Original installation and operating manual

EN-US

POWS Pure Oil Water Separator

› POWS 400

Document: SPPOWS_400_manual_EN_07_2024
02-826
Issued: July, 2024

Table of contents

1. Information on documentation 4
1.1 Contact 4
1.2 Installation information and operating manual 4

2. Safety 5
2.1 Use 5
2.1.1 Intended use 5
2.1.2 Foreseeable misuse 6
2.2 Responsibility of the operator 6
2.3 Target group and personnel 7
2.4 Explanation of the symbols used 8
2.5 Safety instructions and warning notices 9
2.5.1 Generally applicable safety instructions 9
2.5.2 Safe operation 9
2.5.3 Pressurized systems 10
2.5.4 Transport and storage 10
2.5.5 Installation 11
2.5.6 Maintenance 11
2.5.7 Handling hazardous substances 12
2.5.8 Use of spare parts, accessories or materials 12
2.6 Warning notices 13

3. Product information 14
3.1 Product overview 14
3.1.1 POWS 400 14
3.2 How it works 15
3.3 Type plate 16
3.4 Scope of delivery 17

4. Technical data 19
4.1 POWS operating parameters 19
4.2 Storage parameters 19
4.3 Materials 20
4.4 Dimensions 20
4.5 Connections 21
4.6 Assembly conditions 22

5. Transport and storage 23
5.1 Warning notices 23
5.2 Transport 24
5.3 Storage 24

6. Assembly 25
6.1 Warning notices 25
6.2 Installation work 26

7. Commissioning 34
7.1 Warning notices 34

7.2 Initial commissioning ... 35
7.3 Recommissioning ... 36

8. Operation ... 37
8.1 Warning notices ... 37
8.2 Working during operation ... 37

9. Maintenance ... 39
9.1 Warning notices ... 39
9.2 Maintenance plan ... 40
9.3 Maintenance work ... 40
9.3.1 Turbidity test of the purified condensate ... 41
9.3.2 Replace filter cartridges ... 42
9.3.3 Cleaning ... 47
9.3.3.1 Warning notices ... 47
9.3.3.2 Cleaning work ... 48
9.3.4 Visual inspection ... 49
9.3.5 Leakage test ... 49

10. Consumables, accessories and spare parts ... 50
10.1 Order information ... 50
10.2 Maintenance ... 50
10.3 Accessories ... 50
10.4 Spare parts ... 51

11. Decommissioning ... 52
11.1 Warning notices ... 52
11.2 Decommissioning work ... 52

12. Disassembly ... 53
12.1 Warning notices ... 53
12.2 Disassembly work ... 53

13. Disposal ... 60

14. Troubleshooting ... 61

15. Notes ... 62

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
SULLIVAN PALATEK AIR COMPRESSORS 1201 West US Highway 20 Michigan City, Indiana 46360 Phone: 219.874.2497 Fax: 219.809.0203 info@palatek.com www.sullivan-palatek.com	SULLIVAN PALATEK AIR COMPRESSORS 1201 West US Highway 20 Michigan City, Indiana 46360 Phone: 219.874.2497 Fax: 219.809.0203 info@palatek.com www.sullivan-palatek.com

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
07/25/2024	00	00	Initial creation	Initial creation

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 **POWS**, 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.
- Only use the product and accessories in areas that are free from toxic and corrosive chemicals and gases.
- 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!
	• 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 - 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 - Service" must be verifiably trained and authorized for all work on the product.

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
	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.
- Compensate vibrations occurring in the pipeline network by using vibration dampers.

2.5.4 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.

2.5.5 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.
- Prevent trip hazards by routing hoses appropriately.
- Fasten and fix all hoses in such a way that they cannot make any percussive movements.
- Install the inlet and drain lines for condensate as fixed pipes.

2.5.6 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.
- 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.

2.5.7 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.

2.5.8 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
	• Measures to avoid the hazard

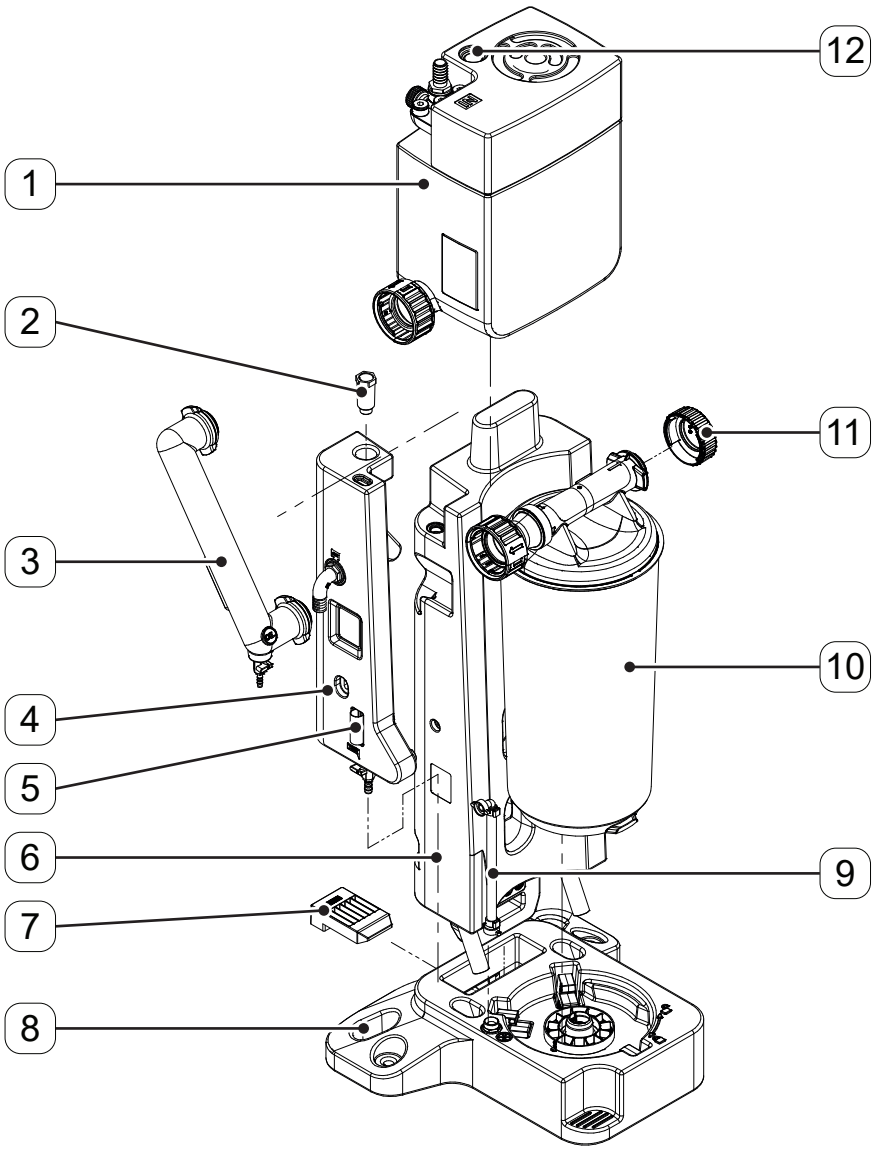
Signal words:

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

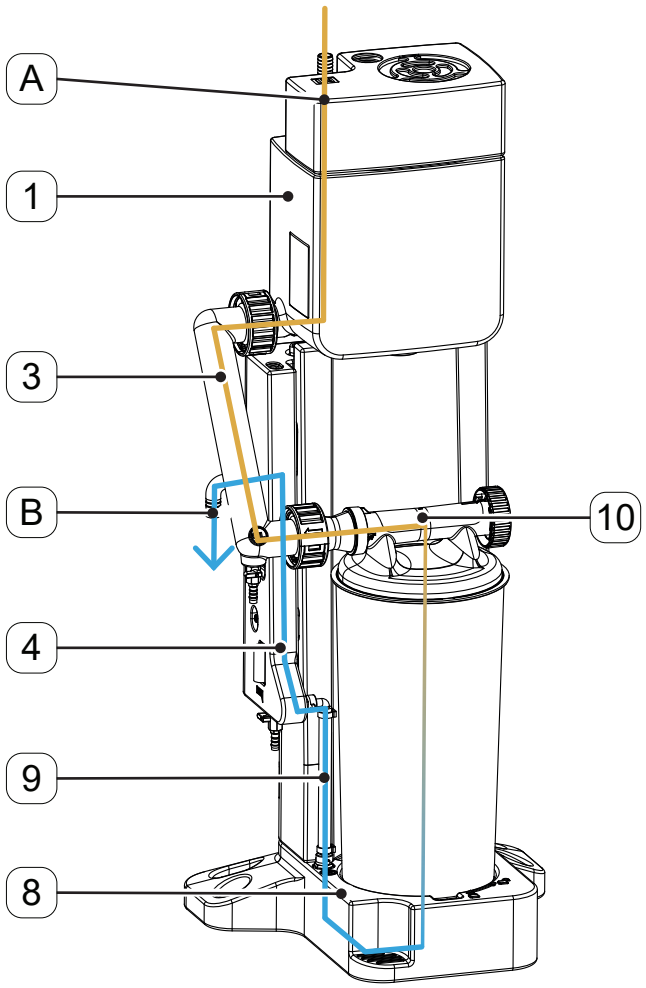
3.1.1 POWS 400



No.	Description / explanation
[1]	Pressure relief chamber
[2]	Fixing screw
[3]	Connecting pipe
[4]	Clean water tank
[5]	Reference turbidity tube
[6]	Foot

No.	Description / explanation
[7]	Locking device
[8]	Collector
[9]	Riser duct
[10]	Filter cartridge
[11]	End cap
[12]	Level indicator

3.2 How it works



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 connecting pipe **[3]** into the filter cartridge **[10]**.

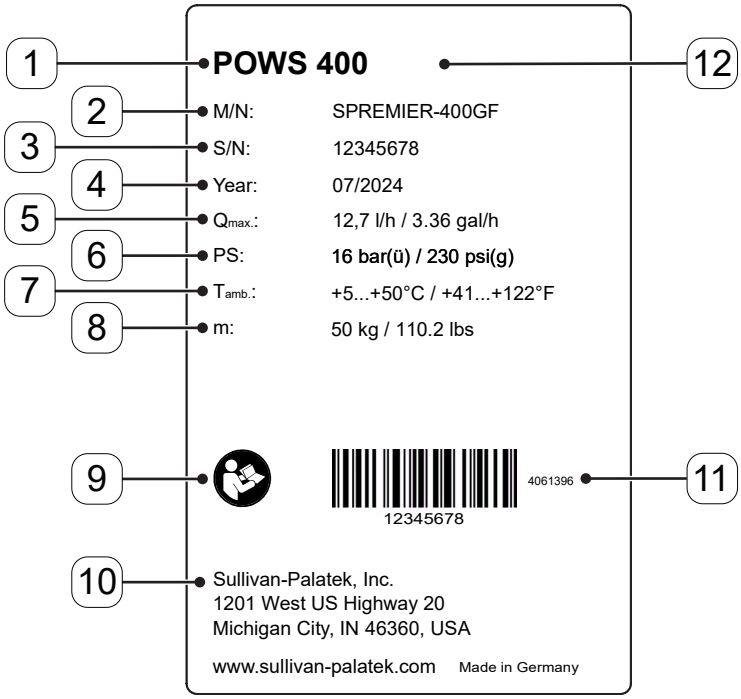
The condensate flows through the filter cartridge **[10]** into the collector **[8]**.

The purified condensate is fed from the collector **[8]** via the riser duct **[9]** 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]** .

If the filter cartridge **[10]** is saturated with oil, the filter cartridge **[10]** will need to be replaced (see section “9.3.2 Replace filter cartridges” on page 42).

A level indicator **[12]** is integrated into the pressure relief chamber **[1]**. If the filling level in the pressure relief chamber **[1]** rises as a result of impaired condensate flow (see section “14. Troubleshooting” on page 61), the level indicator **[12]** will be pushed up so that the red marking on the level indicator **[12]** will become visible.

3.3 Type plate



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

3.4 Scope of delivery

The size and further delivery details are provided in the contractual documents.

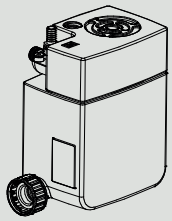
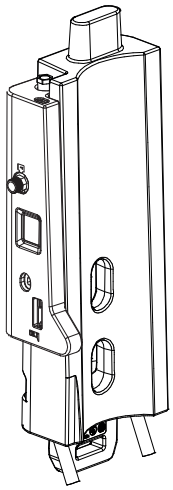
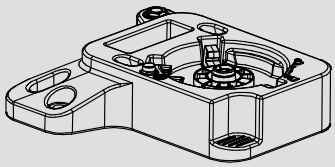
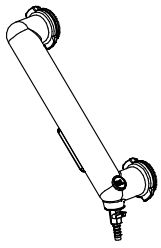
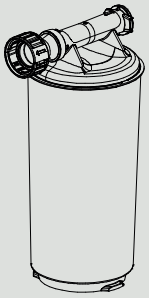
Image	Description / explanation
	Quick Start Guide
	Pressure relief chamber
	Foot
	Collector 1 x 1 filter cartridge
	Connecting pipe

Image	Description / explanation
	Filter cartridge
	Elbow connector with union nut and flat gasket
	Fixing screw
	Riser duct
	End cap
	Locking device, foot
	Reference turbidity tube 5 mg/l (5 ppm) / 10 mg/l (10 ppm)

4. Technical data

4.1 POWS operating parameters

Parameter	POWS 400
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	12.7 l/h 3.36 gal/h
Condensate inlet port	3 x G1/2", male thread, 1 x G1", male thread, 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	50 kg 110.2 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)

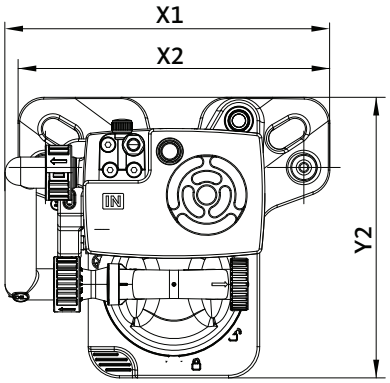
4.2 Storage parameters

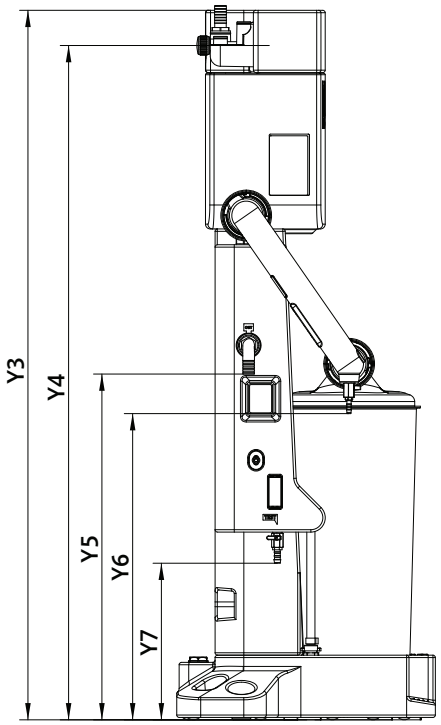
Parameter	POWS 400
Minimum / maximum temperature	+5 °C ... +50 °C +33.8 °F ... +122 °F
Relative ambient air humidity	≤10 ... 80%, without condensate
Empty weight	13.5 kg 29.8 lbs

4.3 Materials

Component	Material
Filter cartridge	Plastic blend and cellulose
Pressure relief chamber	Polyethylene (PE)
Condensate inlet	Polyamide (PA) Polypropylene (PP) Stainless steel (VA)
Connecting pipe	Polyethylene (PE)
Clean water tank	Polyethylene (PE)
Foot	Polyethylene (PE)
Collector	Polyethylene (PE)

4.4 Dimensions

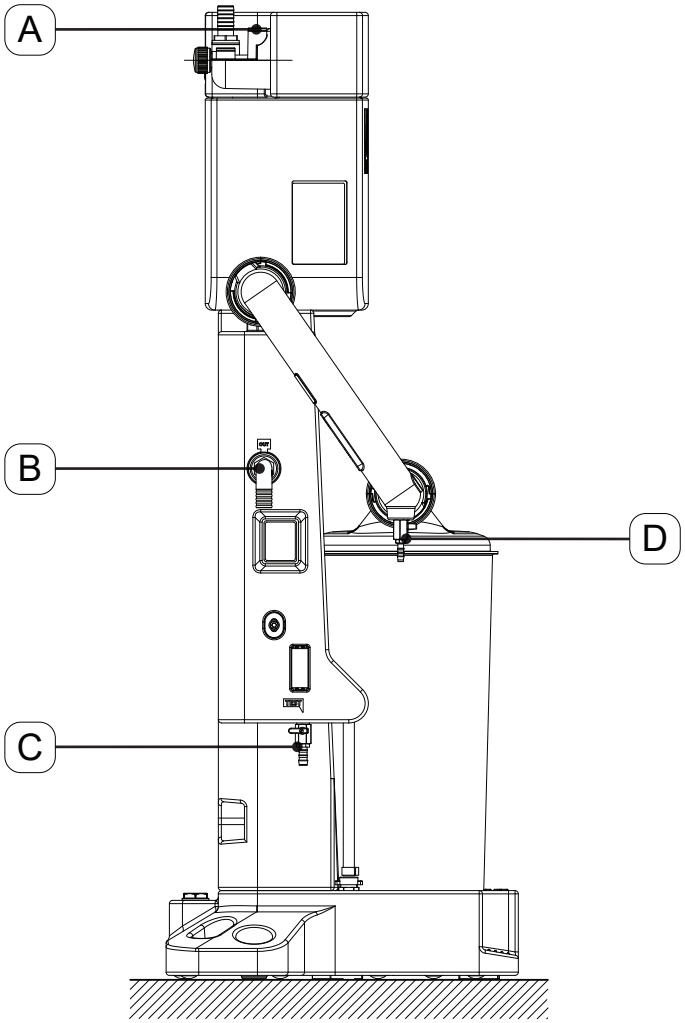




No.	[mm]	[in]
[X1]	625	24.61
[X2]	600	23.62
[X3]	--	--
[Y1]	--	--
[Y2]	540	21.26

No.	[mm]	[in]
[Y3]	1482	58.35
[Y4]	1408	55.43
[Y5]	722	28.43
[Y6]	639	25.16
[Y7]	327	12.87

4.5 Connections

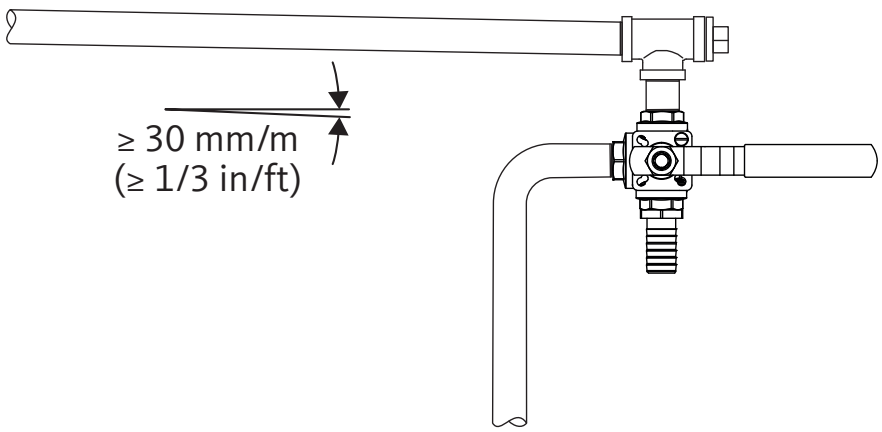


No.	Connection	Qty.	Description / explanation
[A]	25 mm (0.98 in)	1	Hose connection, connection for the condensate inlet
	13 mm (0.52 in)	1	Hose connection, connection for the condensate inlet
	G1/2"	2	Connection for the condensate inlet
[B]	25 mm (0.98 in)	1	Elbow connector, connection for draining the purified condensate
[C]	12 mm (0.47 in)	1	Service valve and hose connection
[D]	12 mm (0.47 in)	1	Drain valve with hose connection

4.6 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 **POWS** (refer to section "4.1 POWS operating parameters" on page 19).
- 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.
- The cross-sectional area of the condensate collection line must be greater than G1" (Ø = 25 mm).
- Route the condensate collection line with a gradient ≥ 30 mm/m (1/3 in/ft) to the place of installation for the **POWS**.
- 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

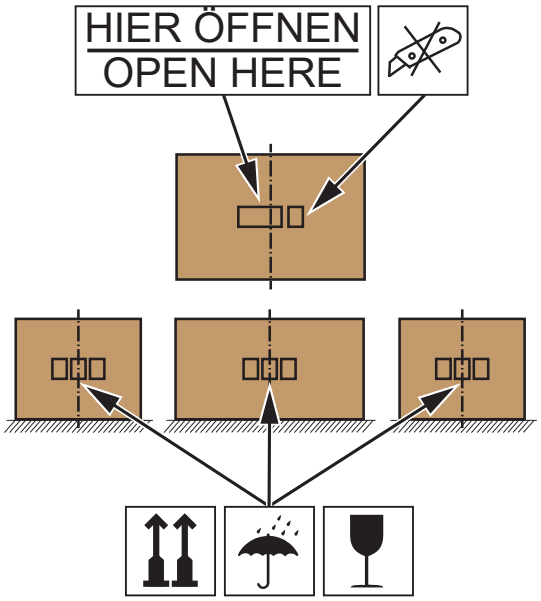
5.1 Warning notices

WARNING	Insufficient qualification!
	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.
	• 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.

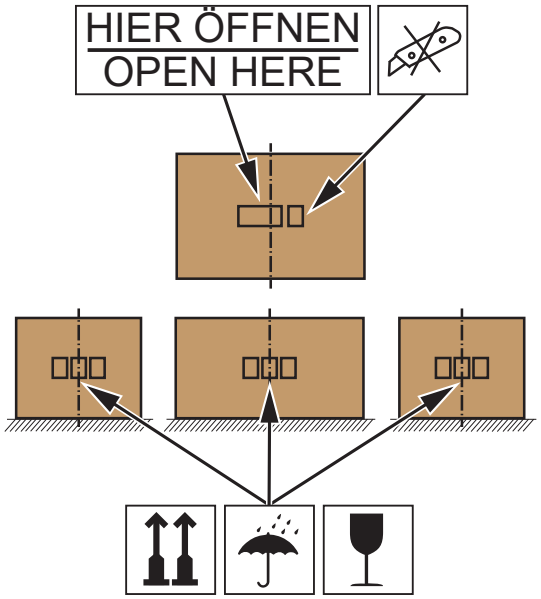
CAUTION	Improper transportation or storage!
 	Improper transportation or storage may result in personal injury or property damage.
	• Use personal protective equipment for all work with packaging material. • Handle the packaging, product and accessories with care. • Package all parts with suitable materials 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!
	Inappropriate disposal of packaging materials can cause environmental damage.
	• Dispose of the packaging material in accordance with the applicable legal requirements and provisions of the country and place of use.

5.2 Transport

Transportation work	
Image	**Description / explanation**
	• 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**
	• Only store the product and accessories in their original, undamaged packaging. • Observe the storage conditions in section “4.2 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!**
	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.
	• 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!**
	The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.
	• 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. • Avoid pressure surges and high pressure differentials.

WARNING	**Insufficient qualification!**
	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.
	• All work on the product and accessories must be carried out exclusively by skilled technical personnel specialized in pressure equipment and systems.

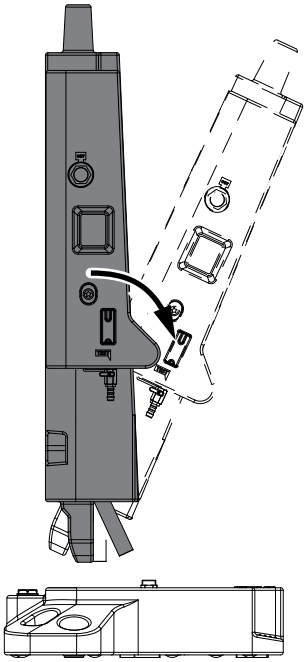
WARNING	**Improper installation!**
	Improper assembly of the product and accessories can result in personal injury and property damage as well as impairments in operation.
	• Install the product, the accessories and all parts and materials used so that they are not subject to mechanical tension. • Fasten and fix hoses in such a way that they cannot make any percussive movements.

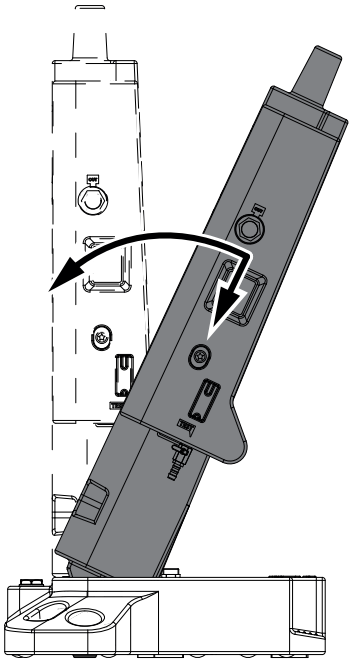
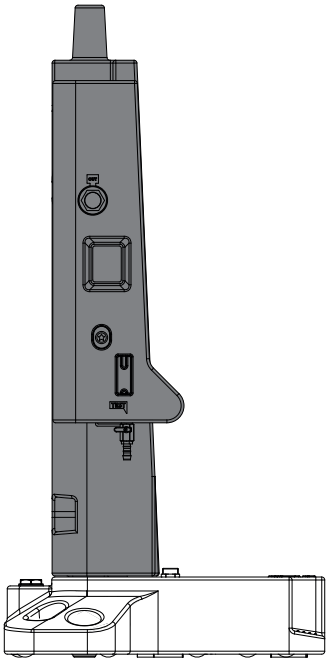
6.2 Installation work

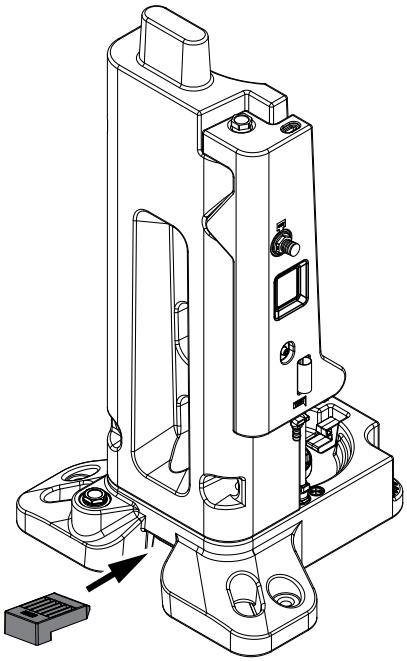
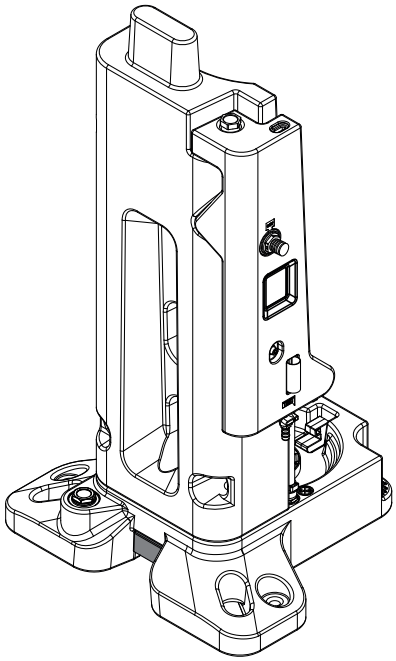
The following prerequisites must be met before carrying out assembly work, and all preparation work must be completed first.

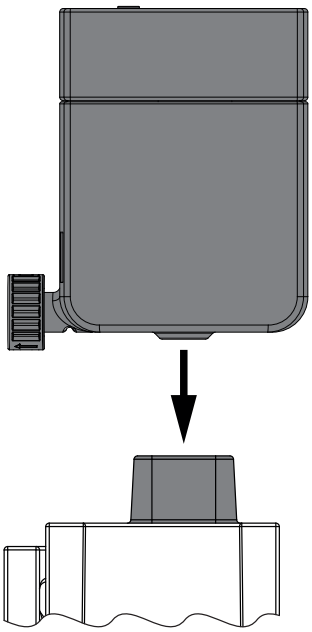
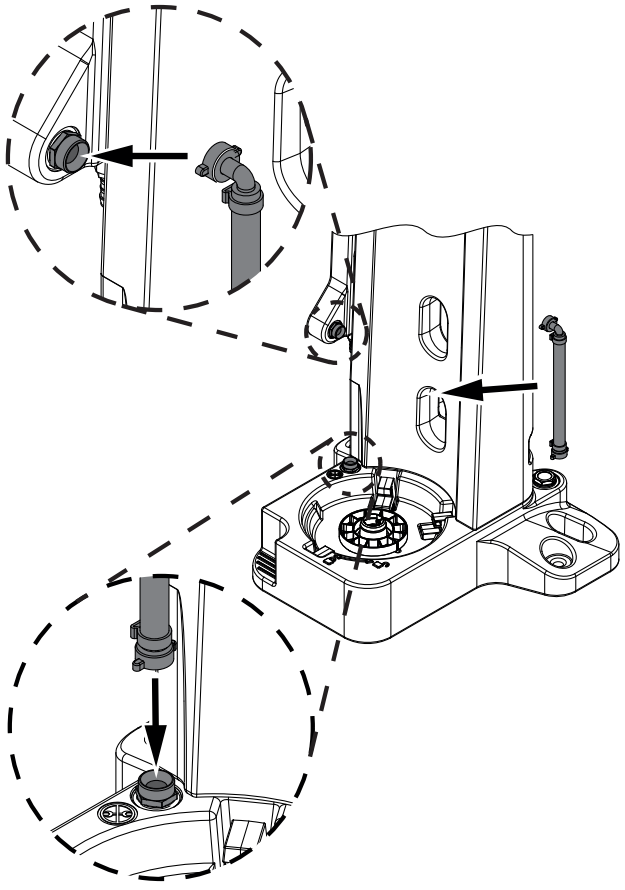
Preconditions		
Tool	**Material**	**Protective equipment**
• Adjustable wrench • Water pump pliers • Spirit level	• Sealing material (e.g. PTFE tape) for sealing the condensate connections provided by the customer • Hose clamps • Hose for condensate	**To be worn at all times:** 

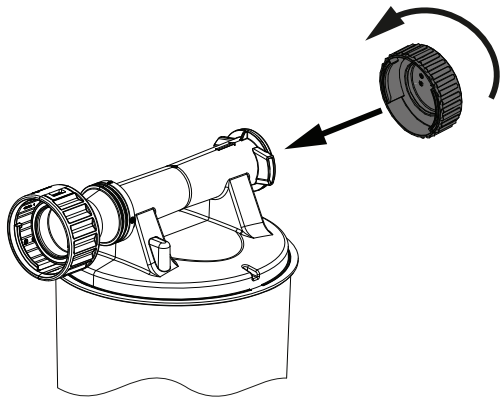
Preparatory work	
1.	Select and set up the place of installation according to the specifications in section “4.6 Assembly conditions” on page 22.
2.	The condensate inlet line provided by the customer must be depressurized and locked and tagged out to prevent unintentional pressurization.
3.	Have the 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.

Installation work	
Image	**Description / explanation**
	1. Position the collector on a flat surface. 2. Align the foot with the positioning tubes facing downwards and position it over the assembly opening. 3. Tilt the upper end of the foot towards the filter cartridge holder until the positioning tubes are vertical.

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

Installation work	
Image	**Description / explanation**
	5. Align the locking device with the heel facing downwards and insert it into the locking device opening in the collector.
	6. Press the locking device into the locking device opening as far as it will go.

Installation work	
Image	**Description / explanation**
	7. Place the pressure relief chamber on the foot. → Align the connection in the direction of the clean water tank.
	8. Install the riser duct between the collector and the clean water tank. → Place the riser duct's straight fitting on the connection in the collector and tighten it clockwise by hand. → Place the riser duct's elbow fitting on the connection of the clean water tank and tighten it clockwise by hand.

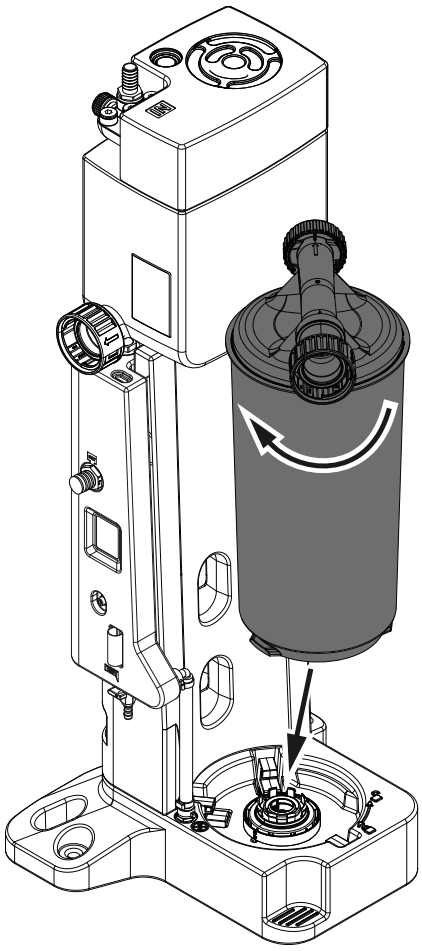
Installation work	
Image	**Description / explanation**
	9. Place the end cap on the filter cartridge and turn it clockwise all the way.

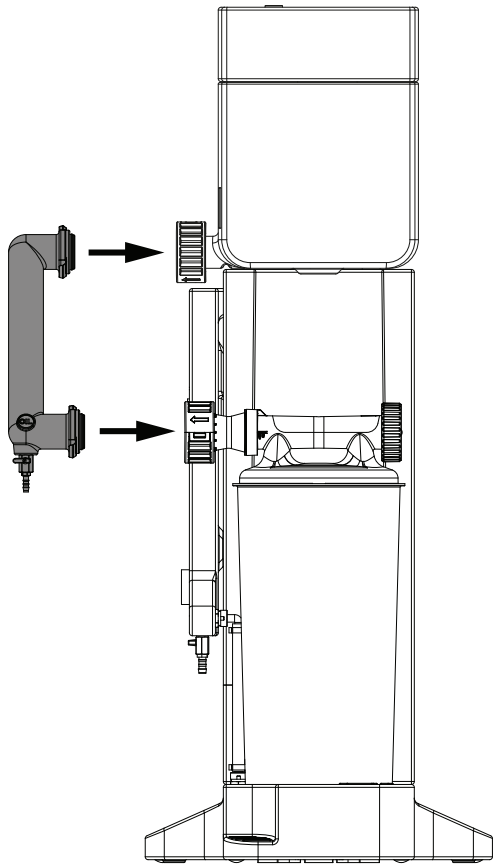
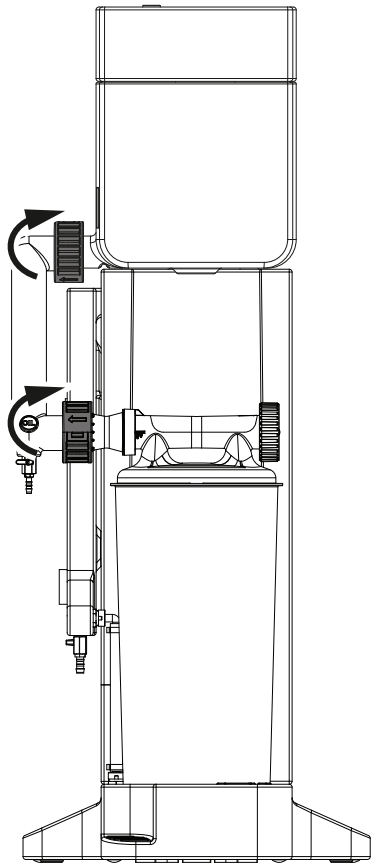
NOTICE

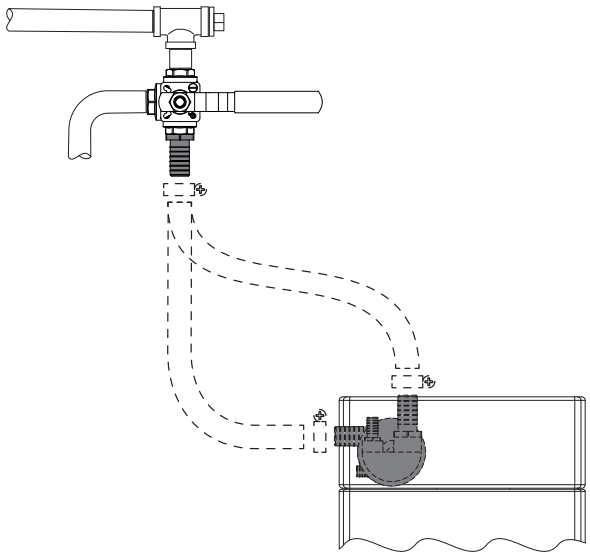
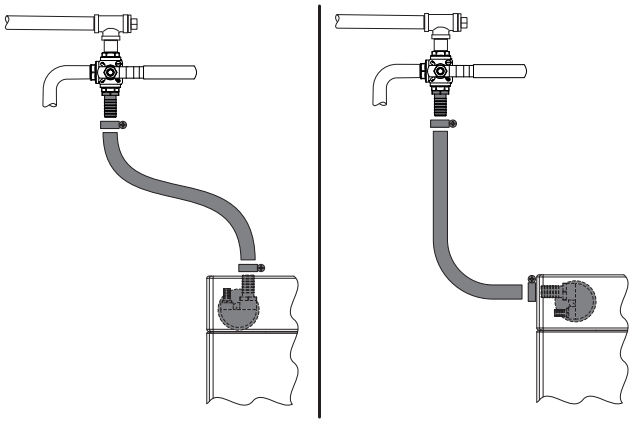
Filter cartridge insertion!

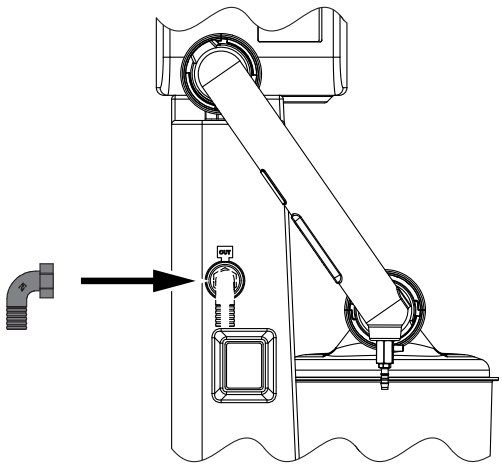
Use of incorrect filter cartridges or incorrect insertion of the filter cartridges can cause damage or leakage to the collector and the filter cartridges.

- Before inserting the filter cartridges, check to make sure that the filter cartridge is the right one for the product.
  - → The 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.

	10. Insert the filter cartridge into the mount on the foot with the bayonet mount facing the clean water tank. 11. Turn the filter cartridge clockwise all the way.

Installation work	
Image	**Description / explanation**
	12. Check the sealing surfaces in the connecting pipe for damage and dirt. → Remove any dirt. → If there is any damage, contact Manufacturer's Service (see section "1.1 Contact" on page 4). 13. Insert the connecting pipe into the connection for the pressure relief chamber. → Point the connecting pipe's drain valve downwards. 14. Align the connecting pipe's connection with the filter cartridge's connection. 15. Insert the connecting pipe into the filter cartridge connection.
	16. Slide the bayonet mounts over the connections and turn them all the way clockwise.

Installation work	
Image	**Description / explanation**
NOTICE 	**Damage due to incorrect hose routing.** Incorrect hose routing can result in property and environmental damage, as well as impaired operation. • Route all hoses in the shortest possible way. • Install all hoses in such a way that they are free of mechanical stress and without any kinks. • Lay all hoses in such a way that no mechanical stresses are transferred to the **POWS** and the minimum bending radii of the respective hose are observed. • Do not lay the hoses in a slack manner (sagging).
	17. Set up the assembled **POWS** offset from the tapping point. → 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.
	18. Connect the tapping point with the condensate inlet of the pressure relief chamber with a hose and secure it against slipping with a hose clamp. → Do not lay the hose in a slack manner (sagging). 19. Tighten the hose clamps hand-tight.

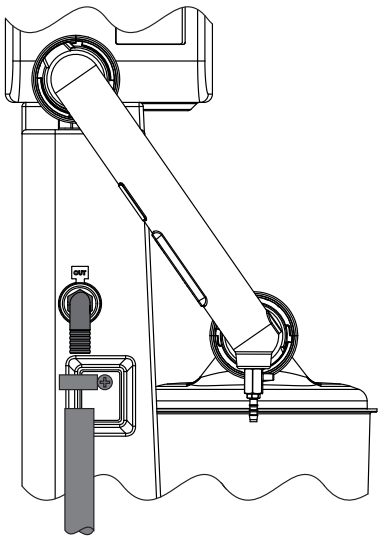
Installation work	
Image	**Description / explanation**
	20. Screw the supplied elbow connector with the mounted flat gasket clockwise as far as it will go onto the condensate drain of the **POWS** and position it so that the outlet is pointing downwards.

NOTICE

Overflow of the clean water tank.

If there is no gradient towards the wastewater system connection, or if there are cross-sectional constrictions in the water outlet hose, this can lead to the clean water tank overflowing.

- The connection to the wastewater system is located below the condensate drain.
- Route the water outlet hose with a steady slope and without any kinks to the connection to the wastewater system.

	21. Attach a water outlet hose to the angled elbow connector on the condensate drain and secure it against slipping off with a hose clamp. 22. Tighten the hose clamp hand-tight. 23. Route the water outlet hose with a steady slope and without any kinks to the connection to the wastewater system.

7. Commissioning

7.1 Warning notices

DANGER	**Operating outside of permitted limit values!**
	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.
	• 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!**
	The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.
	• Before pressurization, check all pipe connections of the system for leak tightness and retighten them if necessary. • Avoid pressure surges and high pressure differentials.

WARNING	**Insufficient qualification!**
	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.
	• 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.

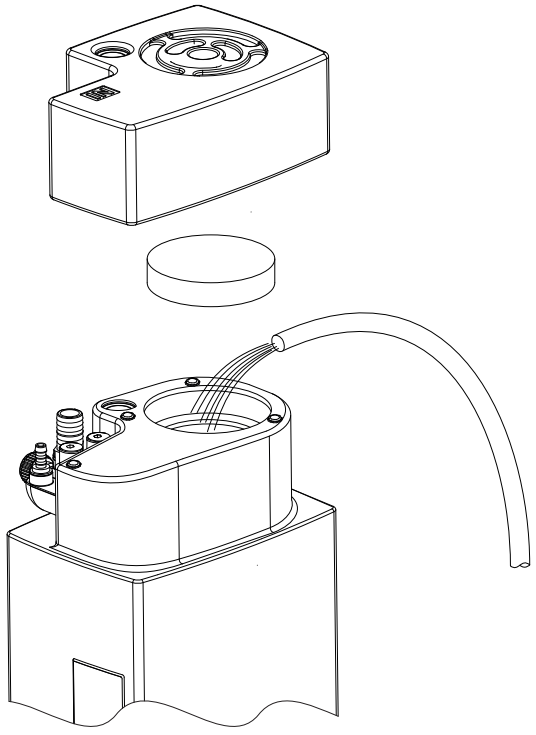
NOTICE	**Restricted function of the filter cartridges.**
	When the clean water tank's ventilation opening is closed, the draining water will produce a negative pressure in the clean water tank. This negative pressure will result in the condensate being sucked through the filter cartridges in an uncontrolled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

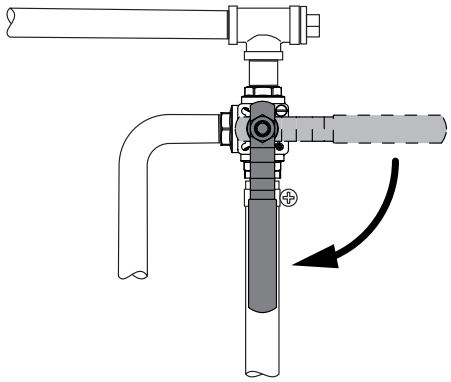
7.2 Initial commissioning

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**
• No tool necessary	• No material necessary	**To be worn at all times:** 

Preparatory work	
1.	Assembly of the **POWS** is complete.

Commissioning work	
Image	**Description / explanation**
	1. Remove the cover from the pressure relief chamber and remove the activated carbon mat from the vent of the pressure relief chamber. 2. Fill the pressure relief chamber with tap water via the vent. → Stop filling it as soon as water comes out from the condensate drain. 3. Insert the activated carbon mat into the vent of the pressure relief chamber and place the cover on the pressure relief chamber.

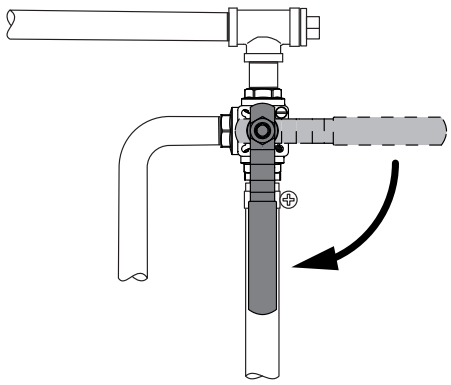
Commissioning work	
Image	**Description / explanation**
	4. Slowly open the condensate feed to the **POWS**. 5. Check all hoses and connections for leaks (see section “9.3.5 Leakage test” on page 49). 6. Commissioning is complete and the discharged condensate is treated by the **POWS**.

7.3 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**
• No tool necessary	• No material necessary	**To be worn at all times:** 

Preparatory work	
1.	The work or troubleshooting on **POWS** is complete.

Commissioning work	
Image	**Description / explanation**
	1. Slowly open the condensate feed to the **POWS**.

8. Operation

8.1 Warning notices

DANGER	**Operating outside of permitted limit values!**
	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.
	• 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.

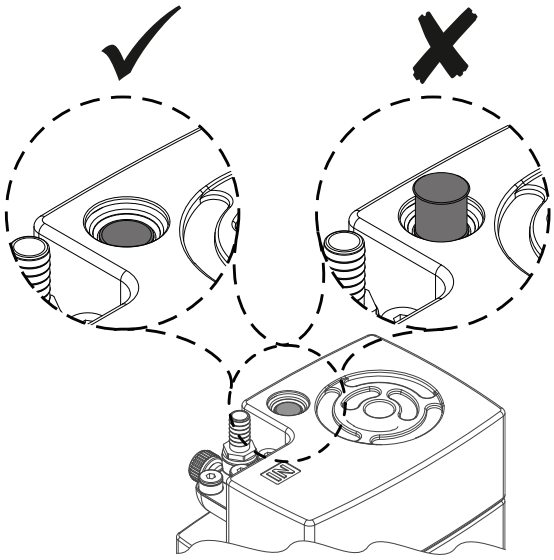
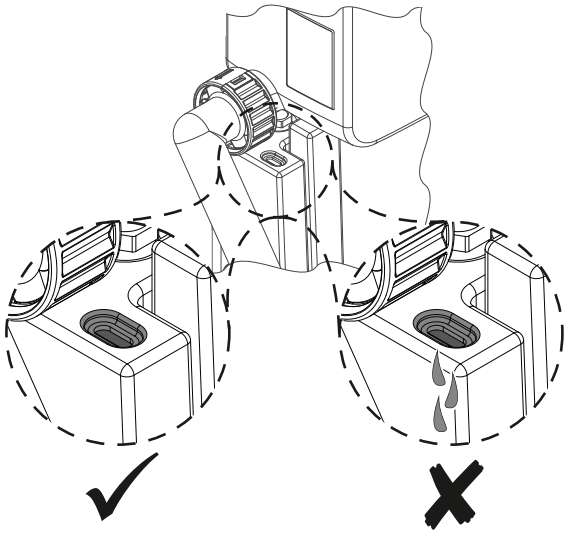
NOTICE	**Operating personnel!**
	Inadequate knowledge of the product and its accessories can lead to material and environmental damage as well as disruptions in operation due to incorrect operation.
	• The product and accessories may only be operated and handled by qualified operating personnel.

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

8.2 Working during operation

Preparatory work	
1.	The **POWS** is set up and connected to the condensate collection line and the drain.
2.	Commissioning of the **POWS** is complete.

Preconditions		
Tool	**Material**	**Protective equipment**
• No tool necessary	• No material necessary	**To be worn at all times:** 

Image	Description
	1. Check the level indicator. **The level indicator is flush with the pressure relief chamber:** → The **POWS** works perfectly. **The level indicator's red marking is visible:** → The pressure relief chamber's maximum filling level has been reached. → The condensate flow has been disrupted (see section "14. Troubleshooting" on page 61).
	2. Check the clean water tank's ventilation opening. **The ventilation opening is dry:** → The **POWS** works perfectly. **Water is coming out from the ventilation opening:** → The water drainage has been disrupted (see section "14. Troubleshooting" on page 61).

9. Maintenance

9.1 Warning notices

DANGER	**Pressurized system!**
	The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.
	• 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. • Avoid pressure surges and high pressure differentials.

DANGER	**Use of incorrect replacement element, accessories or materials!**
	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.
	• 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.

WARNING	**Insufficient qualification!**
	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.
	• All work on the product and accessories may only be carried out by professional technicians - Service.

9.2 Maintenance plan

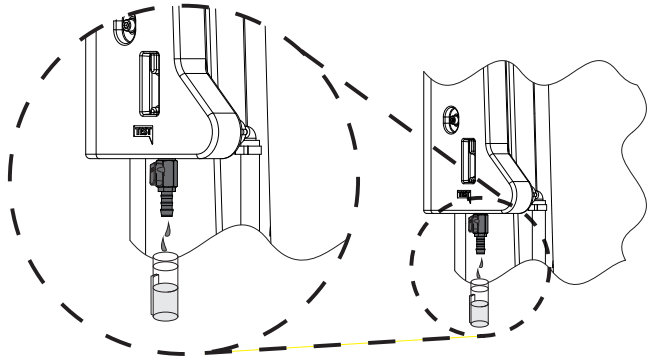
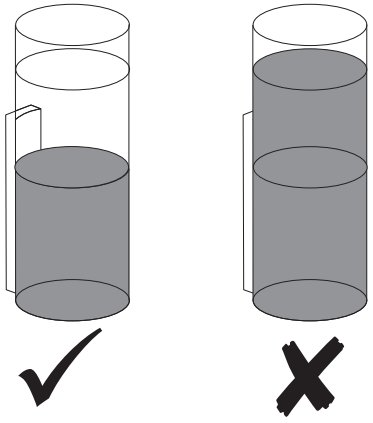
Maintenance	Interval
Turbidity test of wastewater and documenting the result	• Weekly
Visual inspection	• Weekly
Replace the filter cartridge and activated carbon mat	• Mandatory in case of a negative result of the turbidity test • If the level indicator's red marking is visible • At least annually
Leakage test	• Recommendation: After all assembly and maintenance work on the product

9.3 Maintenance work

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

9.3.1 Turbidity test of the purified condensate

Preconditions		
Tool	**Material**	**Protective equipment**
• No tool necessary	• No material necessary	**To be worn at all times:** 

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

9.3.2 Replace filter cartridges

Preconditions		
Tool	**Material**	**Protective equipment**
• No tool necessary	• Filter cartridges • Activated carbon mat	**To be worn at all times:** 

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

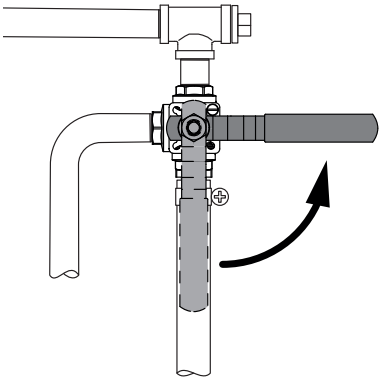
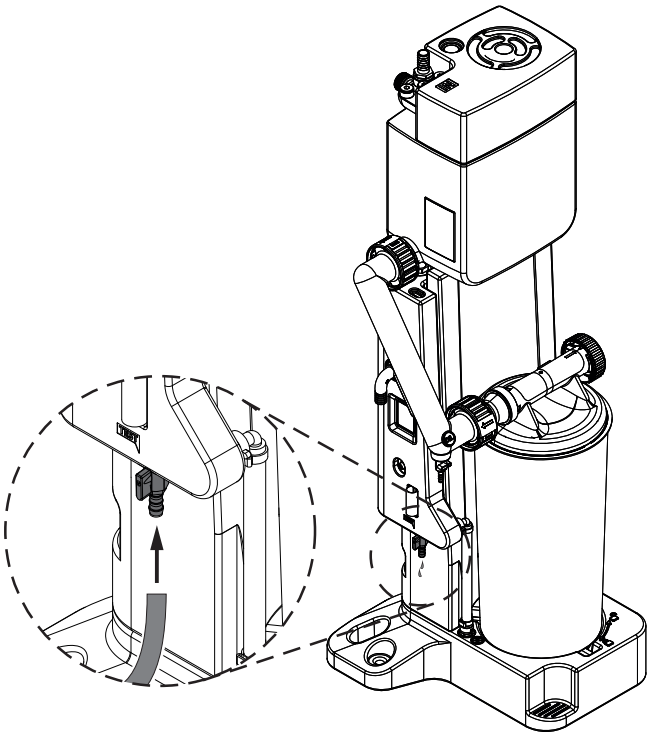
Image	Description / explanation
	1. Cut off the condensate feed to the **POWS** and divert the condensate into a separate container.
	2. Connect the service valve on the clean water tank to a collecting container and open the service valve. → Close the service valve the moment that condensate stops coming out.

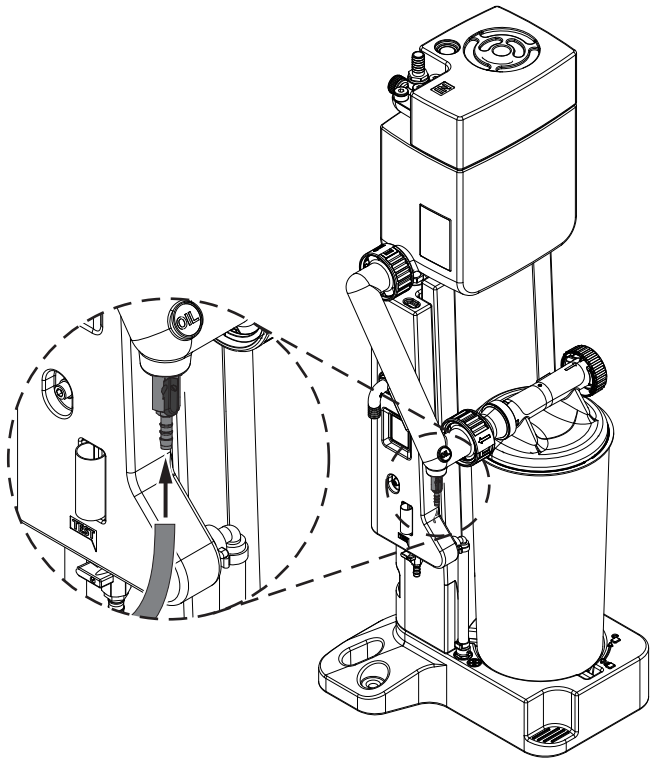
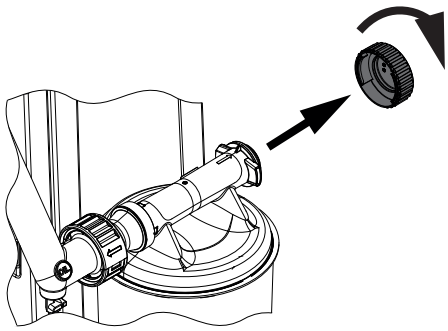
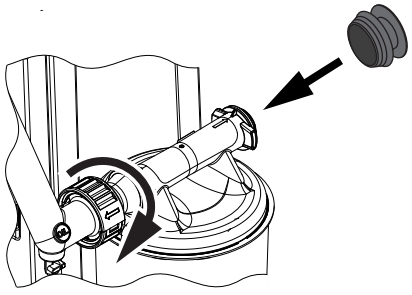
Image	Description / explanation
	3. Connect the drain valve on the connecting pipe to a collecting container and open the drain valve. → Close the drain valve the moment that condensate stops coming out. → Collect and dispose of leaked or spilled condensate in accordance with the locally applicable legal requirements and regulations.
	4. Turn the end cap on the filter cartridge anticlockwise and remove it. → Put the end cap to the side, as you will be screwing it back onto the new filter cartridge.
	5. Use the plug to seal the filter cartridge.

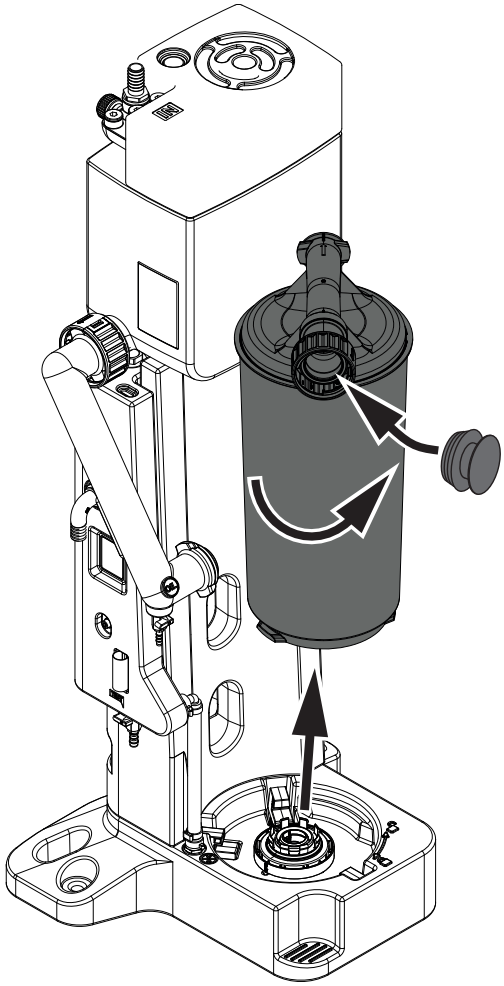
Image	Description / explanation
CAUTION 	**Lifting heavy load!** Lifting the full filter cartridge in an ergonomically incorrect manner can result in personal injury. • Lift the full cartridge in an ergonomically correct manner close to your body. • Use two people to lift the full cartridge over obstacles.
	6. Turn the bayonet mount of the filter cartridge anticlockwise and pull it off from the connection at the measuring chamber outlet. 7. Turn the filter cartridge 45 degrees anticlockwise and seal it with the plugs. 8. Lift the filter cartridge out of the collector and dispose of it properly (see section “13. Disposal” on page 60). 9. Check the sealing surface of the connecting pipe connection for damage and dirt. → Remove any dirt. → If there is any damage, contact Manufacturer’s Service (see section “1.1 Contact” on page 4).

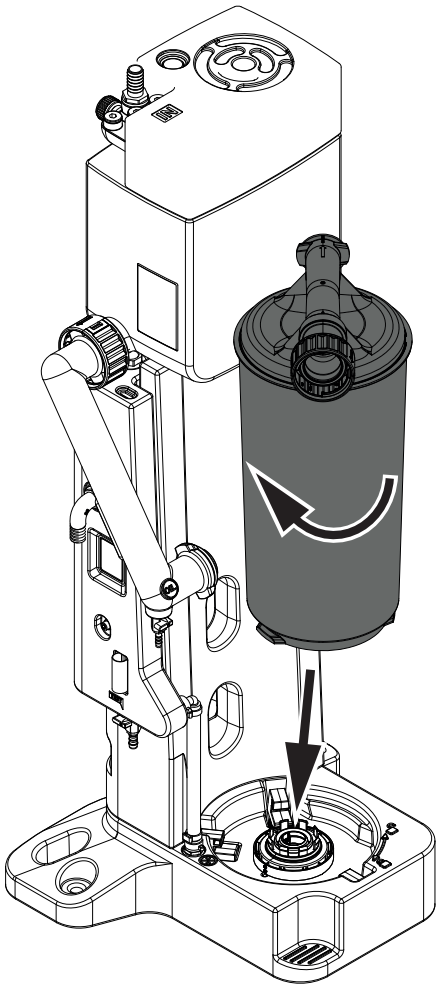
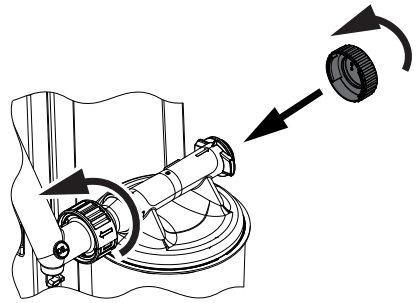
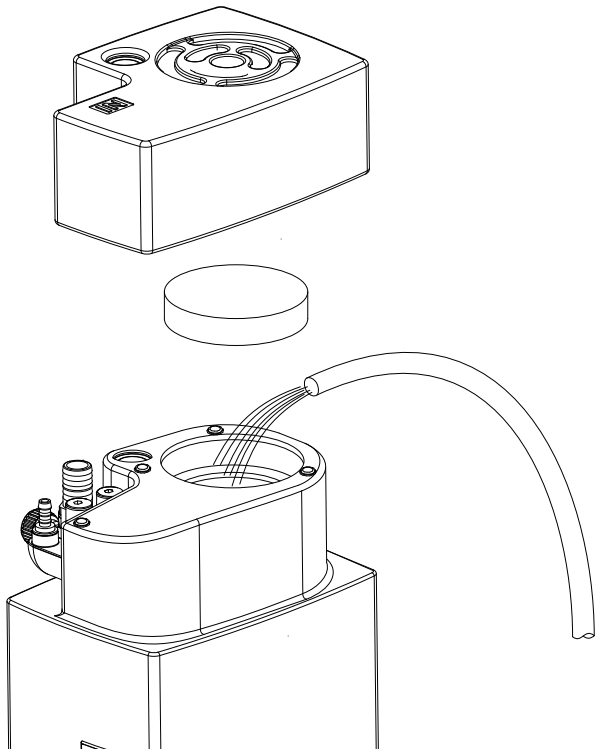
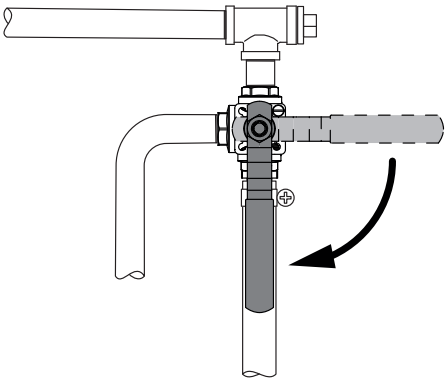
Image	Description / explanation
NOTICE	**Filter cartridge insertion!** Use of incorrect filter cartridges or incorrect insertion of the filter cartridges can cause damage or leakage to the collector and the filter cartridges. • Before inserting the filter cartridges, check to make sure that the filter cartridge is the right one for the product. → The 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.
	10. Insert the filter cartridge into the mount on the foot with the bayonet mount facing the connecting pipe. 11. Turn the filter cartridge clockwise all the way. 12. Align the filter cartridge's connection with the connection on the connecting pipe. 13. Slide the bayonet mount over the connection and turn it clockwise as far as it will go.

Image	Description / explanation
	14. Place the end cap on the filter cartridge and turn it clockwise all the way.
	15. Remove the cover from the pressure relief chamber and remove the activated carbon mat from the vent of the pressure relief chamber. 16. Dispose of the activated carbon mat properly (see section “13. Disposal” on page 60). 17. Fill the **POWS** with tap water via the vent. → Stop filling it as soon as water comes out from the condensate drain. 18. Insert the new activated carbon mat into the vent of the pressure relief chamber and place the cover on the pressure relief chamber.
	19. Slowly open the condensate feed. 20. Check all hoses and connections for leaks (see section “9.3.5 Leakage test” on page 49).

9.3.3 Cleaning

9.3.3.1 Warning notices

CAUTION	Improper cleaning and use of incorrect cleaning agents!
	Improper cleaning and the use of incorrect cleaning agents could result in slight injuries and health or property damage.
	• 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.

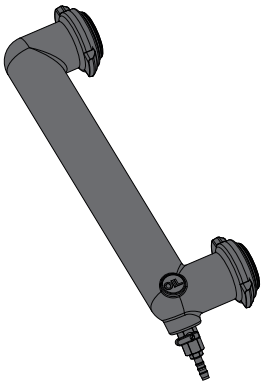
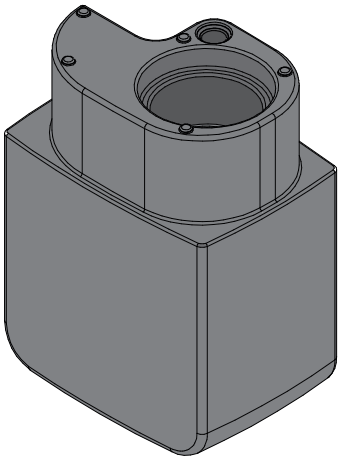
NOTICE	Local hygiene regulations!
	In addition to the cleaning instructions listed, any regionally applicable or company-specific hygiene regulations must be observed.

9.3.3.2 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**
• No tools necessary	• Warm water • Cotton cloth or disposable cloth	**To be worn at all times:** 

Preparatory work	
1.	The **POWS** 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
	**Clean the connecting pipe** Flush the measuring chamber with warm water.
	**Clean pressure relief chamber** Flush the pressure relief chamber with warm water.

Follow-up work	
1.	Transport the cleaned and dried assembly unit to the place of installation of the **POWS** and mount it.
2.	Put the **POWS** back into operation (see section “7. Commissioning” on page 34).

9.3.4 Visual inspection

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

9.3.5 Leakage test

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

1. Fill the **POWS** with tap water via the vent until water comes out of the condensate drain.
2. Check all hose and other connections for leaks.

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

10. Consumables, accessories and spare parts

10.1 Order information

Sullivan-Palatek 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 accessory
- Desired number of accessories to be supplied

The contact information for the relevant **Sullivan-Palatek** service team is listed in section “1.1 Contact” on page 4.

10.2 Maintenance

Designation	Material number
Filter cartridge, including two plastic plugs	Upon request
Activated carbon mat, pressure relief chamber	Upon request

10.3 Accessories

Designation	Material number
POWS 400 spill protection basin 900 mm x 800 mm (35.43 in x 31.5 in)	Upon request
Alarm sensor, changeover switch	Upon request
High pressure relief chamber	Upon request
Expansion kit, **POWS 400** to **iPOWS 550**	Upon request

10.4 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
POWS 400 clean water tank, 2.5 l (0.66 gal)	Upon request
Foot	Upon request
Collector 1 x 1 filter cartridge	Upon request
Connecting pipe	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
Bayonet insert, collector	Upon request
Seal kit	Upon request
Level indicator	Upon request
Plug for collector	Upon request

11. Decommissioning

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

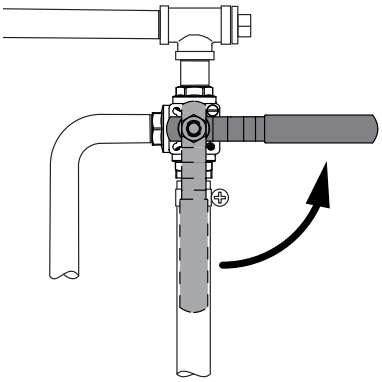
- Repairs to the product or accessories
- Longer standstill of the entire system due to planned work (e.g. conversion work, major repairs, decommissioning of the overall system)

11.1 Warning notices

DANGER	**Pressurized system!**
	The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.
	• Establish a safe area around the work area before starting work. • Before starting work, bleed the pressurized system and secure it against unintentional pressurization.

WARNING	**Insufficient qualification!**
	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.
	• All work on the product and accessories may only be carried out by professional technicians - Service.

11.2 Decommissioning work

Image	Description / explanation
	1. Cut off the condensate feed to the **POWS** and divert the incoming condensate into a separate container.

12. Disassembly

12.1 Warning notices

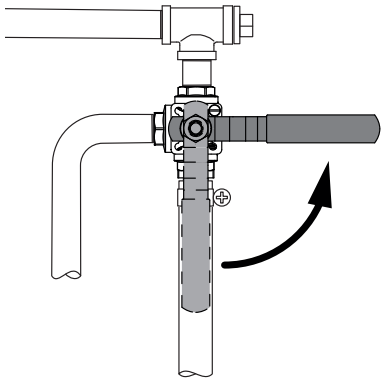
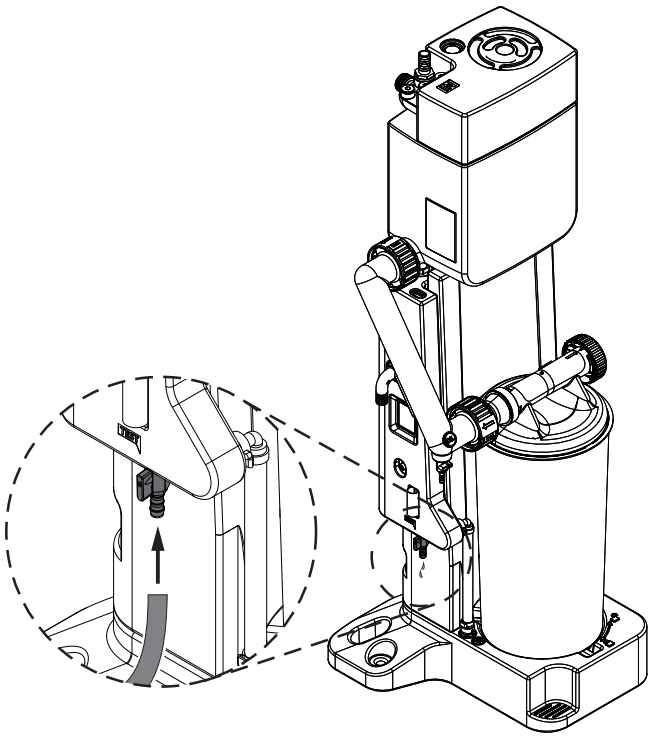
DANGER	**Pressurized system!**
	The risk of death or severe injuries exists in case of contact with fast or sudden exiting fluids or due to bursting system parts.
	• Establish a safe area around the work area before starting work. • Before starting work, bleed the pressurized system and secure it against unintentional pressurization.

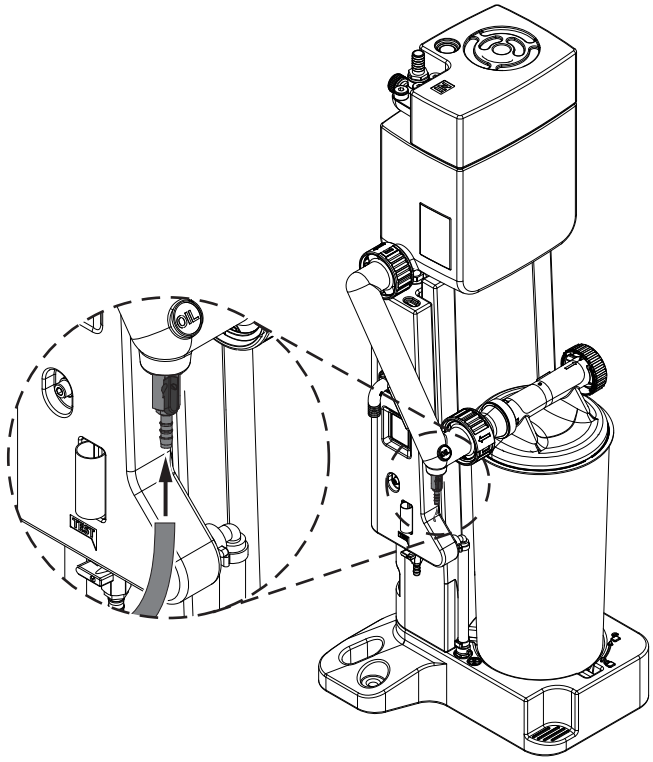
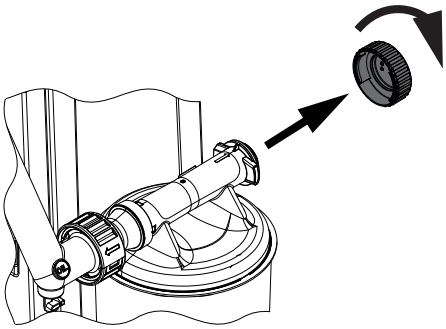
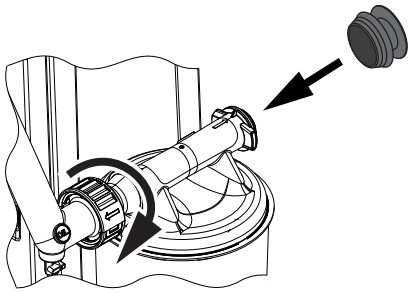
WARNING	**Insufficient qualification!**
	If personnel have insufficient qualifications, this may result in accidents, personal injury and property damage as well as operating disruptions while working on the product or its accessories.
	• All work on the product and accessories may only be carried out by professional technicians - Service.

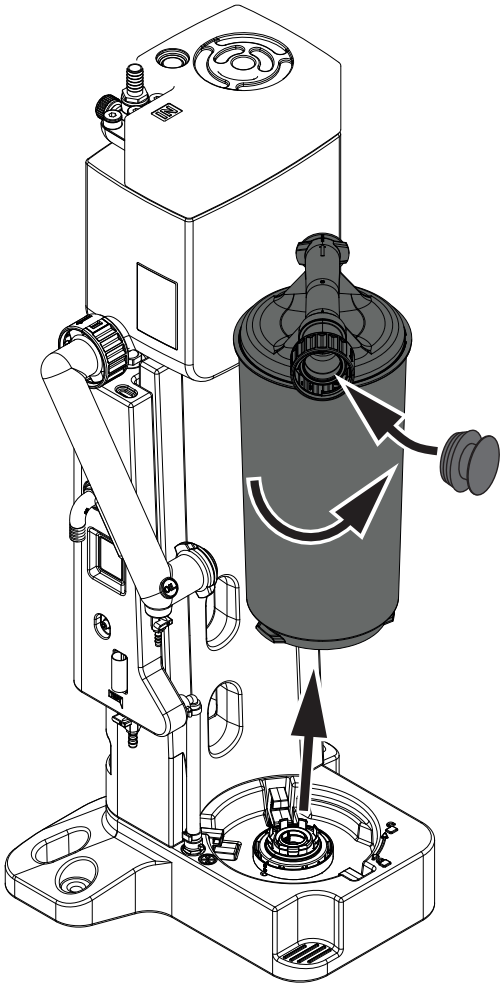
12.2 Disassembly work

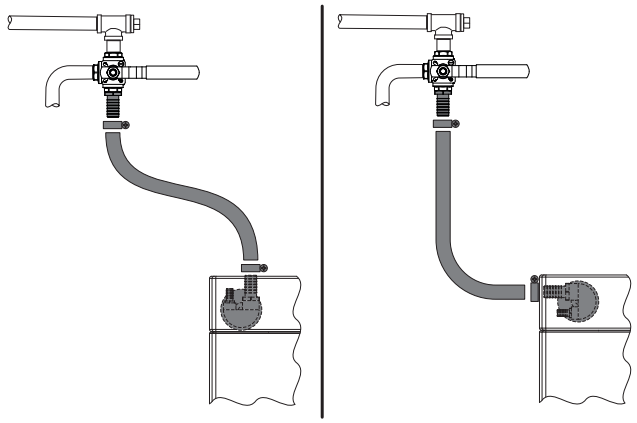
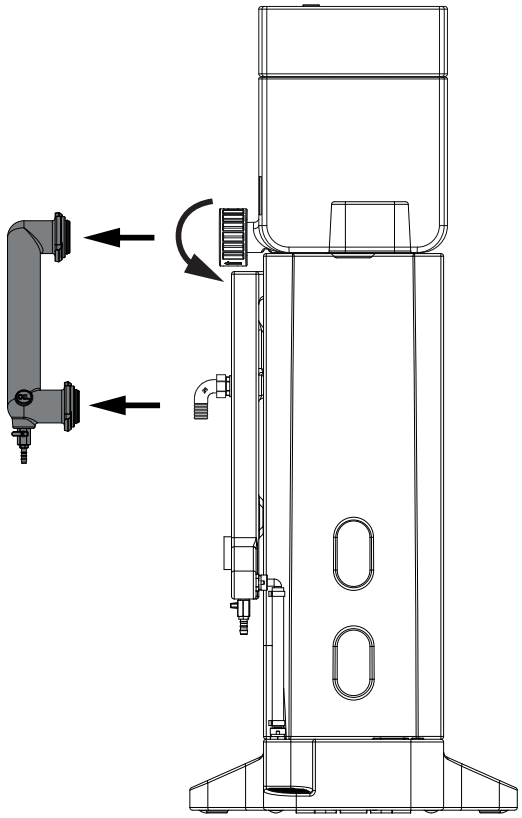
The following requirements must be fulfilled to carry out disassembly work and preparatory work must be completed.

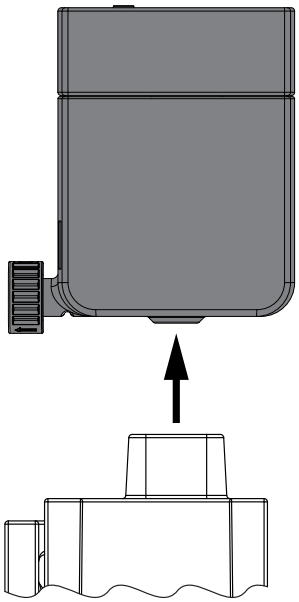
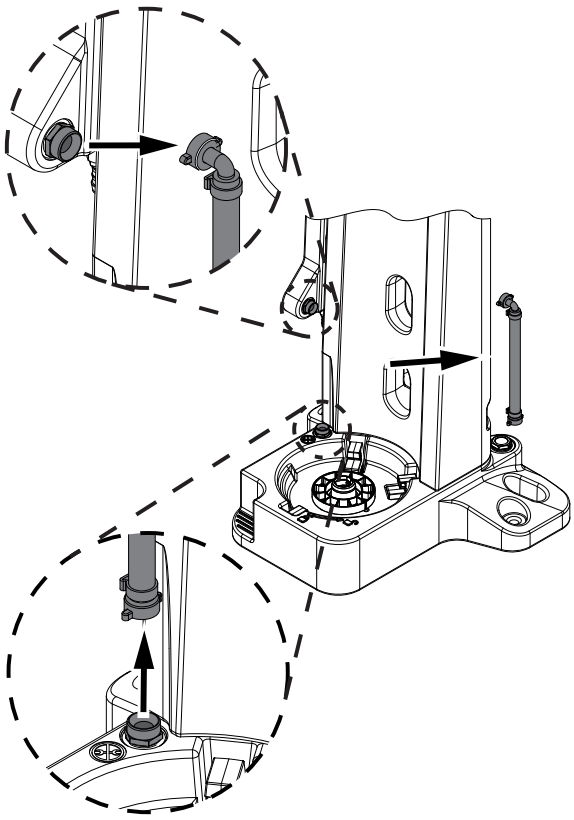
Preconditions		
Tool	**Material**	**Protective equipment**
• Adjustable wrench • Water pump pliers	• No material necessary	**To be worn at all times:** 

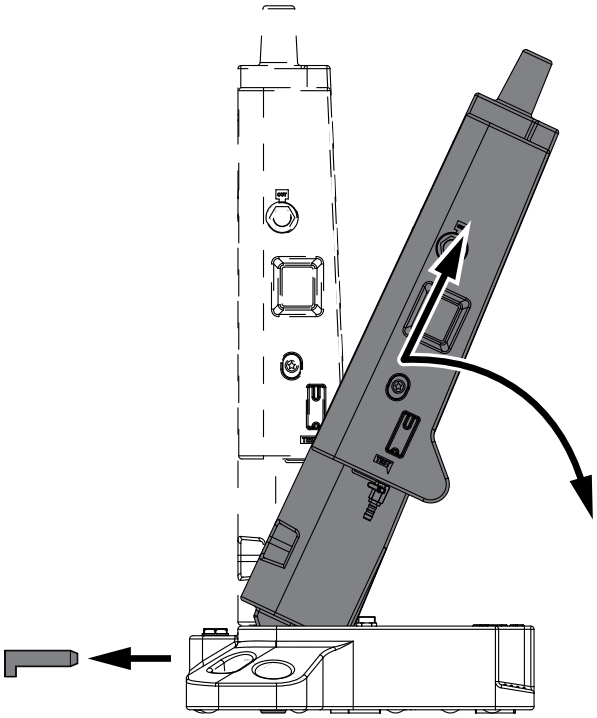
Disassembly work	
Image	**Description / explanation**
	1. Cut off the condensate feed to the **POWS** and divert the incoming condensate into a separate container.
	2. Connect the service valve on the clean water tank to a collecting container and open the service valve. → Close the service valve the moment that condensate stops coming out.

Disassembly work	
Image	**Description / explanation**
	3. Connect the drain valve on the connecting pipe to a collecting container and open the drain valve. → Close the drain valve the moment that condensate stops coming out. → Collect and dispose of leaked or spilled condensate in accordance with the locally applicable legal requirements and regulations.
	4. Turn the end cap on the filter cartridge anticlockwise and remove it. → Put the end cap to the side, as you will be screwing it back onto the new filter cartridge.
	5. Use the plug to seal the filter cartridge.

Disassembly work	
Image	Description / explanation
CAUTION 	**Lifting heavy load!** Lifting the full filter cartridge in an ergonomically incorrect manner can result in personal injury. • Lift the full cartridge in an ergonomically correct manner close to your body. • Use two people to lift the full cartridge over obstacles.
	6. Turn the bayonet mount of the filter cartridge anticlockwise and pull it off from the connection at the measuring chamber outlet. 7. Turn the filter cartridge 45 degrees anticlockwise and seal it with the plugs. 8. Lift the filter cartridge out of the collector and dispose of it properly (see section “13. Disposal” on page 60). 9. Check the sealing surface of the connecting pipe connection for damage and dirt. → Remove any dirt. → If there is any damage, contact Manufacturer’s Service (see section “1.1 Contact” on page 4).

Disassembly work	
Image	**Description / explanation**
	10. Remove the hose between the tapping point and the pressure relief chamber.
	11. Empty and remove the connecting pipe. 12. Clean the connecting pipe (see section “9.3.3 Cleaning” on page 47).

Disassembly work	
Image	**Description / explanation**
	13. Empty and remove the pressure relief chamber. 14. Clean the pressure relief chamber (see section “9.3.3 Cleaning” on page 47).
	15. Remove and clean the riser duct.

Disassembly work	
Image	**Description / explanation**
	16. Remove the locking device from the foot. 17. Remove the foot from the collector. Make sure to tilt the foot in the direction of the filter cartridge mount. 18. Empty and clean collector. 19. Dispose of the dismantled components properly (see section “13. Disposal” on page 60).

13. 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!**
	The improper disposal of parts, components, operating and auxiliary materials, and cleaning products can cause environmental damage.
	• 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 **Sullivan-Palatek**. • In case of doubt, consult a regional disposal company before disposal.

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

14. Troubleshooting

In the event of any malfunctions which are not described, malfunctions which cannot be eliminated or questions, contact **Sullivan-Palatek** customer service, see “1.1 Contact” on page 4.

Symptoms	Possible cause	Measure
The level indicator’s red marking is visible.	1. The filter cartridge cannot absorb any more oil.	Replace the filter cartridge (see section “9.3.2 Replace filter cartridges” on page 42).
	2. The filter cartridge is clogged.	Replace the filter cartridge (see section “9.3.2 Replace filter cartridges” on page 42).
	3. The riser duct is clogged.	Clean or replace the riser duct
Water is coming out from the ventilation opening of the clean water tank.	1. The water outlet hose on the elbow connector is clogged.	Clean or replace the water outlet hose.
	2. The connection to the wastewater system is clogged.	Check and clean the connection the wastewater system.

15. Notes

SULLIVAN PALATEK

AIR COMPRESSORS

1201 West US Highway 20
Michigan City, Indiana 46360
Phone: 219.874.2497
Fax: 219.809.0203
info@palatek.com
www.sullivan-palatek.com