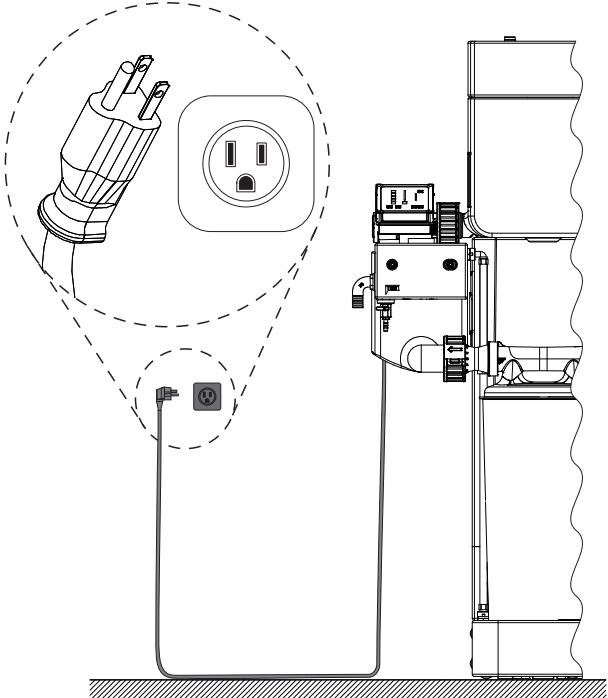
7.2 Connection work

The following prerequisites must be met before carrying out electrical installation work, and all preparation work must be completed first.


Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none"> • 1.5 mm slotted screwdriver • Wire stripper 	<ul style="list-style-type: none"> • Cable for the power supply • Modbus cable • Included connector 	<p>To be worn at all times:</p> 

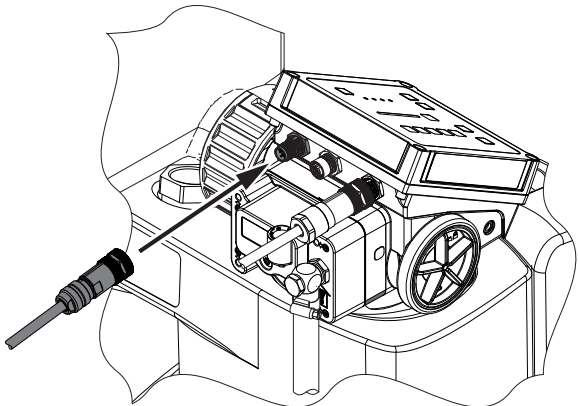
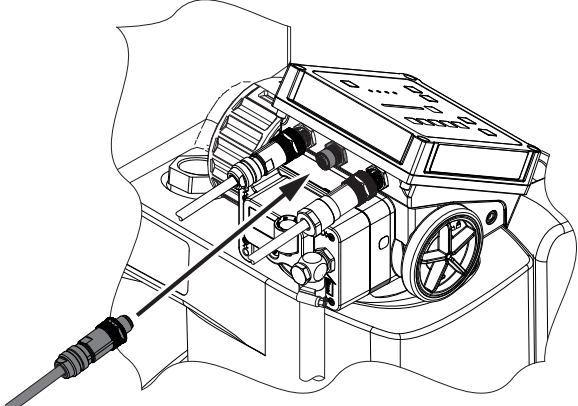
Preparatory work	
1.	A protective contact socket is installed within reach (<3 m (19 ft)) of the place of installation of the iPOWS .
2.	The fusing for the protective contact socket is adequately dimensioned for the corresponding power consumption.
3.	Assembly of the iPOWS is complete.

7.2.1 Connecting the external power supply

Connection work	
Image	Description / explanation
	<ol style="list-style-type: none"> 1. Plug the power supply cable's threaded connection onto the power supply connection and tighten the union nut clockwise hand-tight.
	<ol style="list-style-type: none"> 2. Route the power supply cable all the way to the protective contact socket. <ul style="list-style-type: none"> → Route the cable in such a way that it is free of any mechanical stress. → Prevent trip hazards by routing the cable adequately. 3. Insert the protective contact plug into the protective contact socket. <ul style="list-style-type: none"> → The control unit will start and the SET NUMBER OF FILTER CARTRIDGES menu will be shown.






7.2.2 Modbus

NOTICE	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.
	<ul style="list-style-type: none"> Connect a terminating resistor at the end of the daisy chain of several consecutive Modbus-capable devices.

Connection work	
Image	Description / explanation
	<ol style="list-style-type: none"> 1. Plug the Modbus signal cable onto the Modbus input connection and tighten the union nut clockwise hand-tight. <ul style="list-style-type: none"> → Route the cable in such a way that it is free of any mechanical stress. → Prevent trip hazards by routing the cable adequately.
	<ol style="list-style-type: none"> 2. Plug the Modbus signal cable onto the Modbus output connection and tighten the union nut clockwise hand-tight. <ul style="list-style-type: none"> → Route the cable in such a way that it is free of any mechanical stress. → Prevent trip hazards by routing the cable adequately.


8. Commissioning

8.1 Warning notices


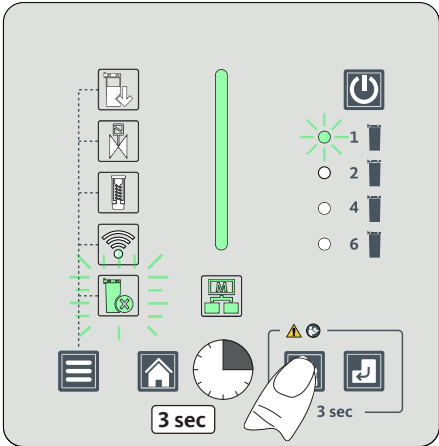
DANGER	Operating outside of permitted limit values!
	<p>Operating the product and accessories outside of the permitted limit values and operating parameters, unauthorized modifications and changes may pose a mortal hazard or the danger of severe injuries.</p> <ul style="list-style-type: none"> • Observe the limit values and operating parameters specified on the type plate and in the instructions. • Check whether operating parameters are changed or restricted through the use of accessories.
DANGER	Pressurized system!
	<p>The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.</p> <ul style="list-style-type: none"> • Before pressurization, check all pipe connections of the system for leak tightness and retighten them if necessary. • Pressurize the system slowly. • Avoid pressure surges and high pressure differentials.
DANGER	Electrical voltage!
	<p>Components in contact with electrical voltage may pose a mortal danger or the danger of severe injuries. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> • Only operate the product and accessories with a complete and closed cover or closed electronic housing. • Check the product and accessories before commissioning in accordance with the locally applicable legal requirements and regulations.
WARNING	Insufficient qualification!
	<p>If personnel have insufficient qualifications, this may result in accidents, personal injury and property damage as well as operating disruptions while working on the product or its accessories.</p> <ul style="list-style-type: none"> • All work on the product and accessories must be carried out exclusively by skilled technical personnel specialized in pressure equipment and systems and trained electricians.
NOTICE	Restricted function of the filter cartridges.
	<p>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.</p> <ul style="list-style-type: none"> • Keep the clean water tank's ventilation opening open.

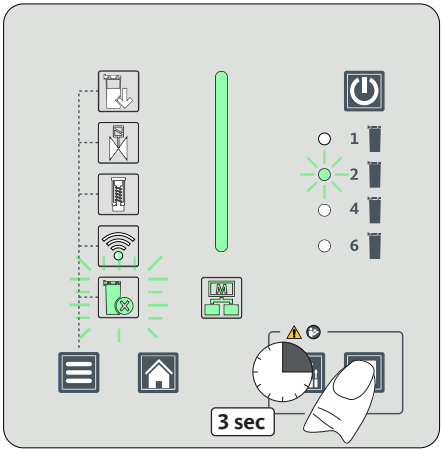
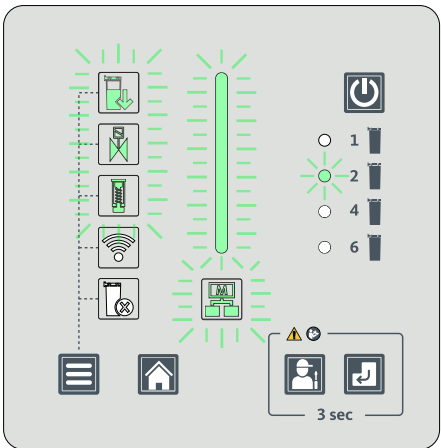
8.2 Initial commissioning

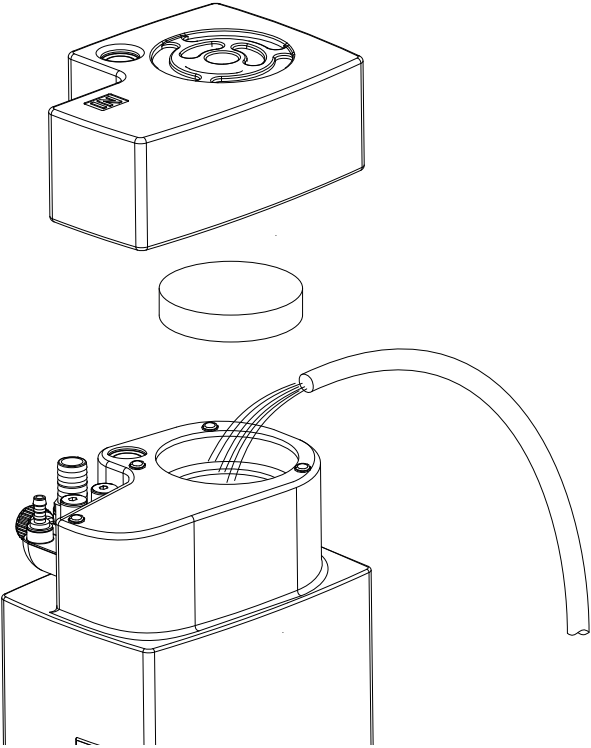
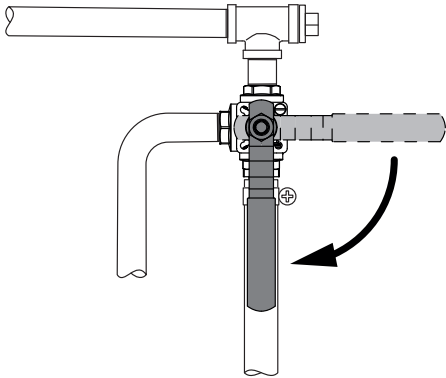
For initial commissioning work to be carried out, the following prerequisites must be fulfilled and the preparatory tasks must have been completed.

Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none">No tool necessary	<ul style="list-style-type: none">No material necessary	To be worn at all times: 

Preparatory work	
1.	Assembly of the iPOWS is complete.
2.	Electrical installation of the iPOWS is complete.


Commissioning work	
Image	Description / explanation
<div>NOTICE </div>	Configuring the number of filter cartridges! Entering the wrong number of filter cartridges may result in property damage, environmental damage or impaired operation. <ul style="list-style-type: none">Make sure to set the correct number of filter cartridges being used.
	<p>As soon as the power supply is established, the LED FILTER CARTRIDGE SELECTION and the LED NUMBER OF FILTER CARTRIDGES will flash green.</p> <ol style="list-style-type: none">Press the Service button and hold it down for 3 seconds in order to set the number of filter cartridges being used.<ul style="list-style-type: none">→ The LED NUMBER OF FILTER CARTRIDGES will switch from the current flashing number to the next higher number (e.g., from 1 to 2).Repeat this step until the correct number of installed filter cartridges is set.

Commissioning work	
Image	Description / explanation
	<p>3. Press and hold the Enter button for 3 seconds.</p> <ul style="list-style-type: none"> → 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.
	<p>4. The control unit is set up and controls the condensate flow of the iPOWS.</p> <ul style="list-style-type: none"> → 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.

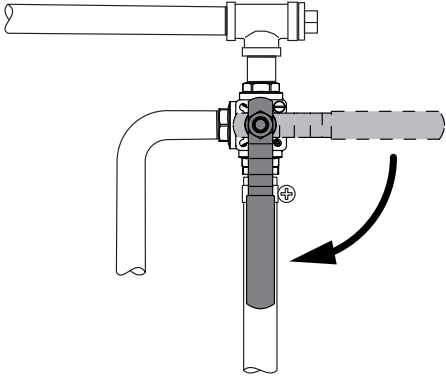
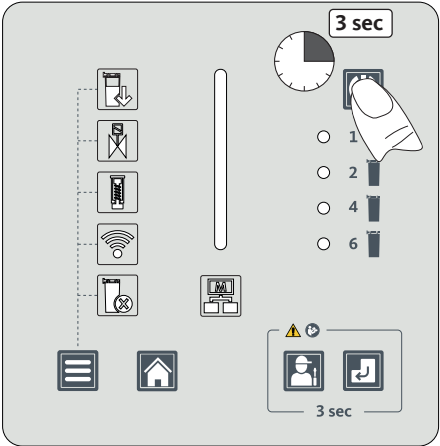
Commissioning work	
Image	Description / explanation
 <p>The diagram illustrates the process of filling the pressure relief chamber. The top part shows the iPOWS unit with its cover removed. The bottom part shows the unit with a hose connected to the vent, pouring water into the chamber. A small '7' is visible at the bottom left of the unit.</p>	<ol style="list-style-type: none"> 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 control unit performs a discharge operation. 7. Insert the activated carbon mat into the vent of the pressure relief chamber and place the cover on the pressure relief chamber.
 <p>The diagram shows a vertical pipe with a horizontal branch. A curved arrow points to the horizontal branch, indicating the condensate feed to the iPOWS unit.</p>	<ol style="list-style-type: none"> 8. Slowly open the condensate feed to the iPOWS. 9. Check all hoses and connections for leaks (see section “10.3.7 Leakage test” on page 109). 10. Commissioning is complete and the discharged condensate is treated by the iPOWS.


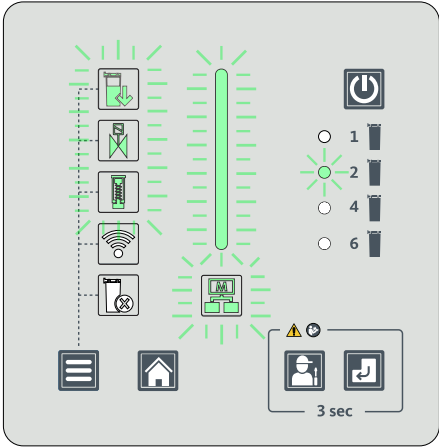
8.3 Recommissioning

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

Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none"> No tool necessary 	<ul style="list-style-type: none"> No material necessary 	To be worn at all times: 





Preparatory work	
1.	The work or troubleshooting on iPOWS is complete.
2.	The compressed air supply and voltage supply have been established.
3.	The Modbus connection has been established.

Commissioning work	
Image	Description / explanation
	<ol style="list-style-type: none"> Slowly open the condensate feed to the iPOWS.
	<ol style="list-style-type: none"> Press and hold down the ON/OFF button on the control unit for 3 seconds. <ul style="list-style-type: none"> → The control unit switches from standby mode to normal mode.

Commissioning work	
Image	Description / explanation
<div>NOTICE</div> <div></div>	<div>Configuring the number of filter cartridges!</div> <div>Entering the wrong number of filter cartridges may result in property damage, environmental damage or impaired operation.</div> <div><ul style="list-style-type: none">Make sure to set the correct number of filter cartridges being used.</div>
<div></div>	<div>3. Commissioning is complete and the discharged condensate is treated by the iPOWS.</div> <div><ul style="list-style-type: none">→ 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.</div>

9. Operation


9.1 Warning notices

DANGER	Operating outside of permitted limit values!
	<p>Operating the product and accessories outside of the permitted limit values and operating parameters, unauthorized modifications and changes may pose a mortal hazard or the danger of severe injuries.</p> <ul style="list-style-type: none"> • Observe the limit values and operating parameters specified on the type plate and in the instructions. • Observe the installation conditions and ambient conditions. • Check whether operating parameters are changed or restricted through the use of accessories. • Observe the maintenance intervals.
DANGER	Electrical voltage!
	<p>Components in contact with electrical voltage may pose a mortal danger or the danger of severe injuries. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> • Only operate the product and accessories with a complete and closed cover or closed electronic housing.
NOTICE	Operating personnel!
	<p>Inadequate knowledge of the product and its accessories can lead to material and environmental damage as well as disruptions in operation due to incorrect operation.</p> <ul style="list-style-type: none"> • The product and accessories may only be operated and handled by qualified operating personnel.
NOTICE	Restricted function of the filter cartridges.
	<p>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.</p> <ul style="list-style-type: none"> • Keep the clean water tank's ventilation opening open.

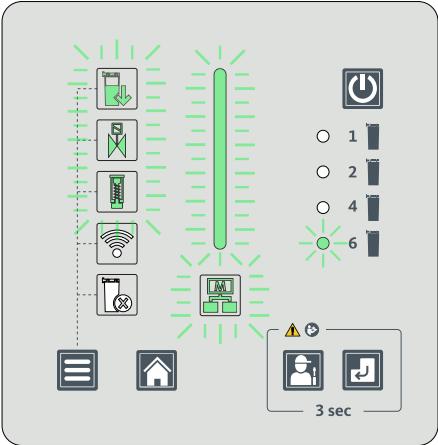
9.2 Menu displays

For operation of the iPOWS the preparatory tasks must have been completed.

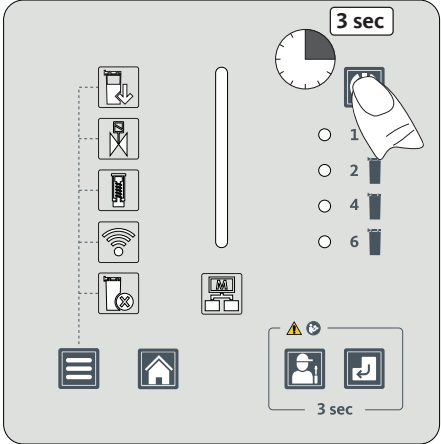
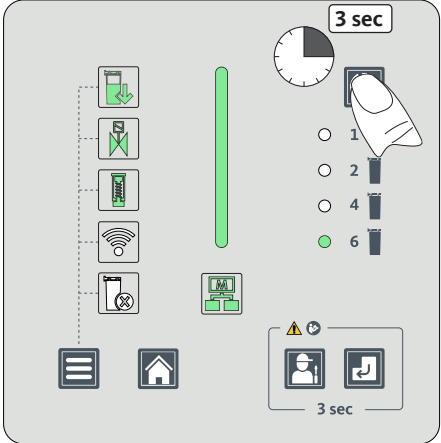
Preparatory work	
1.	The iPOWS is set up and connected to the condensate collection line and the drain.
2.	The control unit is connected to the power supply and switched on.
3.	The control unit is connected to the compressed air supply and has been set up.
4.	The control unit is connected to the MODBUS 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.

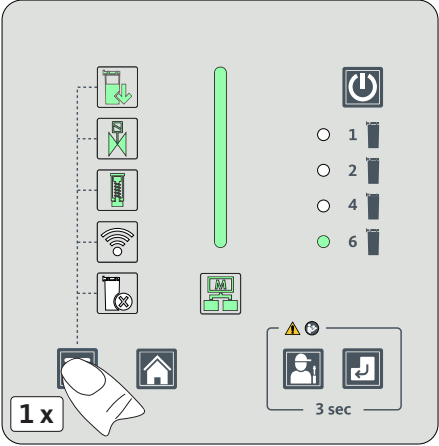
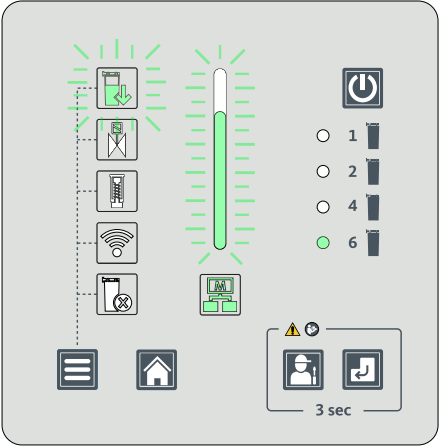
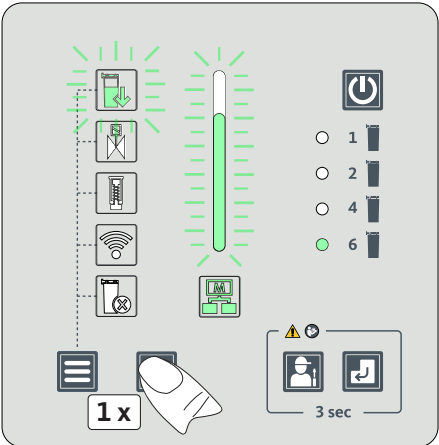
9.2.1 Start menu

Image	Description / explanation
	<p>START MENU</p> <ul style="list-style-type: none">→ 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

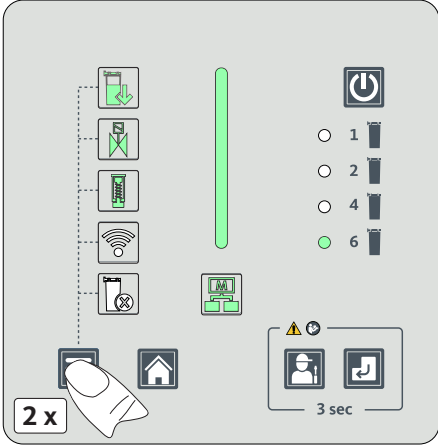
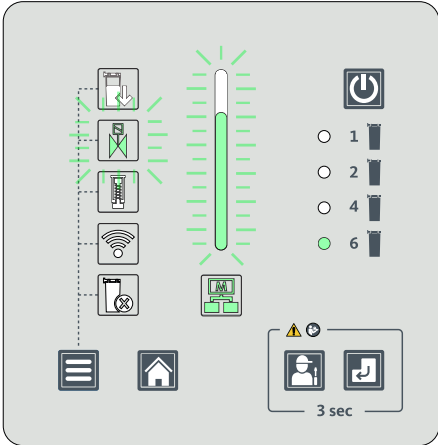
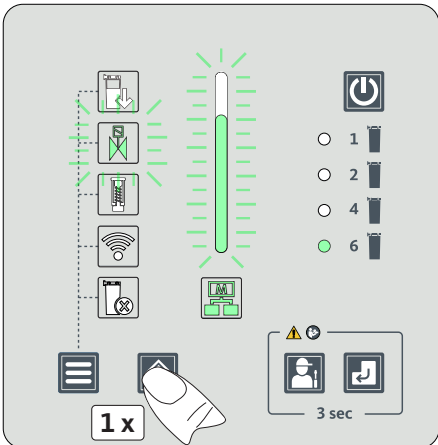
9.2.2 Switching the control unit on and off

Image	Description / explanation
	<p>Switching on the control unit</p> <p>Press and hold down the ON/OFF button for 3 seconds.</p> <ul style="list-style-type: none"> → The control unit switches from standby mode to normal mode. → The START MENU will appear. → The control unit regulates the condensate flow of iPOWS.
<p>INFORMATION</p> <p>i</p>	<p>Initial commissioning.</p> <p>The control unit will start with the SET NUMBER OF FILTER CARTRIDGES menu during initial commissioning only, and the status LED FILTER CARTRIDGE SELECTION will flash green.</p> <ul style="list-style-type: none"> • Set the number of filter cartridges in order to get to the START MENU.
	<p>Switch off control unit</p> <p>Press and hold down the ON/OFF button for 3 seconds.</p> <ul style="list-style-type: none"> → The control unit 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.

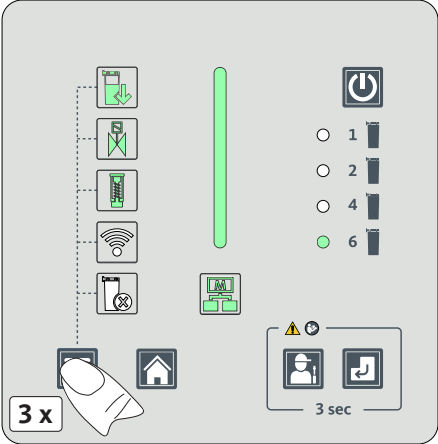
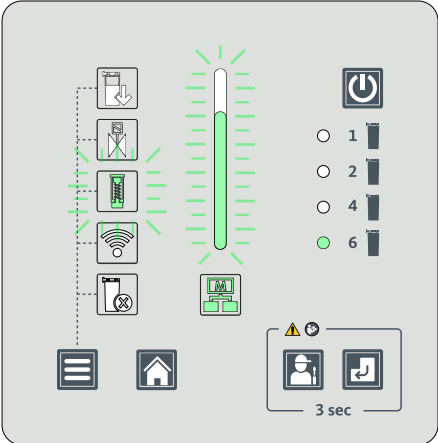
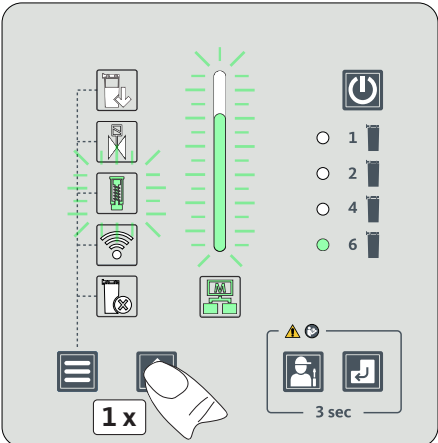
9.2.3 Querying filter cartridge status

Image	Description / explanation												
	<p>1. Press the menu button once.</p>												
	<p>The remaining lifetime of the filter cartridges is displayed.</p> <p>→ The status LED FILTER CARTRIDGES will flash green.</p> <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> <p>→ If the FILTER CARTRIDGES status LED flashes red, replace the filter cartridges (see section “10.3.2 Replace filter cartridges” on page 93).</p>	Status LED STATUS BAR	Lifetime of the filter cartridges	4/4 of the length lights up green	100%	3/4 of the length lights up green	75%	2/4 of the length lights up green	50%	1/4 of the length lights up green	25%	1/4 of the length flashes red	Exceeded
Status LED STATUS BAR	Lifetime of the filter cartridges												
4/4 of the length lights up green	100%												
3/4 of the length lights up green	75%												
2/4 of the length lights up green	50%												
1/4 of the length lights up green	25%												
1/4 of the length flashes red	Exceeded												
	<p>2. Press the start menu button to exit the menu.</p>												

9.2.4 Querying the solenoid valve status

Image	Description / explanation												
	<p>1. Press the menu button twice.</p>												
	<p>The time remaining until replacement of the solenoid valves is displayed.</p> <p>→ The status LED SOLENOID VALVES flashes green.</p> <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> <p>→ If the SOLENOID VALVES status LED flashes red, replace the SOLENOID VALVES Service-Unit (see section “10.3.3 Replacing solenoid valves” on page 99).</p>	Status LED STATUS BAR	Lifetime of the solenoid valves	4/4 of the length lights up green	100%	3/4 of the length lights up green	75%	2/4 of the length lights up green	50%	1/4 of the length lights up green	25%	1/4 of the length flashes red	Exceeded
Status LED STATUS BAR	Lifetime of the solenoid valves												
4/4 of the length lights up green	100%												
3/4 of the length lights up green	75%												
2/4 of the length lights up green	50%												
1/4 of the length lights up green	25%												
1/4 of the length flashes red	Exceeded												
	<p>2. Press the start menu button to exit the menu.</p>												

9.2.5 Querying piston status

Image	Description / explanation												
	<p>1. Press the menu button three times.</p>												
	<p>The time remaining until replacement of the piston is displayed.</p> <p>→ The status LED PISTON flashes green.</p> <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> <p>→ If the PISTON status LED flashes red, replace the PISTON Service-Unit (see section “10.3.4 Replacing the piston” on page 103).</p>	Status LED STATUS BAR	Lifetime of the piston	4/4 of the length lights up green	100%	3/4 of the length lights up green	75%	2/4 of the length lights up green	50%	1/4 of the length lights up green	25%	1/4 of the length flashes red	Exceeded
Status LED STATUS BAR	Lifetime of the piston												
4/4 of the length lights up green	100%												
3/4 of the length lights up green	75%												
2/4 of the length lights up green	50%												
1/4 of the length lights up green	25%												
1/4 of the length flashes red	Exceeded												
	<p>2. Press the start menu button to exit the menu.</p>												

9.2.6 Activating the WLAN

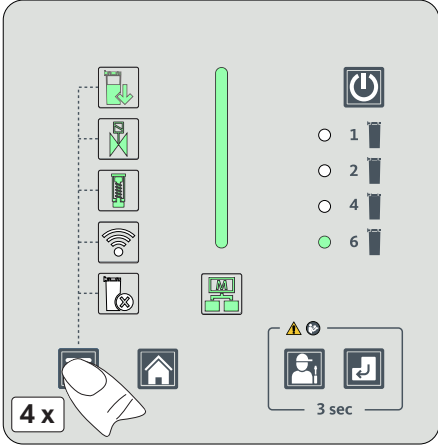
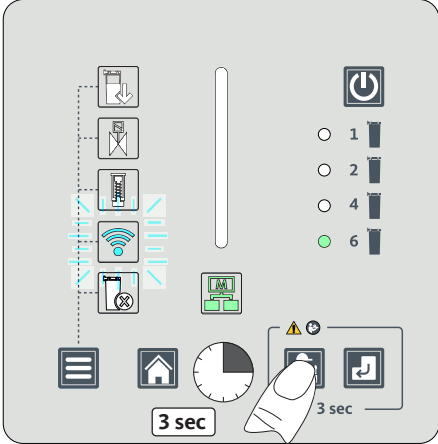
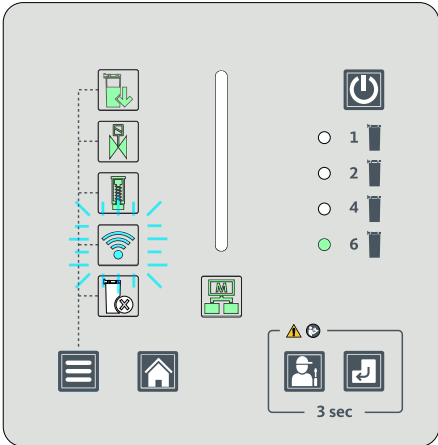
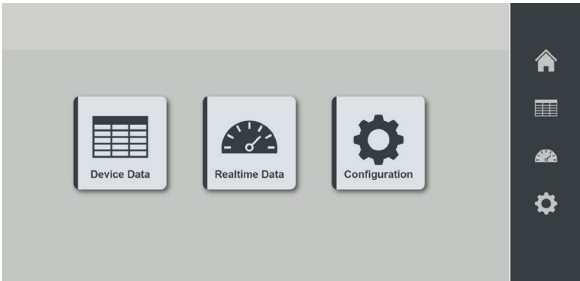
Image	Description / explanation
	<p>1. Press the menu button four times.</p>
	<p>The WLAN status is displayed.</p> <ul style="list-style-type: none"> → The status LED WLAN flashes blue. <p>2. Press and hold the Service button for 3 seconds.</p>
	<p>The WLAN is active.</p> <ul style="list-style-type: none"> → 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. <p>3. Select the SEPARATOR 2... network.</p> <p>4. Enter the password into the security prompt.</p> <p>Password:</p> <ul style="list-style-type: none"> → The last 10 digits of des network name (e.g., SEPARATOR 2320900028) → Scan the QR code on the control unit's housing <p>The WLAN is automatically deactivated after 5 minutes.</p>

Image	Description / explanation
	<p>5. Enter address <code>http://192.168.4.1</code> into a browser.</p> <p>→ The start menu will appear.</p>

9.2.7 Setting number of filter cartridges



NOTICE	Configuring the number of filter cartridges!
	<p>Entering the wrong number of filter cartridges may result in property damage, environmental damage or impaired operation.</p> <ul style="list-style-type: none">• Make sure to set the correct number of filter cartridges being used.
INFORMATION	Initial commissioning.
	<p>Start from step 3 for initial commissioning.</p> <p>The LED NUMBER OF FILTER CARTRIDGES and the status LED FILTER CARTRIDGE SELECTION flashing green at the same time.</p> <p>Skip steps 1 and 2.</p>

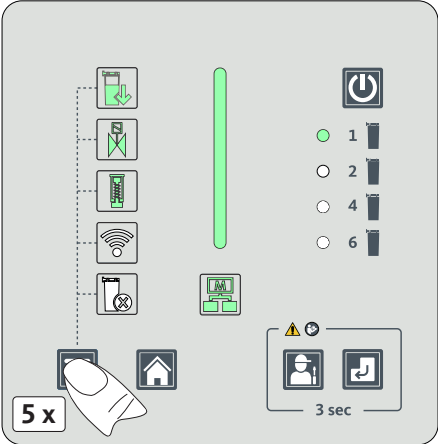
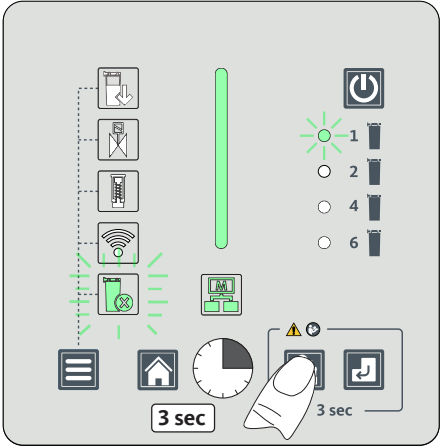
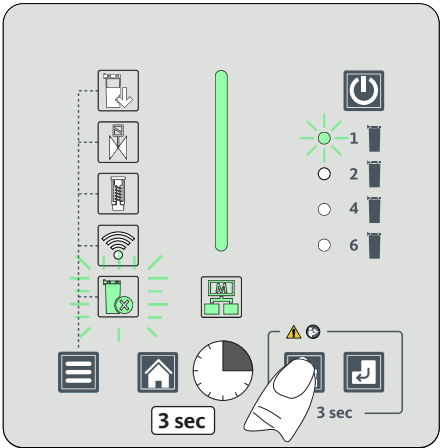
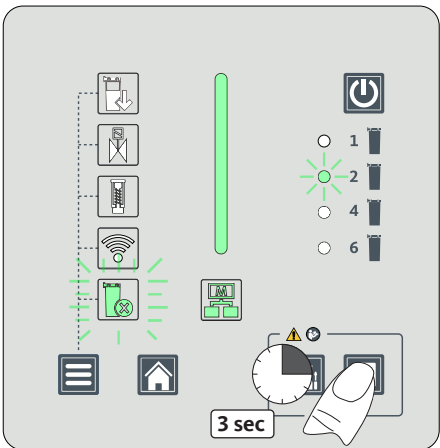
Image	Description / explanation
	<p>1. Press the menu button five times.</p> <p>→ The status LED FILTER CARTRIDGE SELECTION flashes green.</p>

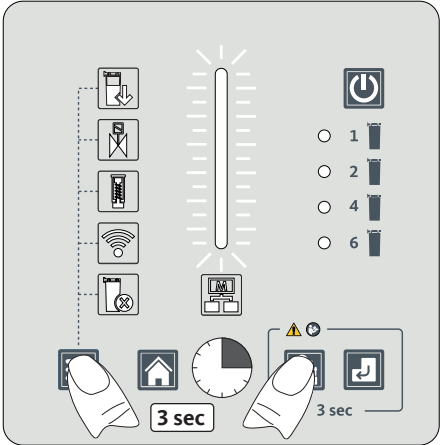
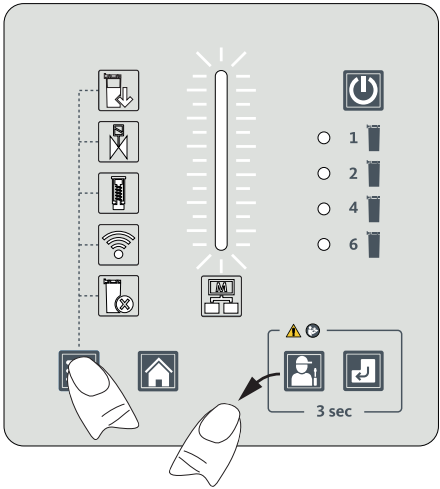
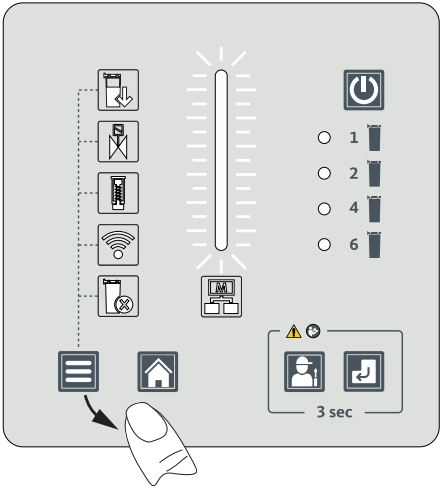
Image	Description / explanation
	<p>2. Press and hold the Service button for 3 seconds.</p> <p>→ The LED NUMBER OF FILTER CARTRIDGES flashes green.</p>
	<p>3. Press and hold the Service button for 3 seconds.</p> <p>→ The LED NUMBER OF FILTER CARTRIDGES will switch from the current flashing number to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

9.2.8 Manually starting a discharge operation

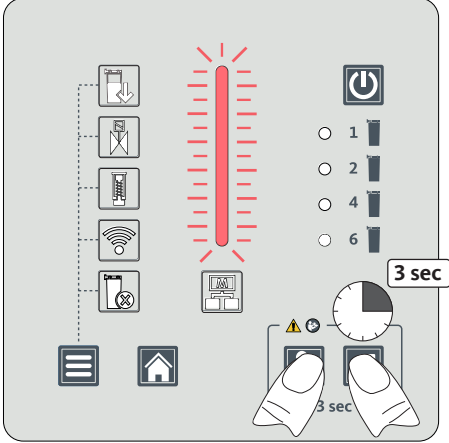
Image	Description / explanation
	<ol style="list-style-type: none">1. Press and hold the Service button for 3 seconds.<ul style="list-style-type: none">→ The piston in the control unit will close the condensate inlet from the pressure relief chamber into the control unit.→ The measuring chamber is supplied 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 operation will stop.<ul style="list-style-type: none">→ The measuring chamber is no longer pressurized with auxiliary air.→ The piston in the control unit will open the condensate inlet from the pressure relief chamber into the control unit.

9.2.9 Resetting IP settings

Image	Description / explanation
	<ol style="list-style-type: none">1. Press and hold down the ON/OFF button for 3 seconds.




Image	Description / explanation
	<p>The control unit switches to standby mode</p> <ul style="list-style-type: none"> → 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. <p>2. Press and hold down the Service button and the menu button simultaneously for 3 seconds.</p>
	<p>3. Release the Service button only.</p>
	<p>4. Release the menu button.</p> <ul style="list-style-type: none"> → The IP settings are reset to the factory settings. <p>5. Press and hold down the ON/OFF button for 3 seconds.</p> <ul style="list-style-type: none"> → The control unit switches from standby mode to normal mode.



9.2.10 Reset error message

Image	Description / explanation
	<ol style="list-style-type: none">1. Read the error message via the WLAN function (see section “3.6 WLAN function” on page 31) or the Modbus function (see section “3.5 Modbus function” on page 24).2. Determine the cause of the error and rectify the error (see section “15. Troubleshooting” on page 123). If you cannot fix the cause of the error, contact manufacturer’s Service (see section “1.1 Contact” on page 5).3. Press and hold down the Service button and the Enter button simultaneously for 3 seconds.<ul style="list-style-type: none">→ The error message will be reset.→ The display will switch to the START MENU screen.

10. Maintenance

10.1 Warning notices

DANGER	Pressurized system!
	<p>The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.</p> <ul style="list-style-type: none"> • Before starting work, bleed the pressurized system and secure it against unintentional pressurization. • A safe area must be set up around the work area during all assembly, installation, maintenance and repair work. • Assemble all pipes and hoses free of mechanical stress. • Before pressurization, check all system connections for leak tightness and retighten them if necessary. • Pressurize the system slowly. • Avoid pressure surges and high pressure differentials.
DANGER	Electrical voltage!
	<p>Components in contact with electrical voltage may pose a mortal danger or the danger of severe injuries. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> • Do not carry out maintenance and repair work on the product unless it has first been de-energized and locked and tagged out. • Establish a safe area around the work area for all maintenance and repair work. • Comply with all regionally applicable regulations and requirements during installation. • Only operate the product with a complete, closed cover or closed electronics housing.
DANGER	Use of incorrect replacement element, accessories or materials!
	<p>The use of incorrect spare parts, accessories or materials, as well as auxiliary and operating materials, may result in death or serious injury. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> • Only use undamaged original parts, auxiliary and operating materials specified by the manufacturer in carrying out all work. • Only use materials permitted for the specific purpose and suitable tools in proper condition. • Only use cleaned pipelines free from dirt and corrosion. • Only use electrical components and materials that comply with the regionally applicable legal requirements and regulations (standards, directives, etc.) for electrical safety.

WARNING	Insufficient qualification!
	<p>If personnel have insufficient qualifications, this may result in accidents, personal injury and property damage as well as operating disruptions while working on the product or its accessories.</p> <ul style="list-style-type: none"> • All work on the product and accessories may only be carried out by professional technicians - Service.
WARNING	Ingress of moisture or foreign objects!
	<p>Water and foreign objects can get into the opened control unit or into the opened electrical connections if electrical connections are disconnected or if the control unit is opened. The ingress of water or foreign objects can result in accidents, personal injury and property damage, and problems during operation.</p> <ul style="list-style-type: none"> • Protect the control unit unit and the electrical connections from splash water and moisture. • Open the control unit 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 impurities and moisture.




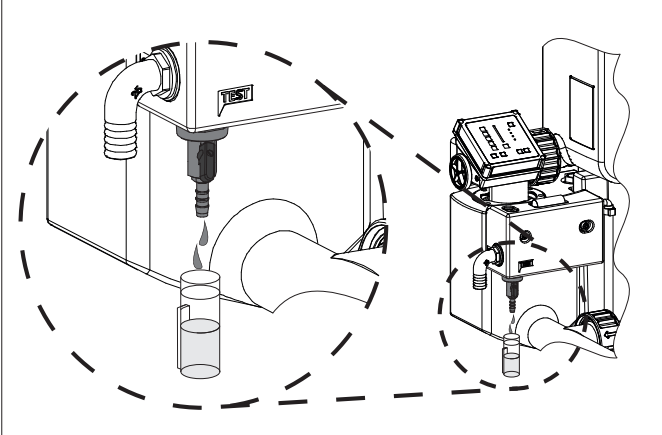
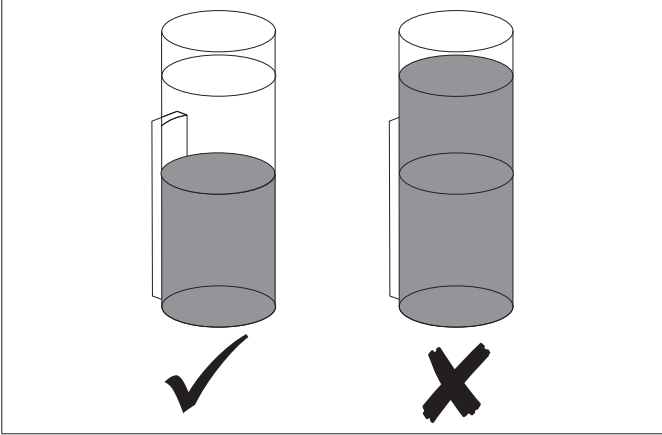
10.2 Maintenance plan

Maintenance	Interval
Turbidity test of wastewater and documenting the result	<ul style="list-style-type: none"> • Weekly
Visual inspection	<ul style="list-style-type: none"> • Weekly
Replace the filter cartridges and activated carbon mat	<ul style="list-style-type: none"> • 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
Replace the piston	<ul style="list-style-type: none"> • Maximum lifetime of the piston reached, see section “9.2.5 Querying piston status” • At least every two years
Replace solenoid valves	<ul style="list-style-type: none"> • Maximum lifetime of solenoid valves reached, see section “9.2.4 Querying the solenoid valve status” • At least every six years
Leakage test	<ul style="list-style-type: none"> • 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

Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none">No tool necessary	<ul style="list-style-type: none">No material necessary	<div>To be worn at all times:</div> <div></div>
Image	Description	
	<div>1. Remove the reference turbidity tube from the holder and fill it with a water sample from the service valve.</div>	
<div></div>	<div>2. Compare the sample with the reference turbidity on the lower half of the reference turbidity tube.</div> <div>The sample is clearer than the reference turbidity: → The iPOWS is working perfectly.</div> <div>The sample is equally or more turbid than the reference turbidity → Replace the filter cartridges immediately.</div> <div>3. Document the result of the turbidity test.</div>	

10.3.2 Replace 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.

Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none">No tool necessary	<ul style="list-style-type: none">Filter cartridgesActivated carbon mat	To be worn at all times: 

Preparatory work	
1.	Place the required number of new filter cartridges and the activated carbon mat next to the iPOWS.
2.	Remove the plugs from the packaging of the new filter cartridges and place them near the iPOWS.

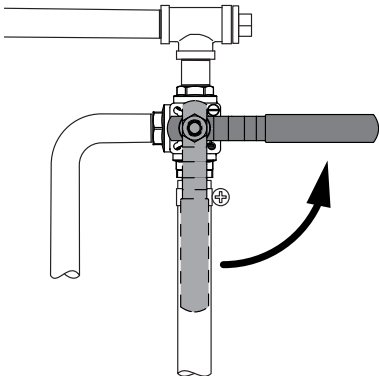
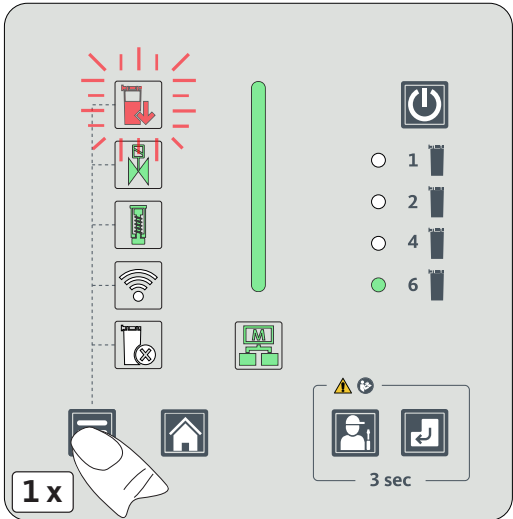
Image	Description / explanation
	1. Cut off the condensate feed to the iPOWS and divert the condensate into a separate container.
	2. Press the menu button once.

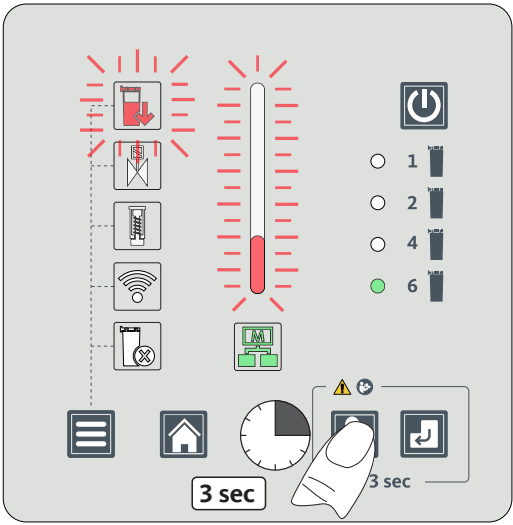
Image	Description / explanation
 The diagram shows a control panel with various icons. At the top left, there are four icons representing filter cartridges, each with a red 'X' and red radiating lines, indicating a fault. To their right is a vertical status bar that is red. Below the status bar is a power button icon. To the right of the power button are four circular indicators labeled 1, 2, 4, and 6, each with a corresponding filter cartridge icon. Below these are three more icons: a home button, a clock, and a service button. A hand is shown pressing the service button, with a '3 sec' label indicating the duration. Below the service button is another '3 sec' label.	<p>The current status of the filter cartridges is displayed.</p> <ul style="list-style-type: none">→ The status LED FILTER CARTRIDGES will flash red.→ The status LED STATUS BAR lights up red. <p>3. Press and hold the Service button for 3 seconds.</p>

Image	Description / explanation										
	<p>The discharge process is started.</p> <ul style="list-style-type: none">→ The piston in the control unit will close the condensate inlet from the pressure relief chamber into the control unit.→ The measuring chamber is supplied with auxiliary air at timed intervals.→ The condensate is passed into the filter cartridges. This takes several minutes.→ The status LED STATUS BAR flashes blue and indicates the remaining time until the filter cartridge needs to be changed. <table><tr><th>Status LED STATUS BAR</th><th>Remaining time</th></tr><tr><td>4/4 of the length flashes blue</td><td>100%</td></tr><tr><td>3/4 of the length flashes blue</td><td>75%</td></tr><tr><td>2/4 of the length flashes blue</td><td>50%</td></tr><tr><td>1/4 of the length flashes blue</td><td>25%</td></tr></table> <p>When the remaining time has elapsed, the discharge process stops.</p> <ul style="list-style-type: none">→ The status LED STATUS BAR lights up blue.→ The measuring chamber is no longer pressurized 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%
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%										
	<p>4. Turn the end caps on the filter cartridges anticlockwise and remove them.</p> <ul style="list-style-type: none">→ Put the end caps to the side, as they will be screwed back on the new filter cartridges.										

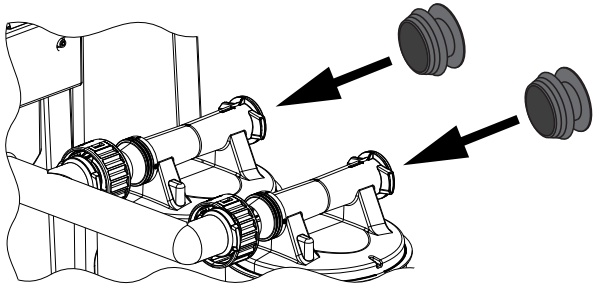

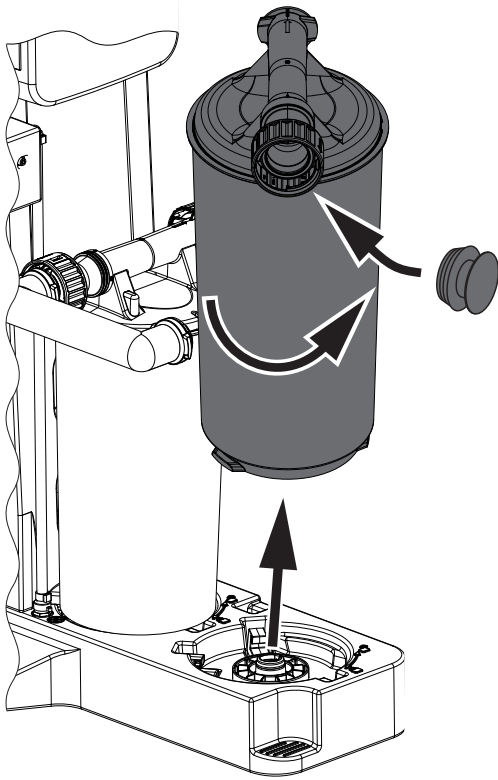
Image	Description / explanation
	<p>5. Seal the filter cartridges with the plugs.</p>
<p>CAUTION</p> 	<p>Lifting heavy load!</p> <p>Lifting the full filter cartridge in an ergonomically incorrect manner can result in personal injury.</p> <ul style="list-style-type: none"> • Lift the full cartridge in an ergonomically correct manner close to your body. • Use two people to lift the full cartridge over obstacles.
	<p>6. Turn the bayonet catch of the filter cartridges anticlockwise and pull it off the connection at the measuring chamber outlet.</p> <p>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.</p> <p>8. Lift the filter cartridge out of the collector and dispose of it properly (see section “14. Disposal” on page 122).</p> <p>9. Check the sealing surfaces of the connection at the measuring chamber outlet for damage and dirt.</p> <ul style="list-style-type: none"> → Remove any dirt. → If there is any damage, contact manufacturer’s Service (see section “1.1 Contact” on page 5).


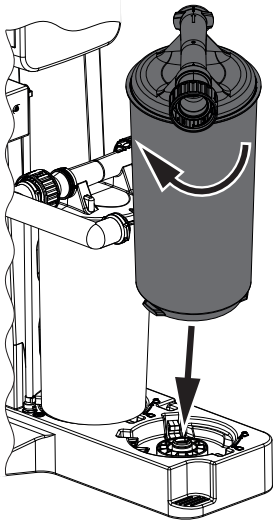
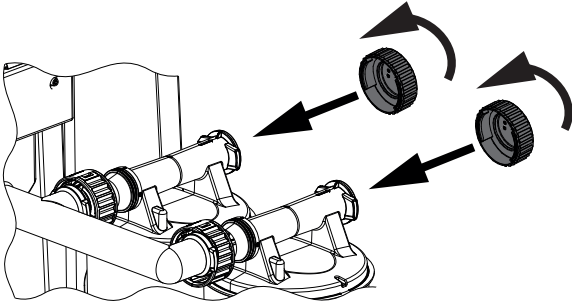
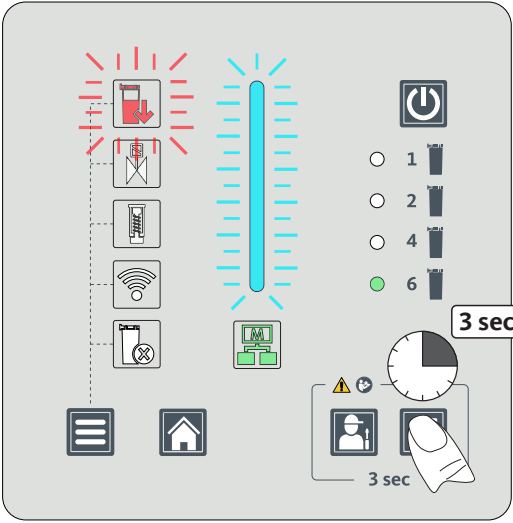
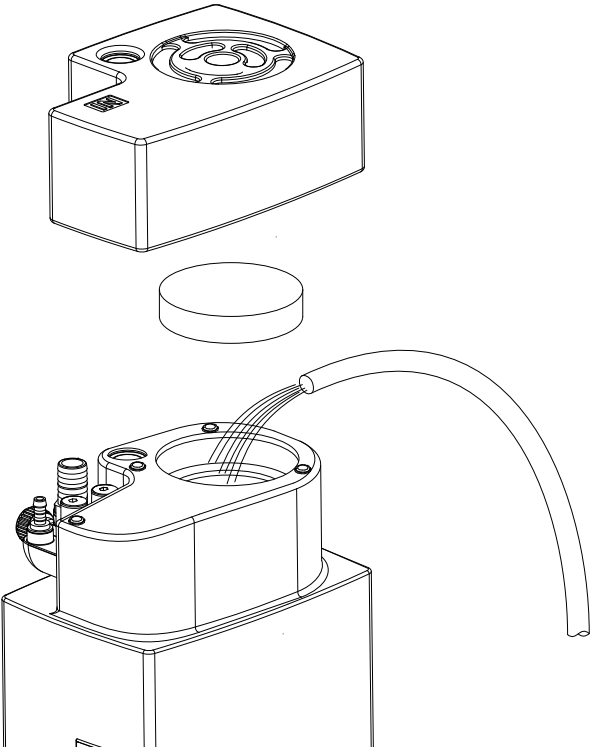
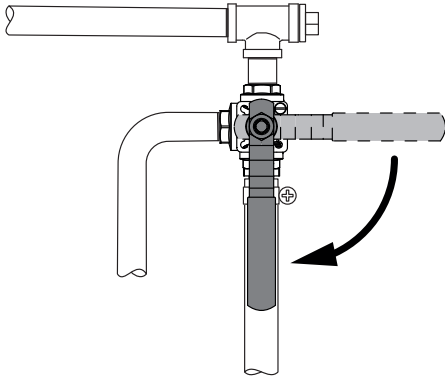


Image	Description / explanation
<p>NOTICE</p> 	<p>Filter cartridge insertion!</p> <p>Use of incorrect filter cartridges or incorrect insertion of the filter cartridges can cause damage or leakage to the collector and the filter cartridges.</p> <ul style="list-style-type: none"> Before inserting the filter cartridges, check to make sure that the filter cartridge is the right one for the product. <ul style="list-style-type: none"> → The color of the cap at the bottom of the filter cartridge must be identical to the color of the cap in the collector. Insert the filter cartridges vertically and carefully into the collector.
	<p>10. Insert the first filter cartridge into the mount on the foot with the bayonet mount facing the measuring chamber outlet.</p> <p>11. Turn the filter cartridge clockwise all the way.</p> <p>12. Align the connecting filter cartridge's connection with the connection on the measuring chamber outlet.</p> <p>13. Slide the bayonet mount over the connection and turn it clockwise as far as it will go.</p> <p>14. Insert the other filter cartridges into the holders and connect them together using the bayonet catches.</p>
	<p>15. Place the end caps on the last filter cartridge in each row and turn them clockwise all the way.</p>

Image	Description / explanation
	<p>16. After replacing the filter cartridges, press and hold down the Enter button for 3 seconds.</p> <ul style="list-style-type: none"> → The piston in the control unit will open the condensate inlet from the pressure relief chamber into the control unit. → The status LED STATUS BAR lights up green. → The display will switch to the START MENU screen.
	<p>17. Remove the cover from the pressure relief chamber and remove the activated carbon mat from the vent of the pressure relief chamber.</p> <p>18. Dispose of the activated carbon mat properly (see section “14. Disposal” on page 122).</p> <p>19. Lift the filter cartridge out of the collector and dispose of it properly (see section “14. Disposal” on page 122).</p> <p>20. Fill the iPOWS with tap water via the vent.</p> <ul style="list-style-type: none"> → Stop filling as soon as the control unit performs a discharge operation. <p>21. Insert the new activated carbon mat into the vent of the pressure relief chamber and place the cover on the pressure relief chamber.</p>
	<p>22. Slowly open the condensate feed.</p> <p>23. Check all hoses and connections for leaks (see section “10.3.7 Leakage test” on page 109).</p>

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.

Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none">Allen key, 2.5 mm	<ul style="list-style-type: none">SOLENOID VALVES Service-UnitAbsorbent materials	To be worn at all times: 

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

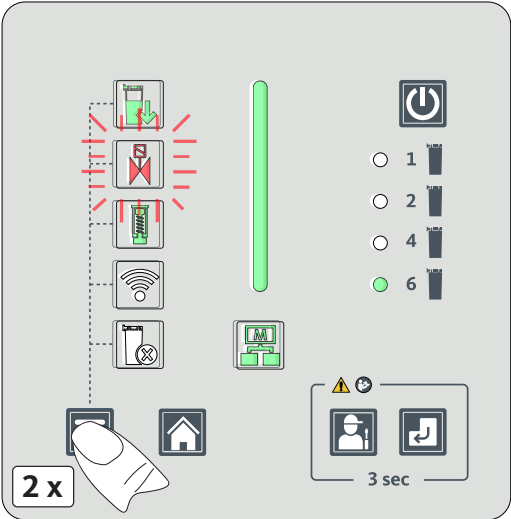
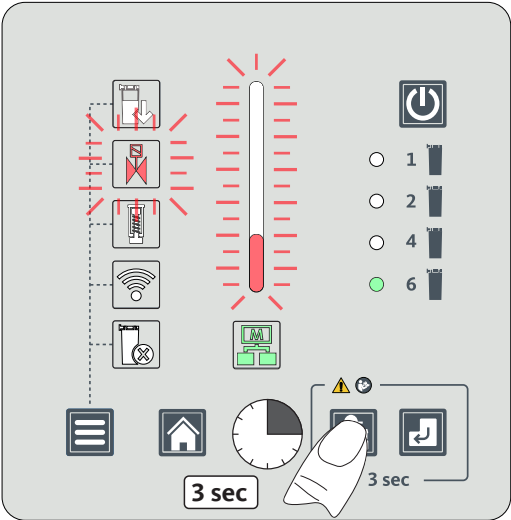
Image	Description / explanation
	1. Press the menu button twice.
	<p>The current status of the solenoid valves is displayed.</p> <ul style="list-style-type: none">→ The status LED SOLENOID VALVES flashes red.→ The status LED STATUS BAR lights up red. <p>2. Press and hold the Service button for 3 seconds.</p>

Image	Description / explanation										
	<p>The discharge process is started.</p> <ul style="list-style-type: none">→ The piston in the control unit will close the condensate inlet from the pressure relief chamber into the control unit.→ The measuring chamber is supplied with auxiliary air at timed intervals.→ The condensate is passed into the filter cartridges. This takes several minutes.→ The status LED STATUS BAR flashes blue and indicates the remaining time until the service. <table><tr><th>Status LED STATUS BAR</th><th>Remaining time</th></tr><tr><td>4/4 of the length flashes blue</td><td>100%</td></tr><tr><td>3/4 of the length flashes blue</td><td>75%</td></tr><tr><td>2/4 of the length flashes blue</td><td>50%</td></tr><tr><td>1/4 of the length flashes blue</td><td>25%</td></tr></table> <p>When the minimum filling level in the measuring chamber is reached, the discharge process stops.</p> <ul style="list-style-type: none">→ The piston in the control unit will open the condensate inlet from the pressure relief chamber into the control unit.→ The status LED STATUS BAR is permanently lit blue.→ The measuring chamber is no longer pressurized 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%
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%										
	<ol style="list-style-type: none">3. Cut off the compressed air supply and secure it against unintentional opening.4. Carefully depressurize the compressed air hose at the compressed air connection.5. Disassemble the compressed air hose.										

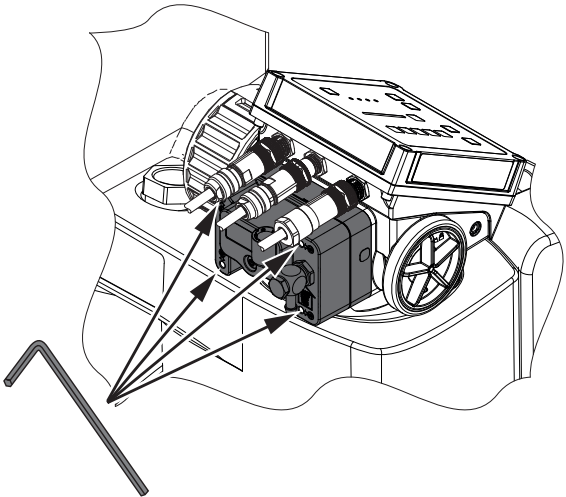
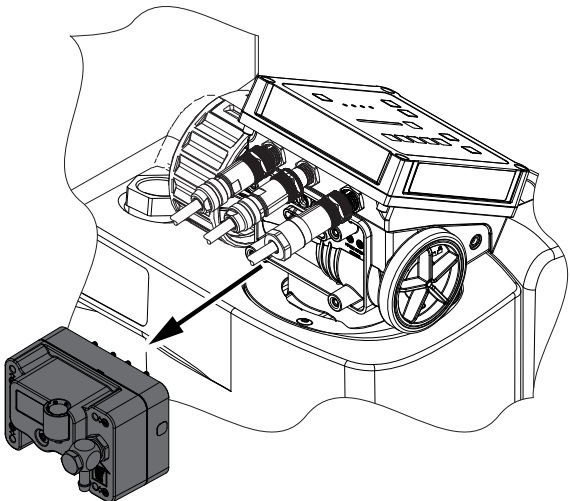
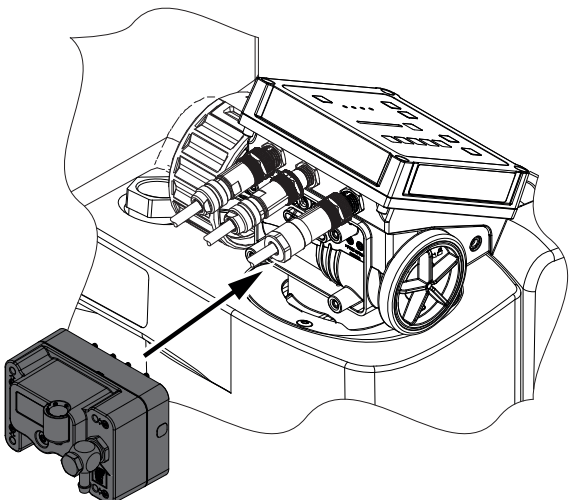
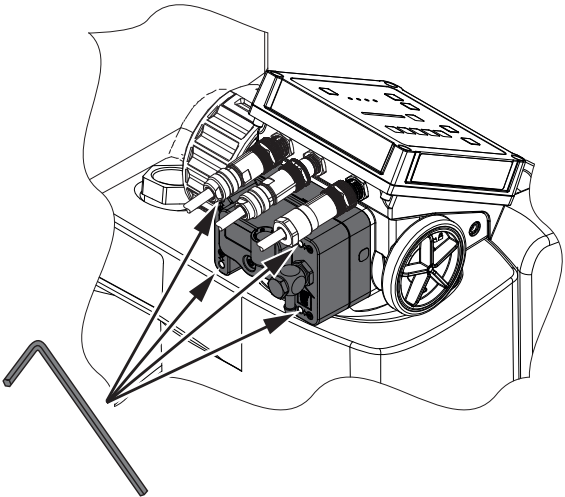
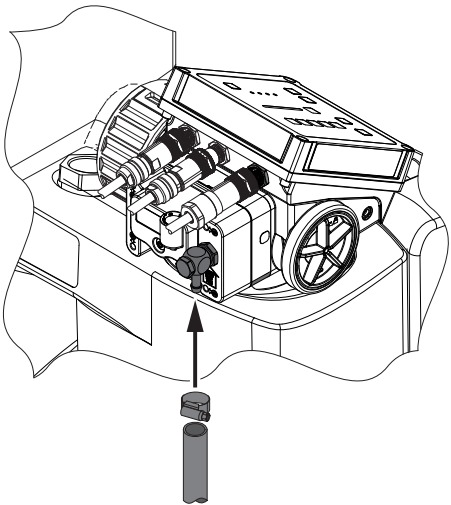
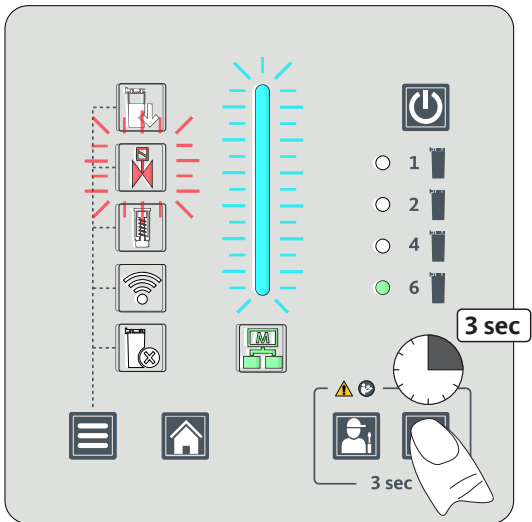


Image	Description / explanation
	<p>6. Loosen the 4 hexagon socket screws until the SOLENOID VALVES Service-Unit can be removed from the control unit.</p> <p>→ The 4 hexagon socket screws are secured in such a way that they cannot fall out from the Service-Unit.</p>
	<p>7. Remove the SOLENOID VALVES Service-Unit.</p> <p>8. Dispose of the removed SOLENOID VALVES Service-Unit properly (see section “14. Disposal” on page 122).</p> <p>9. Check the sealing surfaces in the control unit for damage and dirt.</p> <p>→ Remove any dirt.</p> <p>→ If there is any damage, contact manufacturer’s Service (see section “1.1 Contact” on page 5).</p>
	<p>10. Mount the new SOLENOID VALVES Service-Unit and secure it with the 4 hexagon socket screws.</p>

Image	Description / explanation
	<p>11. Tighten the 4 hexagon socket screws with a tightening torque of $1 \text{ Nm} \pm 0.1 \text{ Nm}$ ($0.74 \text{ ft-lb} \pm 0.74 \text{ ft-lb}$).</p>
	<p>12. Install the compressed air connection.</p> <p>13. Tighten the hose clamp hand-tight.</p> <p>14. Restore the compressed air supply.</p>
	<p>15. After completing the service on the solenoid valves, press and hold down the Enter button for 3 seconds.</p> <ul style="list-style-type: none"> → 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.

Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none">Combination pliers with rubber-covered handles	<ul style="list-style-type: none">PISTON Service-UnitAbsorbent materials	To be worn at all times: 

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

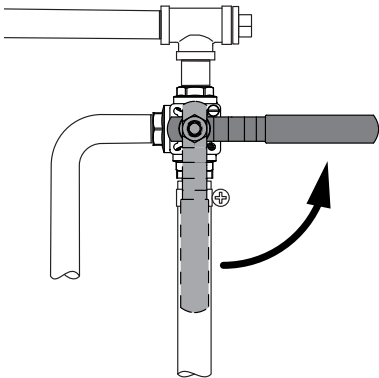
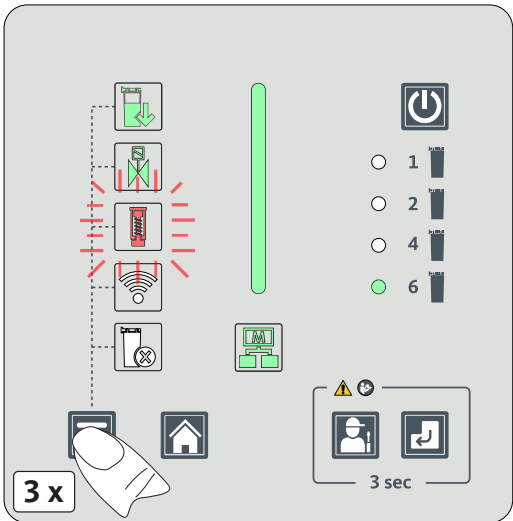
Image	Description / explanation
	<ol style="list-style-type: none">Cut off the condensate feed to the iPOWS and divert the condensate into a separate container.
	<ol style="list-style-type: none">Press the menu button three times.

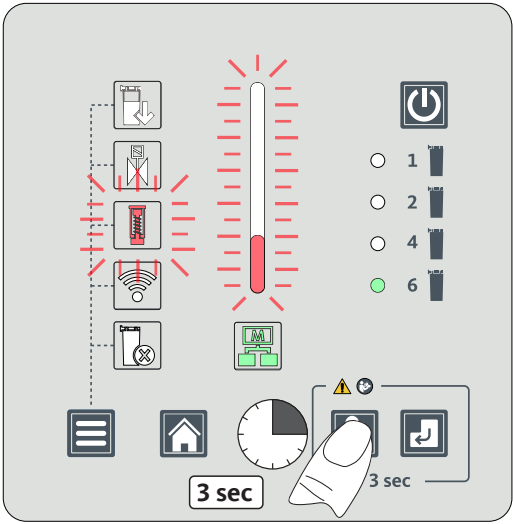
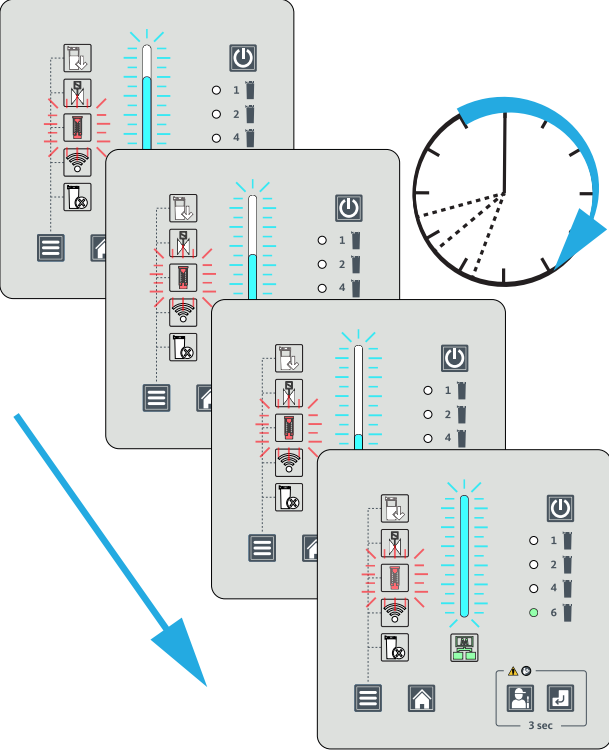
Image	Description / explanation										
	<p>The current status of the piston is displayed.</p> <ul style="list-style-type: none"> → The status LED PISTON flashes red. → The status LED STATUS BAR lights up red. <p>3. Press and hold the Service button for 3 seconds.</p>										
	<p>The discharge process is started.</p> <ul style="list-style-type: none"> → The piston in the control unit will close the condensate inlet from the pressure relief chamber into the control unit. → The measuring chamber is supplied with auxiliary air at timed intervals. → The condensate is passed into the filter cartridges. This takes several minutes. → The status LED STATUS BAR flashes blue and indicates the remaining time until the service. <table border="1" data-bbox="790 1227 1436 1444"> <thead> <tr> <th>Status LED STATUS BAR</th><th>Remaining time</th></tr> </thead> <tbody> <tr> <td>4/4 of the length flashes blue</td><td>100%</td></tr> <tr> <td>3/4 of the length flashes blue</td><td>75%</td></tr> <tr> <td>2/4 of the length flashes blue</td><td>50%</td></tr> <tr> <td>1/4 of the length flashes blue</td><td>25%</td></tr> </tbody> </table> <p>When the minimum filling level in the measuring chamber is reached, the discharge process stops.</p> <ul style="list-style-type: none"> → The piston in the control unit will open the condensate inlet from the pressure relief chamber into the control unit. → The status LED STATUS BAR is permanently lit blue. → The measuring chamber is no longer pressurized 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%
Status LED STATUS BAR	Remaining time										
4/4 of the length flashes blue	100%										
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1/4 of the length flashes blue	25%										

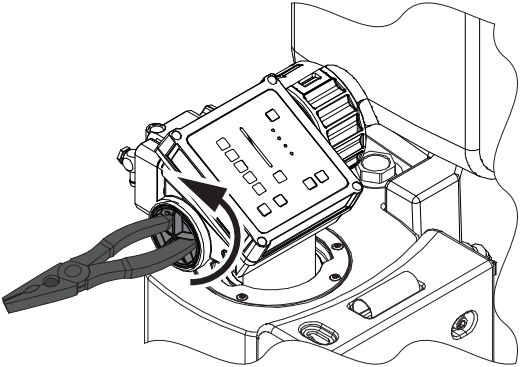
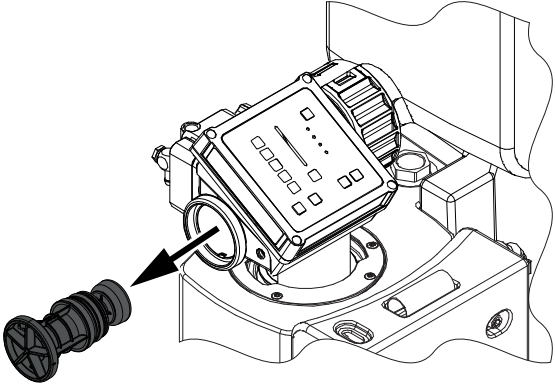
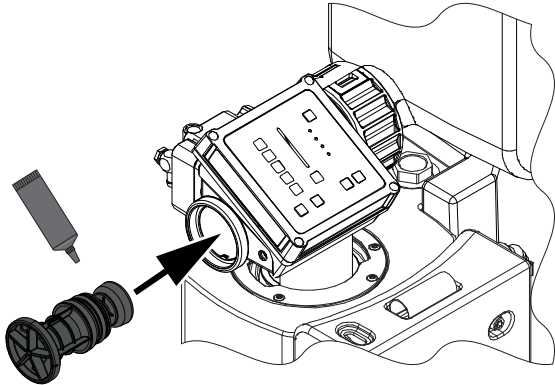
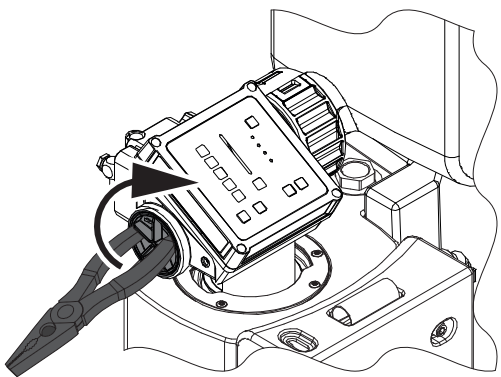
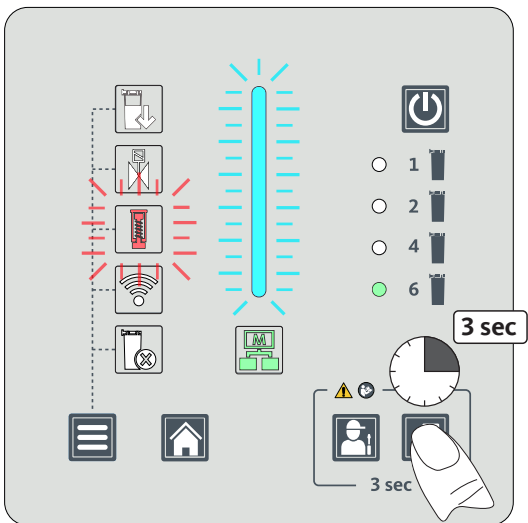


Image	Description / explanation
	<p>4. Loosen the piston cap anticlockwise and unscrew it completely.</p> <p>→ Insert the handle ends of a pair of linesman pliers into the star-shaped handle of the piston cap and carefully turn it anticlockwise.</p>
	<p>5. Pull out the complete PISTON Service-Unit from the control unit.</p> <p>→ Collect and dispose of leaked or spilled condensate in accordance with the locally applicable legal requirements and regulations.</p> <p>→ Dispose of the removed PISTON Service-Unit properly (see section “14. Disposal” on page 122).</p> <p>6. Check the sealing surfaces in the control unit for damage and dirt.</p> <p>→ Remove any dirt.</p> <p>→ If there is any damage, contact manufacturer’s Service (see section “1.1 Contact” on page 5).</p>
	<p>7. Lightly lubricate the O-rings of the new PISTON Service-Unit with the Vaseline supplied.</p> <p>8. Insert the new PISTON Service-Unit in the control unit.</p>

Image	Description / explanation
	<p>9. Screw in the piston cap clockwise as far as it will go.</p> <ul style="list-style-type: none"> → Insert the handles of a pair of linesman pliers into the star-shaped handle of the piston cap and carefully turn clockwise.
	<p>10. After completing the service on the piston, press and hold down the Enter button for 3 seconds.</p> <ul style="list-style-type: none"> → The status LED STATUS BAR lights up green. → The display will switch to the START MENU screen. <p>11. Restore the condensate feed from the condensate collecting line to the pressure relief chamber.</p>


10.3.5 Cleaning

10.3.5.1 Warning notices

CAUTION	Improper cleaning and use of incorrect cleaning agents!
	<p>Improper cleaning and the use of incorrect cleaning agents could result in slight injuries and health or property damage.</p> <ul style="list-style-type: none"> • Only use warm water to remove stubborn dirt or deposits. • Do not use abrasive or aggressive cleaning agents or solvents that could damage the external coating (e.g. labels, type plate, corrosion protection, etc.). • Do not clean or operate the device with hard or pointed implements. • Use an antistatic, damp cloth for external cleaning. • Replace illegible product labels (pictograms, designations) promptly. • Flush the product only with non-pressurized water.
NOTICE	Local hygiene regulations!
	In addition to the cleaning instructions listed, any regionally applicable or company-specific hygiene regulations must be observed.

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.

Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none"> • No tool necessary 	<ul style="list-style-type: none"> • Warm water • Cotton cloth or disposable cloth 	<p>To be worn at all times:</p> 

Preparatory work	
1.	The iPOWS has been decommissioned.
2.	The assembly unit to be cleaned has been dismantled.
3.	Bring the assembly unit to be cleaned to a washing station with an integrated oil separator.

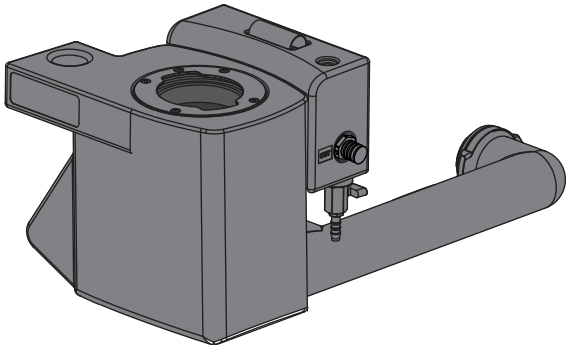
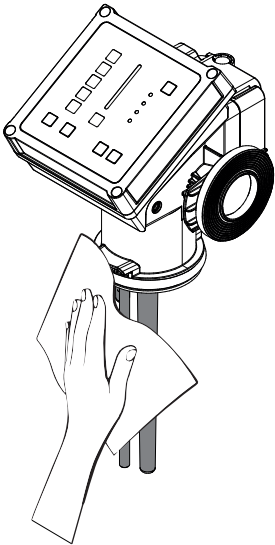
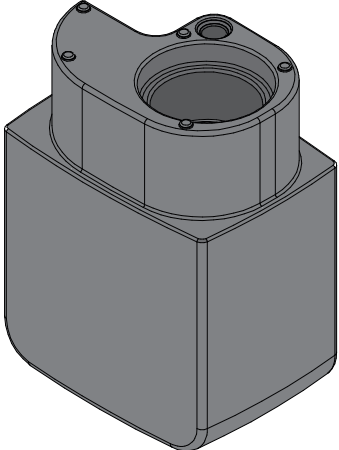
Image	Description / explanation
	<p>Clean measuring chamber</p> <p>Flush the measuring chamber with warm water.</p>

Image	Description / explanation
	<p>Clean control unit</p> <p>Carefully wipe clean the sensor tubes of the following sensors with a damp cloth.</p> <ul style="list-style-type: none"> • Sensor High Level Alarm (HLA) • Sensor High Level (HL) • Sensor Low Level (LL)
	<p>Clean pressure relief chamber</p> <p>Flush the pressure relief chamber with warm water.</p>

Follow-up work	
1.	Dry the cleaned assembly with a cotton cloth.
2.	Transport the cleaned and dried assembly unit to the place of installation of the iPOWS and mount it.
3.	Put the iPOWS back into operation (see section “8. Commissioning” on page 72).

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 **iPOWS** is completely filled with water.

1. Fill the **iPOWS** with tap water through the vent until the control unit performs a discharge operation.
2. Check all hose and other connections for leaks.

Symptoms	Measure
Hose connection leaking	<ul style="list-style-type: none">• Tighten the hose clamp.• Replace hardened hose and respective hose clamps.
Bayonet catch leaking	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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

manufacturer's customer service requires the following data for an inquiry or order:

- Product name and size (see the type plate)
- Serial number (see type plate)
- Material number and designation of the expansion module (see type plate)
- Material number and designation of the accessory
- Desired number of accessories to be supplied

The contact information for the relevant manufacturer's Service team is listed in section "1.1 Contact" on page 5.

11.2 Maintenance

Designation	Material number
Filter cartridge, including two plastic plugs	Upon request
SOLENOID VALVES Service-Unit	Upon request
PISTON Service-Unit	Upon request
Activated carbon mat, pressure relief chamber	Upon request

11.3 Accessories

Designation	Material number
iPOWS 550/iPOWS 1100 spill protection basin 900 mm x 800 mm (35.43 in x 31.5 in)	Upon request
iPOWS 3300 spill protection basin 1100 mm x 900 mm (43.31 in x 35.43 in)	Upon request
iPOWS 3300 spill protection basin 1400 mm x 900 mm (55.12 in x 35.43 in)	Upon request
High pressure relief chamber	Upon request
Expansion kit, iPOWS 550 to iPOWS 1100	Upon request
Expansion kit, iPOWS 1100 to iPOWS 2200	Upon request
Expansion kit, iPOWS 3300 to iPOWS 3300	Upon request

11.4 Spare parts




Designation	Material number
Pressure relief chamber 25 l (6.6 gal)	Upon request
Cover, pressure relief chamber	Upon request
Condensate inlet, rotatable, including fixing screw	Upon request
2.5 l (0.66 gal) iPOWS 550 measuring chamber, including clean water tank	Upon request
5 l (1.32 gal), iPOWS 1100 ... 3300 measuring chamber, including clean water tank	Upon request
Foot	Upon request
Collector 1 x 1 filter cartridge	Upon request
Collector 1 x 2 filter cartridges	Upon request
Collector 2 x 2 filter cartridges	Upon request
Expansion module, 1 x 2 filter cartridges, iPOWS 3300	Upon request
Control unit, Modbus RS485, complete	Upon request
Reference turbidity tube	Upon request
Elbow connector with union nut, reducer fitting and flat gasket	Upon request
Fixing screw	Upon request
Riser duct	Upon request
End cap, cartridges	Upon request
Locking device, foot	Upon request
Locking unit, expansion module	Upon request
Connecting pipe, expansion modules	Upon request
Seal kit, iPOWS-550 ... 3300	Upon request
Seal kit, control unit	Upon request
Level indicator	Upon request
Plug for collector	Upon request

12. Decommissioning

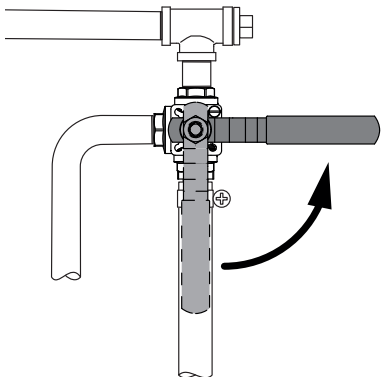
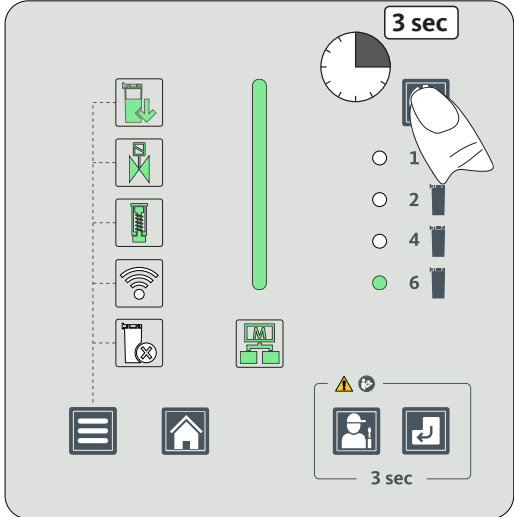
The **iPOWS** must be removed from service for prolonged periods of non-operation, e.g.:

- 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	Pressurized system!
	<p>The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.</p> <ul style="list-style-type: none"> • Establish a safe area around the work area before starting work. • Before starting work, bleed the pressurized system and secure it against unintentional pressurization.
DANGER	Electrical voltage!
	<p>Components in contact with electrical voltage may pose a mortal danger or the danger of severe injuries. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> • Establish a safe area around the work area before starting work. • Before starting work, de-energize the product and the accessories and lock and tag them out.
WARNING	Insufficient qualification!
	<p>If personnel have insufficient qualifications, this may result in accidents, personal injury and property damage as well as operating disruptions while working on the product or its accessories.</p> <ul style="list-style-type: none"> • All work on the product and accessories may only be carried out by professional technicians - Service.

12.2 Decommissioning work

Image	Description / explanation
	<ol style="list-style-type: none"> 1. Cut off the condensate feed to the iPOWS and divert the incoming condensate into a separate container.
	<ol style="list-style-type: none"> 2. Switch off the control unit. Press and hold down the ON/OFF button for 3 seconds. <ul style="list-style-type: none"> → The control unit 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

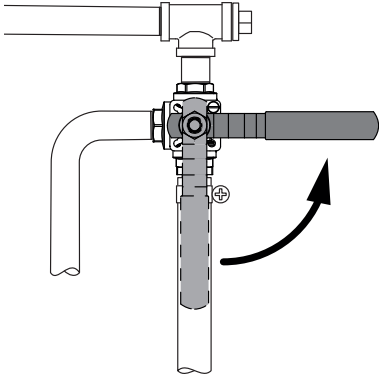
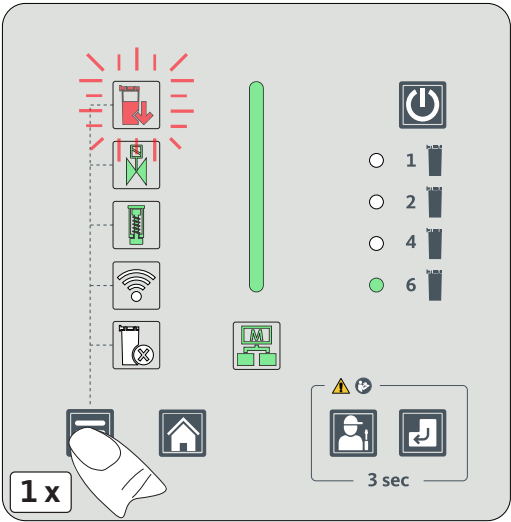
13.1 Warning notices

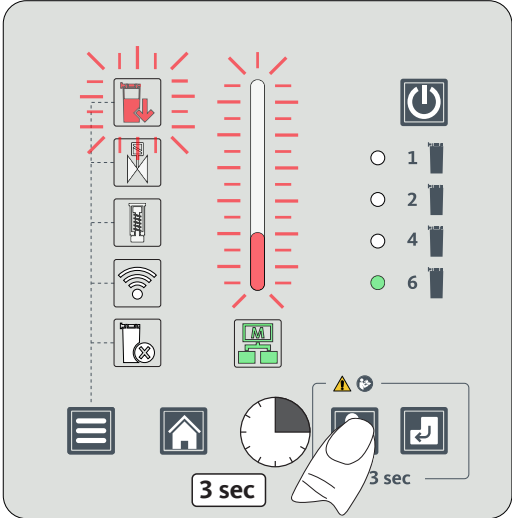
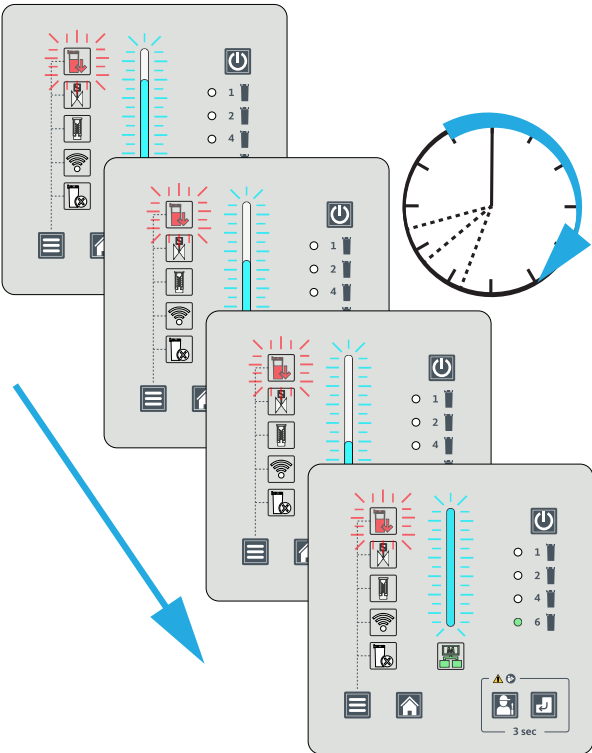
DANGER	Pressurized system!
	<p>The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.</p> <ul style="list-style-type: none"> • Establish a safe area around the work area before starting work. • Before starting work, bleed the pressurized system and secure it against unintentional pressurization.
DANGER	Electrical voltage!
	<p>Components in contact with electrical voltage may pose a mortal danger or the danger of severe injuries. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> • Establish a safe area around the work area before starting work. • Before starting work, de-energize the product and the accessories and lock and tag them out.
WARNING	Insufficient qualification!
	<p>If personnel have insufficient qualifications, this may result in accidents, personal injury and property damage as well as operating disruptions while working on the product or its accessories.</p> <ul style="list-style-type: none"> • All work on the product and accessories may only be carried out by professional technicians - Service.

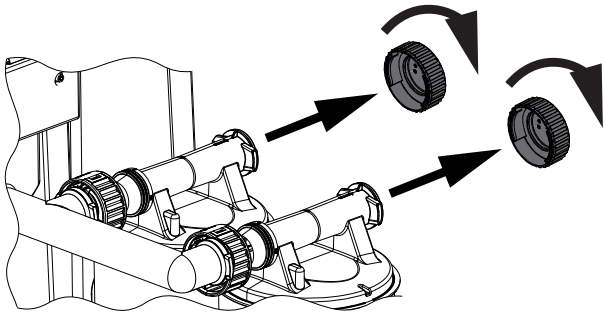
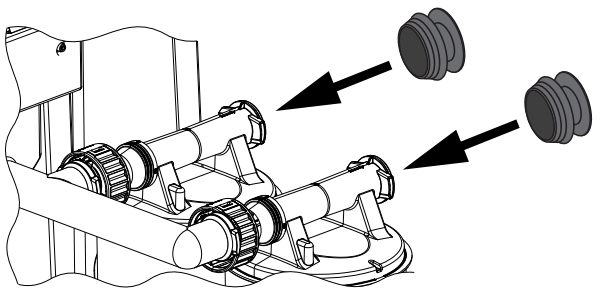
13.2 Disassembly work


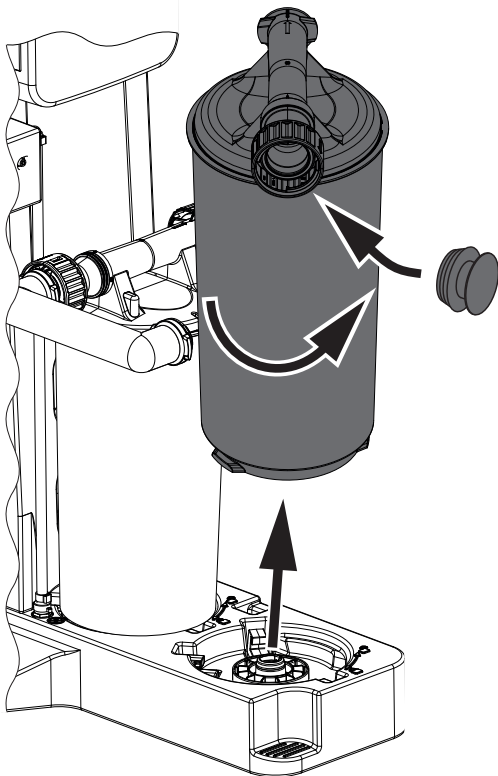
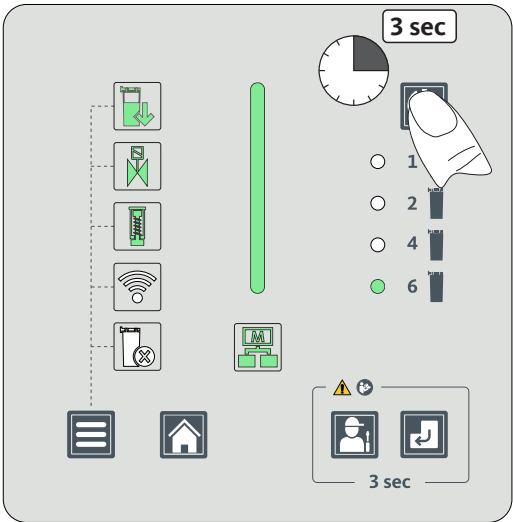
The following requirements must be fulfilled to carry out disassembly work and preparatory work must be completed.

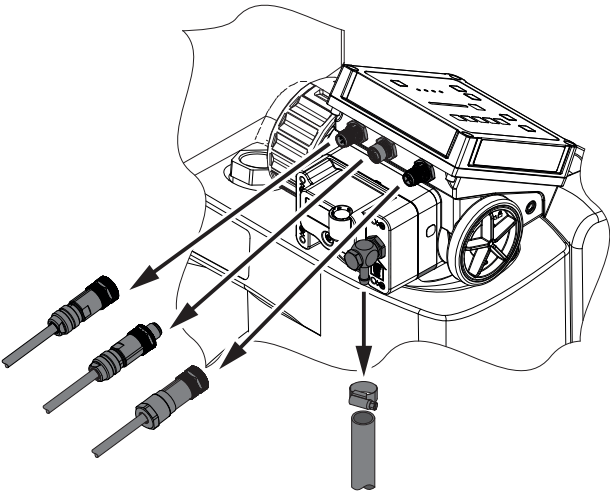
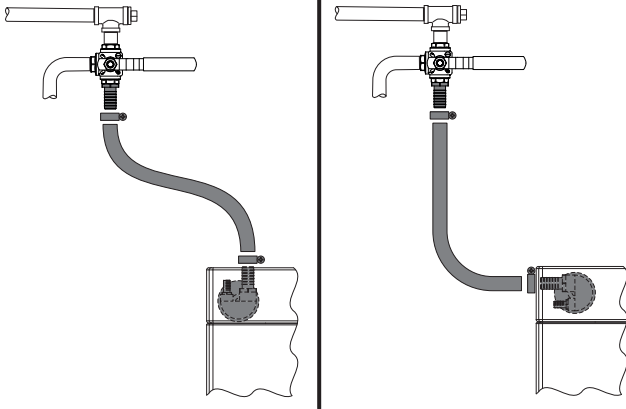
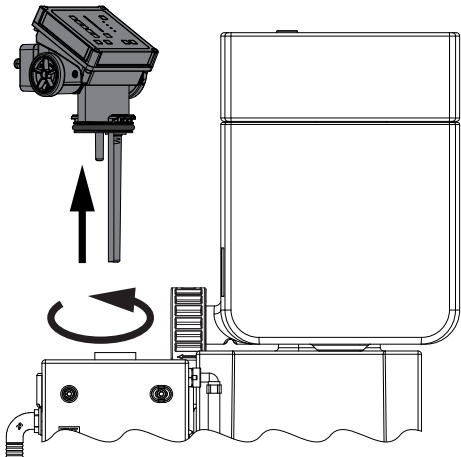
Preconditions		
Tool	Material	Protective equipment
<ul style="list-style-type: none">Adjustable wrenchWater pump pliers	<ul style="list-style-type: none">No material necessary	To be worn at all times: 

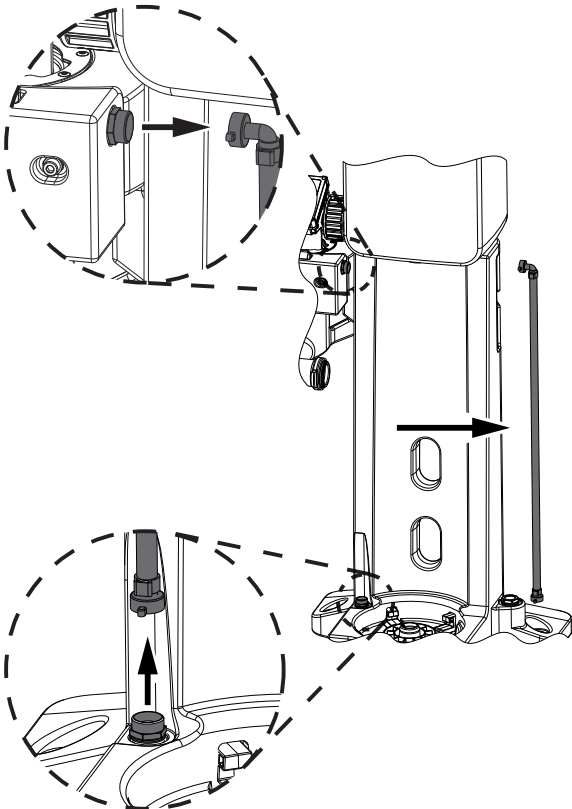
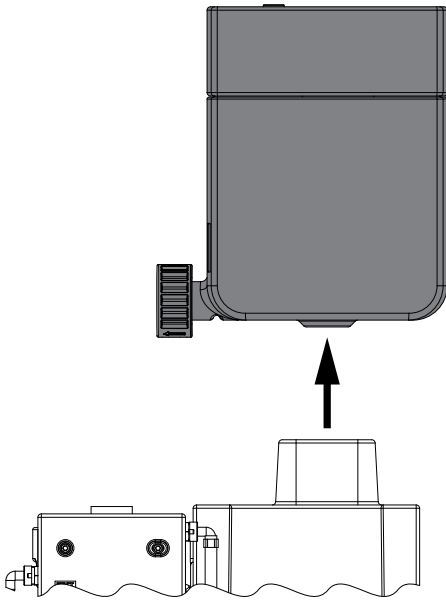
Disassembly work	
Image	Description / explanation
	<ol style="list-style-type: none">Cut off the condensate feed to the iPOWS and divert the incoming condensate into a separate container.
	<ol style="list-style-type: none">Press the menu button once.

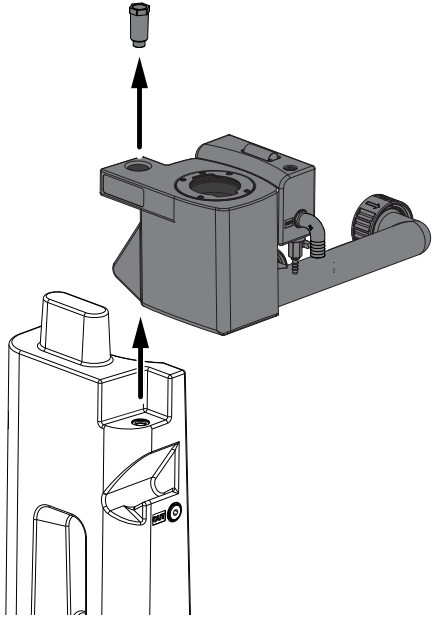
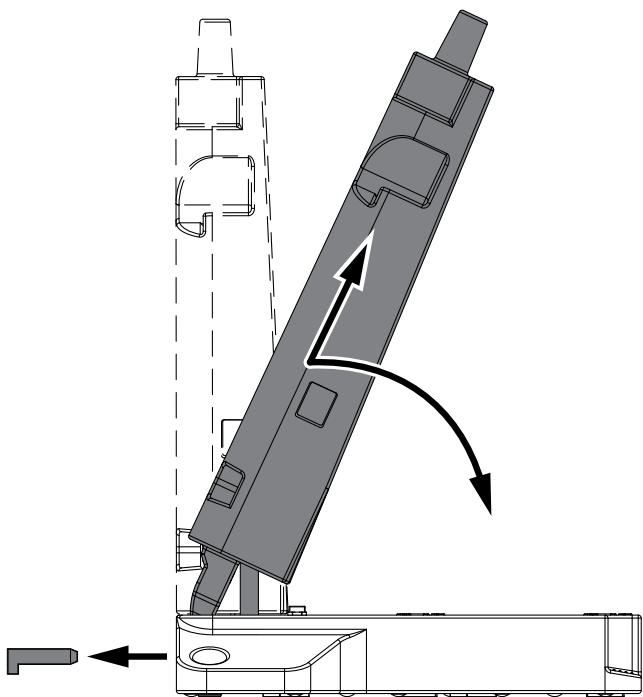
Disassembly work											
Image	Description / explanation										
	<p>The current status of the filter cartridges is displayed.</p> <ul style="list-style-type: none">→ The status LED FILTER CARTRIDGES will flash red.→ The status LED STATUS BAR lights up red. <p>3. Press and hold the Service button for 3 seconds.</p>										
	<p>The discharge process is started.</p> <ul style="list-style-type: none">→ The piston in the control unit will close the condensate inlet from the pressure relief chamber into the control unit.→ The measuring chamber is supplied with auxiliary air at timed intervals.→ The condensate is passed into the filter cartridges. This takes several minutes.→ The status LED STATUS BAR flashes blue and indicates the remaining time until the filter cartridge needs to be removed. <table><tr><th>Status LED STATUS BAR</th><th>Remaining time</th></tr><tr><td>4/4 of the length flashes blue</td><td>100%</td></tr><tr><td>3/4 of the length flashes blue</td><td>75%</td></tr><tr><td>2/4 of the length flashes blue</td><td>50%</td></tr><tr><td>1/4 of the length flashes blue</td><td>25%</td></tr></table> <p>When the remaining time has elapsed, the discharge process stops.</p> <ul style="list-style-type: none">→ The status LED STATUS BAR lights up blue.→ The measuring chamber is no longer pressurized 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%
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%										

Disassembly work	
Image	Description / explanation
	<p>4. Turn the end caps on the filter cartridges anticlockwise and remove them.</p> <p>→ Dispose of the end caps properly (see section “14. Disposal” on page 122).</p>
	<p>5. Seal the filter cartridges with the plugs.</p>

Disassembly work	
Image	Description / explanation
<p>CAUTION</p>  <p>Lifting heavy load!</p> <p>Lifting the full filter cartridge in an ergonomically incorrect manner can result in personal injury.</p> <ul style="list-style-type: none"> • Lift the full cartridge in an ergonomically correct manner close to your body. • Use two people to lift the full cartridge over obstacles. 	
	<ol style="list-style-type: none"> 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 122).
	<ol style="list-style-type: none"> 9. Switch off control unit <ul style="list-style-type: none"> → Press and hold down the ON/OFF button for 3 seconds. → The control unit 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 depressurize the compressed air hose at the compressed air connection.




Disassembly work	
Image	Description / explanation
	<p>12. Cut off the power supply and lock and tag it out.</p> <p>13. Loosen the union nut of the power supply cable on the control unit anticlockwise and remove it from the connection.</p> <p>14. Loosen the union nuts of the Modbus wiring on the control unit anticlockwise and remove them from the connection.</p> <p>15. Disassemble the compressed air hose.</p>
	<p>16. Remove the hose between the tapping point and the pressure relief chamber.</p>
	<p>17. Disassemble and clean the control unit (see section “10.3.5 Cleaning” on page 107).</p>

Disassembly work	
Image	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 107).

Disassembly work	
Image	Description / explanation
	<p>21. Disassemble and clean the measuring chamber (see section “10.3.5 Cleaning” on page 107).</p>
	<p>22. Remove the locking device from the foot.</p> <p>23. Remove the foot from the collector. Make sure to tilt the foot in the direction of the filter cartridge mount.</p> <p>24. Empty and clean collector.</p> <p>25. Dispose of the dismantled components properly (see section “14. Disposal” on page 122).</p>

14. Disposal

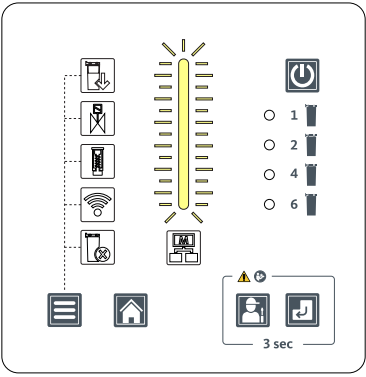
The product and accessories must be properly disposed of at the end of their useful life, e.g. by a specialized company. Materials such as glass, plastic, and some chemical compounds can be recycled or reused.

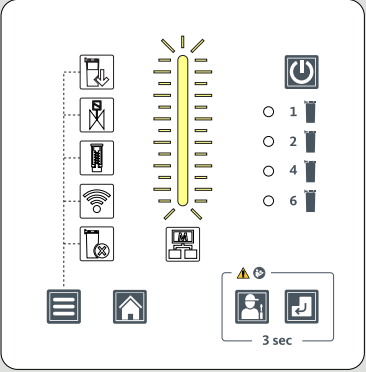
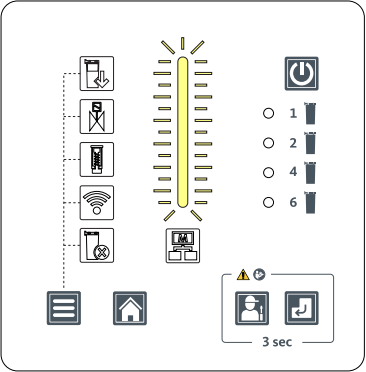
NOTICE	Improper disposal!
	<p>The improper disposal of parts, components, operating and auxiliary materials, and cleaning products can cause environmental damage.</p>
	<ul style="list-style-type: none"> • All components, assemblies, operating, auxiliary materials and cleaning agents must be disposed of appropriately and according to regional statutory specifications and provisions. • Dispose of electrical and electronic components via a specialist disposal company or return them to manufacturer's. • In case of doubt, consult a regional disposal company before disposal.
NOTICE	Inappropriate storage.
	<p>The improper storage of parts, components, operating materials and auxiliary materials, as well as cleaning media, can cause environmental damage.</p>
	<ul style="list-style-type: none"> • Store all components, parts, operating and auxiliary materials as well as cleaning media properly and in accordance with all locally applicable regulations and standards. • Store used filter cartridges in one spill protection basin only.
INFORMATION	Disposal of electrical and electronic products
	<p>Electrical and electronic products (EEE) contain materials, components and substances that can be hazardous and harmful to human health and the environment if the waste from electrical and electronic products (WEEE) is not properly disposed of.</p> <p>Electrical and electronic equipment is marked with the crossed-out rubbish bin symbol. The crossed-out garbage bin symbolizes that electrical and electronic products must be collected separately and not disposed of together with unsorted household waste.</p> <p>For additional information regarding locally applicable laws and regulations concerning recycling electrical and electronic products, contact your local disposal companies or the responsible municipal authority.</p>

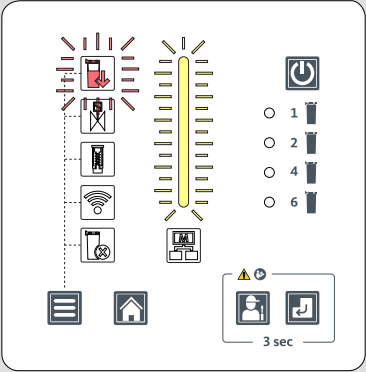
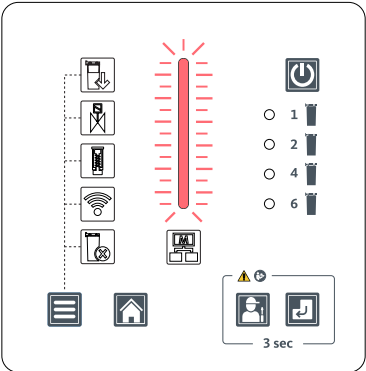
15. Troubleshooting

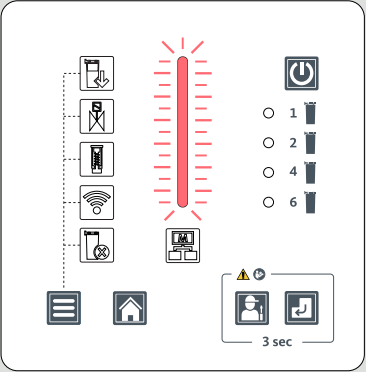
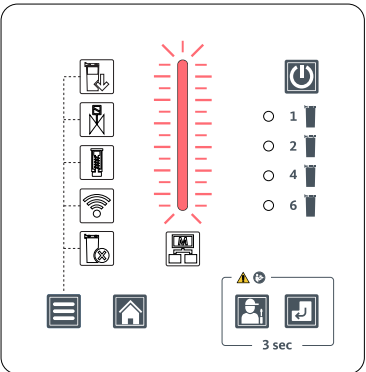
Read the error message via the WLAN function (see section “9.2.6 Activating the WLAN” on page 84) or the Modbus function (see section “3.5 Modbus function” on page 24).

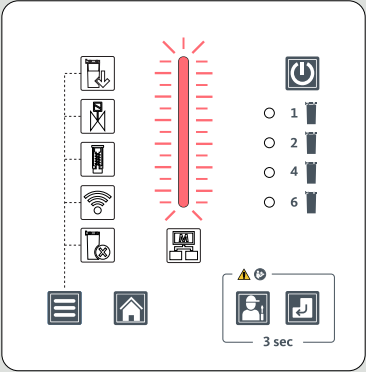
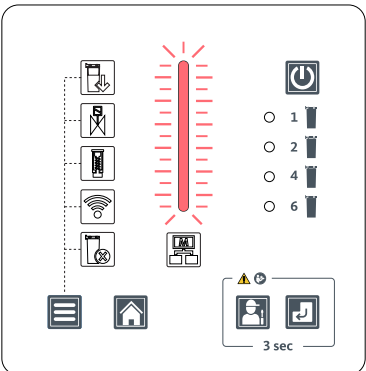
In the event of any malfunctions which are not described, malfunctions which cannot be eliminated or questions, contact manufacturer’s customer service, see “1.1 Contact” on page 5.

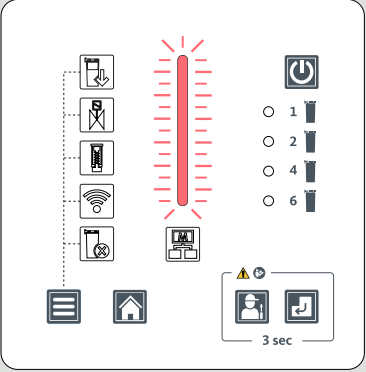
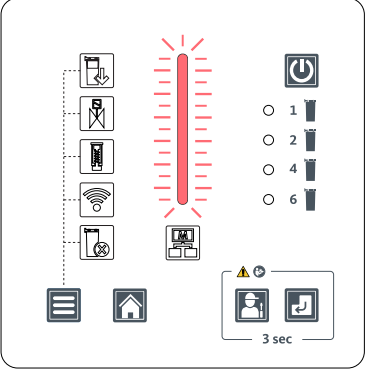
Symptoms	Possible cause	Measure
WARNING 1 High Level (HL) sensor remains covered for too long after a discharge process has been started 	1. Soiled control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	2. No compressed air supply	Switch on compressed air
	3. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 42)
	4. Filling level far above the sensor after start of control unit	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge operation” on page 87)
	5. Filter cartridges are clogged	Replace filter cartridges (refer to section “10.3.2 Replace filter cartridges” on page 93)
	6. During the discharge operation, a hissing sound can be heard at the control unit pressure relief valves.	
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 103)
	8. Riser duct clogged	Clean or replace the riser duct

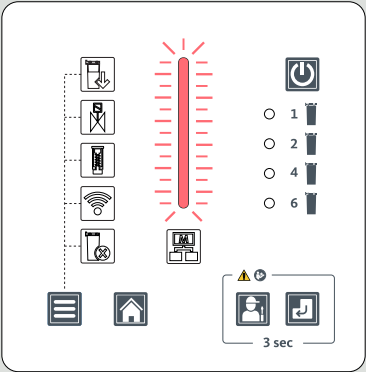
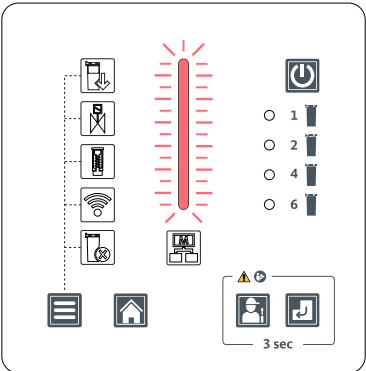
Symptoms	Possible cause	Measure
WARNING 2 High Level Alarm (HLA) sensor remains covered for too long after discharge process has been started 	1. Soiled control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	2. No compressed air supply	Switch on compressed air
	3. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 42)
	4. Filling level far above the sensor after start of control unit	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge operation” on page 87)
	5. Filter cartridges are clogged	Replace filter cartridges (refer to section “10.3.2 Replace filter cartridges” on page 93)
	6. During the discharge operation, a hissing sound can be heard at the control unit pressure relief valves.	
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 103)
	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 control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	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 manufacturer’s Service (see “1.1 Contact” on page 5)

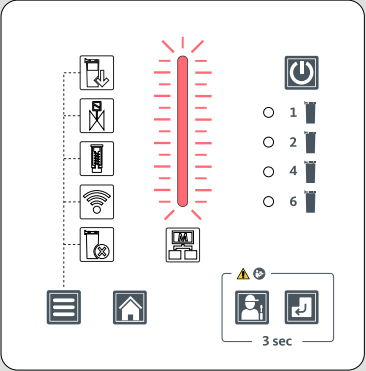
Symptoms	Possible cause	Measure
WARNING 4 Permanently high oil quantity detected in measuring chamber 	1. Filter cartridges can no longer absorb oil 2. Permanently high quantity of oil in the measuring chamber due to a large oil inflow (e.g., oil leaking)	Replace filter cartridges (refer to section "10.3.2 Replace filter cartridges" on page 93) 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 control unit sensors 2. No compressed air supply 3. Excessively low compressed air operating pressure 4. Filling level far above the sensor after start of control unit 5. Filter cartridges are clogged 6. During the discharge operation, a hissing sound can be heard at the control unit pressure relief valves. 7. Piston malfunction 8. Riser duct clogged	Clean the control unit sensors (see section "10.3.5 Cleaning" on page 107) Switch on compressed air Select correct pressure range (see section "4. Technical data" on page 42) Reduce filling level by discharging (see section "9.2.8 Manually starting a discharge operation" on page 87) Replace filter cartridges (refer to section "10.3.2 Replace filter cartridges" on page 93) Remove PISTON Service-Unit and check whether it is working properly (see section "10.3.4 Replacing the piston" on page 103) Clean or replace the riser duct

Symptoms	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 control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	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 42)
	4. Filling level far above the sensor after start of control unit	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge operation” on page 87)
	5. Filter cartridges are clogged	Replace filter cartridges (refer to section “10.3.2 Replace filter cartridges” on page 93)
	6. During the discharge operation, a hissing sound can be heard at the control unit pressure relief valves.	
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 103)
	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 control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	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 42)
	4. Filling level far above the sensor after start of control unit	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge operation” on page 87)
	5. Filter cartridges are clogged	Replace filter cartridges (refer to section “10.3.2 Replace filter cartridges” on page 93)
	6. During the discharge operation, a hissing sound can be heard at the control unit pressure relief valves.	
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 103)
	8. Riser duct clogged	Clean or replace the riser duct

Symptoms	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 control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	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 42)
	4. Filling level far above the sensor after start of control unit	Reduce filling level by discharging (see section “9.2.8 Manually starting a discharge operation” on page 87)
	5. Filter cartridges are clogged	Replace filter cartridges (refer to section “10.3.2 Replace filter cartridges” on page 93)
	6. During the discharge operation, a hissing sound can be heard at the control unit pressure relief valves.	
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 103)
	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 control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	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

Symptoms	Possible cause	Measure
FAULT 6 Low Level (LL) sensor remains covered for too long after a discharge process has been started 	1. Soiled control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	2. Excessively low compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 42)
	3. The minimum compressed air operating pressure is being fallen below during operation	Check compressed air volume
	4. Filter cartridges are clogged	Replace filter cartridges (refer to section “10.3.2 Replace filter cartridges” on page 93)
	5. During the discharge operation, a hissing sound can be heard at the control unit pressure relief valves.	
	6. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 103)
	7. Riser duct clogged	Clean or replace the riser duct
FAULT 7 Low Level (LL) sensor becomes free too quickly during discharge 	1. Soiled control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	2. Excessively high compressed air operating pressure	Select correct pressure range (see section “4. Technical data” on page 42)
	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 99)
	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 103)

Symptoms	Possible cause	Measure
FAULT 8 Oil quantity in the measuring chamber permanently too high 	1. Filter cartridges can no longer absorb oil 2. Very high quantity of oil constantly in the measuring chamber due to a large oil inflow (e.g., oil leaking)	Replace filter cartridges (refer to section "10.3.2 Replace filter cartridges" on page 93) 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 2. Soiled control unit sensors 3. No compressed air supply 4. Excessively low compressed air operating pressure 5. Filling level far above the sensor after start of control unit 6. Filter cartridges are clogged 7. During the discharge operation, a hissing sound can be heard at the control unit pressure relief valves. 8. Piston malfunction 9. Riser duct clogged	Replace filter cartridges (refer to section "10.3.2 Replace filter cartridges" on page 93) Clean the control unit sensors (see section "10.3.5 Cleaning" on page 107) Switch on compressed air Select correct pressure range (see section "4. Technical data" on page 42) Reduce filling level by discharging (see section "9.2.8 Manually starting a discharge operation" on page 87) Replace filter cartridges (refer to section "10.3.2 Replace filter cartridges" on page 93) Remove PISTON Service-Unit and check whether it is working properly (see section "10.3.4 Replacing the piston" on page 103) Clean or replace the riser duct

Symptoms	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 (refer to section “10.3.2 Replace filter cartridges” on page 93)
	2. Soiled control unit sensors	Clean the control unit sensors (see section “10.3.5 Cleaning” on page 107)
	3. Too little pressure	Select correct pressure range (see section “4. Technical data” on page 42)
	4. Pressure drops during discharge	Check compressed air volume
	5. Filter cartridges are clogged	Replace filter cartridges (refer to section “10.3.2 Replace filter cartridges” on page 93)
	6. During the discharge operation, a hissing sound can be heard at the control unit pressure relief valves.	
	7. Piston malfunction	Remove PISTON Service-Unit and check whether it is working properly (see section “10.3.4 Replacing the piston” on page 103)
	8. Riser duct clogged	Clean or replace the riser duct

16. Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total area of 400 square units. The grid is perfectly aligned and covers the entire page without any margins or additional markings.



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