

# COMPRAG®

positive displacement



#1

COMPRESSED AIR PREPARATION  
**REFRIGERATED DRYER**  
**RDX-series**



## 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 m<sup>3</sup>/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.

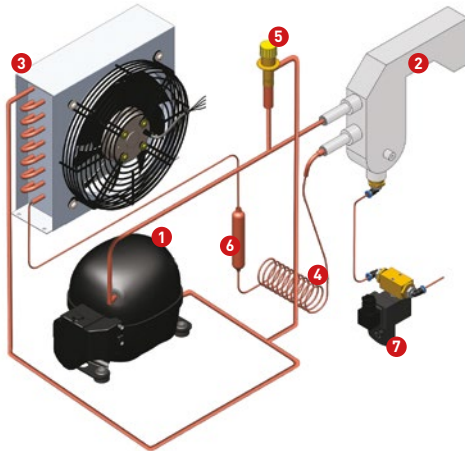
Due to the heat exchange between the compressed air and the refrigerant, the refrigerant passes into the gaseous state. This cycle is continuously repeated. The cooling circuit

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

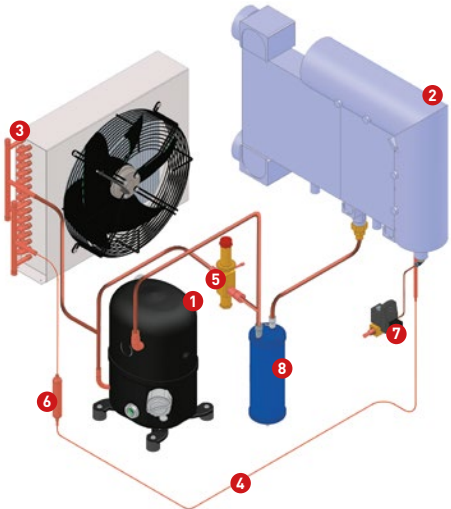
3. Condenser  
4. Capillary pipe

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

7. Time-controlled drain valve

### Refrigerated dryers RDX-100 to RDX-360

Functional block diagram



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 m<sup>3</sup>/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 <sub>1</sub>	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 <sub>2</sub>	0,85	1,00	1,18	1,39	1,67	2,1					
T°C Ambient	22	25	30	35	40	45	50	60			
F <sub>3</sub>	0,92	1	1,07	1,14	1,22	1,35	1,50				

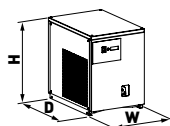
$$\text{Capacity (dryer)} = 1.6 \times 1.25 \times 1.39 \times 1.14 = 3.169 \text{ m}^3/\text{min}.$$

## Technical data refrigerated dryers RDX

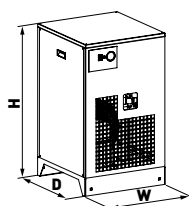
Article	Model	Air flow* (m <sup>3</sup> /min)	Max. working pressure (bar)	Screw connection	Rated voltage (Phase/V/Hz)	Drive power (kW)
14310000	RDX-04	0,40	16	G 1/2"	1/230/50	0,1
14310001	RDX-06	0,60	16	G 1/2"	1/230/50	0,2
14310002	RDX-09	0,90	16	G 3/4"	1/230/50	0,2
14310003	RDX-12	1,20	16	G 3/4"	1/230/50	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

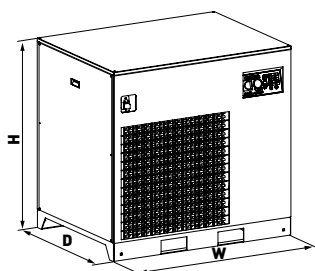
## Dimensions of RDX-series



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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