

Adsorption dryers PDAD

FESTO

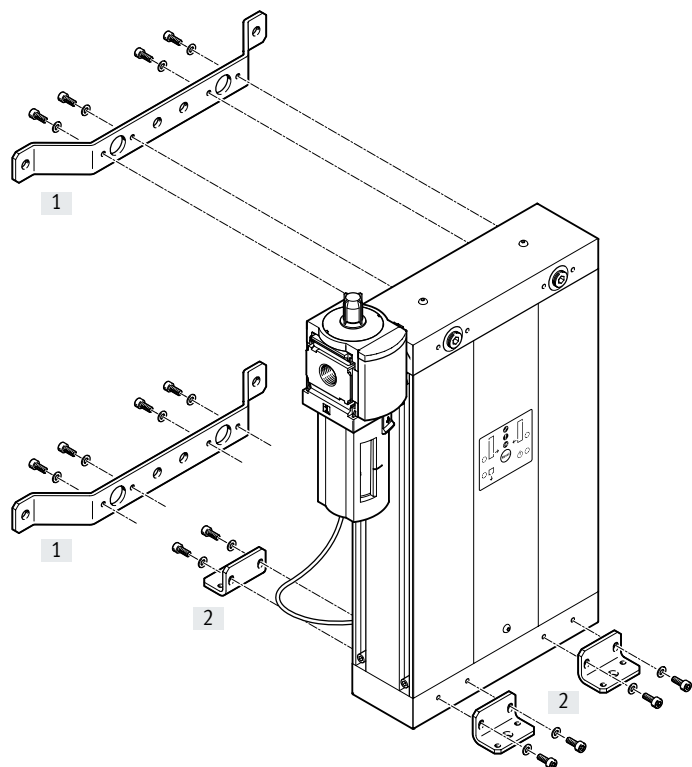


Key features

Description	Areas of application	Features/advantages/benefits	
<p>Cold-regenerating adsorption dryer with defined pressure dew point and high flow rate for decentralised compressed air drying.</p> <p>Adsorption dryers are always required when pressure dew points of less than -20°C need to be achieved reliably.</p>	<ul style="list-style-type: none"> • Sensors • Semiconductor manufacturing • Manufacture of foils and packaging • Transportation of powder • Dental technology • Painting systems • Food industry • Pharmaceuticals 	<ul style="list-style-type: none"> • The solution for dry and clean compressed air • Extends the service life of pneumatic components • Pressure dew point -40°C or -70°C (with reduced flow rate) • Additional filtering of oil and particulates • Ideal for decentralised compressed air drying 	<ul style="list-style-type: none"> • High flow rate performance of up to 2400 l/min • Selectable voltage for electrical connection • Low purge air consumption and noise levels • Complies with air purity class at the output up to 2:1:2 in accordance with ISO 8573-1:2010 at a pressure dew point of -70°C.
Save costs	Reduced maintenance costs	Flexible fitting	User-friendly
<p>Controlled, decentralised drying directly at the consuming device is advantageous because only the actually required amount of dry compressed air is prepared. This reduces energy costs, and prevents corrosion, thus extending the service life of components.</p>	<p>Complete cartridges containing drying agent allow quick and easy replacement of the drying agent. Pre-filled cartridges guarantee fast and clean cartridge replacement.</p> <p>Maintenance costs are reduced because the integrated secondary filter (grade of filtration $1\ \mu\text{m}$) in every cartridge retains the abraded particles of the drying agent.</p>	<p>Space-optimised and flexible mounting thanks to the integrated secondary filter.</p>	<p>A clear operating display shows drying cycles and service functions.</p>
Function	Information		
<p>The air stream is passed through the supplied prefilter, a micro filter with grade of filtration $0.01\ \mu\text{m}$. It protects the drying agent from contaminating dirt and oil particles (oil significantly reduces the service life of the drying agent). The adsorption dryer consists of two cartridges (four in the case of the PDAD-100) filled with drying agent. Moist compressed air flows through the two cartridges alternately, and the water from the air accumulates on the surface of the drying agent. After a predetermined period of time, the flow of</p>	<p>air is switched to the other cartridge and a portion of the dried air (purge air) is used to regenerate the drying agent in the first cartridge. The purge air escapes into the atmosphere.</p>	<p>The drying agent has a service life of 12000 operating hours.</p> <p>The average purge air requirement under nominal conditions (7 bar/25°C) is approx. 17%. If the dryer is used under different operating conditions, the input air/purge air ratio may change as the purge air consumption is only dependent on the input pressure and not on the used output flow rate.</p> <p>The volume of purge air must therefore be adapted to different input pressures by exchanging the air nozzle (air nozzle</p>	<p>set with 3 air nozzles ADNA → page 9).</p>

Peripherals overview and type codes

Peripherals overview



Mounting components and accessories		→ Page/Internet
[1]	Wall mounting kit ABMW	8
[2]	Foot mounting ABMF	8
-	Service kit PDAD-SP	9
-	Air nozzle ADNA	9
-	Micro-filter cartridge MS6-LFM-A	10

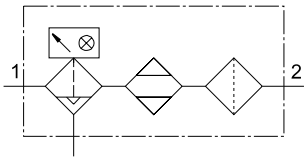
Type codes

001	Series
PDAD	Adsorption dryer
002	Dryer version
09	Nominal flow rate 90 l/min
13	Nominal flow rate 130 l/min
22	Nominal flow rate 220 l/min
51	Nominal flow rate 510 l/min
73	Nominal flow rate 730 l/min
100	Nominal flow rate 1000 l/min

003	Pneumatic connection
G3/8	G3/8
G1/2	G1/2

Data sheet

Function



- - Flow rate
18.5 ... 2406.6 l/min
- - Temperature range
+2 ... +50°C
- - Input pressure 4 ... 16 bar
- - www.festo.com



Pressure dew point -40°C or -70°C

General technical data		PDAD-09	PDAD-13	PDAD-22	PDAD-51	PDAD-73	PDAD-100
Type							
Pneumatic connection 1, 2		G3/8				G1/2	
Design		Cold-regenerating adsorption dryer					
Type of mounting		Via accessories					
Mounting position		Vertical					
		Horizontal					
Pressure dew point	[°C]	-40					
		-70 (with reduced flow rate)					
Air purity class at the output		Compressed air to ISO 8573-1:2010 [2:2:2] (at pressure dew point -40°C)					
		Compressed air to ISO 8573-1:2010 [2:1:2] (at pressure dew point -70°C)					
Electrical data							
Electrical connection		2 connections (12 ... 24 V DC or 110 ... 240 V AC) for power supply socket					
Power consumption	DC	Approx. 9.6 W (24 V/0.4 A typ.)					
	AC	Approx. 16 VA (230 V/0.07 A typ.)					
Degree of protection		IP65 (to DIN 40050)					

Operating and environmental conditions		PDAD-09	PDAD-13	PDAD-22	PDAD-51	PDAD-73	PDAD-100
Type							
Input pressure	[bar]	4 ... 16					
Operating medium		Compressed air to ISO 8573-1:2010 [6:-:4], however no liquid water at the input					
Note on operating/ pilot medium		Operation with lubricated medium not possible					
Ambient temperature	[°C]	+5 ... +50					
Temperature of medium	[°C]	+2 ... +50					
Storage temperature	[°C]	-20 ... +60					
Corrosion resistance class CRC ¹⁾		2					
CE marking (see declaration of conformity) ³⁾		To EU EMC Directive ²⁾					
		To EU Low Voltage Directive					
		To EU Pressure Equipment Directive					
KC mark		KC EMC					

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
- 2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
- 3) Additional information: www.festo.com/sp → Certificates.

Weight [g]		PDAD-09	PDAD-13	PDAD-22	PDAD-51	PDAD-73	PDAD-100
Type							
Adsorption dryer		13000	14000	16500	24000	31000	47000

Data sheet

Materials	
Housing	Wrought aluminium alloy
Note on materials	RoHS-compliant

Note

Please do not use the average consumption values (flow rate) as your guide when setting up the dryer, instead use

- the input pressure of the dryer,
- the peak value for the flow rate and
- the maximum permissible supply temperature.

The adsorption dryers are designed for continuous operation. Intensely pulsed or intermittent operation leads to premature ageing of and/or damage to the drying agent and thus to failure of the dryer. If the adsorption dryer PDAD is nonetheless to be used in pulsed or intermittent mode, the use of buffer reservoirs, through which the compressed air flows, is recommended for smoothing the pressure peaks.

Note

Depending on the application these can be mounted upstream and/or downstream of the dryer. The volume of a reservoir should be approx. 50% of the flow rate for one minute.

Note

On delivery the adsorption dryer PDAD is configured with an air nozzle for an input pressure of 7 ... 9 bar. If a different input pressure is used, the air nozzle must be exchanged. The set containing alternative air nozzles must be ordered separately as an accessory → page 9.

Nominal flow rate q_n [l/min] for pressure dew point -40°C (temperature of medium at input 25°C saturated)													
	Input pressure p [bar]												
	4	5	6	7	8	9	10	11	12	13	14	15	16
PDAD-09													
Input	73.6	88.3	103.1	117.8	132.5	147.2	162.0	176.7	191.4	206.1	220.9	235.6	250.3
	Air nozzle no. 9			Air nozzle no. 7			Air nozzle no. 6			Air nozzle no. 5			
Purge air	33.0	30.0	34.0	31.0	36.0	40.0	31.0	34.0	37.0	30.0	32.0	34.0	36.0
Output	40.6	58.3	69.1	86.8	96.5	107.2	131.0	142.7	154.4	176.1	188.9	201.6	214.3
PDAD-13													
Input	109.6	132.5	153.7	176.7	197.9	220.9	242.1	265.1	286.3	309.2	330.4	353.4	374.6
	Air nozzle no. 10			Air nozzle no. 8			Air nozzle no. 7			Air nozzle no. 6			
Purge air	42.0	52.0	61.0	51.0	54.0	68.0	45.0	49.0	54.0	62.0	67.0	71.0	76.0
Output	67.6	80.5	92.7	125.7	143.9	152.9	197.1	216.1	232.3	247.2	263.4	282.4	298.6
PDAD-22													
Input	186.2	225.3	261.3	300.4	336.4	375.5	411.5	450.6	486.6	525.7	561.7	600.8	636.8
	Air nozzle no. 14			Air nozzle no. 12			Air nozzle no. 10			Air nozzle no. 9			
Purge air	76.0	89.0	106.0	88.0	97.0	107.0	86.0	96.0	106.0	89.0	96.0	103.0	111.0
Output	110.2	136.3	155.3	212.4	239.4	268.5	325.5	354.6	380.6	436.7	465.7	497.8	525.8
PDAD-51													
Input	416.3	503.6	584.2	671.5	752.0	839.3	919.9	1007.2	1087.8	1175.1	1255.6	1342.9	1423.5
	Air nozzle no. 23			Air nozzle no. 17			Air nozzle no. 14			Air nozzle no. 12			
Purge air	166.0	204.0	230.0	165.5	194.5	216.0	165.0	182.5	198.5	160.5	176.0	182.5	201.5
Output	250.3	299.6	354.2	506.0	557.5	623.3	754.9	824.7	889.3	1014.6	1079.6	1160.4	1222.0
PDAD-73													
Input	613.5	742.1	860.9	989.5	1108.3	1236.9	1355.7	1484.3	1603.0	1731.7	1850.4	1979.1	2097.8
	Air nozzle no. 29			Air nozzle no. 24			Air nozzle no. 17			Air nozzle no. 15			
Purge air	233.0	270.0	311.0	261.0	302.0	339.0	248.0	272.0	295.0	243.0	261.0	282.0	301.0
Output	380.5	472.1	549.9	728.5	806.3	897.9	1107.7	1212.3	1308.0	1488.7	1589.4	1697.1	1796.8
PDAD-100													
Input	821.7	993.9	1153.0	1325.3	1484.3	1656.6	1815.6	1987.9	2146.9	2319.2	2478.2	2650.5	2809.6
	Air nozzle no. 23			Air nozzle no. 17			Air nozzle no. 14			Air nozzle no. 12			
Purge air	332.0	408.0	460.0	331.0	389.0	432.0	330.0	365.0	397.0	321.0	352.0	365.0	403.0
Output	489.7	585.9	693.0	994.3	1095.3	1224.6	1485.6	1622.9	1749.9	1998.2	2126.2	2285.5	2406.6

Data sheet

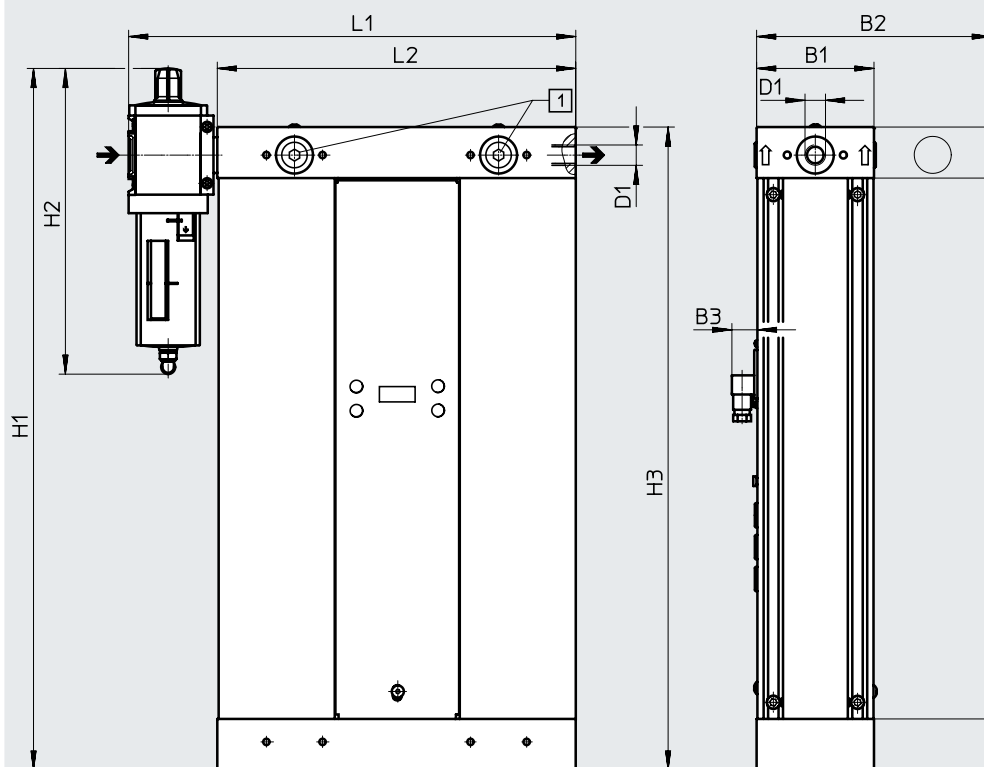
Nominal flow rate q_n [l/min] for pressure dew point -70°C (temperature of medium at input 25°C saturated)													
	Input pressure p [bar]												
	4	5	6	7	8	9	10	11	12	13	14	15	16
PDAD-09													
Input	51.5	61.8	72.1	82.5	92.8	103.1	113.4	123.7	134.0	144.3	154.6	164.9	175.2
	Air nozzle no. 9			Air nozzle no. 7			Air nozzle no. 6			Air nozzle no. 5			
Purge air	33.0	30.0	34.0	31.0	36.0	40.0	31.0	34.0	37.0	30.0	32.0	34.0	36.0
Output	18.5	31.8	38.1	51.5	56.8	63.1	82.4	89.7	97.0	114.3	122.6	130.9	139.2
PDAD-13													
Input	77.3	92.8	108.2	123.7	139.2	154.6	170.1	185.5	201.0	216.5	231.9	247.4	262.8
	Air nozzle no. 10			Air nozzle no. 8			Air nozzle no. 7			Air nozzle no. 6			
Purge air	42.0	52.0	61.0	51.0	54.0	68.0	45.0	49.0	54.0	62.0	67.0	71.0	76.0
Output	35.3	40.8	47.2	72.7	85.2	86.6	125.1	136.5	147.0	154.5	164.9	176.4	186.8
PDAD-22													
Input	131.4	157.7	184.0	210.3	236.6	262.8	289.1	315.4	341.7	368.0	394.3	420.6	446.8
	Air nozzle no. 14			Air nozzle no. 12			Air nozzle no. 10			Air nozzle no. 9			
Purge air	76.0	89.0	106.0	88.0	97.0	107.0	86.0	96.0	106.0	89.0	96.0	103.0	111.0
Output	55.4	68.7	78.0	122.3	139.6	155.8	203.1	219.4	235.7	279.0	298.3	317.6	335.8
PDAD-51													
Input	293.8	352.5	411.3	470.0	528.8	587.5	646.3	705.0	763.8	822.5	881.3	940.1	998.8
	Air nozzle no. 23			Air nozzle no. 17			Air nozzle no. 14			Air nozzle no. 12			
Purge air	166.0	204.0	230.0	165.5	194.5	216.0	165.0	182.5	198.5	160.5	176.0	182.5	201.5
Output	127.8	148.5	181.3	304.5	334.3	371.5	481.3	522.5	565.3	662.0	705.3	757.6	797.3
PDAD-73													
Input	432.9	519.5	606.1	692.7	779.3	865.8	952.4	1039.0	1125.6	1212.2	1298.8	1385.3	1471.9
	Air nozzle no. 29			Air nozzle no. 24			Air nozzle no. 17			Air nozzle no. 15			
Purge air	233.0	270.0	311.0	261.0	302.0	339.0	248.0	272.0	295.0	243.0	261.0	282.0	301.0
Output	199.9	249.5	295.1	431.7	477.3	526.8	704.4	767.0	830.6	969.2	1037.8	1103.3	1170.9
PDAD-100													
Input	579.8	695.8	811.7	927.7	1043.6	1159.6	1275.6	1391.5	1507.5	1623.4	1739.4	1855.4	1971.3
	Air nozzle no. 23			Air nozzle no. 17			Air nozzle no. 14			Air nozzle no. 12			
Purge air	332.0	408.0	460.0	331.0	389.0	432.0	330.0	365.0	397.0	321.0	352.0	365.0	403.0
Output	247.8	287.8	351.7	596.7	654.6	727.6	945.6	1026.5	1110.5	1302.4	1387.4	1490.4	1568.3

Data sheet

Dimensions

Download CAD data → www.festo.com

With prefilter and connecting kit



Note
 The tubing from the condensate drain of the prefilter to the dryer is included in the scope of delivery. The condensate drain port on the dryer with push-in fitting NPQH-L is designed for tubing with a diameter of 4 mm (standard O.D. tubing).

[1] Blanking plug

→ Flow direction

Type	B1	B2	B3	D1	H1	H2	H3	L1	L2
PDAD-09	~92	-	~20	G3/8	~491	~240	~445	~351	~281
PDAD-13	~92	-	~20	G3/8	~550	~240	~504	~351	~281
PDAD-22	~92	-	~20	G3/8	~681	~240	~635	~351	~281
PDAD-51	~92	-	~20	G3/8	~1111	~240	~1065	~351	~281
PDAD-73	~92	-	~20	G1/2	~1506	~360	~1460	~351	~281
PDAD-100	-	~184	~20	G1/2	~1111	~360	~1065	~351	~281

Ordering data

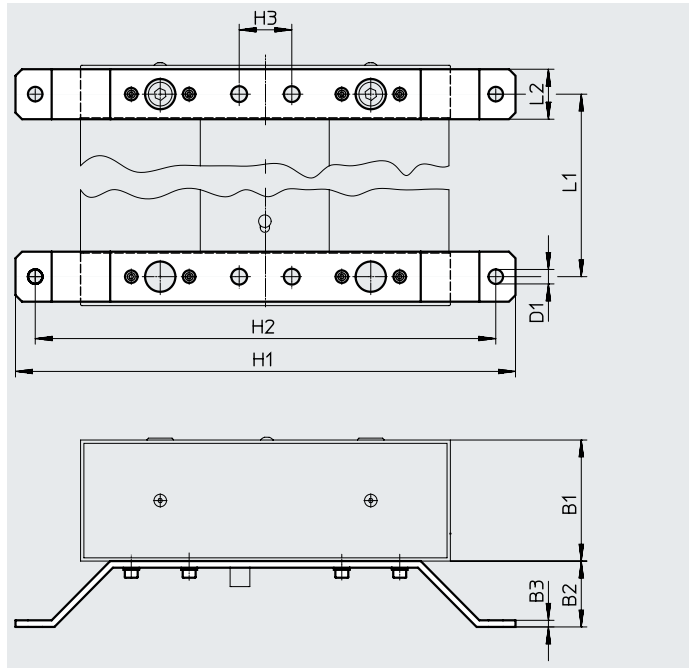
With prefilter, connecting kit, power supply socket

Pneumatic connection	Output flow rate under nominal conditions ¹⁾ [l/min]	Part no.	Type
G3/8	87	552170	PDAD-09-G3/8
	126	552171	PDAD-13-G3/8
	212	552172	PDAD-22-G3/8
	506	552173	PDAD-51-G3/8
G1/2	729	552174	PDAD-73-G1/2
	994	552175	PDAD-100-G1/2

1) Input pressure 7 bar, pressure dew point -40°C, temperature of medium at input 25°C

Accessories

Wall mounting kit ABMW



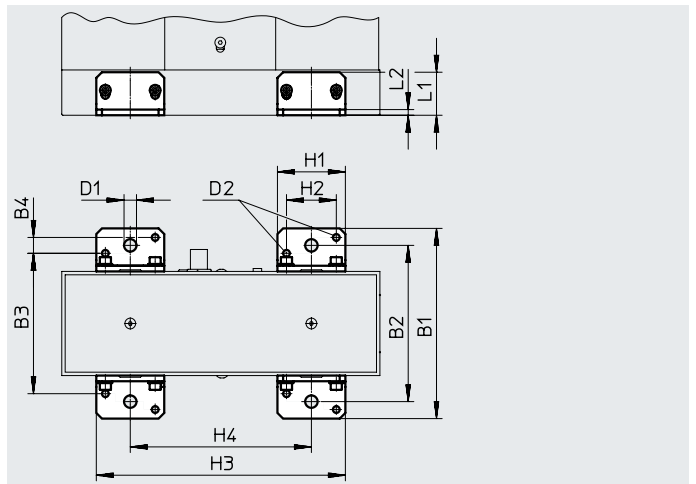
Dimensions and ordering data

Type	B1	B2	B3	D1 ∅	H1	H2	H3	L1	L2	CRC ¹⁾	Part no.	Type
PDAD-09	92	50	5	11	380	350	40	401	38	2	553756	ABMW-PDAD
PDAD-13	92	50	5	11	380	350	40	460	38			
PDAD-22	92	50	5	11	380	350	40	591	38			
PDAD-51	92	50	5	11	380	350	40	1021	38			
PDAD-73	92	50	5	11	380	350	40	1416	38			
PDAD-100	184	50	5	11	380	350	40	1021	38			

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Foot mounting ABMF



Dimensions and ordering data

Type	B1	B2	B3	B4	D1 ∅	D2 ∅	H1	H2	H3	H4	L1	L2	CRC ¹⁾	Part no.	Type
PDAD-09/13/22/51/73	168	138	124	14	11	6	60	44	220	160	38	5	2	553755	ABMF-PDAD
PDAD-100	260	230	216	14	11	6	60	44	220	160	38	5			

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

Service kit PDAD-SP

with 2 drying agent cartridges (4 drying agent cartridges in the service kit PDAD-100-SP), sealing rings, plastic discs and a reset disc



Ordering data		Part no.	Type
For type			
PDAD-09		553749	PDAD-09-SP-12000
PDAD-13		553750	PDAD-13-SP-12000
PDAD-22		553751	PDAD-22-SP-12000
PDAD-51		553752	PDAD-51-SP-12000
PDAD-73		553753	PDAD-73-SP-12000
PDAD-100		553754	PDAD-100-SP-12000

Air nozzle ADNA

Set comprising 3 air nozzles for PDAD-09 ... PDAD-73 and 6 air gun nozzles for PDAD-100 for adjusting the purge air at an input pressure < 7 bar or > 9 bar



Ordering data	Air nozzle for input pressure p			Part no.	Type
	For type				
	4 ... 6 bar	10 ... 12 bar	13 ... 16 bar		
PDAD-09	No. 9	No. 6	No. 5	553763	ADNA-PDAD-09
PDAD-13	No. 10	No. 7	No. 6	553764	ADNA-PDAD-13
PDAD-22	No. 14	No. 10	No. 9	553765	ADNA-PDAD-22
PDAD-51	No. 23	No. 14	No. 12	553766	ADNA-PDAD-51
PDAD-73	No. 29	No. 17	No. 15	553767	ADNA-PDAD-73
PDAD-100	No. 23 (2x)	No. 14 (2x)	No. 12 (2x)	553768	ADNA-PDAD-100

Accessories

Micro-filter cartridge MS6-LFM-A
for prefilter

Grade of filtration: 0.01 µm



Ordering data		
For type	Part no.	Type
PDAD-09/13/22/51	532909	MS6-LFM-A
PDAD-73/100	552093	MS6-LFM-A-HF