



## Original installation and operation manual

### Compressed air refrigeration dryer DRYPOINT® RA III

- |        |           |
|--------|-----------|
| > 1080 | > 1080 WC |
| > 1300 | > 1300 WC |
| > 1490 | > 1490 WC |
| > 1900 | > 1900 WC |
| > 2400 | > 2400 WC |
| > 3000 | > 3000 WC |

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# 1. Notes about the documentation


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

## 1.1 Contact

Manufacturer	Customer service and tools
<p><b>BEKO TECHNOLOGIES GmbH</b></p> <p>Im Taubental 7   41468 Neuss            Tel. + 49 2131 988 - 1000            info@beko-technologies.com            www.beko-technologies.com</p>	<p><b>BEKO TECHNOLOGIES GmbH</b></p> <p>Im Taubental 7   41468 Neuss            Tel. + 49 2131 988 - 1000            service-eu@beko-technologies.com            www.beko-technologies.com</p>

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


## 1.2 Information regarding installation and operation manual

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

Publication date	Revision	Version	Reason for amendment	Scope of amendment
08. January 2024	00	00	New product	New document

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

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

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

## 1.3 Other applicable documents

- Safety data sheet of refrigerant fluid
- **BEKOMAT®** Installation and operation manual
- Wiring diagrams
- Modbus configuration description

## 2. Safety

### 2.1 Use

#### 2.1.1 Intended use

The **DRYPOINT® RA III**, also termed product / device in the following, is a compressed-air refrigeration dryer used to separate the moisture in the compressed air, where the compressed air does not treat foodstuffs and is not used for breathing purposes.

The product is intended only for the separation of moisture in compressed air. Any use of this product other than the use described in this manual is hereby deemed to be non-intended and can cause a hazard for the safety of people and the environment.

The following must be noted for intended use:

- Read and follow the manual.
- Only use the product and accessories within the operating parameters given in the technical data and the agreed delivery conditions.
- Only use the product and accessories with media which are free of caustic, aggressive, corrosive, toxic, flammable, oxidising or inorganic components. In cases of doubt an analysis must be carried out.
- Only use the product and accessories in areas which are free of toxic and corrosive chemicals and gases.
- Only use the product and accessories within piping system designed for the technical data with appropriate connections, pipe diameters and assembly clearances.
- Only use the product and accessories outside potentially explosive atmospheres.
- Only use the product and accessories away from direct solar radiation and heat sources as well as areas subject to frost.
- Only combine the product and accessories with the products and components named and recommended by **BEKO TECHNOLOGIES** in the manual.
- Adhere to the prescribed maintenance schedules.

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

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



## 2.1.2 Reasonably foreseeable inappropriate use

Reasonably foreseeable inappropriate use is deemed to have occurred if the product or the accessories are used in any other way than that described in the section "2.1.1 Intended use" on page 8. Reasonably foreseeable inappropriate use includes the use of the product or the accessories in a manner not intended by the manufacturer or supplier but which may result from foreseeable human behaviour.

Reasonably foreseeable inappropriate use includes:

- The use of treated air for foodstuffs and/or breathing purposes.
- The execution of any kind of modification, in particular constructive and process-technology related interventions.
- The suspension, bridging or non-application of existing or recommended safety equipment.

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


## 2.2 Responsibility of operating company

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

- Before all actions, check to ensure that the manual available does in fact belong to the product.
- The product and accessories are used, serviced and repaired in accordance with the intended use.
- The product and accessories are only used with the recommended and fully operable safety equipment.
- All assembly, installation and maintenance work is carried out by qualified skilled technical personnel only.
- Personnel have the necessary personal protective equipment available and also use this equipment.
- Suitable technical safety measures are taken so that the permissible operating parameters are adhered to.
- Keep all safety symbols and the type plate on the product and accessories in a legible state. Replace damaged and illegible markings immediately.

## 2.3 Target group and personnel

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

INFORMATION	Personnel requirements
	<p>The personnel may not execute any actions on the product or the accessories when they are under the influence of drugs, medications, alcohol or other substances that may impair their consciousness.</p>

**Operating personnel**

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

**Skilled technical personnel - transport and storage**

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

The capabilities include, in particular, experience with hoists, forklifts and lifting equipment and knowledge of local laws, standards and guidelines relating to transport and storage.

**Skilled technical personnel – pressure equipment and systems**

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

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

### **Skilled technical personnel - refrigeration engineering**

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

The skills required include, in particular, experience in handling refrigerant fluids, using refrigerant circuits, measurement and control technology, as well as familiarity with locally applicable laws, standards and regulations for dealing with refrigerant fluids technology.

### **Skilled technical personnel - electrical engineering**

Skilled technical personnel - electrical engineering are people who, as a result of their training, professional experience, qualifications and further training, have all the requisite skills to safely perform all actions related to electricity, to instruct, to independently identify potentially hazardous situations and to implement appropriate measures to avert any danger.













The skills required include, in particular, experience in using electrical plants, measurement and control technology as well as familiarity with locally applicable laws, standards and regulations for dealing with electrical technology.

### **Skilled technical personnel – customer service**

Skilled technical personnel - customer service are people who have the skills and qualifications of the skilled personnel definitions named above. Skilled technical personnel - customer service must have documented proof of training for all work on the product and be authorised.

## 2.4 Explanation of the symbols used

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

Symbol	Description / explanation
	General warning symbol (danger, warning, caution)
	Danger: pressurised system
	Danger: electric voltage
	Warning: hot surfaces
	Observe the installation and operation manual
	General mandatory sign
	Wear safety footwear
	Use respiratory protection, protection class FFP 3 (particle-filtering half mask)
	Use self-contained respiratory protection
	Use protective gloves (cut-proof, liquid-resistant, chemicals-proof)
	Wear safety goggles with side shields
	General information

## 2.5 Safety instructions and warning notices

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

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

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

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

### 2.5.1 General applicable safety instructions

- Before starting work, refer to the technical documentation for the entire system and observe the overall operating instructions.
- Carry out a risk assessment before starting work on site (last minute risk assessment).
- Use suitable personal protective equipment (PPE) for all work.
- Set up a safety area around the working area during all installation, maintenance and repair work.
- Use existing plant-specific Lockout Tagout (LOTO) procedure for safe shutdown and isolation from energy hazards.

### 2.5.2 Safe operation

The following actions may result in serious personal injury or death:

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

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

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

### 2.5.3 Pressurised systems

The following may result in serious personal injury or death:

- Contact with fast or suddenly escaping fluids.
- Bursting system parts.
- Whipping movements of pressurized hoses and pipes during separation.

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

- Observe the following safety rules during all work:
  1. Shut down the system or system section.
  2. Secure the system or system section against restarting
  3. Reduce the pressure in the system or all system sections to ambient pressure.
  4. e.g. by slowly releasing the pressure in a controlled manner via relief valves.
  5. Secure against pressure being applied again.
- Check pressurised systems for safety, contamination and possible damage.
- Before pressurisation, check all system connections for leak tightness and tighten if necessary.
- Only pressurise systems slowly.
- Avoid pressure blows and high differential pressures.
- Compensate any vibrations occurring in the pipe network by using vibration dampers.

### 2.5.4 Electric voltage

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

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

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

## 2.5.5 Transport and storage

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

For safe transport and storage of the product and accessories, observe the following point:

- Handle the packaging, the product and accessories carefully.
- Transport and handle the packaged product and accessories according to the markings on the packaging (note lifting gear attachment points, the centre of gravity and alignment e.g. keep vertical, do not throw, etc.).
- Only use proper means of transport and lifting equipment that is in proper working order.
- Always adhere to the permissible storage parameters.
- Store the product and accessories only outside of areas exposed to direct sunlight and heat sources.

## 2.5.6 Installation

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

For safe assembly and electrical installation, observe the following points:

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

## 2.5.7 Maintenance

Improper performance of maintenance and repair work may result in serious personal injuries or death.

For safe maintenance and repair, observe the following points:

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



## 2.5.8 Handling hazardous substances

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

For the safe handling of polluted condensate the following points must be observed:

- Use suitable protective equipment when handling condensate.
- Pick up and dispose of any leaking or spilled condensate in accordance with applicable regional laws and requirements.

The product contains fluorinated greenhouse refrigerant fluid. Improper handling of the refrigerant fluid can be harmful to your health and cause damage to the environment.

For the safe handling of refrigerant fluid the following points must be observed:

- Use suitable protective equipment when handling refrigerant fluid. Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance, repair and dismantling works on refrigerant circuit.
- Pick up and dispose the refrigerant fluid in accordance with all nationally and locally applicable regulations. Discharge to atmosphere in large quantities should be avoided.

## 2.5.9 Use of spare parts, accessories or materials

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


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

## 2.6 Warning notices

Warning notices warn against dangers when handling the product and accessories.

In order to prevent accidents, personal injury and damage to property as well as impairments during operation, it is essential to adhere to the warning notices.

### Structural set up:

SIGNAL WORD	Type and source of danger
 Symbol	Possible consequences if the danger is ignored <ul style="list-style-type: none"> <li>• Measures to prevent the danger</li> </ul>

### Signal words:

**DANGER**

**Imminent hazard**

Consequences of non-compliance: Death or serious personal injury

**WARNING**

**Imminent hazard**

Consequences of non-compliance: Death or serious personal injury are possible

**CAUTION**

**Potential hazard**

Consequences of non-compliance: Personal injury or damage to property are possible

**NOTE**

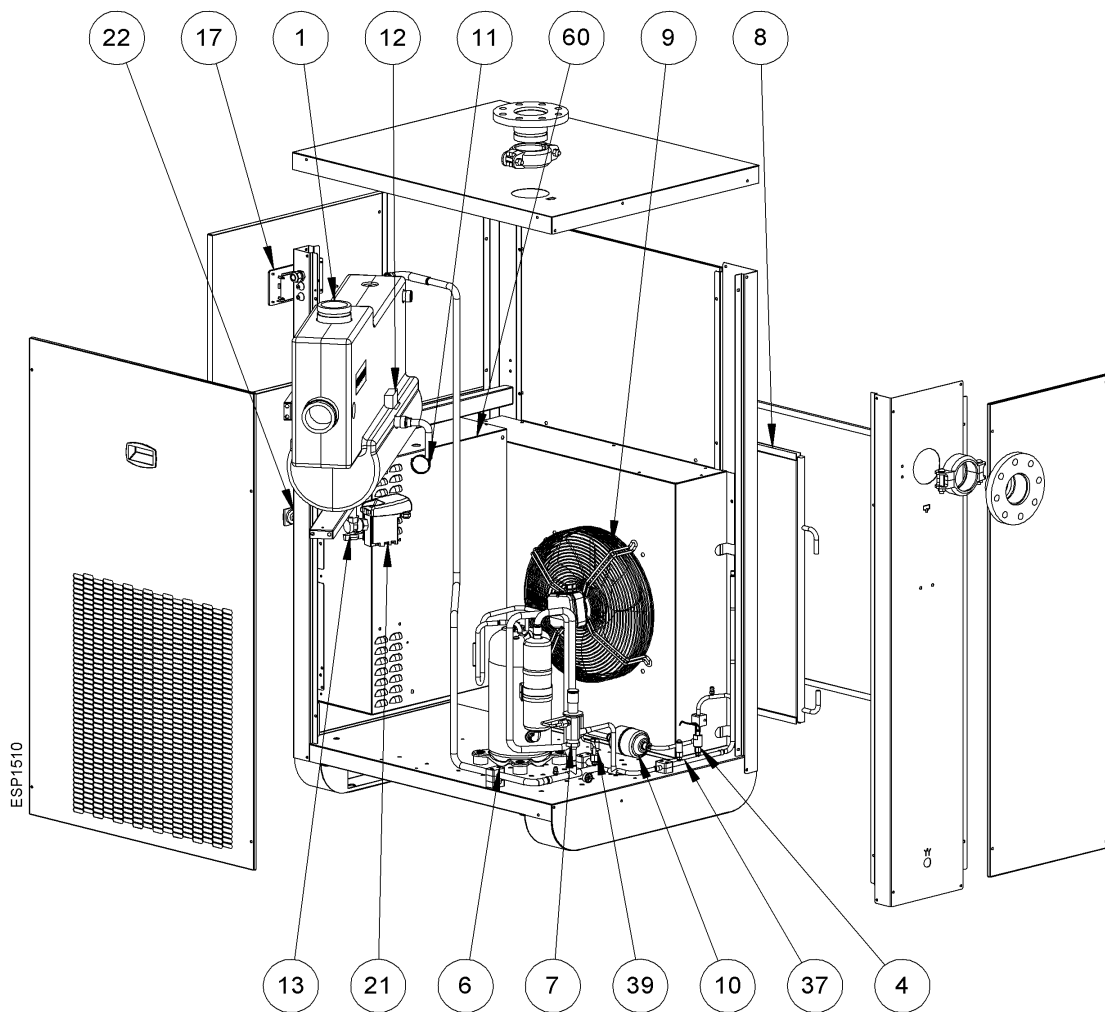
**Additional notes**

Consequences of non-compliance: Damage to property, malfunction and device failure are possible. No hazard to people or endangerment of safe operation

### 3. Product information

#### 3.1 Product overview

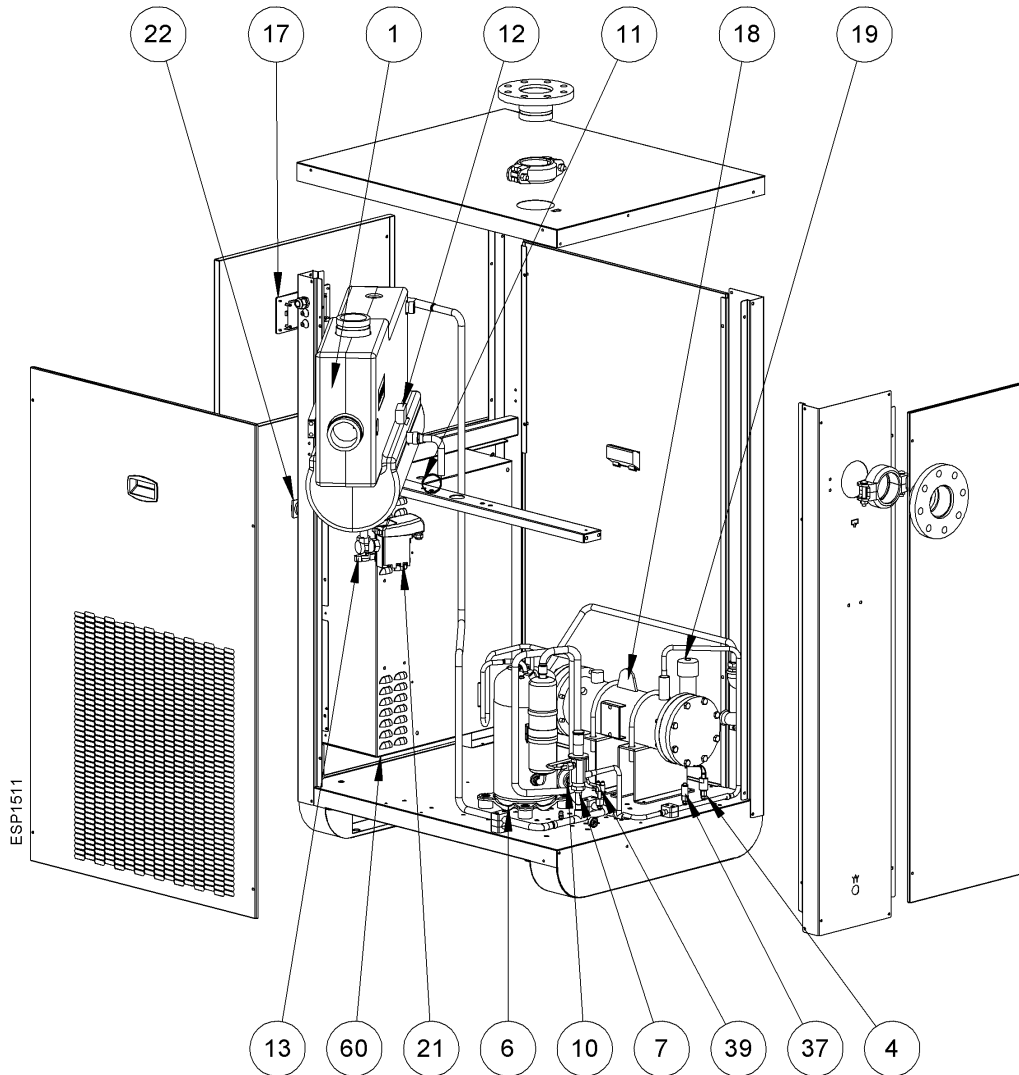
##### 3.1.1 DRYPOINT® RA III 1080, 1300



Pos. No.	Description / explanation
[1]	Heat exchanger
[4]	High pressure switch HPS
[6]	Refrigerant compressor
[7]	Hot gas by-pass valve
[8]	Condenser
[9]	Cooling fan
[10]	Filter of refrigerant fluid
[11]	Capillary tube

Pos. No.	Description / explanation
[12]	Temperature probe BT1
[13]	Condensate drain service valve
[17]	User Interface
[21]	Condensate drain
[22]	ON-OFF switch
[37]	Pressure transducer BHP
[39]	Pressure transducer BLP
[60]	Electrical box

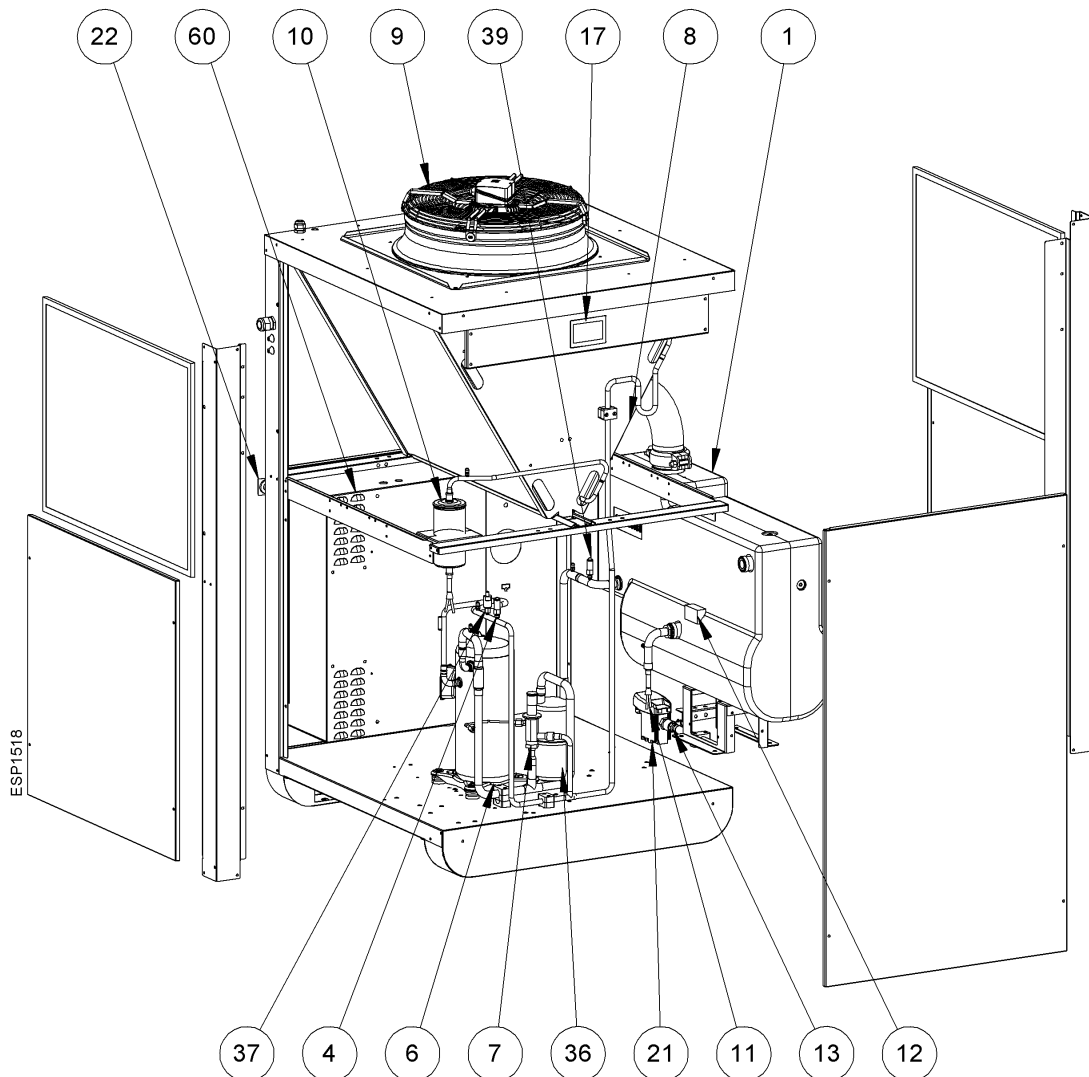
### 3.1.2 DRYPOINT® RA III 1080, 1300 water-cooled



Pos. No.	Description / explanation
[1]	Heat exchanger
[4]	High pressure switch HPS
[6]	Refrigerant compressor
[7]	Hot gas by-pass valve
[10]	Filter of refrigerant fluid
[11]	Capillary tube
[12]	Temperature probe BT1
[13]	Condensate drain service valve

Pos. No.	Description / explanation
[17]	User Interface
[18]	Water condenser
[19]	Water regulating valve
[21]	Condensate drain
[22]	ON-OFF switch
[37]	Pressure transducer BHP
[39]	Pressure transducer BLP
[60]	Electrical box

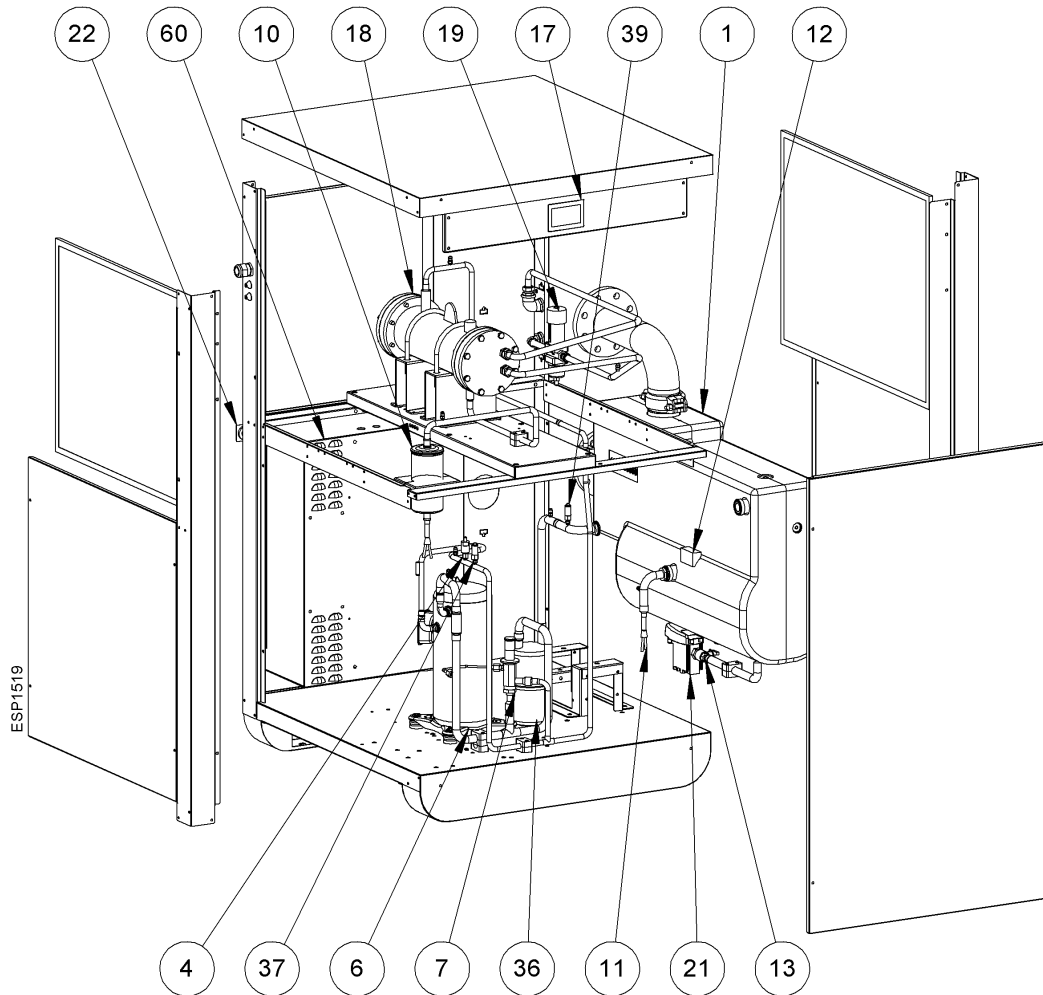
### 3.1.3 DRYPOINT® RA III 1490, 1900



Pos. No.	Description / explanation
[1]	Heat exchanger
[4]	High pressure switch HPS
[6]	Refrigerant compressor
[7]	Hot gas by-pass valve
[8]	Condenser
[9]	Cooling fan
[10]	Filter of refrigerant fluid
[11]	Capillary tube
[12]	Temperature probe BT1

Pos. No.	Description / explanation
[13]	Condensate drain service valve
[17]	User Interface
[21]	Condensate drain
[22]	ON-OFF switch
[36]	Liquid separator
[37]	Pressure transducer BHP
[39]	Pressure transducer BLP
[60]	Electrical box

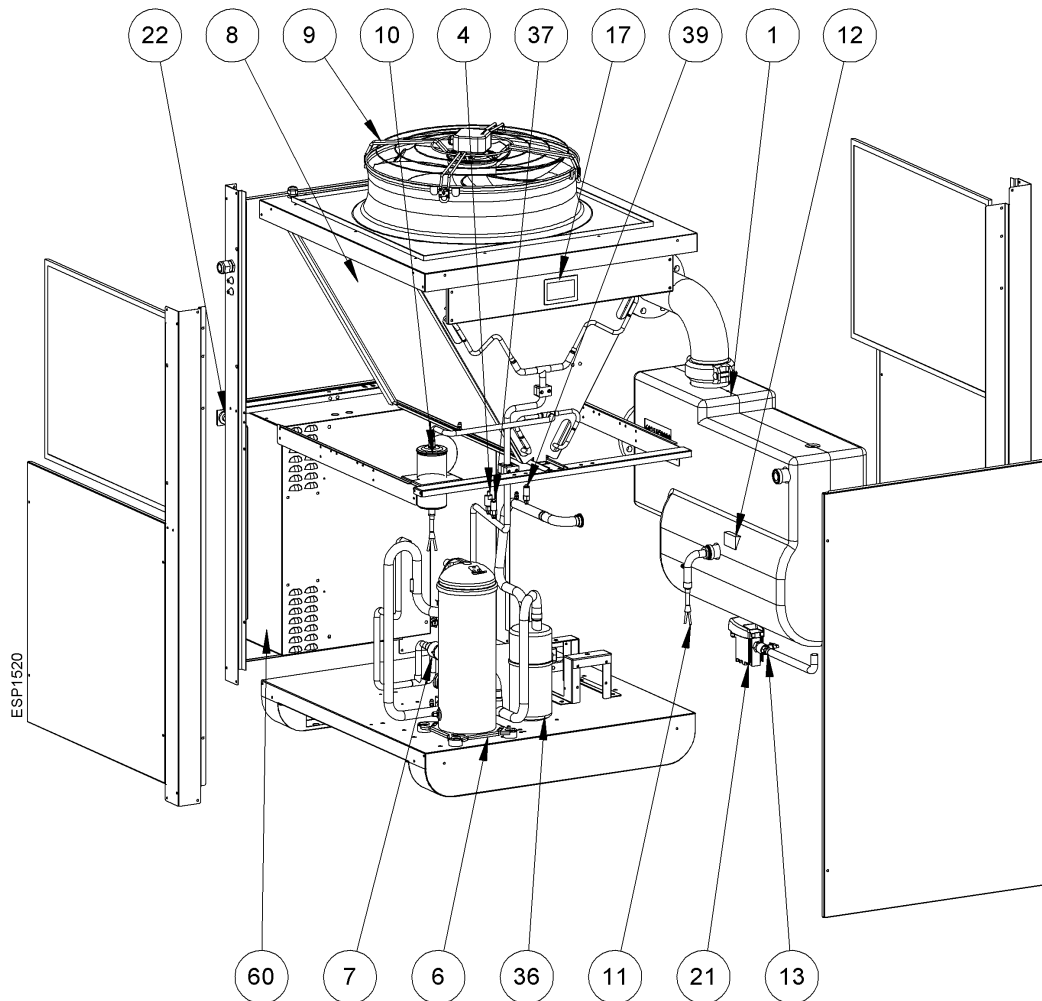
### 3.1.4 DRYPOINT® RA III 1490, 1900 water-cooled



Pos. No.	Description / explanation
[1]	Heat exchanger
[4]	High pressure switch HPS
[6]	Refrigerant compressor
[7]	Hot gas by-pass valve
[10]	Filter of refrigerant fluid
[11]	Capillary tube
[12]	Temperature probe BT1
[13]	Condensate drain service valve
[17]	User Interface

Pos. No.	Description / explanation
[18]	Water condenser
[19]	Water regulating valve
[21]	Condensate drain
[22]	ON-OFF switch
[36]	Liquid separator
[37]	Pressure transducer BHP
[39]	Pressure transducer BLP
[60]	Electrical box

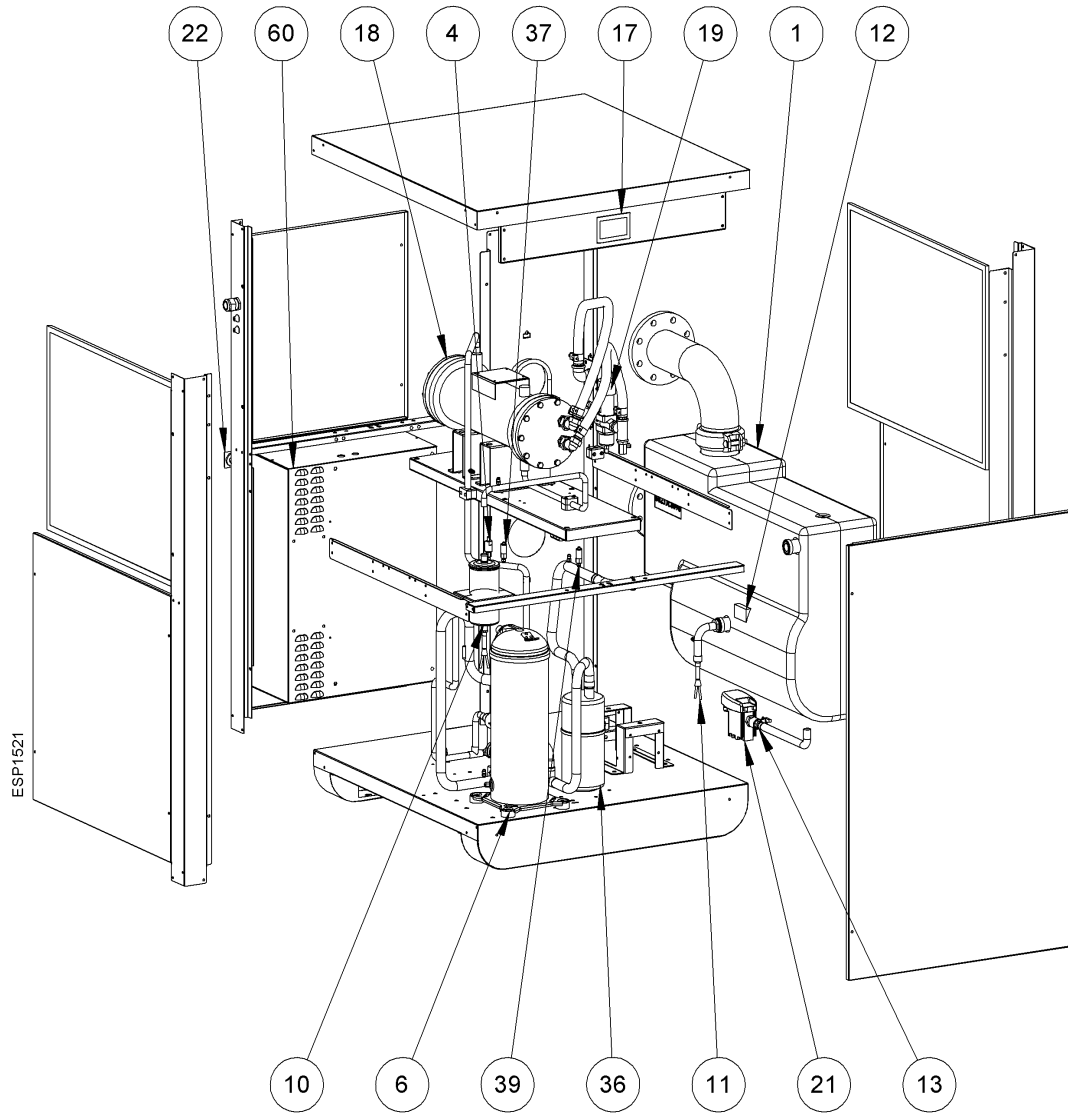
### 3.1.5 DRYPOINT® RA III 2400, 3000



Pos. No.	Description / explanation
[1]	Heat exchanger
[4]	High pressure switch HPS
[6]	Refrigerant compressor
[7]	Hot gas by-pass valve
[8]	Condenser
[9]	Cooling fan
[10]	Filter of refrigerant fluid
[11]	Capillary tube
[12]	Temperature probe BT1

Pos. No.	Description / explanation
[13]	Condensate drain service valve
[17]	User Interface
[21]	Condensate drain
[22]	ON-OFF switch
[36]	Liquid separator
[37]	Pressure transducer BHP
[39]	Pressure transducer BLP
[60]	Electrical box

### 3.1.6 DRYPOINT® RA III 2400, 3000 water-cooled



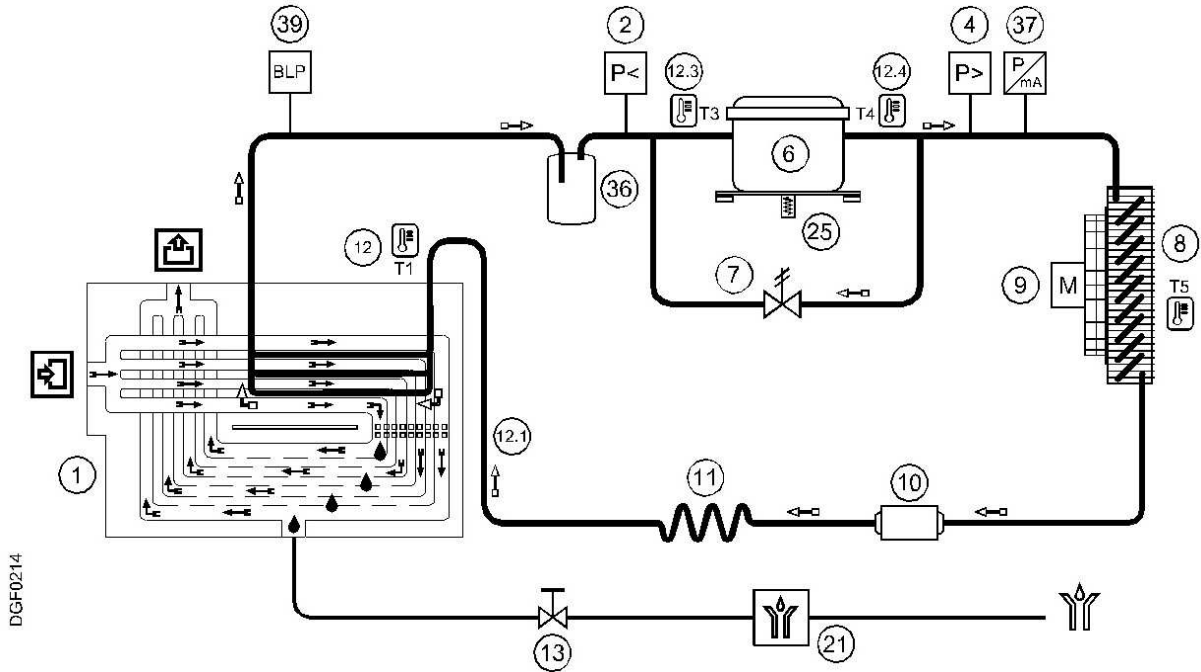
Pos. No.	Description / explanation
[1]	Heat exchanger
[4]	High pressure switch HPS
[6]	Refrigerant compressor
[7]	Hot gas by-pass valve
[10]	Filter of refrigerant fluid
[11]	Capillary tube
[12]	Temperature probe BT1
[13]	Condensate drain service valve
[17]	User Interface

Pos. No.	Description / explanation
[18]	Water condenser
[19]	Water regulating valve
[21]	Condensate drain
[22]	ON-OFF switch
[36]	Liquid separator
[37]	Pressure transducer BHP
[39]	Pressure transducer BLP
[60]	Electrical box

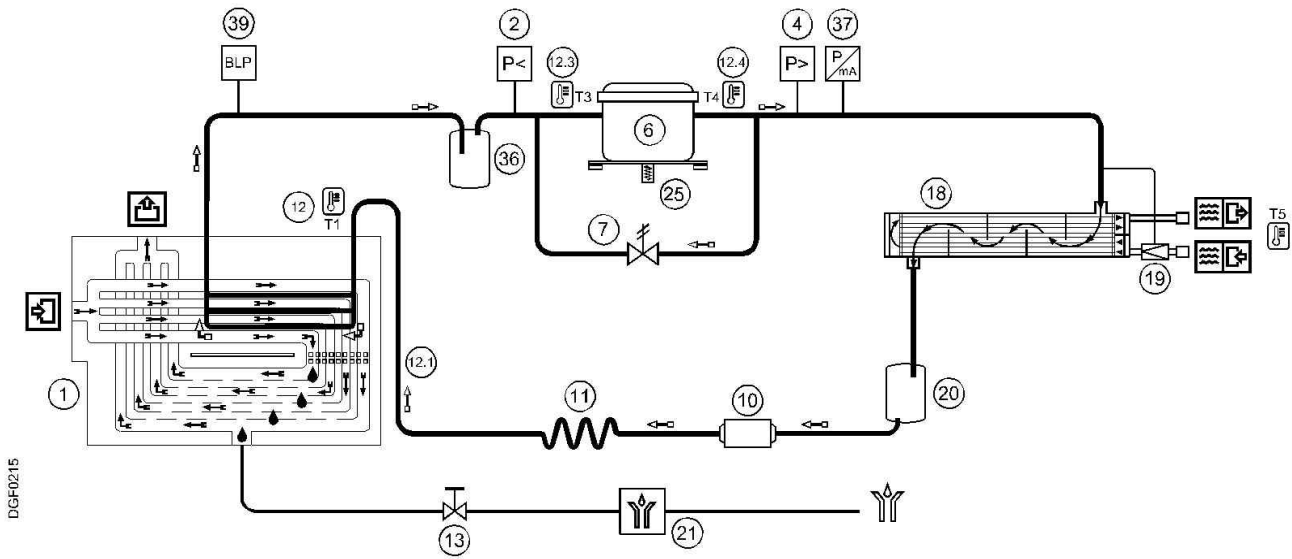


### 3.2 Function description

#### 3.2.1 Flow diagram, air-cooled models



### 3.2.2 Flow diagram, water-cooled models



### 3.2.3 Compressed air flow

The hot, humid air enters the heat exchanger **[1]**, cools and reaches a temperature of approximately 2 °C. At this temperature, the humidity present in the air changes to a liquid state, precipitates to the bottom of the exchanger **[1]** and is expelled through the automatic condensate drain **[21]**. The cold, dry air is then channelled and heated again until it reaches a temperature at the outlet of the exchanger that is approximately 8 °C lower than the temperature of the incoming air.

### 3.2.4 Refrigerating cycle

The refrigerant compressor **[6]** compresses the refrigerant fluid and conveys it at high pressure towards the condenser **[8]** inside which the gas cools and becomes liquid at high pressure. The liquid refrigerant passes through the filter drier **[10]** and the capillary tube **[11]** where, due to the pressure drop, it reaches the preset temperature. The low pressure liquid refrigerant enters the heat exchanger **[1]** and the heat present in the environment is transferred to the liquid refrigerant causing its evaporation. The low pressure and low temperature refrigerant fluid then returns to the refrigerator compressor **[6]** where it is compressed again and the cycle starts again from the beginning.

In case of low thermal load (use of compressed air at a flow rate lower than the nominal flow rate of the dryer), the excess refrigerant is automatically diverted from the delivery side by the refrigeration compressor **[6]** towards the suction side via the by-pass valve -hot gas pass **[7]**.

### 3.3 Type plate

#### 3.3.1 Type plate of DRYPOINT® RA III

**DPRA1080**

Produktschlüssel: Product key:	4059830
Serienr. / Baujahr: Serial n° / year of building:	230025219 / 23
Nennvolumenstrom (ISO1217): Nominal flow rate (ISO1217):	1080 m³/h

---


<b>Kältemittel / Refrigerant</b>	V 2.4 liter
R 513A/ 1.35kg CO2 eq 0.852t GWP631	
PS HP21.8/LP20.9 bar	TS -5...120 °C

---

<b>Druckluft / Compressed air</b>	V 24.3 liter
PS 16 bar	TS 2...70 °C

---

**Elektrisch / Electric**

3/400V ± 10%/50Hz	 16A
1.90kW/4.2A – FLA6.5A	IP42
Diagram 90BKGM13CEP00_R00	

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**Komplette Einheit / Complete unit**


PED 2014/68/EU – Cat.II	Fluid Group 2
Umgebungstemperatur: Ambient temperature:	TS 1...50 °C

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Hermetically sealed  
Hermetisch geschlossen

Contains fluorinated greenhouse gases covered by  
the Kyoto Protocol


Enthält vom Kyoto Protokoll erfasste fluorierte  
Treibhausgase



---






**BEKO TECHNOLOGIES GMBH**  
 Im. Taubental 7, 41468 Neuss  
 Germany

 2820


http://www.beko-technologies.com


### 3.4 Scope of delivery

Illustration	Description / explanation
	<p>Product <b>DRYPOINT® RA III</b></p>
 <p>Original installation and operation manual</p> <p>Compressed air refrigeration dryer DRYPOINT® RA III</p> <ul style="list-style-type: none"> <li>&gt; 1080 AC → 1080 WC</li> <li>&gt; 1300 AC → 1300 WC</li> <li>&gt; 1490 AC → 1490 WC</li> <li>&gt; 1900 AC → 1900 WC</li> <li>&gt; 2400 AC → 2400 WC</li> <li>&gt; 3000 AC → 3000 WC</li> </ul> <p>05-318</p> 	<p>Original installation and operation manual</p>

## 4. Technical data

### 4.1 Operating parameters

INFORMATION	Nominal conditions
	The nominal condition refers to an ambient temperature of +25 °C (+77.0 °F) with inlet air at 7 bar(g) (101.5 psi(g)) and +35 °C (+95.0 °F).

INFORMATION	Refrigerant quantity
	Refrigerant quantity stated in the following is the design value. The type plate records the actual quantity of refrigerant used in each particular device.

Operating parameters		
Parameter	Unit	Value
Pressure dew point at nominal conditions	°C (°F)	+3 (+37.4)
Nominal ambient temperature		+25 (+77.0)
Min. ... max. ambient temperature		+1 ... +50 (+33.8 ... +122.0)
Nominal inlet air temperature		+35 (+95.0)
Max. inlet air temperature		+70 (+158.0)
Nominal inlet air pressure	bar(g) (psi(g))	7 (101.5)
Max. inlet air pressure		16 (232.1)
Refrigerant fluid	Type	R513A
	GWP	631
Max. noise level at 1 m	dB(A)	< 75

## 4.1.1 DRYPOINT® RA III 1080 ... 1300



Parameter	Unit	DRYPOINT® RA III			
		1080	1080 WC	1300	1300 WC
Air flow rate at nominal conditions	m <sup>3</sup> /h	1080		1260	
	l/min	18000		21000	
	scfm	636		742	
Air pressure drop	bar (psi)	0,07 (1.02)		0,09 (1.31)	
Cooling air fan flow	m <sup>3</sup> /h (cfm)	3500 (2060.0)	-	3500 (2060.0)	-
Cooling water flow @ 30 °C (86 °F)		-	0,96 (0.565)	-	0,97 (0.571)
Heat rejection	kW (btu/h)	24,00 (81891)		28,00 (95540)	
Refrigerant quantity	kg (oz)	1,35 (47.½)	2,00 (71)	1,60 (56.½)	2,40 (85)
Power supply	V/ph/f	400/3/50			
Nominal electric consumption	kW	1,90	1,70	1,90	1,70
	A	4,2	3,3	3,2	2,8
Full load amperage	A	6,5	6,1	6,0	5,5

### 4.1.2 DRYPOINT® RA III 1490 ... 1900



Parameter	Unit	DRYPOINT® RA III			
		1490	1490 WC	1900	1900 WC
Air flow rate at nominal conditions	m <sup>3</sup> /h	1500		1900	
	l/min	25000		31667	
	scfm	883		1119	
Air pressure drop	bar	0,06		0,09	
	(psi)	(0.87)		(1.31)	
Cooling air fan flow	m <sup>3</sup> /h (cfm)	7000 (4120.0)	-	7000 (4120.0)	-
Cooling water flow @ 30°C (86 °F)		-	1,13 (0.665)	-	1,46 (0.859)
Heat rejection	kW (btu/h)	33,00 (112601)		42,00 (143310)	
Refrigerant quantity	Kg (oz)	2,00 (71)	3,00 (106)	2,00 (71)	3,00 (106)
Power supply	V/ph/f	400/3/50			
Nominal electric consumption	kW	2,20	2,00	2,90	2,60
	A	4,0	3,6	5,5	4,9
Full load amperage	A	8,9	7,1	10,7	8,9

## 4.1.3 DRYPOINT® RA III 2400 ... 3000



Parameter	Unit	DRYPOINT® RA III			
		2400	2400 WC	3000	3000 WC
Air flow rate at nominal conditions	m <sup>3</sup> /h	2400		3000	
	l/min	40000		50000	
	scfm	1413		1767	
Air pressure drop	bar	0,09		0,13	
	(psi)	(1.31)		(1.89)	
Cooling air fan flow	m <sup>3</sup> /h	12000 (7062.9)	-	12000 (7062.9)	-
Cooling water flow @ 30°C (86 °F)	(cfm)	-	1,94 (1.142)	-	2,51 (1.477)
Heat rejection	kW	52,00		65,00	
	(btu/h)	(177431)		(221789)	
Refrigerant quantity	kg	2,70	4,10	2,70	4,10
	(oz)	(95)	(145)	(95)	(145)
Power supply	V/ph/f	400/3/50			
Nominal electric consumption	kW	3,90	3,50	6,10	4,90
	A	8,8	8,2	16	15,0
Full load amperage	A	14,8	12,8	21,2	19,2



## 4.2 Correction factors

Corrections factors (CF)											
Parameter	Unit	Value									
Ambient Temp.	°C	≤ +25	+30	+35	+40	+45	+50				
	(°F)	(+77.0)	(+86.0)	(+95.0)	(+104.0)	(+113.0)	(+122.0)				
CF		1,00	0,96	0,91	0,85	0,76	0,64				
Inlet air Temp.	°C	≤ +25	+30	+35	+40	+45	+50	+55	+60	+65	+70
	(°F)	(+77.0)	(+86.0)	(+95.0)	(+104.0)	(+113.0)	(+122.0)	(+131.0)	(+140.0)	(+149.0)	(+158.0)
CF		1,48	1,23	1,00	0,82	0,67	0,54	0,46	0,41	0,38	0,36
Inlet air pressure	bar(g)	4	5	6	7	8	10	12	14	15	16
	(psi(g))	(58.0)	(72.5)	(87.0)	(101.5)	(116.0)	(145.0)	(174.0)	(203.1)	(217.6)	(232.1)
CF		0,77	0,86	0,93	1,00	1,05	1,14	1,21	1,27	1,30	1,33
Dew point	°C	+3	+5	+7	+10						
	(°F)	(+37.4)	(+41.0)	(+44.6)	(+50.0)						
CF		1,00	1,09	1,19	1,37						

### 4.3 Cooling water parameters, water-cooled models

Parameter	Unit	Value
Min. ... max. water temperature	°C (°F)	+15 ... +30 (+59.0 ... +86.0)
Min. ... max. water pressure	bar(g) (psi(g))	3 ... 10 (43.5 ... 145.0)
Required head pressure	bar (psi)	> 3 (> 43.5)
PH value	-	7,5 ... 9,0
Total hardness	°dH	6.0 ... 15
Conductivity	µS/cm	10 ... 1000
Sulphates (SO <sub>4</sub> <sup>2-</sup> )	mg/l or ppm	< 100
Hydrogen carbonate / Sulphates (HCO <sub>3</sub> / SO <sub>4</sub> <sup>2-</sup> )		> 1
Ammonia (NH <sub>3</sub> )		< 0,5
Manganous ion (Mn <sup>2+</sup> )		< 0.05
Chlorides (Cl <sup>-</sup> )		< 50
Free chlorine		< 0,5
Oxygen content		< 0,1
Carbon dioxide (CO <sub>2</sub> )		< 50
Hydrogen sulphide (H <sub>2</sub> S)		< 0,05
Phosphate (PO <sub>4</sub> <sup>3-</sup> )		< 2
Ferric ion (Fe <sup>3+</sup> )		< 0,5

### 4.4 Storage parameters

Parameter	Unit	DRYPOINT® RA III					
		1080	1080 WC	1300	1300 WC	1490	1490 WC
Min. ... max. temperature	°C (°F)	+1 ... +50 (+33.8 ... +122.0)					
Relative humidity	%	Max 80% without condensation					
Weight	kg (lbs)	231 (509)	241 (531)	238 (525)	248 (547)	261 (575)	276 (608)

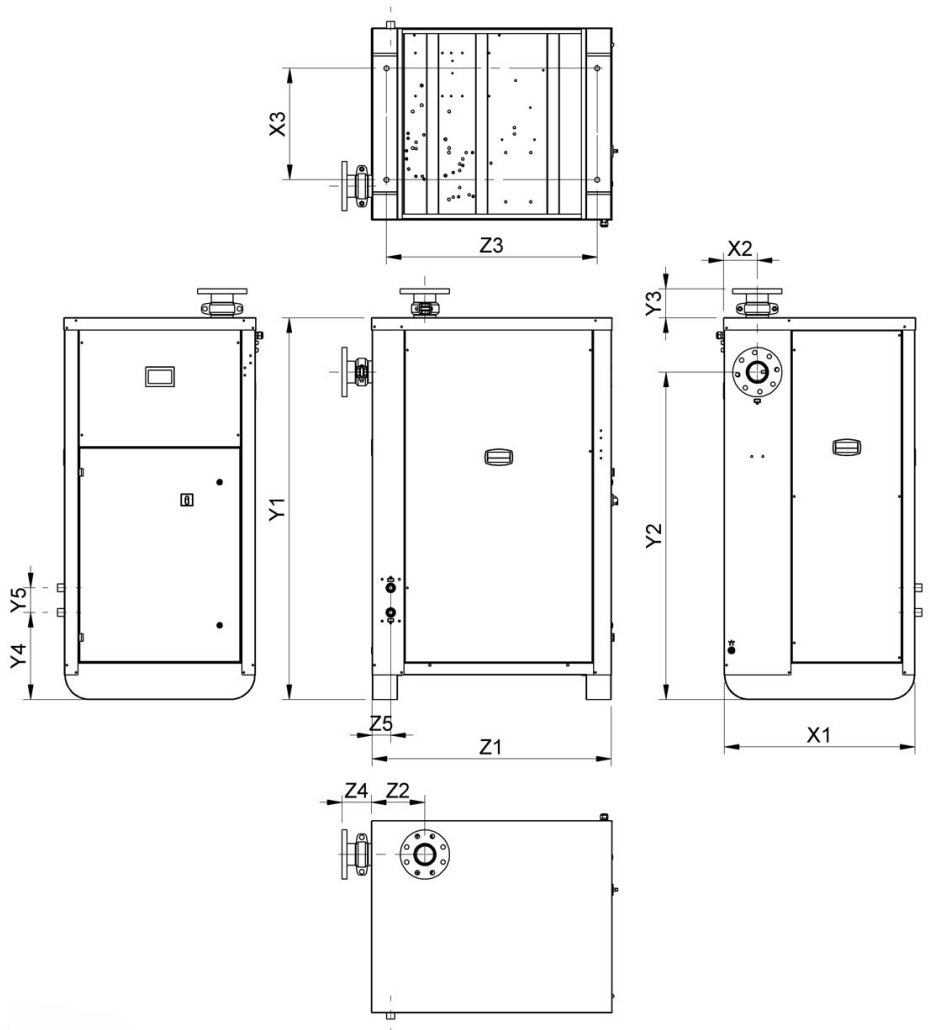
Parameter	Unit	DRYPOINT® RA III					
		1900	1900 WC	2400	2400 WC	3000	3000 WC
Min. ... max. temperature	°C (°F)	+1 ... +50 (+33.8 ... +122.0)					
Relative humidity	%	Max 80% without condensation					
Weight	kg (lbs)	263 (580)	278 (613)	337 (743)	352 (776)	338 (745)	353 (778)

## 4.5 Materials

Component	Material
Housing and supports	Structural steel, epoxy paint
Refrigerant compressor	Steel, copper, aluminium, oil
Heat exchanger	Aluminium
Condenser	Aluminium, copper, structural steel
Pipes	Copper
Fan	Aluminium, copper, steel
Valves	Brass, steel
<b>BEKOMAT®</b> condensate drain	Aluminium, plastic mix and electronics
Insulant material	Synthetic rubber, polystyrene, polyurethane
Electronic Control Unit	Plastic mix and electronics
Electric cables, electric parts	Copper, brass, PVC, plastic mix

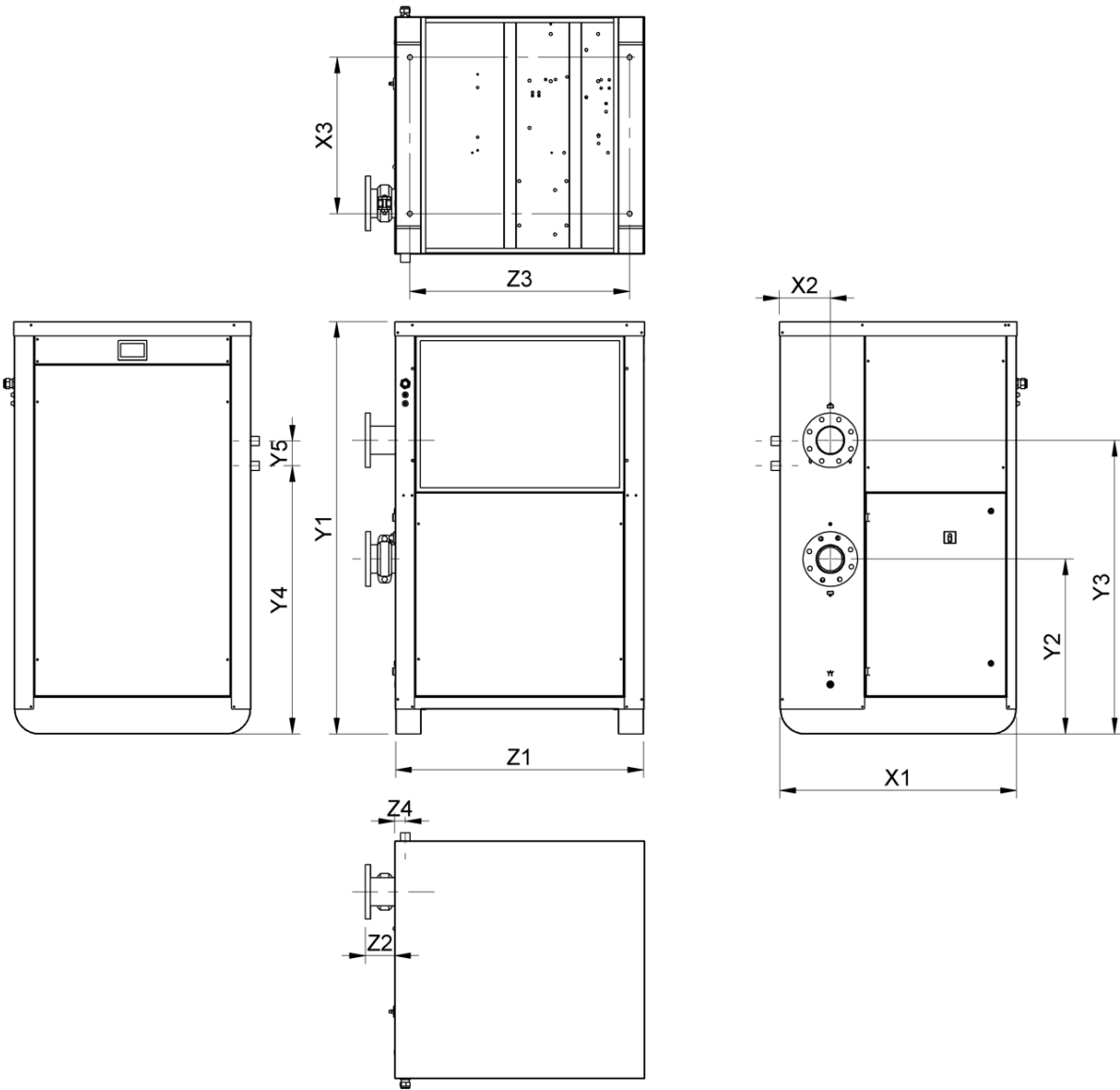
## 4.6 Dimensions

### 4.6.1 DRYPOINT® RA III 1080 ... 1300



Pos. No.	Unit	DRYPOINT® RA III	
		1080	1300
[X1]	mm (in)	775 (30.51)	
[X2]		138 (5.43)	
[X3]		453 (17.83)	
[Y1]		1550 (61.02)	
[Y2]		1331 (52.40)	
[Y3]		117 (4.61)	
[Y4]		354 (13.94)	
[Y5]		100 (3.94)	
[Z1]		975 (38.39)	
[Z2]		217 (8.54)	
[Z3]		856 (33.70)	
[Z4]		120 (4.72)	
[Z5]		75 (2.95)	

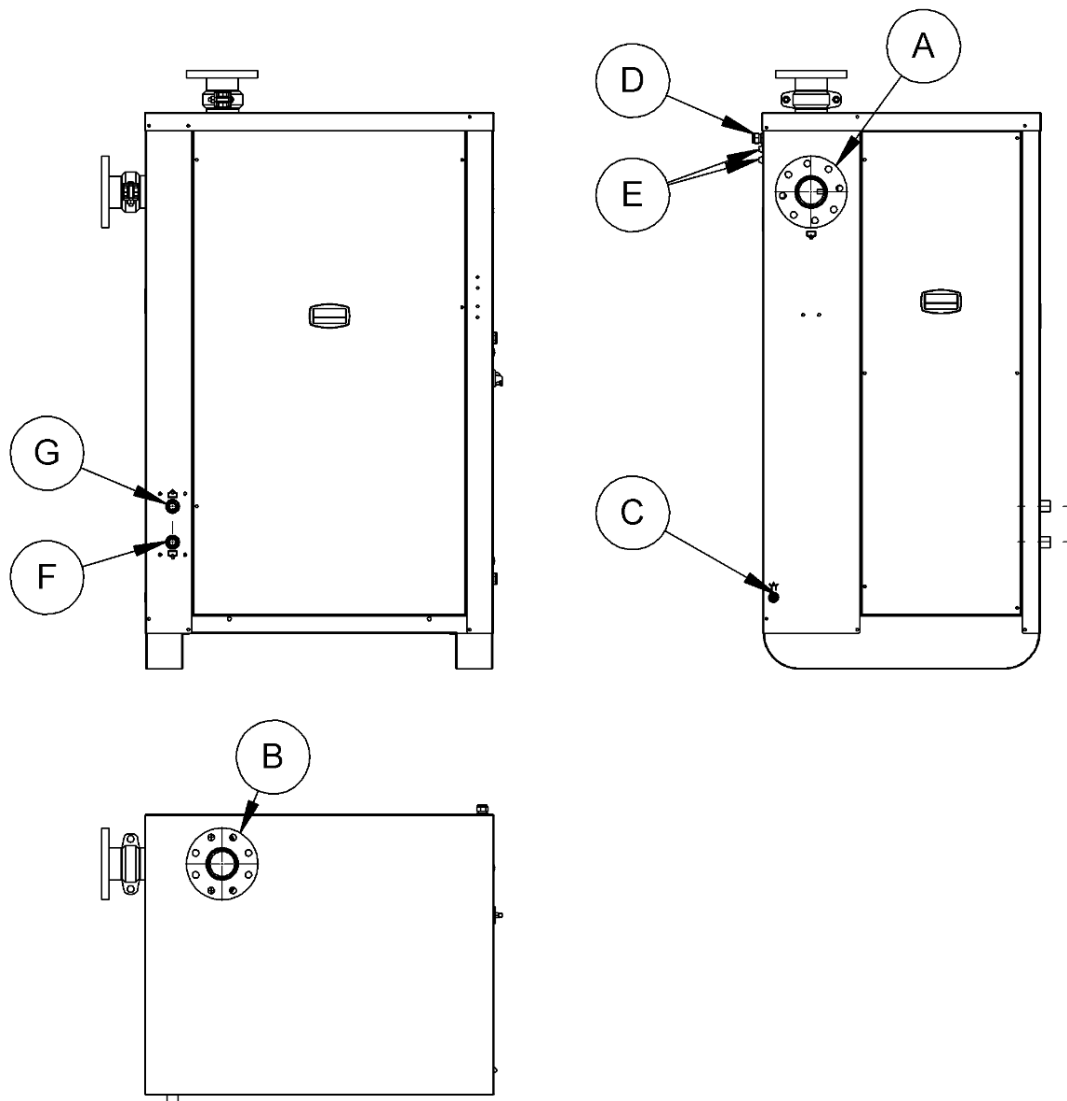
### 4.6.2 DRYPOINT® RA III 1490 ... 3000



Pos. No.	Unit	DRYPOINT® RA III			
		1490	1900	2400	3000
[X1]	mm (in)	957 (37.68)			
[X2]		170 (6.69)		205 (8.07)	
[X3]		630 (24.80)			
[Y1]		1661 (65.39)			
[Y2]		644 (25.35)		705 (27.76)	
[Y3]		1057 (41.61)		1183 (46.57)	
[Y4]		1080 (42.52)			
[Y5]		100 (3.94)			
[Z1]		1006 (39.61)			
[Z2]		114 (4.49)		118 (4.65)	
[Z3]		885 (3.35)			
[Z4]		42 (1.65)			

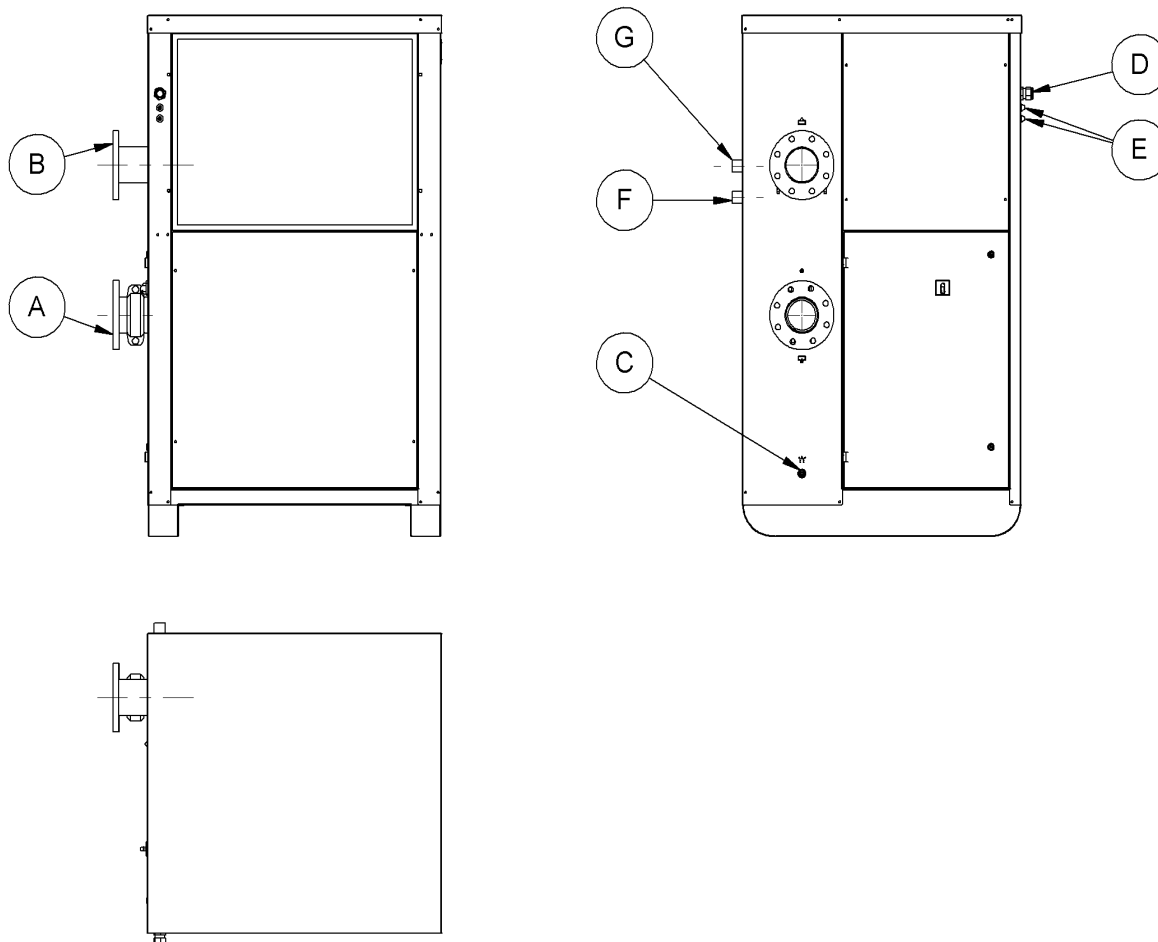
## 4.7 Connections

### 4.7.1 DRYPOINT® RA III 1080 ... 1300



DRYPOINT® RA III	Pos. No.	Connection	Description / explanation
1080 ... 1300	[A]	DN 80	Flanged connection, connection for compressed air inlet
	[B]	DN 80	Flanged connection, connection for compressed air outlet
	[C]	8 mm (0.31 in)	Rubber hose, connection for condensate outlet
	[D]	M 20	Cable gland, connection for external power supply
	[E]	PG 11	Rubber grommets, connection for auxiliary wiring
	[F]	G ¾"	Sleeve connection, connection for cooling water inlet, water-cooled models
	[G]	G ¾"	Sleeve connection, connection for cooling water outlet, water-cooled models

## 4.7.2 DRYPOINT® RA III 1490 ... 3000



DRYPOINT® RA III	Pos. No.	Connection	Description / explanation
1490 ... 1900	[A]	DN 80	Flanged connection, connection for compressed air inlet
	[B]	DN 80	Flanged connection, connection for compressed air outlet
2400 ... 3000	[A]	DN 100	Flanged connection, connection for compressed air inlet
	[B]	DN 100	Flanged connection, connection for compressed air outlet
1490 ... 3000	[C]	8 mm (0.31 in)	Rubber hose, connection for condensate outlet
	[D]	M 32	Cable gland, connection for external power supply
	[E]	PG 11	Rubber grommets, connection for auxiliary wiring
	[F]	G 1"	Sleeve connection, connection for cooling water inlet, water-cooled models
	[G]	G 1"	Sleeve connection, connection for cooling water outlet, water-cooled models

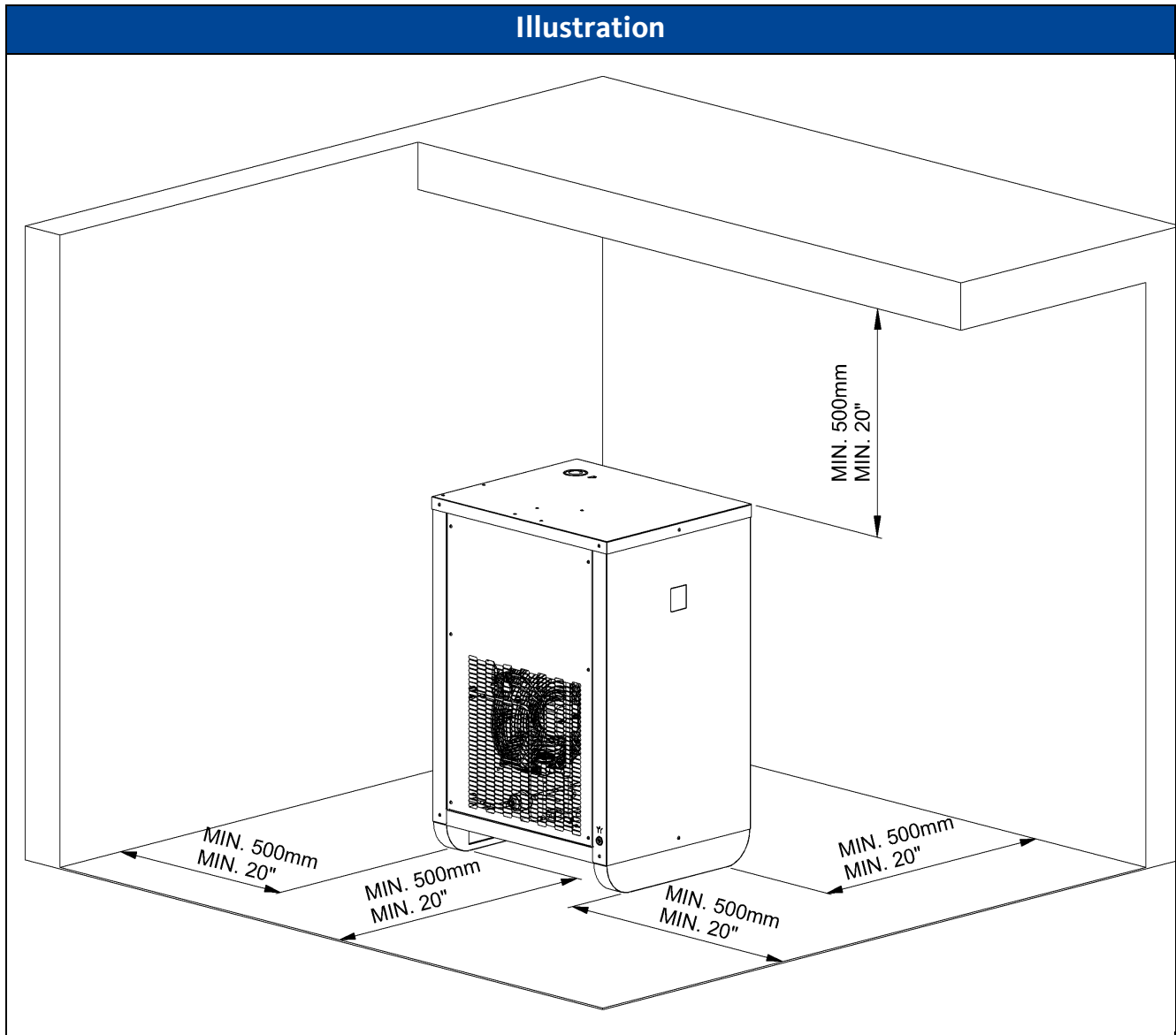


## 4.8 Assembly conditions

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




- The place of installation is clean and dry, protected from direct sunlight, rain, frost, sources of heat and fire. Unlimited exchange of air and sufficient ventilation is guaranteed, refer to section “4.8.1 Minimum distance from adjacent structure” on page 42.
- The place of installation has sufficient space for all actions at the product, e.g. assembly and maintenance.
- The set-up area is level, smooth and suitable to bear the weight of the product.
- Sealed set-up area or spill protection basin are available. In the event of damage, no untreated condensate or oil may get into the sewer system or the soil.
- A customer-side compressed air supply line is available.
- A customer-side condensate collection line is available.
- A customer-side 3ph+E power supply line is available.
- A customer-side cooling water line is available for water-cooled models. Cooling water meets the requirements specified in section “4.3 Cooling water parameters, water-cooled models” on page 34.

### 4.8.1 Minimum distance from adjacent structures





## 5. Transport and storage

### 5.1 Warning notices


<b>WARNING</b>	<b>Insufficient qualification</b>
	<p>If personnel carrying out work on the product and accessories is not properly qualified, this may result in accidents, personal injury and damage to property and/or impaired operation.</p>
	<ul style="list-style-type: none"> <li>• All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in transport and storage.</li> </ul>
<b>CAUTION</b>	<b>Inappropriate transport or storage</b>
	<p>Inappropriate transport or storage may result in personal injury or damage to property.</p>
	<ul style="list-style-type: none"> <li>• Use personal protective equipment during all work with packaging material.</li> <li>• Handle the packaging, product and accessories with care.</li> <li>• Pack all parts impact-proof using suitable material.</li> <li>• Transport and handle the packaging according to the markings (note lifting gear attachment points, the centre of gravity and alignment e.g. keep vertical, do not throw, etc.).</li> <li>• Only use proper means of transport and lifting equipment that is in proper working order.</li> <li>• Always adhere to the permissible transport and storage parameters.</li> <li>• Store the product and accessories only outside of areas exposed to direct sunlight and heat sources.</li> </ul>
<b>NOTE</b>	<b>Handling packaging material</b>
	<p>Inappropriate disposal of packaging materials can cause environmental damage.</p>
	<ul style="list-style-type: none"> <li>• Dispose of the packaging material in accordance with the applicable legal requirements and provisions of the country and place of use.</li> </ul>


## 5.2 Transport

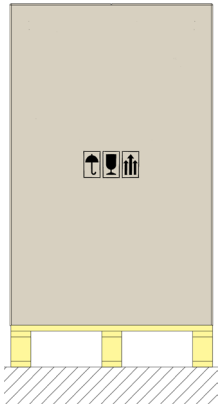
<b>NOTE</b>	<b>Incorrect handling of the product</b>
	<p>Damage to product will occur if laid on its side or placed upside down during the transport. Heavy blows will cause irreparable damage.</p> <ul style="list-style-type: none"> <li>• Transport the product with care, in an upright position and do not tilt it.</li> </ul>

Transport work	
Illustration	Description / explanation
	<ul style="list-style-type: none"> <li>• Only transport the product and accessories in their original and undamaged packaging.</li> <li>• Use a suitable trolley or a forklift truck to move the packaged product and accessories.</li> </ul>

### 5.3 Storage





<b>NOTE</b>	<b>Incorrect storage of the product</b>
	Damage to product will occur if laid on its side or placed upside down. <ul style="list-style-type: none"> <li>• Only store the product in an upright position.</li> </ul>

<b>NOTE</b>	<b>Long term storage</b>
	After a long storage period the components and the functioning of the device must be checked by the manufacturer. <ul style="list-style-type: none"> <li>• Contact the manufacturer if storage period exceeds 12 months.</li> </ul>

Storage work	
Illustration	Description / explanation
	<ul style="list-style-type: none"> <li>• Only store the product and accessories in their original and undamaged packaging.</li> <li>• Adhere to the storage conditions in section “4.4 Storage parameters” on page 35.</li> <li>• The storage location is dry, frost-free and lockable.</li> <li>• Protect against external influences of the weather, direct sunlight, and sources of heat.</li> <li>• Secure against falling over and protect against vibrations.</li> </ul>


## 6. Assembly

### 6.1 Warning notices

<b>DANGER</b>	<b>Use of incorrect spare parts, accessories or materials</b>
	<p>Use of the incorrect spare parts, accessories or materials, as well as auxiliary and operating materials, may result in death or serious injury. Malfunctions and device failure as well as material damage can occur.</p>
	<ul style="list-style-type: none"> <li>• Only use undamaged original parts, auxiliary and operating materials which are specified by the manufacturer to complete all work.</li> <li>• Only use the materials approved for the respective application and suitable tools in proper working order.</li> <li>• Only use pipes that are free of dirt, damage and corrosion.</li> </ul>
<b>DANGER</b>	<b>Pressurised system</b>
	<p>There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.</p>
	<ul style="list-style-type: none"> <li>• Before starting work, depressurise the pressurised system and secure it against unintentional pressurisation.</li> <li>• Set up a safety area around the working area during assembly, installation, maintenance and repair work.</li> <li>• Assemble all pipes and hoses free of mechanical stress.</li> </ul>
<b>WARNING</b>	<b>Insufficient qualification</b>
	<p>If personnel carrying out work on the product and accessories is not properly qualified, this may result in accidents, personal injury and damage to property and/or impaired operation.</p>
	<ul style="list-style-type: none"> <li>• All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in pressure equipment and systems.</li> </ul>
<b>WARNING</b>	<b>Inappropriate assembly</b>
	<p>Inappropriate assembly of the product and the accessories can lead to personal injury and damage to property and/or impaired operation.</p>
	<ul style="list-style-type: none"> <li>• Assemble the product and all the parts, accessories and materials used free from mechanical stress.</li> <li>• Fix hoses in such a way that they do not flap around.</li> </ul>

## 6.2 Assembly work

For assembly work to be carried out, the following protective equipment must be always worn and the preparatory tasks must have been completed.


Prerequisites		
Tools	Material	Protective equipment
<ul style="list-style-type: none"> <li>No tool necessary</li> </ul>	<ul style="list-style-type: none"> <li>No material necessary</li> </ul>	


Preparatory tasks	
1.	Select and set up the place of installation according to the specifications in section “4.8 Assembly conditions” on page 41.
2.	The compressed air supply line, the condensate collection line, the cooling water line provided by the customer are pressureless and secured against unintentional pressure build up.
3.	Have the necessary tools and materials ready.
4.	Prepare the required connection materials suitable for the pressure and temperature range.
5.	Check the product for damage, Only use the product in an undamaged state.
6.	The section “4.7 Connections” on page 39 was read and applied.

Assembly work	
1.	Align the product in such a way that the User Interface is easy visible and all connection elements are easy accessible.
2.	Fix the product to the floor, if necessary.
3.	Compressed air: connect the flanged connection to the compressed air line.
4.	Cooling water, water-cooled models: connect the threaded connection to the cooling water line.
5.	Condensate drain: connect the condensate drain hose to the drain collection line.
6.	Install collision protection, if necessary.




## 7. Electrical installation

### 7.1 Warning notices

<b>DANGER</b>	<b>Use of incorrect spare parts, accessories or materials</b>
	<p>Use of the incorrect spare parts, accessories or materials, as well as auxiliary and operating materials, may result in death or serious injury. Malfunctions and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> <li>• Only use undamaged original parts, auxiliary and operating materials which are specified by the manufacturer to complete all work.</li> <li>• Only use the materials approved for the respective application and suitable tools in proper working order.</li> <li>• Only use electric components and materials that comply with regionally applicable specifications and regulations for electrical safety.</li> </ul>


<b>DANGER</b>	<b>Electric voltage</b>
	<p>There is a danger of death or serious injuries following contact with components which are in contact with electric voltage. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> <li>• Only carry out installation, maintenance and repair work on the product and accessories when they have been disconnected and secured against being switched back on again unintentionally.</li> <li>• Set up a safety area around the working area during assembly, installation, maintenance and repair work.</li> <li>• Comply with all regionally applicable regulations and requirements during installation.</li> <li>• Provide a circuit breaker in the power supply within easy reach of the product. The circuit breaker disconnects all current-carrying conductors.</li> <li>• Connect the protective conductor (earth connection) according to regulations.</li> </ul>



<b>WARNING</b>	<b>Insufficient qualification</b>
	<p>If personnel carrying out work on the product and accessories is not properly qualified, this may result in accidents, personal injury and damage to property and/or impaired operation.</p>
	<ul style="list-style-type: none"> <li>• All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in electrical engineering.</li> </ul>
<b>WARNING</b>	<b>Inappropriate electrical installation</b>
	<p>Improper electrical installation of the product and the accessories can lead to personal injury and damage to property as well as impairments in operation.</p>
	<ul style="list-style-type: none"> <li>• Check all plug-type connections for a correct fit.</li> <li>• Avoid stumbling hazard through appropriate cable routing.</li> <li>• Avoid mechanical strain on the cables.</li> </ul>
<b>WARNING</b>	<b>Ingress of moisture or foreign bodies</b>
	<p>Removing components or opening the product may allow water or foreign bodies to enter the opened product. Ingress of water or foreign bodies can lead to accidents, personal injury and damage to property as well as impairments in operation.</p>
	<ul style="list-style-type: none"> <li>• Protect the product from splashing water or moisture.</li> <li>• Only open the product or remove components in a dry place.</li> <li>• Do not insert any foreign bodies into openings of the product.</li> <li>• Keep all contact surfaces and openings free of dirt and moisture.</li> </ul>


## 7.2 Connection work

For electrical installation work to be carried out, the following protective equipment must be always worn and the preparatory tasks must have been completed.

Prerequisites		
Tools	Material	Protective equipment
<ul style="list-style-type: none"> <li>No tool necessary</li> </ul>	<ul style="list-style-type: none"> <li>No material necessary</li> </ul>	


Preparatory tasks	
1.	A 3ph+E protective contact socket or a terminal box is installed within reach of the place of installation.
2.	Fusing of protective contact socket / terminal box is correctly dimensioned for the power consumption.
3.	Assembly of the product is complete.
4.	<b>ON-OFF</b> switch of the product is in OFF position.
5.	Have the necessary tools and materials ready.
6.	A 3ph+E power cable correctly dimensioned for the power consumption of the product and with a suitable length is ready and available.
7.	The section "4.7 Connections" on page 39 was read and applied.

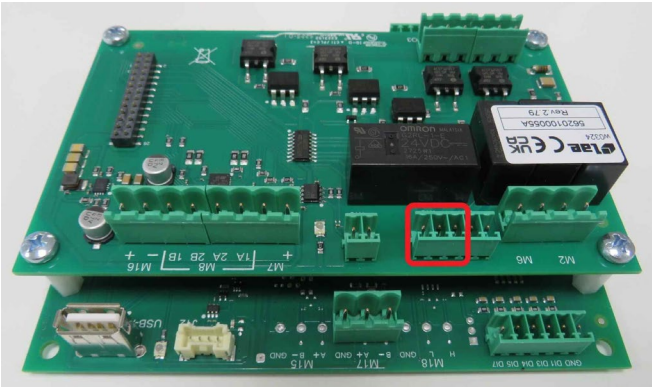
### 7.2.1 External power supply

<b>NOTE</b>	<b>Wrong phase sequence</b>
	Incorrect phase sequence L1, L2, L3 will cause the lack of starting of the product. <ul style="list-style-type: none"> <li>Phases L1, L2, L3 must be connected to the device with correct phase sequence.</li> </ul>


Connection work	
1.	Guide the power cable through the arranged cable gland on the product.
2.	Product side: Connect the cable to terminals L1, L2, L3, EARTH.
3.	Plant side: connect the cable to the protective contact socket / terminal box.
4.	Make sure that power cable is free of mechanical stress and mechanically protected.

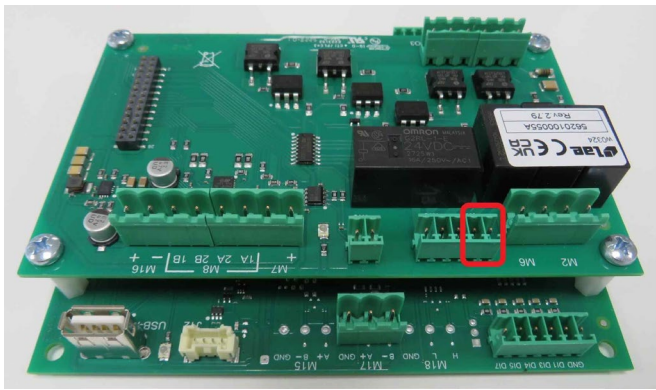
### 7.2.2 WARNING / ALARM digital output

<b>NOTE</b>	<b>WARNING / ALARM digital output failure</b>
	The WARNING / ALARM contact is a potential-free NO / NC contact. Using the contact with unsuitable voltages and currents will cause its failure. <ul style="list-style-type: none"> <li>Contact rating current 4 A @ 250 Vac</li> </ul>

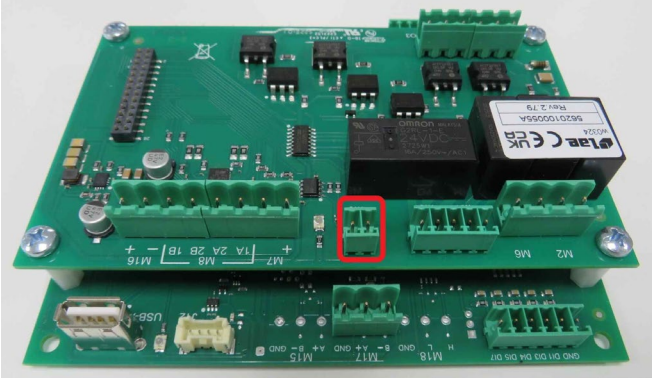
Connection work	
Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>Guide a two-wires signal cable through the arranged rubber grommet on the product.</li> <li>Product side: connect the cable to the connector M3 [RL3] ALARM of Electronic Control Unit.</li> <li>Plant side: connect the cable to the supervisory system of the plant.</li> <li>Make sure that power cable is free of mechanical stress and mechanically protected.</li> </ol>

### 7.2.3 STANDBY – RUNNING digital output


<b>NOTE</b>	<b>STANDBY – RUNNING digital output failure</b>
	<p>The STANDBY – RUNNING contact is a potential-free NO contact. Using the contact with unsuitable voltages and currents will cause its failure.</p> <ul style="list-style-type: none"> <li>Contact rating current 4 A @ 250 Vac</li> </ul>

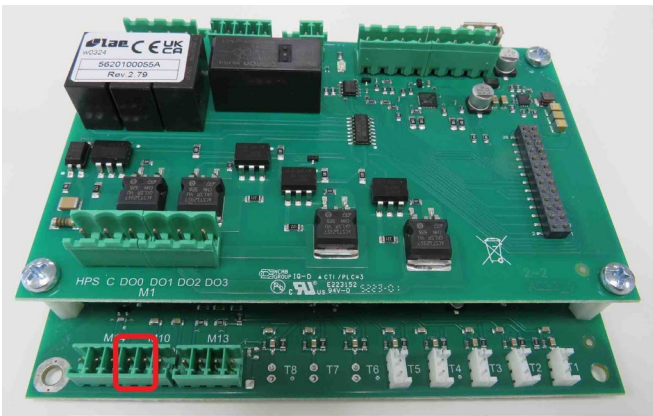
Connection work	
Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>1. Guide a two-wires signal cable through the arranged rubber grommet on the product.</li> <li>2. Product side: connect the cable to the connector M4 [RL4] DRYER ON of Electronic Control Unit.</li> <li>3. Plant side: connect the cable to the supervisory system of the plant.</li> <li>4. Make sure that power cable is free of mechanical stress and mechanically protected.</li> </ol>

### 7.2.4 DEW POINT TEMPERATURE analog output


Connection work	
Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>1. Guide a two-wires shielded signal cable through the arranged rubber grommet on the product.</li> <li>2. Product side: connect the cable to the connector M9 [AO3] DEW POINT of Electronic Control Unit.</li> <li>3. Plant side: connect the cable to the supervisory system of the plant.</li> <li>4. Make sure that power cable is free of mechanical stress and mechanically protected.</li> </ol>


### 7.2.5 Remote START-STOP digital input

<b>NOTE</b>	<b>Remote electrical contact</b>
	<p>Using an unsuitable remote electrical contact may cause operating malfunctions.</p> <ul style="list-style-type: none"> <li>• Use only a clean remote contact suitable for low voltage applications and free from any electrical potential.</li> <li>• Max resistance of contact + cable: 100 ohm.</li> </ul>


Connection work	
Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>1. Guide a two-wires signal cable through the arranged rubber grommet on the product.</li> <li>2. Product side: Connect the cable to the connector M10 [DI6-GND] REMOTE of Electronic Control Unit.</li> <li>3. Plant side: connect the cable to the remote electrical contact.</li> <li>4. Make sure that power cable is free of mechanical stress and mechanically protected.</li> </ol>

## 7.2.6 Remote RESET digital input


NOTE	Remote electrical contact
	<p>Using an unsuitable remote electrical contact may cause operating malfunctions.</p> <ul style="list-style-type: none"> <li>• Use only a clean remote contact suitable for low voltage applications and free from any electrical potential.</li> <li>• Max resistance of contact + cable: 100 ohm.</li> </ul>

Connection work	
Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>1. Guide a two-wires signal cable through the arranged rubber grommet on the product.</li> <li>2. Product side: Connect the cable to the connector M10 [D18-GND] REMOTE RESET of Electronic Control Unit.</li> <li>3. Plant side: connect the cable to the remote electrical contact.</li> <li>4. Make sure that power cable is free of mechanical stress and mechanically protected.</li> </ol>

### 7.2.7 USB memory stick for data log storage





Connection work	
Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>1. Insert a formatted USB memory stick into the USB slot located on the back side of User Interface.</li> </ol>

### 7.2.8 Remote management, Modbus RTU data signal

INFORMATION	Modbus RTU installation and configuration
	<p>For further information on the Modbus RTU installation and configuration, refer to the section “1.3 Other applicable documents” on page 7.</p>

## 8. Commissioning


### 8.1 Warning notices


<b>DANGER</b>	<b>Operation outside the permissible limit range</b>
	<p>Operation of the product or accessories outside the permissible limits and operating parameters, unauthorised intervention and modifications may result in death or serious injury.</p>
	<ul style="list-style-type: none"> <li>• Adhere to the limits and operating parameters specified on the type plate and in the manual.</li> <li>• Check whether the operating parameters have been amended or restricted by the use of accessories.</li> </ul>
<b>DANGER</b>	<b>Pressurised system</b>
	<p>There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.</p>
	<ul style="list-style-type: none"> <li>• Before pressurisation, check all system pipe connections for leak tightness and tighten if necessary.</li> <li>• Slowly pressurise the system.</li> <li>• Avoid pressure blows and high differential pressures.</li> </ul>
<b>DANGER</b>	<b>Electric voltage</b>
	<p>There is a danger of death or serious injuries following contact with components which are in contact with electric voltage. Malfunction and device failure as well as material damage can occur.</p>
	<ul style="list-style-type: none"> <li>• Only operate the product and accessories with the cover complete and closed and the electronics housing closed.</li> <li>• Check the product and accessories before commissioning in accordance with the locally applicable legal requirements and regulations.</li> </ul>
<b>WARNING</b>	<b>Insufficient qualification</b>
	<p>If personnel carrying out work on the product and accessories is not properly qualified, this may result in accidents, personal injury and damage to property and/or impaired operation.</p>
	<ul style="list-style-type: none"> <li>• All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in pressure equipment and systems and skilled technical personnel specializing in electrical engineering.</li> </ul>





## 8.2 Initial commissioning


For initial commissioning work to be carried out, the following protective equipment must be always worn and the preparatory tasks must have been completed.

Prerequisites		
Tools	Material	Protective equipment
<ul style="list-style-type: none"> <li>No tool necessary</li> </ul>	<ul style="list-style-type: none"> <li>No material necessary</li> </ul>	

NOTE	Refrigerant compressor failure
	Starting the product with the refrigeration compressor oil still cold can irreparably damage the refrigeration compressor.
	<ul style="list-style-type: none"> <li>Wait at least 2 hours before starting the product.</li> </ul>

INFORMATION	Delayed starting function
	<p>The device is provided of a delayed start function to avoid too frequent start/stop cycles which could damage the refrigerant compressor. The starting delay occurs:</p> <ul style="list-style-type: none"> <li>After the booting of User Interface consequently to the switch <b>ON</b> of the device.</li> <li>Starting delay: 300 seconds.</li> <li>After stopping the device using the <b>START-STOP</b> button and an immediate restart attempt. Starting delay: 180 seconds.</li> </ul>

INFORMATION	Dew point value
	A dew point between 0 °C (+32 °F) and +10 °C (+50 °F) displayed on the User Interface is considered to be correct according to the possible operating conditions, e.g. flow rate, air inlet temperature, ambient temperature, etc.

INFORMATION	Short-term inactivity
	During short-term inactivity, max. 2 / 3 days, it is advisable to leave the product connected to the power supply and leave <b>ON</b> the <b>ON-OFF</b> switch.

### Preparatory tasks


1.	Assembly of the product is complete.
2.	Compressed air inlet/outlet valves are closed.
3.	Electrical installation of the product is complete.
4.	The section “3.1 Product overview” on page 19 was read and applied.
5.	The condensate drain service valve is open.


### Commissioning work


1.	Establish the mains supply.
2.	Power the product acting on the <b>ON-OFF</b> switch and wait 30 seconds the booting of User Interface. Refer to section “3.1 Product overview” on page 19.
3.	Wait 2 hours to allow the heat up of oil of refrigerant compressor.
4.	Water-cooled models: establish the cooling water supply.
5.	Water-cooled models: check the regular water flow in the water circuit.
6.	Start the product pushing for 3 seconds the <b>START-STOP</b> button on the User Interface. Refer to section “ <b>9.3 Overview of User Interface after power ON</b> ” on page 60.
7.	If the product does not start and the User Interface shows the alarm A14, stop the commissioning work and refer to section “7.2.1 External power supply” on page 51.
8.	Check the power consumption complies with the values engraved on the type plate.
9.	Wait for the cooling fan to run.
10.	Wait until the dew point value displayed on the User Interface is stable. Refer to section “ <b>9.4 Operate on the User Interface</b> ” on page 60.
11.	Establish the compressed air supply.
12.	Slowly open the air inlet valve.
13.	Slowly open the air outlet valve.
14.	Check the air connections for air leakage.
15.	Wait for the condensate drain to works.
16.	Check the condensate drain works correctly.

## 9. Operation

### 9.1 Warning notices

<b>DANGER</b>	<b>Operation outside the permissible limit range</b>
	<p>Operation of the product or accessories outside the permissible limits and operating parameters, unauthorised intervention and modifications may result in death or serious injury.</p> <ul style="list-style-type: none"> <li>• Adhere to the limits and operating parameters specified on the type plate and in the manual.</li> <li>• Observe the assembly conditions and the ambient conditions.</li> <li>• Check whether the operating parameters have been amended or restricted by the use of accessories.</li> <li>• Adhere to the maintenance intervals.</li> </ul>

<b>DANGER</b>	<b>Electric voltage</b>
	<p>There is a danger of death or serious injuries following contact with components which are in contact with electric voltage. Malfunction and device failure as well as material damage can occur.</p> <ul style="list-style-type: none"> <li>• Only operate the product and accessories with the cover complete and closed and the electronics housing closed.</li> </ul>

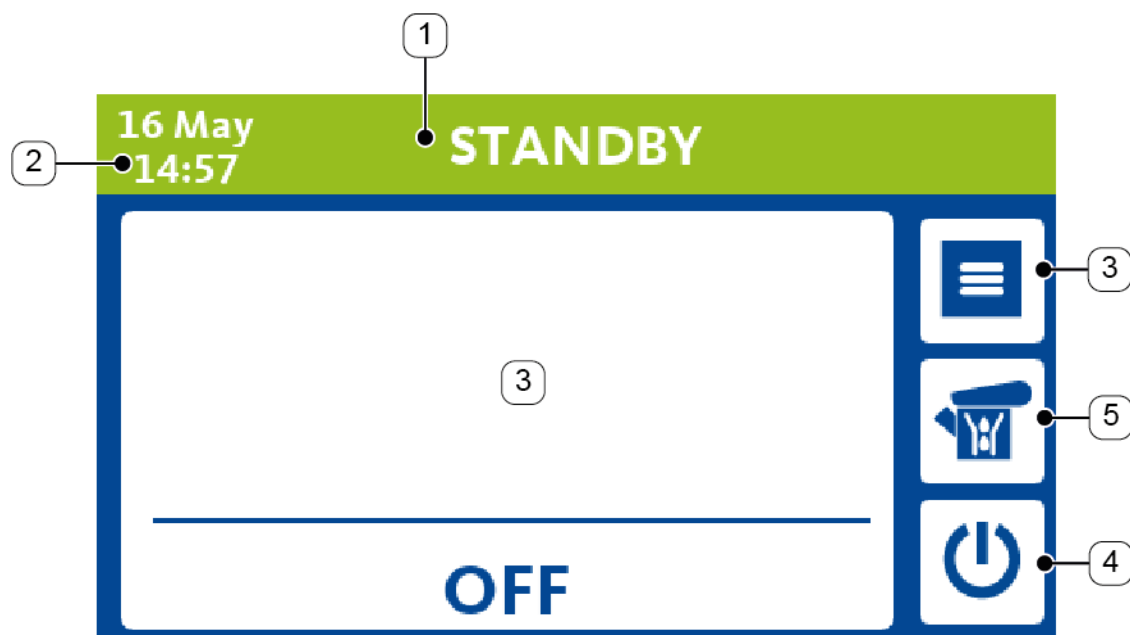
<b>NOTE</b>	<b>Operating personnel</b>
	<p>Insufficient knowledge of the product and the accessories can lead to damage to property and the environment as well as impair operation.</p> <ul style="list-style-type: none"> <li>• The product and accessories may only be operated and used by qualified operating personnel.</li> </ul>

### 9.2 Daily operating checks

With the product in normal running condition, every day check the:

- Stability of dew point value.
- Functioning of condensate drain.
- Cleanliness of the condenser.
- Cyclical run/stop of the cooling fan.
- Noiseless of normal running condition.

### 9.3 Overview of User Interface after power ON



Pos. No.	Description / explanation
[1]	Status of the device and notification area
[2]	Current date and time
[3]	Dew point temperature area


Pos. No.	Description / explanation
[4]	START-STOP button
[5]	CONDENSATE DRAIN TEST button
[6]	FUNCTIONS MENU button

### 9.4 Operate on the User Interface

For operation of the product, the preparatory tasks must have been completed.

Preparatory tasks	
1.	The procedure on section "8 Commissioning" on page 56 was carried out.
2.	The product is switched ON and started.
3.	Compressed air flows into the air circuit.
4.	Water-cooled models: cooling water flows into the water circuit.
5.	The condensate is regularly discharged.

### 9.4.1 Normal running status

INFORMATION	Dew point value
	<p>A dew point between 0 °C (+32 °F) and +10 °C (+50 °F) displayed on the User Interface is considered to be correct according to the possible operating conditions, e.g. flow rate, air inlet temperature, ambient temperature, etc.</p>



INFORMATION	Refrigerant compressor running
	<p>During the normal running status, the refrigerant compressor runs continuously. The product must remain started during the entire compressed air usage time, even if the air compressor works periodically.</p>

Illustration	Description / explanation
	<p><b>Normal running status</b></p> <p>The User Interface shows:</p> <ul style="list-style-type: none"> <li>• the current date and time</li> <li>• Status ON with green background</li> <li>• the dew point temperature</li> </ul>

### 9.4.2 Stopping and starting


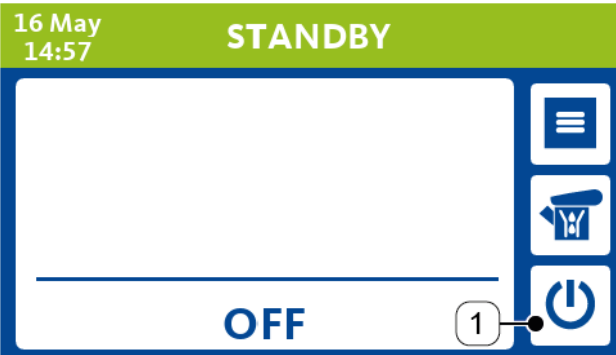
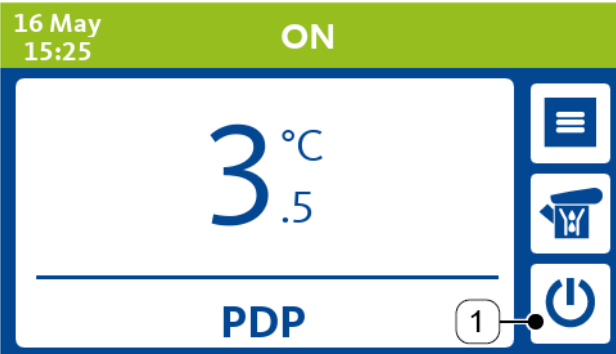
INFORMATION	Delayed starting function
	<p>The device is provided of a delayed start function to avoid too frequent start/stop cycles which could damage the refrigerant compressor. The starting delay occurs:</p> <ul style="list-style-type: none"> <li>• After the booting of User Interface consequently to the switch <b>ON</b> of the device.</li> <li>• Starting delay: 300 seconds.</li> <li>• After stopping the device using the START-STOP button and an immediate restart attempt. Starting delay: 180 seconds.</li> </ul>

Illustration	Description / explanation
	<p><b>Stopping the device</b></p> <ol style="list-style-type: none"> <li>1. Press and hold the <b>START-STOP</b> button <b>[1]</b> for 3 seconds. <ul style="list-style-type: none"> <li>→ The device stops.</li> <li>→ The User Interface shows <b>STANDBY</b>.</li> </ul> </li> </ol>
	<p><b>Starting the device</b></p> <ol style="list-style-type: none"> <li>1. Press and hold the <b>START-STOP</b> button <b>[1]</b> for 3 seconds. <ul style="list-style-type: none"> <li>→ The device starts.</li> <li>→ The User Interface shows <b>ON</b> and the dew point temperature.</li> </ul> </li> </ol>

### 9.4.3 Condensate drain test


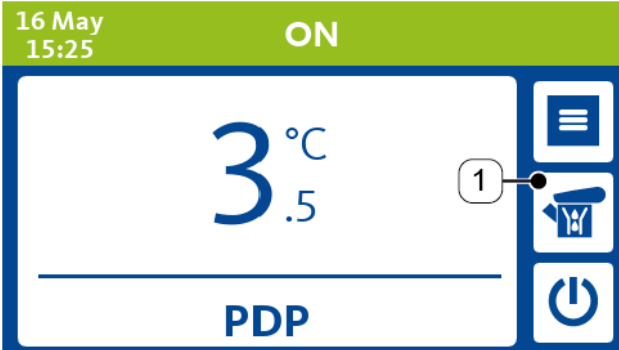
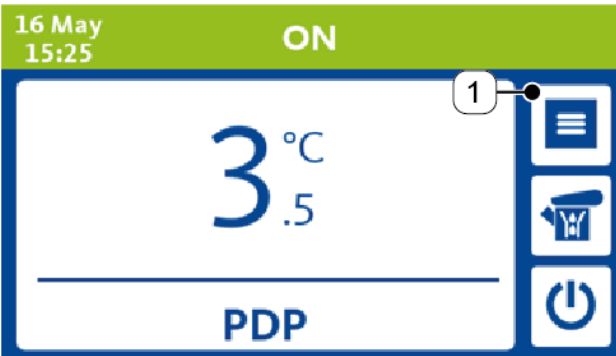

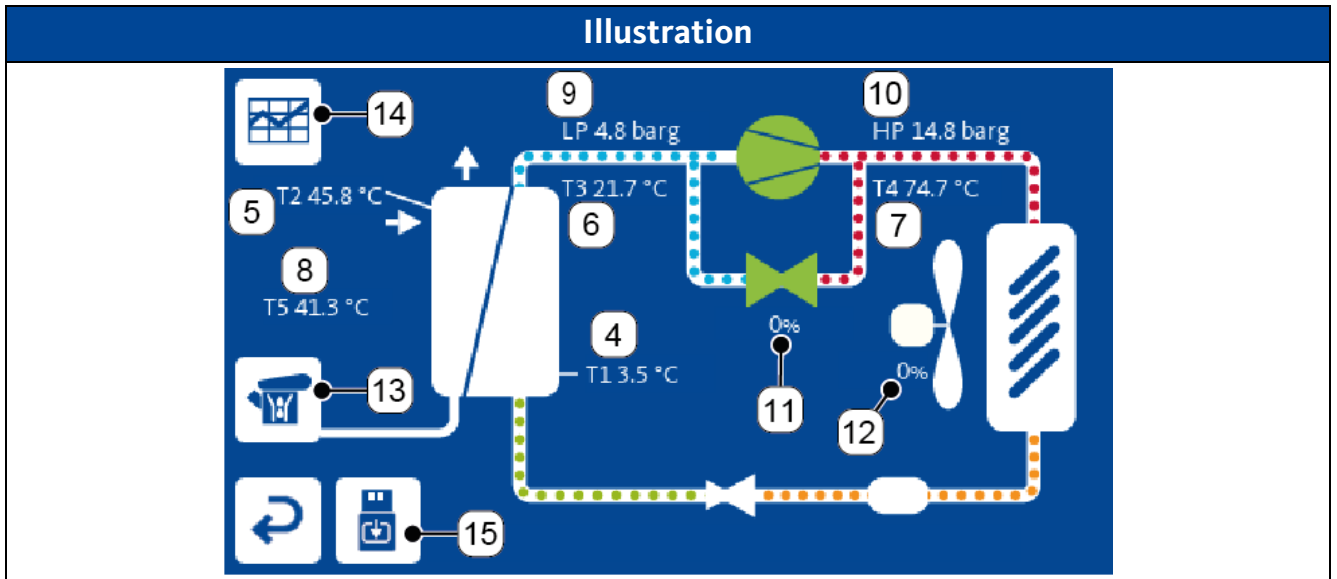
<b>INFORMATION</b>	<b>Condensate drain test</b>
	<p>The condensate drain test can be performed at any time, regardless the status of the device and any display indication.</p>

Illustration	Description / explanation
	<p><b>Condensate drain test</b></p> <ol style="list-style-type: none"> <li>1. Press and hold the button <b>CONDENSATE DRAIN TEST</b> button [1] to perform the condensate drain test, release the button to stop the test.</li> </ol>

## 9.4.4 Actual process values, data logger, data recording

Illustration	Description / explanation
	<p><b>Actual process values</b></p> <ol style="list-style-type: none"> <li>1. With the device in normal running status, press the <b>FUNCTIONS MENU</b> button [1] to access the functions menu screen.</li> </ol>
	<ol style="list-style-type: none"> <li>2. Press the <b>PROCESS VALUES</b> button [2] to access the actual process values screen.</li> <li>3. From each subsequent screen, in order to return back to previous screen, press the <b>BACK</b> button [3].</li> </ol>





Pos. No.	Description / explanation	Pos. No.	Description / explanation
[4]	T1 – Dew point temperature.	[10]	HP – Pressure of refrigerant fluid at discharge side of compressor.
[5]	T2 – Temperature of air at inlet side of heat exchanger.	[11]	Opening percentage of hot gas by-pass valve, models RA 2400 / 3000.
[6]	T3 – Temperature of refrigerant fluid at suction side of compressor.	[12]	Fan speed percentage, models RA 2400 / 3000.
[7]	T4 – Temperature of refrigerant fluid at discharge side of compressor.	[13]	CONDENSATE DRAIN TEST button
[8]	T5 – Ambient temperature.	[14]	PROCESS VALUES HISTORY button
[9]	LP – Pressure of refrigerant fluid at suction side of compressor.	[15]	DATA RECORDING button

**Description / explanation**

The User Interface shows the actual process values and related function buttons.

**CONDENSATE DRAIN TEST button**

Press and hold the **CONDENSATE DRAIN TEST** button [13] to perform the condensate drain test, release the button to stop the test

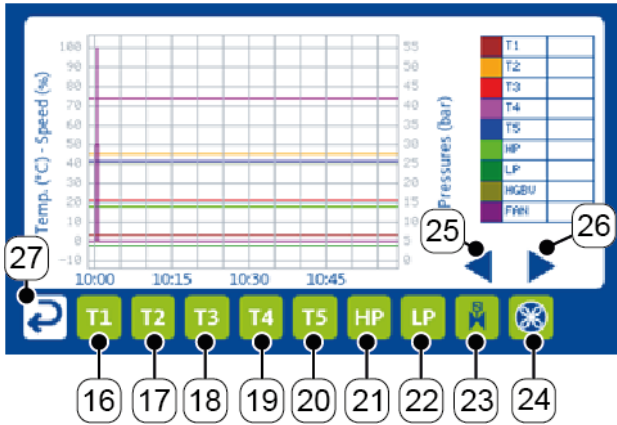
**PROCESS VALUES HISTORY button**

Press the **PROCESS VALUES HISTORY** button [14] to access the process values history screen.

**DATA RECORDING button**

Press the **DATA RECORDING** button [15] to access the data recording screen.

**Description / explanation**

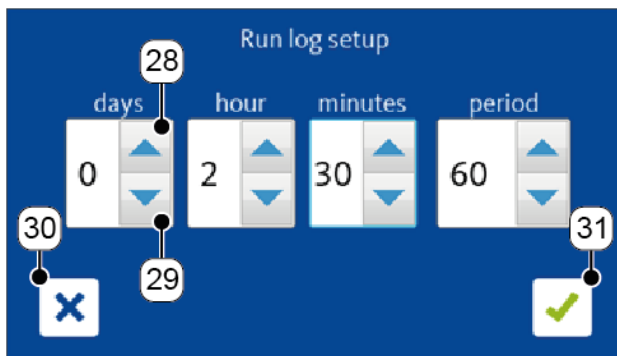


**Process values history screen**

Graphical and numerical representation of actual process values for the last 60 minutes of device operation.

Stored values shifted out the last 60 minutes are definitively lost.

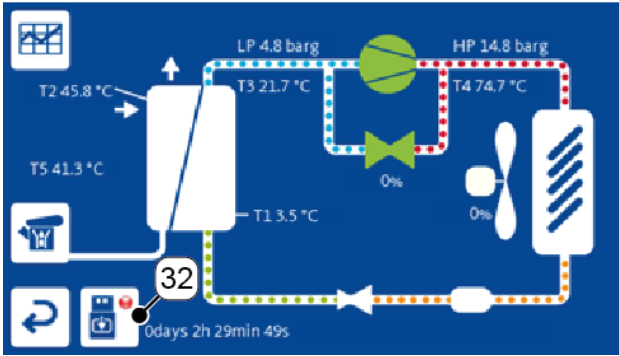
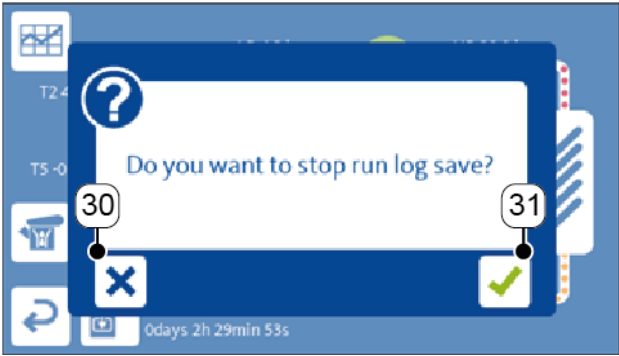
1. Use buttons **T1 [16], T2 [17], T3 [18], T4 [19], T5 [20], HP [21], LP [22], EHGBV [23], FAN [24]** to show / hide on the graph the corresponding traces.
2. Touch the graph to position the graph cursor roughly near the required time.
3. Use the **CURSOR L** and **CURSOR R** buttons **[25, 26]** to fine tune the position of the graph cursor on the required time. Positioning accuracy is +/- 15 seconds.
4. Press the **BACK** button **[27]** to return back to previous screen.



**Data recording screen**


To record the process values of a certain time frame, a USB memory stick must be already installed by the maintenance personnel. Refer to section “7.2.7 USB memory stick for data log storage “ on page 55.


1. Set the recording time with the **CURSOR UP** and **CURSOR DOWN** buttons **[28, 29]**. The picture shows a setting of recording time for 2 hours and 30 minutes with a data sampling every 60 seconds.
2. Start the recording pressing the **CONFIRM** button **[31]** or abort the command pressing **EXIT** button **[30]**.

Description / explanation	
 <p>The screenshot shows a process flow diagram with several temperature and pressure points. A red circle with the number 32 is overlaid on the interface, pointing to a specific area.</p>	<ol style="list-style-type: none"> <li>3. The User Interface shows the time remaining to the end of recording.</li> <li>4. To manually stop the recording, press the <b>STOP DATA RECORDING</b> button [32].</li> </ol>
 <p>The screenshot shows a confirmation dialog box with a question mark icon and the text "Do you want to stop run log save?". There are two buttons: a blue 'X' button labeled 30 and a green checkmark button labeled 31.</p>	<ol style="list-style-type: none"> <li>5. Stop the recording pressing the <b>CONFIRM</b> button [31] or abort the command pressing the <b>EXIT</b> button [30].</li> <li>6. Once the recording is finished, the USB memory stick must be removed for further analysis.</li> </ol> <p><b>The USB memory stick must be removed only by the maintenance personnel.</b></p>


## 9.4.5 WARNING status

The WARNING is an anomalous event related to a malfunction of the device. The WARNING does not compromise the functioning of the device and the safety of operators.

NOTE	WARNING status
	<p>With the device in WARNING status the compressed air treatment may be improper.</p> <ul style="list-style-type: none"> <li>• Call immediately the maintenance personnel if one or more WARNINGS are detected.</li> <li>• Maintenance personnel will refer to section “16 <b>Troubleshooting</b>” on page 105.</li> </ul>


INFORMATION	Behaviour of the device in presence of a WARNING
	<ul style="list-style-type: none"> <li>• With the device stopped: <ul style="list-style-type: none"> <li>→ The triggering of one or more WARNINGS is not shown on the User Interface.</li> <li>→ With one or more active WARNINGS is always possible to start the device.</li> </ul> </li> <li>• After the starting command: <ul style="list-style-type: none"> <li>→ The device starts.</li> <li>→ The notification area of User Interface changes colour to orange and flashes.</li> <li>→ WARNING code and text are shown on the notification area.</li> <li>→ In case of more active WARNINGS, they are shown cyclically.</li> </ul> </li> <li>• With the device in normal running status: <ul style="list-style-type: none"> <li>→ The device remain in normal running status.</li> <li>→ The notification area of User Interface changes colour to orange and flashes.</li> <li>→ WARNING code and text are shown on the notification area.</li> <li>→ In case of more active WARNINGS, they are shown cyclically.</li> </ul> </li> <li>• Exceptions: <ul style="list-style-type: none"> <li>→ WARNING W11 appears and automatically clears without any user clearing action, with device stopped also.</li> <li>→ WARNING W5 appears and automatically clears by factory setting. It can be set to be cleared with the user clearing action.</li> <li>→ WARNING W2 doesn't stop the dryer by factory setting. It can be set: <ul style="list-style-type: none"> <li>○ to prevent the starting of the device, if stopped.</li> <li>○ to stop the device, if started.</li> </ul> </li> </ul> </li> </ul>


WARNING Code	Description / explanation
W1	Low Dew Point
W2	High Dew Point
W3	Probe Fault T2
W4	Probe Fault T3
W5	Drainer
W5 Dn nn	Drainer, specific faults
W6	Programmed Service
W7	High Discharge Temperature
W8	High Evaporating Pressure
W9	Low Condensing Pressure
W10	High Condensing Pressure
W11	Low Ambient Temperature
W12	High Ambient Temperature
W13	Probe Fault T5
W14	Low Inlet Temperature
W15	High Inlet Temperature

Illustration	Description / explanation
	<p><b>e.g. WARNING W3: PROBE FAULT T2</b></p> <ol style="list-style-type: none"> <li>1. The notification area changes colour to orange and flashes.</li> <li>2. WARNING code W3 and text <b>PROBE FAULT T2</b> are shown.</li> </ol>

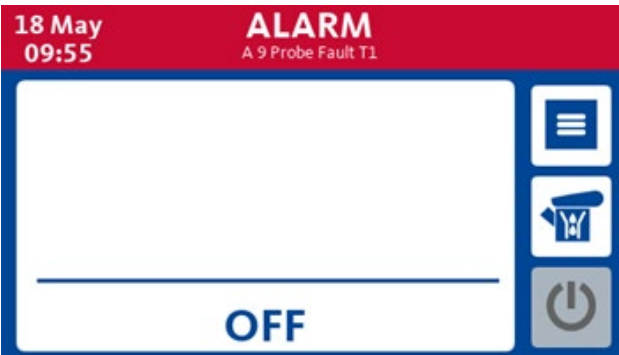
## 9.4.6 ALARM status

The ALARM is an anomalous event related to a malfunction or a fault of the device. The ALARM always stops the device to ensure the safety of the device and operators.

NOTE	ALARM status
	<p>With the device in ALARM status the compressed air will not be treated.</p> <ul style="list-style-type: none"> <li>• Call immediately the maintenance personnel if one or more ALARMS are detected.</li> <li>• Maintenance personnel will refer to section “16 <b>Troubleshooting</b>” on page 105.</li> </ul>

INFORMATION	Behaviour of the device in presence of an ALARM
	<ul style="list-style-type: none"> <li>• With the device stopped: <ul style="list-style-type: none"> <li>→ The triggering of one or more ALARMS is not shown on the User Interface.</li> <li>→ With one or more active ALARMS is not possible to start the device.</li> </ul> </li> <li>• After the starting command: <ul style="list-style-type: none"> <li>→ The device doesn't start.</li> <li>→ The notification area of User Interface shows ALARM, changes colour to red and flashes.</li> <li>→ ALARM code and text are shown on the notification area.</li> <li>→ In case of more active ALARMS, they are shown cyclically.</li> </ul> </li> <li>• With the device in normal running status: <ul style="list-style-type: none"> <li>→ The device immediately stops.</li> <li>→ The notification area of User Interface shows ALARM, changes colour to red and flashes.</li> <li>→ ALARM code and text are shown on the notification area.</li> <li>→ In case of more active ALARMS, they are shown cyclically.</li> </ul> </li> <li>• Exceptions: <ul style="list-style-type: none"> <li>→ ALARMS A6 and A14 appears with the device stopped also.</li> </ul> </li> </ul>

ALARM Code	Description / explanation
A1	High Pressure Switch
A2	Low Pressure Switch
A3	Low Evaporating Pressure
A4	High Discharge Temperature
A5	Compressor protection
A6	ICE
A7	Probe Fault LP
A8	Probe Fault HP
A9	Probe Fault T1
A10	Probe Fault T4
A11	Low Differential Pressure
A12	High Evaporating Pressure
A13	Low condensing Pressure
A14	Reversed Phases
A19	Fan
A E 1001	Power Unit Communication Lost

Illustration	Description / explanation
	<p><b>e.g. ALARM A9: PROBE FAULT T1</b></p> <ol style="list-style-type: none"> <li>1. The notification area shows <b>ALARM</b>, changes colour to red and flashes.</li> <li>2. ALARM code A9 and text <b>PROBE FAULT T1</b> are shown.</li> </ol>

## 9.4.7 ALARM history

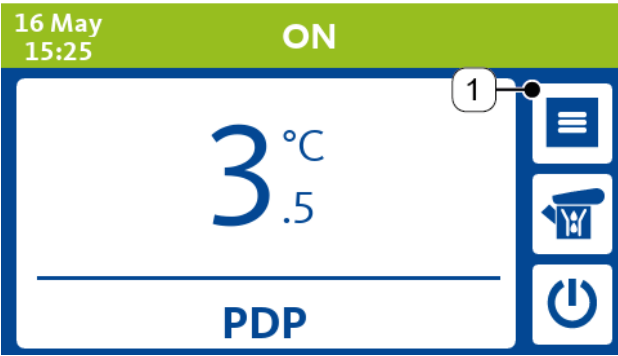

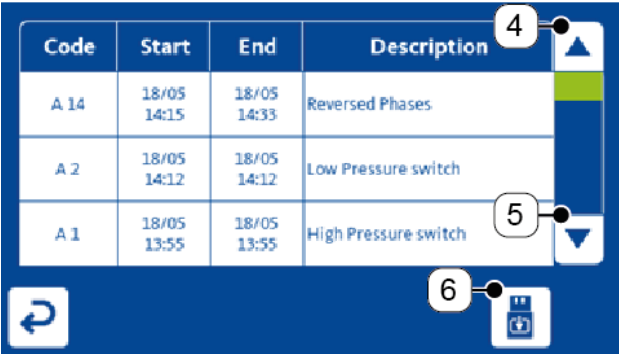
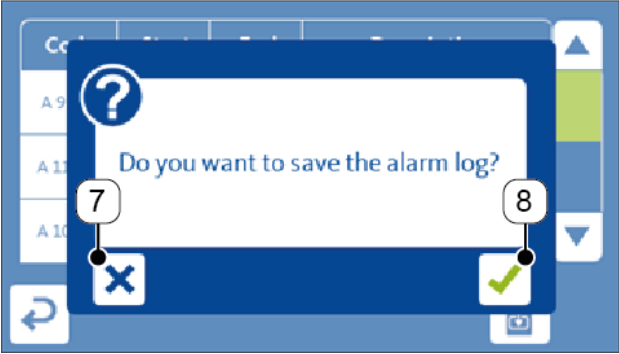
Illustration	Description / explanation
	<p><b>ALARM history</b></p> <ol style="list-style-type: none"> <li>1. With the device stopped or in normal running status, press the button <b>FUNCTIONS MENU</b> button [1] to access the functions menu screen.</li> </ol>
	<ol style="list-style-type: none"> <li>2. Press the <b>ALARM HISTORY</b> button [2] to access the alarm history file screen.</li> <li>3. From each subsequent screen is possible to return back to previous screen pressing the <b>BACK</b> button [3].</li> </ol>



Illustration	Description / explanation																
 <p>The screenshot shows a table with the following data:</p> <table border="1" data-bbox="204 371 794 622"> <thead> <tr> <th>Code</th> <th>Start</th> <th>End</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>A 14</td> <td>18/05 14:15</td> <td>18/05 14:33</td> <td>Reversed Phases</td> </tr> <tr> <td>A 2</td> <td>18/05 14:12</td> <td>18/05 14:12</td> <td>Low Pressure switch</td> </tr> <tr> <td>A 1</td> <td>18/05 13:55</td> <td>18/05 13:55</td> <td>High Pressure switch</td> </tr> </tbody> </table> <p>Callout 4 points to the up arrow button, callout 5 points to the down arrow button, and callout 6 points to the DATA RECORDING button (USB icon).</p>	Code	Start	End	Description	A 14	18/05 14:15	18/05 14:33	Reversed Phases	A 2	18/05 14:12	18/05 14:12	Low Pressure switch	A 1	18/05 13:55	18/05 13:55	High Pressure switch	<p>4. Use the <b>CURSOR UP</b> and <b>CURSOR DOWN</b> buttons [4, 5] to scroll the chronological list of ALARMS.</p> <p><b>ALARM history download</b></p> <p>To download the ALARM history, a USB memory stick must be already installed by the maintenance personnel. Refer to section “7.2.7 USB memory stick for data log storage “ on page 55.</p> <p>5. Press the <b>DATA RECORDING</b> button [6] to download the whole ALARM history.</p>
Code	Start	End	Description														
A 14	18/05 14:15	18/05 14:33	Reversed Phases														
A 2	18/05 14:12	18/05 14:12	Low Pressure switch														
A 1	18/05 13:55	18/05 13:55	High Pressure switch														
 <p>The screenshot shows a confirmation dialog box with the text: "Do you want to save the alarm log?". Callout 7 points to the 'X' (cancel) button, and callout 8 points to the checkmark (confirm) button.</p>	<p>6. Confirm the download pressing the <b>CONFIRM</b> button [8] or abort the command pressing <b>EXIT</b> button [7].</p> <p>7. Once the downloading is finished, remove the USB memory stick for the further analysis.</p> <p><b>The USB memory stick must be removed only by the maintenance personnel.</b></p>																

## 9.4.8 Remote mode


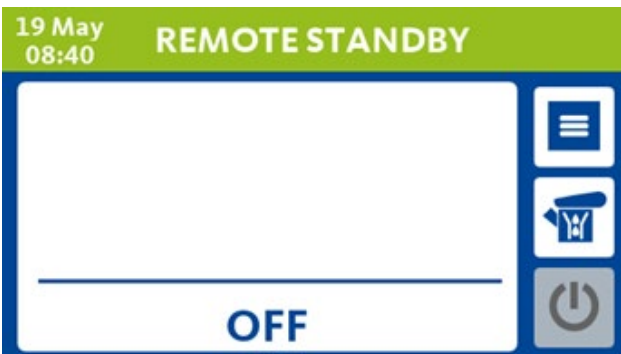

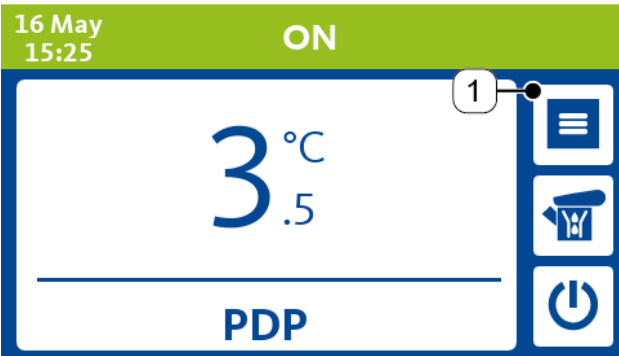

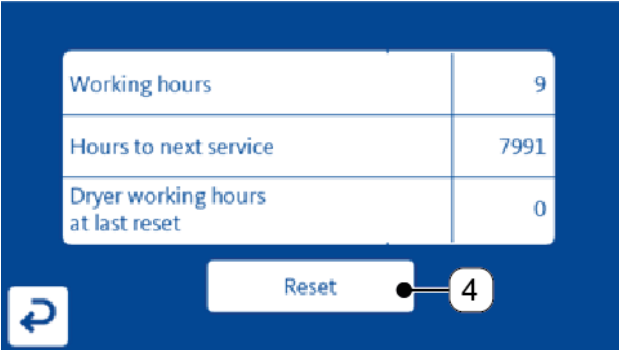
INFORMATION	Behaviour of the device in remote mode
	<ul style="list-style-type: none"> <li>• The device starts and stops by a remote command without any preliminary signalling on the local User Interface.</li> <li>• Operations not permitted on the local User Interface:</li> <li>• Starting and stopping of the device.</li> <li>• Operations permitted on the local User Interface:</li> <li>• Access to the functions menu.</li> <li>• Managing and clearing of WARNINGS and ALARMS.</li> <li>• Condensate drain test.</li> <li>• Operations permitted by remote command:</li> <li>• Starting and stopping of the device</li> <li>• Clearing of WARNINGS and ALARMS.</li> <li>• Exceptions               <ul style="list-style-type: none"> <li>→ WARNINGS and ALARMS can be cleared on the local User Interface or by remote command by factory setting. This feature can be changed to clear WARNINGS and ALARMS only on the local User Interface.</li> </ul> </li> </ul>

Illustration	Description / explanation
	<p><b>Remote mode</b></p> <ul style="list-style-type: none"> <li>• The device is stopped.</li> <li>• The User Interface shows <b>REMOTE STANDBY</b>.</li> </ul>
	<ul style="list-style-type: none"> <li>• The device is started.</li> <li>• The User Interface shows <b>REMOTE ON</b>.</li> </ul>

### 9.4.9 Operating hours and maintenance timer

Illustration	Description / explanation
	<p><b>Operating hours and maintenance timer</b></p> <ol style="list-style-type: none"> <li>1. With the device stopped or in normal running status, press the <b>FUNCTIONS MENU</b> button [1] to access the functions menu screen.</li> </ol>
	<ol style="list-style-type: none"> <li>2. Press the <b>OPERATING HOURS</b> button [2] to access the information screen.</li> <li>3. From each subsequent screen is possible to return back to previous screen pressing the <b>BACK</b> button [3].</li> </ol>
	<ol style="list-style-type: none"> <li>4. The User Interface shows: <ul style="list-style-type: none"> <li>- The total operating hours.</li> <li>- The remaining hours to the next maintenance work.</li> <li>- The operating hours from last reset of timer.</li> </ul> </li> </ol> <p><b>MAINTENANCE TIMER RESET button</b></p> <ol style="list-style-type: none"> <li>5. The <b>MAINTENANCE TIMER RESET</b> button [4] is used by the maintenance personnel only and, to avoid inappropriate operations, its function is protected by the security PIN. Refer to section “10.2.1 Reset of maintenance timer “ on page 88.</li> </ol>

## 9.4.10 System settings and automatic start/stop weekly timer

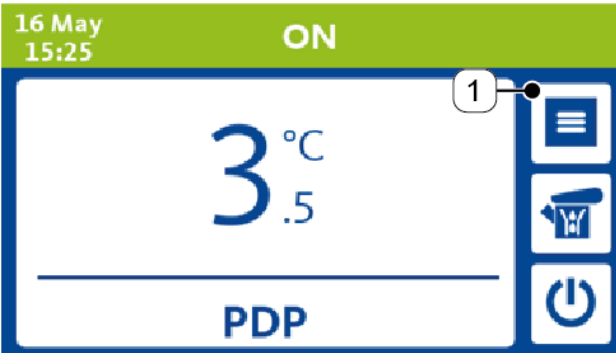


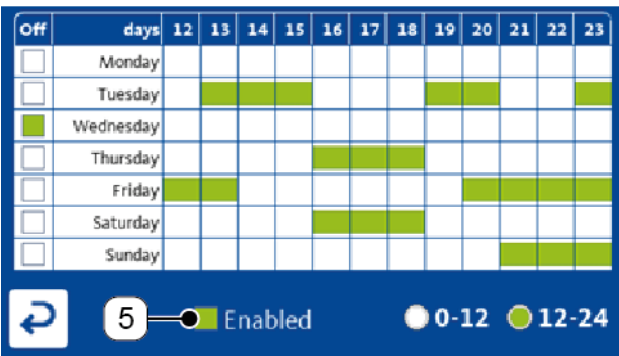
Illustration	Description / explanation
	<p><b>System settings and automatic start/stop weekly timer</b></p> <ol style="list-style-type: none"> <li>1. With the device stopped or in normal running status, press the <b>FUNCTIONS MENU</b> button [1] to access the functions menu screen.</li> </ol>
	<ol style="list-style-type: none"> <li>2. Press the <b>SYSTEM SETTINGS</b> button [2] to access the system settings screen.</li> <li>3. From each subsequent screen is possible to return back to previous screen pressing the <b>BACK</b> button [3].</li> </ol>
	<ol style="list-style-type: none"> <li>4. The User Interface shows: <ul style="list-style-type: none"> <li>→ System language</li> <li>→ Current date</li> <li>→ Current time</li> <li>→ Date format</li> <li>→ Time format</li> <li>→ Units of temperature and pressure</li> </ul> </li> <li>5. Touch the desired function and change / update the settings / values.</li> </ol> <p><b>Weekly timer setup</b></p> <ol style="list-style-type: none"> <li>6. Press the <b>TIMER SETUP</b> button [4] to access the weekly timer screen.</li> </ol>

Illustration		Description / explanation
 <p>Green colour areas = Programmed running time and timer enabled.</p> <p>Light blue areas = Programmed running time and timer disabled.</p> <p>White areas = device stopped.</p>		<ol style="list-style-type: none"> <li>7. Touch the screen to set the automatic start / stop time for the device. The programmed running time is highlighted by colouring the selected areas in green or blue.</li> <li>8. Select / unselect the boxes on the left of the screen to exclude / include one or more days in the programming.</li> <li>9. Select / unselect the <b>ENABLED</b> box [5] to enable / disable the timer.</li> </ol>

### 9.4.11 Spare parts list of device

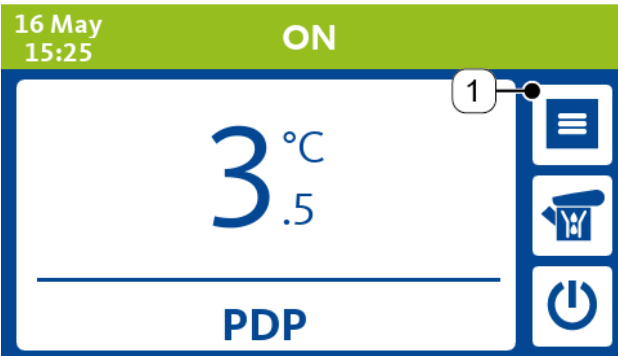

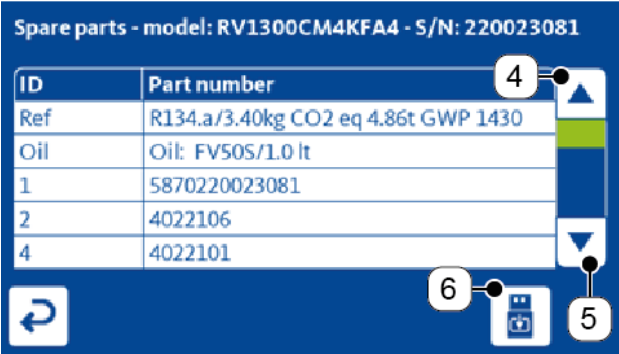
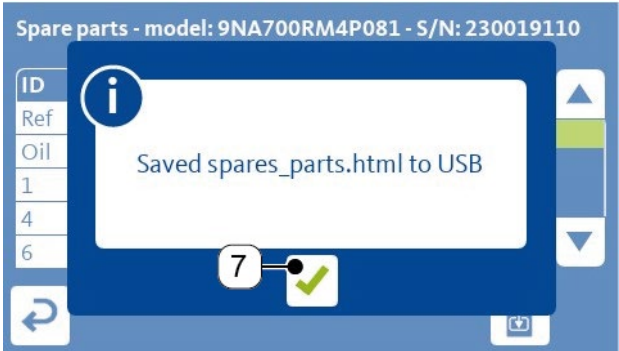

Illustration	Description / explanation
	<p><b>Spare parts list of device</b></p> <ol style="list-style-type: none"> <li>1. With the device stopped or in normal running status, press the <b>FUNCTIONS MENU</b> button [1] to access the functions menu screen.</li> </ol>
	<ol style="list-style-type: none"> <li>2. Press the <b>SPARE PARTS LIST</b> button [2] to access the screen of spare parts list of the device.</li> <li>3. From each subsequent screen is possible to return back to previous screen pressing the <b>BACK</b> button [3].</li> </ol>

Illustration	Description / explanation
	<p>4. Use the <b>CURSOR UP</b> and <b>CURSOR DOWN</b> buttons [4, 5] to scroll the spare parts list.</p> <p><b>Spare parts list download</b></p> <p>To download the spare parts list, a USB memory stick must be already installed by the maintenance personnel. Refer to section “7.2.7 USB memory stick for data log storage “ on page 55.</p> <p>5. Press the <b>DATA RECORDING</b> button [6] to download the spare parts list.</p>
	<p>6. Once the downloading is finished, press the <b>CONFIRM</b> button [7] and remove the USB memory stick for the further analysis.</p> <p><b>The USB memory stick must be removed only by the maintenance personnel.</b></p>

### 9.4.12 User parameters

NOTE	Incorrect setting of user parameters
	<p>The incorrect setting of user parameters can lead to unexpected behaviour of the device like improper air treatment due to wrong dew point, unexpected start and stop, unexpected signalling of one or more warnings / alarms, condensate drain malfunction, breakdown of Modbus communication.</p> <ul style="list-style-type: none"> <li>• Default user parameters must be modified with awareness, consistently with the specifications and the requirements of the compressed air plant.</li> </ul>

Code	Description / explanation	Value range	Accuracy	Default value
<b>Ton</b>	<b>Time drain ON</b> Condensate drain, solenoid valve activation time. 0 = <b>BEKOMAT</b> ® drain installed	0 ... 20 seconds	1	0
<b>Toff</b>	<b>Time drain OFF</b> Condensate drain, solenoid valve pause time.	0 ... 20 minutes	1	1
<b>DrC</b>	<b>Dryer Remote Control</b> <b>LOCAL</b> = local <b>START-STOP</b> mode <b>REMOTE</b> = remote <b>START-STOP</b> via digital input signal <b>MODBUS</b> = remote <b>START-STOP</b> via Modbus RTU.	LOCAL, REMOTE, MODBUS	-	LOCAL
<b>HdA</b>	<b>High Dew Point Alarm</b> Threshold temperature of Warning <b>W2</b>	0,0 ... 25,0 °C or 32,0 ... 77,0 °F	0,1	20,0 °C or 68,0 °F
<b>Hdd</b>	<b>High Dew Point Delay</b> Delay time of triggering of Warning <b>W2</b>	1 ... 20 minutes	1	15
<b>HdS</b>	<b>High Dew Point alarm STOP</b> Behaviour of device during normal running status with Warning <b>W2</b> active <b>NO</b> = device doesn't stops <b>YES</b> = device stops	NO, YES	-	NO
<b>SrV</b> <b>(*1)</b>	<b>Service setting</b> Setting of maintenance timer 0,0 = timer disabled	0,0 ... 12,0 (x 1000) hours	0,1	8,0
<b>Scl</b>	<b>Units</b> °C = temperature in °C and pressure in bar °F = temperature in °F and pressure in psi	°C, °F	-	°C

**(\*1)** With advanced parameter **PSPR** = YES, the parameter **SrV** can be modified only after typing the security PIN.



Code	Description / explanation	Value range	Accuracy	Default value
<b>AS</b>	<p><b>Auto Restart</b></p> <p>Automatic restart after a voltage drop</p> <p>NO = device must be intentionally restarted</p> <p>YES = device restarts automatically, if it was running before voltage drop</p>	NO, YES	-	NO
<b>Ard</b>	<p><b>Auto Reset service drain</b></p> <p>Enables / disables the automatic clearing of Warning <b>W5</b></p> <p>YES = automatic clearing</p> <p>NO = manual clearing</p>	YES, NO	-	YES
<b>ACM</b>	<p><b>Alarm Contact Management</b></p> <p>Selects the triggering logic of the WARNING / ALARM contact</p> <p>1 = any Alarm and Warning <b>W2</b></p> <p>2 = any Alarm and any Warning</p> <p>3 = any Alarm</p> <p>4 = any Alarm and Warnings <b>W2</b> and <b>W11</b></p>	1, 2, 3, 4	-	1
<b>IPA</b>	<b>Modbus address</b>	1 ... 255	1	1
<b>DPmin</b>	<p><b>Dew Point at 4mA</b></p> <p>Minimum Dew Point value that sets the analogue output AO3 to 4 mA</p>	-10,0 ... 10,0 °C or 14,0 ... 50,0 °F	0,1	-10,0 °C or 14,0 °F
<b>DPmax</b>	<p><b>Dew Point at 20mA</b></p> <p>Maximum Dew Point value that sets the analogue output AO3 to 20 mA</p>	25,0 ... 50,0 °C or 77,0 ... 122,0 °F	0,1	40,0 °C or 104,0 °F

**Advanced parameters, protected by security PIN**

<b>Code</b>	<b>Description / explanation</b>	<b>Value range</b>	<b>Accuracy</b>	<b>Default value</b>
<b>RbP (*2)</b>	<b>Reset by Password</b> Clearing of WARNINGS / ALARMS NO = clearing allowed locally (by User Interface) and remotely YES = clearing allowed only locally (by User Interface)	NO, YES	-	NO
<b>NoA (*3)</b>	<b>Number of Alarms</b> Maximum number of local clearings allowed within the time frame defined in <b>TtPR</b>	1 ... 10	1	1
<b>TtPR (*3) (*4)</b>	<b>Time to Possible Reset</b> Time frame within which the maximum number of local clearings defined in <b>NoA</b> can be performed	0 ... 24 hours	1	1
<b>PSPR</b>	<b>Programmed Service Protected Reset</b> Enables / disables the security PIN to clear the Warning <b>W6</b> NO = clearing of Warning allowed without typing the security PIN YES = clearing of Warning allowed only after typing the security PIN	NO, YES	-	NO

(\*2) With **RbP** = NO, the maximum number of remote clearings allowed within 60 minutes is 3.

(\*3) Effective only with **RbP** = YES.

(\*4) With **TtPR** = 0, when **NoA** setting is reached, the device asks the typing of the security PIN to clear a WARNING / ALARM.

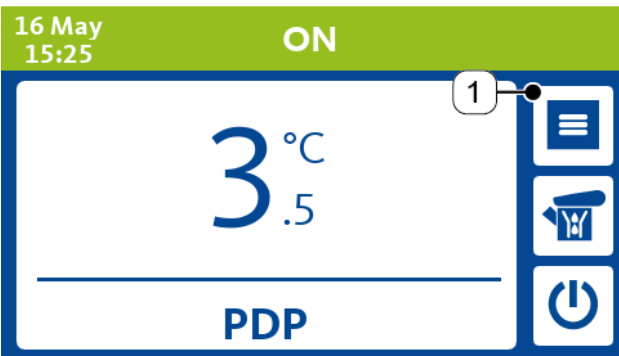

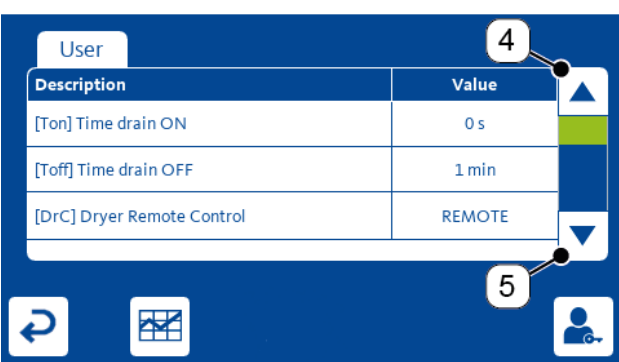
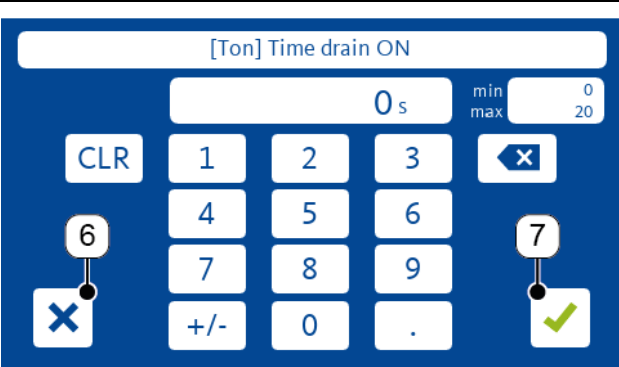
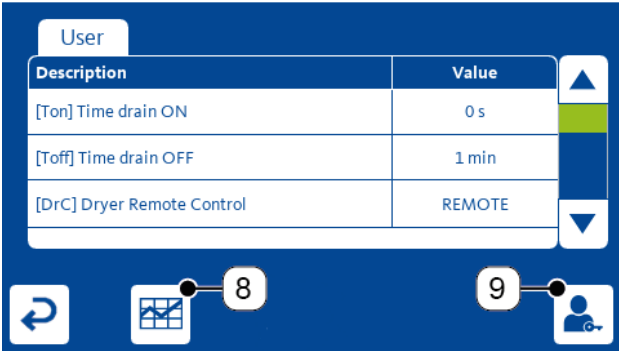

Illustration	Description / explanation
	<p><b>Modification of a parameter</b></p> <ol style="list-style-type: none"> <li>1. With the device stopped or in normal running status, press the <b>FUNCTIONS MENU</b> button [1] to access the functions menu screen.</li> </ol>
	<ol style="list-style-type: none"> <li>2. Press the <b>PROCESS PARAMETERS</b> button [2] to access the user parameters screen.</li> <li>3. From each subsequent screen is possible to return back to previous screen pressing the <b>BACK</b> button [3].</li> </ol>
	<ol style="list-style-type: none"> <li>4. Use the <b>CURSOR UP</b> and <b>CURSOR DOWN</b> buttons [4, 5] to scroll the list of parameters.</li> <li>5. Touch the screen on the parameter to be changed then select the desired value.</li> </ol>
	<ol style="list-style-type: none"> <li>6. If the parameter requires a numerical value, set the new value using the numerical keypad.</li> <li>7. Confirm the new setting pressing the <b>CONFIRM</b> button [7] or abort the command pressing the <b>EXIT</b> button [6].</li> </ol>

Illustration	Description / explanation
	<p><b>ADVANCED PROCESS PARAMETERS button</b></p> <p>8. Press the <b>ADVANCED PROCESS PARAMETERS</b> button [9] to access the advanced parameters screen. To avoid inappropriate operations, the access is protected by the security PIN.</p> <p><b>PROCESS VALUES HISTORY button</b></p> <p>9. Press the <b>PROCESS VALUES HISTORY</b> button [8] to access the compressor envelope screen. To avoid inappropriate operations, the access is protected by the security PIN.</p>




### 9.4.13 Modbus function


The Modbus function can be used to manage the operating functions and device information.


INFORMATION	Modbus configuration
	<p>For further information on the Modbus function, refer to the section “1.3 Other applicable documents” on page 7.</p>


## 10. Maintenance


### 10.1 Warning notices


<p><b>DANGER</b></p>	<p><b>Pressurised system</b></p>
	<p>There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.</p>
	<ul style="list-style-type: none"> <li>• Before starting work, depressurise the pressurised system and secure it against unintentional pressurisation.</li> <li>• Set up a safety area around the working area during assembly, installation, maintenance and repair work.</li> <li>• Assemble all pipes and hoses free of mechanical stress.</li> <li>• Before pressurisation, check all system connections for leak tightness and tighten if necessary.</li> <li>• Slowly pressurise the system.</li> <li>• Avoid pressure blows and high differential pressures.</li> </ul>
<p><b>DANGER</b></p>	<p><b>Electric voltage</b></p>
	<p>There is a danger of death or serious injuries following contact with components which are in contact with electric voltage. Malfunction and device failure as well as material damage can occur.</p>
	<ul style="list-style-type: none"> <li>• Only carry out installation, maintenance and repair work on the product and accessories when they have been disconnected and secured against being switched back on again unintentionally.</li> <li>• Set up a safety area around the working area during assembly, installation, maintenance and repair work.</li> </ul>
<p><b>DANGER</b></p>	<p><b>Use of incorrect spare parts, accessories or materials</b></p>
	<p>Use of the incorrect spare parts, accessories or materials, as well as auxiliary and operating materials, may result in death or serious injury. Malfunctions and device failure as well as material damage can occur.</p>
	<ul style="list-style-type: none"> <li>• Only use undamaged original parts, auxiliary and operating materials which are specified by the manufacturer to complete all work.</li> <li>• Only use the materials approved for the respective application and suitable tools in proper working order.</li> <li>• Only use pipes that are free of dirt, damage and corrosion.</li> <li>• Only use electric components and materials that comply with regionally applicable specifications and regulations for electrical safety.</li> </ul>

<b>WARNING</b>	<b>Refrigerant fluid</b>
	The incorrect handling of refrigerant fluid may result in serious injury. Malfunctions and device failure as well as environment damage can occur. Refer to the indications on the type plate on the product as regards the type and amount of refrigerant fluid charged on the product.
	<ul style="list-style-type: none"> <li>All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in refrigeration engineering and customer service.</li> </ul>

<b>WARNING</b>	<b>Hot surfaces</b>
	Contact with hot surfaces during work on the product and accessories can lead to burns, accidents and personal injury.
	<ul style="list-style-type: none"> <li>Switch the product OFF before all maintenance work and allow it to cool.</li> </ul>


<b>WARNING</b>	<b>Insufficient qualification</b>
	If personnel carrying out work on the product and accessories is not properly qualified, this may result in accidents, personal injury and damage to property and/or impaired operation.
	<ul style="list-style-type: none"> <li>All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in customer service.</li> </ul>

<b>WARNING</b>	<b>Ingress of moisture or foreign bodies</b>
	Removing components or opening the product may allow water or foreign bodies to enter the opened product. Ingress of water or foreign bodies can lead to accidents, personal injury and damage to property as well as impairments in operation.
	<ul style="list-style-type: none"> <li>Protect the product from splashing water or moisture.</li> <li>Only open the product or remove components in a dry place.</li> <li>Do not insert any foreign bodies into openings of the product.</li> <li>Keep all contact surfaces and openings free of dirt and moisture.</li> </ul>

<b>CAUTION</b>	<b>Condensate</b>
	Contact with condensate containing substances which endanger health and the environment can pose a health hazard, causing irritation and/or damage to the eyes, skin and mucous membranes.
	<ul style="list-style-type: none"> <li>Use suitable protective equipment when handling condensate.</li> <li>Pick up and dispose of any leaking or spilled condensate in accordance with applicable regional laws and requirements.</li> </ul>

## 10.2 Maintenance work

For maintenance work to be carried out, the following protective equipment must be always worn and the preparatory tasks must have been completed.

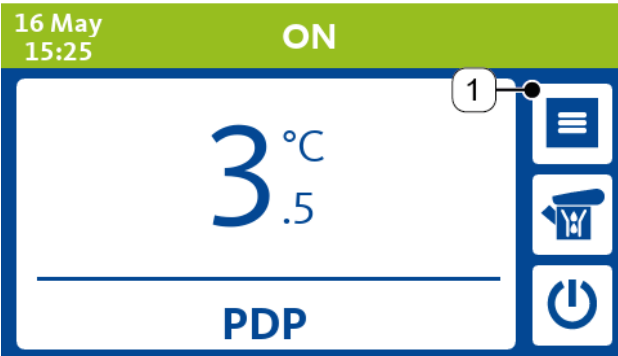

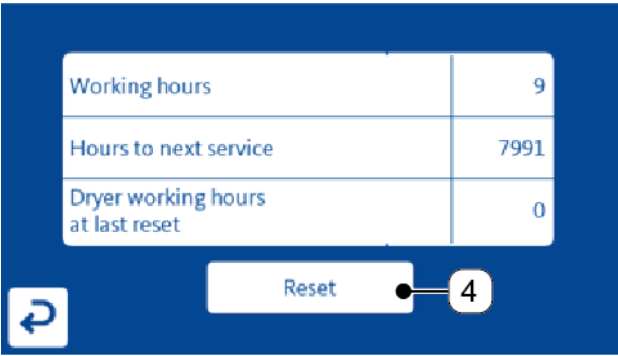

Prerequisites		
Tools	Material	Protective equipment
<ul style="list-style-type: none"> <li>No tool necessary</li> </ul>	<ul style="list-style-type: none"> <li>No material necessary</li> </ul>	

Preparatory tasks	
1.	The procedure on section “13 Decommissioning” on page 97 was carried out.

Maintenance work	Interval
<ul style="list-style-type: none"> <li>Clean the condenser using an air jet, max. 2 bar (29 psi), inside out.</li> </ul>	200 hours or monthly, which occurs first.
<ul style="list-style-type: none"> <li>Check the tightness of all electrical connections.</li> <li>Check the integrity of insulation of electrical cables.</li> <li>Check the integrity of electrical clamps.</li> <li>Check the integrity of fasteners of electrical equipment.</li> <li>Check the refrigeration circuit for signs of oil and/or refrigerant leaks.</li> <li>Check the integrity of rubber hose of condensate drain.</li> </ul>	1000 hours or annually, which occurs first.
<ul style="list-style-type: none"> <li>Check / clean / replace the condensate drain.</li> </ul>	8000 hours.

Final tasks	
1.	Follow the procedure on section “8 Commissioning” on page 56.
2.	Follow the procedure on section “10.2.1 Reset of maintenance timer” on page 88.




### 10.2.1 Reset of maintenance timer


Illustration	Description / explanation
	<p><b>Reset of maintenance timer</b></p> <ol style="list-style-type: none"> <li>1. With the device stopped or in normal running status, press the <b>FUNCTIONS MENU</b> button [1] to access the functions menu screen.</li> </ol>
	<ol style="list-style-type: none"> <li>2. Press the <b>OPERATING HOURS</b> button [2] to access the information screen.</li> <li>3. From each subsequent screen is possible to return back to previous screen pressing the <b>BACK</b> button [3].</li> </ol>
	<ol style="list-style-type: none"> <li>4. Press the <b>MAINTENANCE TIMER RESET</b> button [4] to reset the maintenance timer.</li> </ol> <p><b>This button is used by the maintenance personnel only and to avoid inappropriate operations, its function is protected by the security PIN.</b></p>
	<ol style="list-style-type: none"> <li>5. Confirm the operation pressing the <b>CONFIRM</b> button [6] or abort the command pressing the <b>EXIT</b> button [5].</li> </ol>





# 11. Adjustments

## 11.1 Warning notices

<b>DANGER</b>	<b>Pressurised system</b>
	<p>There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.</p>
	<ul style="list-style-type: none"> <li>• Set up a safety area around the working area during assembly, installation, maintenance and repair work.</li> <li>• Slowly pressurise the system.</li> </ul>
<b>DANGER</b>	<b>Electric voltage</b>
	<p>There is a danger of death or serious injuries following contact with components which are in contact with electric voltage. Malfunction and device failure as well as material damage can occur.</p>
	<ul style="list-style-type: none"> <li>• Set up a safety area around the working area during assembly, installation, maintenance and repair work.</li> </ul>
<b>WARNING</b>	<b>Refrigerant fluid</b>
	<p>The incorrect handling of refrigerant fluid may result in serious injury. Malfunctions and device failure as well as environment damage can occur. Refer to the indications on the type plate on the product as regards the type and amount of refrigerant fluid charged on the product.</p>
	<ul style="list-style-type: none"> <li>• All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in refrigeration engineering and customer service.</li> </ul>


<b>WARNING</b>	<b>Hot surfaces</b>
	Contact with hot surfaces during work on the product and accessories can lead to burns, accidents and personal injury.
	<ul style="list-style-type: none"> <li>• Pay attention to the hot surfaces during the adjustment work.</li> </ul>

<b>WARNING</b>	<b>Insufficient qualification</b>
	If personnel carrying out work on the product and accessories is not properly qualified, this may result in accidents, personal injury and damage to property and/or impaired operation.
	<ul style="list-style-type: none"> <li>• All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in customer service.</li> </ul>


<b>WARNING</b>	<b>Ingress of moisture or foreign bodies</b>
	Removing components or opening the product may allow water or foreign bodies to enter the opened product. Ingress of water or foreign bodies can lead to accidents, personal injury and damage to property as well as impairments in operation.
	<ul style="list-style-type: none"> <li>• Protect the product from splashing water or moisture.</li> <li>• Only open the product or remove components in a dry place.</li> <li>• Do not insert any foreign bodies into openings of the product.</li> <li>• Keep all contact surfaces and openings free of dirt and moisture.</li> </ul>


## 11.2 Adjustment work

For adjustment work to be carried out, the following protective equipment must be always worn.

Prerequisites		
Tools	Material	Protective equipment
<ul style="list-style-type: none"> <li>• No tool necessary</li> </ul>	<ul style="list-style-type: none"> <li>• No material necessary</li> </ul>	

### 11.2.1 Adjustment of hot gas by-pass valve

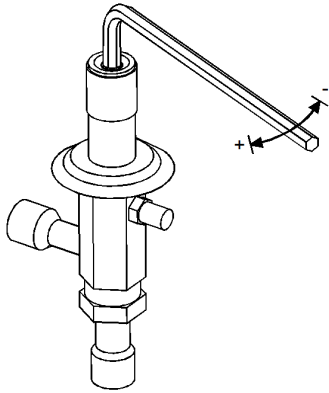
<b>NOTE</b>	<b>Schrader service valve</b>
	<p>Each time a pressure gauge is connected to the Schrader service valve, a part of refrigerant fluid is discharged in the environment.</p> <ul style="list-style-type: none"> <li>• Connect the pressure gauge to the Schrader service valve only in case of real malfunction of the refrigerant circuit.</li> </ul>

<b>INFORMATION</b>	<b>Factory setting of hot gas by-pass valve</b>
	<p>The hot gas by-pass valve is adjusted by the manufacturer during the testing phase of the device and the adjusting screw is sealed with yellow sealant.</p> <p>In case of malfunction of refrigerant circuit, is possible to recalibrate the by-pass valve.</p>

### Preparatory tasks

1.	The device is stopped.
2.	Inlet / outlet air valves are closed. Compressed air does not flow into the heat exchanger.
3.	Service panels are removed.
4.	A low pressure gauge is connected to the Schrader service valve on the low pressure side of refrigerant circuit.
5.	A set of hex keys is available.


### Adjustment work


Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>1. Start the device and wait few minutes.</li> <li>2. Turn the adjustment screw clockwise to increase the evaporation pressure or counterclockwise to reduce it.</li> <li>3. Wait for the evaporation pressure to stabilize, until the set point value 2,3 bar(g), +0,1/-0 bar (33.4 psi(g) +1.5/-0 psi) is reached.</li> </ol>

### Final tasks

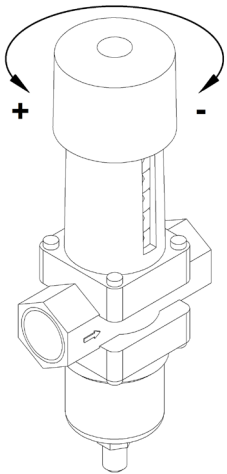
1.	Disconnect the low pressure gauge from the refrigerant circuit.
2.	Reinstall the service panels.
3.	Slowly open the air inlet valve.
4.	Slowly open the air outlet valve.

### 11.2.2 Adjustment of cooling water regulating valve, water-cooled models

<b>NOTE</b>	<b>Schrader service valve</b>
	<p>Each time a pressure gauge is connected to the Schrader service valve, a part of refrigerant fluid is discharged in the environment.</p> <ul style="list-style-type: none"> <li>• Connect the pressure gauge to the Schrader service valve only in case of real malfunction of the refrigerant circuit.</li> </ul>

<b>INFORMATION</b>	<b>Factory setting of cooling water regulating valve</b>
	<p>The cooling water regulating valve is adjusted by the manufacturer during the testing phase with a setup that covers the majority of operating conditions. In case of malfunction of refrigerant circuit due to extreme operating conditions, is possible to recalibrate the valve.</p>

Preparatory tasks	
1.	The device is stopped.
2.	Inlet / outlet air valves are closed. Compressed air does not flow into the heat exchanger.
3.	Service panels are removed.
4.	Cooling water supply is available.
5.	A high pressure gauge is connected to the Schrader service valve on the high pressure side of refrigerant circuit.

Adjustment work	
Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>1. Start the device and wait few minutes.</li> <li>2. Turn the adjustment knob clockwise to reduce the condensing pressure or counterclockwise to increase it.</li> <li>3. Wait for the condensing pressure to stabilize, until the set point value 10 bar(g), +0,5/-0,5 bar (145.0 psi(g) +7.3/-7.3 psi) is reached.</li> </ol>

**Final tasks**

1.	Disconnect the high pressure gauge from the refrigerant circuit.
2.	Reinstall the service panels.
3.	Slowly open the air inlet valve.
4.	Slowly open the air outlet valve.

## 12. Spare parts

### 12.1 Order information


The spare parts list of each device is printed on a sticker applied on the internal side of the rear panel of the device. Each spare part is identified with its callout No. referred to section “3.1 Product overview” on page 19 and its Material Number.

**BEKO TECHNOLOGIES** customer service requires the following data for an inquiry or order:

- Product name and installation size (see type plate)
- Serial number (see type plate)
- Material number and designation of the part
- Required quantity of part to be delivered

The contact data for the **BEKO TECHNOLOGIES** customer service are listed in section “1.1 Contact” on page 6.

## 12.2 Spare parts

INFORMATION	Callouts
	All callouts [#] mentioned in the following are referred to the section “3.1 Product overview” on page 19.

No.	Designation
[1]	Heat exchanger
[4]	High pressure switch HPS
[6]	Refrigerant compressor
[7]	Hot gas by-pass valve
[8]	Condenser
[9]	Cooling fan
[10]	Filter of refrigerant fluid
[12]	Temperature probe BT1
[13]	Condensate drain service valve
[17.1]	Electronic Control Unit
[17.2]	User Interface
[18]	Water condenser
[19]	Water regulating valve
[21]	Condensate drain
[22]	<b>ON-OFF</b> switch
[37]	Pressure transducer BHP
[39]	Pressure transducer BLP






## 13. Decommissioning

The product must be decommissioned during longer periods of standstill, for example in the case of:


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

### 13.1 Warning notices

<b>DANGER</b>	<b>Pressurised system</b>
	<p>There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.</p>
	<ul style="list-style-type: none"> <li>• Set up a safety area around the working area before starting work.</li> </ul>
<b>DANGER</b>	<b>Electric voltage</b>
	<p>There is a danger of death or serious injuries following contact with components which are in contact with electric voltage. Malfunction and device failure as well as material damage can occur.</p>
	<ul style="list-style-type: none"> <li>• Set up a safety area around the working area before starting work.</li> </ul>
<b>WARNING</b>	<b>Insufficient qualification</b>
	<p>If personnel carrying out work on the product and accessories is not properly qualified, this may result in accidents, personal injury and damage to property and/or impaired operation.</p>
	<ul style="list-style-type: none"> <li>• All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in customer service.</li> </ul>

## 13.2 Decommissioning work




For decommissioning work to be carried out, the following protective equipment must be always worn.


Prerequisites		
Tools	Material	Protective equipment
<ul style="list-style-type: none"> <li>No tool necessary</li> </ul>	<ul style="list-style-type: none"> <li>No material necessary</li> </ul>	


Decommissioning work	
1.	Slowly close the air inlet valve and secure it against unintentional opening.
2.	Slowly close the air outlet valve and secure it against unintentional opening.
3.	Wait few minutes and then stop the product pushing for 3 seconds the <b>START-STOP</b> button on the User Interface. Refer to section “9.3 Overview of User Interface after power ON” on page 60.
4.	Water-cooled models: interrupt the cooling water supply and secure it against unintentional opening.
5.	Turn off the power acting on the <b>ON-OFF</b> switch. Refer to section “3.1 Product overview” on page 19.
6.	Interrupt the mains supply and secure it against being established back on again unintentionally.
7.	Depressurise the air circuit on the product.
8.	Depressurise the water circuit on the product.

## 14. Disassembly

### 14.1 Warning notices


<b>DANGER</b>	<b>Pressurised system</b>
	<p>There is a danger of death or serious personal injury resulting from contact with fast or suddenly escaping fluids or through bursting system parts.</p>
	<ul style="list-style-type: none"> <li>• Set up a safety area around the working area before starting work.</li> <li>• Before starting work, depressurise the pressurised system and secure it against unintentional pressurisation.</li> </ul>
<b>DANGER</b>	<b>Electric voltage</b>
	<p>There is a danger of death or serious injuries following contact with components which are in contact with electric voltage.</p>
	<ul style="list-style-type: none"> <li>• Set up a safety area around the working area before starting work.</li> <li>• Before starting work, disconnect the product and accessories and secure them against being switched back on again unintentionally.</li> </ul>
<b>WARNING</b>	<b>Refrigerant fluid</b>
	<p>The incorrect handling of refrigerant fluid may result in serious injury and environment damage can occur. Refer to the indications on the type plate on the product as regards the type and amount of refrigerant fluid charged on the product.</p>
	<ul style="list-style-type: none"> <li>• All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in refrigeration engineering and customer service.</li> <li>• Pick up the refrigerant fluid in accordance with applicable regional laws and requirements.</li> </ul>

<b>WARNING</b>	<b>Insufficient qualification</b>
	If personnel carrying out work on the product and accessories is not properly qualified, this may result in accidents, personal injury and damage to property.
	<ul style="list-style-type: none"><li>• All work on the product and accessories must be carried out exclusively by skilled technical personnel specializing in refrigeration engineering and customer service.</li></ul>

<b>CAUTION</b>	<b>Condensate</b>
	Contact with condensate containing substances which endanger health and the environment can pose a health hazard, causing irritation and/or damage to the eyes, skin and mucous membranes.
	<ul style="list-style-type: none"><li>• Use suitable protective equipment when handling condensate.</li><li>• Pick up and dispose of any leaking or spilled condensate in accordance with applicable regional laws and requirements.</li></ul>

## 14.2 Disassembly work

For disassembly work to be carried out, the following protective equipment must be always worn and the preparatory tasks must have been completed.


Prerequisites		
Tools	Material	Protective equipment
<ul style="list-style-type: none"> <li>No tool necessary</li> </ul>	<ul style="list-style-type: none"> <li>No material necessary</li> </ul>	


Preparatory tasks	
1.	The procedure on section “13 Decommissioning” on page 97 was carried out.
2.	Have the necessary tools ready.


Disassembly work	
1.	Disconnect the power cable from the protective contact socket / terminal box.
2.	Uninstall collision protection, if was installed.
3.	Disconnect the condensate drain hose to the drain collection line.
4.	Water-cooled models: disconnect the threaded connection to the cooling water line.
5.	Disconnect the threaded connection to the compressed air line.
6.	Remove fixing bolts, if the product was fixed on the floor.
7.	Remove the service panels on the product.
8.	Remove from the place of installation all disassembled parts and accessories.
9.	Remove the refrigerant fluid from the refrigerant circuit.
10.	Clean the installation area from any fluid or oil leakage occurred during the disassembly work.

# 15. Disposal

## 15.1 Warning notices


NOTE	Inappropriate disposal
	<p>Inappropriate disposal of components, parts, operating and auxiliary materials, refrigerant fluid as well as cleaning media can cause environmental damage.</p>
	<ul style="list-style-type: none"> <li>• Dispose of all components, parts, operating and auxiliary materials, refrigerant fluid as well as cleaning media professionally and in accordance with all nationally and locally applicable regulations and standards.</li> <li>• Do not discharge to atmosphere the refrigerant fluid.</li> <li>• Dispose of electrical and electronic components through a specialist waste disposal company.</li> <li>• In case of doubt, consult a local disposal company before disposal.</li> </ul>

NOTE	Inappropriate storage
	<p>Inappropriate storage of components, parts, operating and auxiliary materials, refrigerant fluid as well as cleaning media can cause environmental damage.</p>
	<ul style="list-style-type: none"> <li>• Store all components, parts, operating and auxiliary materials, refrigerant fluid as well as cleaning media properly and in accordance with all nationally and locally applicable regulations and standards.</li> </ul>

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

## 15.2 Disposal of materials and components

For disposal work to be carried out, the following protective equipment must be always worn and the preparatory tasks must have been completed.

Prerequisites		
Tools	Material	Protective equipment
<ul style="list-style-type: none"> <li>No tool necessary</li> </ul>	<ul style="list-style-type: none"> <li>No material necessary</li> </ul>	



Preparatory tasks	
1.	The procedure on section “14 Disassembly” on page 99 was carried out.

Operating / auxiliary material	Material	EU waste code
Adsorption materials, filter materials, cleaning wipes and protective clothing – contaminated by oils or other hazardous substances	-	15 02 02
Adsorption materials, filter materials, cleaning wipes and protective clothing – with the exception of those classified by 15 02 02	-	15 02 03
Packaging	Paper / cardboard	15 01 01
	Plastic	15 01 02
	Wood	15 01 03

Component	Material	EU waste code
Whole device (with or without refrigerant fluid)	-	16 02 11
Refrigerant fluid	-	14 06 01
Refrigerant compressor (sealed, with oil included)	-	16 02 15
Filter of refrigerant fluid (sealed)	-	16 02 15
Tubes of refrigerant circuit	Copper	17 04 01
Condenser (tubes)		
Condenser (frame)	Iron / carbon steel	17 04 05
Fan grid		
Hot gas by-pass valve		
Panels, mounting frame, supports, screws		
Heat exchanger	Aluminium	17 04 02
Condenser (fins)		
Fan blade		
Complete cooling fan	Electric / electronic components with their plastic parts	16 02 16
Fan motor (with capacitor removed)		
Temperature probes		
Pressure transducers		
Pressure switches		
ON-OFF switch		
Electronic Control Unit / User Interface		
Condensate drain		
Other electric / electronic components		
Capacitor (removed from motor of cooling fan)	-	16 02 15
Electrical wires	PVC / copper	17 04 11
Insulating material	Elastomeric foam	17 06 04
Other plastic parts	Plastic	15 01 02
Condensate drain hose	Contaminated plastic / rubber	16 01 21


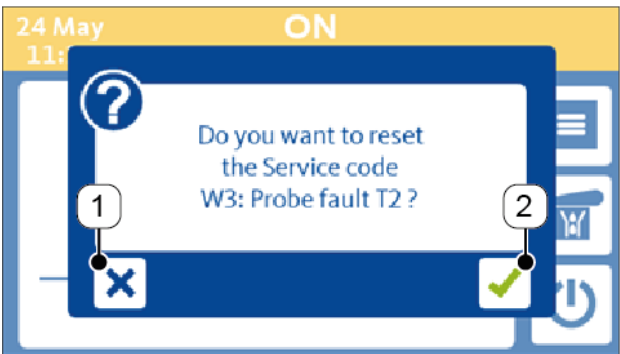


## 16. Troubleshooting

<p><b>INFORMATION</b></p>	<p><b>Applicable documents</b></p>
	<p>Following applicable documents are necessary and available:</p> <ul style="list-style-type: none"> <li>• <b>BEKOMAT®</b> Installation and operation manual.</li> <li>• Wiring diagrams.</li> </ul>
<p><b>INFORMATION</b></p>	<p><b>Technical support</b></p>
	<p>This section contains solutions to the most probable malfunctions/faults. In any case, it is not possible to predict in advance all possible malfunction/failure situations of the device.</p> <p>In the event of any malfunctions / faults which are not described here, malfunctions which cannot be acknowledged / eliminated or other related questions, contact <b>BEKO TECHNOLOGIES</b> customer service. Refer to section “1.1 Contact” on page 6.</p>

## 16.1 Warnings and alarms

### 16.1.1 Clearing a WARNING

Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>1. Refer to the section “9.4.5 WARNING status” on page 68.</li> <li>2. Fix the cause which has triggered the <b>WARNING</b>.</li> <li>3. The notification area of User Interface stops flashing and turns permanently orange.</li> <li>4. Touch the notification area.</li> </ol>
	<ol style="list-style-type: none"> <li>5. Confirm the operation pressing the <b>CONFIRM</b> button [2] or abort the command pressing the <b>EXIT</b> button [1].</li> </ol>

WARNING code – Text	Cause	Action
<p><b>W1 – Low Dew Point</b></p> <p>Trigger: T1 &lt; -1,0 °C</p> <p>Reset: T1 ≥ 0,0 °C</p> <p>Delay: 3 minutes</p>	Probe BT1, the dew point temperature is too low.	Refer to section “16.2 Specific malfunctions” on page 114, “Probe BT1, dew point temperature too low”.
<p><b>W2 – High Dew Point</b></p> <p>Trigger: T1 &gt; had value</p> <p>ResehadHdA value - 1 K</p> <p>Delay: Hdd value</p>	The value of parameter <b>HdA</b> is too low.	Increase the value of parameter <b>HdA</b> .
	Probe BT1, the dew point temperature is too high.	Refer to section “16.2 Specific malfunctions” on page 114, “Probe BT1, dew point temperature too high”.
<p><b>W3 – Probe Fault T2</b></p> <p>Trigger: BT2 fault</p> <p>Reset: BT2 reset</p> <p>Delay: none</p>	The electrical wiring between Probe BT2 and Electronic Control Unit is interrupted.	Restore the electrical wiring.
	Probe BT2, defective or faulty.	Replace the probe.
<p><b>W4 – Probe Fault T3</b></p> <p>Trigger: BT3 fault</p> <p>Reset: BT3 reset</p> <p>Delay: none</p>	The electrical wiring between Probe BT3 and Electronic Control Unit is interrupted.	Restore the electrical wiring.
	Probe BT3, defective or faulty.	Replace the probe.
<p><b>W5 – Drainer</b></p> <p>Trigger: DI5 open</p> <p>Reset: DI5 closed</p> <p>Delay: 20 minutes</p>	The condensate drain is defective or faulty	Consult the <b>BEKOMAT®</b> Installation and operation manual.
	The electrical wiring between condensate drain and Electronic Control Unit is interrupted.	Restore the electrical wiring.
	Compressed air line is depressurised.	Pressurise the compressed air line.
<p><b>W5 Dn nn</b></p> <p><b>Drainer, specific faults</b></p>	Condensate drain specific malfunction.	Consult <b>BEKO TECHNOLOGIES</b>
<p><b>W6 – Programmed Service</b></p> <p>Trigger: SrV value</p> <p>Reset: timer reset</p> <p>Delay: none</p>	The maintenance time is expired.	Refer to section “10.2 Maintenance work” on page 87.
<p><b>W7 – High Discharge Temp.</b></p> <p>Trigger: T4 &gt; 100,0 °C</p> <p>Reset: T4 &lt; 95,0 °C</p> <p>Delay: 60 seconds</p>	Probe BT4, the temperature on discharge side of refrigerant compressor is too high.	Refer to section “16.2 Specific malfunctions” on page 114, “Probe BT4, compressor discharge temperature too high”.

<b>WARNING code – Text</b>	<b>Cause</b>	<b>Action</b>
<b>W9 – Low Condensing Pressure</b> Trigger: variable Reset: variable Delay: 600 seconds	Transducer BHP, the condensing pressure of the refrigerant fluid is too low.	Refer to section “16.2 Specific malfunctions” on page 114, “Transducer BHP, condensing pressure of refrigerant fluid too low”.
<b>W10 – High Condensing Pressure</b> Trigger: variable Reset: variable Delay: 600 seconds	Transducer BHP, the condensing pressure of the refrigerant fluid is too high.	Refer to section “16.2 Specific malfunctions” on page 114, “Transducer BHP, condensing pressure of refrigerant fluid too high”.
<b>W11 – Low Ambient Temp.</b> Trigger: $T5 < 0,0^{\circ}\text{C}$ Reset: $T5 \geq 1,0^{\circ}\text{C}$ Delay: 5 minutes	Probe BT5, the ambient temperature is too low.	Restore the nominal operating conditions.
<b>W12 – High Ambient Temp.</b> Trigger: $T5 > 45,0^{\circ}\text{C}$ Reset: $T5 \leq 42,0^{\circ}\text{C}$ Delay: 5 minutes	Probe BT5, the ambient temperature is too high.	Restore the nominal operating conditions.
<b>W13 – Probe Fault T5</b> Trigger: BT5 fault Reset: BT5 reset Delay: none	The electrical wiring between Probe BT5 and Electronic Control Unit is interrupted.	Restore the electrical wiring.
	Probe BT5, defective or faulty.	Replace the probe.
<b>W14 – Low Inlet Temperature</b> Trigger: $T2 < 10,0^{\circ}\text{C}$ Reset: $T2 \geq 11,0^{\circ}\text{C}$ Delay: 5 minutes	Probe BT2, the inlet air temperature is too low.	Restore the nominal operating conditions.
<b>W15 – High Inlet Temperature</b> Trigger: $T2 > 70,0^{\circ}\text{C}$ Reset: $T2 \leq 65,0^{\circ}\text{C}$ Delay: 5 minutes	Probe BT2, the inlet air temperature is too high.	Restore the nominal operating conditions.

### 16.1.2 Clearing an ALARM

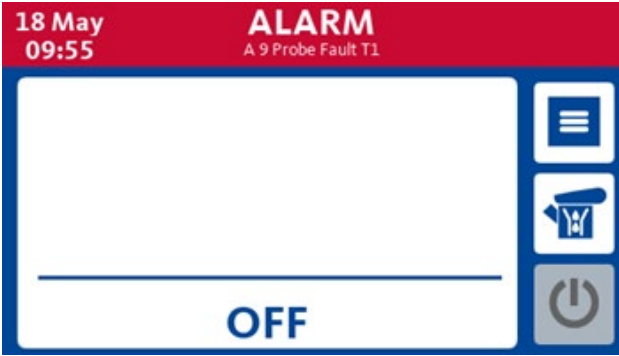

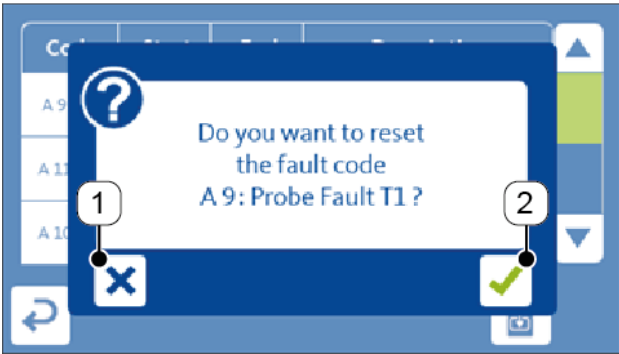
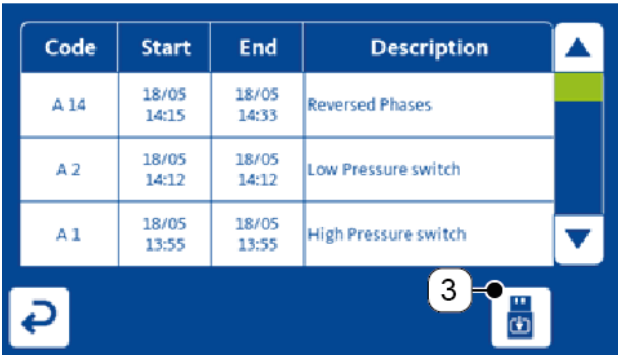
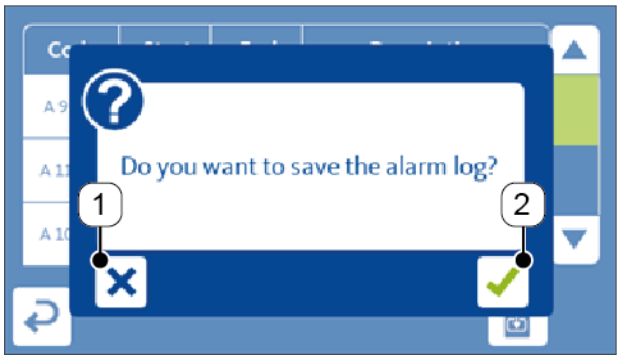
Illustration	Description / explanation
	<ol style="list-style-type: none"> <li>1. Refer to the section “9.4.6 ALARM status” on page 70.</li> <li>2. Fix the cause which has triggered the ALARM.</li> <li>3. The notification area of User Interface stops flashing and turns permanently red.</li> <li>4. Touch the notification area to access the list of all stored ALARMS.</li> </ol>
	<ol style="list-style-type: none"> <li>5. Touch the red area with the ALARM to be cleared.</li> </ol>
	<ol style="list-style-type: none"> <li>6. Confirm the operation pressing the <b>CONFIRM</b> button [2] or abort the command pressing the <b>EXIT</b> button [1].</li> </ol>

Illustration	Description / explanation
	<p><b>ALARM history download</b></p> <p>To download the ALARM history, a USB memory stick must be already installed by the maintenance personnel. Refer to section “7.2.7 USB memory stick for data log storage “ on page 55.</p> <p>7. Press the <b>DATA RECORDING</b> button [3] to download the whole ALARM history.</p>
	<p>8. Confirm the download pressing the <b>CONFIRM</b> button [2] or abort the command pressing the <b>EXIT</b> button [1].</p> <p>9. Once the downloading is finished, remove the USB memory stick for the further analysis.</p> <p><b>The USB memory stick must be removed only by the maintenance personnel.</b></p>

ALARM code - Text	Cause	Action
<b>A1 – High Pressure Switch</b> Trigger: DI HPS open Reset: DI HPS closed Delay: none	Safety pressure switch HPS, the pressure of the refrigerant fluid has reached the safety limit.	Refer to section “16.2 Specific malfunctions” on page 114, “Safety pressure switch HPS has triggered”.
<b>A2 – Low Pressure Switch</b> Trigger: LP < 0,7 bar(g) Reset: LP ≥ 1,7 bar(g) Delay: (*1)	Transducer BLP, the pressure of the refrigerant fluid has reached the minimum value allowed. There is a refrigerant leak in the refrigerant circuit.	Repair the refrigerant circuit.
<b>A3 – Low Evaporating Pressure</b> Trigger: LP < 2,0 bar(g) Reset: LP ≥ 2,3 bar(g) Delay: 300 seconds	Transducer BLP, the evaporating pressure of the refrigerant fluid is too low.	Refer to section “16.2 Specific malfunctions” on page 114, “Transducer BLP, evaporating pressure of refrigerant fluid too low”.
<b>A4 – High Discharge Temp.</b> Trigger: T4 > 110,0°C Reset: T4 ≤ 100,0°C Delay: 60 seconds	Probe BT4, the temperature of the refrigerant fluid has reached the safety limit.	Refer to section “16.2 Specific malfunctions” on page 114, “Probe BT4, compressor discharge temperature too high”.
<b>A5 – Compressor Protection</b> Trigger: DI4 open Reset: DI4 closed Delay: none	The internal heat protection of refrigerant compressor has triggered.	Wait 30 minutes to cool down the motor then check carefully the operation of refrigerant compressor.
	The circuit breaker QC1 has triggered.	Restore the circuit breaker QC1 then check carefully the operation of refrigerant compressor.
<b>A6 - ICE</b> Trigger: T1 < -3,0°C Reset: T1 ≥ 0,0°C Delay: 60 seconds	Probe BT1, the temperature of body of heat exchanger is under 0°C.	Refer to section “16.2 Specific malfunctions” on page 114, “Probe BT1, dew point temperature too low”.

ALARM code - Text	Cause	Action
<b>A7 – Probe Fault LP</b> Trigger: BLP fault Reset: BLP reset Delay: none	Transducer BLP, defective or faulty.	Replace the transducer.
	The electrical wiring between the transducer BLP and Electronic Control Unit is interrupted.	Restore the electrical wiring.
<b>A8 – Probe Fault HP</b> Trigger: BHP fault Reset: BHP reset Delay: none	Transducer BHP, defective or faulty.	Replace the transducer.
	The electrical wiring between the transducer BHP and Electronic Control Unit is interrupted.	Restore the electrical wiring.
<b>A9 – Probe Fault T1</b> Trigger: BT1 fault Reset: BT1 reset Delay: none	Probe BT1, defective or faulty.	Replace the probe.
	The electrical wiring between the probe BT1 and Electronic Control Unit is interrupted.	Restore the electrical wiring.
<b>A10 – Probe Fault T4</b> Trigger: BT4 fault Reset: BT4 reset Delay: none	Probe BT4, defective or faulty.	Replace the probe.
	The electrical wiring between the probe BT4 and Electronic Control Unit is interrupted.	Restore the electrical wiring.

(\*1) 0 seconds at device start-up, 2 seconds during normal operation



ALARM code – Text	Cause	Action
<p><b>A11 – Low Differential Pressure</b></p> <p>Trigger: <math>\Delta p &lt; 2,5 \text{ bar(g)}</math>                      Reset: <math>\Delta p \geq 2,5 \text{ bar(g)}</math>                      Delay: (*2)</p>	<p>Transducers BHP and BLP, low differential pressure between values HP and LP</p>	<p>Refer to section “16.2 Specific malfunctions” on page 114, “Transducers BHP and BLP, low differential pressure between values HP and LP”.</p>
<p><b>A12 – High Evaporating Pressure</b></p> <p>Trigger: <math>LP &gt; 4,8 \text{ bar(g)}</math>                      Reset: <math>LP \leq 4,8 \text{ bar(g)}</math>                      Delay: (*3)</p>	<p>Transducer BLP, the evaporating pressure of the refrigerant fluid is too high.</p>	<p>Refer to section “16.2 Specific malfunctions” on page 114, “Transducer BLP, evaporating pressure of refrigerant fluid too high”.</p>
<p><b>A13 – Low Condensing Pressure</b></p> <p>Trigger: variable                      Reset: variable                      Delay: (*3)</p>	<p>Transducer BHP, the condensing pressure of the refrigerant fluid is too low.</p>	<p>Refer to section “16.2 Specific malfunctions” on page 114, “Transducer BHP, condensing pressure of refrigerant fluid too low”.</p>
<p><b>A14 – Reversed Phases</b></p> <p>Trigger: DI7 open                      Reset: DI7 closed                      Delay: (*4)</p>	<p>Relay RPP, power phases L1, L2, L3 are connected to the device with the uncorrect phase sequence.</p>	<p>Restore the correct phase sequence</p>
	<p>Missing power phase.</p>	<p>Connect the missing phase</p>
<p><b>A19 - Fan</b></p> <p>Trigger: DI3 open                      Reset: DI3 closed                      Delay: none</p>	<p>The internal heat protection of cooling fan has triggered.</p>	<p>Wait 30 minutes to cool down the motor then check carefully the operation of cooling fan.</p>
	<p>The circuit breaker QV1 has triggered.</p>	<p>Restore the circuit breaker QV1 then check carefully the operation of cooling fan, models RA 2400 / 3000</p>
<p><b>A E 1001 – Communication lost</b></p> <p>Trigger: cable HMI disconnected                      Reset: cable HMI connected                      Delay: 5 seconds</p>	<p>Communication broken between User Interface and Electronic Control Unit</p>	<p>Check the integrity of HMI connection cable</p>

(\*2) 15 minutes at device start-up, 60 seconds during normal operation

(\*3) 15 minutes at device start-up, 600 seconds during normal operation

(\*4) 0 seconds at device start-up, 2 seconds during normal operation

## 16.2 Specific malfunctions

Specific malfunction	Cause	Action
Probe BT1, dew point temperature too high.	The probe BT1 does not detect the temperature correctly.	Check / place the probe back in its correct position.
	The refrigerant compressor is stopped.	See specific malfunction "The refrigerant compressor is stopped".
	The ambient temperature is too high or ventilation is insufficient.	Restore the nominal operating conditions.
	The temperature of inlet compressed air is too high.	
	The pressure of inlet compressed air is too low.	
	The flow rate of inlet compressed air is higher than the nominal flow rate of the device.	
	The condenser is dirty.	Clean the condenser.
	The cooling fan is stopped.	See specific malfunction "The cooling fan is stopped".
	The device does not drain the condensate.	See specific malfunction "The device does not drain the condensate".
	The hot gas by-pass valve is out of calibration, models from RA 1080 to RA 1900	Refer to section "11.2.1 Adjustment of hot gas by-pass valve" on page 91.
	There is a refrigerant leak in the refrigerant circuit.	Repair the refrigerant circuit.
	The temperature of cooling water is too high, water-cooled models.	Restore the nominal operating conditions.
	The flow rate of cooling water is too low, water-cooled models.	
Probe BT1, dew point temperature too low.	The ambient temperature is too low or the device is installed in a windy area.	Restore the nominal operating conditions.
	The cooling fan is running continuously.	Replace the Electronic Control Unit.
	The hot gas by-pass valve is out of calibration, models from RA 1080 to RA 1900	Refer to section "11.2.1 Adjustment of hot gas by-pass valve" on page 91.

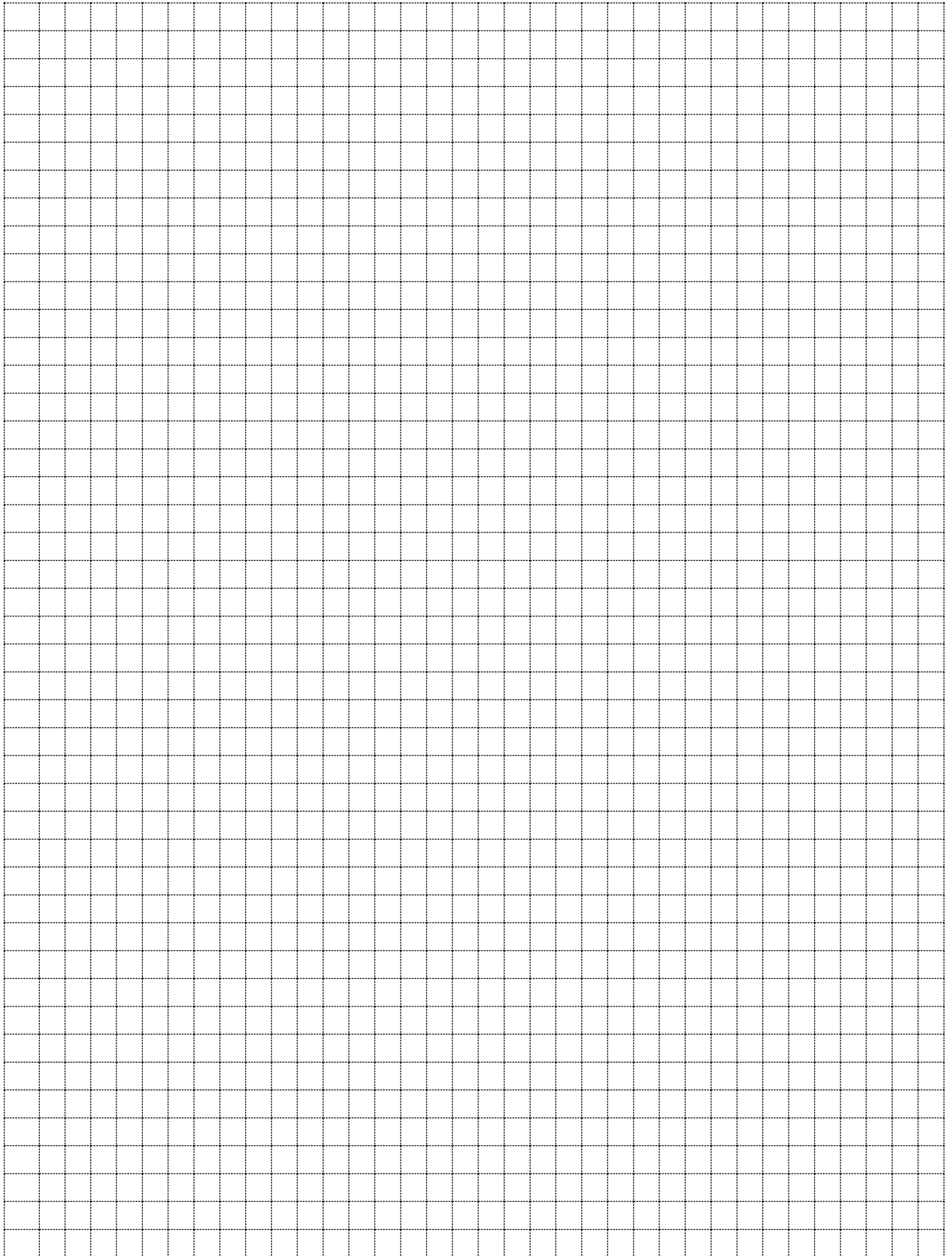
Specific malfunction	Cause	Action
Probe BT4, compressor discharge temperature too high.	The probe BT4 does not detect the temperature correctly.	Check / place the probe back in its correct position.
	Excessive thermal load.	Restore the nominal operating conditions.
	The temperature of inlet compressed air is too high.	
	The flow rate of inlet compressed air is higher than the nominal flow rate of the device.	
	The ambient temperature is too high or ventilation is insufficient.	
	The condenser is dirty.	Clean the condenser.
	The cooling fan is stopped.	See specific malfunction “The cooling fan is stopped”.
	The hot gas by-pass valve is out of calibration, models from RA 1080 to RA 1900	Refer to section “11.2.1 Adjustment of hot gas by-pass valv” on page 91.
	The temperature of cooling water is too low, water-cooled models.	Restore the nominal operating conditions.
	The cooling water regulating valve is out of calibration, water-cooled models.	Refer to section “11.2.2 Adjustment of cooling water regulating valve, water-cooled models” on page 93.
	There is a refrigerant leak in the refrigerant circuit.	Repair the refrigerant circuit.
Transducer BLP, evaporating pressure of refrigerant fluid too high.	Excessive thermal load.	Restore the nominal operating conditions.
	The temperature of inlet compressed air is too high.	
	The ambient temperature is too high or ventilation is insufficient.	
	The condenser is dirty.	Clean the condenser.
	The cooling fan is stopped.	See specific malfunction “The cooling fan is stopped”.
	The hot gas by-pass valve is out of calibration, models from RA 1080 to RA 1900	Refer to section “11.2.1 Adjustment of hot gas by-pass valv” on page 91.
	The cooling water regulating valve is out of calibration, water-cooled models.	Refer to section “11.2.2 Adjustment of cooling water regulating valve, water-cooled models” on page 93.
	The transducer BLP is defective.	Replace the transducer.
	The refrigerant compressor is stopped.	See specific malfunction “The refrigerant compressor is stopped”.

Specific malfunction	Cause	Action
Transducer BHP, condensing pressure of refrigerant fluid too low.	The ambient temperature is too low or the device is installed in a windy area.	Restore the nominal operating conditions.
	The temperature of cooling water is too low, water-cooled models.	
	The cooling water regulating valve is out of calibration, water-cooled models.	Refer to section “11.2.2 Adjustment of cooling water regulating valve, water-cooled models” on page 93.
	There is a refrigerant leak in the refrigerant circuit.	Repair the refrigerant circuit.
	The transducer BHP is defective.	Replace the transducer.
	The refrigerant compressor is stopped.	See specific malfunction “The refrigerant compressor is stopped”.
Transducer BLP, evaporating pressure of refrigerant fluid too low.	There is a refrigerant leak in the refrigerant circuit.	Repair the refrigerant circuit.
	The hot gas by-pass valve is out of calibration, models from RA 1080 to RA 1900	Refer to section “11.2.1 Adjustment of hot gas by-pass valv” on page 91.
	The transducer BLP is defective.	Replace the transducer.
	The cooling fan is running continuously.	Replace the Electronic Control Unit.
Transducer BHP, condensing pressure of refrigerant fluid too high.	The temperature of inlet compressed air is too high.	Restore the nominal operating conditions.
	The ambient temperature is too high or ventilation is insufficient.	
	The flow rate of inlet compressed air is higher than the nominal flow rate of the device.	
	The condenser is dirty.	Clean the condenser.
	The cooling fan is stopped.	See specific malfunction “The cooling fan is stopped”.
	The temperature of cooling water is too high, water-cooled models.	Restore the nominal operating conditions.
	The flow rate of cooling water is too low, water-cooled models.	
	The cooling water regulating valve is out of calibration, water-cooled models.	Refer to section “0 Adjustment of cooling water regulating valve, water-cooled models” on page 93.
The transducer BHP is defective.	Replace the transducer.	

Specific malfunction	Cause	Action
Transducers BHP and BLP, low differential pressure between values HP and LP	The ambient temperature is too low or the device is installed in a windy area.	Restore the nominal operating conditions.
	The temperature of cooling water is too low, water-cooled models.	
	The cooling water regulating valve is out of calibration, water-cooled models.	Refer to section “0 Adjustment of cooling water regulating valve, water-cooled models” on page 93.
	The hot gas by-pass valve is out of calibration, models from RA 1080 to RA 1900	Refer to section “11.2.1 Adjustment of hot gas by-pass valv” on page 91.
	There is a refrigerant leak in the refrigerant circuit.	Repair the refrigerant circuit.
	The transducer BLP is defective.	Replace the transducer.
	The transducer BHP is defective.	
	The refrigerant compressor is stopped.	See specific malfunction “The refrigerant compressor is stopped”.
Safety pressure switch HPS has triggered.	The temperature of inlet compressed air is too high.	Restore the nominal operating conditions, then press the reset button on the pressure switch.
	The flow rate of inlet compressed air is higher than the nominal flow rate of the device.	
	The ambient temperature is too high or ventilation is insufficient.	
	The condenser is dirty.	Clean the condenser, then press the reset button on the pressure switch.
	The cooling fan is stopped.	See specific malfunction “The cooling fan is stopped”, then press the reset button on the pressure switch.
	The temperature of cooling water is too high, water-cooled models.	Restore the nominal operating conditions, then press the reset button on the pressure switch.
	The flow rate of cooling water is too low, water-cooled models.	
	The pressure switch HPS is defective.	Replace the pressure switch.
The refrigerant compressor is stopped, without any warning / alarm on the User Interface.	The electrical wiring is interrupted.	Restore the electrical wiring.
	The compressor is faulty.	Replace the compressor.

Specific malfunction	Cause	Action
The cooling fan is stopped, without any warning / alarm on the User Interface.	There is a refrigerant leak in the refrigerant circuit.	Repair the refrigerant circuit.
	The electrical wiring is interrupted.	Restore the electrical wiring.
	The transducer BHP is defective.	Replace the transducer.
	The motor is faulty.	Replace the motor.
The device does not drain the condensate.	The pressure of compressed air is too low.	Restore the nominal operating conditions.
	The condensate service valve is closed.	Open the valve.
	The condensate is frozen.	See specific malfunction "Probe BT1, dew point temperature too low".
The <b>BEKOMAT</b> ® condensate drain does not work properly.	The <b>BEKOMAT</b> ® condensate drain does not work properly.	Consult <b>BEKOMAT</b> ® Installation and operation manual.
	The <b>BEKOMAT</b> ® condensate drain does not work properly.	Consult <b>BEKOMAT</b> ® Installation and operation manual.
Excessive air pressure drop.	The condensate is frozen.	See specific malfunction "Probe BT1, dew point temperature too low."
	The device does not drain the condensate.	See specific malfunction "The device does not drain the condensate."
	The heat exchanger is clogged.	Check and clean the heat exchanger.

## 17. Notes



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