

REFRIGERATED DRYERS RDX-series



For complete drying of compressed air, it is necessary to use refrigerated dryers. RDX series dehumidifiers are a robust design with low pressure loss and high efficiency.

Constant low dew point for efficient moisture removal even in the case of variable compressed air flow conditions



RDX-series refrigerated dryers with a capacity of 0.4–36.0 m³/min are equipped with an efficient cast-aluminium heat exchanger and an inbuilt coalescence separator. The low degree of pressure loss due to the inbuilt separator and the reliable outer insulation of the heat exchanger facilitate a high level of energy efficiency for the system. The coalescence separator is insensitive to pressure fluctuations in the case of varying load and reliably removes up to 98% of condensed moisture.

Combined 3-in-1 heat exchanger

The combined heat exchanger in an RDX refrigerated dryer consists of three functional units: an air/air heat exchanger, an air/refrigerant heat exchanger and a coalescence separator.

The air/air heat exchanger pre-cools hot compressed air. This saves up to 50% in energy in the subsequent refrigerant cooling process. At the same time, cold dry air leaving the dryer is heated to a suitable temperature for subsequent use. The air/refrigerant heat exchanger brings the temperature of the compressed air to dew point. The coalescence separator removes condensate from the compressed air. The separated condensate is periodically discharged by the condensate drain valve.



Features:

- Operation and failure LED indication
- Dew point indicator with a colour scale
- Hot-gas bypass regulation for an adjustment of refrigeration capacity
- Reliable drain valve and electronic timer to control periodic operation
- Environmentally and ozone-friendly refrigerants R134a and R404a
- Efficient thermally insulated heat exchanger
- Modern and reliable refrigerant compressors

Functional block diagram refrigerated dryers RDX

The refrigerant compressor (1) condenses the gaseous refrigerant in the condenser (3), where most of the refrigerant passes into the liquid phase. The liquefied refrigerant is directed through the filter-dryers (6), injected via the capillary pipe (4) and evaporated in the evaporator (2), where it absorbs the heat of the compressed air.

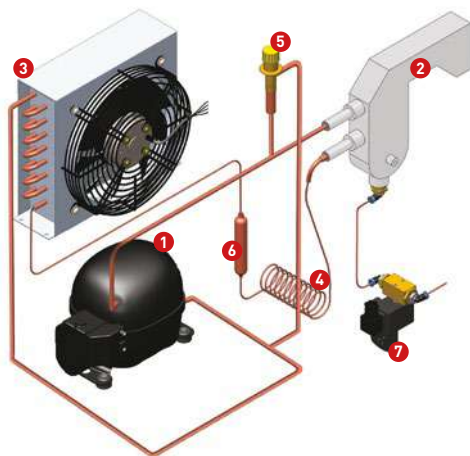
Due to the heat exchange between the compressed air and the refrigerant, the refrigerant passes into the gaseous state. This cycle is continuously repeated. The cooling circuit

is equipped with hot-gas bypass regulation for providing refrigeration that is adjusted to the variable compressed air flow.

When demand for compressed air falls, the hot-gas bypass valve opens and allows the hot air to flow from the high-pressure side to the low-pressure side. The pressure in the evaporator is held constant and ensures the pressure dew point never falls below +3° C in order to prevent icing of the evaporator.

Refrigerated dryers RDX-04 to RDX-77

Functional block diagram



Main component

1. Refrigerant compressor
2. Evaporator

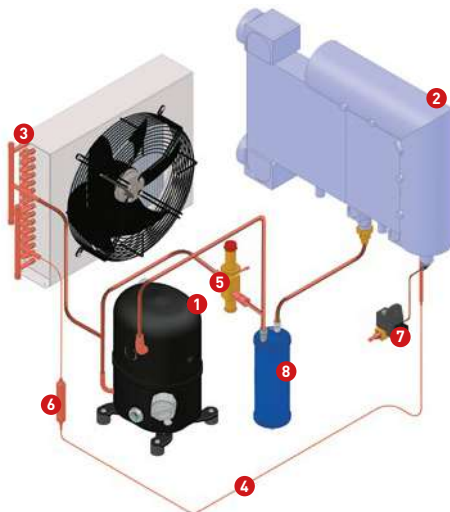
3. Condenser
4. Capillary pipe

5. Hot-gas bypass valve
6. Filter-dryer

7. Time-controlled drain valve

Refrigerated dryers RDX-100 to RDX-360

Functional block diagram



Adjusting dryer's capacity for different operating conditions

The capacity applies to a working pressure of 7 bar, a compressed air temperature at the dryer's inlet of 35°C and an ambient temperature of 25°C, according to DIN ISO 7183. In order to calculate the dryer's capacity for real operating conditions at the dryer's inlet, please use the following correction coefficients:

$$\text{Capacity}_{(\text{air compressor})} \times F_1 \times F_2 \times F_3 = \text{Capacity}_{(\text{dryer})}$$

Example:

For an air compressor capacity of 1.6 m³/min, a working pressure of 4 bar, a compressed air temperature at the dryer's inlet of 45°C and an ambient temperature of 35°C, the required capacity of the refrigerated dryer is calculated as follows:

Correction coefficients:

| Working pressure [bar] | 0 | 1 | 2 | 4 | 6 | 7 | 8 | 10 | 12 | 14 | 16 |
|--------------------------|------|------|------|------|------|------|------|------|------|------|-----|
| F ₁ | X | X | X | 1,25 | 1,06 | 1,00 | 0,96 | 0,90 | 0,86 | 0,82 | 0,8 |
| T°C Compressed air inlet | 30 | 35 | 40 | 45 | 50 | 60 | 70 | | | | |
| F ₂ | 0,85 | 1,00 | 1,18 | 1,39 | 1,67 | 2,1 | | | | | |
| T°C Ambient | 22 | 25 | 30 | 35 | 40 | 45 | 50 | 60 | | | |
| F ₃ | 0,92 | 1 | 1,07 | 1,14 | 1,22 | 1,35 | 1,50 | | | | |

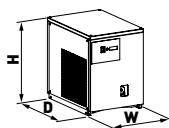
$$\text{Capacity (dryer)} = 1.6 \times 1.25 \times 1.39 \times 1.14 = 3.169 \text{ m}^3/\text{min}.$$

Technical data refrigerated dryers RDX

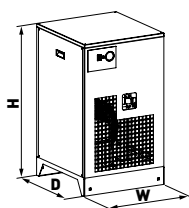
| Article | Model | Air flow* (m³/min) | Max. work- ing pressure (bar) | Screw con- nection | Rated voltage (Phase/V/Hz) | Drive power (kW) |
|----------|---------|-----------------------|-------------------------------------|-----------------------|----------------------------------|---------------------|
| 14310000 | RDX-04 | 0,40 | 16 | G 1/2" | 1/230/50 | 0,1 |
| 14310001 | RDX-06 | 0,60 | 16 | G 1/2" | 1/230/50 | 0,2 |
| 14310002 | RDX-09 | 0,90 | 16 | G 3/4" | 1/230/50 | 0,2 |
| 14310003 | RDX-12 | 1,20 | 16 | G 3/4" | 1/230/50 | 0,3 |
| 14310004 | RDX-18 | 1,80 | 16 | G 3/4" | 1/230/50 | 0,3 |
| 14310005 | RDX-24 | 2,40 | 14 | G 1" | 1/230/50 | 0,5 |
| 14310006 | RDX-30 | 3,00 | 14 | G 1" | 1/230/50 | 0,6 |
| 14310007 | RDX-36 | 3,60 | 14 | G 1" | 1/230/50 | 0,7 |
| 14310008 | RDX-41 | 4,10 | 14 | G 1" | 1/230/50 | 0,8 |
| 14310009 | RDX-52 | 5,20 | 14 | G 1.1/2" | 1/230/50 | 1,0 |
| 14310010 | RDX-65 | 6,50 | 14 | G 1.1/2" | 1/230/50 | 1,1 |
| 14310011 | RDX-77 | 7,70 | 14 | G 1.1/2" | 1/230/50 | 1,5 |
| 14310012 | RDX-100 | 10,00 | 14 | G 2.1/2" | 3/400/50 | 2,1 |
| 14310013 | RDX-120 | 12,00 | 14 | G 2.1/2" | 3/400/50 | 2,2 |
| 14310014 | RDX-150 | 15,00 | 14 | G 2.1/2" | 3/400/50 | 2,4 |
| 14310015 | RDX-180 | 18,00 | 14 | G 2.1/2" | 3/400/50 | 3,0 |
| 14310016 | RDX-200 | 20,00 | 14 | DN80 | 3/400/50 | 3,0 |
| 14310017 | RDX-240 | 24,00 | 14 | DN80 | 3/400/50 | 3,7 |
| 14310018 | RDX-300 | 30,00 | 14 | DN80 | 3/400/50 | 4,7 |
| 14310019 | RDX-360 | 36,00 | 14 | DN80 | 3/400/50 | 5,4 |

*Measured according to ISO 7183

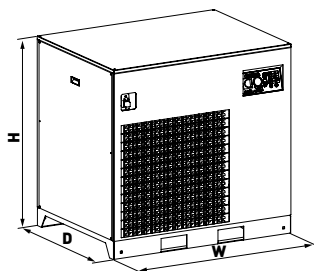
Dimensions of RDX-series



| Model | Height H (mm) | Width W (mm) | Depth D (mm) | Weight (kg) |
|--------|---------------|--------------|--------------|-------------|
| RDX-04 | 500 | 370 | 540 | 34 |
| RDX-06 | 500 | 370 | 540 | 35 |
| RDX-09 | 500 | 370 | 540 | 36 |
| RDX-12 | 500 | 370 | 540 | 36 |
| RDX-18 | 500 | 370 | 540 | 38 |



| Model | Height H (mm) | Width W (mm) | Depth D (mm) | Weight (kg) |
|---------|---------------|--------------|--------------|-------------|
| RDX-24 | 810 | 510 | 555 | 47 |
| RDX-30 | 810 | 510 | 555 | 52 |
| RDX-36 | 810 | 510 | 555 | 60 |
| RDX-41 | 810 | 510 | 555 | 65 |
| RDX-52 | 890 | 515 | 565 | 72 |
| RDX-65 | 890 | 515 | 565 | 75 |
| RDX-77 | 890 | 515 | 565 | 86 |
| RDX-100 | 1063 | 750 | 841 | 135 |
| RDX-120 | 1063 | 750 | 841 | 151 |
| RDX-150 | 1063 | 750 | 841 | 162 |
| RDX-180 | 1063 | 750 | 841 | 180 |



| Model | Height H (mm) | Width W (mm) | Depth D (mm) | Weight (kg) |
|---------|---------------|--------------|--------------|-------------|
| RDX-200 | 1150 | 1200 | 970 | 275 |
| RDX-240 | 1150 | 1200 | 970 | 295 |
| RDX-300 | 1150 | 1200 | 970 | 315 |
| RDX-360 | 1150 | 1200 | 970 | 335 |



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