ADSORPTION DRYER HP-DRY

(High pressure, Heatless regenerated adsorption dryer)

DESCRIPTION

HP-DRY adsorption dryers have been designed for continuous separation of water vapour from compressed air thus reducing the dew point. Operation of the dryer requires two columns to operate alternately. Adsorption takes place under pressure in the first column while the second column regenerates with a portion of the already dried compressed air at ambient pressure. Dryers consists from control valves, controller with LED display and two columns filled with desiccant. Springs in the columns make sure that the desiccant beads will not move during the operation. The robust design enables efficient and reliable operation, fast installation and simple maintenance.

DRYER RATING ACCORDING TO ISO8573-1

Solid particles[1]	Water[1],[2]	Oil[1]
1	2-3	1

[1]Typical result based on standard configuration and nominal operating conditions.

[2]Depend on specific design. Class 2 when operated at nominal operating conditions.

TECHNICAL SPECIFICATIONS

Operating pressure	50 bar / 100bar / 250bar / 420bar
Operating temperature	1,5°C to 50°C
Pressure dew points	-25°C, -40°C (Default), -55°C
Voltage, Frequency	230V, 50/60Hz
Power consumption	<60 W
Protection class (controller)	IP 65
Filter (inlet)[3]	Super fine coalescing; residual oil cont. <0,01mg/m3; 0,01µm
Filter (outlet)	Dust filter; 1µm
Dew point dependent control	OPTIONAL, Only available when dew point sensor is connected!
Relay output for dew point warning	OPTIONAL, Only available when dew point sensor is connected!
Digital input for stand-by	STANDARD, Open contact 24 VDC
Communication	Modbus TCP/IP

[3]If the dryer is supplied without the inlet filter, compressed air class 1 (ISO 8753-1) for solid particles and oil should be provided to the inlet of the dryer.

MATERIALS

Columns	Stainless steel
Frame	Carbon steel
Valves	Carbon steel – zinc plated
Check valves	Carbon steel – zinc plated
Sealings	NBR
Fittings, Screws, plugs	Carbon steel – zinc plated, Stainless steel
Lubricant	Shell cassida grease RLS 2
Outside protection (frame)	Powder paint coated (Epoxy-polyester base)
Desiccant	80% Molecular sieve 4A, 20% Silica gel

SIZES

Model	Connection IN & OUT[7]	Inlet flow [Nm³/h][4]	Outlet flow [Nm³/h][5]	h [mm]	w [mm]	d [mm]	Mass [kg]	Vol. [l][6]	Filter
HP-DRY 050 PN50	G 3/8"	50	48,5	1200	680	580	130	3,2	HF 007
HP-DRY 100 PN50	G 3/8"	100	97	1250	680	580	150	6,7	HF 007
HP-DRY 150 PN50	G 3/8"	150	145,5	1550	680	580	170	10,4	HF 007
HP-DRY 250 PN50	G 3/8"	250	242,5	1700	820	700	260	17,4	HF 007
HP-DRY 350 PN50	G 1/2"	350	339,5	1700	820	700	320	25,3	HF 007
HP-DRY 500 PN50	G 1/2"	500	485	1920	820	700	410	32,4	HF 010
HP-DRY 650 PN50	G 1/2"	650	630,5	2250	820	700	460	44,2	HF 010
HP-DRY 50 PN100	G 3/8"	50	48,5	1250	680	580	125	1,6	CHP 005
HP-DRY 100 PN100	G 3/8"	100	97	1350	680	580	170	3,6	CHP 005
HP-DRY 150 PN100	G 3/8"	150	145,5	1650	680	580	200	5,1	CHP 005
HP-DRY 250 PN100	G 3/8"	250	242,5	1550	680	600	210	8,3	CHP 005
HP-DRY 350 PN100	G 1/2"	350	339,5	1460	820	680	270	11,8	CHP 007
HP-DRY 500 PN100	G 1/2"	500	485	1700	820	680	290	16,8	CHP 007
HP-DRY 650 PN100	G 1/2"	650	630,5	1800	820	700	380	22	CHP 007
HP-DRY 800 PN100	G 1/2"	800	776	1850	820	680	480	28	CHP 007
HP-DRY 50 PN250	G 3/8"	50	48,5	1000	680	450	95	0,8	CHP 005
HP-DRY 100 PN250	G 3/8"	100	97	1360	680	450	135	1,6	CHP 005
HP-DRY 150 PN250	G 3/8"	150	145,5	1600	680	450	145	2,2	CHP 005
HP-DRY 250 PN250	G 3/8"	250	242,5	1500	680	450	180	3,6	CHP 005
HP-DRY 350 PN250	G 1/2"	350	339,5	1400	820	650	250	5,2	CHP 007
HP-DRY 500 PN250	G 1/2"	500	485	1500	820	650	300	7	CHP 007
HP-DRY 650 PN250	G 1/2"	650	630,5	1500	820	650	400	9,3	CHP 007
HP-DRY 800 PN250	G 1/2"	800	776	1550	820	650	460	11,7	CHP 007
HP-DRY 1000 PN250	G 1/2"	1000	970	1600	820	650	580	14,5	CHP 007
HP-DRY 1200 PN250	G 1/2"	1200	1164	1550	820	700	620	17,6	CHP 007
HP-DRY 1400 PN250	G 1/2"	1400	1358	1650	820	700	650	21,5	CHP 007
HP-DRY 100 PN420	G 3/8"	100	97	1120	680	450	120	1	CHP 005
HP-DRY 150 PN420	G 3/8"	150	145,5	1360	680	450	135	1,6	CHP 005
HP-DRY 250 PN420	G 3/8"	250	242,5	1450	680	580	190	2,5	CHP 005
HP-DRY 350 PN420	G 1/2"	350	339,5	1350	820	580	270	3,3	CHP 007
HP-DRY 500 PN420	G 1/2"	500	485	1380	820	650	310	4,5	CHP 007
HP-DRY 650 PN420	G 1/2"	650	630,5	1450	820	650	440	6,1	CHP 007
HP-DRY 800 PN420	G 1/2"	800	776	1230	820	650	425	7,4	CHP 007
HP-DRY 1000 PN420	G 1/2"	1000	970	1450	820	650	600	10	CHP 007
HP-DRY 1200 PN420	G 1/2"	1200	1164	1450	1000	900	850	11,4	CHP 007
HP-DRY 1400 PN420	G 1/2"	1400	1358	1500	1000	900	800	14,3	CHP 007
HP-DRY 1600 PN420	G 1/2"	1600	1552	1450	1000	900	1200	15,3	CHP 007

[4]Refers to 1bar(a) and 20°C, at nominal operating pressure , inlet temperature 35°C and pressure dew point at outlet -40°C.

[5]Purge air requirements depend on actual operating conditions (Typically about 3%).

[6]Volume is the net volume of a single column.

[7]Threads of the dryer are male. It is possible to remove the fittings on the inlet and outlet, to get a pipe connection (for welding), where you should contact the manufacturer for the diameter and thickness. Also on the inlet you can remove the fittings and pipes entirely to get a female connection directly on the pre-filter.

CORRECTION FACTORS

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

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

OPERATING PRESSURE (HP-DRY PN50)

[bar]	25	30	35	40	45	50
[psi]	363	435	508	580	653	725
C_{OP}	0,51	0,61	0,71	0,81	0,9	1

OPERATING PRESSURE (HP-DRY PN100)

[bar]	50	60	70	80	90	100
[psi]	725	870	1015	1160	1305	1450
C_{OP}	0,5	0,6	0,7	0,8	0,9	1

OPERATING PRESSURE (HP-DRY PN250)

[bar]	110	130	160	190	220	250
[psi]	1595	1885	2320	2755	3190	3625
C_{OP}	0,44	0,52	0,64	0,76	0,88	1

OPERATING PRESSURE (HP-DRY PN420)

[bar]	250	275	300	325	350	375	400	420
[psi]	3625	3990	4350	4715	5075	5440	5800	6091
C_{OP}	0,59	0,65	0,71	0,77	0,83	0,89	0,95	1

OPERATING TEMPERATURE

[°C]	25	30	35	40	45	50
[F]	77	86	95	104	113	122
C_{OT}	1	1	1	0,97	0,87	0,80

DEW POINT

[°C]	-25	-40	-55
[F]	-13	-40	-67
C_D	1,1	1	0,7

MAINTENANCE

For maintenance, please follow instructions specified in operating manual. Check dryer operation weekly.
Typical service interval:

- Filter elements: every 12 months in operation or sooner if required
- Desiccant, silencers, valve components: every 24 months in operation or sooner if required