



# ADSORPTION DRYER

## CO2-R-DRY 400-20000

### BVA/BVA(P)

(Heat regenerated adsorption dryer)

#### DESCRIPTION

CO2-R-DRY adsorption dryers are designed for continuous separation of water vapour from compressed CO<sub>2</sub> thus lowering the dew point. CO2-R-DRY dryers have two columns that operate alternately. Adsorption takes place under pressure in the first column while the second column regenerates (heated ambient air for desorption + ambient air in vacuum mode for cooling). A dryer consists of two columns, filled with desiccant beads, a blower, heater, controller with an LCD display, valves, manometers, and a support construction. A proven and robust design enables efficient and reliable operation, fast installation and simple maintenance.



#### DRYER RATING ACCORDING TO ISO8573-1

Solid particles <sup>(1)</sup>	Water <sup>(1),(2)</sup>	Oil <sup>(1)</sup>
2	1-3	1

<sup>(1)</sup>Typical result based on standard configuration and nominal operating conditions

<sup>(2)</sup>Dependant on a specific design. Class 2 when operated at nominal operating conditions.

#### TECHNICAL SPECIFICATIONS

Operating pressure	4 – 25 bar
Operating temperature (inlet)	1,5°C to 42,5°C (for temperature >35°C apply correction factor)
Ambient temperature	1,5°C to 50°C (check also blower suction conditions)
Pressure dew point	-40°C (lower PDP on request)
Voltage, Frequency	400V, 50Hz
Protection class (controller)	IP 54
Communication	Modbus TCP/IP, Profinet TCP/IP
Filter requirement (inlet) <sup>(1)</sup>	Super fine coalescing; residual oil cont. <0,01mg/m <sup>3</sup> ; 0,01µm
Filter requirement (outlet) <sup>(1)</sup>	Dust filter; 1µm
Column insulation	Included
Valve position switches	OPTIONAL
<b>DRYER TYPES</b>	<b>BVA, BVA(P)</b>
Desorption	Blower ambient air (vac.)
Cooling	Blower ambient air (vac.)
Blower suction conditions max.	20% RH at 40°C
	37% RH at 35°C
	50% RH at 30°C
	70% RH at 25°C
	90% RH at 20°C
Compressed carbon dioxide losses	0% <sup>(2)</sup>

(1) Filters are included as standard but not mounted on the dryer.

(2) A small quantity of gas is lost to operate the valves and during switch over. In BVA(P) small portion of gas is also consumed to purge the vessels with carbon dioxide after regeneration with air.



## MATERIALS

Columns, piping	Stainless steel
Construction	Carbon steel
Construction protection	Epoxy painted
Valves	Brass, aluminium, steel, stainless steel
Seals	NBR, FKM
Fittings, Screws, plugs	Stainless steel, brass, steel (zinc plated)
Desiccant	Activated alumina

## SIZES

Model	Conn. IN & OUT <sup>(4)</sup>	Inlet flow [Nm <sup>3</sup> /h] <sup>(3)</sup>	A [mm]	B [mm]	C [mm]	Mass [kg]	Vessel Volume [l] <sup>(5)</sup>	Blower power [kW]	Heater power [kW]
CO2-R-DRY 400	DN50	390	1200	850	2250	1000	108	1,3	3,5
CO2-R-DRY 600	DN50	590	1500	900	2350	1400	167	1,6	5,5
CO2-R-DRY 780	DN50	780	1750	1000	2450	1800	221	1,6	7
CO2-R-DRY 1000	DN50	930	1750	1250	2450	1900	266	1,6	8
CO2-R-DRY 1200	DN80	1150	1900	1100	2450	2200	333	1,6	10
CO2-R-DRY 1600	DN80	1600	1900	1350	2500	2600	474	4	14
CO2-R-DRY 2000	DN100	1950	2200	1150	2600	3400	583	4	17
CO2-R-DRY 2500	DN100	2530	2350	1150	2750	3800	769	7,5	22
CO2-R-DRY 3000	DN100	2990	2500	1150	2750	4000	917	8,5	26
CO2-R-DRY 3600	DN100	3680	2800	1350	2850	4800	1146	8,5	32
CO2-R-DRY 4100	DN125	4100	3000	1350	2850	5100	1291	8,5	35
CO2-R-DRY 5000	DN125	4990	3200	1450	2950	5900	1609	15	45
CO2-R-DRY 6500	DN150	6550	3520	1750	3050	7200	2166	15	56
CO2-R-DRY 7700	DN150	7700	3700	2000	3100	7900	2592	15	70
CO2-R-DRY 10000	DN200	10250	4300	2200	3550	12000	3584	22	95
CO2-R-DRY 12000	DN200	11700	4400	2500	3550	14200	4173	-	-
CO2-R-DRY 14000	DN200	14800	4800	2600	3650	16800	5463	-	-
CO2-R-DRY 16000	DN200	16000	5000	3200	3650	18500	6201	-	-
CO2-R-DRY 18000	DN250	18200	5200	3500	4200	20000	6982	-	-
CO2-R-DRY 20000	DN250	20200	6000	3500	4350	23000	7820	-	-

<sup>(3)</sup>Refers to 1bar(a) and 20°C at 7 bar operating pressure , inlet temperature 35°C and pressure dew point at outlet -40°C

<sup>(4)</sup>Refers to dryer inlet and outlet connection without filters.

<sup>(5)</sup>Volume per vessel

## CORRECTION FACTORS

To calculate the correct capacity of a given dryer based on actual operating conditions, multiply the nominal flow capacity by the appropriate correction factor(s).

$$\text{Corrected capacity} = \text{Nominal inlet flow capacity} \times c_{OP} \times c_{OT}$$

## OPERATING PRESSURE

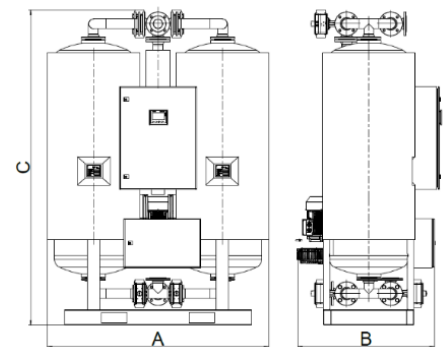
[bar]	4	5	6	7	8	9	10	12	14	16	18	20	22	24	25
[psi]	58	72	87	100	115	130	145	174	203	232	261	290	319	348	363
c <sub>OP</sub>	0,63	0,75	0,88	1	1,13	1,25	1,38	1,63	1,88	2,13	2,38	2,63	2,88	3,13	3,25

## OPERATING TEMPERATURE

[°C]	25	30	35	40	42,5
[F]	77	86	95	104	108
c <sub>OT</sub>	1	1	1	0,7	0,52

## PRESSURE DEW POINT

[°C]	-	-	-
[F]	-	-	-
c <sub>D</sub>	-	-	-



## MAINTENANCE

For maintenance, please follow the operating manual. Check the dryer operation weekly.