



**READ AND SAVE THESE INSTRUCTIONS**

# INSTALLATION AND OPERATION MANUAL

Desiccant dryer  
Condair **DA 500-4000**

# Thank you for choosing Condair

Installation date (MM/DD/YYYY):

Commissioning date (MM/DD/YYYY):

Site:

Model:

Serial number:

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# 1 Introduction

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## 1.1 To the very beginning

We thank you for having purchased a Condair DA 500 - 4000 desiccant dryer (for short: Condair DA).

The Condair DA desiccant dryers incorporate the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Condair DA desiccant dryer may result in danger to the user or third parties and/or damage to property.

To ensure a safe, proper, and economical operation of the Condair DA desiccant dryer, please observe and comply with all information and safety instructions contained in the present documentation as well as in the separate documentations of the components installed in the drying system.

If you have questions after reading this documentation, please contact your Condair representative. They will be glad to assist you.

## 1.2 Notes on the installation and operation manual

### Limitation

**The subject of this installation and operation manual are the Condair DA 500 - 4000 desiccant dryers in their different versions.** The various options and accessories are only described insofar as this is necessary for proper operation of the equipment. Further information on options and accessories can be obtained in the respective manuals.

This installation and operation manual is restricted to the **installation, commissioning, operation, maintenance and troubleshooting** of the Condair DA desiccant dryer and is meant for **well-trained personnel being sufficiently qualified for their respective work.**

## Symbols used in this manual



The catchword "NOTE" used in conjunction with the hand symbol designates important notes in this manual that require special attention.



The catchword "CAUTION" used in conjunction with the caution symbol in the circle designates notes in this operation manual that, if neglected, may cause **damage and/or malfunction of the unit or other material assets**.



The catchword "WARNING" used in conjunction with the general caution symbol designates safety and danger notes in this operation manual that, if neglected, may cause to **injury to persons**.



The catchword "DANGER" used in conjunction with the general caution symbol designates safety and danger notes in this operation manual that, if neglected, may lead to **severe injury or even death of persons**.

### Safekeeping

Please safeguard this installation and operation manual in a safe place, where it can be immediately accessed. If the desiccant dryer changes hands, the documentation must be passed on to the new operator. If the documentation gets misplaced, please contact your Condair representative.

### Language versions

This installation and operation manual is available in other languages. Please contact your Condair representative for information.

## 2 For your safety

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### General

Every person working with the Condair DA desiccant dryer must have read and understood this installation and operation manual before carrying out any work.

Knowing and understanding the contents of the installation and operation manual is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty operation, and to operate the unit safely and correctly.

All ideograms, signs and markings applied to the Condair DA desiccant dryer must be observed and kept in readable state.

### Qualification of personnel

All work described in this installation and operation manual **may only be carried out by specialist who are well trained and adequately qualified and are authorized by the customer.**

For safety and warranty reasons any action beyond the scope of this manual must be carried out only by qualified personnel authorised by the manufacturer.

It is assumed that all persons working with the Condair DA desiccant dryer are familiar and comply with the appropriate regulations on work safety and the prevention of accidents.

The Condair DA desiccant dryer may not be used by persons (including children) with reduced physical, sensory or mental abilities or persons with lacking experience and/or knowledge, unless they are supervised by a person responsible for their safety or they received instructions on how to operate the system. Children must be supervised to make sure that they do not play with the Condair DA desiccant dryer.

### Intended use

The Condair DA 500-4000 desiccant dryers are intended exclusively for **air dehumidification at atmospheric pressure** within the specified operating conditions (see [chapter 9.1](#)). Any other type of application, without the written consent of Condair, is considered as not conforming with the intended purpose and may lead to the Condair DA desiccant dryer becoming dangerous.

Operation of the equipment in the intended manner requires **that all the information contained in this installation and operation manual are observed (in particular the safety instructions).**

**Danger that may arise from the Condair DA desiccant dryer**



**DANGER!**  
**Danger of electric hazard!**

The Condair DA desiccant dryer is mains powered. Live parts may be exposed when the unit is open. Touching live parts may cause severe injury or danger to life.

**Prevention:** Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.



**WARNING!**  
**Risk of injury!**

Inside the Condair DA desiccant dryer there are moving parts present, which can cause serious injury to hands and fingers.

**Prevention:** Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.

Keep hands away from moving parts.



**WARNING!**  
**Risk of burns!**

Inside the Condair DA desiccant dryer are heating element present, which can cause burns if touched.

**Prevention:** Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains), secure the unit against inadvertent power-up, **and wait at least 15 minutes prior to opening any service panel, allowing the heater to cool down.**

**Warning signs attached to the unit**

	<p><b>General Warning</b></p> <p>Draws attention to a dangerous situation that can lead to injury or serious damage to health.</p>
	<p><b>Electric shock</b></p> <p>Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.</p>
	<p><b>Hot surfaces</b></p> <p>Hot surfaces inside the device. Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains), secure the unit against inadvertent power-up, and wait at least 15 minutes prior to opening any service panel, allowing the heater to cool down.</p>
	<p><b>Rotating fan blades</b></p> <p>Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains), secure the unit against inadvertent power-up.</p> <p>Keep hands or other body parts away from moving parts.</p>

### Correct lifting and handling

Lifting or handling of components always carries an element of risk, and therefore must only be carried out by trained and qualified personnel. Ensure that any lifting operations have been fully planned and risk assessed. All equipment should be checked by a skilled and competent health & safety representative. It is the customer's responsibility to ensure that operators are trained in handling heavy goods and to enforce the relevant lifting regulations.

### Preventing unsafe operation

If it is suspected that **safe operation is no longer possible**, the Condair DA desiccant dryer should immediately **be shut down and secured against accidental power-up**. This can be the case under the following circumstances:

- if the Condair DA desiccant dryer is damaged
- if the electrical installations are damaged
- if the Condair DA desiccant dryer is no longer operating correctly

All persons working with the Condair DA desiccant dryer must report any alterations to the unit that may affect safety to the owner without delay.

### Prohibited modifications to the unit

**No modifications must be undertaken** on the Condair DA 500 - 4000 desiccant dryers without the express written consent of Condair.

For the replacement of defective components use exclusively **original accessories and spare parts available** from your Condair representative.



#### CAUTION!

The desiccant dryer must only be used for dehumidification of air at atmospheric pressure.

Never use the desiccant dryer without the filters as the desiccant rotor can become contaminated and lose capacity.

The desiccant dryer must not be installed in areas where explosion proof equipment is required.

## 3 Important notes

### 3.1 Inspection of the delivery

After receiving:

- Inspect shipping boxes for damage. Any damages of the shipping boxes must be reported to the shipping company.
- Check packing slip to ensure all parts has been delivered. All material shortages are to be reported to your Condair supplier within 48 hours after receipt of the goods. Condair assumes no responsibility for any material shortages beyond this period
- Unpack the parts/components and check for any damage. If parts/components are damaged, notify the shipping company immediately
- Check whether the components are suitable for installation on your site according to the model key stated on the type plate

### 3.2 Storing/Transportation/Packaging

#### Storing

The Condair DA desiccant dryer must be stored in a weather-protected environment.

- Room temperature: -20 °C to +60 °C
- Room humidity: 10 to 95 %RH (non condensing)

#### Transportation

Observe the following for transport or handling of the Condair DA desiccant dryer:

- The desiccant dryer should always stand upright on its feet.
- Never put other goods on top of the desiccant dryer.

For optimum protection always transport the unit in the original packaging and use an appropriate lifting/transporting device.



It is the customer's responsibility to ensure that operators are trained in handling heavy goods and that the operators comply with the appropriate regulations on work safety and the prevention of accidents.

#### Packaging

Keep the original packaging of the components for later use. In case you wish to dispose of the packaging, observe the local regulations on waste disposal. Please recycle packaging where possible.

## 4 Product overview

### 4.1 Product designation

The product designation and the most important unit data are found on the specification label fixed on the right side below the operation panel (see example below):

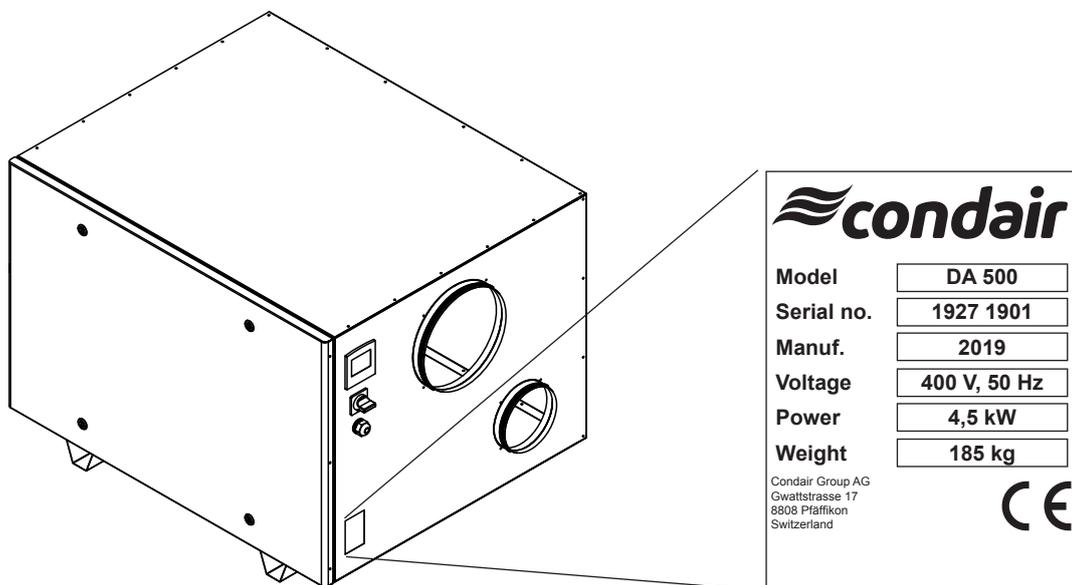


Fig. 1: Specification label

### 4.2 Applications

The Condair desiccant dryers is of the solid desiccant wheel type designed to dry air of atmospheric pressure. The desiccant dryer can be used for drying air of up to 100 % relative humidity (RH) with air temperatures from 0 °C to 40 °C.

The applications are numerous and widespread. Below are some examples:

- Controlling humidity levels in production processes.
- Drying of temperature sensitive products.
- Maintaining correct humidity in storage areas.
- Protection of equipment sensitive to corrosion.
- Controlling humidity levels in museums and archives.
- Drying after water damage and drying of buildings during construction.
- Climatic improvements in damp areas.

### 4.3 Method of operation

The desiccant dryer operates with two air streams. A larger air stream to be dehumidified, and a smaller air stream to exhaust the moisture out of the desiccant rotor. Two fans inside the desiccant dryer create air streams which travel through the desiccant rotor in opposite directions.

The larger air volume, the process air, passes through the slowly rotating silica gel rotor. Silica gel is a hygroscopic material adsorbing water vapour direct from the air. When passing through the rotor the humidity of the air is reduced, whilst the moisture content of the rotor material increases. On exiting the rotor the dried air is introduced into the area, or the process to be dehumidified. The adsorption process also functions at negative temperatures.

The smaller air volume, the reactivation air, desorbs the moisture from the silica gel rotor. This reactivation air is heated by an internal heater to a temperature of approximately +120°C. As the reactivation air passes through the rotor, in an opposite direction to the dry air, it will decrease the moisture content of the rotor material. The reactivation air will leave the desiccant dryer as warm, moist air, which is then exhausted out from the building.

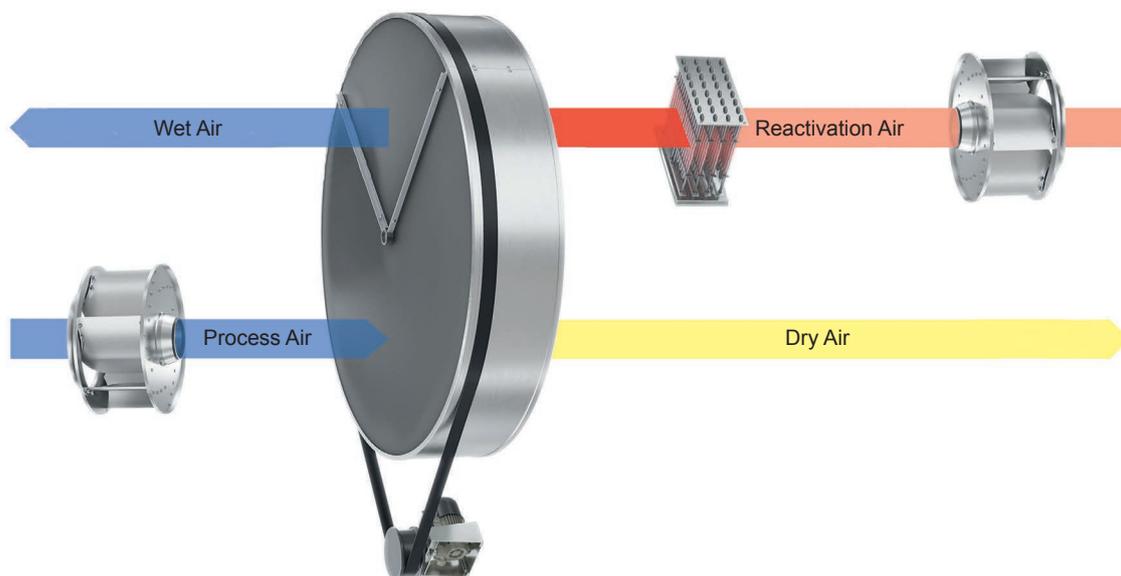


Fig. 2: Operation principle

## 4.4 Product description

The Condair DA desiccant dryers with applied ducting meet the requirements of IEC protective class IP23. The electrical panel meets the requirements of IEC protective class IP44.

### 4.4.1 Casing

The RAL9006 powder-coated double-walled housing is fabricated with 1 mm Magnelis® and is insulated with 30 mm mineral wool insulation including inner panels. The sound- and heat-insulated construction with seals on the panel avoids thermal bridges and achieves a high level of tightness. The side of the desiccant dryer has a panel that can be removed for service access. All duct connections to the desiccant dryer are designed for connections to standard metric size spiral ducts.

### 4.4.2 Rotor

The desiccant dryer has a drying rotor fabricated from 82% desiccant material, 16% fibreglass and 2% adhesive sealant. The rotor has a matrix of corrugated and flat heat resistant sheets, which houses the Silica Gel desiccant agent. This matrix creates a large number of axial flutes through the rotor, which together builds up an immense surface area for moisture adsorption in a small volume. The rotor is manufactured and processed to be able to withstand moisture-saturated air without being damaged. Furthermore, the rotor will not be damaged even if the fan or the heater for reactivation should fail during operation. The desiccant rotor is tested according to ASTM E84-18b, and the results are Flame Spread Index (FSI) 0 and Smoke Developed Index (SDI) 0.

#### **Rotor sealings**

The rotor has two peripheral seals (PTFE/Silicone) on the rotor casing and four radial seals (PTFE)

#### **Rotor drive system**

An electrical gear motor and a belt drive achieve the slow rotation of the rotor. The belt sits on the outer rim of the rotor and is driven by a pulley on the drive motor. A belt tension device keeps the belt in place and maintains tension to prevent belt slip. Correct operation of the drive system, and direction of rotation can be checked by opening the front panel.

The centre hub of the rotor is equipped with ball bearings. The rotor shaft is made from stainless steel.

### 4.4.3 Filters

Two separate air filters class ISO coarse ≥65% are installed on the inlet of each air flow. These filters protect primarily the internal components from dust.

### 4.4.4 Fans for process- and reactivation air

The device is equipped with two directly driven centrifugal fans, IP54 and ISO F, installed in the device. The exact type can be found in the respective table in [chapter 11](#).

#### **4.4.5 Heater for reactivation air**

For the units with electrical reactivation, the reactivation heater is of the PTC-type (Positive Temperature Coefficient), which cannot be overheated. From the DA 1400 onwards, the electric reactivation heating has a 2-stage design as standard. A modulated reactivation heating is available as an option.

Optionally, the device can also be operated with alternative thermal sources eg. steam or warm water. Please contact your Condair representative.

#### **4.4.6 Electrical panel**

The electrical panel is located in a separate compartment behind the service panel. Switches and indications for operation are mounted at the side of the desiccant dryer.

#### **4.4.7 Operation Options**

For desiccant dryers with PLC, the operation is described in the PLC controller manual.

# 5 Installation

## 5.1 Installation and service access

The Condair desiccant dryer is as standard designed for indoor installation, and must be installed in horizontal position on its feet, preferably bolted to the floor.

The ambient conditions at the place of installation should be within the range:

- Room temperature: 0-40°C for standard units
- Room humidity: 10-95 %rh for standard units  
10-75 %rh at low pre-cooling temperatures

Ensure a space of 1000 mm in front of the desiccant dryer for inspection and service.

## 5.2 Duct connection for permanent installation

The Condair DA 500-4000 desiccant dryers can be installed in the room that should to be dehumidified or in a separate room.

To obtain the best performance the outlets from the fans should be equipped with diffusers.

### 5.2.1 Wet air duct from the desiccant dryer

The wet air from the desiccant dryer should be exhausted to the outside. The duct should be as short as possible to minimize the chance of condensation of the wet air. This duct should slope down in angle of at least  $>2^\circ$ , to stop any condensed water from flowing back into the desiccant dryer. If the wet air duct is extremely long, or must be installed sloping upwards from the desiccant dryer, it should have a drainage point (4-6 mm) drilled at its lowest position.

Since there is a risk that the wet air temperature could exceed  $+80^\circ\text{C}$ , it is recommended to insulate the wet air duct system and appropriate warning signs should be placed at the wet air outlet duct.

The exhaust opening should have a coarse wire net.

### 5.2.2 Reactivation air into the desiccant dryer

The reactivation air duct into the desiccant dryer should be as short as possible. The intake opening of the duct should have a coarse wire net, to stop foreign objects from entering the desiccant dryer. Insulation is normally not needed and the duct can slope up- or downwards. In some installations, as an alternative, the reactivation air can be taken from the installation room. For this alternative no duct connection is needed.

The temperature range for the reactivation air is from  $-20^\circ\text{C}$  to  $+40^\circ\text{C}$ .

The reactivation air volume is controlled by a damper in the inlet duct of the reactivation air. The air volume must be measured during commissioning and the damper adjusted accordingly. For a solution with a speed-controlled fan, please contact your Condair representative (see also installation schematics in [chapter 5.2.5](#)).

### **5.2.3 Process- and dry air with the desiccant dryer installed in the dehumidified room**

When the desiccant dryer is installed in the dehumidified room space it would normally take the process air direct from the room without any duct system, with only a protection net for the inlet required. The dry air outlet would normally have a duct system designed for distribution of the dry air in the building.

### **5.2.4 Process- and dry air with the desiccant dryer installed outside the dehumidified room**

When the desiccant dryer is installed in a separate plant room all inlet and outlet openings are usually ducted.

The desiccant dryer takes the process air as ambient air, or as pre-treated air from an HVAC, or alternatively as return air from the dehumidified room. The dry air from the desiccant dryer can be connected for post-treatment or ducted back to the dehumidified room, e.g. post cooler or filter.

A damper can be installed in the process air inlet duct, enabling correct commissioning of the dry air volume. For a solution with a speed-controlled fan, please contact your Condair representative.

## 5.2.5 Installation schematics

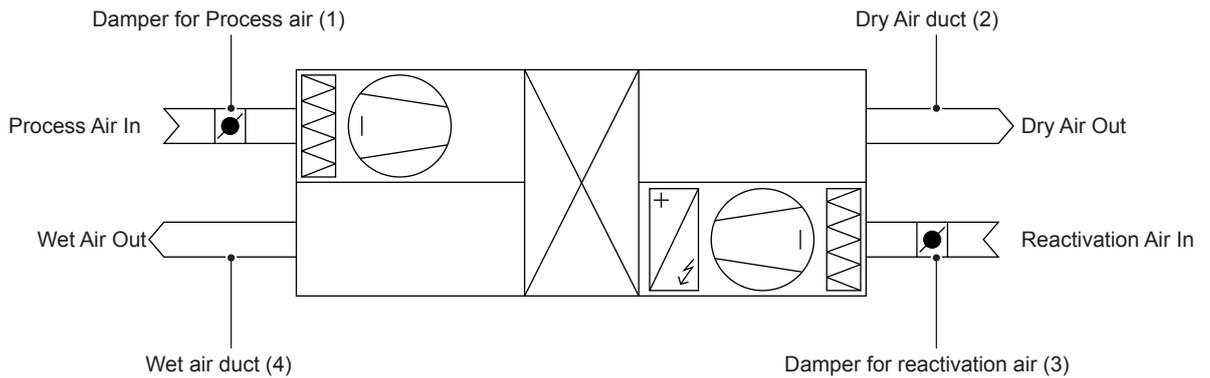


Fig. 3: Installation schematics

- 1 Damper for process air:** To adjust the airflow to the required value during commissioning, the air needs to be adjusted manually with a damper, which is installed at the process air inlet. The process inlet air damper is not required if the system is fitted with fan speed control option.
- 2 Dry air duct:** The ducts should be selected to have the minimum possible pressure drop (check available external pressure range in the manual), also to prevent unnecessary positive pressure building up in the dry air chamber inside the unit.
- 3 Damper for reactivation air:** To adjust the airflow to the required value during commissioning; the air needs to be adjusted manually to the datasheet-value with a damper. If the unit is equipped with a full modulating capacity, this damper is mandatory and the nominal reactivation airflow needs to be adjusted during commissioning on 100% capacity.
- 4 Wet air duct:** The wet air duct should be insulated and the ducts should be selected to have the minimum possible pressure drop (check available external Pressure range in the manual). In this duct, there is a risk of condensation. To prevent a collection of condensate, this duct should slope down in angle of at least  $>2^\circ$  or has a condensate drain on its lowest point (drill hole). If the unit is equipped with full modulating capacity, there is an increased risk of condensate. In this case, we recommended using corrosion resistant ducts.

## 5.3 Electrical installation

See [Appendix 1 – electrical wiring diagram](#).

## 6 Commissioning

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On initial start-up, the following steps should be taken in this order:

1. Ensure that the external isolation switch is isolating the unit from the mains and that the main switch on the desiccant dryer is set in the OFF position.
2. Open the service panel of the desiccant dryer and ensure that no foreign objects are left inside the unit or in the electrical compartment.
3. Ensure that the process and reactivation air dampers (if any) are open, and that ducts are clean and free of blockages.
4. Check that air filters are installed and clean.
5. Access the fan chambers by removing the panels/safety grids, rotate the fan impellers by hand and make sure they can move freely. After checking the fans, mount the service panels/safety grids back on the unit.
6. Ensure that the mains supply fuse is suitably rated.
7. Mount the main service panel on the desiccant dryer.
8. Connect the desiccant dryer to the main electrical supply by turning the isolation switch to ON, and check all three phases are live. Terminal L1, L2, L3 in the desiccant dryer.
9. Check to see that the lamp on the PLC called STAND BY is lighting up, but that the machine doesn't start.
10. Start the desiccant dryer for a short moment (approx. 1 minute) by turning the switch on the PLC to the ON respectively MAN position or by pressing "unit on" and "Manuel / Auto" on the PLC. Check that there is no apparent vibration while the fans are ramping up to full speed. Also check that the green operation lamp on the PLC lights up.
11. Stop the desiccant dryer by turning the ON/OFF switch on the PLC to OFF.
12. The reactivation air fan will continue to work for 6 minutes after the unit has been turned OFF on the PLC.
13. The desiccant dryer is now ready for operation.
14. Start the desiccant dryer and check that the unit is operating at the correct air volumes and air pressures by taking measurements in the dry air and wet air ducts.
15. If requested check the dehumidification performance by measuring humidity in the dry air outlet from the desiccant dryer. Compare the result with the performance charts.

# 7 Maintenance

## 7.1 Important notes on maintenance

### Qualification of personnel

All maintenance work must be carried out only by well qualified and trained personnel authorised by the owner. It is the owner's responsibility to verify proper qualification of the personnel.

### General note

The instructions and details for maintenance work must be followed and upheld.

Only the maintenance work described in this documentation may be carried out.

Only use original Condair spare parts to replace faulty parts.

### Safety

Some maintenance work requires removal of the unit covers. Please note the following:



**DANGER!**  
Danger of electric hazard!

**The Condair DA desiccant dryer is mains powered. Live parts may be exposed when the unit is open. Touching live parts may cause severe injury or danger to life.**

**Prevention:** Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.



**WARNING!**  
Risk of injury!

**Inside the Condair DA desiccant dryer there are moving parts present, which can cause serious injury to hands and fingers.**

**Prevention:** Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains) and secure the unit against inadvertent power-up.

Keep hands or other body parts away from moving parts.



**WARNING!**  
Risk of burns!

**Inside the Condair DA desiccant dryer are heating element present, which can cause burns if touched.**

**Prevention:** Before carrying out any work set the Condair DA desiccant dryer out of operation (switch off the unit, disconnect it from the mains), secure the unit against inadvertent power-up, **and wait at least 15 minutes prior to opening any service panel, allowing the heater to cool down.**

The maintenance intervals for the desiccant dryer depend on the surrounding environment and installation site. Recommended maintenance intervals could therefore differ from one installation to another. Incorrect maintenance and service may result in reduced dehumidification capacity.

## 7.2 Filters

The desiccant dryer is equipped with two separate filter banks, one for the process air and the other for the reactivation air. The filters are positioned at the respective inlets and will clean the air prior to entering the desiccant dryer.

Intervals for cleaning or replacement of the filters will be determined by the amount of dust and particles in the air at the installation site.

We recommend that the filters are checked at least once a month. There is a service alarm in the PLC that will be activated after a certain period of time in order to ensure that filters are checked regularly.

The unit can be equipped with differential pressure measurement for checking the pressure drop over the filters.



Never operate the desiccant dryer without the filters, as the rotor can be damaged by dust.

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## 7.3 Rotor

The rotor is maintenance free. However should it be necessary to clean the rotor the first choice should be careful use of compressed air. With severe contamination, the rotor can be washed with water. Cleaning with water is no routine matter; please contact your Condair representative.

Check the rotor bearing and the rotor surface once a year.

Note: Due to the effects of heat during the reactivation process, the white color of the desiccant rotor changes to beige or brownish over time. This is normal and does not affect rotor performance.

DA desiccant dryers with built-in PLC have inductive rotor guard as standard. This feature is not available for units without PLC.



Airborne chemical compounds, e.g. oily vapors or solvents can also be adsorbed by the rotor and permanently reduces its capacity.

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## 7.4 Electrical motors

The electrical motors are equipped with ball bearings. The bearings are designed to last the life of the motor and therefore no maintenance is required.

Check the motors once a year for any abnormal sound.

## 7.5 Heater

The reactivation electric heater does not need maintenance, but should be checked twice a year for any mechanical damage to the heating elements.

## 7.6 Rotor drive belt

Check the belt tensioning at regular intervals. The tensioning is maintained constantly by the belt tension device, and should not need to be adjusted during normal operation. Please note that the belt tensioning should not be too tight as this can damage the drive motor.

## 7.7 Rotor seals

Check that the seals are in the right position and not damaged. There is a service alarm in the PLC that will be activated after certain period in order to ensure that the rotor seals are checked regularly.

## 7.8 General summary of maintenance intervals

	Filter	Rotor bearing	Motors	Rotor drive	Heater	Seals
As required	x					
Every 6th month				x	x	x
Every 12th month		x	x			

## 8 Troubleshooting

Malfunction	Possible cause of trouble	Corrective action
<b>None, or reduced dehumidification capacity</b>	Filter dirty.	Clean or replace filters.
	Electrical heater faulty.	Check fuses.
	Airflow reduced.	Check openings and dampers.
	No rotation of rotor.	Check belt tensioning or PLC alarms.
	Internal leakage in unit.	Check seals and springs. Check internal pressures for unfavourable pressure situations (target: Pa process air $\geq$ Pa re-activation air).
	Altered air volumes.	Measure and check air volumes.
	Altered reactivation temperature.	Check reactivation heater.
	Air leakage.	Check panels and check seals.
<b>Circuit breaker or fuse faulty</b>	Fan faulty.	Check fans and motors.
	Too large air volume.	Check air volumes and dampers.
	Rotor does not rotate.	Check drive motor and drive belt.
	Reactivation heater faulty.	Check reactivation heater.
<b>Desiccant dryer does not start</b>	No control circuit.	Check control fuses.
	Faulty control signal.	Check external start/stop signal
	Phase fault.	Check main fuses.
	Fuse for controls faulty.	Check electrical components.
<b>Rotor does not rotate</b>	Drive belt is slipping.	Check belt tensioning.
	Drive belt broken or worn.	Replace drive belt.
	Rotor jammed.	Check centre shaft, rim of rotor.
	Drive motor faulty.	Replace complete gear motor.
<b>No dry- or wet air volume</b>	Filter dirty.	Clean or replace filters.
	Fan faulty.	Check fan, motor and impeller.
	Phase fault.	Check main fuses and phase sequence.
	Ducts blocked.	Check dampers and ducts.

## 9 Product specification

### 9.1 Technical data

		DA 500	DA 700	DA 1000	DA 1400	DA 2400	DA 3400	DA 4000
Drying capacity at 20°C - 60% rH	kg/h	3.3	5.1	7.1	10	13.5	14.5	20
Nominal dry air volume	m <sup>3</sup> /h	500	700	1000	1400	2400	3400	4000
Nominal reactivation air volume	m <sup>3</sup> /h	150	220	350	400	500	550	850
Nominal ext. pressure process air	Pa	300	200	300	200	300	300	200
Nominal ext. pressure reactivation air	Pa	300	250	200	300	250	200	200
Electrical connected load	kW	4.5	7.5	11	13.6	19	20.6	30.4
Electrical load - reactivation heat register	kW	4	7	10.2	13	17.5	18	26
Operation range - temperature	°C	0 to +40						
Operation range - humidity	%rH	0 to 100						
Voltage supply <sup>1)</sup>	V/Ph/Hz	400/3/50						
Connection diameter process air	mm	400						
Connection diameter dry air	mm	315						
Connection diameter reactivation air	mm	200						
Connection diameter wet air	mm	200						
Filter class process air <sup>2)</sup>		ISO Coarse 65%						
Filter class reactivation air <sup>2)</sup>		ISO Coarse 70%						
Dimensions (H x B x T)	mm	910 x 1199 x 992						
Sound pressure level <sup>3)</sup>	dB(A)	62	62	62	63	68	69	69
Weight	kg	185	190	190	195	200	200	205

<sup>1)</sup> 60 Hz are available upon request

<sup>2)</sup> Classification according to ISO 16890

<sup>3)</sup> Maximum value at 1 m distance, with applied ducting

#### NOTE!

Valid only for standard units, with standard fans, air-flows and standard reactivation heat power.

## 9.2 Dimensions DA 500-4000

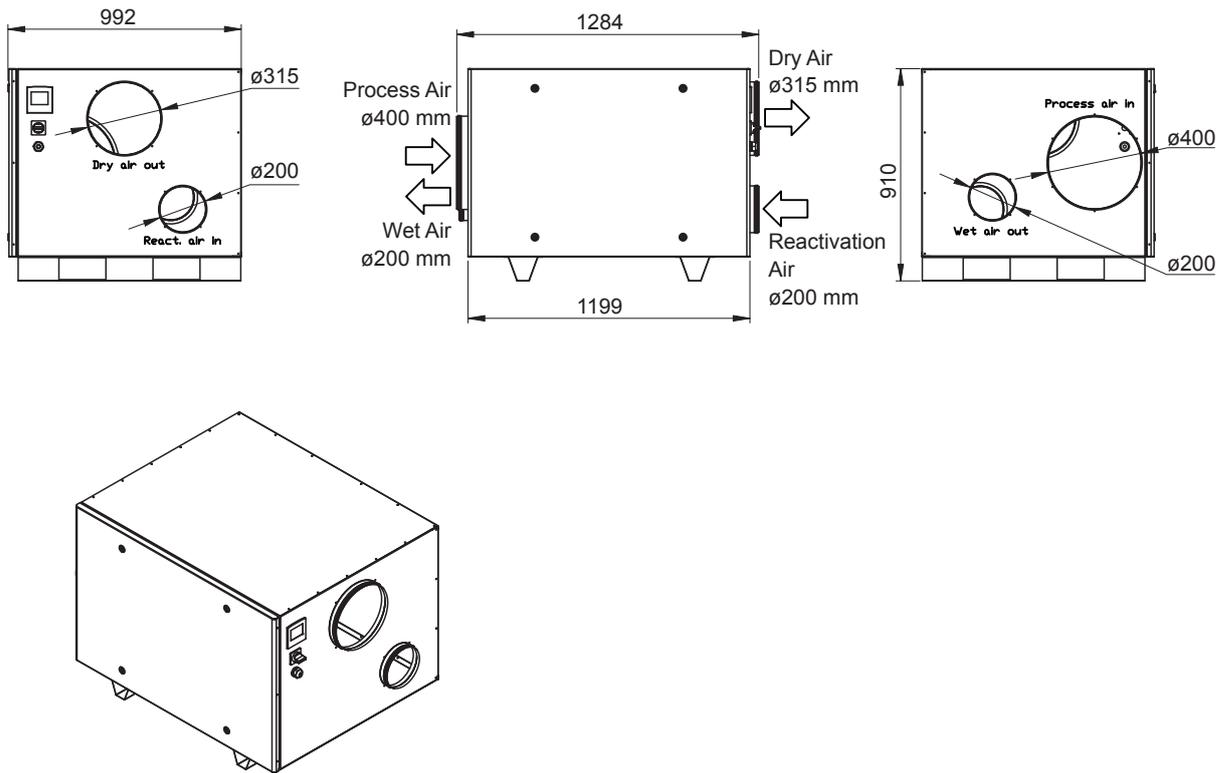


Fig. 4: Dimensions DA 500-4000

## 10 Spare parts

### 10.1 Exploded view

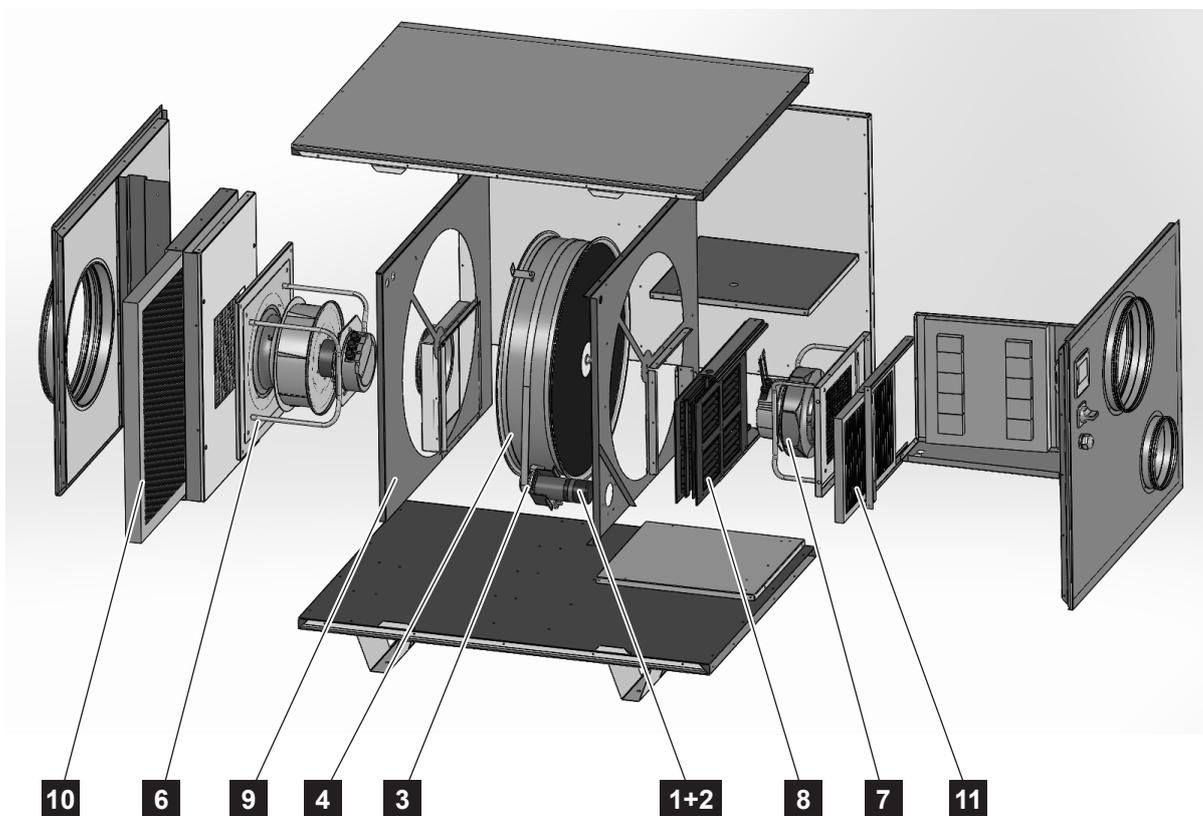


Fig. 5: Exploded view

## 10.2 Spare parts Condair DA 500

Pos.	Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
1	Drive Motor	2597816	SGM65/30-4, 230-240V 50Hz, 3 rpm	1	1
2	Capacitor	2597817	0,5 µF 700 V	1	
3	Belt pulley	2597811	20-5M-09	1	
4	Drive belt	2597818	1595 5M	1	
5	Belt tensioner	2596156	Rosta SE11 + R11	1	
6	Process air fan	2597857	GR25V-2EP.WD.1R	1	
	Motor capacitor Process air fan	2597856	6 µF	1	
7	React. Air fan	2597858	GR22V-2EP.WC.1R	1	
	Motor capacitor React. Air fan	2597853	4 µF	1	
8	Heater PTC	2597837	PTC, HRKK 42/22 - 400V	2	1
9	Rotor	2597807	Rotor DTS-DA-500	1	
	Rotor radial seal	2597834	PTFE	4	
	Rotor peripheral seal	2597832	PTFE/Silicone	2	
	Clamp for peripheral seal	2597833		2	
10	Process air filter	2597865	Panel filter 715 x 494 x 45 mm	1	2
11	Reactivation air filter	2597866	Panel filter 310 x 450 x 25 mm	1	2
--	Rotation guard sensor with magnet	2597875	For units with delivered with PLC	1	
--	Standard Basic-PLC 3,5" incl standard software	2597879	For units with delivered with Basic-PLC	1	

## 10.3 Spare parts Condair DA 700

Pos.	Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
1	Drive Motor	2597816	SGM65/30-4, 230-240V 50Hz, 3 rpm	1	1
2	Capacitor	2597817	0,5 µF 700 V	1	
3	Belt pulley	2597811	20-5M-09	1	
4	Drive belt	2597818	1595 5M	1	
5	Belt tensioner	2596156	Rosta SE11 + R11	1	
6	Process air fan	2597857	GR25V-2EP.WD.1R	1	
	Motor capacitor Process air fan	2597856	6 µF	1	
7	React. Air fan	2597858	GR22V-2EP.WC.1R	1	
	Motor capacitor React. Air fan	2597853	4 µF	1	
8	Heater PTC	2597837	PTC, HRKK 42/22 - 400V	3	1
9	Rotor	2597807	Rotor DTS-DA-700	1	
	Rotor radial seal	2597834	PTFE	4	
	Rotor peripheral seal	2597832	PTFE/Silicone	2	
	Clamp for peripheral seal	2597833		2	
10	Process air filter	2597865	Panel filter 715 x 494 x 45 mm	1	2
11	Reactivation air filter	2597866	Panel filter 310 x 450 x 25 mm	1	2
--	Rotation guard sensor with magnet	2597875	For units with delivered with PLC	1	
--	Standard Basic-PLC 3,5" incl standard software	2597879	For units with delivered with Basic-PLC	1	

## 10.4 Spare parts Condair DA 1000

Pos.	Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
1	Drive Motor	2597816	SGM65/30-4, 230-240V 50Hz, 3 rpm	1	1
2	Capacitor	2597817	0,5 µF 700 V	1	
3	Belt pulley	2597811	20-5M-09	1	
4	Drive belt	2597818	1595 5M	1	
5	Belt tensioner	2596156	Rosta SE11 + R11	1	
6	Process air fan	2597861	R3G250-RR01-H1	1	
7	React. Air fan	2597858	GR22V-2EP.WC.1R	1	
	Motor capacitor React. Air fan	2597853	4 µF	1	
8	Heater PTC	2597837	PTC, HRKK 42/22 - 400V	4	1
9	Rotor	2597807	Rotor DTS-DA-1000	1	
	Rotor radial seal	2597834	PTFE	4	
	Rotor peripheral seal	2597832	PTFE/Silicone	2	
	Clamp for peripheral seal	2597833		2	
10	Process air filter	2597865	Panel filter 715 x 494 x 45 mm	1	2
11	Reactivation air filter	2597866	Panel filter 310 x 450 x 25 mm	1	2
--	Rotation guard sensor with magnet	2597875	For units with delivered with PLC	1	
--	Standard Basic-PLC 3,5" incl standard software	2597879	For units with delivered with Basic-PLC	1	

## 10.5 Spare parts Condair DA 1400

Pos.	Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
1	Getriebemotor	2597816	SGM65/30-4, 230-240V 50Hz, 3 rpm	1	1
2	Kondensator	2597817	0,5 µF 700 V	1	
3	Riemenscheibe	2597819	12 L 050-6F	1	
4	Zahnriemen	2597820	855 L (width 12 mm)	1	
5	Riemenspanner	2596156	Rosta SE11 + R11	1	
6	Prozessventilator	2597861	R3G250-RR01-H1	1	
7	React. Air fan	2597857	GR25V-2EP.WD.1R	1	
	Motor capacitor React. Air fan	2597856	6 µF	1	
8	Heater PTC	2597837	PTC, HRKK 42/22 - 400V	4	1
9	Rotor	2597803	Rotor DTS-DA-1400	1	
	Rotor radial seal	2597828	PTFE	4	
	Rotor peripheral seal	2597826	PTFE/Silicone	2	
	Clamp for peripheral seal	2597827		2	
10	Process air filter	2597865	Panel filter 715 x 494 x 45 mm	1	2
11	Reactivation air filter	2597866	Panel filter 310 x 450 x 25 mm	1	2
--	Rotation guard sensor with magnet	2597875	For units with delivered with PLC	1	
--	Standard Basic-PLC 3,5" incl standard software	2597879	For units with delivered with Basic-PLC	1	

## 10.6 Spare parts Condair DA 2400

Pos.	Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
1	Drive Motor	2597816	SGM65/30-4, 230-240V 50Hz, 3 rpm	1	1
2	Capacitor	2597817	0,5 µF 700 V	1	
3	Belt pulley	2597819	12 L 050-6F	1	
4	Drive belt	2597820	855 L (width 12 mm)	1	
5	Belt tensioner	2596156	Rosta SE11 + R11	1	
6	Process air fan	2597859	R3G280-AU11-C1	1	
7	React. Air fan	2597857	GR25V-2EP.WD.1R	1	
	Motor capacitor React. Air fan	2597856	6 µF	1	
8	Heater PTC	2597837	PTC, HRKK 42/22 - 400V	6	1
9	Rotor	2597803	Rotor DTS-DA-2400	1	
	Rotor radial seal	2597828	PTFE	4	
	Rotor peripheral seal	2597826	PTFE/Silicone	2	
	Clamp for peripheral seal	2597827		2	
10	Process air filter	2597865	Panel filter 715 x 494 x 45 mm	1	2
11	Reactivation air filter	2597866	Panel filter 310 x 450 x 25 mm	1	2
--	Rotation guard sensor with magnet	2597875	For units with delivered with PLC	1	
--	Standard Basic-PLC 3,5" incl standard software	2597879	For units with delivered with Basic-PLC	1	

## 10.7 Spare parts Condair DA 3400

Pos.	Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
1	Drive Motor	2597816	SGM65/30-4, 230-240V 50Hz, 3 rpm	1	1
2	Capacitor	2597817	0,5 µF 700 V	1	
3	Belt pulley	2597819	12 L 050-6F	1	
4	Drive belt	2597820	855 L (width 12 mm)	1	
5	Belt tensioner	2596156	Rosta SE11 + R11	1	
6	Process air fan	2597860	GR31C-ZID.DC.1R	1	
7	React. Air fan	2597857	GR25V-2EP.WD.1R	1	
	Motor capacitor React. Air fan	2597856	6 µF	1	
8	Heater PTC	2597837	PTC, HRKK 42/22 - 400V	6	1
9	Rotor	2597803	Rotor DTS-DA-3400	1	
	Rotor radial seal	2597828	PTFE	4	
	Rotor peripheral seal	2597826	PTFE/Silicone	2	
	Clamp for peripheral seal	2597827		2	
10	Process air filter	2597865	Panel filter 715 x 494 x 45 mm	1	2
11	Reactivation air filter	2597866	Panel filter 310 x 450 x 25 mm	1	2
--	Rotation guard sensor with magnet	2597875	For units with delivered with PLC	1	
--	Standard Basic-PLC 3,5" incl standard software	2597879	For units with delivered with Basic-PLC	1	

## 10.8 Spare parts Condair DA 4000

Pos.	Part	Part No.	Technical specification	Numbers installed	Numbers of recommended spare parts
1	Drive Motor	2597816	SGM65/30-4, 230-240V 50Hz, 3 rpm	1	1
2	Capacitor	2597817	0,5 µF 700 V	1	
3	Belt pulley	2597819	12 L 050-6F	1	
4	Drive belt	2597820	855 L (width 12 mm)	1	
5	Belt tensioner	2596156	Rosta SE11 + R11	1	
6	Process air fan	2597862	GR31C-ZID.DG.CR	1	
7	React. Air fan	2597861	R3G250-RR01-H1	1	
8	Heater PTC	2597837	PTC, HRKK 42/22 - 400V	8	1
9	Rotor	2597806	Rotor DTS-DA-4000	1	
	Rotor radial seal	2597828	PTFE	4	
	Rotor peripheral seal	2597826	PTFE/Silicone	2	
	Clamp for peripheral seal	2597827		2	
10	Process air filter	2597865	Panel filter 715 x 494 x 45 mm	1	2
11	Reactivation air filter	2597866	Panel filter 310 x 450 x 25 mm	1	2
--	Rotation guard sensor with magnet	2597875	For units with delivered with PLC	1	
--	Standard Basic-PLC 3,5" incl standard software	2597879	For units with delivered with Basic-PLC	1	

# 11 Component data

## 11.1 Component data Condair DA 500

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
<b>Fans</b>				
Manufacturer		Ziehl-Abegg	Ziehl-Abegg	
Fan type		GR25V-2EP.WD.1R	GR22V-2EP.WC.1R	
<b>Motors</b>				
Manufacturer		Ziehl-Abegg	Ziehl-Abegg	Rotek
Model		GR25V-2EP.WD.1R	GR22V-2EP.WC.1R	SGM65/30-4
Speed	min-1	2740	2500	3,0
Power	kW	0,24	0,12	7,8 W
Voltage	V	1x 230'V	1x 230'V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	1,05	0,52	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
<b>Rotor</b>				
Type				Rotor 500
<b>Filters</b>				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO Coarse 65%	ISO Coarse 70%	
Filter media		Cotton/Synthetic	Synthetic	
Dimensons	mm	1p. 715 x 494 x 45	1p. 310 x 450 x 25	
Pressure drop, clean filter	Pa	40	40	
Pressure drop, dirty filter	Pa	140	140	
<b>Heating, reactivation air</b>				
Power	kW			
Type			PTC	
Voltage	V		400	
Number of heating elements			2	

## 11.2 Component data Condair DA 700

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
<b>Fans</b>				
Manufacturer		Ziehl-Abegg	Ziehl-Abegg	
Fan type		GR25V-2EP.WD.1R	GR22V-2EP.WC.1R	
<b>Motors</b>				
Manufacturer		Ziehl-Abegg	Ziehl-Abegg	Rotek
Model		GR25V-2EP.WD.1R	GR22V-2EP.WC.1R	SGM65/30-4
Speed	min-1	2740	2500	3,0
Power	kW	0,24	0,12	7,8 W
Voltage	V	1x 230V	1x 230V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	1,05	0,52	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
<b>Rotor</b>				
Type				Rotor 700
<b>Filters</b>				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO Coarse 65%	ISO Coarse 70%	
Filter media		Cotton/Synthetic	Synthetic	
Dimensions	mm	1p. 715 x 494 x 45	1p. 310 x 450 x 25	
Pressure drop, clean filter	Pa	40	40	
Pressure drop, dirty filter	Pa	140	140	
<b>Heating, reactivation air</b>				
Power	kW			
Type			PTC	
Voltage	V		400	
Number of heating elements			3	

### 11.3 Component data Condair DA 1000

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
<b>Fans</b>				
Manufacturer		Ebmpapst	Ziehl-Abegg	
Fan type		R3G250-RR01-H1	GR22V-2EP.WC.1R	
<b>Motors</b>				
Manufacturer		Ebmpapst	Ziehl-Abegg	Rotek
Model		M3G 084-DF	GR22V-2EP.WC.1R	SGM65/30-4
Speed	min-1	3740	2740	3,0
Power	kW	0,5	0,24	7,8 W
Voltage	V	1x230V	1x230V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	2,2	1,05	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
<b>Rotor</b>				
Type				Rotor 1400
<b>Filters</b>				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO Coarse 65%	ISO Coarse 70%	
Filter media		Cotton/Synthetic	Synthetic	
Dimensions	mm	1p. 715 x 494 x 45	1p. 310 x 450 x 25	
Pressure drop, clean filter	Pa	40	40	
Pressure drop, dirty filter	Pa	140	140	
<b>Heating, reactivation air</b>				
Power	kW			
Type			PTC	
Voltage	V		400	
Number of heating elements			4	

## 11.4 Component data Condair DA 1400

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
<b>Fans</b>				
Manufacturer		Ebmpapst	Ziehl-Abegg	
Fan type		R3G250-RR01-H1	GR25V-2EP.WD.1R	
<b>Motors</b>				
Manufacturer		Ebmpapst	Ziehl-Abegg	Rotek
Model		M3G 084-DF	GR25V-2EP.WD.1R	SGM65/30-4
Speed	min-1	3740	2740	3,0
Power	kW	0,5	0,24	7,8 W
Voltage	V	1x230V	1x230V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	2,2	1,05	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
<b>Rotor</b>				
Type				Rotor 1400
<b>Filters</b>				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO Coarse 65%	ISO Coarse 70%	
Filter media		Cotton/Synthetic	Synthetic	
Dimensions	mm	1p. 715 x 494 x 45	1p. 310 x 450 x 25	
Pressure drop, clean filter	Pa	40	40	
Pressure drop, dirty filter	Pa	140	140	
<b>Heating, reactivation air</b>				
Power	kW			
Type			PTC	
Voltage	V		400	
Number of heating elements			4	

## 11.5 Component data Condair DA 2400

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
<b>Fans</b>				
Manufacturer		ebmpapst	Ziehl-Abegg	
Fan type		R3G280-AU11-C1	GR25V-2EP.WD.1R	
<b>Motors</b>				
Manufacturer		ebmpapst	Ziehl-Abegg	Rotek
Model		M3G084-GF	GR25V-2EP.WD.1R	SGM65/30-4
Speed	min-1	3100	2740	3,0
Power	kW	1,0	0,24	7,8 W
Voltage	V	3x400V	1x230V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	1,6	1,05	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
<b>Rotor</b>				
Type				Rotor 2400
<b>Filters</b>				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO Coarse 65%	ISO Coarse 70%	
Filter media		Cotton/Synthetic	Synthetic	
Dimensions	mm	1p. 715 x 494 x 45	1p. 310 x 450 x 25	
Pressure drop, clean filter	Pa	40	40	
Pressure drop, dirty filter	Pa	140	140	
<b>Heating, reactivation air</b>				
Power	kW			
Type			PTC	
Voltage	V		400	
Number of heating elements			6	

## 11.6 Component data Condair DA 3400

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
<b>Fans</b>				
Manufacturer		Ziehl-Abegg	Ziehl-Abegg	
Fan type		GR31C-ZID.DC.1R	GR25V-2EP.WD.1R	
<b>Motors</b>				
Manufacturer		Ziehl-Abegg	Ziehl-Abegg	Rotek
Model		GR31C-ZID.DC.1R	GR25V-2EP.WD.1R	SGM65/30-4
Speed	min-1	3550	2740	3,0
Power	kW	2,2	0,24	7,8 W
Voltage	V	3x400	1x230	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	3,6	1,05	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
<b>Rotor</b>				
Type				Rotor 3400
<b>Filters</b>				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO Coarse 65%	ISO Coarse 70%	
Filter media		Cotton/Synthetic	Synthetic	
Dimensions	mm	1p. 715 x 494 x 45	1p. 310 x 450 x 25	
Pressure drop, clean filter	Pa	40	40	
Pressure drop, dirty filter	Pa	140	140	
<b>Heating, reactivation air</b>				
Power	kW		18	
Type			PTC	
Voltage	V		400	
Number of heating elements			6	

## 11.7 Component data Condair DA 4000

Unit part / Components	Units	Process air (dry air side)	Reactivation air (wet air side)	Rotor
<b>Fans</b>				
Manufacturer		Ziehl-Abegg	Ebmpapst	
Fan type		GR31C-ZID.DG.CR	R3G250-RR01-H1	
<b>Motors</b>				
Manufacturer		Ziehl-Abegg	Ebmpapst	Rotek
Model		RH31C-ZID.DG.CR	M3G 084-DF	SGM65/30-4
Speed	min-1	4200	3740	3,0
Power	kW	3,9	0,5	7,8 W
Voltage	V	3x400V	1x230V	230
Frequency	Hz	50/60	50/60	50/60
Amps	A	6,2	0,5	60 mA
Protection class	IP	54	54	
Insulation class	ISO	F	F	
<b>Rotor</b>				
Type				Rotor 4000
<b>Filters</b>				
Type		Panel filter	Panel filter	
Filter class ISO 16890		ISO Coarse 65%	ISO Coarse 70%	
Filter media		Cotton/Synthetic	Synthetic	
Dimensions	mm	1p. 715 x 494 x 45	1p. 310 x 450 x 25	
Pressure drop, clean filter	Pa	40	40	
Pressure drop, dirty filter	Pa	140	140	
<b>Heating, reactivation air</b>				
Power	kW			
Type			PTC	
Voltage	V		400	
Number of heating elements			8	

# 12 EU declaration of conformity

## EU declaration of conformity

Condair Group AG  
Gwattstrasse 17  
8808 Pfäffikon SZ  
Switzerland

declare under own responsibility that the product:

**Condair Dehumidifier DA 500, DA 700, DA 800, DA 1000, DA 1100, DA 1400, DA 2400, DA 3400, DA 4000, DA 4400, DA 6000, DA 6400, DA 7400, DA 8000, DA 9400, DA 13000, DA 19000 and DA 27000 from unit no 128 1512**

which is detailed in this declaration complies to the following harmonized European standards and technical specifications:

<b>EN ISO 12100:2010</b>	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
<b>EN 60204-1:2018</b>	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
<b>EN 61000-6-3:2007/A1:2011/AC:2012</b>	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
<b>EN 61000-6-2:2005/C1:2005</b>	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments

according to conditions in directive:

<b>2006/42/EC</b>	Machinery Directive
<b>2009/125/EC</b>	Ecodesign requirements for fans driven by motors with an electric input power between 125 W and 500 kW
<b>2014/30/EU</b>	Electromagnetic Compatibility (EMC) Directive

Pfäffikon 2018-12-12

The manufacturer:



Condair Group AG  
Robert Merki



## 13 Appendix 1 – electrical wiring diagram

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The electrical wiring diagram for the desiccant dryer will be completed about 2 weeks before completion of the unit and is delivered together with the unit.

As every dehumidifier is uniquely manufactured to client specification the wiring diagram is unique to the particular unit consequently the specific electrical wiring diagram.



CONSULTING, SALES AND SERVICE:



CH94/0002.00

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The Condair logo, consisting of a stylized wave symbol followed by the word 'condair' in a bold, lowercase, sans-serif font.