Donaldson Ultrafilter

Adsorption Dryer HRS

HRS	$\dot{V}_{nom}$ at 7 bar(g)		connections PN16, DIN 2633	installed power	weight	dimensions		
						A=width	B=depth	C=hight
	m³/h	cfm	DN	kW	kg	mm	mm	mm
0375	375	220	DN 50	7,6	800	1340	810	2120
0550	550	325	DN 50	11,2	1010	1470	890	2340
0650	650	385	DN 50	11,2	1150	1510	930	2260
0850	850	500	DN 50	14,2	1260	1610	940	2330
1000	1000	590	DN 80	14,2	1390	1680	970	2460
1350	1350	800	DN 80	20,0	1670	1800	1090	2580
1650	1650	975	DN 80	24,0	1970	1900	1130	2630
1950	1950	1150	DN 100	32,5	2390	2020	1260	2720
2250	2250	1330	DN 100	32,5	2590	2120	1270	2740
2750	2750	1620	DN 100	38,0	3000	2320	1400	2790
3500	3500	2065	DN 100	44,5	3600	3380	1830	3060
4000	4000	2360	DN 150	52,5	4580	3490	1860	3180
5000	5000	2945	DN 150	71,0	5330	3750	1950	3310
6000	6000	3535	DN 150	86,0	6200	3880	2080	3400
7000	7000	4125	DN 150	95,0	7150	4240	2230	3470
8750	8750	5155	DN 200	115,0	8950	4570	2490	3570
10500	10500	6185	DN 200	135,0	12600	4780	2600	3060
11200	11200	6775	DN 200	153,0	13600	4970	2750	3100
13600	13600	8010	DN 200	177,5	15800	5280	2975	3230

$\dot{V}_{nom}$ in m³/h related to compressor inlet at 20°C and 1 bar(a), an operating pressure of 7 bar(g) and a compressed air inlet temperature of +35°C (saturated).

Conversion factor (C_1) for sizing, depending on dryer inlet temperature and operating pressure at a pressure dew point of -40°C:

T_{inlet}	operating pressure bar(g)						
°C	4	5	6	7	8	9	10
30	0,72	0,92	1,09	1,25	1,36	1,45	1,51
35	0,55	0,7	0,86	**1,00**	1,12	1,25	1,37
40	0,33	0,45	0,58	0,71	0,82	0,92	1,03

table 2

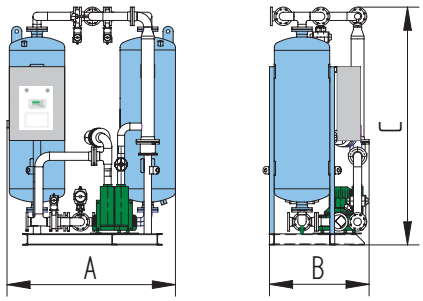
Sizing Example:

real air flow ($\dot{V}_T$): 3990 m³/h
operating pressure: 6 bar(g)
inlet temperature: 40 °C
Faktor C_1: 0,58

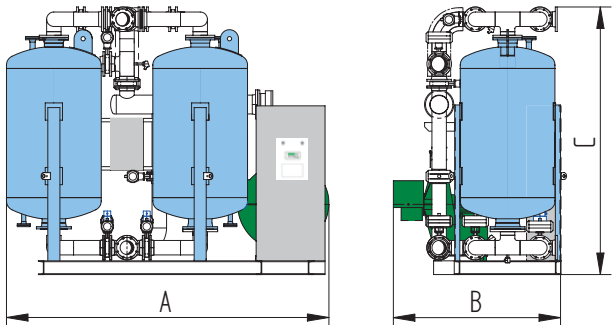
$$\dot{V}_{corr} = \frac{\dot{V}_T}{C_1} = \frac{3990\ m^3/h}{0,58} = 6879\ m^3/h$$

Selection: HRS 7000

up to 2750



from 3500



Technical changes reserved. Release: R01/31082004

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Adsorption Dryer HRS

1. Process Characteristics

- Desorption in counter-current flow to the adsorption direction with externally heated blower air
- Cooling with ambient air
- Designed for automatic and continuous operation (up to 2750 at pressure-vacuum operation)

2. Standard Conditions

• Pressure dewpoint:	-40°C	Selection at different operating conditions by correction factor C1 according to table 2.
• Operation pressure:	7 bar(g)	
• Inlet temperature:	+35°C	
• Inlet humidity:	saturated	

3. Operating Limits

• Media:	compressed air/nitrogen	Design for operating conditions beyond specified application limits on request.
• Operating pressure:	4-10 bar(g)	
• Inlet temperature	5-40°C	
• Ambient temperature:	5-40°C	
• max. blower inlet:	35°C/45% to 30°C/60% r.H.	
• Installation:	indoor	

4. Standard Design

Control

• Design:	acc. to VDE/IEC
• Power supply:	3 Ph / 400 V - 50 Hz
• Control voltage:	24 V DC / 230 V - 50 Hz
• PLC:	Siemens S7-200 with CPU 224
• Text display:	Siemens TD 200
• Protection:	IP 55, acc. to IEC 529
• Control panel:	C-steel sheet, powder coated, RAL7035
• Potential free common alarm contact:	incl.
• Main switch:	incl.

Adsorption Vessel

• Material:	carbon steel
• Design data:	11 bar(g), 230°C für 0375 - 2750 10 bar(g), 200°C für 3500 - 13600
• Design, manufacturing and testing:	acc. to AD-2000
• Approval:	acc. to PED 27/23/EC
• Desiccant:	incl.
• gas distributor:	incl. (stainless steel)

Piping

• Nominal pressure:	PN 16
• Material:	carbon steel
• Design, manufacturing and testing:	acc. to AD-2000
• Approval:	acc. to PED 27/23/EC

Heat insulation	heater to regeneration inlet valves
Electrical flange heater	with overheat protection
Regeneration blower	with suction filter

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Adsorption dryer HRS

continuation of standard design

Pneumatically activated butterfly valves	internals made of stainless steel
4-way plug-valve	from 0375-2750; maintenance free
Non-return valves	with PTFE- gaskets
Pressure release valves	with silencers
Pressure equalization valves	incl.
Resistance thermometer	Pt 100 - measuring and control devices
Pressure transmitter	for pressure and changeover control
Manometer with shut-off valve	per adsorption vessel
Control air unit	incl. valve manifold with multipole connection and control air filter
Pneumatic box	to house the control air unit (size 3500 and up)
End position monitoring	of inlet butterfly valves with limit switches (size 3500 and up)
Control air piping	up to size 2750 with PVC-pipe; with galvanized steel pipe (size 3500 and up)

5. Standard Options (upon request)

- **Dewpoint dependent control ‚ultraconomy‘**
- **Mounting of prefilter system incl. piping**
- **Mounting of afterfilter system incl. piping**
- **System bypass with 3 manual valves**
- **Bus interface**
- **Desorption air heating with steam heater instead of electrical heater**
- **Desorption air heating with steam and electrical heater**
- **Heat insulation of adsorption vessel**
- **16 bar version**
- **Status information by light indicators**
- **Control air piping made of stainless steel**
- **Changeover monitoring and limit switches for additional butterfly valves**
- **Monitoring of dryer inlet temperature**
- **Free of silicone / separating agents**
- **Alternative power supply**
- **Pressure dew point below -40°C**
- **Frost protection down to -20°C**
- **Outdoor installation**
- **Special noise reduction**

6. Filter

Please select the necessary prefilter and afterfilter systems out of our comprehensive filter product range.

7. Condensate

For necessary and economical draining as well as conditioning of accumulated condensate we recommend our condensate technology range of products.