OPERATION MANUAL

Installation, operation and service information

DRYPOINT® ACC

DRYPOINT® ACC / ACC P 005 - 100

06 - 078

Introduction

This operating manual is intended to familiarise you, the operator/user, with the safety, design, function, maintenance and servicing of the heatless regenerating adsorption dryer.

Knowledge of the basic and specific safety instructions is a prerequisite for the safe handling and trouble-free operation of this system.

This operating manual contains safety instructions for the safe operation of this system.

These operating instructions, in particular the safety instructions, must be observed by all persons working on this system. It is essential that these operating instructions are made available to operating personnel at all times and are kept at the system's place of use.

Explanation of the pictograms used
- Safety instructions
- Explanation of symbols

Safety instructions are marked with symbols in this manual. The safety instructions are preceded by signal words that indicate the extent of the hazard. To avoid accidents, personal injury and property damage, act with caution and strictly observe the safety instructions.

DANGER!

This combination of symbol and signal word indicates an **immediate danger** to life and health. Failure to observe these instructions will **result in serious health effects, including life-threatening injuries.**

WARNING!

This combination of symbol and signal word indicates a potentially imminent danger **to the life and health of persons. Failure to obser**ve these instructions may **result in serious health effects, including life-threatening injuries.**

CAUTION!

This combination of symbol and signal word indicates a **potentially dangerous situation**. Failure to observe these instructions may result in **injury** or **damage** to property.

DANGER OF ELECTRIC SHOCK!

This combination of symbol and signal word warns of dangerous electrical voltage. Failure to observe these instructions may result in **possible danger** to persons due to **electric shock or high voltage.**

WARNING! Danger from pressurised parts!

Compressed air may escape from defective lines or components. Compressed air can cause injury to body parts. Depressurise the system before starting work.

Blow-off noises during pressure relief
This symbol indicates that you should wear hearing protection for your own personal safety!

Wear suitable gloves
This symbol indicates that you should wear protective gloves for your own safety!

Important
Indicates special instructions for avoiding damage.

Information point
This symbol indicates a location where additional or important information is available.

Dispose of waste in accordance with local disposal regulations

Commissioning / pressurising the system

Decommissioning / depressurising the system

Touchdisplay
Indicates the pressure required on certain areas of the touch display.

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1 The manufacturer

BEKO TECHNOLOGIES GmbH
Im Taubental 7
D-41468 Neuss
Tel. +49 2131 988 1000

info@beko-technologies.com
www.beko-technologies.com

2 Recommendations for occupational safety

The manufacturer expressly disclaims any responsibility or liability for damage and/or injury resulting from failure to observe these specific or other known precautions or from failure to exercise the necessary care in the operation and handling of adsorption dryers, even if they are not expressly stated individually.

To ensure the proper operation of the system, it is essential that you observe the safety instructions and information in this operating manual.

All safety instructions are also for your personal safety!

The relevant occupational safety regulations, accident prevention regulations and operating instructions apply to the operation of the adsorption dryer. The adsorption dryer has been designed, constructed and built in accordance with generally accepted technical standards.

The design/development, production, assembly and customer service for the system are subject to a certified quality assurance system in accordance with DIN EN ISO 9001.

2.1. Intended use

The system may only be operated in accordance with its intended purpose. The adsorption dryer is designed exclusively for drying compressed air or nitrogen. Any other use of the system or use beyond this scope is considered improper. The manufacturer is not liable for any damage resulting from this, to the extent permitted by law. All work on pressure vessels and pipelines, such as welding, structural modifications, assembly work, etc., may only be carried out after prior consultation with the manufacturer and, if necessary, the notified body. Improper modifications can cause malfunctions, dangerous operating conditions, system shutdowns or the destruction of components. Any unauthorised modification may invalidate the declaration of conformity.

2.2. General safety instructions

WARNING! Danger from nitrogen!

Risk of suffocation if nitrogen escapes due to oxygen displacement!

- When drying nitrogen, do not operate the system in closed rooms, ensure adequate ventilation, discharge/extract the regeneration air if necessary, and observe additional country-specific regulations for handling gaseous nitrogen.

The medium to be dried must not contain any corrosive components that could attack the material of the pressure equipment in an impermissible manner.

The pressure and temperature of the medium must correspond to the specifications on the type plate and in the operating instructions for the device!

The pressure equipment is not designed to withstand loads from traffic, wind and earthquakes. If these loads occur, the pressure equipment must be protected against them by suitable measures.

Leave the operating instructions at the place of use!

Ensure that the operating instructions are always available at the system and accessible to operating personnel.

Use the correct tools!

When maintaining and repairing the system, you may only use tools that are in perfect condition and approved for the intended purpose. If special tools are required for certain tasks, this must be clarified with the manufacturer in advance.

DANGER! Do not make any structural changes to the plant!

Unauthorised modifications to pressure vessels or pipes, e.g. welding work or conversions, increase the risk of accidents for personnel. This jeopardises the safety of employees and the integrity of the system.

- Work on pressurised parts may only be carried out by the manufacturer or with their written consent.

DANGER! Do not deactivate any protective devices on the system!

If safety-related protective devices against exceeding the permissible operating parameters for pressure and temperature are deactivated, the system may enter a dangerous operating state. This endangers the life and limb of employees.

- Safety devices must never be bypassed, deactivated or tampered with. They must be kept in constant working order.

WARNING! Risk of injury due to pressure/temperature exceeding limits!

- It must be ensured that the pressure in the system components cannot exceed the permissible operating pressures under any circumstances.
- As standard, the operator is responsible for protecting the system against pressure exceedances. It must be ensured that the pressure-generating compressor and, if applicable, the compressed air network downstream of the adsorption dryer are adequately protected.
- The process technology ensures that the temperature at operating pressure cannot exceed the maximum permissible operating temperatures of the individual components. The operator must take appropriate measures to ensure that the temperatures of the feed materials do not exceed the permissible values for the system.
- Damage to components, loss of functionality, system failure and danger to personnel due to sudden pressure relief or material failure.

If the pressure equipment is under operating pressure, suitable measures must be taken to ensure that the permissible operating temperatures are maintained under the ambient conditions prevailing at the installation site.

Pressure vessels – Recurring tests / alternating load stress

Depending on the type, the cycle times of the pressure equipment result in a different number of load cycles per year. A service life of 10 years was taken into account in the design.

Sizes 035 - 100:
In Germany, an inspection of the pressure-bearing walls (internal inspection) must be carried out after 5 years at the latest, and a strength test (pressure test) after 10 years at the latest. Otherwise, the operator must observe the national regulations at the respective installation site and determine the inspection intervals in consultation with the competent notified body.

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FIRE HAZARD!

Uncontrolled pressure increase in the event of fire can lead to explosion, component failure and danger to life.

- If there are potential sources of fire at the installation site, the operator must ensure that suitable protective measures are taken to prevent the permissible operating parameters from being exceeded.

2.3. Safety instructions for transport and assembly

WARNING! Risk of injury and damage to property during transport!

Packages may have an off-centre centre of gravity. If not secured correctly, the package may tip over and fall. Falling or tipping packages can cause serious injury!

- The system must be attached and lifted at the designated points using suitable lifting equipment. The system must not be transported by the piping, as this may cause damage. This can lead to leaks in the piping system and even serious malfunctions of the system.
- Only allow qualified personnel to carry out all work.

CAUTION! Damage due to improper use!

Avoid danger from external forces and moments!

- Ensure that no additional forces and moments are transmitted to the adsorption dryer via the connected on-site pipelines that could exceed the permissible loads of the system. If necessary, this must be ensured by the operator by means of suitable evidence and/or on-site measures.
- Ensure that no impermissible oscillations, vibrations or pulsations from other units can be transmitted to the adsorption dryer. If necessary, this must be prevented by suitable measures on site.

2.4. Safety measures during operation

The basic prerequisite for the safe handling and trouble-free operation of this system is knowledge of and compliance with national work, operating and safety regulations. Furthermore, internal factory regulations must be observed.

Check the system at regular intervals for externally visible damage. Malfunctions or faults that could compromise safety must be rectified immediately. In the event of malfunctions, all instructions provided must be observed (see Chapter 14). If the measures listed there do not rectify the malfunction, please contact the manufacturer.

Only trained personnel from the manufacturer are permitted to operate the control system or the system.

WARNING! Risk of injury from blow-off noises!

Pressure relief can cause loud noises and possibly damage your hearing!

- Wear ear protection for your own safety!

2.5. Dangers from electrical energy

DANGER OF ELECTRIC SHOCK!

There is a risk of death from electrical voltage and electrostatic discharge on electrical components!

- Work on the electrical supply must be carried out by a trained and authorised specialist in accordance with DIN VDE regulations (or comparable country-specific regulations) and the regulations of the respective power supply company.
- The device may only be connected to an electrical network that has been installed in accordance with regulations.
- If work on live parts is necessary, a second person must be called in to switch off the main switch and secure it against being switched back on. Secure and cordon off the work area and put up a warning sign. Only use voltage-insulated tools.
- The electrical equipment of the system must be checked regularly. Only use original fuses with the specified voltage and amperage.
- Never touch electrical components and contacts when the operating switch is switched on!
- Switch off the device immediately in the event of power supply faults.
- Regularly check the earth conductor and the protective conductor system, including all connections!
- Switch off the operating switch before carrying out any work on the electrical supply.

2.6. Hazards posed by the desiccant

The adsorbents used are located in the adsorber cartridges.

The selection of adsorbents is tailored to the treatment plant. Only adsorption cartridges from the manufacturer may be used.

Adsorbents are chemicals and are therefore subject to the usual precautions (safety data sheet). The adsorbents used here are not subject to labelling in accordance with the Hazardous Substances Ordinance.

Always store adsorbent cartridges in a place that is only accessible to authorised personnel.

2.7. Safety instructions for maintenance and repair work

Anyone involved in the installation, commissioning, operation, maintenance, repair or similar at the user's premises must have read and understood the operating instructions, in particular the safety instructions. If you have any questions, please contact the manufacturer.

The manufacturer is not liable for damage resulting from improper installation and commissioning of the system. The operator bears the sole risk for this.

Responsibilities for maintenance and repair work must be clearly defined. Inform operating personnel before starting maintenance and repair work. Have the manufacturer's customer service department carry out the prescribed adjustment, maintenance and inspection work in a timely manner.

All maintenance and repair work on the system must be carried out in accordance with the instructions.

DANGER! Danger to life due to unauthorised restarting

Unauthorised reconnection of the power supply during maintenance poses a risk of serious injury or even death to persons in the danger zone.

- For some maintenance and repair work, the system must be taken out of operation and depressurised and de-energised. You are putting yourself and others at risk if you carry out this work on the running system.

- Shut down the system properly.
- Depressurise the system.
- To switch off, disconnect the system from the mains and secure it against restarting.
- Attach a warning sign to prevent restarting.

Replace wear parts in accordance with the intervals specified in the "Device and spare parts list" or Chapter 15.2 "Service sets". This list is part of the operating instructions.

Only use original spare parts and accessories from the manufacturer. There is no guarantee that parts sourced from other suppliers have been designed and manufactured to meet the required stress and safety requirements.

DANGER FROM DAMAGED COMPONENTS!

Damaged components or pressure equipment can lead to sudden pressure loss or uncontrolled gas leakage during further operation, posing a risk of injury. The system can no longer be operated safely.

- Damaged components must be replaced with new ones.
- If there is visible severe damage to pressure equipment, it must be taken out of service immediately!
- For your own safety, we recommend that you have wear parts or damaged parts replaced by the manufacturer's customer service department.
- After completing maintenance work, a leak test must be carried out.

WARNING! Risk of injury and damage to property during transport!

Packages may have an off-centre centre of gravity. If loaded incorrectly, the package may tip over and fall. Falling or tipping packages can cause serious injury!

- Carefully attach and secure larger assemblies to lifting gear when replacing them! Only use suitable and technically sound lifting gear and load-bearing equipment with sufficient load-bearing capacity!
- When carrying out assembly work above head height, use safetycompliant climbing aids and work platforms! Never use machine parts as climbing aids; risk of falling! Wear fall protection when carrying out maintenance work at heights above 1.80 m!
- Only allow qualified personnel to carry out all activities.

2.8. Obligations of the operator

The operator undertakes to ensure that the system is only operated by persons who are familiar with the safety regulations and the handling of the system. These are in detail:

Safety

- Accident prevention regulations
- General and system-related safety instructions
- Safety equipment of the system
- Measures in emergencies

Operation of the system

- Measures to be taken when commissioning the unit
- What to do in the event of malfunctions
- Shutting down the system

2.9. Obligations of personnel

All persons responsible for operating the system undertake to,

- to observe the basic regulations on occupational safety and accident prevention,
- to have read and understood the operating instructions,
- follow the instructions in the operating manual.

3 Product description

The DRYPOINT® ACC 005 - 100 and ACC P 005 - 100 are heatless regenerating adsorption dryers for drying and treating compressed air or nitrogen.

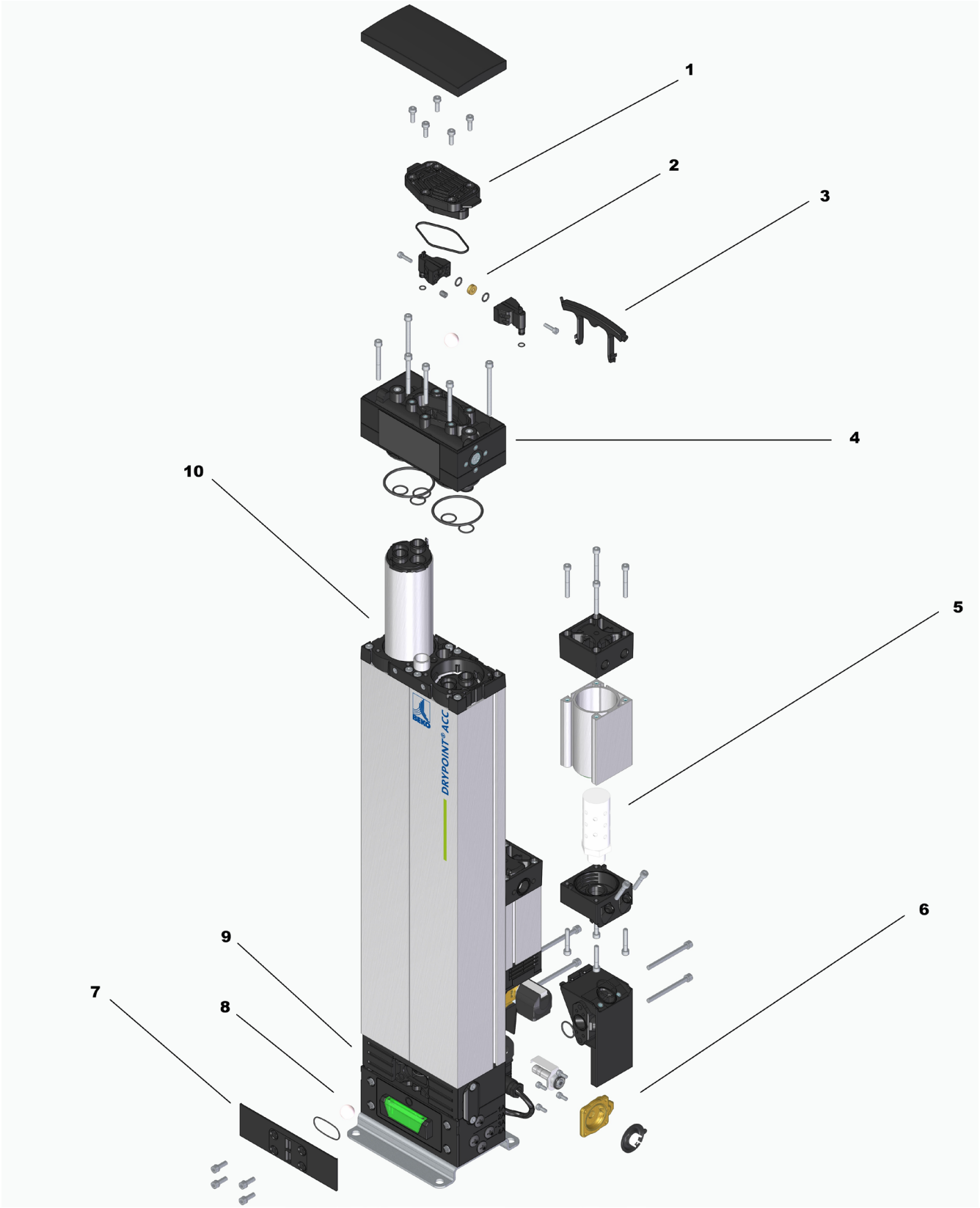
3.1. System components

3.1.1. ACC 005 - 025 and ACC 035 - 100

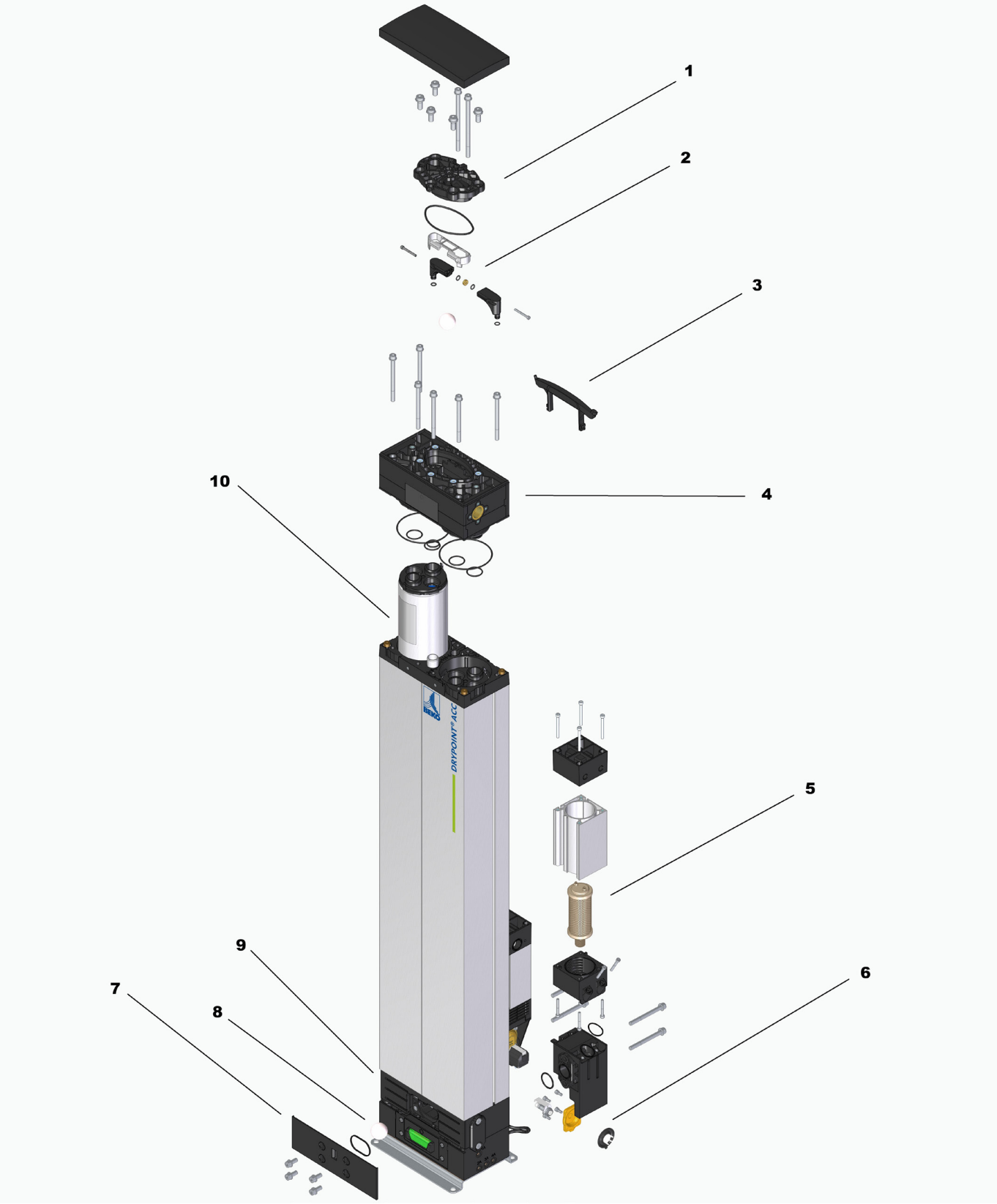
Drawing number	Component	Quantity
01	Top cover shuttle-valve	1
02	Regeneration air nozzle	1
03	Cartridge lifter	1
04	Adsorber cover	1
05	Silencer	2
06	Valve membrane	2
07	Lower shuttle-valve cover	1
08	Shuttle-valve ball	2
09	Electronic control	1
10	Desiccant cartridges	2-12*

*depending on size

ACC 005 - 025



ACC 035 - 100

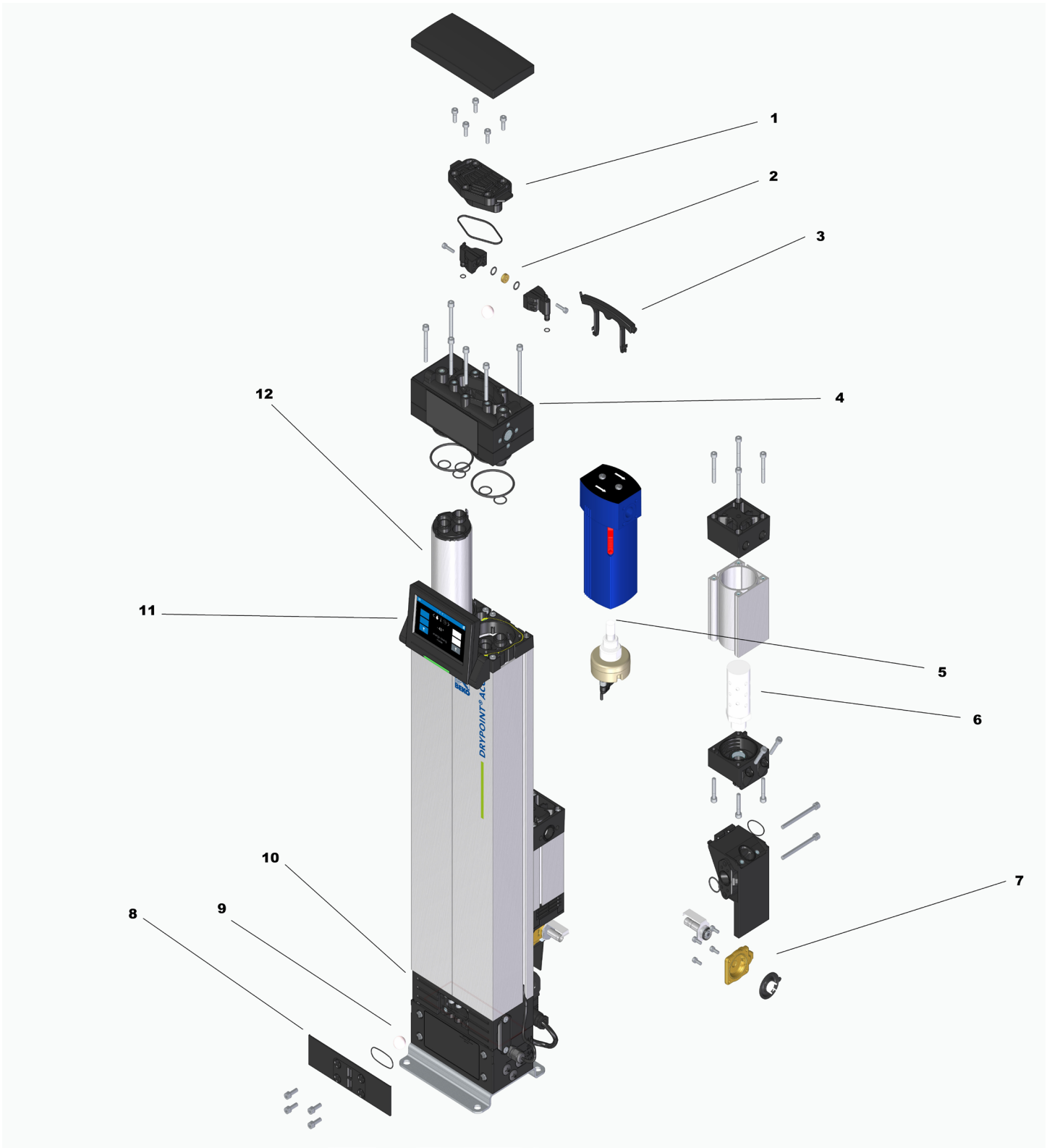


3.1.2. ACC P 005 - 025 and ACC P 035 - 100

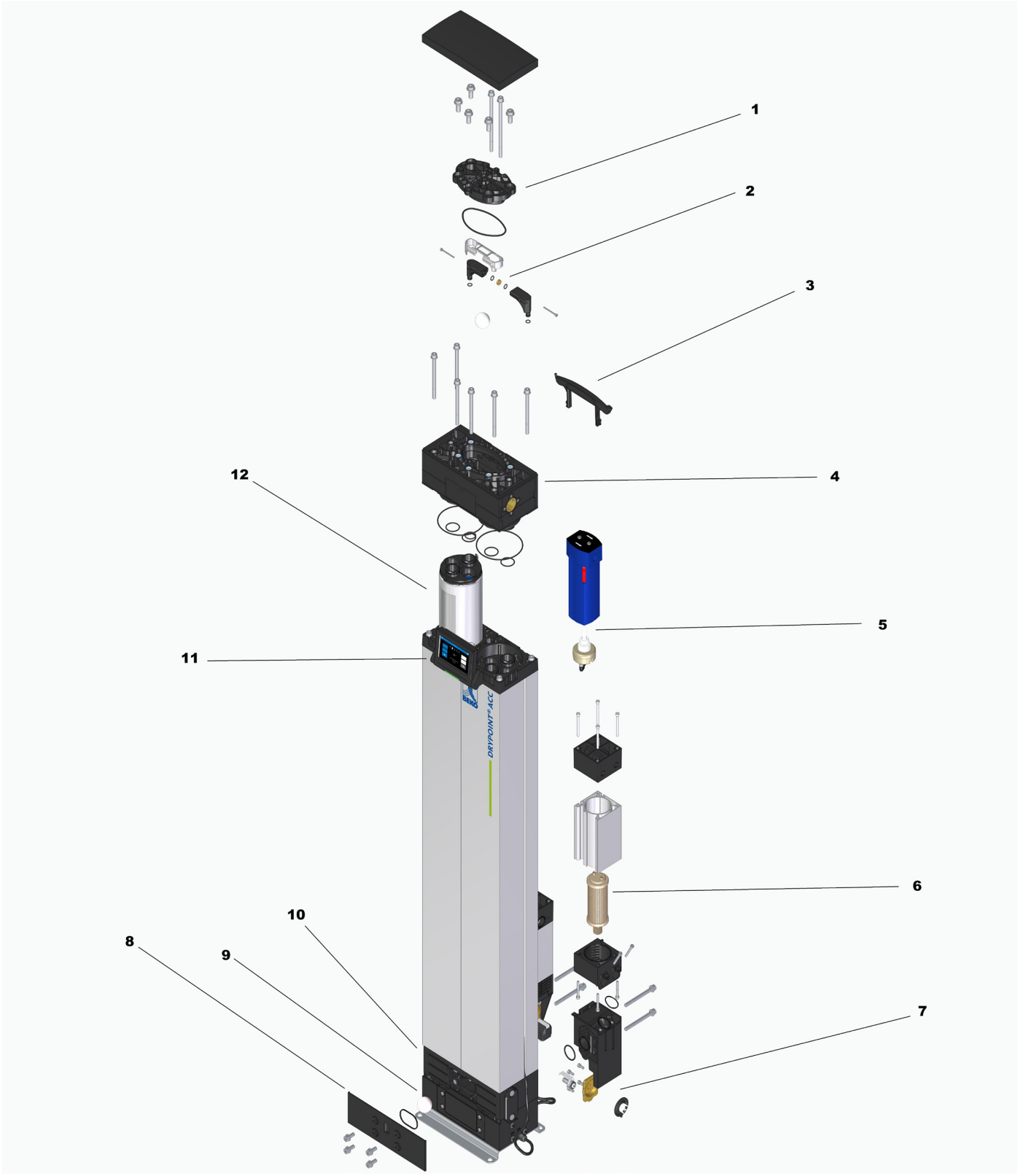
Drawing number	Component	Quantity
1	Top cover shuttle-valve	1
2	Regeneration air nozzle	1
3	Cartridge lifter	1
4	Adsorber cover	1
5	Dew point transmitter with after-filter housing	1
6	Silencer	2
7	Valve membrane	2
8	Lower shuttle-valve cover	1
9	Shuttle-valve ball	2
10	Electronic control	1
11	Control panel (ACC P only)	1
12	Desiccant cartridges	2-12*

* depending on the size

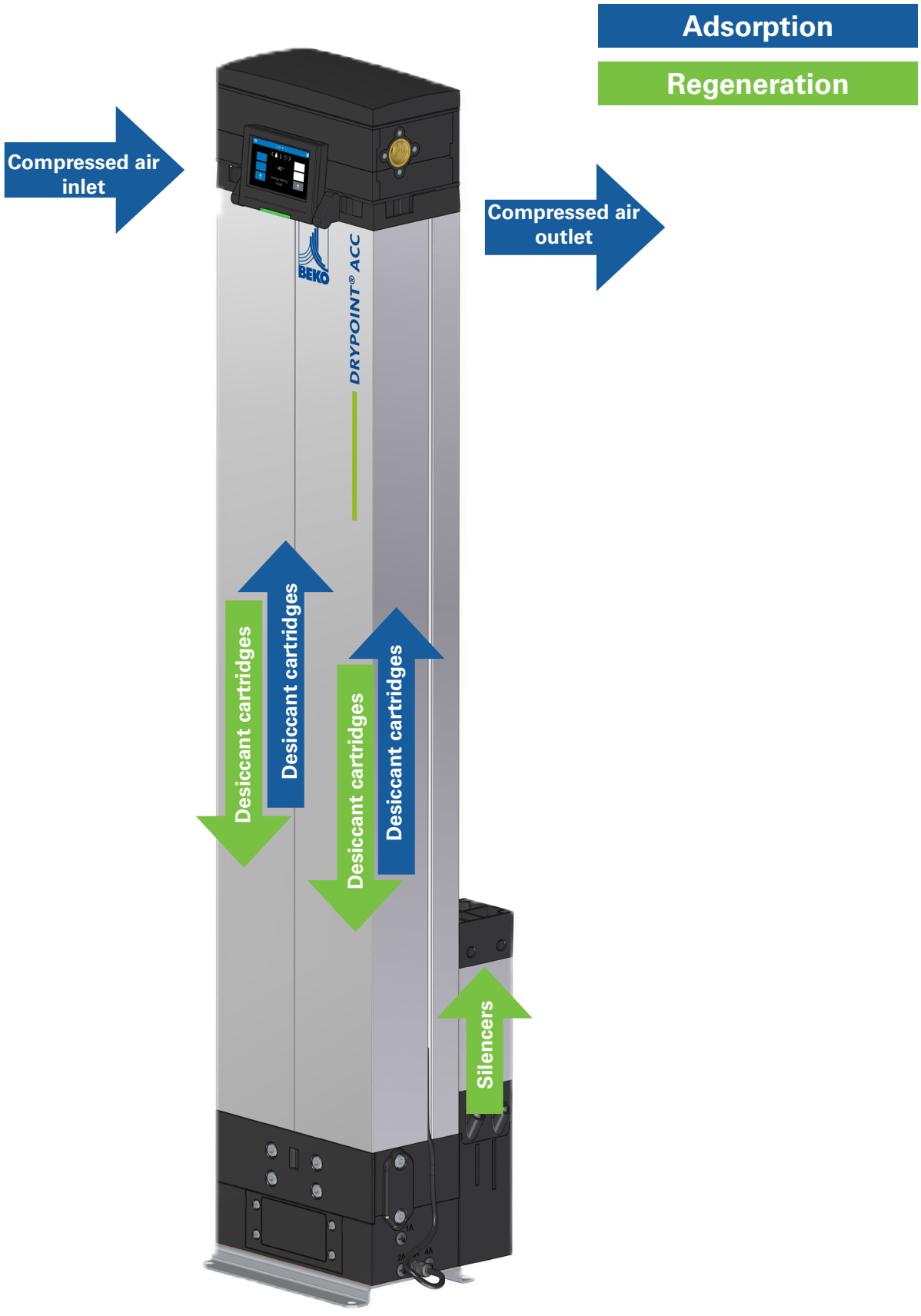
ACC P 005 - 025



ACC P 035 - 100

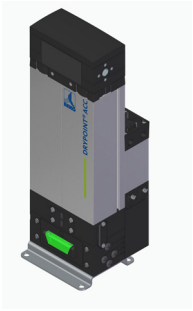


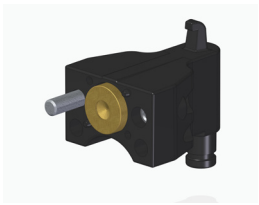
3.2. Schematic representation

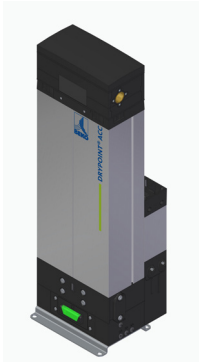


3.3. Scope of delivery

Protective devices against exceeding pressure and temperature are not included in the standard scope of delivery of the system. If they are available as an option, they must never be disabled or bypassed.

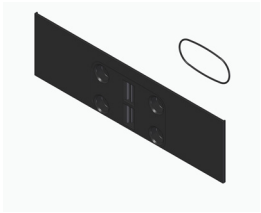
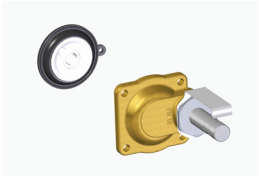
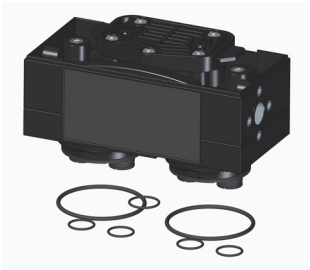
DRYPOINT® ACC / ACC P 005 - 025			
	Illustration	Designation	Quantity
1		DRYPOINT® ACC	1
		DRYPOINT® ACC P	1
2		Cartridge lifter 005 - 025	1
3		Operating instructions on USB	1

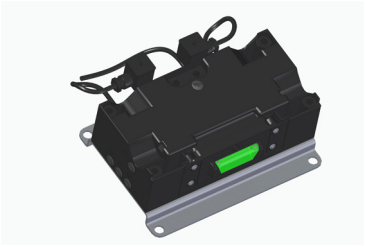
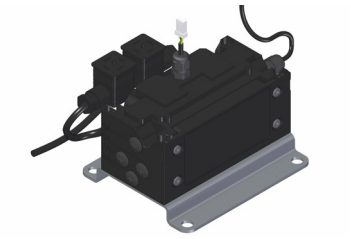
DRYPOINT® ACC / ACC P 005 - 025			
	Illustration	Designation	Quantity
4		Regeneration air nozzle 005 - 025 4 - 6 bar(g) - supplied	1
5		Regeneration air nozzle 005 - 025 9 - 12 bar(g) - provided	1
6		Regeneration air nozzle 005 - 025 13 - 16 bar(g) - provided	1
7		Regeneration air nozzle 005 - 025 7- 8 bar(g) - already installed	1
8		Eye bolt M5 005 - 025	2
9		Dew point transmitter (only for ACC P)	1

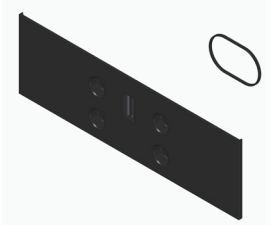
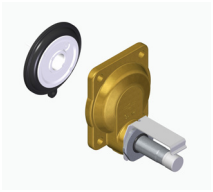
DRYPOINT® ACC / ACC P 035 - 100			
	Illustration	Designation	Quantity
1		DRYPOINT® ACC	1
		DRYPOINT® ACC P	1
3		Cartridge lifter 035 - 100	1
4		Operating instructions on USB	1

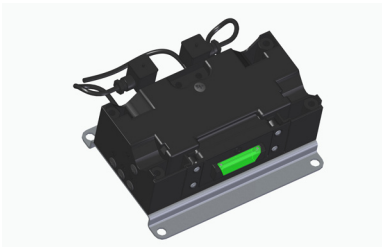
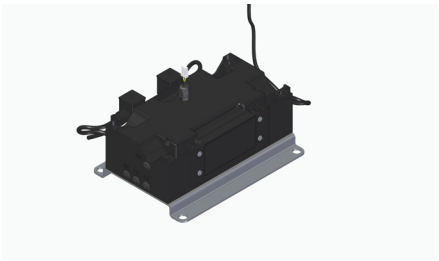
DRYPOINT® ACC / ACC P 0035 - 100			
	Illustration	Designation	Quantity
5		Regeneration air nozzle 035 - 100 4 - 6 bar(g) - provided	1
6		Regeneration air nozzle 035 - 100 9 - 12 bar(g) - provided	1
7		Regeneration air nozzle 035 - 100 7- 8 bar(g) - already installed	1
8		Eye bolt M8 035 - 100	2
9		Dew point transmitter (only for ACC P)	1

3.4. Accessories / Spare parts

DRYPOINT® ACC / ACC P 005 - 025			
	Illustration	Designation	Quantity
1		Membrane housing 005 - 025 right incl. 2x O-rings	1
2		Membrane housing 005 - 025 left incl. 2x O-rings	1
3		Shuttle-valve housing 005 - 025 incl. 1x O-ring	1
4		Shuttle-valve cover 005 - 025 incl. 1x O-ring	1
5		Solenoid valve cover 005 - 025 incl. 1x membrane	1
6		Adsorber cover 005 - 025 incl. 7x O-rings	1

DRYPOINT® ACC / ACC P 005 - 025			
	Illustration	Designation	Quantity
7		Cartridge lifter 005 - 025	1
8		Dew point transmitter (only with ACC P)	1
9		Spare control unit ACC 005 - 025 230 V 50 - 60 Hz	1
10		Spare control ACC 005 - 025 110 V 50 - 60 Hz	1
11		Replacement control ACC 005 - 025 24 V	1
12		Spare control ACC P 005 - 025 230 V 50 - 60 Hz	1
13		Spare control ACC P 005 - 025 110 V 50 - 60 Hz	1
14		Replacement control ACC P 005 - 025 24 V	1
15		Control display (only for ACC P)	1

DRYPOINT® ACC / ACC P 035 - 100			
	Illustration	Designation	Quantity
1		Membrane housing 035 - 100 right incl. 2x O-rings	1
2		Membrane housing 035 - 100 left incl. 2x O-rings	1
3		Shuttle-valve housing 035 - 100 incl. 1x O-ring	1
4		Shuttle-valve cover 035 - 100 incl. 1x O-ring	1
5		Solenoid valve cover 035 - 100 incl. 1x membrane	1
6		Adsorber cover 035 - 100 incl. 7x O-rings	1

DRYPOINT® ACC / ACC P 035 - 100			
	Illustration	Designation	Quantity
7		Cartridge lifter 035 - 100	1
8		Dew point transmitter (only with ACC P)	1
9		Spare control unit ACC 035 - 100 230 V 50 - 60 Hz	1
10		Spare control ACC 035 - 100 110 V 50 - 60 Hz	1
11		Spare control ACC 035 - 100 24 V	1
12		Spare control ACC P 035 - 100 230 V 50 - 60 Hz	1
13		Replacement control ACC P 035 - 100 110 V 50 - 60 Hz	1
14		Spare control unit ACC P 035 - 100 24 V	1
15		Control display (only for ACC P)	1

3.5. Dew point transmitter UDM 515

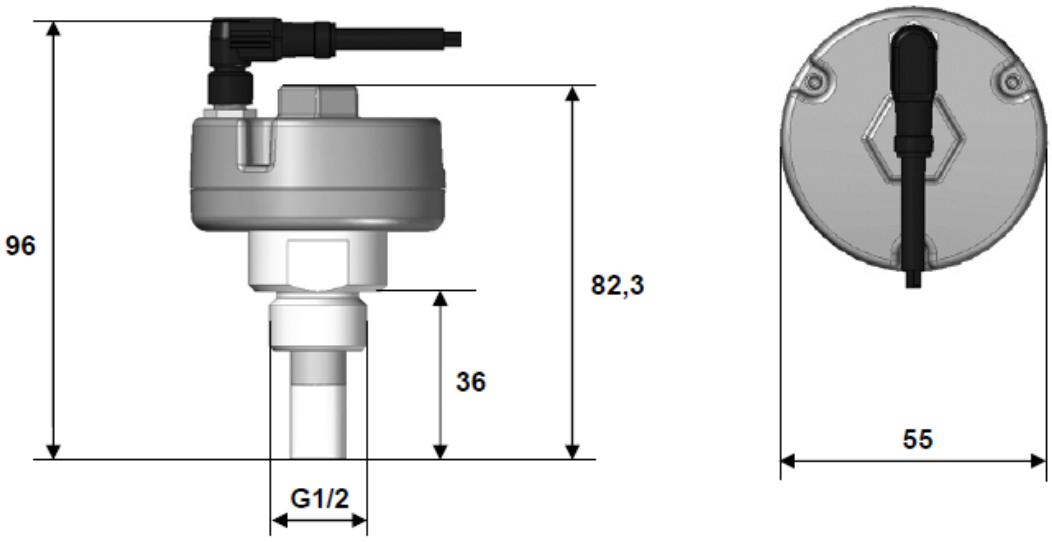
The UDM 515 dew point transmitter enables reliable and long-term stable dew point monitoring in industrial applications.

Technical data	
Area of application:	Dew point measurement of compressed air from adsorption dryers
Medium:	- The dew point transmitter can be used for compressed air up to a saturation of 100% relative humidity - Medical gases - Non-corrosive gases Fluid group 2 according to DGRL 2014/68/EU, e.g. nitrogen, etc.
Air humidity:	max. 100 %
Ambient temperature:	-25…+55 °C
Operating altitude:	up to 2000 m above sea level
Pressure range:	-1…50 bar PN50 (standard) -1…400 bar PN400, 100% pressure tested
Connection thread:	G 1/2" stainless steel
Power supply:	24 V DC (10...30 V DC)
Current consumption:	≤ 60 mA (corresponds to Modbus operation)
Protection class:	IP 65
EMC:	DIN EN 61326-1
Effective measuring range: **Accuracy:**	Pressure dew point (DTP) +20 to-70 °C, 3-point calibration ± 1 °C at +20 to-20 °C DDP ± 2 °C at-20 to-50 °C DTP ± 3 °C at-50 to-70 °C DDP
Temperature measurement range: **Accuracy:**	-20 °C to +70 °C, 1-point calibration at +22 °C ± 0.5 °C
Scaled measuring range:	-110 °C to +20 °C (DTP)

Technical data	
Interfaces*:	Analogue = 4…20 mA in 2-wire technology Load ≤ 500 ohms
Materials Sensor housing: Sensor carrier: Sensor protective cap: Surfaces:	 Zinc alloy Z410 Stainless steel 1.4404 Stainless steel 1.4301 Nickelplated sensor housing
Connection:	M8, 4-pin

* The temperature can also be read digitally in °C.
Only one interface can be active and used at a time.
Switching between the two interfaces is done using special software.

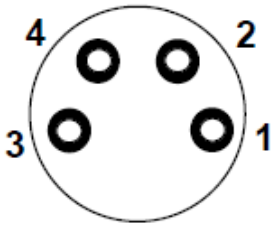
Dimensions



Electrical connection

		Pin 1	Pin 2	Pin 3*	Pin 4*
UDM 515	**Connector plug**	+VB	-VB	Modbus A	Modbus B
	Connection cable (max. 10 m)	brown	white	blue	black

* Modbus cannot be used for 2-wire applications

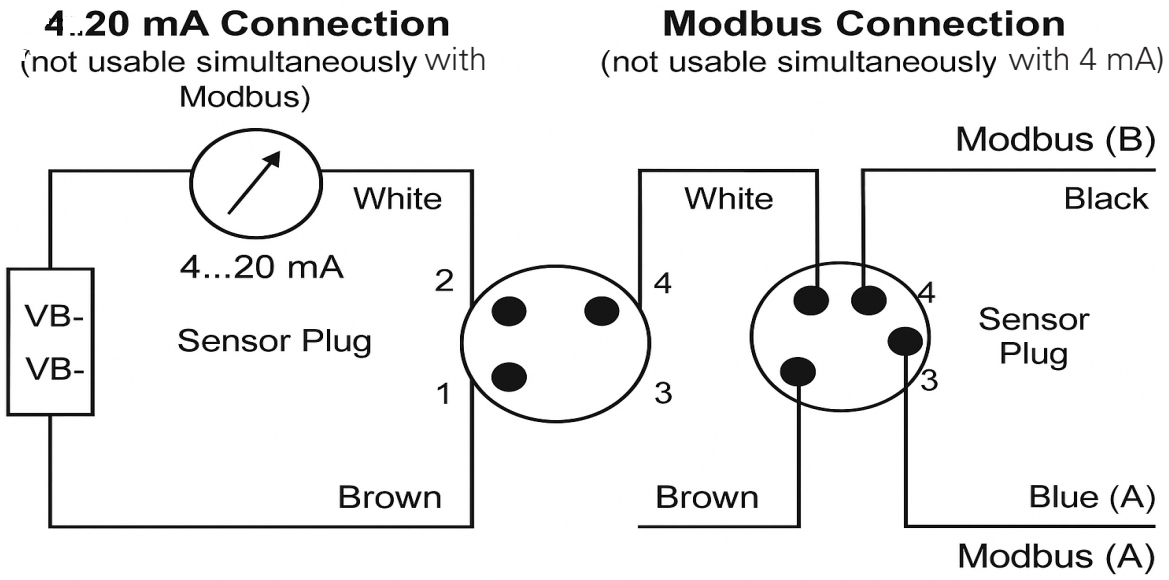


Connection cable
(socket)

+VB	Supply voltage 24 V DC (10...30 V DC) smoothed
-VB	GND
Modbus (A)	RS485 (+)
Modbus (B)	RS485 (-)

M8 connector plug - connection diagram
The user can connect the supply and signal lines as shown in the connection diagram.

Note:
The sensor must be connected in a de-energised state.



Modbus

The UDM 515 has a standard 4…20 mA analogue output in 2-wire technology and an RS 485 Modbus output. However, only either the 4…20 mA analogue output or the RS 485 Modbus output can be used. Due to the 4…20 mA 2-wire technology (low power), both outputs cannot be used simultaneously.

Switching from 2-wire technology to Modbus and back requires the service software or can be set via the control system of the respective dryer.

Before commissioning the sensor, the communication parameters

Modbus ID, baud rate, parity and stop bit

must be set to enable communication with the Modbus client. The setting can be made using the PC service software.

Default values for communication parameters:
- Modbus ID: 1 (1 - 247)
- Baud rate: 19200 bps (1200, 2400, 4800, 9600, 19200, 38400 bps)
- Parity: even (none, even, odd)
- Stop bit: 1 (1,2)

The following function codes are supported:
- Function code 03: Read Holding Register
- Function code 16: Write Multiple Register

Register mapping of the value registers:

Modbus Register	Modbus adress	No.of bytes	Data Type	Description	Default Setting	Read Write	Unti/ Comment
1001	1000	4	Float	Temperature		R	[°C]
1003	1002	4	Float	Temperature		R	[°F]
1005	1004	4	Float	Relative Humidity		R	[%]
1007	1006	4	Float	Dew Point		R	[°Ctd]
1009	1008	4	Float	Dew Point		R	[°Ftd]
1011	1010	4	Float	Absolute Humidity		R	[g/m³]
1013	1012	4	Float	Absolute Humidity		R	[mg/m³]
1015	1014	4	Float	Humidity Grade		R	[g/kg]
1017	1016	4	Float	Vapor Ratio (Volume)		R	[ppm]
1019	1018	4	Float	Saturation Vapor Pressure		R	[hPa]
1021	1020	4	Float	Partial Vapor Pressure		R	[hPa]
1023	1022	4	Float	Atmospheric DewPoint		R	[°Ctd]
1025	1024	4	Float	Atmospheric DewPoint		R	[°Ftd]

Device settings register
Modbus Settings (2001...2006)

Modbus Register	Modbus Address	No.of bytes	Data Type	Description	Default Setting	Read Write	Unit /Comment
2001	2000	2	UInt16	Modbus ID	1	R/W	Modbus ID 1…247
2002	2001	2	UInt16	Baudrate	4	R/W	0 = 1200 1 = 2400 2 = 4800 3 = 9600 4 = 19200 5 = 38400
2003	2002	2	UInt16	Parity	1	R/W	0 = none 1 = even 2 = odd
2004	2003	2	UInt16	Number of Stopbit		R/W	0 = 1 Stopbit 1 = 2 Stopbit
2005	2004	2	UInt16	Word Order	0xABCD	R/W	0xABCD = Big Endian 0xCDAB = Middle Endian
2006	2005	2	UInt16	Modbus Enabled	0	R/W	0 = Modbus disabled 1 = Modbus Enabled

Analog Scaling Settings (2007...2011)

Modbus Register	Modbus Address	No.of bytes	Data Type	Description	Default Setting	Read Write	Unit /Comment
2007	2006	4	UInt32	Output Value	4	R/W	0 = 4...20 mA disabled 1 = Temperature [°C] 2 = Temperature [°F] 3 = relative Humidity [%] 4 = DewPoint [°C] 5 = DewPoint [°F] 6 = Absolute Humidity [g/m3] 7 = Absolute Humidity [mg/m3] 8 = Humidity Grade [g/kg] 9 = Vapor Ratio [ppm] 10 = Saturation Vapor Pressure[hPa] 11 = Partial Vapor Pressure [hPa] 12 = Atmospheric DewPoint [°C] 13 = Atmospheric DewPoint [°F]
2009	2008	4	float	4 mA Scale Low	-110	R/W	
2011	2010	4	float	20 mA Scale High	20	R/W	

3.6. Function

The compressed air flows through a pre-filter (optional) with an integrated condensate drain to the shuttle-valve. Depending on its position, the air is directed to one of the two adsorbers, where it releases its moisture to the desiccant within the specified adsorption time and flows through the second shuttle-valve and the post-filter to the outlet in a dry and clean state. The water vapour content of the compressed air is reduced to at least the specified pressure dew point of-40 °C. Part of the dried compressed air flows through the regeneration air nozzle into the other adsorber, which is in regeneration mode. The partial flow of dried compressed air extracts the moisture from the desiccant of the regenerating adsorber and discharges it from the dryer via the associated open regeneration valve and the silencer. Once the regeneration time set in the control system has elapsed, the open regeneration valve closes. Pressure builds up in the regenerated adsorber in a time-controlled manner. Once the pressure build-up time has elapsed, the regeneration valve of the previously adsorbing adsorber opens. The shuttle-valve are switched to the second position by the operating pressure.

3.7. Adsorption

The adsorption dryers operate with alternating adsorption and regeneration phases. In the two adsorbers, the medium is dried alternately in one adsorber while the other adsorber is regenerated. This process ensures continuous operation. The medium to be dried enters the pre-filter (optional) at the wet gas inlet. Here, condensate and dirt particles are separated by the microfilter. The medium flows through the lower shuttle-valve from bottom to top through one of the two adsorbers.

At the upper part of the adsorber, the dried medium passes through the upper shuttle-valve to the post-filter (optional). Here, fine dust and any desiccant abrasion that may have occurred are separated by the dust filter, and the dried and cleaned medium enters the pipeline network at the dry gas inlet.

3.8. Regeneration (dryer stage)

The moisture-laden desiccant is regenerated using a partial flow of the dried medium. At the start of regeneration, the solenoid valve at the regeneration gas outlet is opened. This depressurises the adsorber to atmospheric pressure. The compressed air escapes from the system via the silencers. A partial flow of the dried medium flows from the adsorbing adsorber, via the bypass line in the upper pipe, from top to bottom through the adsorber to be regenerated and through the silencers into the atmosphere. The required amount of regeneration gas is provided by the regeneration air nozzle.

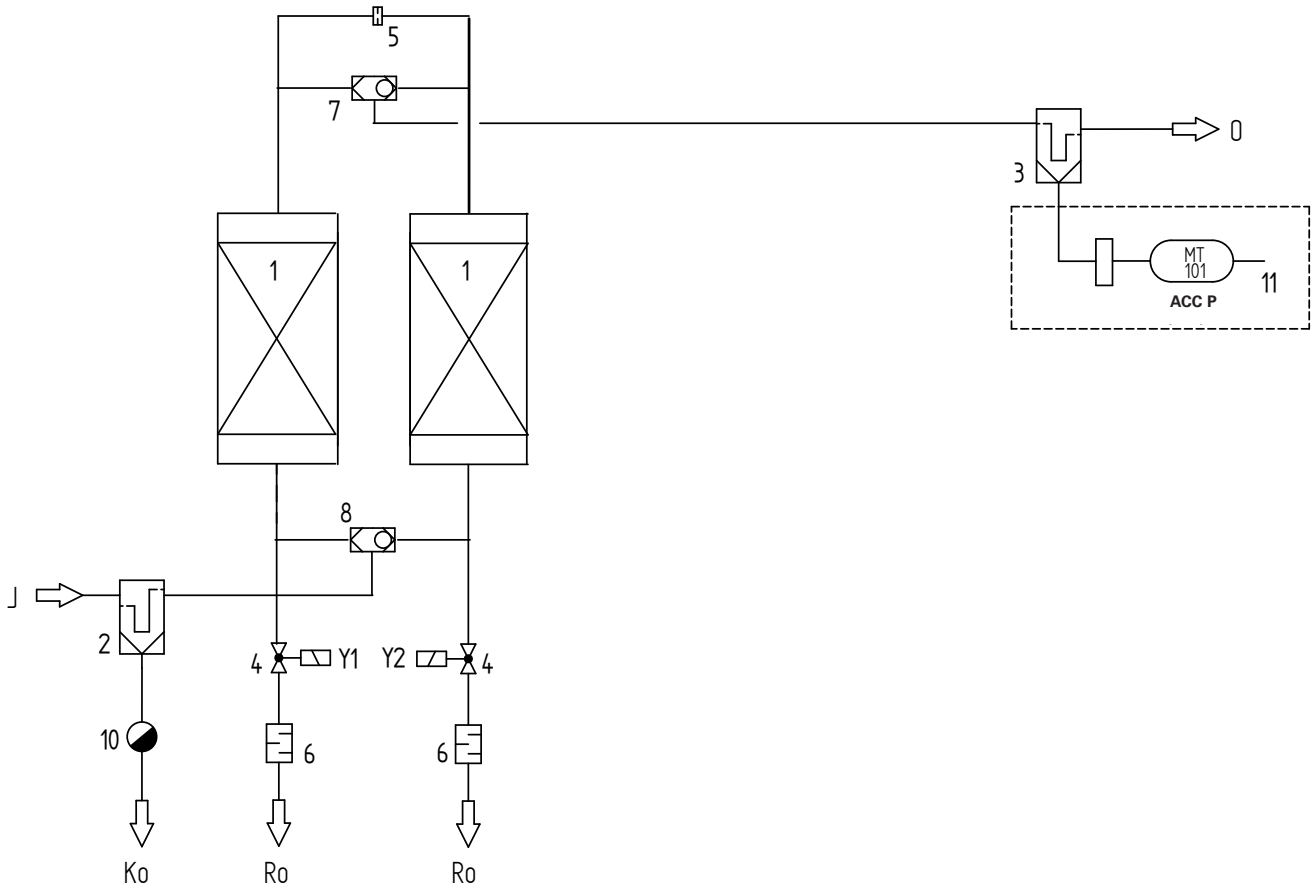
3.9. Pressure build-up (dryer stage)

At the end of the regeneration phase, the solenoid valve at the regeneration gas outlet is closed. Pressure builds up in the regenerating adsorber via the bypass line in the upper pipe. The regenerated adsorber remains at operating pressure in "standby" mode until the switchover process begins.

3.10. Switchover process (dryer stage)

The switching process is time-controlled (see section 3.11).

R&I - Flow chart



3.11. Electronic control function

3.11.1. Time control (ACC)

The electronic control unit has an LED display that shows the statuses "Operation", "Intermittent operation", "Service" and "Alarm". The control unit has a potential-free collective alarm. Furthermore, as described in Chapter 8.5 "Intermittent operation", the control unit can be connected to the compressor. The dryer only operates when the compressor is running. The adsorption cycle for an adsorber is set to 2 minutes. The adsorption time is calculated from the regeneration time of 100 seconds and the pressure build-up time of 20 seconds for the respective regenerating adsorber.

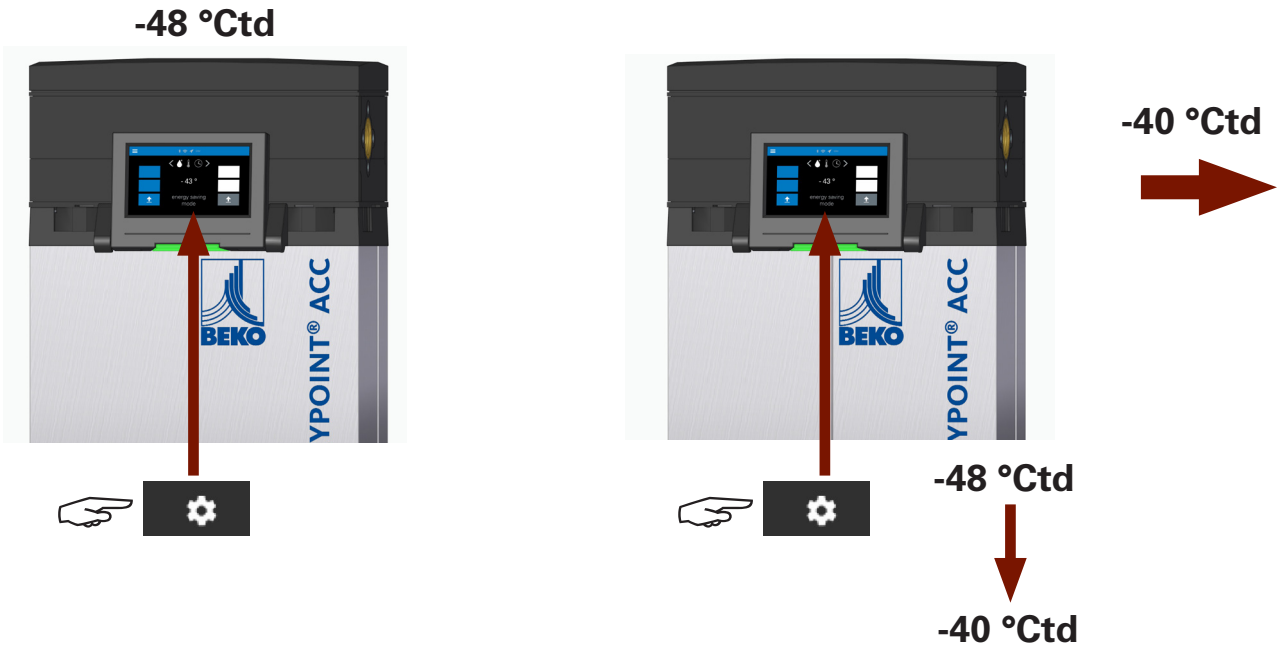
3.11.2. Dew point control (ACC P)

The control system is factory-set to load-dependent operating mode.

The electronic control offers a wide range of configuration options via a touch display to optimally adapt the dryer to individual requirements.
In conjunction with the dew point transmitter, not only energy costs are reduced, but the desiccant capacity is also optimally utilised by extending the drying time without causing undesirable dew point peaks.

For information on setting this operating mode, see section 11.3.2.

Load-dependent control is implemented by means of a so-called "working window" in the control programme. The two switchover points are used to define a range in which the loaddependent control is to operate.
Switching point A is always 8 °Ctd and B 3 °Ctd lower than the set dew point value (nominal value), meaning A = nominal value-8 °Ctd and B = nominal value-3 °Ctd. Example: if the dew point is set to-40 °Ctd, then switching point A =-48 °Ctd and B =-43 °Ctd. If the temperature falls below A, the control system switches to "ECO Time" to save energy.
The default settings are switching point A =-48 °C and switching point B =-43 °C. Switching point B is set automatically by the control system.
If the "dew point control" mode is set, the adsorption dryer adsorbs moisture in one of the two adsorbers until the pressure dew point at the dry air outlet has risen to the value set at switchover point B.
Once switching point B has been reached, the control system operates in a time-controlled cycle (120 seconds of adsorption, including 100 seconds of regeneration and 20 seconds of pressure build-up) until the pressure dew point set at switching point A is reached again. The control system then operates again in the load-dependent cycle until the pressure dew point at the dry air outlet has risen to the value set at switchover point B.
During ECO Time (with a load-dependent extended cycle), the regenerated container remains under operating pressure so that the adsorber can be switched immediately from regeneration/ECO Time to adsorption. The current ECO Time can be shown on the display.



3.11.3. Intermittent operation

If the dryer is operated intermittently, it must be installed as shown in the diagram in section 8.5. If the compressor is operated intermittently, it is possible to link the dryer control system to the compressor control system. This ensures that the regeneration of the dryer is not interrupted. The dryer remains in intermittent operation after pressure build-up is complete if no compressed air is being consumed. The dryer control is linked to the compressor control by connecting the potential-free normally open contact on the compressor to the terminal strips (digital input) of the control board. The contact must be closed when the compressor is not running. The ACC P control system displays the "intermittent operation" status in plain text, and the ACC control system displays it via a green flashing status indicator. This operating mode can only be used if the dryer is installed directly behind the compressor and a storage tank is connected downstream of the dryer, which must be dimensioned so that the regeneration of the adsorption dryer can be completed without the compressor restarting. If a potential-free contact of the compressor is connected (opens when the compressor is running), intermittent operation is active.

At the start of the desorption phase, the compressor running time is totalled. At the end of the adsorption phase, the control system checks whether the compressor running time is greater or less than the set factor of, for example, 1 minute. If this time is not reached, the active regeneration valve closes to prevent unnecessary air consumption from the pressure vessel. At the same time, the control system switches to intermittent operation. When the compressor starts to build up pressure again (air is extracted again), the control system continues the programme sequence.

3.11.4. Behaviour of the control system in the event of a power failure

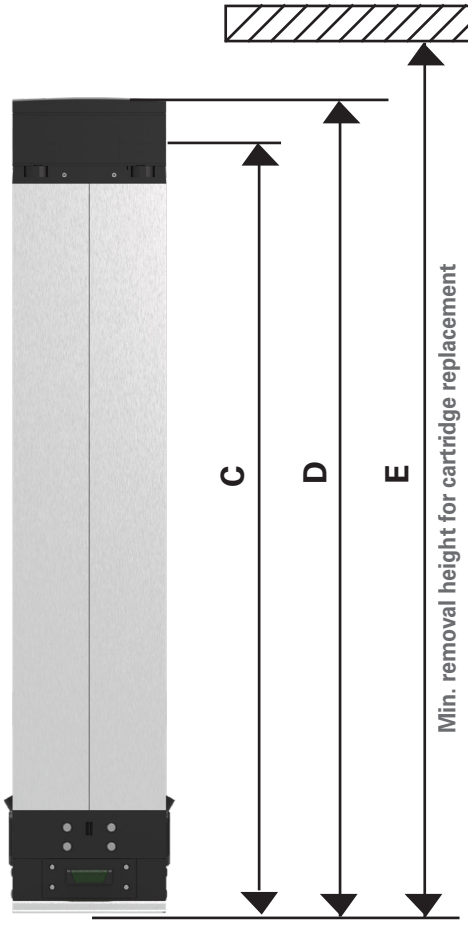
The control system has an intelligent data backup system. If the mains voltage drops or even fails completely, the control system performs a data backup. All necessary data is saved. After the mains voltage is restored, the control system builds up pressure and continues working from the point where the interruption occurred.

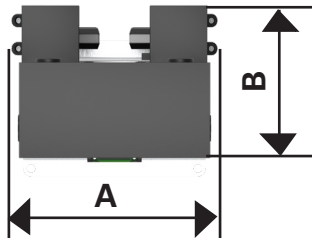
4 Technical data

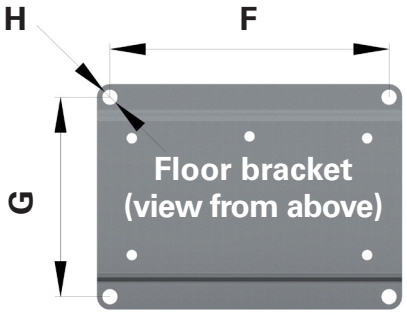
DRYPOINT® ACC / ACC P 005 - 100	
Functional principle	Fully automatic, heatless regenerating for continuous operation
Spannungsversorgung	
Power supply depending on model	220 - 230 V AC / 50 - 60 Hz, 110 - 115 V AC / 50 - 60 Hz, 24 V DC +/-10%
Power supply cable	AC: 3 x 1,0 mm^2 / DC: 2 x 1,0 mm^2
Power consumption and internal fuse protection	ACC: 24 V DC = 12 W, AC = 15 VA / 12 W
	ACC P: 24 V DC = 16 W, AC = 19 VA / 16 W
Internal fuse	2 A slow-blow, 250 V, ceramic tube fuse
Contact rated voltage Relay solenoid valves	230 V AC / 115 V AC / 24 V DC
Contact rated current Relay solenoid valves	5 A (resistive load)
Contact rated voltage Relay alarm	40 V
Contact rated current relay alarm	1 A (resistive load)
Protection class	IP65 UL 50 E Type 5
Overvoltage category	II
Design data	
Medium	Compressed air / nitrogen
Operating pressure	min. 4 bar(g) / max. 16 bar(g) (types 005 to 025) min. 4 bar(g) / max. 12 bar(g) (types 035 to 100)
Medium temperature	min. 5 °C / max. 55 °C
Pressure dew point	min.-40 °C (other pressure dew point options available on request)
Ambient temperature	min. +4 °C / max. +50 °C
Ambient humidity	max. 100% at 50 °C
Operating environment	0- 2000 m above sea level (indoor)
Sound power level measured 1 m in front of and behind the dryer	ACC / ACC P 005 - 025: 106,7 dB ACC / ACC P 035 - 100: 98,3 dB
Degree of contamination	2
Pressure vessel	
Design overpressure	min. 4 bar(g) / max. 16 bar(g) (types 005 to 025) min. 4 bar(g) / max. 12 bar(g) (Type 035 to 100)
Test overpressure	23 bar(g)
Design temperature	0 °C to +55 °C
Desiccant	
Type of desiccant	Molecular sieve 10Å
Purity of compressed air at dryer inlet	
Water vapour content depending on temperature and saturation level	5 :-: 4 according to ISO 8573-1:2010

Reference conditions: According to ISO 7183 Compressed air inlet temperature +35 °C / 7 bar(g) Operating pressure		
Type	Nominal flow rate m^3 /h	Connection according to DIN EN ISO 228-1
005	5	3/8″
010	10	3/8″
015	15	3/8″
025	25	3/8″
035	35	3/4″
050	50	3/4″
065	65	3/4″
080	80	3/4″
100	100	3/4″

5 Dimensions







Size	F mm	G mm	H mm
005 - 025	138	117	11
035 - 100	236	169	13

Size	Connections	A mm	B* mm	C mm	D mm	E mm	Weight kg
005	3/8“	183	169	450	489	897	10
010	3/8“	183	169	717	756	1164	15
015	3/8“	183	169	984	1023	1431	21
025	3/8“	183	169	1518	1557	1965	31
035	3/4“	290	241	788	850	1266	34
050	3/4“	290	241	1052	1114	1530	45
065	3/4“	290	241	1316	1378	1894	57
080	3/4“	290	241	1580	1642	2058	68
100	3/4“	290	241	1844	1906	2322	79

*Total depth including floor mount

6 Installation conditions

To ensure trouble-free operation and achieve the guaranteed performance values, a pre-filter and a post-filter must be installed:

- Pre-filter (with integrated condensate drain)
  - Removes condensate and dirt particles from the supply air
  - Protects the desiccant from damage caused by oil and moisture

- Post-filter (dust filter, optional)
  - Removes fine dust and any desiccant abrasion that may occur
  - Ensures the required purity of dried air or nitrogens

Important note:

The maximum permissible residual oil content of the compressed air at the dryer inlet is 3 mg/m³. If the residual oil content is higher, an additional oil separator filter must be installed upstream. **The installation of the filters is a prerequisite** for the proper operation and maintenance of the dryer's functionality. Oil and water in the liquid phase can irreparably damage the desiccant and significantly impair the function of the entire system. Deviations from the installation conditions described here can:

- significantly impair the dryer performance,
- to failure of the desiccant.

7 Before installation

7.1. Transport and assembly

You will find information on this here:

- how to transport and set up the system safely.

The DRYPOINT®ACC / ACC P 005 - 010 adsorption dryers are packed in a cardboard box. In sizes 015 - 100, the dryers are also delivered lying flat on a profiled wooden frame. Pay attention to the pictograms on the packaging.

7.1.1. Safety instructions for transport

CAUTION! Damage due to improper transport!

Improper load distribution during transport can result in significant personal injury and/or property damage.

- Particular care and caution must be exercised during transport and when loading and unloading the system! Never use force! Only use lifting equipment that is suitable for the weight and type of load.

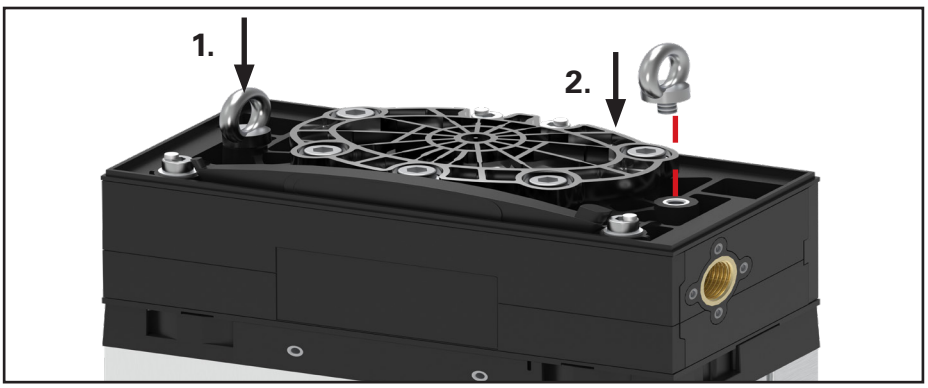
Ensure that the maximum permissible load of the load-bearing equipment in the user's plant is not exceeded. When transporting with a pallet truck, ensure that the system is only lifted under the support frame of the system or under the profiled timber frame.

Ensure that the angle between the horizontal and the ropes never falls below 45°. Failure to observe this may result in leaks in the system's piping system and even serious malfunctions of the dryer.

Under no circumstances should the system be transported by its piping, as this could cause damage. This can lead to leaks in the system's piping system and even serious malfunctions of the dryer. Use **eye bolts** instead.

The appropriate ring bolts are included in the scope of delivery.

Installation of the eye bolts:



8 Installation

The operator is responsible for the proper installation and execution of the cables leading to and from the system.

The manufacturer is **not** responsible for the planning and installation of protection against overvoltage, short circuits and overloads.

8.1. General information

- If the system is to be integrated into an existing pipeline, it must be assumed that the section of the pipeline downstream of the installation point will still be contaminated before initial commissioning. These pipeline sections and components may need to be cleaned or replaced.

- Never remove individual filters or desiccant cartridges from the system without replacing them before restarting operation. This would significantly impair the function of the system.

- The dryers can generally be installed vertically, provided that the marked flow direction is observed.

- Ensure that the dryer cannot be flowed through in the reverse direction (exception: intermittent operation).

- The dryer must not be started up against a large volume at atmospheric or low pressure (see also Chapter 4). This can be prevented by installing an automatic start-up system (optional).

- Parallel connection of several dryers without separate volume flow limitation should also be avoided.

- If the compressor is operated intermittently, the compressor control and dryer control can be linked (operating mode: intermittent operation, section 8.5). In any case, it must be ensured that the regeneration cycle that has been started is completed after the compressor is switched off.

- The straight internal thread in accordance with DIN EN ISO 228-1 may only be used with a straight external thread, whereby the seal is achieved on the sealing surface around the connection thread. To prevent over-tightening, the following maximum torques may be applied:
  Type 005 - 025: 30 Nm
  Type 035 - 100: 50 Nm

- The conical NPT internal thread in accordance with ANSI B 1.20.1 must be sealed with a suitable thread sealant (e.g. DIN EN 751) and the following maximum torques may be applied when screwing in a conical external thread:
  Type 005 - 025: 30 Nm
  Type 035 - 100: 50 Nm

8.2. Installation variants

DANGER OF TIPPING OVER!

The dryer may tip over if it is not set up properly or secured. There is a risk of injury!

- Only place the appliance on a level, stable surface and secure the dryer against tipping over.

8.2.1. General

The floor bracket is already mounted on the dryer upon delivery.

The floor for mounting the adsorption dryer must be level and sufficiently stable. Sufficiently dimensioned screws and dowels must be used to secure the floor bracket. When mounted on the floor, the adsorption dryer must be protected against collision and, when mounted on racks, secured against tipping. Install a safety device if necessary.

8.2.2. Floor mounting

The floor for installing the adsorption dryer must be level and sufficiently load-bearing. Sufficiently dimensioned fasteners suitable for the respective substrate must be used to ensure safe installation of the floor brackets.

Recommendations:

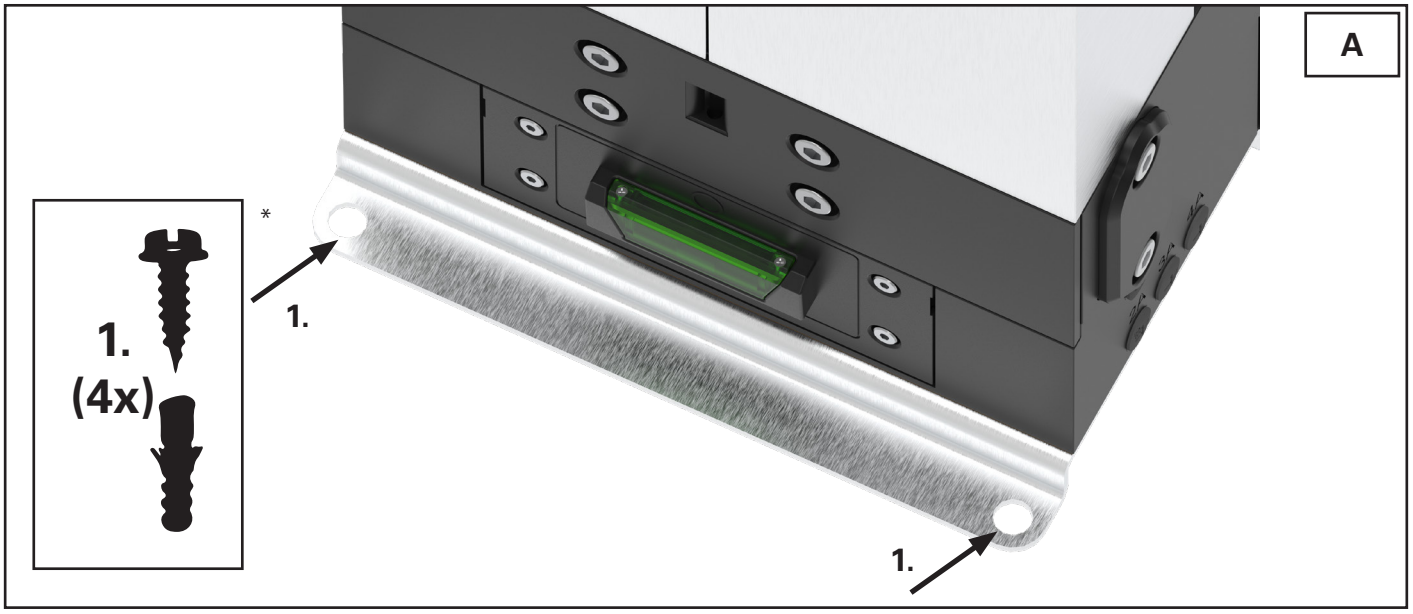
- For floor brackets sizes 005- 025: screw diameter 8- 10 mm, maximum head diameter 18 mm
- For floor mounts sizes 035- 100: screw diameter 10 mm, maximum head diameter 20 mm

Notes on selecting fasteners:

- Permitted systems include ETA-approved:
  - Dowel with matching universal screw
  - Concrete screws
  - Heavy-duty anchors

- The operator is responsible for selecting the type of fastener, dimensioning the screws and dowels, and checking the load-bearing capacity of the substrate.

- When mounted on the floor, the adsorption dryer must be protected against collision and, when mounted on racks, secured against tipping. Install a support device if necessary.



To mount the dryer to the floor with screws, the valve carrier mounted on the rear must be removed. Please proceed as described in chapter 15.3.3 Maintenance of solenoid valves.

* Not included in the scope of delivery.

8.3. Installation instructions

- During installation, ensure that the system is easily accessible for service and maintenance work.
- The system can be supplied with compressed air from all commercially available compressors. However, ensure that the compressed air meets the inlet conditions specified in the design when entering the system. The compressor's intake shaft should not be located in an area with disproportionately high levels of pollution (in the immediate vicinity of machine exhaust gases or other sources of contamination).

Removing the packaging

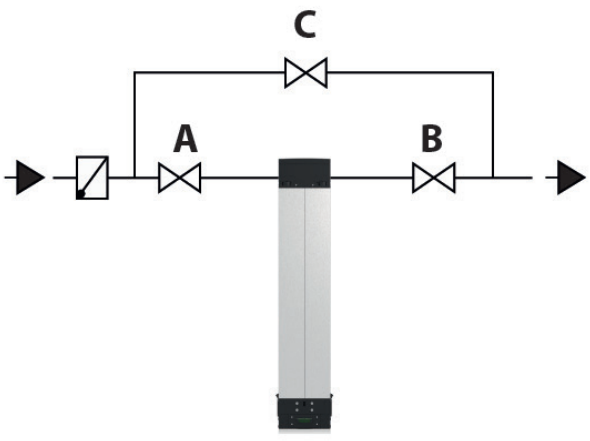
Remove the packaging carefully! Please report any damage or loss of system components that occurred during transport to the manufacturer and the transport company immediately. Document any damage and inform the manufacturer immediately.

Installation site

- Clean the area required for installation of the system and ensure that it is accessible from all sides. In particular, ensure that there is sufficient space available for replacement and maintenance of the system.
- The load-bearing capacity of the floor must be designed to accommodate the weight of the system. The floor must be level.
- Ensure that no oscillations, vibrations or pulsations from other units can be transmitted to the system.
- The system must be installed in such a way that the mains socket (when using the supplied connection cable) or the mains isolator (for external power supply) is easily accessible.

Bypass pipeline

When using a bypass line, it is essential to ensure that compressed air treatment is also provided in the bypass line. Otherwise, undried and unfiltered air will enter the pipe network, which can lead to serious disadvantages.



Adjustment to the operating pressure

The adsorption dryer is factory-equipped for operating conditions of 7 bar(g) / 35 °C. The dryers are also supplied with the following regeneration air nozzles:

005 - 025
- 4 - 6 bar(g) / 9 - 12 bar(g) / 13 - 16 bar(g)

035 - 100
- 4 - 6 bar(g) / 9 - 12 bar(g)

If operating conditions at the installation site differ, the regeneration air nozzle can be adjusted (see section 15.3.2).

Attention!
Any adjustments to the operating pressure must be carried out by the service department.

Attention!
At pressures below 7 bar, the regeneration air nozzle must be replaced. Otherwise, there is a risk that the regeneration of the desiccant will not be guaranteed. At pressures above 8 bar, the regeneration air nozzle should be replaced to prevent excessive loss of regeneration air.

Nozzle set	Nozzle number			
	4-6 bar(g)	7-8 bar(g)	9-12 bar(g)	13-16 bar(g) *
5	6	3	2	1
10	11	7	5	4
15	16	9	8	7
25	24	14	13	10
35	25	17	14	n/a
50	29	21	19	n/a
65	31	25	23	n/a
80	32	27	26	n/a
100	33	30	28	n/a

*Only for dryers sizes 005- 025 of the DRYPOINT® ACC / ACC P.

8.4. Connection to the compressed air network

Connect the system correctly to the wet gas inlet and dry gas outlet. Check that all screw connections are tight.

The straight internal thread in accordance with DIN EN ISO 228-1 may only be used with a straight external thread. To prevent overtightening, the following maximum torques may be applied:
Type 005 - 025: 30 Nm
Type 035 - 100: 50 Nm

The conical NPT internal thread according to ANSI B 1.20.1 must be sealed with suitable thread sealants (e.g. DIN EN 751) and the following maximum torques may be applied when screwing in a conical external thread:
Type 005 - 025: 30 Nm
Type 035 - 100: 50 Nm

Compressed air quality

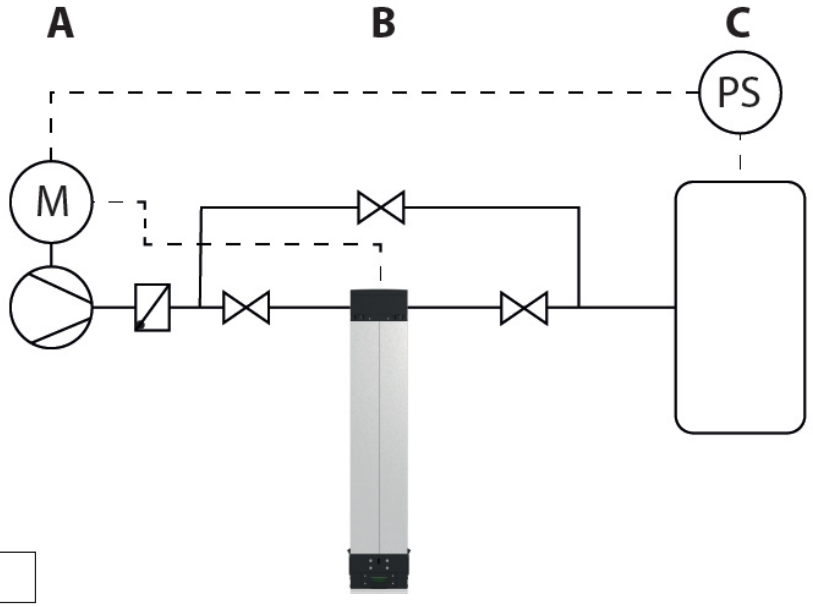
- The maximum permissible residual oil content of the compressed air upstream of the dryer is 3 mg/m^3. If the residual oil content is higher, an additional pre-filter must be installed.

- Sterile compressed air can be achieved by installing a high-performance sterile filter downstream.

8.5. Intermittent operation

If the dryer is operated in "intermittent operation" mode, the installation must be carried out in accordance with the "Intermittent operation" diagram in the following order: compressor (A) – dryer (B) – storage tank (C).

Ensure that air can flow through the dryer from backwards! See also section 3.11.3 "Intermittent operation".



Intermittent operation

8.6. Electrical connection

DANGER OF ELECTRIC SHOCK!

There is a risk of fatal injury from electric shock when working on the electrical supply!

- The power supply must be switched off before carrying out any work on the electrical supply.
- Work on the electrical supply must be carried out by a trained and authorised specialist in accordance with DIN VDE regulations (or comparable country-specific regulations) and the regulations of the respective electricity supply company.
- Only use voltage-insulated tools!

The system is always supplied with a connected power cable (1.5 m, without plug). Depending on the model, the system must be supplied with a voltage of 220–230 V AC / 50–60 Hz, 110–115 V AC / 50–60 Hz or 24 V DC (see also chapter 4, "Technical Data").

A new, longer supply cable must have a cross-section of 3 x 1.0 mm² (alternating current) or 2 x 1.0 mm² (direct current). To connect a new supply cable, the inspection cover of the dryer must be removed. The power cable is connected to terminal X1 (see following pages).

- Before making the electrical connection, ensure that the permissible mains voltage range of the control unit corresponds to the local mains voltage.
- If the control unit is permanently connected to the mains, provide an all-pole mains disconnect device with a corresponding fuse in accordance with IEC / EN 60947. The required connection data can be found on the type plate. The plug connection or mains disconnect device must be accessible at all times.
- If the device is disconnected from the mains, the mains disconnect device must be lockable or the disconnect point must be monitored at all times.
- Reinstallation of the connection, changes to the system or inspection of the protective conductor, including verification of the correct fuse protection, may only be carried out by a trained electrician.

Important!
The cable ends to be connected to the control unit must be fitted with ferrules (using the tool provided for this purpose).

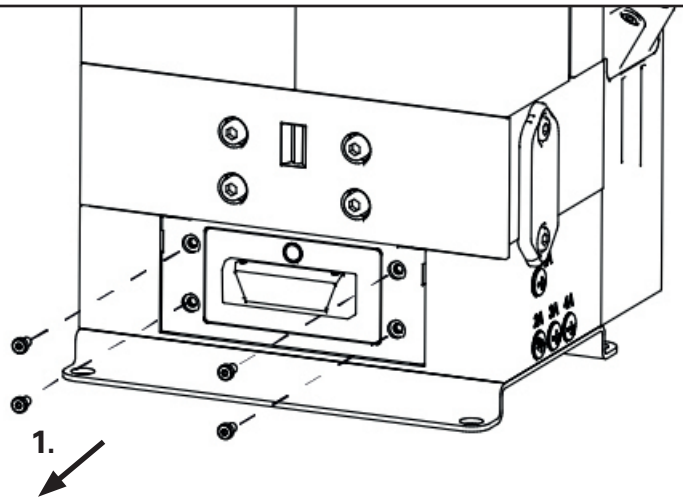
Removing the inspection cover
The inspection cover must be removed if:
- the power cable is replaced
- Replacing the cover (including power supply unit)
- an alarm contact is used
- Intermittent operation is used
- the fuse is replaced
- Battery is replaced

DANGER OF ELECTRIC SHOCK!

Working on the system poses a risk of death due to electrical voltage!

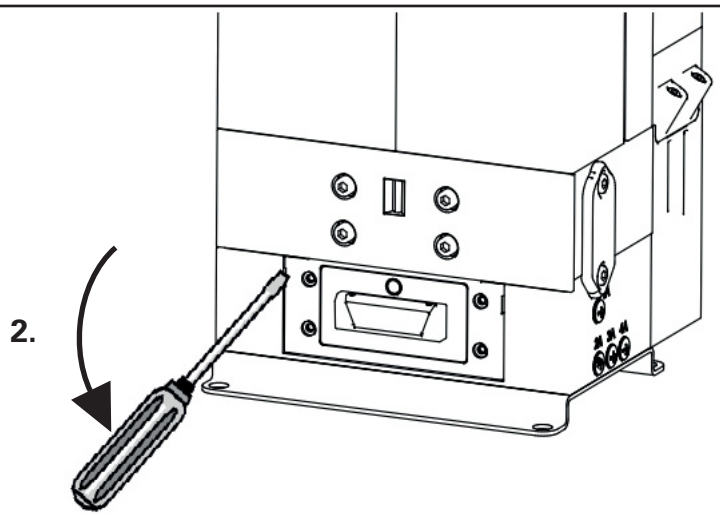
- Disconnect the system from the mains before starting work!
- Damage to the electrical system due to short circuit or overvoltage and risk of injury due to electric shock!

A



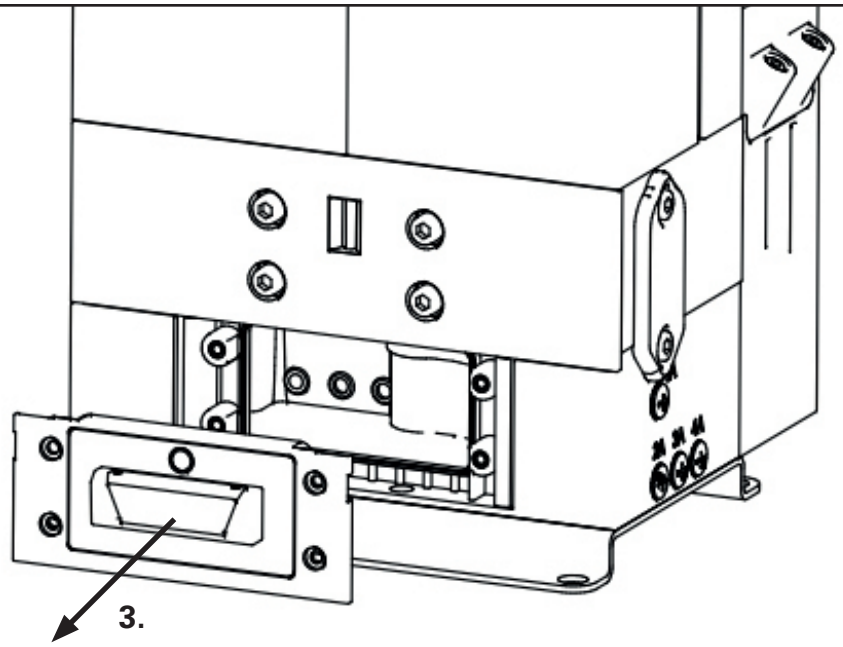
1. Loosen the 4 screws on the inspection cover by turning them anticlockwise.

B



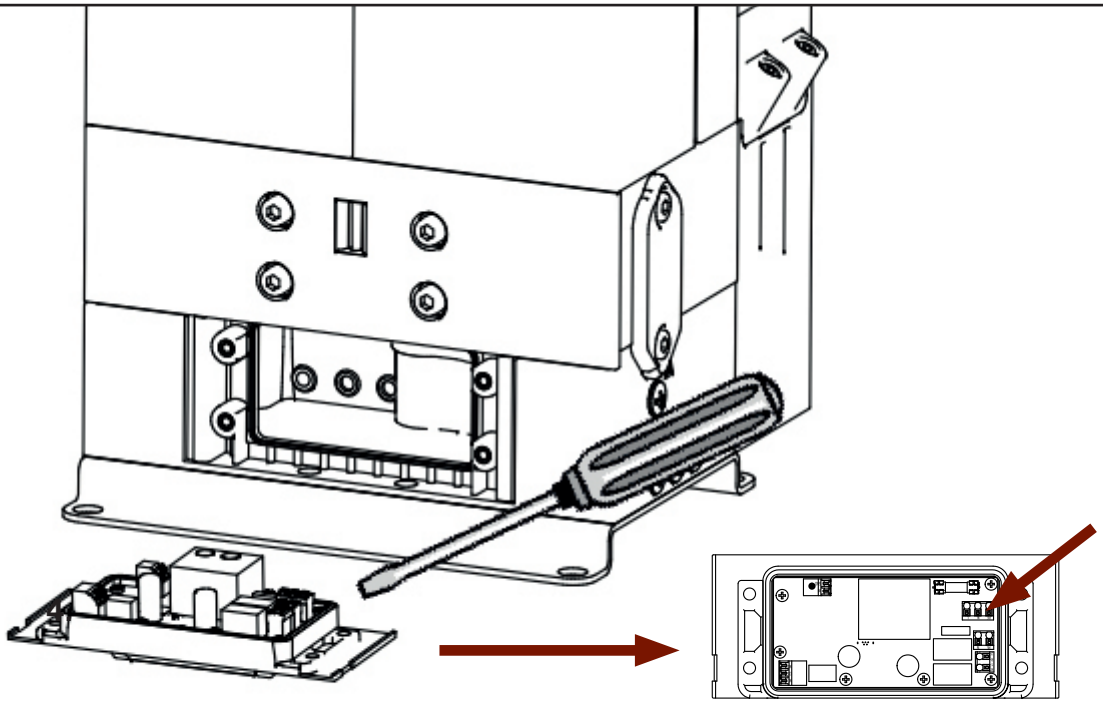
2. Using a flat screwdriver, carefully lever out the inspection cover at the notches shown on the right and left by gently rocking it. Take care not to damage the plastic frame of the inspection cover plate.

C

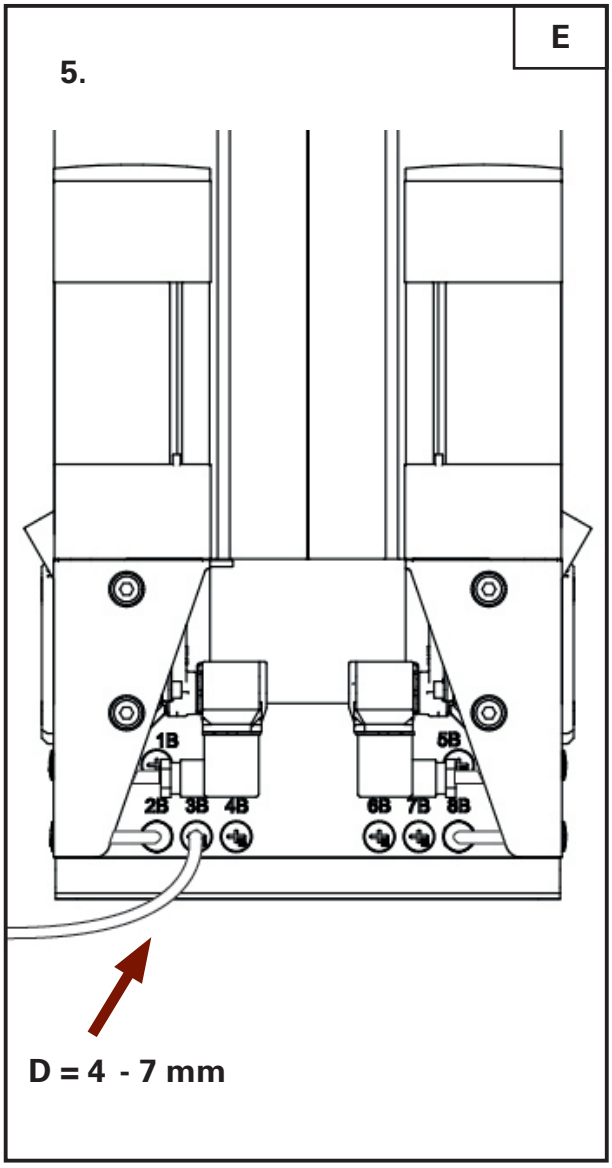


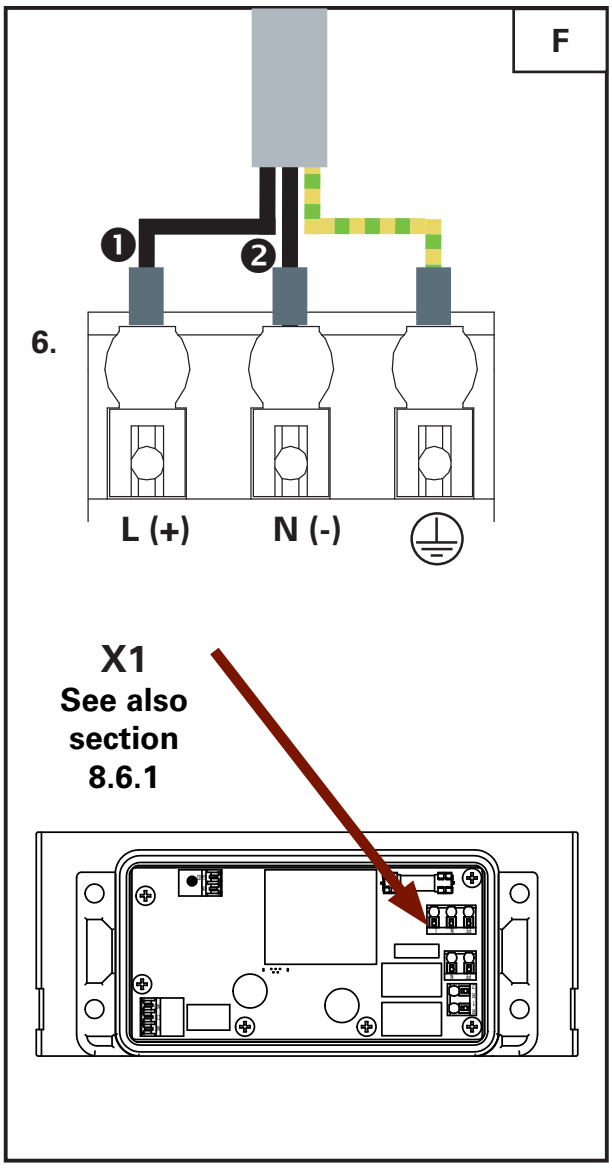
3. Pull the inspection cover forward to remove it.

D



4. Disconnect the existing power cable from terminal X1 of the inspection cover circuit board using a screwdriver.





5. Pull the existing power cord out of the screw connection (3A) on the right-hand side of the dryer. Feed the new power cord through the screw connection (3A).

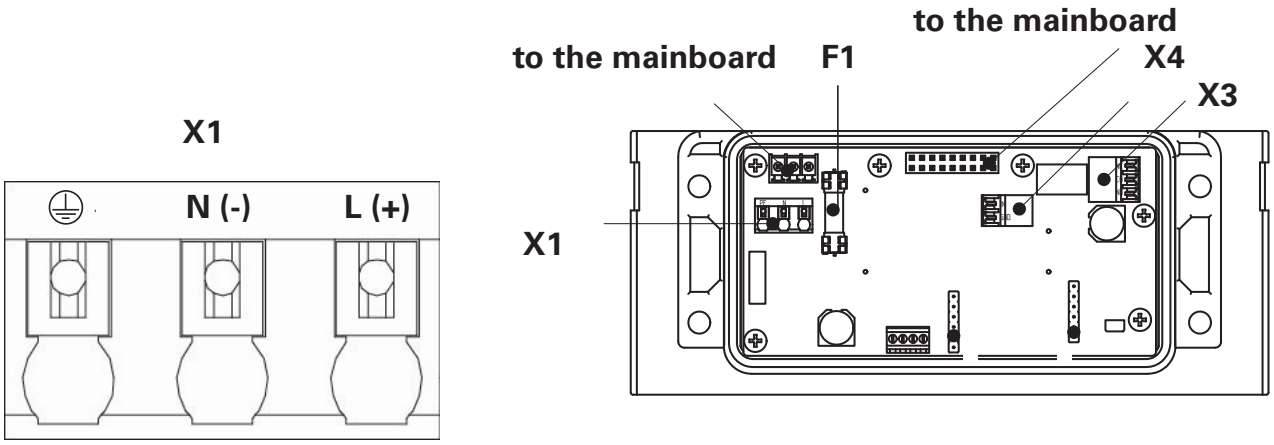
6. Then connect the ends of the new power cord fitted with wire end ferrules to terminal X1 on the inspection cover circuit board.

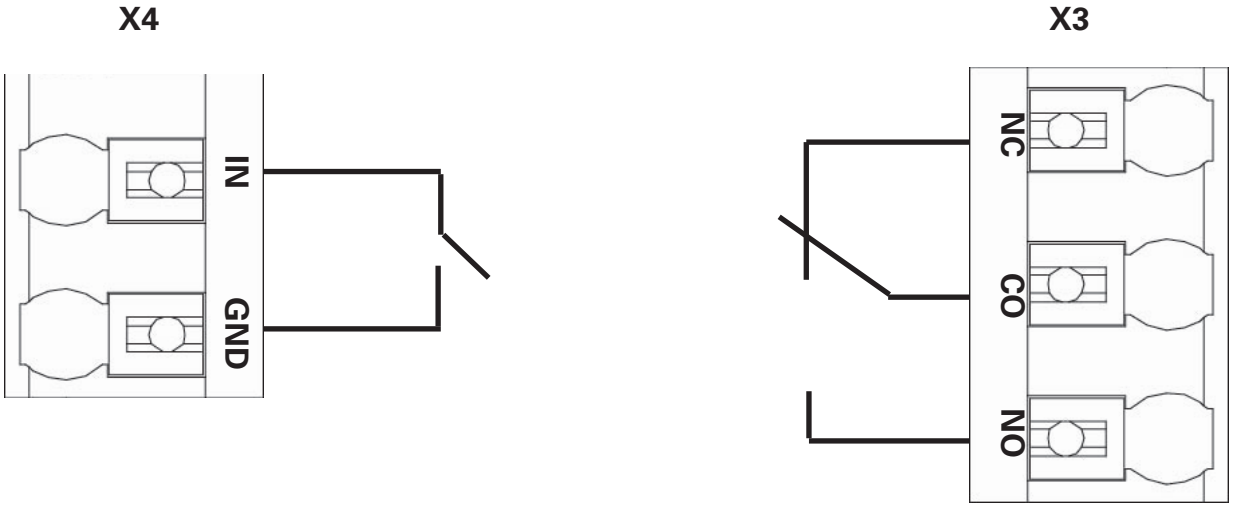
Reassembly is carried out in reverse order.

For the exact position of terminal X1 on the inspection cover circuit board for the different ACC / ACC P versions, see section 8.6.1.

All electrical connections must be checked before commissioning. Electrical connection work must only be carried out by qualified personnel.

8.6.1. Inspection cover circuit board ACC



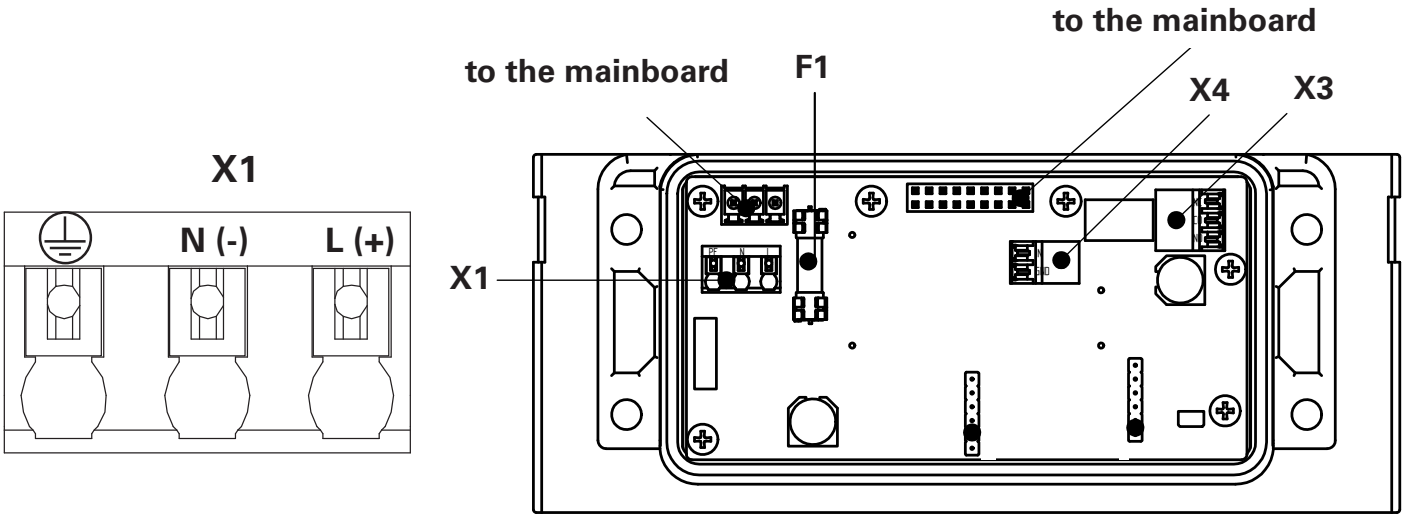


Intermittent operation

Alarm contact
(CO-NC: closed in alarm/de-energised state)
CO-NO: closed during normal operation)

Component / terminal strip	Terminal	Terminal assignment	Function
X1	⏚	Earth	Mains supply
	N	Neutral (-)	
	L	❷ Phase (+)	
X3	NC	❶ opener	Alarm contact
	CO	Common	
	NO	Closing contact	
X4	IN	Neutral	Intermittent operation
	GND	Ground	
F1	--	--	Mains fuse, 2 A, 250 V AC ceramic

8.6.2. Inspection cover circuit board ACC P



Intermittent operation

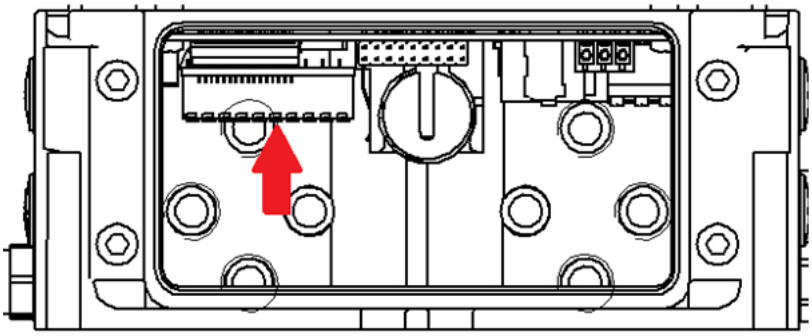
Alarm contact
(CO-NC: closed in alarm/de-energised state)
(CO-NO: closed during normal operation)

Component / terminal strip	Terminal	Terminal assignment	Function
X1	⏚	Earth	Mains supply
	N	❷ Neutral (-)	
	L	❶ Phase (+)	
X3	NC	opener	Alarm contact
	CO	Common	
	NO	Closing contact	
X4	IN	Neutral	Intermittent operation
	GND	Ground	
F1	---	---	Mains fuse, 2A, 250V AC ceramic

8.6.3. Sensor circuit board ACC P

The inspection cover must be removed for removal (see section 8.6).
Placing the dryer in a horizontal position and removing the dryer foot make this process easier.

The sensor board (red arrow) can then be pulled downwards from the mainboard.



Sensor circuit board terminal connection X3:

Analogue 2-wire or 3-wire sensors can be connected using a small flat screwdriver.

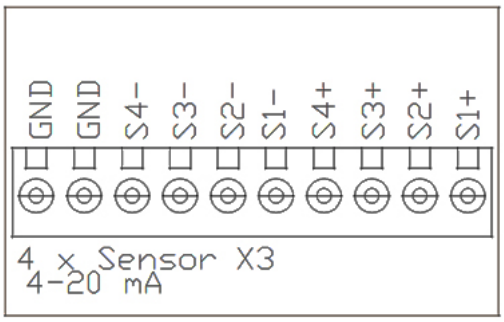
Terminal assignment examples:

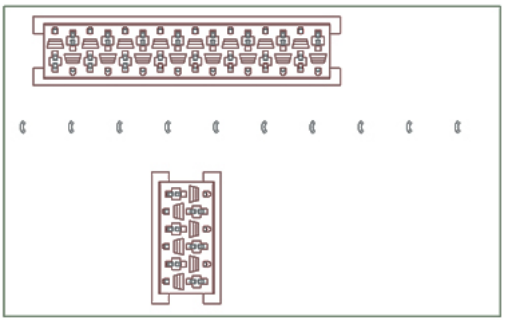
2-wire:
S1+ = Power supply Signal to
S1- = Signal to ground

3-wire:
S2+ = Power supply
S2- = Signal to ground
GND = Additional ground connection

During installation, ensure that the two red plugs on the underside of the circuit board are aligned as shown below:

Place the sensor circuit board on the sockets on the main board with the long plug at the front and press down firmly until it stops. The circuit board must not fall off, otherwise it is not seated correctly.





Component / Terminal strip	Terminal	Function
Sensor board X3	**GND**	Additional GND connection
	GND	Additional GND connection
	S4-	Signal against ground Sensor 4
	S3-	Signal against ground Sensor 3
	S2-	Signal against ground Sensor 2
	S1-	Signal against ground Sensor 1
	S4+	Power supply sensor 4
	S3+	Power supply sensor 3
	S2+	Power supply sensor 2
	S1+	Power supply sensor 1

8.6.4. Replacing the battery on the mainboard (ACC P)

DANGER OF ELECTRIC SHOCK!

Working on the system poses a risk of death due to electrical voltage!

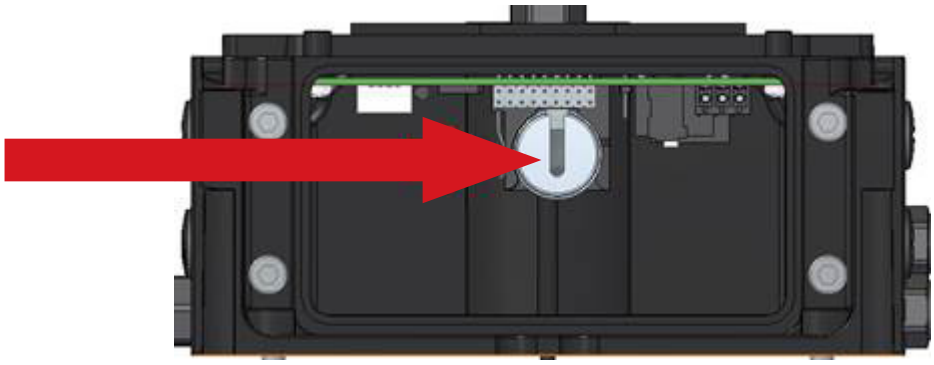
- Disconnect the system from the mains before starting work!

Observe the safety instructions in sections 2.5 and 8.6.

The battery is located on the mainboard. It has a service life of approx. 5 years. It is a **CR2032** lithium button cell battery (Panasonic / Varta / Energizer).
If the battery is replaced when the dryer is disconnected from the power supply, the date and time must be reset!

Battery CR2032

- Varta CR2032
MH13654
- Energizer CR2032
MH29980
- Panasonic CR2032
MH29980



Important information!

- Replace used batteries immediately.
- **Used batteries must be disposed of separately from the rest of the device.**
- **Used batteries must be disposed of as hazardous waste in accordance with legal regulations.**

9 Commissioning

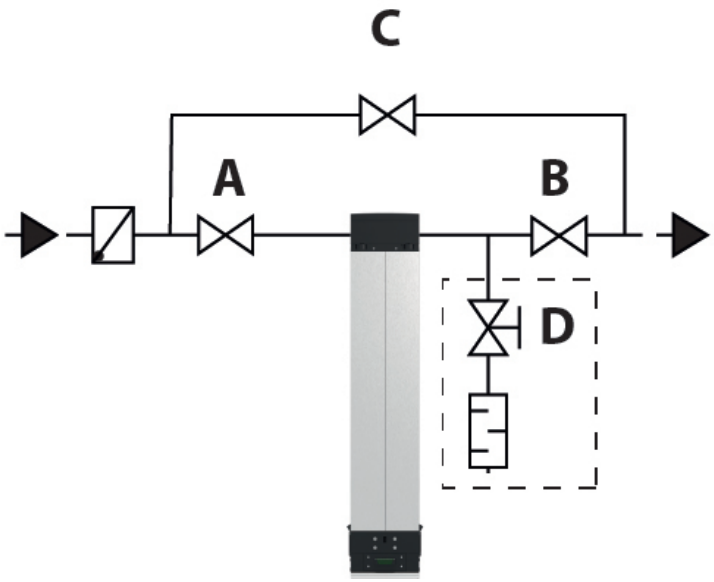
9.1. Initial commissioning of the plant

Before commissioning the system, the pressure vessels must be equipped with the necessary safety devices, such as safety devices to prevent pressure exceeding the limit, safety valves, etc. These parts are not included in the manufacturer's scope of delivery.

To avoid errors during initial commissioning, we recommend that the initial commissioning be carried out by the manufacturer's customer service department.

Carry out the initial commissioning in the order described below, taking into account the information provided (see section 7.1):

1. Check that valves A and B are closed and that the electrical control system is switched off.



2. Slowly pressurise the dryer by slowly opening valve A.

3. Check the pressure at a measuring point. Both adsorbers must be under operating pressure.

4. Now supply power to the electrical control system.

5. The control system starts with the pressure build-up phase in both adsorbers. Then the regeneration phase of one adsorber and the adsorption phase of the other adsorber begin.

6. Please note that moisture from the environment may have entered the desiccant during transport or storage of the dryer. Therefore, the desiccant should be regenerated for at least 3 hours before the shut-off valve B to the compressed air network is opened. The dryer should only be operated in time-controlled mode during this process.

7. Slowly open valve B to integrate the dryer into the compressed air line network.

8. Close valve C if it was open during commissioning.

9. Close valve D if it was open during commissioning.

The dryer is now properly commissioned and operates fully automatically and continuously. Please note that, depending on the operating conditions and specified pressure dew point, it may take some time for all parts of the dryer and the connected compressed air system to dry completely and for the desired pressure dew point to be reached.

The following mechanical hazards may arise from the system during operation:

WARNING! Risk of injury from blow-off noises!

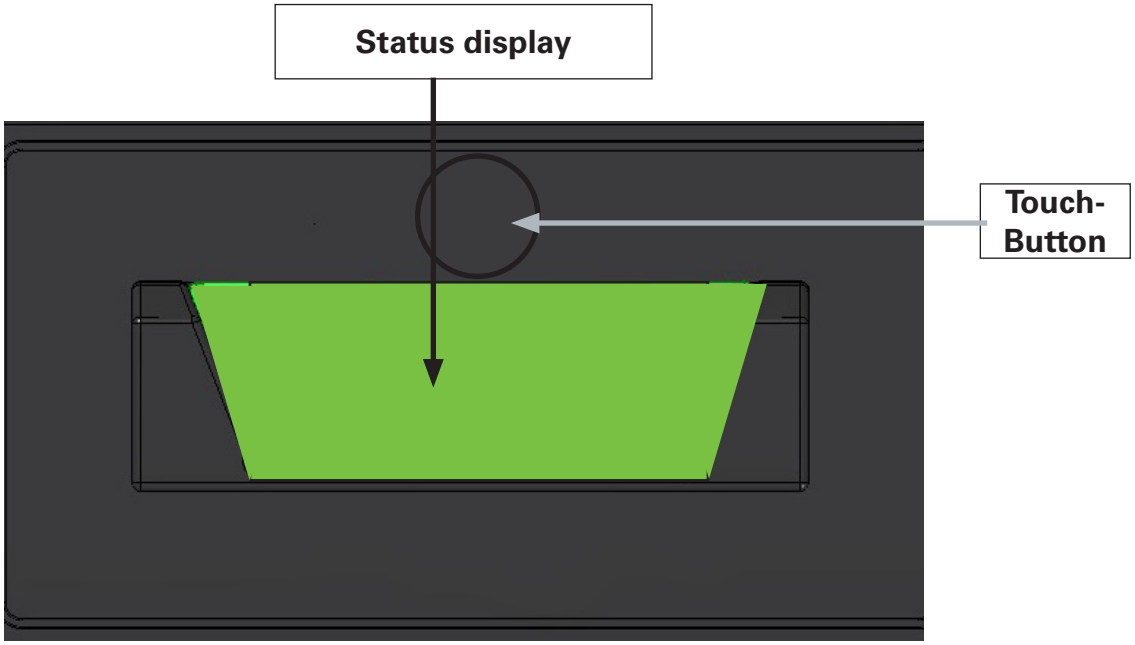
Pressure relief can cause loud noises and possibly damage your hearing!

- Wear ear protection for your own safety!

10 Operation ACC

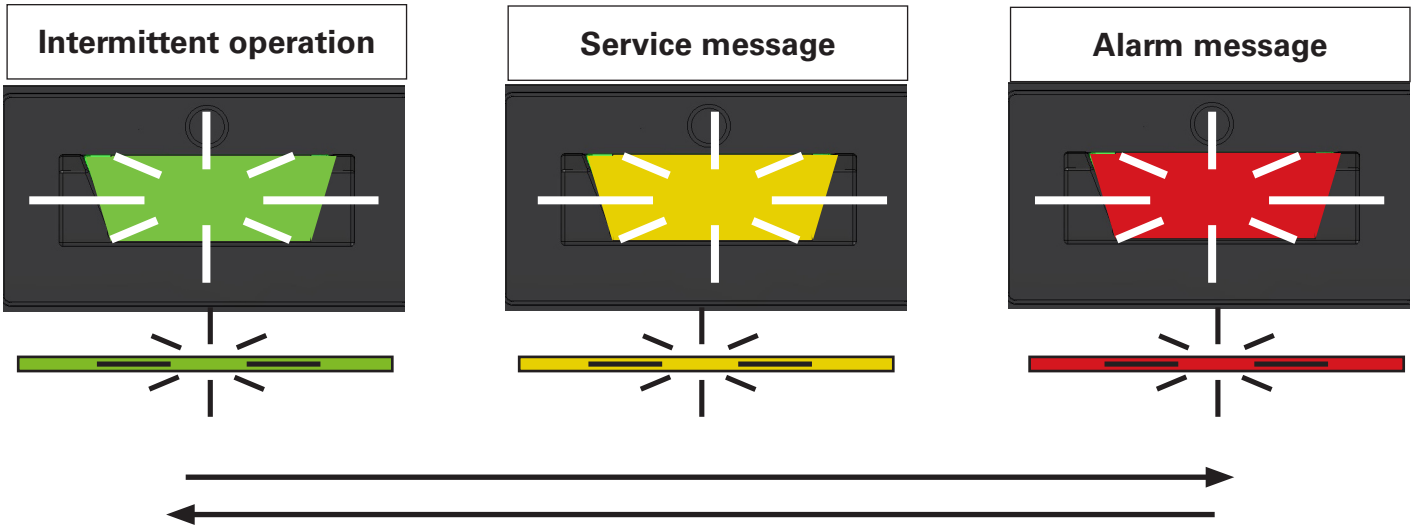
Once commissioning is complete, the current operating status of the dryer is indicated by LED lights. The dryer operates fully automatically; no further operating steps are required.

LED



LED

The status indicator lights up green continuously during normal operation and flashes continuously during intermittent operation. In the event of an alarm/service message, the status indicator flashes yellow or red (depending on the type of message). The touch button can be used to reset or acknowledge service messages (see chapter 13 „Service and alarm messages"). Alarm messages disappear automatically as soon as the faults have been rectified.

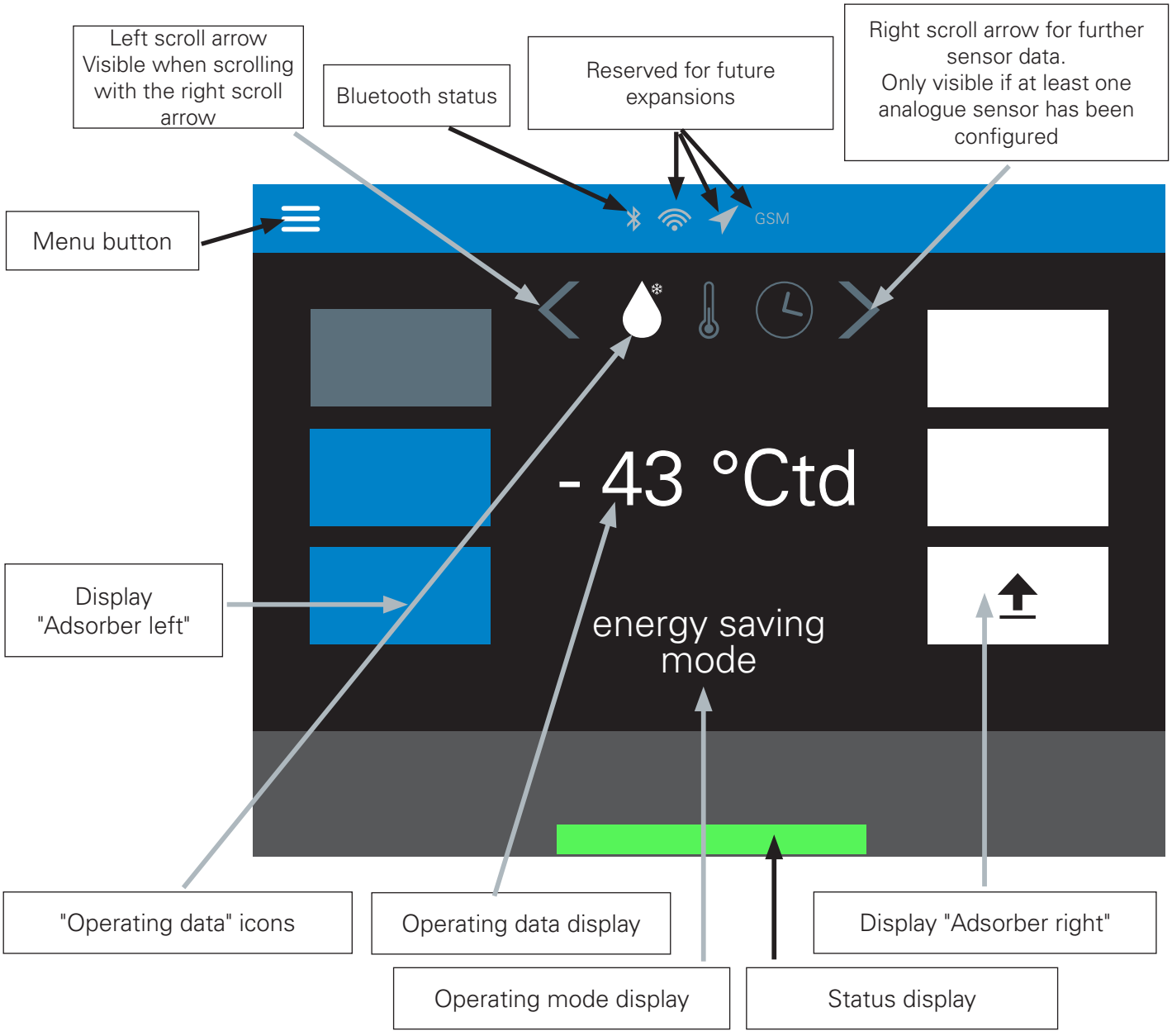


LED

All three messages on the status display may also appear one after the other if all events occur simultaneously by chance.

11 Operation ACC P

After start-up, a grey start screen is displayed for a few seconds. The display then switches to the home screen. Here, the current operating states are shown on the display after the system has built up pressure. The example shows the home screen for the set operating mode "Dew point control".



The adsorber displays change colour depending on the operating status – both in dew point-controlled and intermittent operation:

Blue	=	Adsorption cycle
Grey	=	Adsorption and regeneration cycle not yet completed
White	=	Regeneration cycle

The black arrow indicates pressure build-up/release.
- Downward arrow = pressure relief.
- Arrow pointing upwards = pressure build-up.

There is no pressure relief time; the arrow is only used for visualisation for 2 seconds after switching.

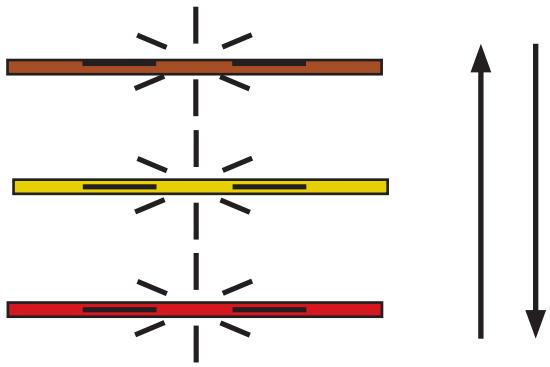
Status display:
Normally, the status indicator lights up green continuously.
During intermittent operation, the status indicator flashes green. During servicing, the status indicator flashes yellow.
In the event of an alarm, the status indicator flashes red.

For more information, see chapter 13.2 "Service and alarm messages ACC P".

Intermittent operation:

Service message:

Alarm message:



All three messages on the status display may also appear one after the other if all events occur simultaneously by chance.
Alarm messages disappear automatically as soon as the faults have been rectified.
Alarm messages can also be acknowledged via the alarm message window.

Menu button:
Exits the home screen and displays the main menu overview (see chapter 11.2).

Bluetooth status:
Displays the current Bluetooth status.
Bluetooth is always switched on by default and should not be switched off.

Operating mode display:
Shows the current operating mode (in the example, "Dew point control").
Further information can be found in chapter 11.3 "Settings".

Operating data symbols:
Switching between operating data. The right scroll arrow can be used to display additional operating data (if available). If the left scroll arrow is visible, it can be used to scroll back.

Possible operating data symbols:

 TIME

 DEW POINT

 VOLUME FLOW

 TEMPERATURE

 PRESSURE

 DIFFERENTIAL PRESSURE

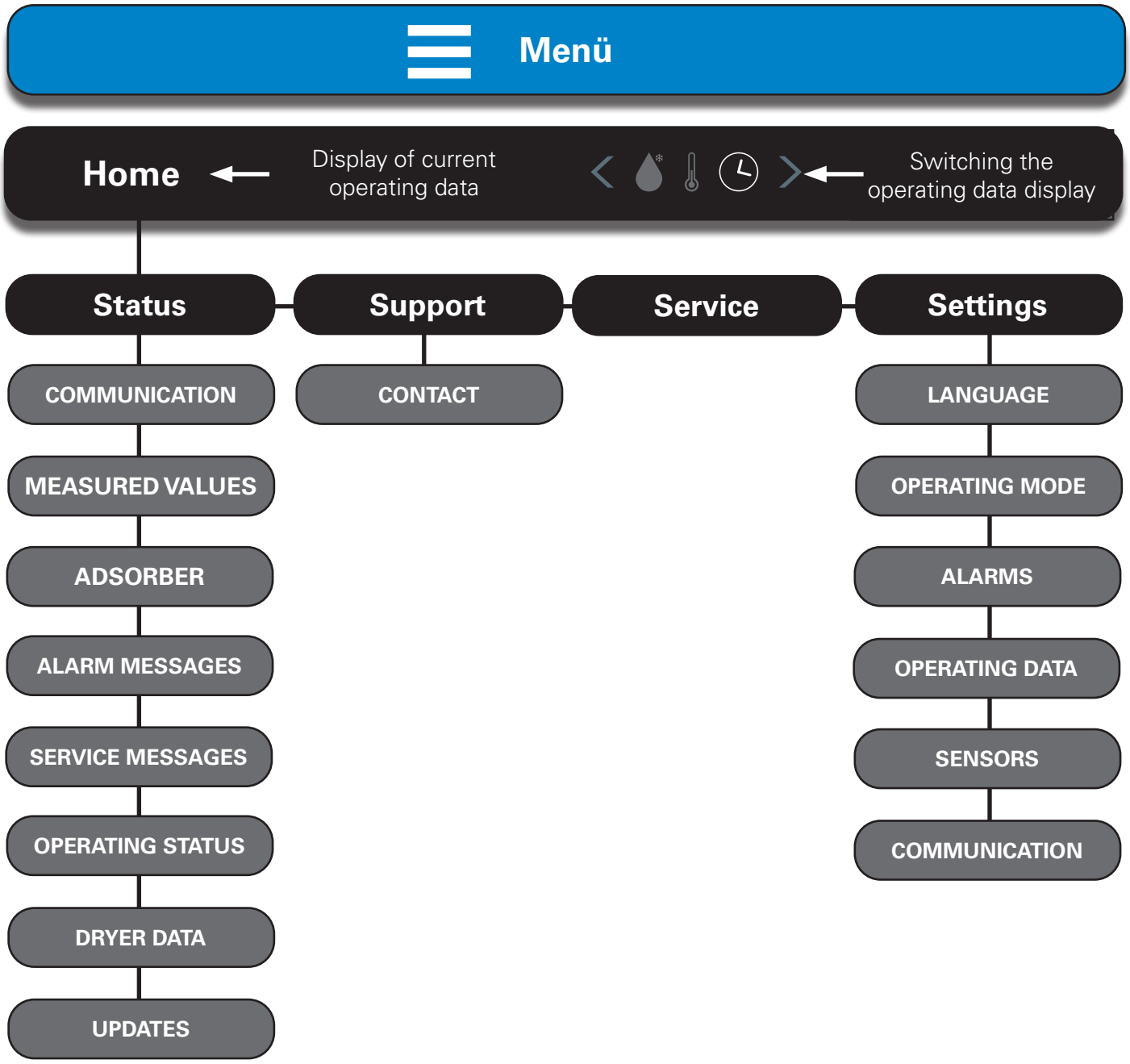
 CO

 CO_2

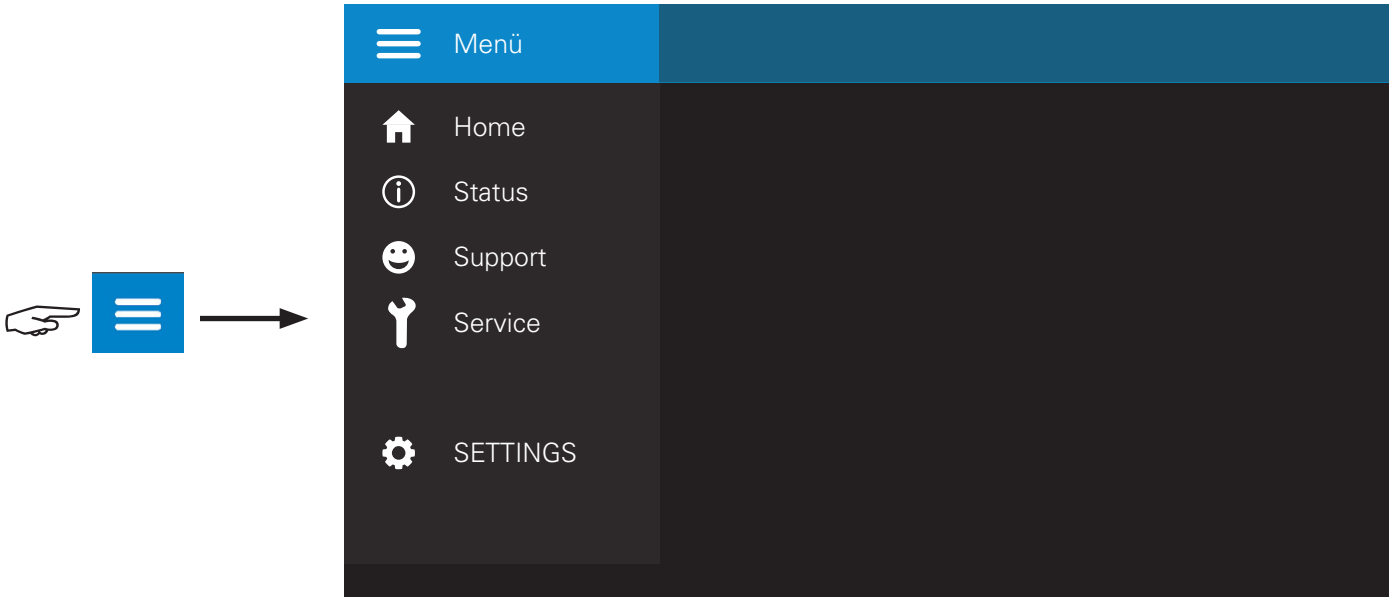
Pressing these symbols displays the current operating data on the home screen.

Note:
With the exception of the time symbol, some symbols are only visible if the device is equipped with the corresponding sensors.

11.1. Graphical menu structure

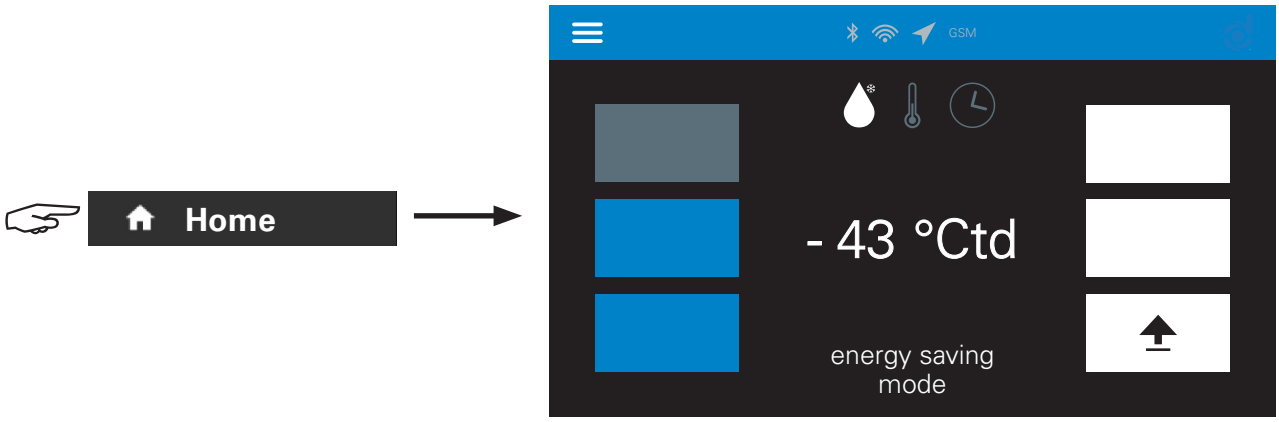


11.2. Main menu Overview



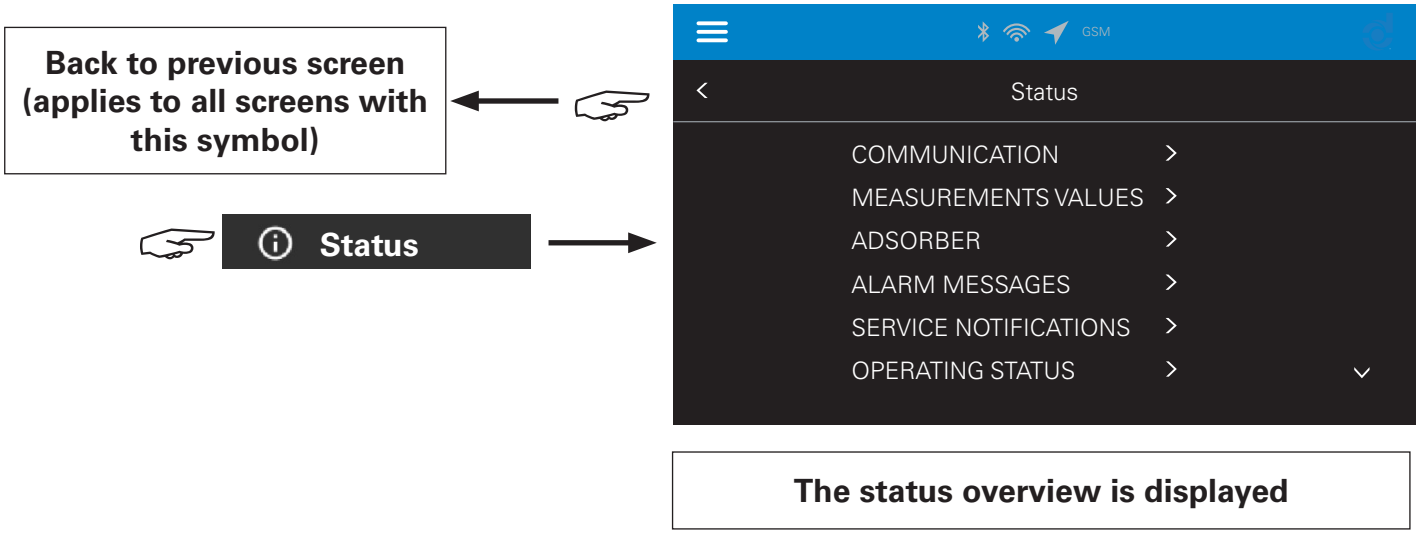
An overview of all available menus is displayed.

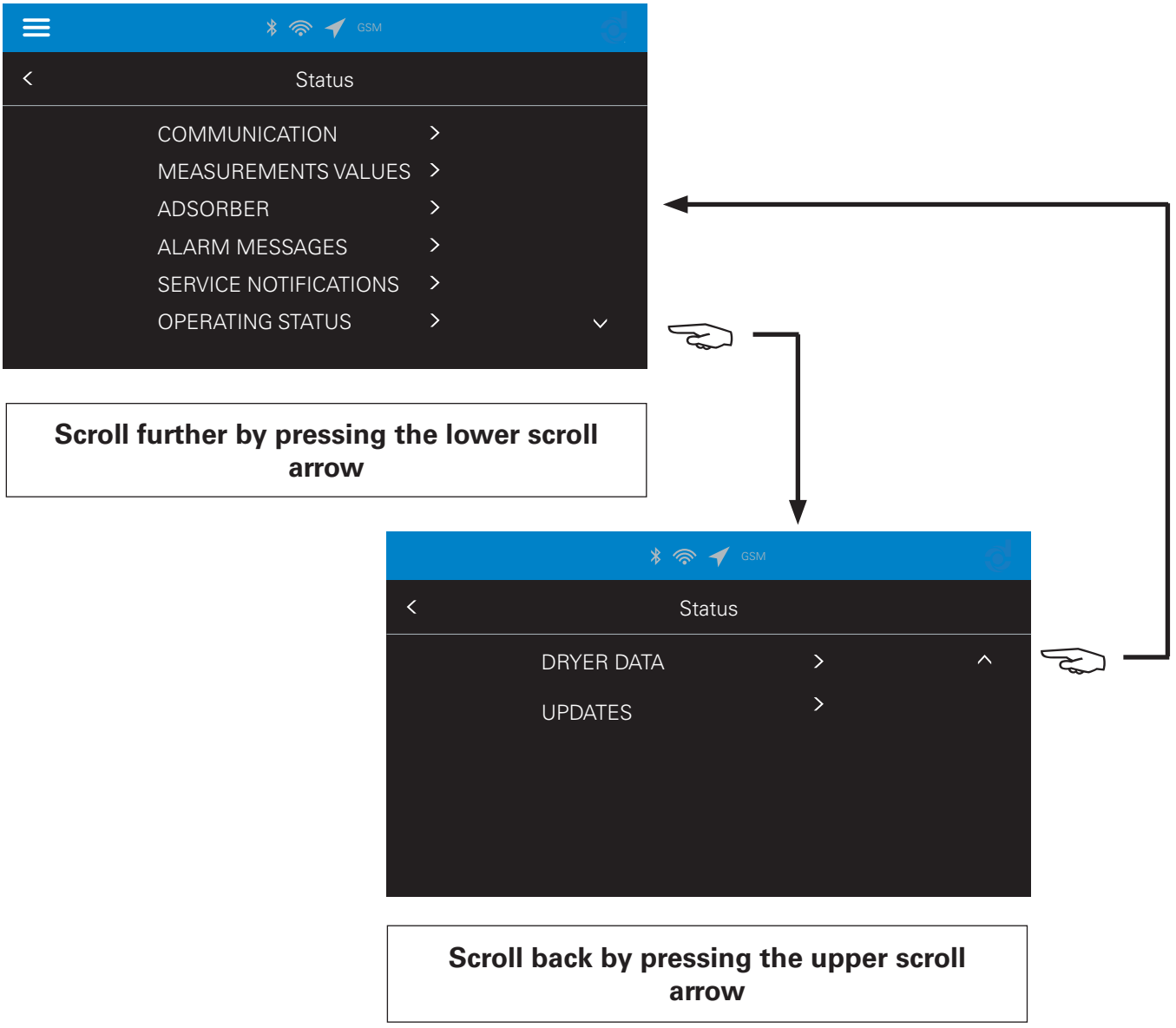
11.2.1. Menu „Home´´



**The home screen is displayed.
In this example, the operating mode "Dew point control" is activated (drop symbol displayed in white).**

11.2.2. Menu "Status"





11.2.3. Tabular menu overview "STATUS"

Tabular overview of all available status displays of the ACC P control.

MENU OVERVIEW "STATUS"		
MAIN MENU	Submenu	Displays
COMMUNICATION >	BLUETOOTH	Bluetooth on/off MAC address
MEASUREMENT VALUES >	UDM 515 DEW POINT	°Ctd depending on sensor configuration
	UDM 515 TEMPERATURE	°C depending on sensor configuration
	SENSOR 1 - 4 (analogue)	Display depending on sensor configuration. The additionally configured sensors are displayed here, e.g. dew point 1 connected to analogue 1, etc.
ADSORBER >	TOTAL ADSORPTION CYCLES SINCE LAST MAINTENANCE	Numerical display
	TOTAL ADSORPTION CYCLES	
	TOTAL ADSORPTION TIME	
ALARM MESSAGES >	DATE TIME ALARM	For a list of all alarm messages, see section 13.2.2
SERVICE MESSAGES >	DATE TIME SERVICE	List of all service messages
		Reset = Reset to default values
OPERATING STATUS >	DEW POINT CONTROL	This displays the current operating status of the dryer, e.g., dew point control, time control, data logging, or intermittent operation, etc
	ECO TIME >	In conjunction with dew point control: ECO Time appears when you click on the clock symbol or via Status > Operating status. Energy savings (regeneration stops) occur when the dew point value is better than the target value. For how it works, see section 3.11.2

MENU OVERVIEW "STATUS"		
MAIN MENU	Submenu	Display
DRYER DATA >	SERIAL NUMBER	Display of dryer data
	ITEM NUMBER	
	DATE OF MANUFACTURE	
	DRYER TYPE	
	DRYER SIZE	
	RATED POWER	
	PRE-FILTER 1	
	AFTERFILTER	
	SILENCER	
UPDATES >	FW M	Display of version number
	FW D	
	GUI	
	LAST UPDATE	Display of date

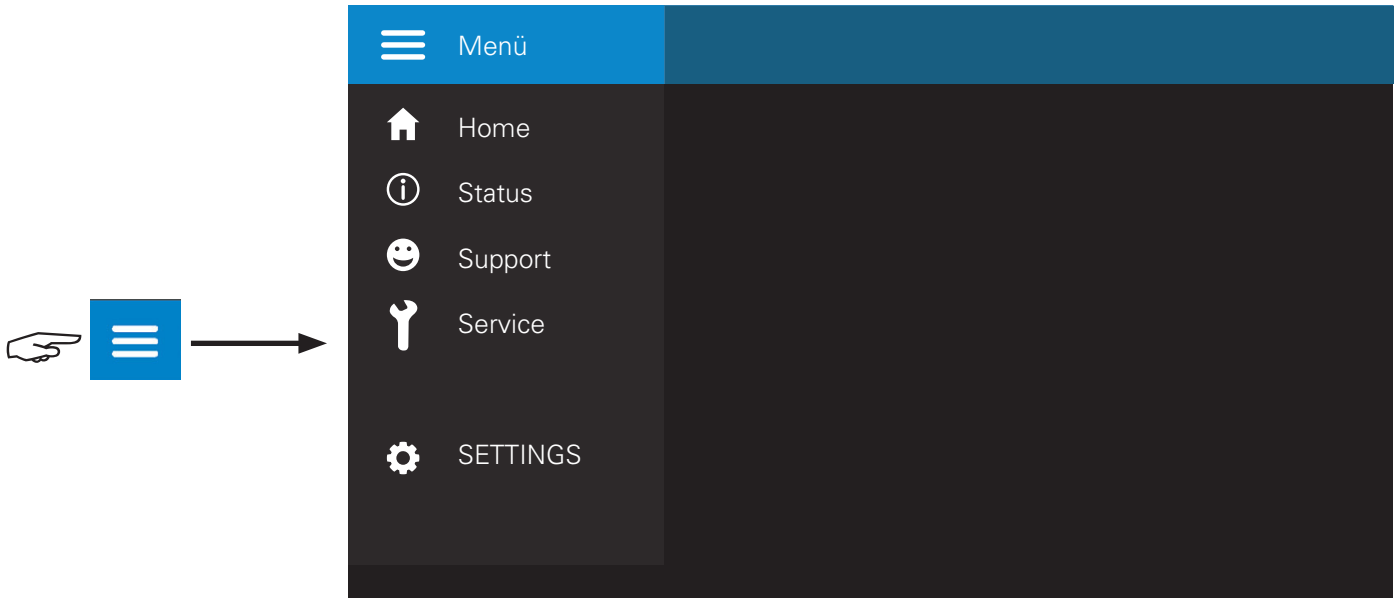
11.2.4. "Support" menu

For more information on this menu, see Chapter 18.1 "Additional support ACC P"

11.2.5. Menu "Settings"

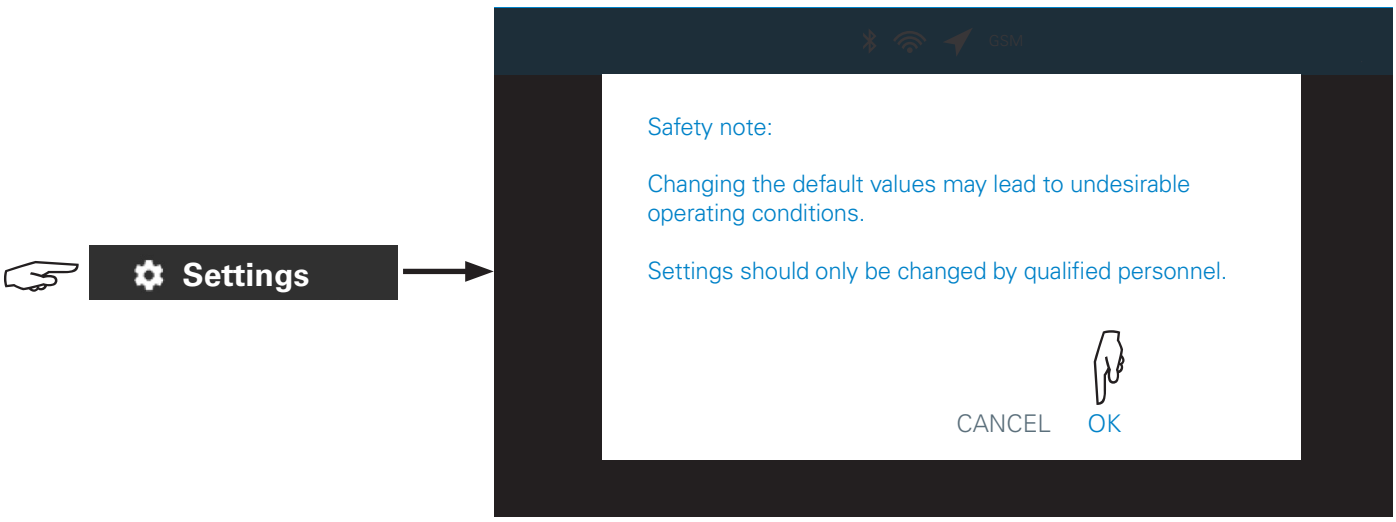
Further information on this menu can be found in chapter 11.3 "Settings menu"

11.3. "Settings" menu

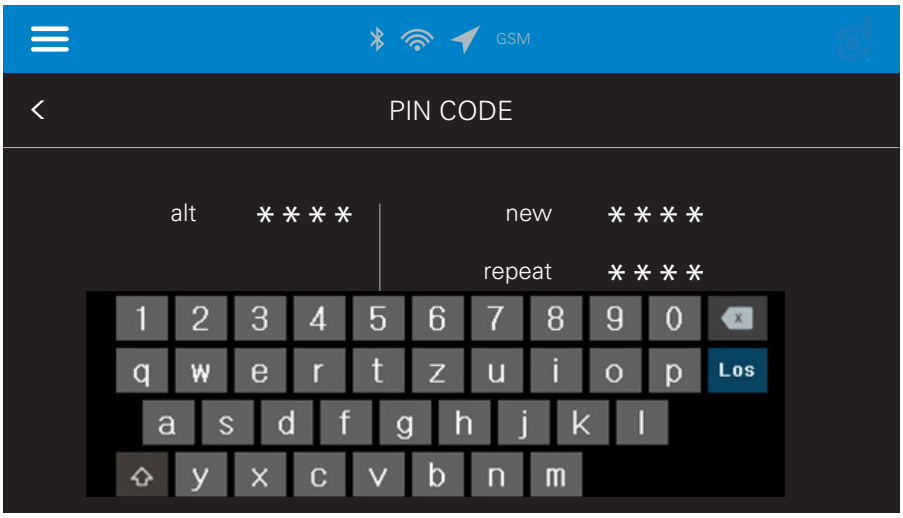


An overview of all available menus is displayed

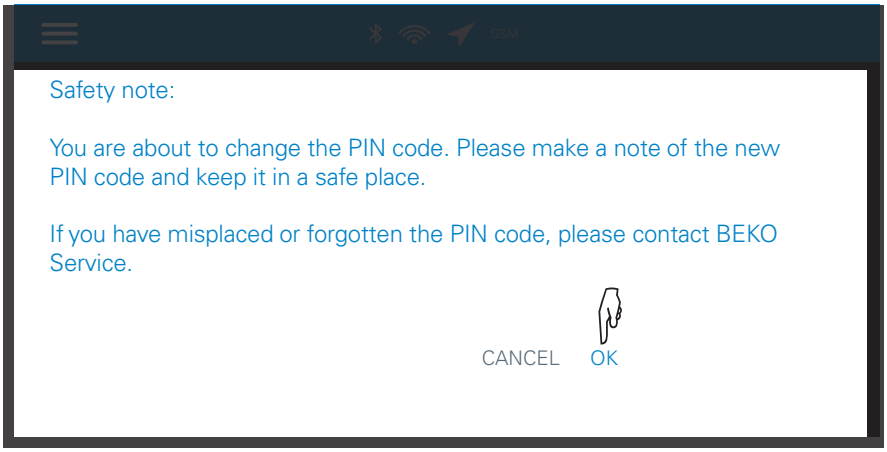
11.3.1. PIN code



Press "CANCEL" to cancel this function, press "OK" to continue.

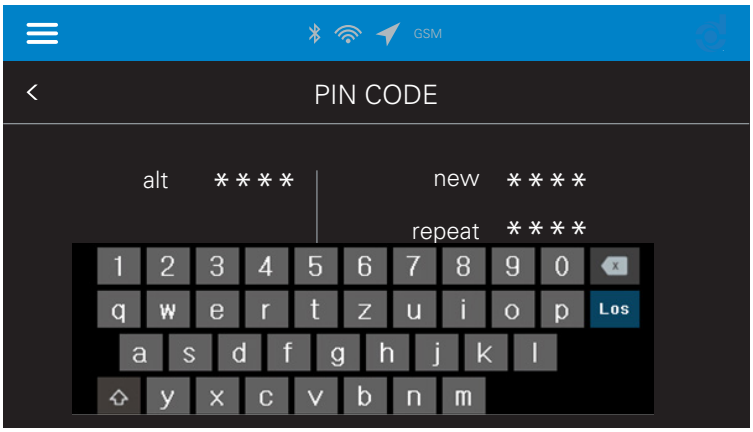


Replace the factory-set PIN code with a new one. 1) Enter the old PIN in the "old" field 2) Enter the new PIN in the "new" field (only 4 digits may be entered) 3) Repeat the new PIN in the field 4) Confirm with the "Go" button. The factory-set PIN code of "0000" must always be changed for security reasons!

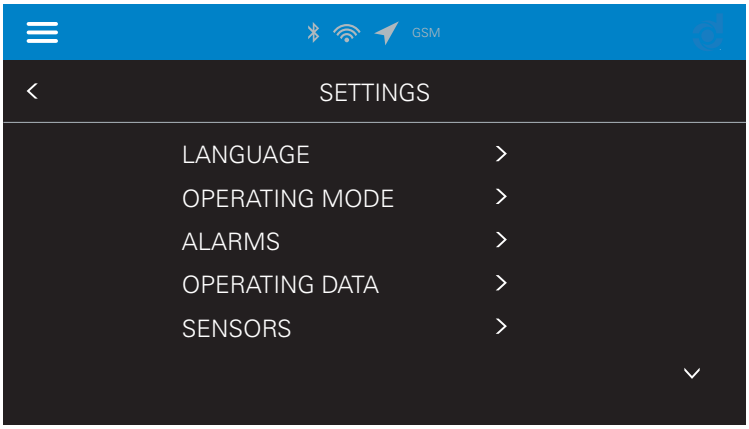


Press "CANCEL" to cancel this function, press "OK" to continue.

Confirmation display for a few seconds



Enter the new PIN code in the "old" field and press "Go" to open the "Settings" menu.



An overview of all available settings is displayed.
For details, see chapter 11.3.2

11.3.2. Tabular menu overview "Settings"

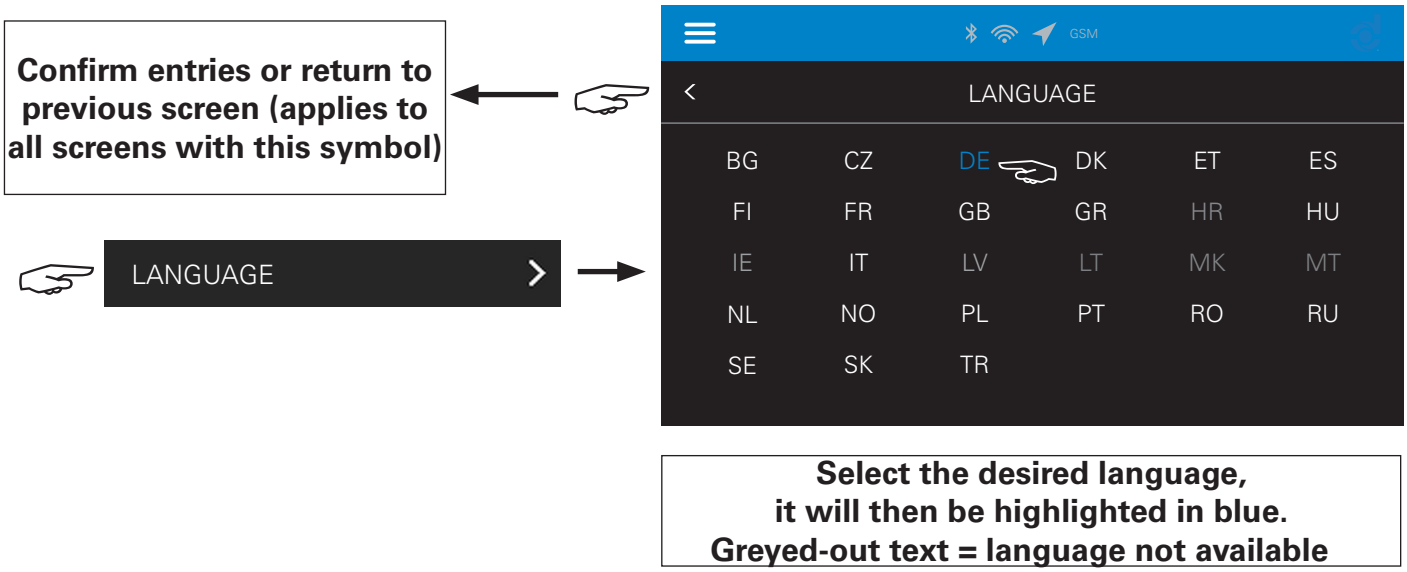
Tabular overview of all available setting options for the ACC P control system. Detailed descriptions of the various setting options can be found in the corresponding chapters indicated in the table.

MENU OVERVIEW "SETTINGS"			
MAIN MENU	Submenu	**Chapter**	Setting options / Displays
LANGUAGE >		**11.3.3**	22 of 28 languages (country codes) selectable
OPERATING MODE >	TIME CONTROL		Can be selected individually (selected operating mode is displayed in blue)
	DEW POINT CONTROL		
ALARMS >	DEW POINT	**11.3.5**	Alarms for the configured sensors, such as dew point, etc., are displayed here. It also shows whether the value is digital or analogue, as already described in section 11.2.3.
OPERATING DATA >	DEW POINT		Display of the interfaces and the assigned dew points
	REL. HUMIDITY INLET	**11.3.4**	**Numerical input**
	min. OPERATING PRESSURE	**11.3.4**	**Numerical input**
	max. compressed air temperature		**Numerical input**
	max. VOLUME FLOW		**Display only in m³ /h**
	REGENERATION AIR NOZZLE		**Display / manual selection 0 - 33**
	CYCLE TIMES >		
	ADORPTION	**11.3.4**	**Display only**
	REGENERATION		**Numerical input**
	PRESSURE BUILD-UP		
	ACTIVATION INTERMITTENT AFTERRUN	**11.3.5**	Activation by means of **on/off switch**
	FORCED SWITCHING		**Numeric input**
	DATE & TIME		**Numeric input**
	FACTORY SETTINGS	**11.3.5**	**Confirmation Yes/No**

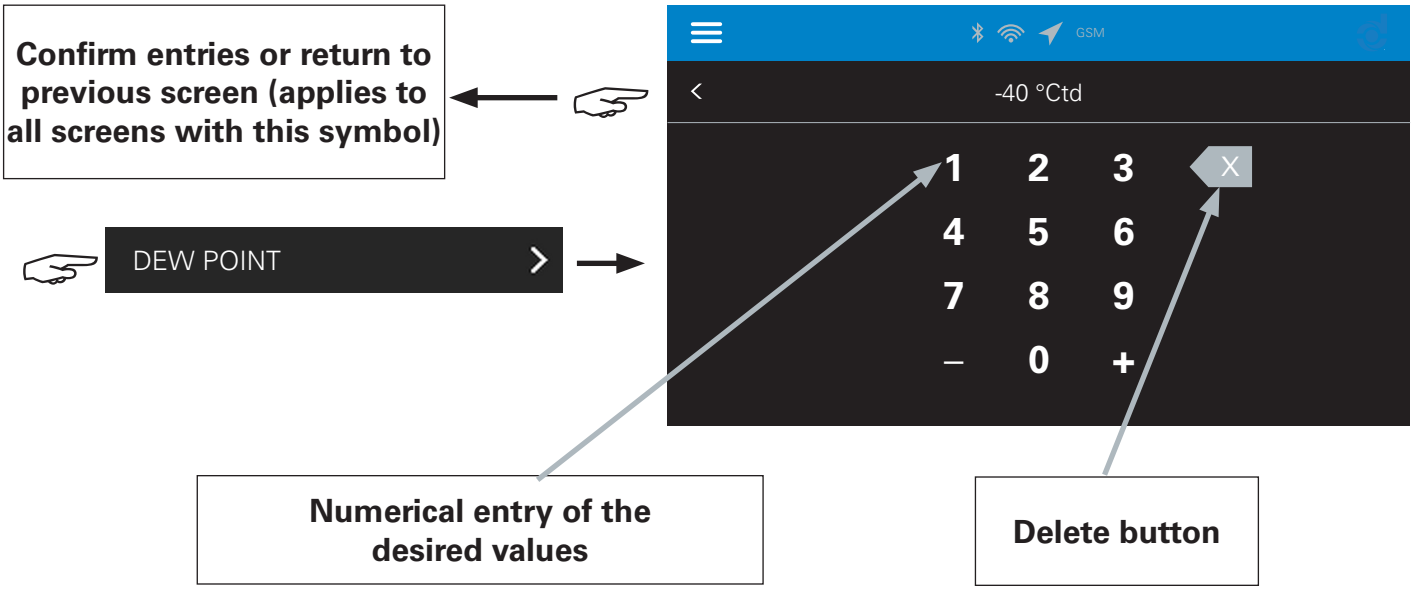
MAIN MENU	Submenu	Chapter	Setting options / Displays
SENSORS >	ANALOG 1	11.3.6	**Option to select individual sensors (if connected). The names of the sensors can be customised using the keyboard.**
	ANALOG 2		
	ANALOG 3		
	ANALOG 4		
	DIGITAL (UDM 515)		
	SENSOR TYPE	11.3.7	----- = not configured
			Dew point
			Pressure
			Differential pressure
			Temperature
			Volume flow
			CO_2
			CO
			..... = user defined
	SCALING +20 > -80 > °Ctd >	11.3.6	**Numerical input**
			Selection of units
	INTERFACE 4 - 20 mA	11.3.6	**Range limit adjustable**
			Sensor error not adjustable
	INTERFACE MODBUS (digital) >		
	ID	11.3.6	**Numeric input**
	BAUD		**Baud rate selection**
	STOP		**Selectable**
	PARI		
	WORD ORDER		
	REGISTER >		
	SERIAL NUMBER		**Not adjustable**
	DEW POINT		**Adjustable**
	TEMPERATURE		
	PRESSURE		
	DIFFERENTIAL PRESSURE		
COMMUNICATION >	BLUETOOTH*	11.3.5	**Activation using the on/off switch**

*All installed communication modules are listed here. Default = BLUETOOTH

11.3.3. "Language" setting

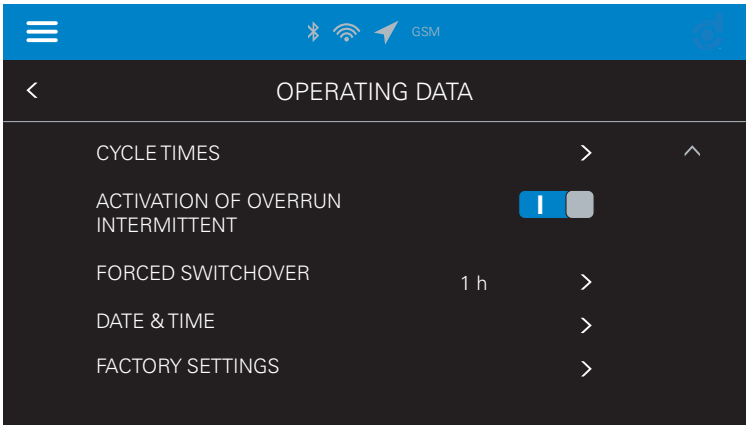


11.3.4. Example of numerical settings



11.3.5. Example of activation using an on/off switch

ACTIVATION AFTER RUN
INTERMITTENT



Activated	
deactivated	

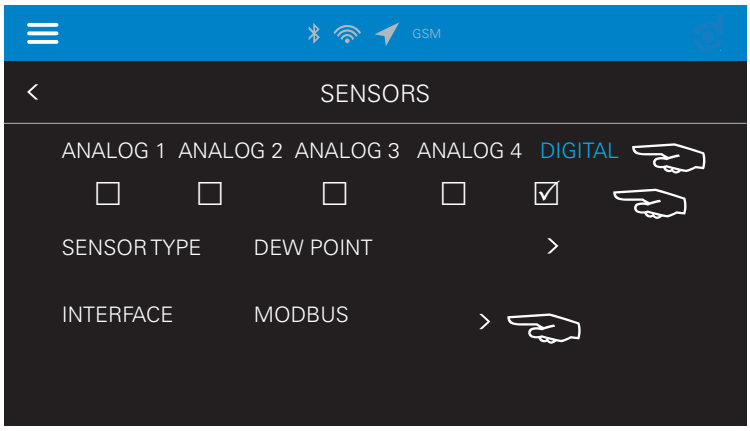
In the above example, pressing the on/off switch activates the run-on function in intermittent operation (position "1") or deactivated (position "0")

11.3.6. Examples of "Sensors" settings

SENSORS
INTERFACE MODBUS (digital))

UDM 515 = DIGITAL (standard)
Pressing the arrow behind "MODBUS" opens a settings menu (for setting options, see also section 11.3.2):

ID
BAUD
STOP
PARI
WORD ORDER
REGISTER

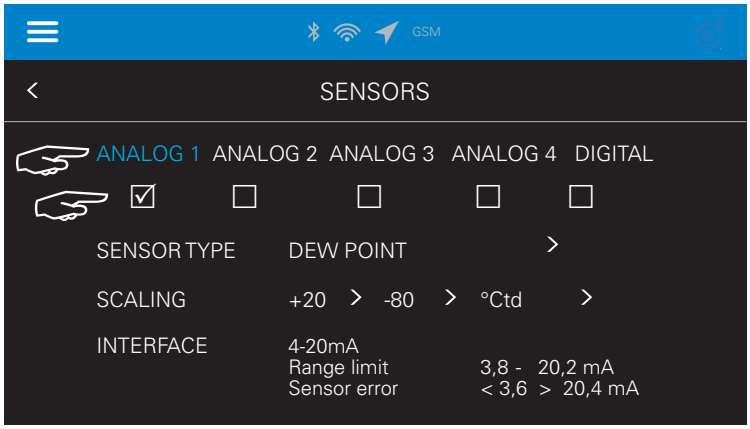


Pressing "ANALOG 1...4" or "DIGITAL" highlights the text in blue. Use the checkbox to select which sensor is responsible for the drying cycle (in the example above, "DIGITAL").

SENSORS
INTERFACE 4 - 20 mA (analogue):

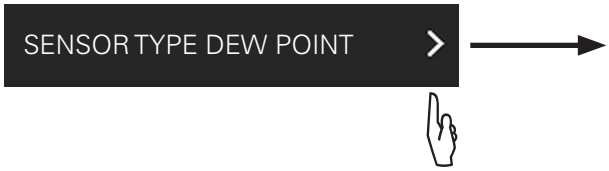
Examples:
Dew point = Analogue 1
Frost protection = Analogue 2
(temperature sensor)

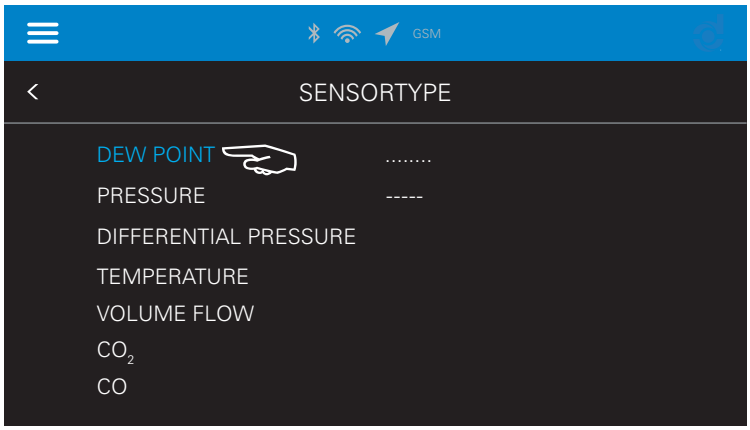
The range limit (tolerance threshold) can be set. The sensor error is calculated automatically. If the calculated sensor error is exceeded or not reached, an alarm message is issued.



Pressing "ANALOG 1...4" or "DIGITAL" highlights the text in blue. Use the checkbox to select which sensor is responsible for the drying cycle (in the example above, "ANALOG 1").

11.3.7. Examples of settings for "Sensor type"





Pressing a sensor type highlights it in blue.

Pressing the dotted line brings up a keyboard that can be used to freely select the name of the sensor.
No symbol appears on the home screen, but rather a "u" for user defined.
Pressing the dashed line cancels the sensor selection.

12 Decommissioning

For dryers that run continuously, the following steps are necessary for decommissioning:

1. Close the shut-off valve behind the dryer (valve B, see illustrations "Bypass line" in chapter 9.1).
2. Leave the control unit in operation until both adsorbers are fully regenerated.
3. Take the control system out of operation by disconnecting the power cable from the power supply.

Under no circumstances should compressed air continue to flow through the dryer after it has been taken out of operation, as this could overload the desiccant and prevent it from being regenerated by the drying system.

12.1. Pressure reflief of the system

1. Take the system out of service in the correct manner (see also Chapter 12).
2. Close shut-off valve A (see illustrations "Bypass line" in Chapter 9.1).
3. Depressurise the system.

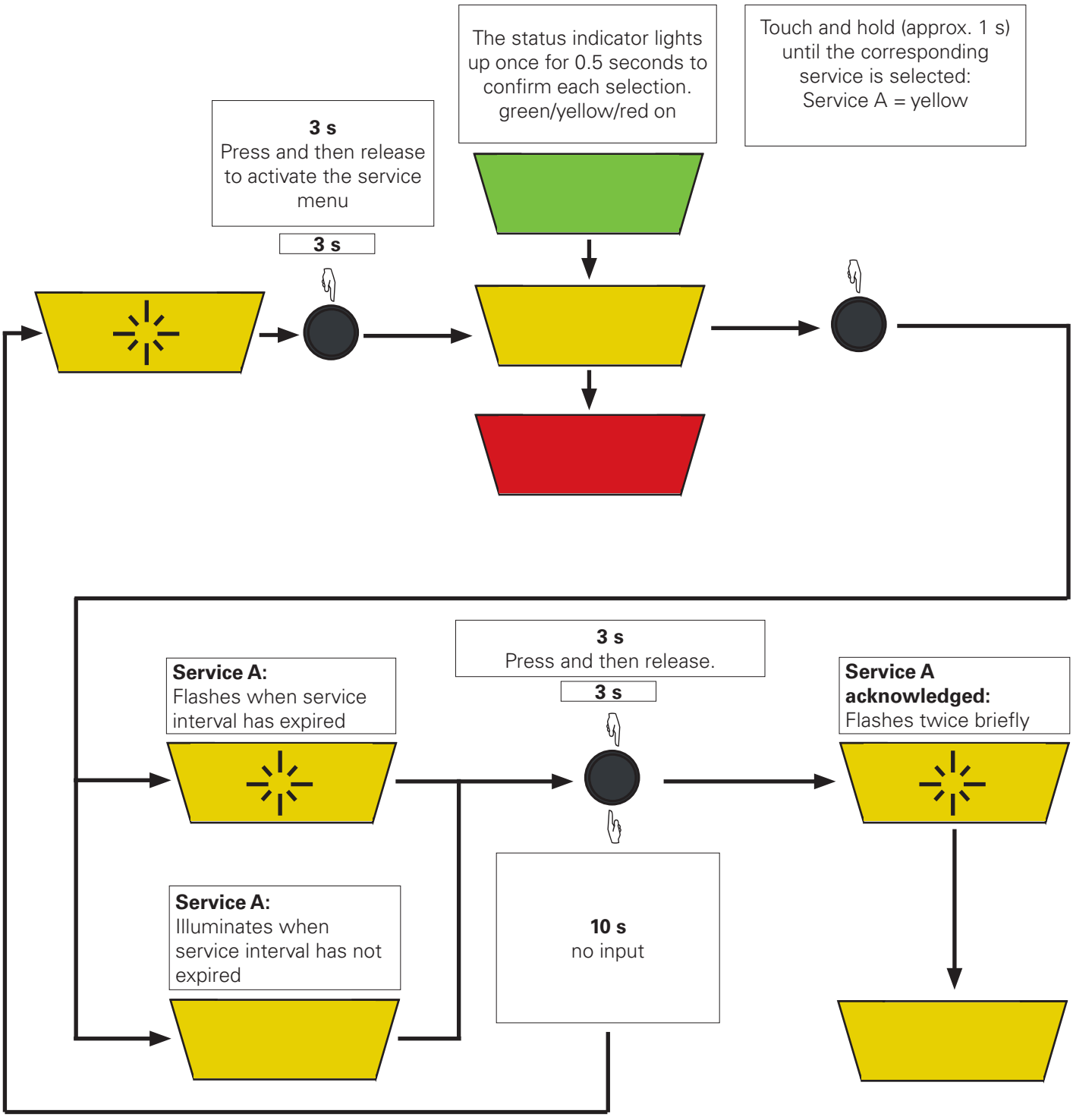
13 Service and alarm messages

13.1. Service messages

In the event of a service requirement, the status indicator flashes yellow.

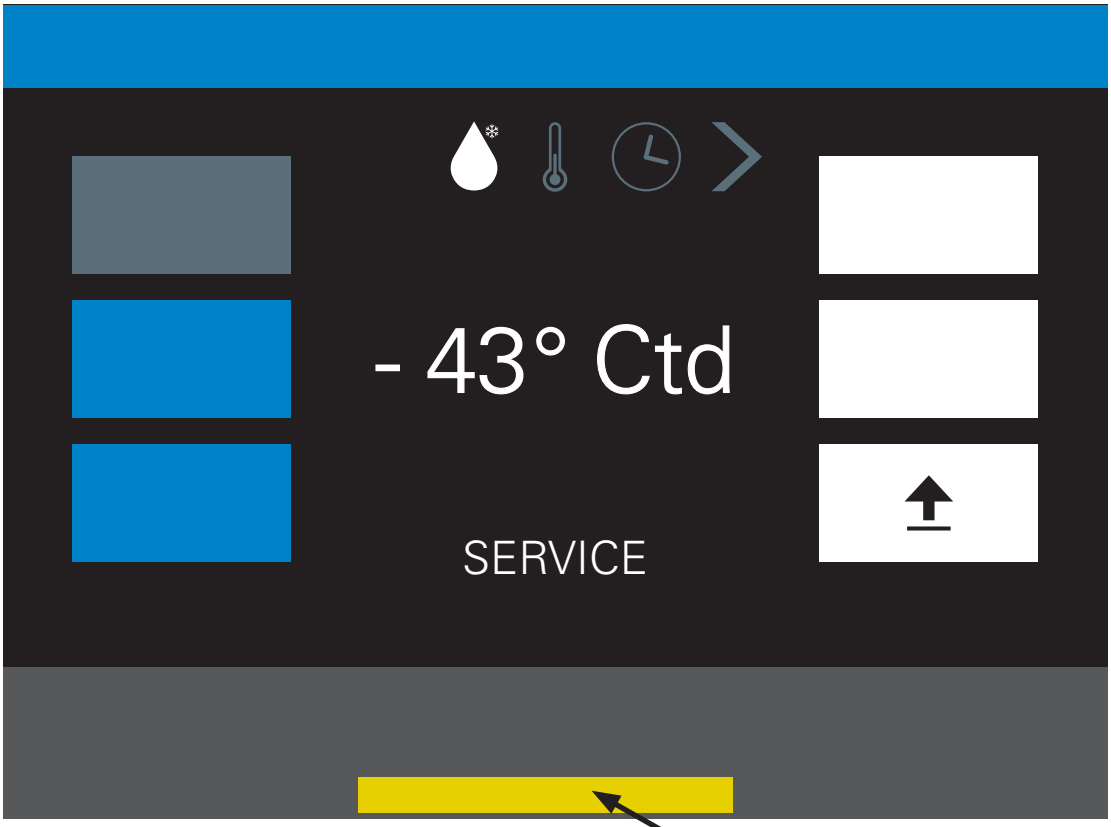
Service A

The illustration shows the status display "ACC". For replacement intervals, see Chapter 15.1 "Service intervals".

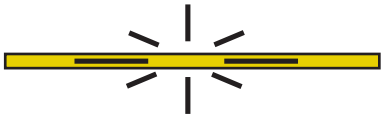


13.2. Service and alarm messages (ACC P)

In the event of a service, the status LED flashes yellow and "SERVICE" is shown on the display. In the event of an alarm, the status LED flashes red and "ALARM" is shown on the display.



Status display

Service message:  **see section 13.2.1**

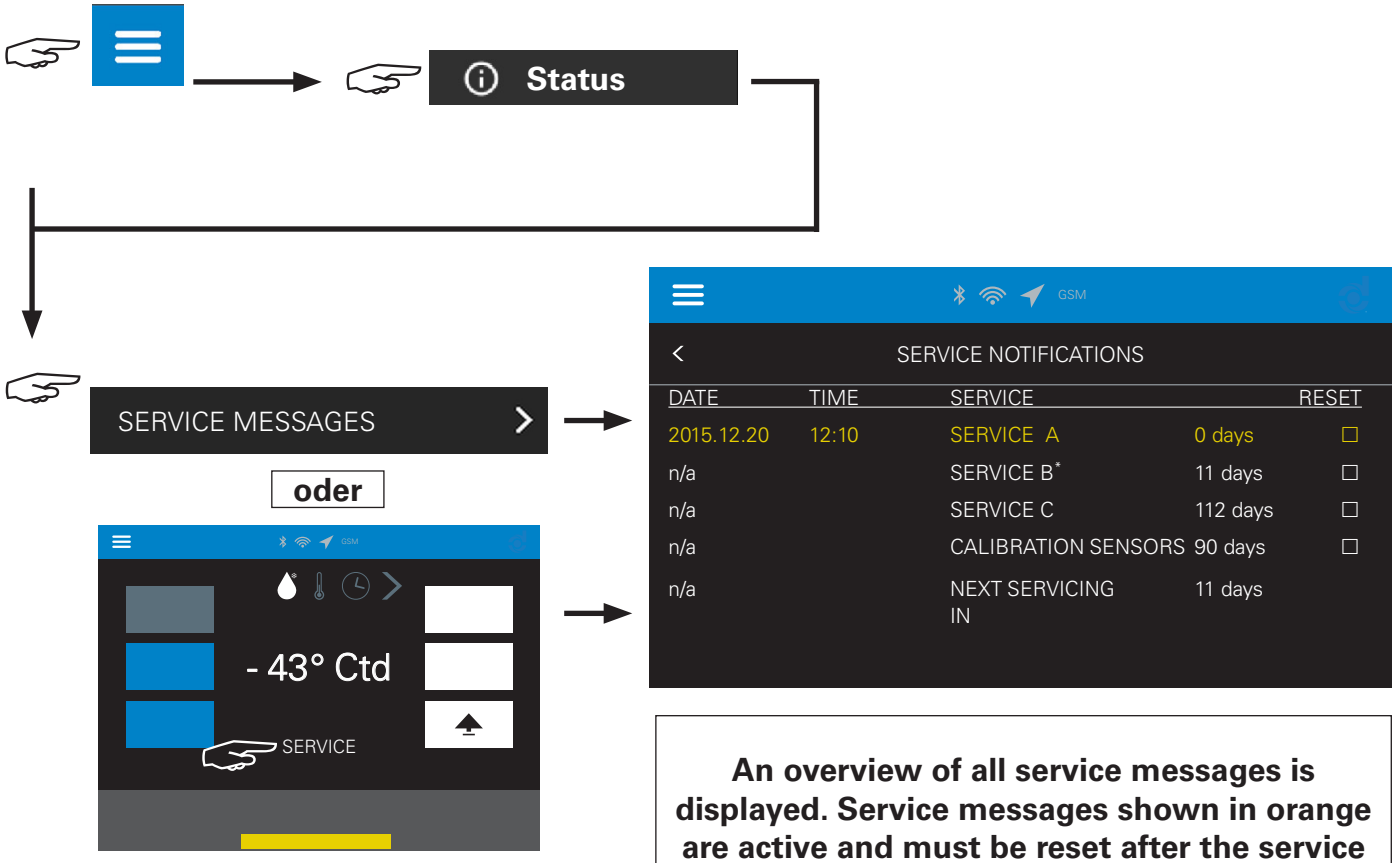
Alarm message:  **see section 13.2.2**

13.2.1. Service notifications

Possible service messages		
Service message		**Action**
SERVICE A	**365 days**	Replacement of the S-DPACC service kit
SERVICE C	**730 days**	Replacement of desiccant cartridges
CALIBRATION SENSORS	**365 days**	Sensors must be recalibrated at specified intervals to ensure that they are fully functional.
The service intervals specified by the manufacturer can be found in Chapter 15.1 "Service intervals".		

Calling up the service messages

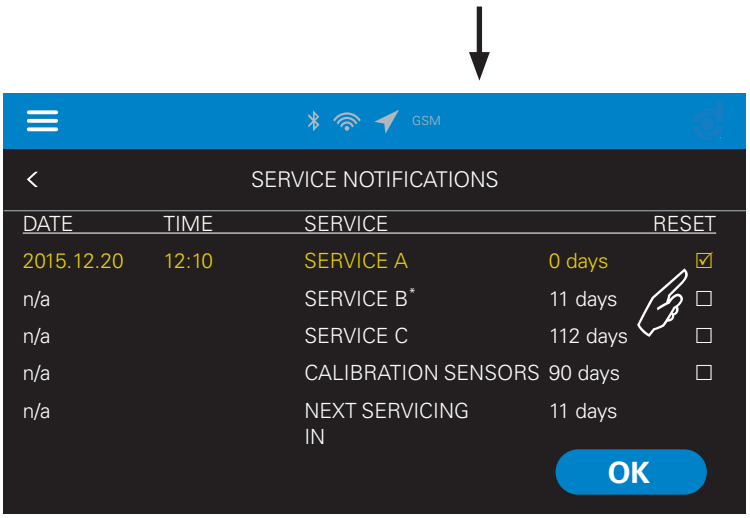
Set the status display to "Service messages".



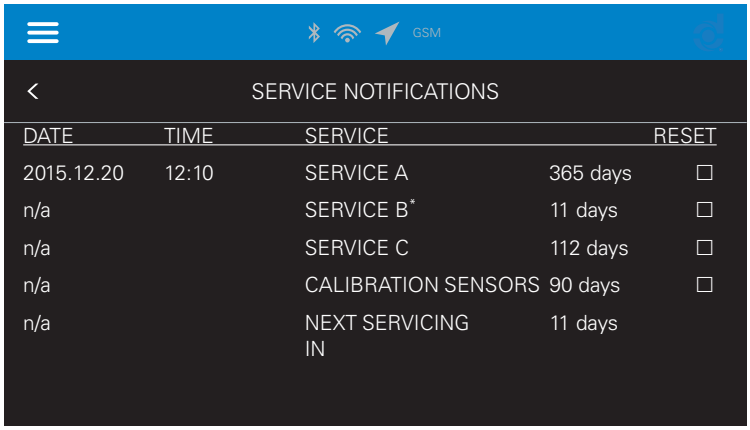
An overview of all service messages is displayed. Service messages shown in orange are active and must be reset after the service has been performed.

* Service B is not available.

Exiting the menu "Service messages"



Pressing the reset symbol will mark it with a check mark, and pressing the "OK" button that now appears will reset it.



After pressing the "OK" button, the message previously displayed in orange now appears in white and the full number of days (365) until the next service is displayed.

* Service B is not available.

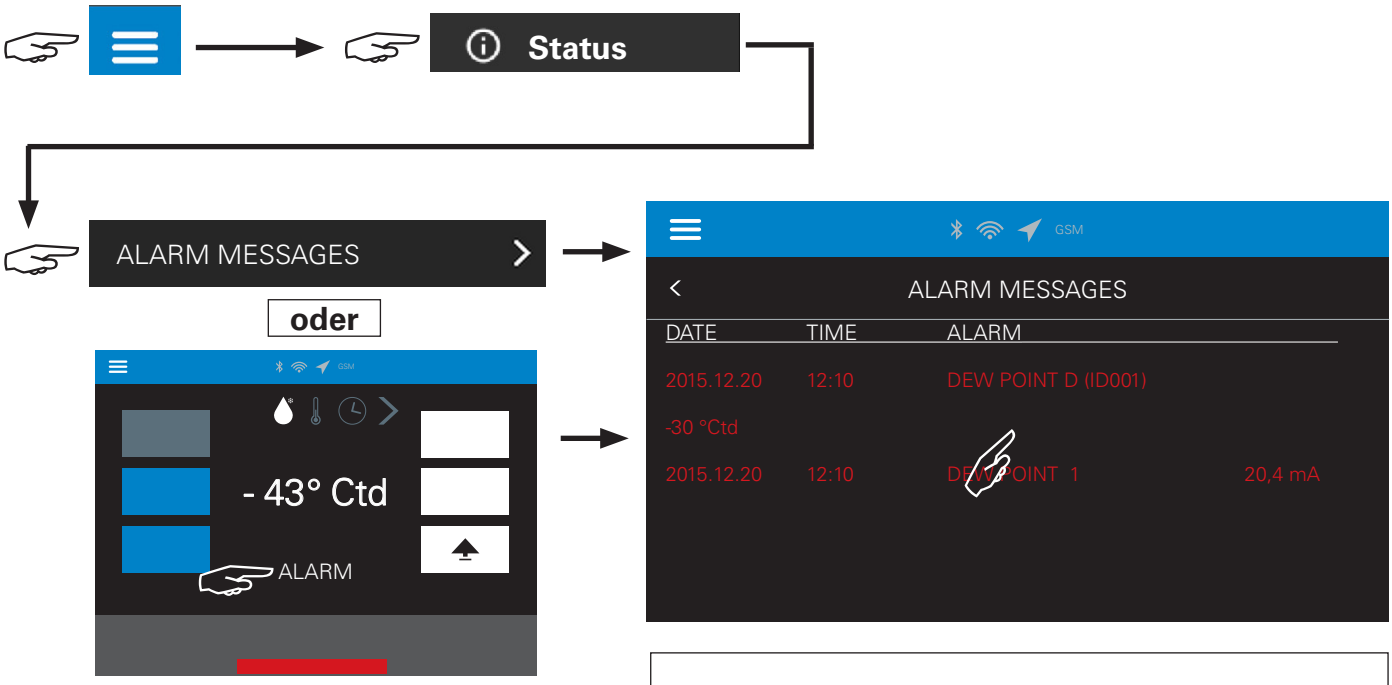
13.2.2. Alarm messages

Possible alarm messages		
Alarm message (examples)*	**Alarm value**	**Possible causes**
DEW POINT D (D001) **(Digital sensor)**	**xx °Ctd**	Alarm messages are issued when the alarm contact switches: DEW point > Default setting Pre-alarm dew point > Default setting (= alarm contact does not switch) Pressure < 4 bar Differential pressure > Default setting Temperature > Default setting CO > Default setting CO_2 > Default setting Volume flow > Default setting Freely definable sensor type (Settings > Sensors > Sensor type) …….1 > Default setting …….. 2 > Default setting …….. 3 > Default setting …….. 4 > Default setting
DEW POINT D (D001) **(Digital sensor)**	**-256 °Ctd**	Sensor not connected
DEW POINT 2 **(Analogue sensor 1...4)**	**3,6 mA**	Sensor error or open transmitter
DEW POINT 2 **(Sensor "Analogue 1...4")**	**20,4 mA**	Sensor error or short-circuited transmitter
Further information on causes of errors and troubleshooting can be found in Chapter 14.2 "Troubleshooting".		

* The names of the sensors can be freely defined (see Chapter 11.3.7.)
Alarms are only triggered if alarm messages have been activated under Settings. The alarm contact can be activated, i.e. whether or not it switches when an alarm is triggered. In the event of a power failure/cable break, an alarm can be generated via the alarm contact; in this case, there is no display on the dryer.
An unconnected or defective sensor displays "-" without a value.

Calling up alarm messages

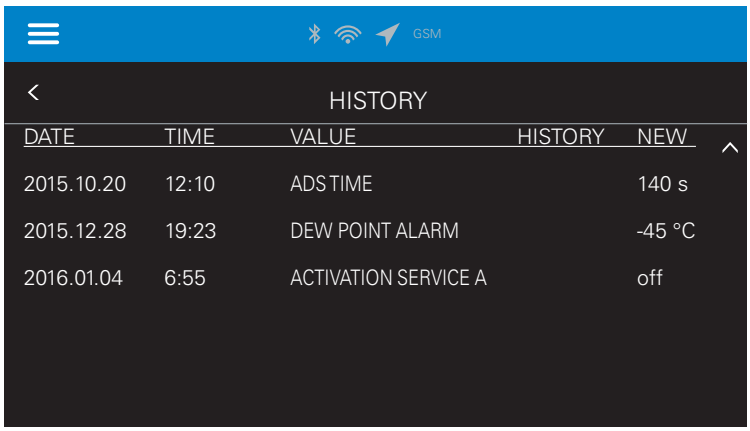
Set the status display to "Alarm messages". Alarms are only triggered if alarm messages have been activated under Settings. Clicking on the alarm message acknowledges it and deletes the alarm message. If the cause has not been rectified, the alarm message is repeated after a preset time, e.g. 30 seconds. The history can be displayed as required via the menu item Service > Analysis > History.



Once the cause of the fault has been rectified, the line is deleted.
No manual reset is required.

An overview of all current alarm messages is displayed.
For the cause and rectification of faults, see Chapter 14.2 "Troubleshooting".

Exiting the menu "Alarm messages"



An overview of all current and past alarm messages is displayed.

14 Faults

In this chapter, we explain:

- what faults can occur
- the cause of the faults
- What measures need to be taken to rectify the faults

You will find an overview of this in the corresponding overview lists. Please note all operating conditions and setting parameters at the time the error occurred. To rectify some errors, it is necessary to switch off the system. Please note the following information:

- Take the system out of operation.

- Proceed as described (see also Chapter 12) when taking the system out of operation. Attach a warning sign: Switching on the system is prohibited!

- If necessary, depressurise the system (see also section 12.1).

- After working on the system, restore it to its original condition.

Important:
Troubleshooting may only be carried out by instructed persons or trained specialist personnel!

14.1. Possible causes of faults

Before specifically searching for the causes of the faults that have occurred, the following points must be checked:

- Is the system damaged externally or are any parts missing?
- Is the system supplied with power and does the type of power supply correspond to the voltage specified on the type plate?
- Is the power supply to all electrical components within the system guaranteed?
- Was commissioning carried out correctly (see also section 9.1)?
- Are all external shut-off valves in the correct position (see also Section 9.1)?
- Do the input parameters (max. flow rate, min. operating pressure, max. inlet temperature) correspond to the data used for the design?

14.2. Troubleshooting

Symptom	Possible cause		Remedy
Dew point too high	Operating conditions setting deviates		Adjust the dryer (ACC P)
	Maximum service life of cartridges exceeded		Replace the cartridges
	Regeneration air nozzle dirty or incorrect		Check the regeneration air nozzle
	Defective shuttle-valves or regeneration valves		Check the regeneration air nozzle
	Silencer dirty		Check valves and replace if necessary
High pressure loss Strong air flow at the silencer	Shuttle-valve not working	Silencer dirty	Replace silencer
		Ball damaged	Replace ball
	Pressure build-up incomplete	Regeneration valve membrane defective	Replace regeneration valves
		Incorrect or defective regeneration air nozzle	Replace regeneration air nozzle
		Regeneration air nozzle contaminated	Clean the regeneration air nozzle
		Pressure build-up time too short	Reset the inlet pressure. It is probably below the minimum required pressure of 4 bar.
		Incorrect sequence during commissioning	1. Step: Pressure build-up 2. Step: Switch on the control unit
No function after electrical connection	Control system has no operating voltage	Connection to the terminals on the inspection cover circuit board not connected	Check the contact pins
		Only ACC P: The inspection cover is not correctly attached to the housing.	Check the inspection cover
LEDs or display not working	Display circuit board defective		Call customer service
	Cable connection to display board interrupted		
	Mainboard defective		

Symptom	Possible cause		Remedy
Only ACC P: Alarm message Digital sensor (UDM 515)*	Sensor signals outside the permissible range	Incorrect scaling under Settings > Sensors may be the cause of an incorrect measured value	Check the scaling. It must correspond to the specifications of the sensor manufacturer
Only ACC P: Alarm message sensor analogue* **1...4**	Sensor signals outside the permissible range (4- 20 mA)		
Only ACC P: Alarm message Sensor xxxx* 20.4 mA	Sensor defective or malfunctioning	Short circuit in the supply line to the sensor or in the sensor	Check sensor, check supply lines to sensor, replace if necessary
Only ACC P: Alarm message Sensor xxxx* 3.6 mA	Sensor defective	Supply line to sensor interrupted or sensor not connected	Check sensor, check supply lines to sensor, replace if necessary

*The user is free to choose the names of the sensors. The scaling of the UDM 515 can only be set by the manufacturer.

15 Service and maintenance

15.1. Service intervals

The manufacturer recommends that the following maintenance work be carried out within the specified maintenance intervals:

SERVICE INTERVALS					
Product	**Type Comment**	**1 year / 12 months**	**2 years / 24 months**	**3 years / 36 months**	**4 years / 48 months**
Service inspection	Checking/cleaning of: Silencer Shuttle-valves Solenoid valves	**X**	**X**	**X**	**X**
Recalibration dew point transmitter	Only ACC P	**X**	**X**	**X**	**X**
S-DPACC Service Kit	Service A	**X**	**X**	**X**	**X**
Cartridges	Service C		**X**		**X**

Desiccant cartridges

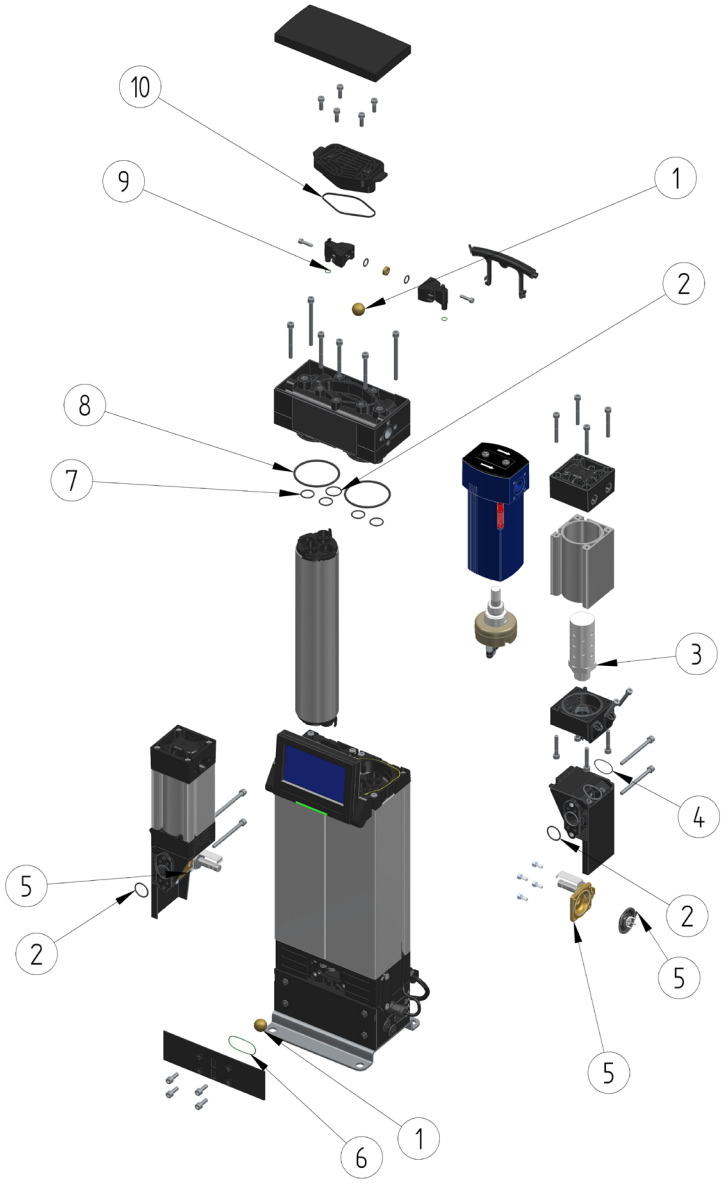
Oil in the liquid phase can destroy the desiccant and lead to significant restrictions in the function of the system. Therefore, care must be taken to replace the filter elements regularly (see the filter installation and operating instructions). Failure to comply with the operating conditions (inlet temperature too high or operating pressure too low) can lead to overloading of the desiccant, which in turn leads to malfunctions of the system. To ensure proper operation of the system and its individual components, the desiccant cartridges must be replaced after the service message from the control system, but no later than after 17,500 operating hours or a maximum of 2 years.

Scope of service inspection

1. Visual inspection of the adsorption dryer and filters
2. Inspection and cleaning of the condensate drain
3. Inspection of all valves, cleaning and lubrication if necessary
4. Inspection and replacement of silencers if necessary
5. Replacement in accordance with service interval: Service A annually, Service C every two years. The relevant components are listed in the following exploded drawings.
6. Leak test under pressure
7. Test run and final inspection
8. Check the reciprocal switching of the adsorption dryer
9. Recommissioning of the dryer
10. Checking the compressed air quality
11. Recording of data and inspection details in the service report

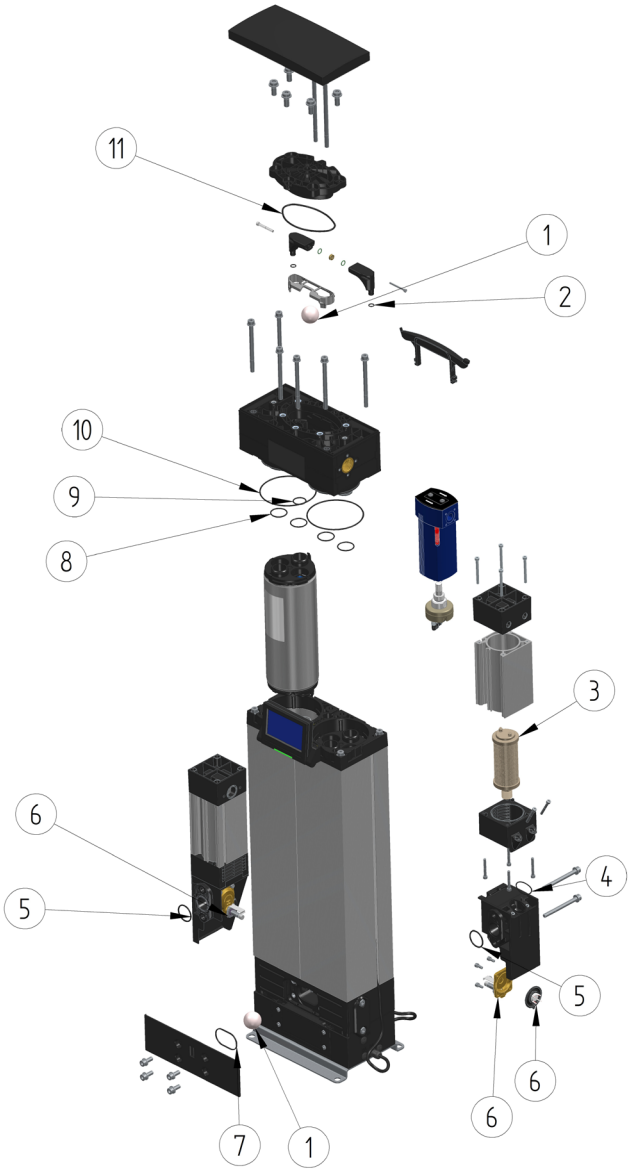
Service DRYPOINT® ACC / ACC P 005 - 025

Item	Quantity	Description
1	2	VALVE BODY, SPHERICAL D17 PU 90° SHORE GRINDED WV1/2
2	3	O-RING 18.50 X 1.50 PERBUNAN, 70 SHORE
3	2	SILENCER 1/2" 005 - 025
4	2	O-RING 22.00 X 1.00 PERBUNAN 70 SHORE
5	2	WEAR PARTS SET VALVE/MAGNETIC VALVE 1/2 INCH
6	1	O-RING 29.00 X 2.00 PERBUNAN, 70 SHORE
7	4	O-RING 15.50 X 1.50 PERBUNAN, 70 SHORE
8	2	O-RING 55.00 X 3.00 PERBUNAN, 70 SHORE
9	2	O-RING 6,00 X 1,00 PERBUNAN, 70 SHORE
10	1	O-RING 55,00 X 2,00 PERBUNAN, 80 SHORE



Service DRYPOINT® ACC / ACC P 035 - 100

Item	Quantity	Description
1	2	BALL Ø 35 PUR 90 SHORE A 035-100
2	2	O-RING 8,50 X 1,50 PERBUNAN, 70 SHORE
3	2	SILENCER 1/2" 035 - 100
4	2	O-RING 29,50 X 1,50 PERBUNAN, 70 SHORE
5	2	O-RING 32,00 X 2,50 PERBUNAN, 70 SHORE
6	2	WEAR PARTS SET VALVE/VERSCHLEISSTEILESET MAGNETVENTIL 3/4 INCH
7	1	O-RING 46,00 X 2,00 PERBUNAN, 70 SHORE
8	4	O-RING 30,00 X 2,00 PERBUNAN, 70 SHORE
9	1	O-RING 23,00 X 2,00 PERBUNAN FREE OF PARTING AGENT
10	2	O-RING 110,00 X 2,25 PERBUNAN, 70 SHORE
11	1	O-RING 96,00 X 3,00 PERBUNAN, 70 SHORE



15.2. Service sets

Service sets DRYPOINT® ACC / ACC P 005 - 100 (Service C)		
Type	**Material no. cartridges**	**Number of cartridges complete**
005	4066361	2
010		4
015		6
025		10
035	4066364	4
050		6
065		8
080		10
100		12

Contents of S-DPACC service kit and wear parts DRYPOINT®ACC / ACC P 005 - 100 (Service A)		
Type	**Contents S-DPACC service kit**	**Material no.**
005 - 025	O-rings Wear parts kits Solenoid valves Wear parts kits for shuttle-valves Silencers	4066362
035 - 100		4066363

15.3. Maintenance

DANGER! Danger to life from pressurised systems!

Pressurised equipment or systems can cause serious injury! Furthermore, unauthorised reconnection of the power supply during maintenance can result in serious injury or even death for persons in the danger zone.

- Maintenance work may only be carried out by qualified and specially trained personnel.
- Before starting any maintenance work, shut down the system and depressurise it. Before starting work, switch off all power supplies and secure them against being switched back on.
- Prevent persons or objects from being hit by condensate or escaping compressed air.
- Attach a warning sign to prevent reactivation.
- Always wear personal protective equipment in the danger zone.

After completing all maintenance work, restart the system (see Chapter 9).

Wear suitable gloves when carrying out all maintenance work, such as changing filter elements or cartridges.

Dispose of waste in accordance with local disposal regulations. It is essential that the desiccant cartridges/filter elements are disposed of properly.

When replacing the desiccant cartridges, the shuttle-valves, regeneration air nozzles and solenoid valves should also be replaced. Steps 15.3.1, 15.3.2 and 15.3.3 must then be carried out together.

Cleaning the dryer:
The touch display (ACC P) may only be cleaned with special cleaning cloths for TFT panels.
Never use flammable solvents to clean components. Mild cleaning agents such as household cleaners or glass cleaners are suitable. Ensure that the type plate is not damaged by the cleaning agent. Take appropriate safety precautions against toxic vapours from cleaning fluids.

Please use the maximum torques specified in the table below when tightening the screws. Check the torques of the screws during all maintenance work on the device and tighten them to the specified torque if necessary.

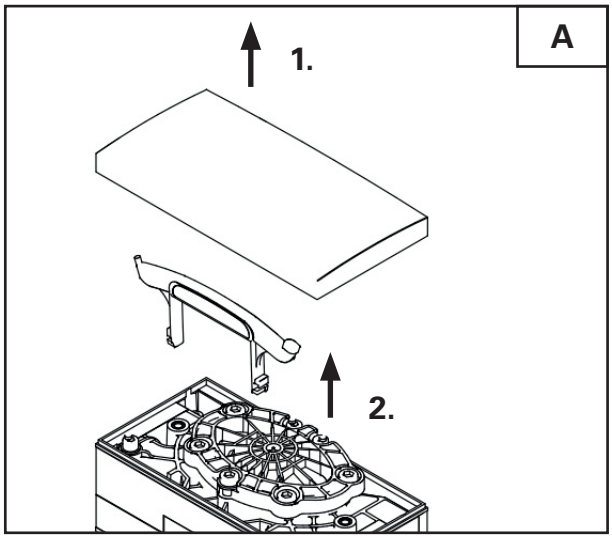
Screw tightening torques	
Screw size	**Tightening torque (Nm)**
M4	**3,2**
M5	**4,0**
M8	**11,0**
M10	**11,0**

15.3.1. Replacement of desiccant cartridges

Interval: 730 days

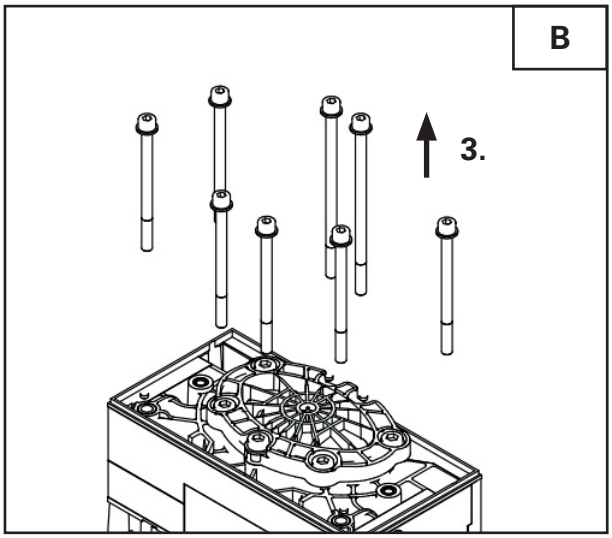
Please observe the instructions in section 15.3

Removing the cartridges!

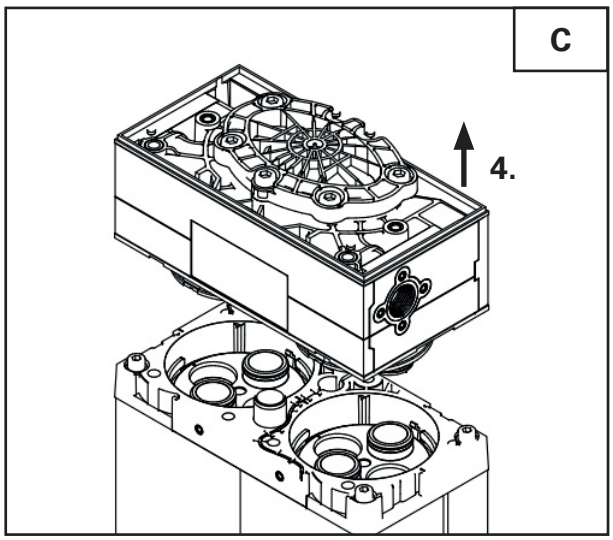


1. Remove the top covers of the cartridges (covers are attached magnetically).

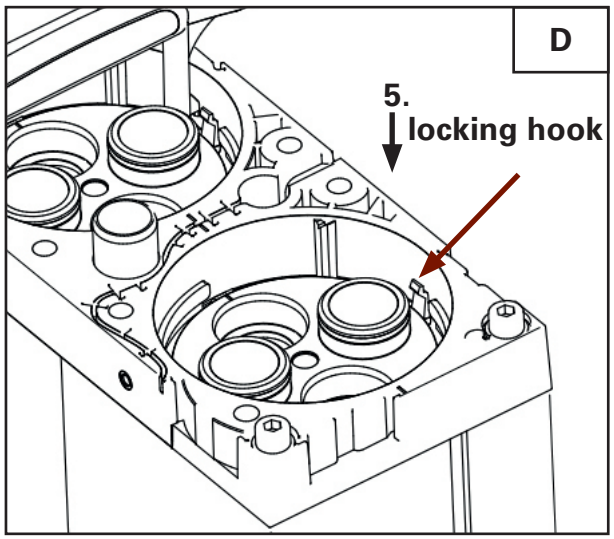
2. Pull the cartridge lifter upwards and set it aside.



3. Loosen the upper screws* of the adsorber cover by turning them counterclockwise.

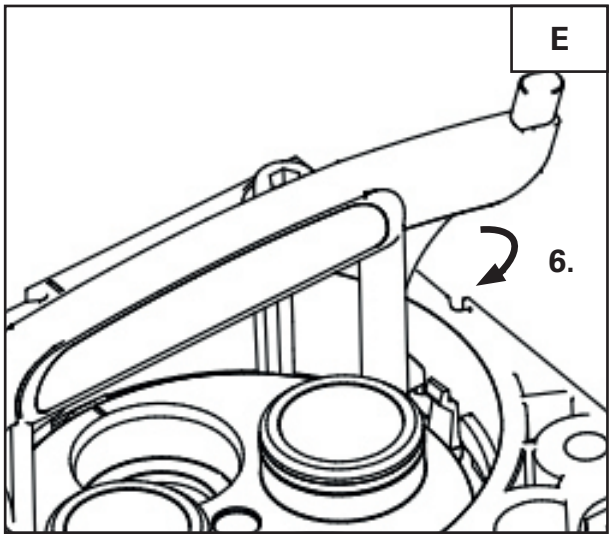


4. Some cartridges remain attached to the adsorber cover; carefully remove them from a low height using a screwdriver.

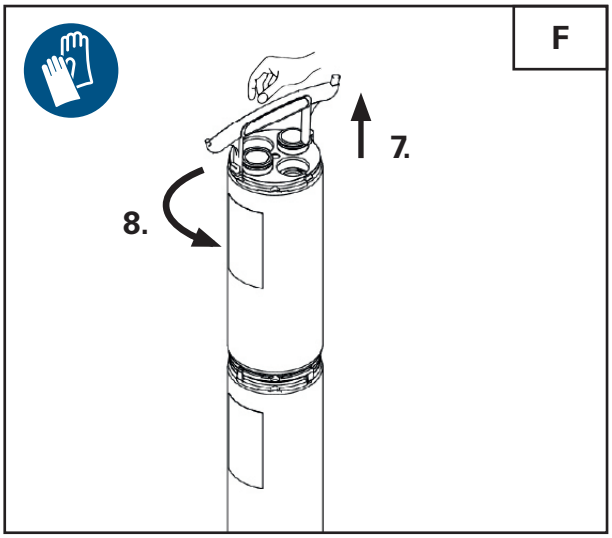


5. Place the cartridge lifter on the top of the first cartridge next to the latching hook.

*Sizes 005- 025: 6 screws, sizes 035-100: 8 screws

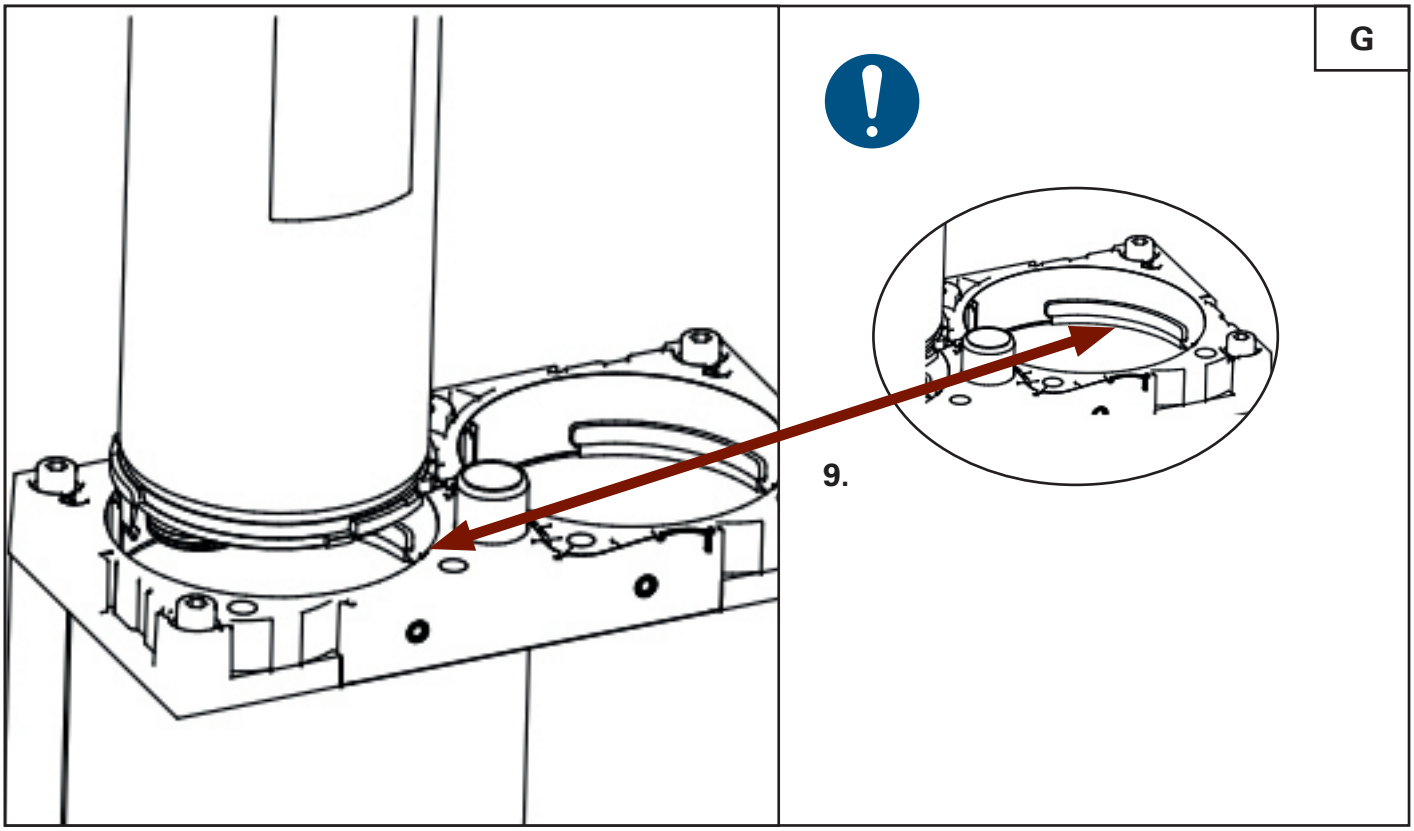


6. Turn the cartridge lifter clockwise until the tabs on the cartridge lifter are under the locking hooks on the cartridge.

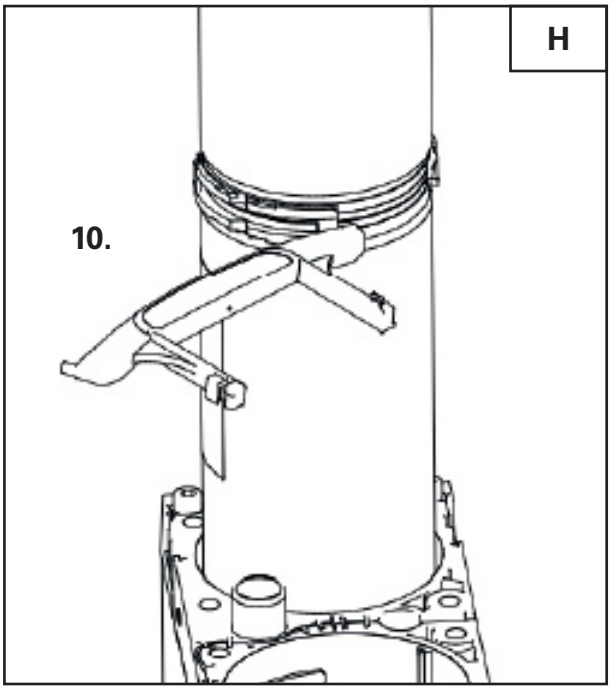


7. Use the cartridge lifter to lift the cartridges only far enough to be able to grasp them securely with your hands and pull them out.

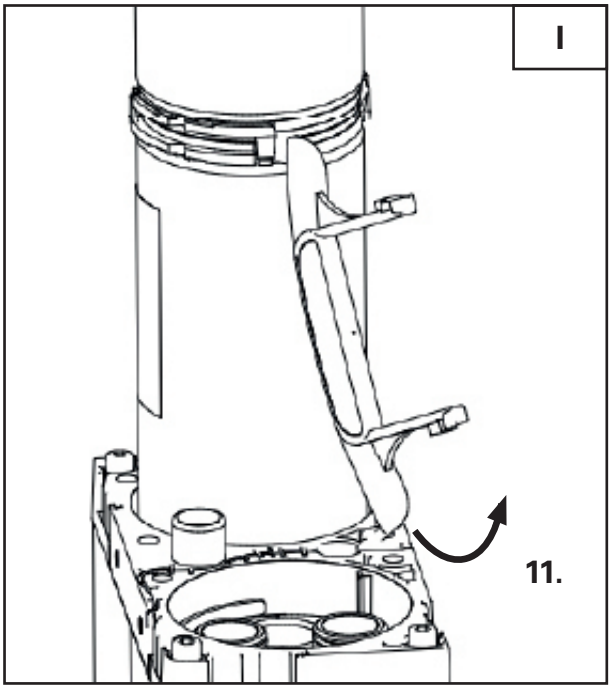
8. Turn the cartridges 1/4 turn anticlockwise.



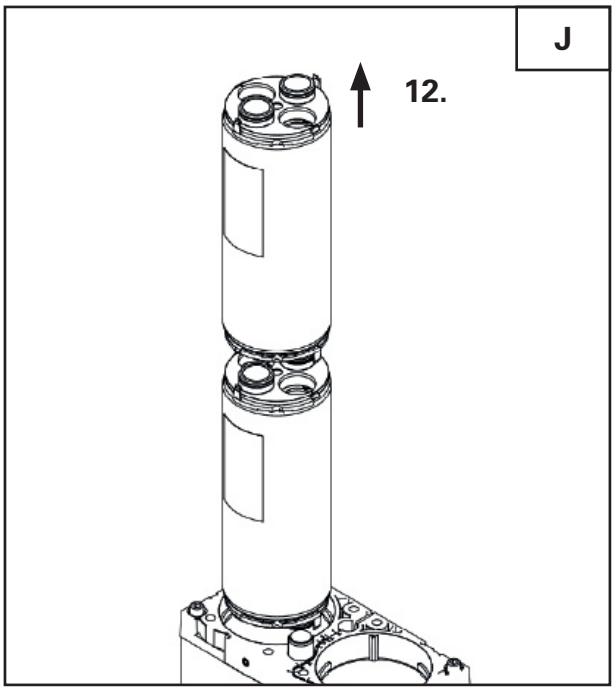
9. Important!
The lower cartridge must rest on the collar of the upper part of the adsorber so that it does not fall back into the adsorber profile.



10. Insert the cartridge lifter between the 1st and 2nd cartridges.



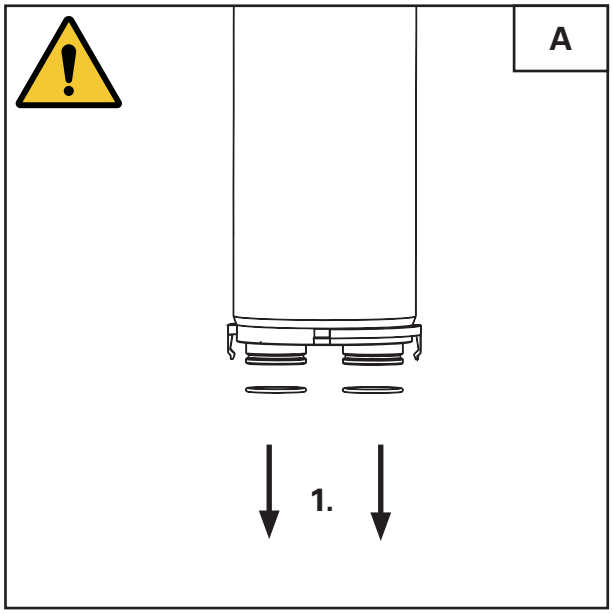
11. Turn the cartridge lifter 90° anticlockwise to separate the cartridges from each other.



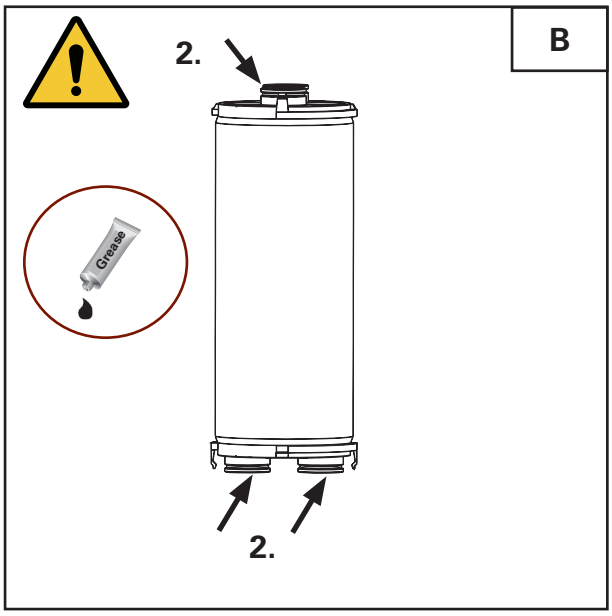
12. Remove the upper cartridge.

Repeat steps F to J to remove the remaining cartridges.

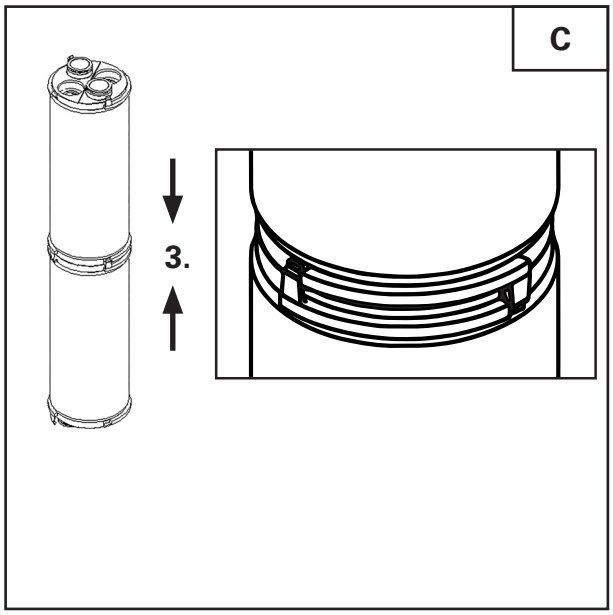
Installing the new cartridges!



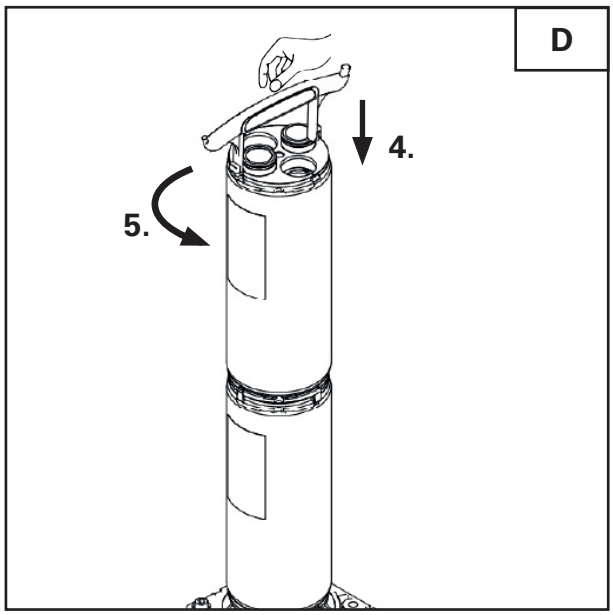
1. Remove the lower seals from the **bottom** cartridge.



2. **Lightly** grease the seals of all cartridges with a suitable lubricant!

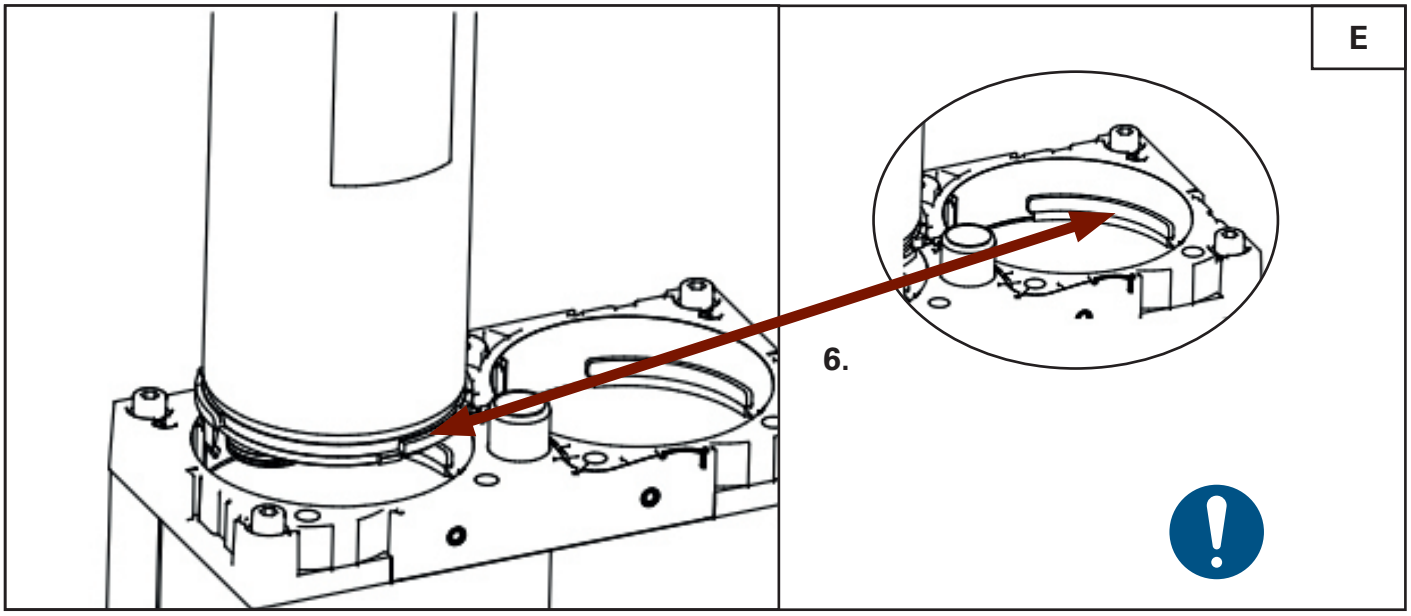


3. Connect the two cartridges together. Ensure that the lower seals (see **step A)** have been removed from the bottom cartridge..

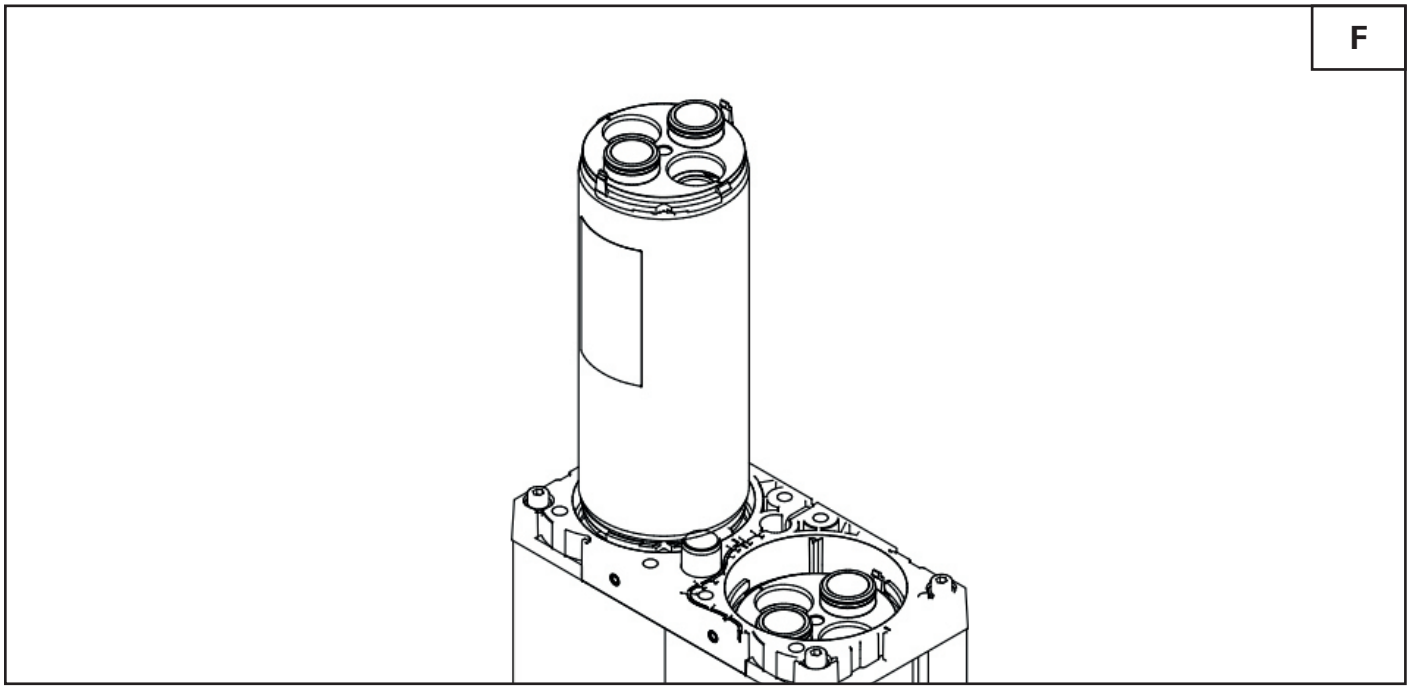


4. Insert both cartridges into the adsor ber profile with your hands.

5. Turn the cartridges 1/4 turn anticlock wise.

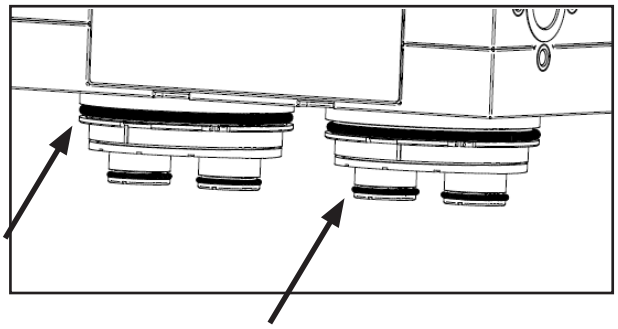


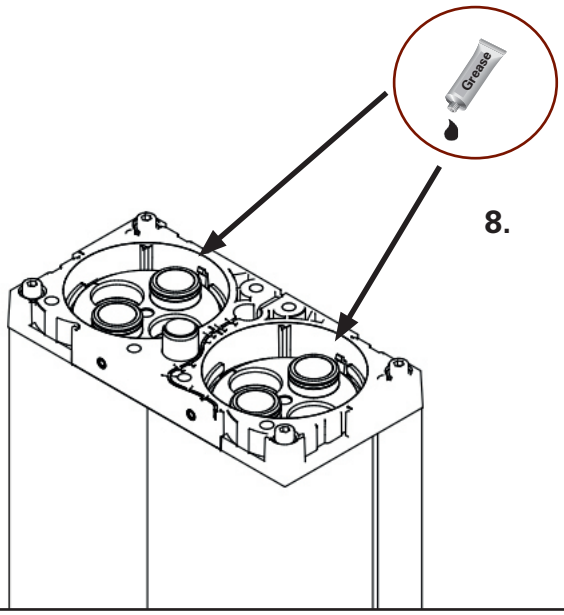
6. Important!
The upper cartridge must rest on the collar of the upper part of the adsorber to prevent it from falling back into the adsorber profile.



7. Repeat steps **A** to **F** to install the remaining cartridges.
For the top cartridge, place the cartridge lifter on top and slowly insert the cartridge package into the adsorber profile!

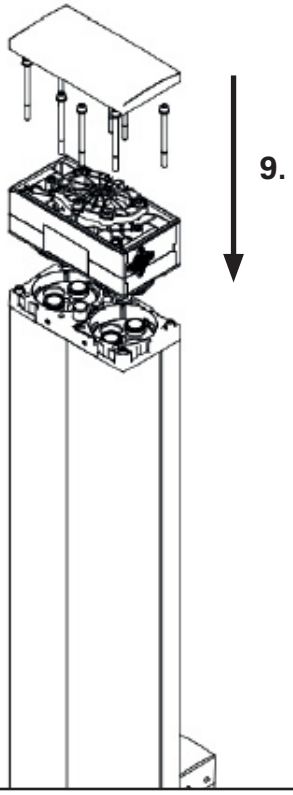
G





8. Grease the seals of the adsorber cover with a suitable lubricant!

H



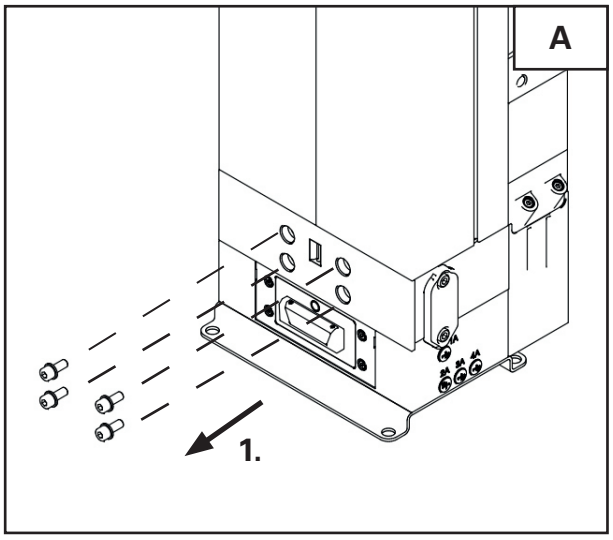
9. Secure the adsorber cover and upper covers with screws. Do not forget the washers.

15.3.2. Maintenance of shuttle-valves / replacement of regeneration air nozzle

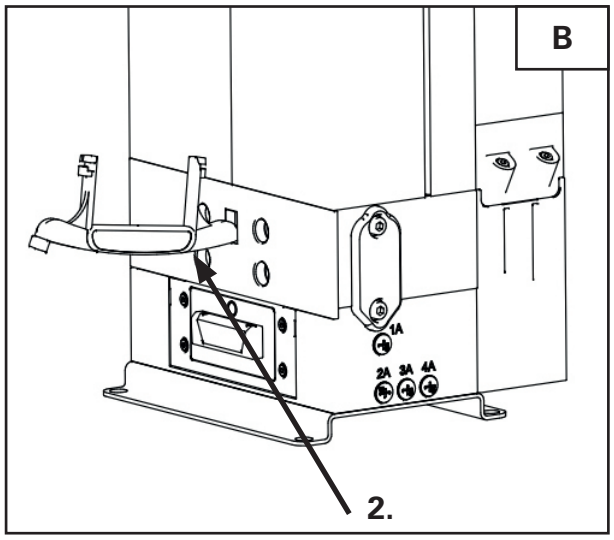
Interval: **365 days**

Observe the instructions in chapter 15.3

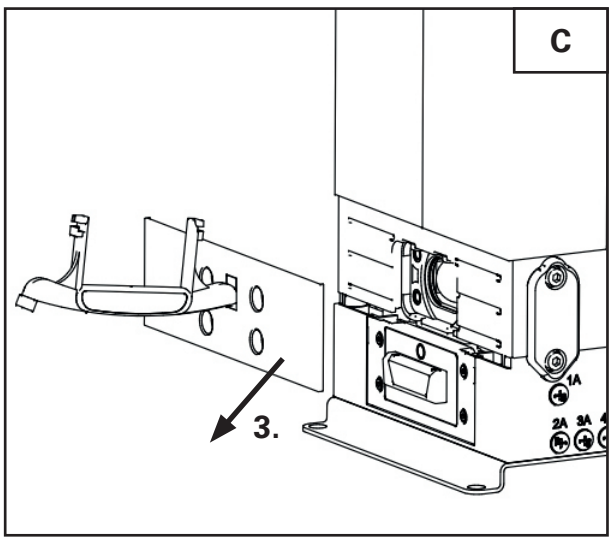
Change valve at the bottom!



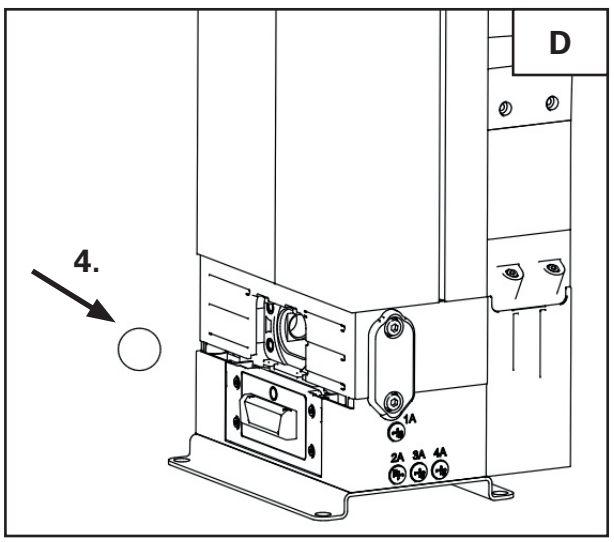
1. Remove the 4 screws from the lower shuttle-valve cover.



2. Insert the cartridge lifter into the recess in the lower shuttle-valve cover.



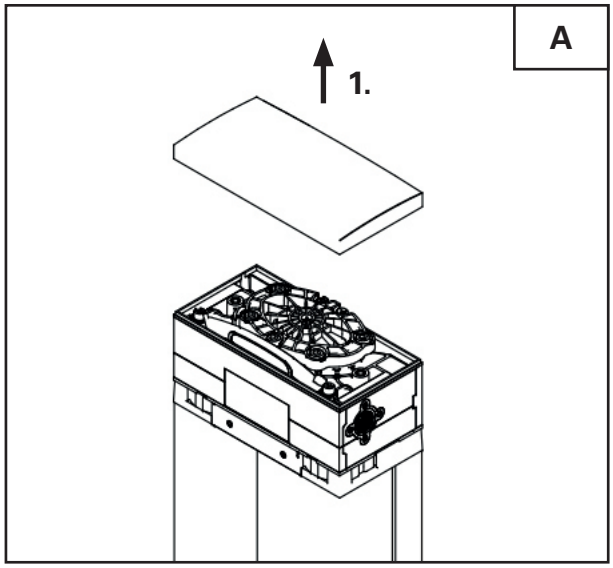
3. Remove the cartridge lifter together with the shuttle-valve cover.



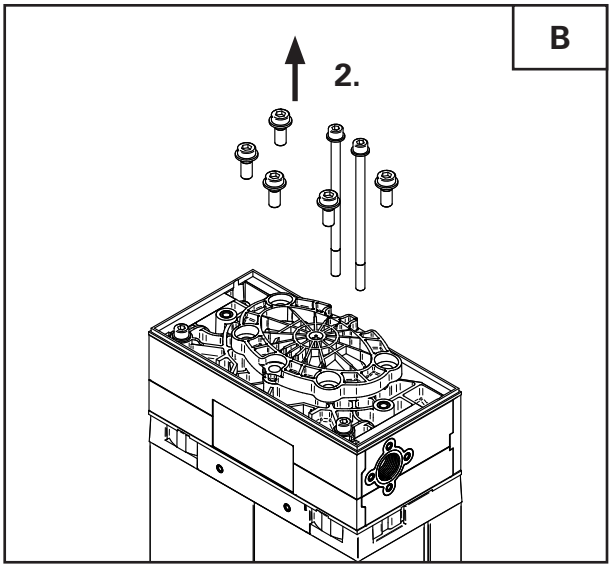
4. Remove the shuttle-valve ball and replace it with a new one.

Reassembly is carried out in reverse order.

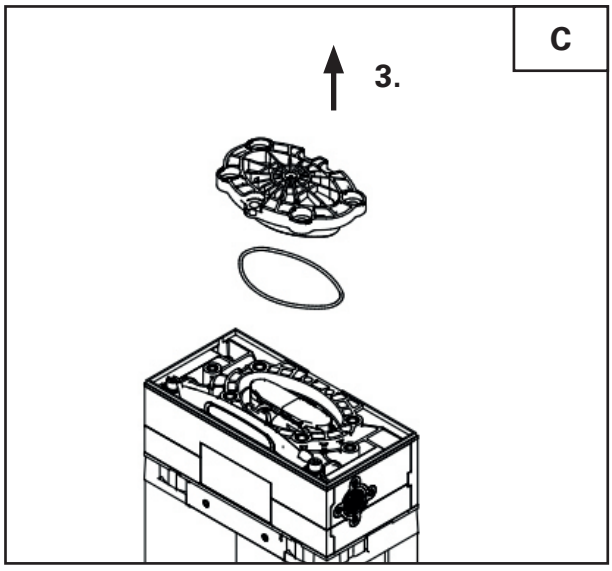
Shuttle-valve at the top / replace regeneration air nozzle!



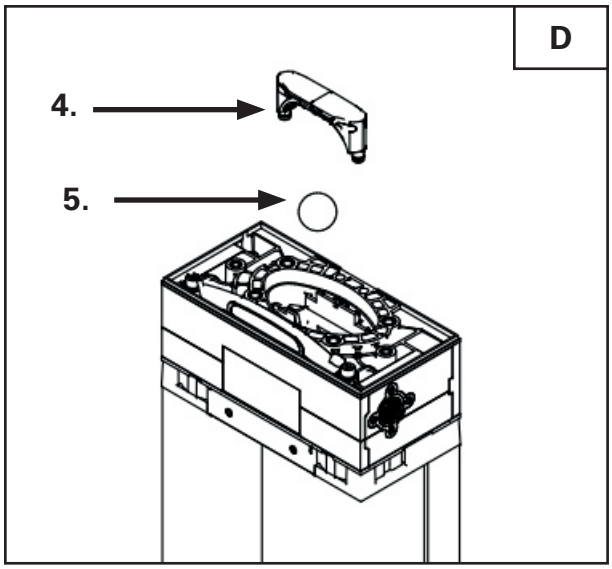
1. Remove the top cover of the cartridges (the cover is attached magnetically).



2. Loosen and remove the screws* on the upper shuttle-valve cover by turning them anticlockwise.



3. Remove the upper shuttle-valve cover. The seal is also replaced du ring service.



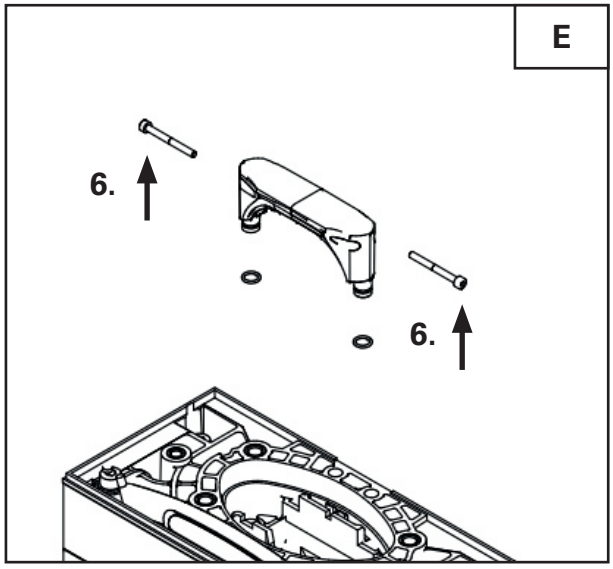
4. Pull out the regeneration air nozzle housing.

5. Remove the shuttle-valve ball and replace it with a new one.

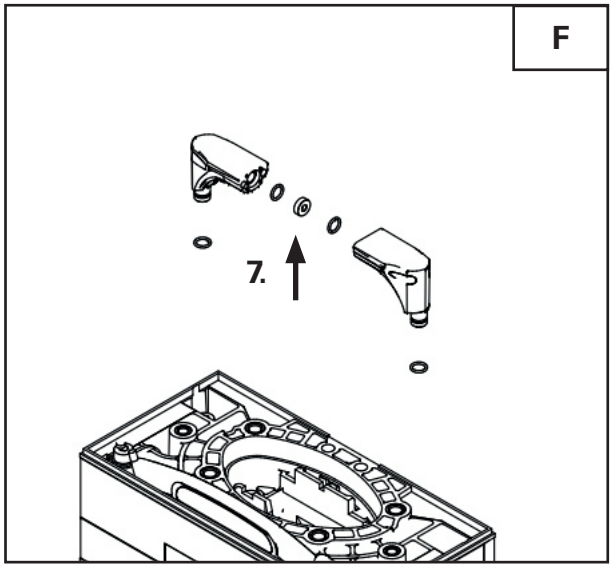
Reassembly is carried out in reverse order.
Note the washers.
If the regeneration air nozzle needs to be replaced, please continue with steps E and F below.

*Sizes 005–025: 5 screws, sizes 035–100: 7 screws

Replace the regeneration air nozzle!



6. Loosen the 2 screws on the regeneration air nozzle housing.



7. Disassemble the regeneration air nozzle housing and replace all O-rings.

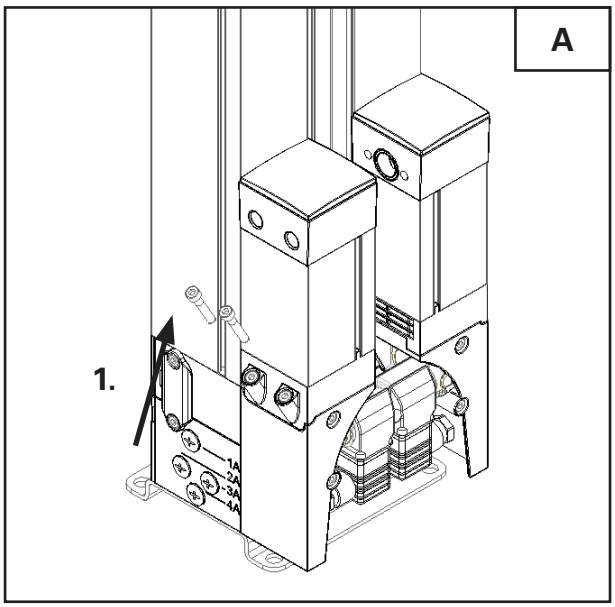
The regeneration air nozzle type depends on the operating pressure. Please ensure that the correct regeneration air nozzle type is used in accordance with section 8.3.

Reassembly is carried out in reverse order.

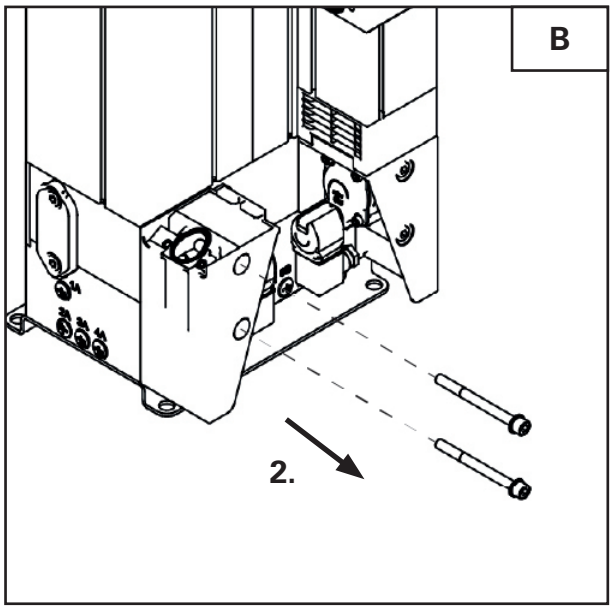
15.3.3. Solenoid valve maintenance

Interval: **365 days**

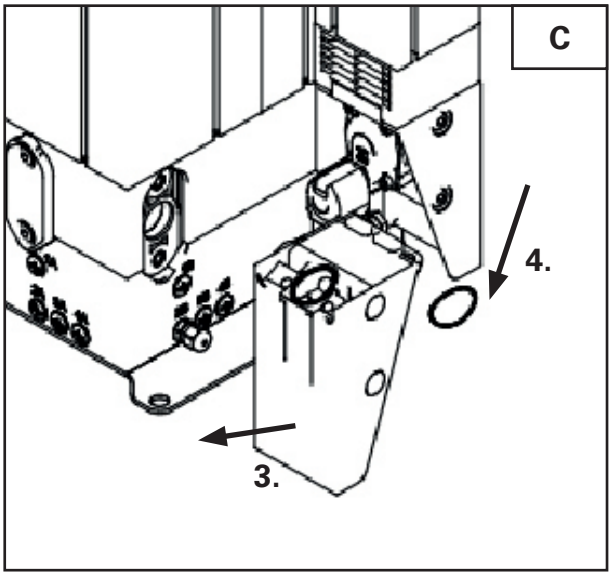
Observe the information insection 15.3



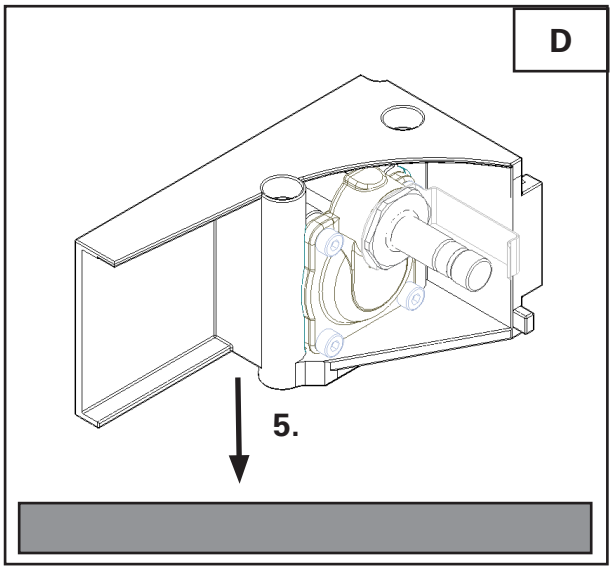
1. Loosen the two upper screws on the left silencer housing by turning them anticlockwise and remove the silencer unit.



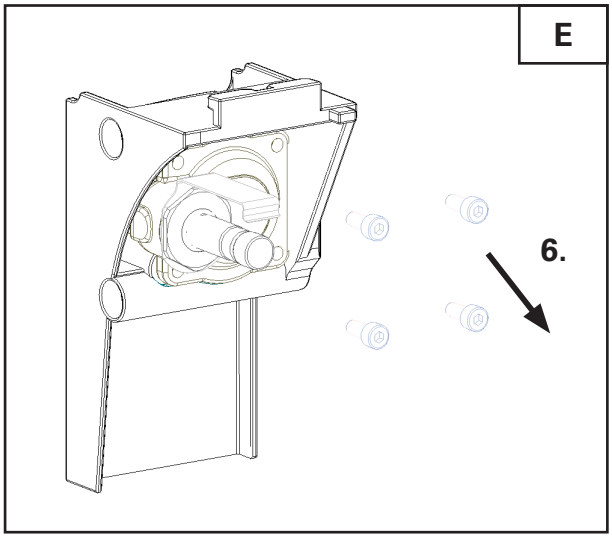
2. Loosen the two lower screws on the valve carrier by turning them anti clockwise.



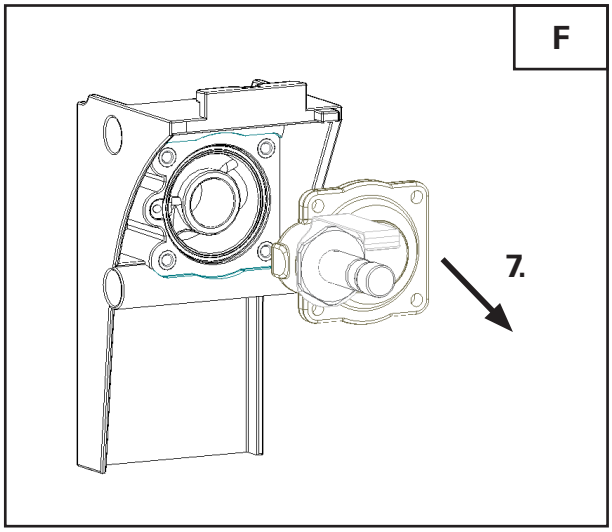
3. Remove the coil from the solenoid valve.
4. Remove the valve carrier.



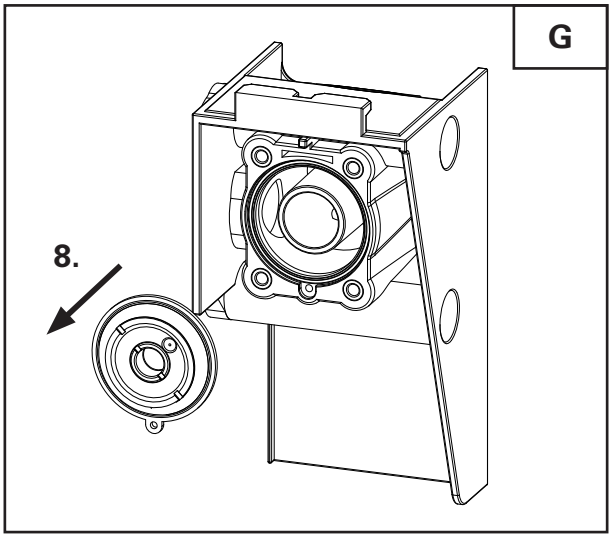
5. If possible, place the valve carrier on a table and loosen the screw connec tion from the diaphragm assembly using an open-end spanner, but do not dismantle it yet.



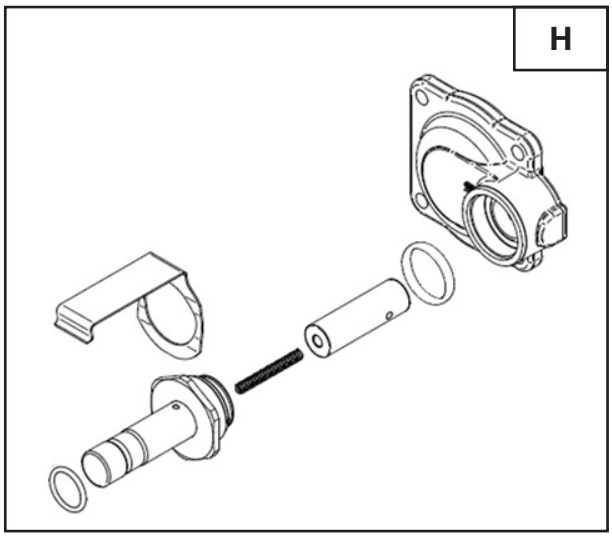
6. Loosen the 4 screws on the diaphragm cover by turning them anticlockwise.



7. Remove the valve cover.



8. Remove the old membrane and insert the new one. Ensure correct positioning.



9. Now loosen the diaphragm assembly from the diaphragm cover using an open-end spanner. Replace the O-rings, spring and armature.

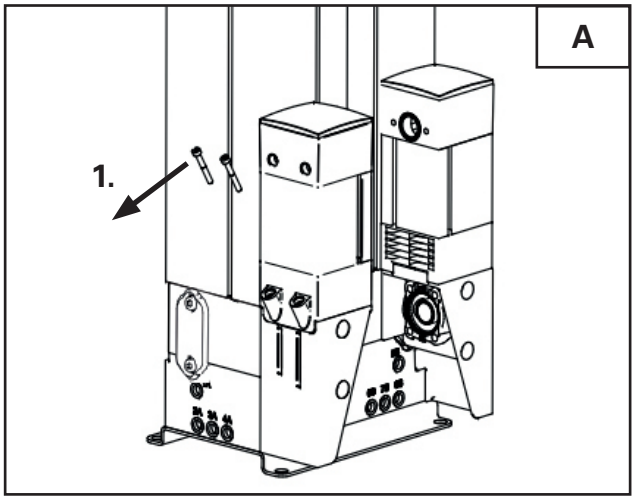
Repeat steps A to H with the right solenoid valve.

Reassembly is carried out in reverse order.

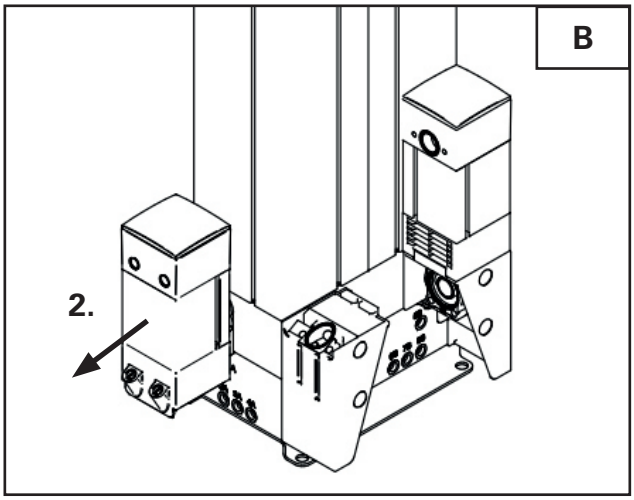
15.3.4. Maintenance of silencers

Interval: **365 days**

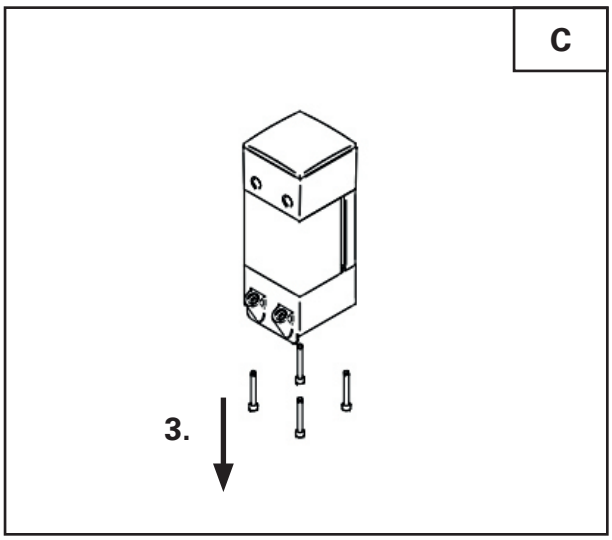
Observe the information insection 15.3



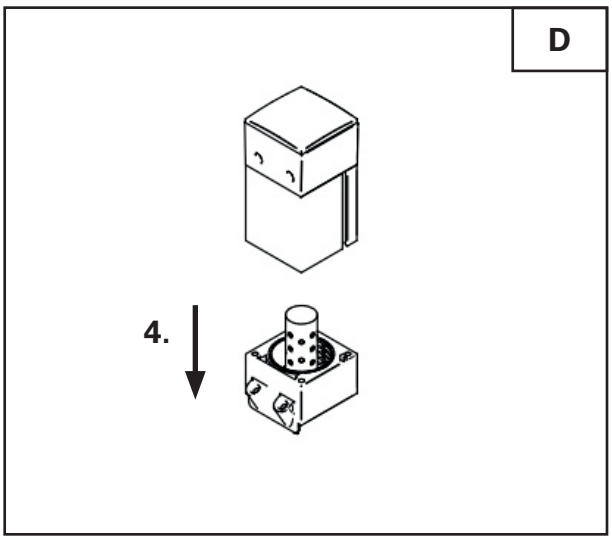
1. Loosen the two lower screws on the silencer housing by turning them anticlockwise.



2. Pull the silencer housing forward.

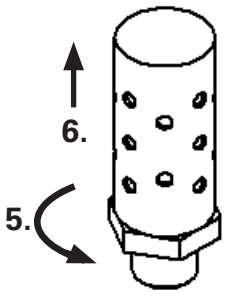


3. Loosen the four lower screws on the silencer housing by turning them anticlockwise.



4. Remove the silencer base with the silencer.

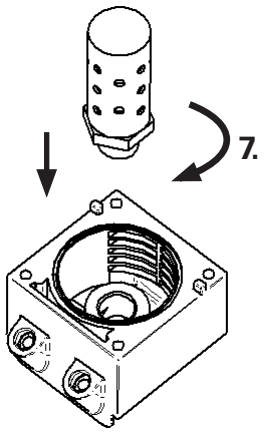
E



5. Loosen the silencer by turning it anti clockwise.

6. Remove the silencer.

F



7. Screw in the new silencer by turning it clockwise.

Repeat steps A to F with the right-hand silencer.

Reassembly is carried out in reverse order.

16 Disassembly

The DRYPOINT®ACC / ACC P adsorption dryer must be dismantled with the utmost care and in compliance with all relevant safety regulations. Improper dismantling can result in serious injury and property damage.

DANGER! Sudden escape of compressed air due to residual pressure in the system!

Uncontrolled escape of compressed air can cause hearing damage or serious injury!

- Before starting disassembly, the system must be completely depressurised!

DANGER OF ELECTRIC SHOCK!

Contact with live components poses a risk of serious injury, malfunction, operational disruption or product damage!

- Before starting disassembly, the device must be properly disconnected from the power supply and secured against being switched back on.

CAUTION! Lifting heavy loads!

Incorrect lifting can result in personal injury.

- Lift the adsorption dryer ergonomically and close to your body, depending on its size. If necessary, use a crane or a suitable lifting device.

16.1. Disassembly steps

1. **Wear suitable personal protective equipment (PPE):**
- Hearing protection (due to the high noise level during pressure relief)
- Safety goggles (to protect against escaping particles)
- Protective gloves (to protect against sharp edges, hot surfaces and oil residues)

2. **Disconnect the power supply:**
- Completely disconnect the device from the power supply
- Secure against being switched back on (e.g. by removing the plug and attaching a warning sign)

3. **Depressurise the system:**
- Close the ball valve at the inlet
- Slowly open the drain valve to completely release the residual pressure via the silencer
- Ensure that there is no residual pressure in the system (e.g. by checking the pressure gauge).

4. **Prepare for load acceptance (if necessary):**
- Estimate the weight of the components
- For heavier components, plan for suitable lifting equipment or additional personnel

5. **Loosen connections**
- Now carefully remove all mechanical connections between the DRYPOINT®ACC / ACC P adsorption dryer and the rest of the system using suitable tools.
- To do this, loosen the screw connections at the inlet and outlet that connect the adsorption dryer to the piping of the overall system. Take care to proceed in a controlled manner to avoid damage to the connection points.

17 Disposal

At the end of their useful life, the product and accessories must be disposed of properly, e.g. by a specialist company. Materials such as glass, plastic and some chemical compounds are largely recoverable, recyclable and can be reused.

17.1. Warnings

Improper disposal

Improper disposal of parts, components, operating materials, auxiliary materials and cleaning media can cause environmental damage..

- Dispose of all parts, components, operating materials, auxiliary materials and cleaning media properly and in accordance with the applicable regional legal requirements and regulations.
- Dispose of electrical and electronic components via a specialist disposal company or return them to the manufacturer.
- If you are unsure about disposal, consult your regional waste disposal company.

Disposal of electrical and electronic products

- Electrical and electronic products (EEE) contain materials, components and substances that can be hazardous and harmful to human health and the environment if waste electrical and electronic products (WEEE) are not disposed of properly.
- Electrical and electronic products are marked with a crossed-out wheelie bin symbol. The crossed-out wheelie bin symbolises that electrical and electronic products must be collected separately and must not be disposed of with household waste.
- For further information on the regionally applicable legal requirements and regulations for the recycling of electrical and electronic products, please contact your regional waste disposal company or the responsible municipal authority.

17.2. Disposal of operating materials and auxiliary materials

Operating material / auxiliary material	EU waste code
Absorbent materials, filter materials, wiping cloths and protective clothing- contaminated with oils or other hazardous substances	15 02 02
Absorbent materials, filter materials, wiping cloths and protective clothing – except those covered by 15 02 02	15 02 03
Packaging - Paper and cardboard	15 01 01
Packaging - plastics	15 01 02
Waste oils - mineral	13 02 05
Waste oils - synthetic	13 02 06

17.3. Disposal of components

Before disposal, the following requirements must be met:

Requirements	
1.	The product and accessories have been taken out of service and dismantled.
2.	The product and accessories have been cleaned and any remaining media has been removed.

Components	EU waste code
Electrical and electronic equipment – with the exception of those covered by 20 01 21, 20 01 23 and 20 01 35 fall	20 01 36
Plastics	20 01 39
Metals	20 01 40

18 Technical support

If you have any technical questions, please contact the following addresses:

BEKO TECHNOLOGIES GmbH
Im Taubental 7
D-41468 Neuss
Tel. +49 2131 988 1000

info@beko-technologies.com
www.beko-technologies.com

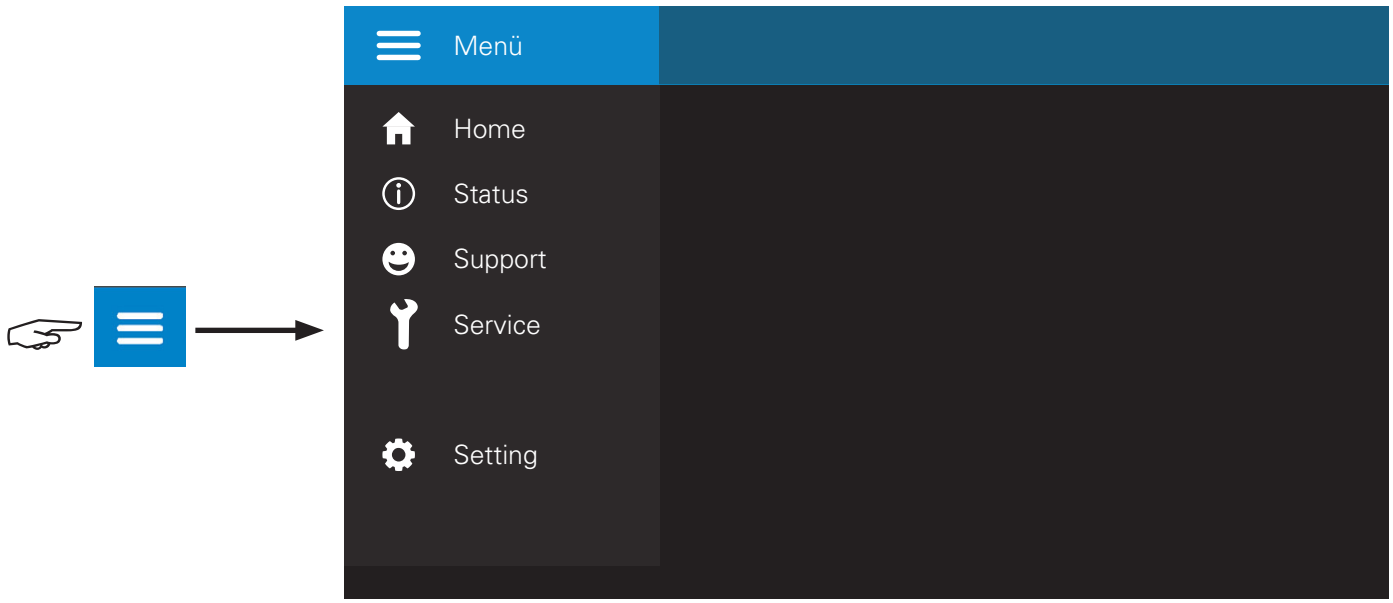
Please provide the following information in all correspondence and telephone calls with us:

- **Dryer type**
- **Serial number***
- **Year of manufacture***

* The serial number and year of manufacture can be found on the type plate on your system. With the ACC P version, this information can also be found under Status > Dryer data. Photos sent by e-mail are also possible and helpful.

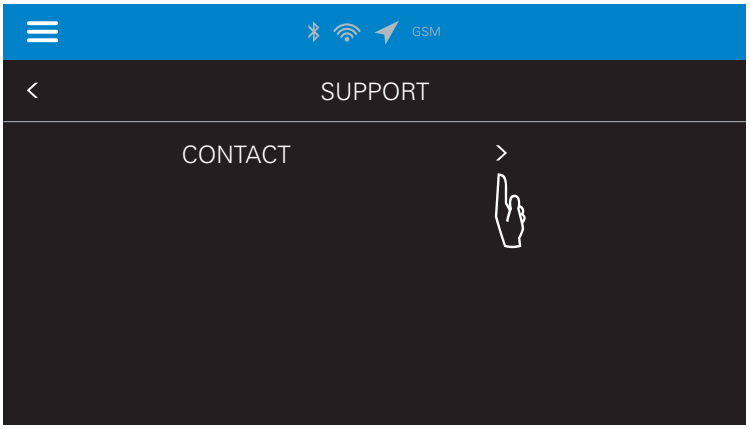
18.1. Additional technical support ACC P

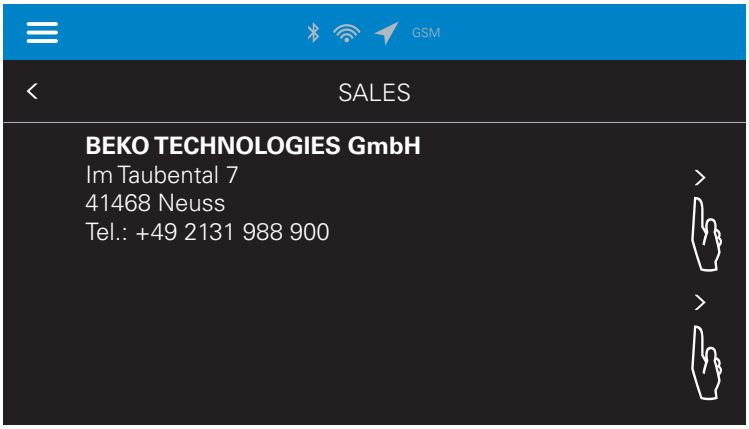
You can find the support address on the touch display of the ACC P control.



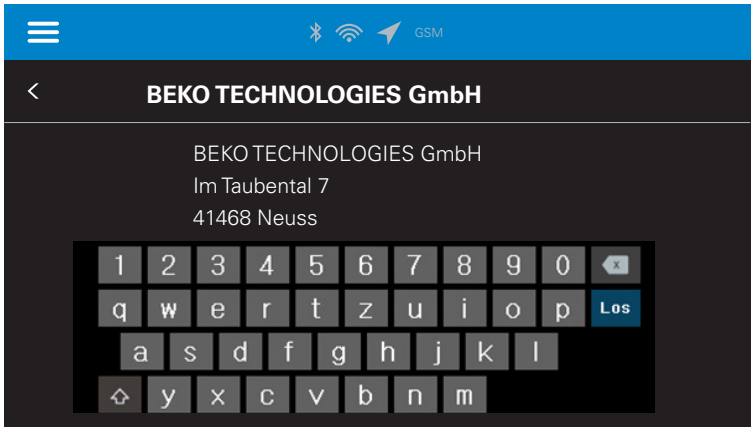
An overview of all available menus is displayed

SUPPORT





The contact address is displayed



Pressing the right arrow keys opens the keyboard screen for entering your own data.

BEKO TECHNOLOGIES GmbH

Im Taubental 7
D - 41468 Neuss
Tel. +49 2131 988 0
Fax +49 2131 988 900
info@beko-technologies.com
service-eu@beko-technologies.com

DE

BEKO TECHNOLOGIES LTD.

Unit 11-12 Moons Park
Burnt Meadow Road
North Moons Moat
Redditch, Worcs, B98 9PA
Tel. +44 1527 575 778
info@beko-technologies.co.uk

GB

BEKO TECHNOLOGIES S.à.r.l.

Zone Industrielle
1 Rue des Frères Rémy
F - 57200 Sarreguemines
Tél. +33 387 283 800
info@beko-technologies.fr
service@beko-technologies.fr

FR

BEKO TECHNOLOGIES B.V.

Veenen 12
NL - 4703 RB Roosendaal
Tel. +31 165 320 300
benelux@beko-technologies.com
service-bnl@beko-technologies.com

NL

BEKO TECHNOLOGIES (Shanghai) Co. Ltd.

Rm.715 Building C, VANTONE Center
No.333 Suhong Rd.Minhang District
201106 Shanghai
Tel. +86 (21) 50815885
info.cn@beko-technologies.cn
service1@beko.cn

CN

BEKO TECHNOLOGIES s.r.o.

Na Pankráci 26/322
CZ - 140 00 Praha 4
Tel. +420 24 14 14 717 /
+420 24 14 09 333
info@beko-technologies.cz

CZ

BEKO Tecnológica España S.L.

Torruella i Urpina 37-42, nave 6
E - 08758 Cervelló
Tel. +34 93 632 76 68
Mobil +34 610 780 639
info.es@beko-technologies.es

ES

BEKO TECHNOLOGIES LIMITED

Room 2608B, Skyline Tower,
No. 39 Wang Kwong Road
Kwoloon Bay Kwoloon, Hong Kong
Tel. +852 2321 0192
Raymond.Low@beko-technologies.com

HK

BEKO TECHNOLOGIES INDIA Pvt. Ltd.

Plot No.43/1 CIEEP Gandhi Nagar
Balanagar Hyderabad
IN - 500 037
Tel. +91 40 23080275 /
+91 40 23081107
Madhusudan.Masur@bekoindia.com
service@bekoindia.com

IN

BEKO TECHNOLOGIES S.r.l a socio unico

Via Druento 82
I - 10078 Venaria Reale (TO)
Tel. +39 011 4500 576
Fax +39 0114 500 578
info.it@beko-technologies.com
service.it@beko-technologies.com

IT

BEKO TECHNOLOGIES K.K

KEIHIN THINK Building 8 Floor
1-1 Minamiwatarida-machi
Kawasaki-ku, Kawasaki-shi
JP - 210-0855
Tel. +81 44 328 76 01
info@beko-technologies.jp

JP

BEKO TECHNOLOGIES Sp. z o.o.

ul. Pańska 73
PL - 00-834 Warszawa
Tel. +48 22 314 75 40
info.pl@beko-technologies.pl

PL

BEKO TECHNOLOGIES S. de R.L. de C.

BEKO Technologies, S de R.L. de C.V.
Blvd. Vito Alessio Robles 4602 Bodega 10
Zona Industrial
Saltillo, Coahuila, 25107
Mexico
Tel. +52(844) 218-1979
informacion@beko-technologies.com

MX

BEKO TECHNOLOGIES, CORP.

900 Great Southwest Pkwy SW
Atlanta, GA 30336
USA
Tel. +1 404 924-6900
beko@bekousa.com

US

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www.beko-technologies.com