Refrigerated dryers RDX with 0.4–18.0 m³/min capacity

RDX series dehumidifiers feature 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

Pictured: RDX-24
RDX-52

Refrigerated dryers of the RDX-series with 0.4–18.0 m³/min capacity are equipped with a stainless steel plate heat exchanger (model RDX-04 to RDX-18) or with an aluminium plate-fin heat exchanger (model RDX-24 to RDX-180), each with an integrated stainless steel condensate separator.

Low pressure loss because of an integrated condensate separator and efficient thermal insulation ensure energy-efficient operation.

The integrated stainless steel coalescence condensate separator provides constant performance even under conditions with variable compressed air flow and separates up to 98% of liquid condensate.

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

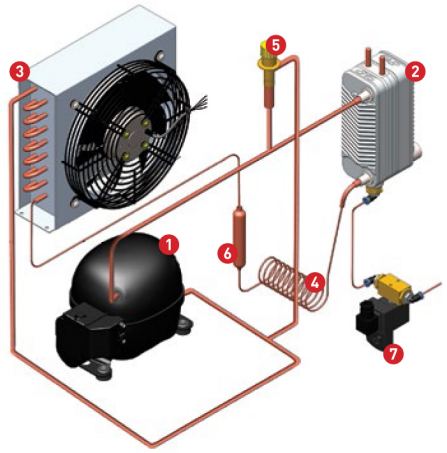
The refrigerant compressor (1) condenses the gaseous refrigerant in the condenser (3), where most of the refrigerant passes into the liquid phase. The liquefied refrigerant is directed through the filter-dryers (6), injected via the capillary pipe (4) and evaporated in the evaporator (2), where it absorbs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

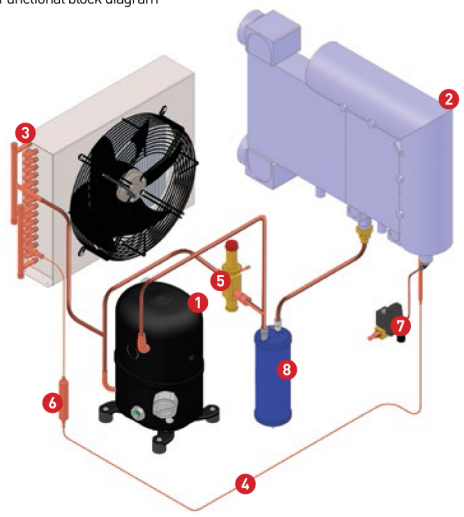
The cooling circuit is equipped with hot-gas bypass regulation for providing refrigeration that is adjusted to the variable compressed air flow.

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-18
Functional block diagram



Refrigerated dryers RDX-24 to RDX-180
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
8. Liquid separator

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:

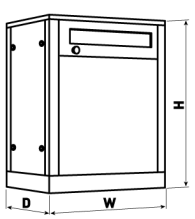
Working pressure (bar)	0	1	2	4	6	7	8	10	12	14	16
F_1	X	X	X	1,25	1,06	1,00	0,96	0,90	0,86	0,82	0,8
T°C Compressed air inlet	30	35	40	45	50	60	70				
F_2	0,85	1,00	1,18	1,39	1,67	2,1					
T°C Ambient	22	25	30	35	40	45	50	60			
F_3	0,92	1	1,07	1,14	1,22	1,35	1,50				

Capacity (dryer) = 1.6 x 1.25 x 1.39 x 1.14 = 3.169 m³/min.

Technical data

Article	Model	Air flow* (m³/min)	Max. working pressure (bar)	Screw connection	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 1/2"	1/230/50	0,2
14310003	RDX-12	1,20	16	G 1/2"	1/230/50	0,3
14310004	RDX-18	1,80	16	G 1/2"	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"	3/380/50	2,1
14310013	RDX-120	12,00	14	G 2 1/2"	3/380/50	2,2
14310014	RDX-150	15,00	14	G 2 1/2"	3/380/50	2,4
14310015	RDX-180	18,00	14	G 2 1/2"	3/380/50	3,0

*Measured according to ISO 7183



Dimensions of RDX-series

Model	Height H (mm)	Width W (mm)	Depth D (mm)	Weight (kg)
RDX-04	501	360	518	34
RDX-06	501	360	518	35
RDX-09	501	360	518	36
RDX-12	501	360	518	36
RDX-18	501	360	518	38
RDX-24	808	508	554	47
RDX-30	808	508	554	52
RDX-36	808	508	554	60
RDX-41	808	508	554	65
RDX-52	890	512	562	72
RDX-65	890	512	562	75
RDX-77	890	512	562	86
RDX-100	1150	850	800	177
RDX-120	1150	850	800	182
RDX-150	1150	850	800	185
RDX-180	1150	850	800	188