Adsorption dryers PDAD

FESTO

For optimised process reliability and minimised maintenance costs – adsorption dryer PDAD

Info 409

Adsorption dryers PDAD

Decentralised drying of compressed air reduces maintenance costs and optimises process reliability for a longer component service life. A perfect example is the compact adsorption dryer PDAD with fixed pressure dew point of –40 °C or –70 °C, which is suitable for the highest compressed air classes.

Reliable drying

Max. pressure dew point

Easy to service

Save costs
Controlled, decentralised drying directly at the consuming device means that only the actually required amount of dry air is used. This reduces energy costs, prevents corrosion and extends the service life of components.

Reduced service costs
Just a simple cartridge change is all that is needed to replace the granulates. It also helps ensure constant air quality.

An added bonus are lower maintenance costs due to the fact that abraded particles of the drying agent are retained in the integrated secondary filter.

Flexible installation
Space-optimised and flexible mounting thanks to the integrated secondary filter.

User-friendly
The service function via the display means that everything is always in view. The display of drying cycles and required maintenance means greater clarity.

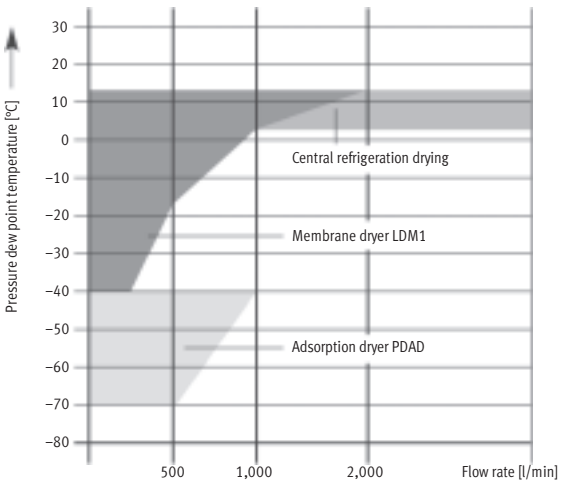
Adsorption dryer PDAD...

- Produced for decentralised compressed air drying
- Fixed pressure dew points: –40 °C, –70 °C
- High flow rate performance up to 1,000 l/min
- Low purge air consumption and noise levels

... indispensable in the following areas of application:

- Sensors
- Semiconductor manufacturing
- Painting systems
- Manufacture of packaging/foils
- Transportation of powder
- Dental technology
- Food industry
- Pharmaceuticals

For clean compressed air networks and fault-free operation The Festo range of compressed air dryers offers the right solution for every application.



Adsorption dryers PDAD

Peripherals overview and type codes

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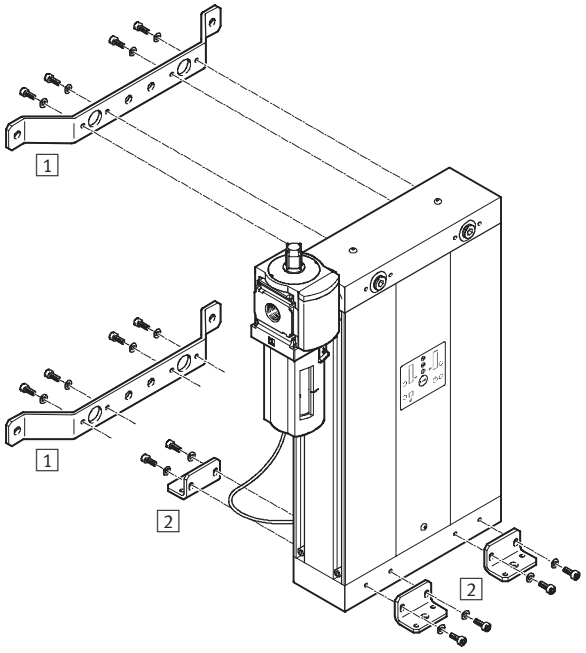
Peripherals overview



Mounting attachments and accessories		➔ Page
1	Wall mounting kit ABMW	9
2	Foot mounting ABMF	9
–	Service kit PDAD-SP	10
–	Air nozzle ADNA	10

Type codes

PDAD – 22 – G3/8

Basic function	
PDAD	Adsorption dryer

Output flow rate under nominal conditions (supply pressure 7 bar, pressure dew point –40 °C, temperate of medium at input 25 °C)	
09	87 l/min
13	126 l/min
22	212 l/min
51	506 l/min
73	729 l/min
100	994 l/min

Pneumatic connection	
PDAD-09/13/22/51	
G3/8	Thread G3/8
PDAD-73/100	
G1/2	Thread G1/2

Adsorption dryers PDAD

Technical data

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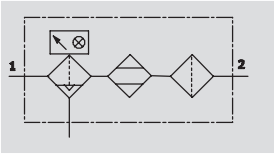
Function



Flow rate
40 ... 2,400 l/min

Temperature range
+2 ... +50 °C

Supply pressure
4 ... 16 bar

Pressure dew point
–40 °C or –70 °C

General technical data							
Type		PDAD-09	PDAD-13	PDAD-22	PDAD-51	PDAD-73	PDAD-100
Pneumatic connection 1, 2		G3⁄8				G1½	
Design		Cold regenerating adsorption dryer					
Type of mounting		With accessories					
Mounting position		Upright					
		Horizontal					
Pressure dew point	[°C]	–40					
		–70 (with reduced flow rate)					
Air purity class at the outlet		2.1.1 in accordance with DIN ISO 8573-1 at a pressure dew point of –70 °C					
		2.1.1 in accordance with DIN ISO 8573-1 at a pressure dew point of –40 °C					
Electrical data							
Electrical connection		2 connections (12 ... 24 V DC or 110 ... 240 V AC) for power supply sockets					
Power consumption	DC	Approx. 9.6 W (24 V/0.4 A typ.)					
	AC	Approx. 16 VA (230 V/0.07 A typ.)					
Protection class		IP65 (to DIN 40050)					
Materials							
Body		Wrought aluminium alloy					

Operating and environmental conditions							
Type		PDAD-09	PDAD-13	PDAD-22	PDAD-51	PDAD-73	PDAD-100
Supply pressure	[bar]	4 ... 16					
Operating medium		Filtered compressed air, unlubricated					
Ambient temperature	[°C]	+5 ... +50					
Temperature of medium	[°C]	+2 ... +50					
Storage temperature	[°C]	–20 ... +60					
Corrosion resistance class CRC[1)]		2					
CE mark (see declaration of conformity)		In accordance with EU EMC directive					
		In accordance with EU Low Voltage Directive					
		In accordance with EU Pressure Equipment Directive					

1) Corrosion resistance class 2 to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]						
Type	PDAD-09	PDAD-13	PDAD-22	PDAD-51	PDAD-73	PDAD-100
Adsorption dryer	13,000	14,000	16,500	24,000	31,000	47,000

New

Adsorption dryers PDAD

Technical data

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Note

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

a) the inlet pressure of the dryer,
b) the peak value for the flow rate and
c) the maximum permissible supply temperature.

The adsorption dryers are designed for continuous operation.
Intensely pulsed or intermittent operation leads to the premature aging of and/or damage to the drying agent and thus to the 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. 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 a supply pressure of 7 to 9 bar.
If a different supply pressure is used, the air nozzle must be replaced. The set containing the other air nozzles must be ordered separately ➔ 10.

Nominal flow rate q_n [l/min] for pressure dew point –40 °C (temperature of medium at inlet 25 °C saturated)													
q_n	Supply pressure p [bar]												
	4	5	6	7	8	9	10	11	12	13	14	15	16
PDAD-09													
Inlet	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
Outlet	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													
Inlet	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
Outlet	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													
Inlet	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
Outlet	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													
Inlet	416.3	503.6	584.2	671.5	752.0	839.3	919.9	1,007.2	1,087.8	1,175.1	1,255.6	1,342.9	1,423.5
	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
Outlet	250.3	299.6	354.2	506.0	557.5	623.3	754.9	824.7	889.3	1,014.6	1,079.6	1,160.4	1,222.0
PDAD-73													
Inlet	613.5	742.1	860.9	989.5	1,108.3	1,236.9	1,355.7	1,484.3	1,603.0	1,731.7	1,850.4	1,979.1	2,097.8
	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
Outlet	380.5	472.1	549.9	728.5	806.3	897.9	1,107.7	1,212.3	1,308.0	1,488.7	1,589.4	1,697.1	1,796.8
PDAD-100													
Inlet	821.7	993.9	1,153.0	1,325.3	1,484.3	1,656.6	1,815.6	1,987.9	2,146.9	2,319.2	2,478.2	2,650.5	2,809.6
	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
Outlet	489.7	585.9	693.0	994.3	1,095.3	1,224.6	1,485.6	1,622.9	1,749.9	1,998.2	2,126.2	2,285.5	2,406.6

Adsorption dryers PDAD

Technical data

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Nominal flow rate q_n [l/min] for pressure dew point -70 °C (temperature of medium at inlet 25 °C saturated)													
q_n	Supply pressure [bar]												
	4	5	6	7	8	9	10	11	12	13	14	15	16
PDAD-09													
Inlet	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
Outlet	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													
Inlet	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
Outlet	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													
Inlet	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
Outlet	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													
Inlet	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
Outlet	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													
Inlet	432.9	519.5	606.1	692.7	779.3	865.8	952.4	1,039.0	1,125.6	1,212.2	1,298.8	1,385.3	1,471.9
	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
Outlet	199.9	249.5	295.1	431.7	477.3	526.8	704.4	767.0	830.6	969.2	1,037.8	1,103.3	1,170.9
PDAD-100													
Inlet	579.8	695.8	811.7	927.7	1,043.6	1,159.6	1,275.6	1,391.5	1,507.5	1,623.4	1,739.4	1,855.4	1,971.3
	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
Outlet	247.8	287.8	351.7	596.7	654.6	727.6	945.6	1,026.5	1,110.5	1,302.4	1,387.4	1,490.4	1,568.3

Adsorption dryers PDAD

Technical data

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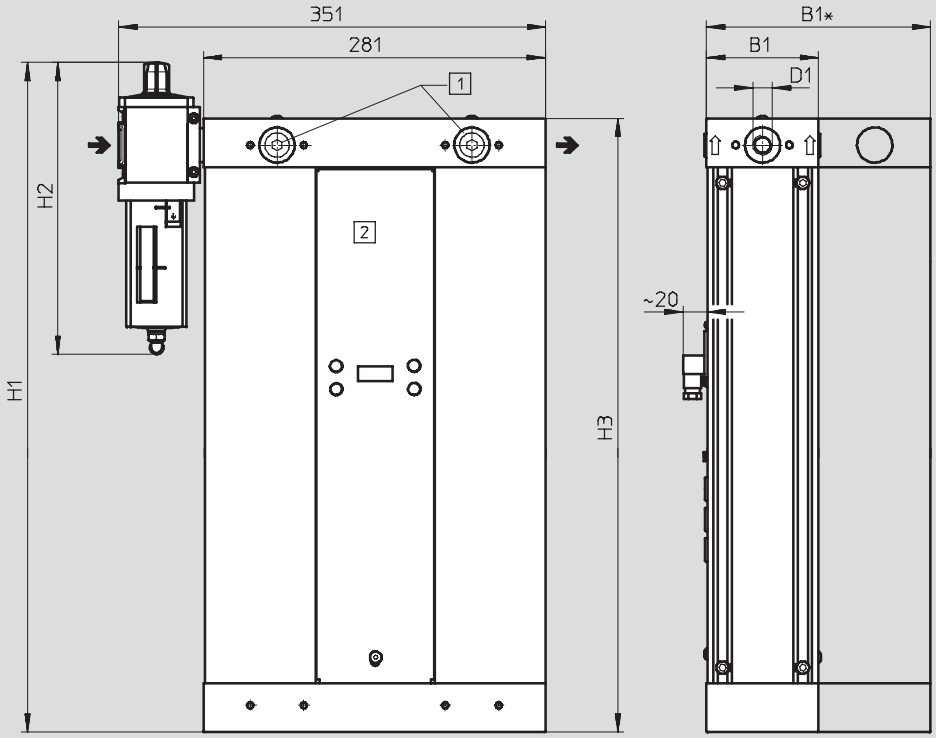
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

With prefilter and connecting kit



Note

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

1 Blanking plugs

➔ Flow direction

Type	D1	B1	B1*	H1	H2	H3
PDAD-09	G3/8	92	–	491	240	445
PDAD-13	G3/8	92	–	550	240	504
PDAD-22	G3/8	92	–	681	240	635
PDAD-51	G3/8	92	–	1 111	240	1 065
PDAD-73	G1/2	92	–	1 506	360	1 460
PDAD-100	G1/2	–	184	1 111	360	1 065

Ordering data

With prefilter, connecting kit, power supply socket

Pneumatic connection	Outlet flow rate under nominal conditions[1] [l/min]	Part No.	Type
G3/8	87	**552 170**	**PDAD-09-G3/8**
	126	**552 171**	**PDAD-13-G3/8**
	212	**552 172**	**PDAD-22-G3/8**
	506	**552 173**	**PDAD-51-G3/8**
G1/2	729	**552 174**	**PDAD-73-G1/2**
	994	**552 175**	**PDAD-100-G1/2**

1) Supply pressure 7 bar, pressure dew point –40 °C, temperature of mediums at inlet 25 °C

Adsorption dryers PDAD

Accessories

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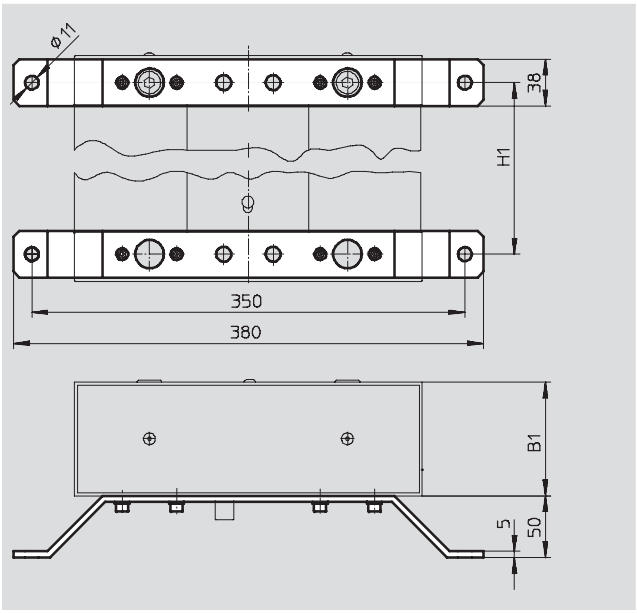
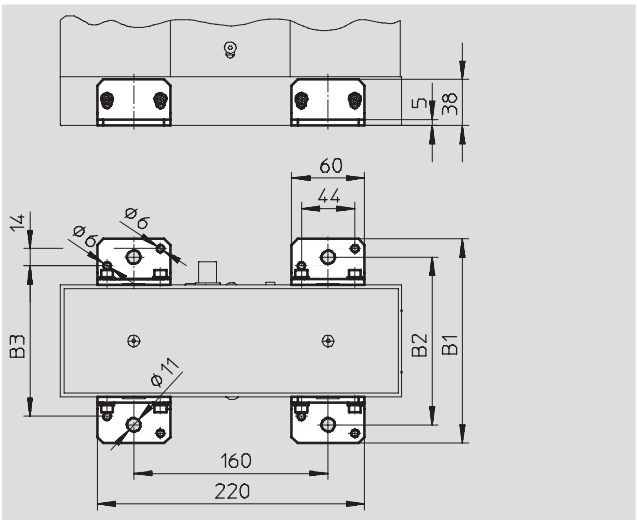
Wall mounting kit ABMW



Dimensions and ordering data														
PDAD-09		PDAD-13		PDAD-22		PDAD-51		PDAD-73		PDAD-100		CRC[1]	Part No.	Type
B1	H1	B1	H1	B1	H1	B1	H1	B1	H1	B1	H1			
92	401	92	460	92	591	92	1,021	92	1,416	184	1,021	2	**553 756**	**ABMW-PDAD**

1) Corrosion resistance class 2 to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Foot mounting ABMF



Dimensions and ordering data								
PDAD-09/13/22/51/73			PDAD-100			CRC[1]	Part No.	Type
B1	B2	B3	B1	B2	B3			
168	138	124	260	230	216	2	**553 755**	**ABMF-PDAD**

1) Corrosion resistance class 2 to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

New

Adsorption dryers PDAD

Accessories

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

Operating and environmental conditions		
Operating pressure	[bar]	4 ... 16
Operating medium		Filtered compressed air, unlubricated, grade of filtration 0.01 µm
Ambient temperature	[°C]	+5... +50
Temperature of medium	[°C]	+2 ... +50

Ordering data		
For type	Part No.	Type
PDAD-09	**553 749**	**PDAD-09-SP-12000**
PDAD-13	**553 750**	**PDAD-13-SP-12000**
PDAD-22	**553 751**	**PDAD-22-SP-12000**
PDAD-51	**553 752**	**PDAD-51-SP-12000**
PDAD-73	**553 753**	**PDAD-73-SP-12000**
PDAD-100	**553 754**	**PDAD-100-SP-12000**

Air nozzle ADNA
For adaptation of the purge air at a supply pressure of < 7 bar or > 9 bar

Ordering data		
For type	Part No.	Type
PDAD-09	**553 763**	**ADNA-PDAD-09**
PDAD-13	**553 764**	**ADNA-PDAD-13**
PDAD-22	**553 765**	**ADNA-PDAD-22**
PDAD-51	**553 766**	**ADNA-PDAD-51**
PDAD-73	**553 767**	**ADNA-PDAD-73**
PDAD-100	**553 768**	**ADNA-PDAD-100**

Adsorption dryers PDAD

Accessories

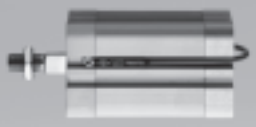
Micro-filter cartridge MS6-LFM-A
For prefilter

Grade of filtration: 0.01 µm

Ordering data		
For type	Part No.	Type
PDAD-09/13/22/51	**532 909**	**MS6-LFM-A**
PDAD-73/100	**552 093**	**MS6-LFM-A-HF**

Products and services – everything from a single source

Products incorporating new ideas are created when enthusiasm for technology and efficiency come together. Tailor-made service goes without saying when the customer is the focus of attention.



Pneumatic and electrical drives

- Pneumatic cylinders
- Semi-rotary drives
- Handling modules
- Servopneumatic positioning systems
- Electromechanical drives
- Positioning controllers and controllers

Valves and valve terminals

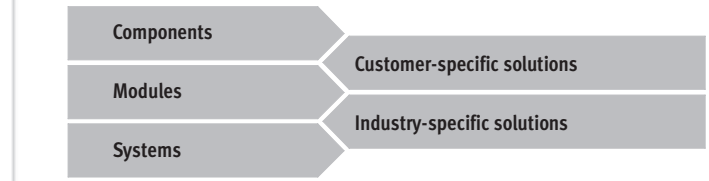
- Standard valves
- Universal and application-optimised valves
- Manually and mechanically actuated valves
- Shut-off, pressure control and flow control valves
- Proportional valves
- Safety valves

Fieldbus systems/ electrical peripherals

- Fieldbus Direct
- Installation system CP/CPI
- Modular electrical terminal CPX

Compressed air preparation

- Service unit combinations
- Filter regulators
- Filters
- Pressure regulators
- Lubricators
- On-off and soft-start valves
- Dryers
- Pressure amplifiers
- Accessories for compressed air preparation



Services from Festo to increase your productivity – across the entire value creation sequence

Engineering – for greater speed in the development process

- CAD models
- 14 engineering tools
- Digital catalogue
- FluidDRAW®
- More than 1,000 technical consultants and project engineers worldwide
- Technical hotlines

Supply chain – for greater speed in the procurement process

- E-commerce and online shop
- Online order tracking
- Euro special manufacturing service
- Logistics optimisation

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- Vacuum grippers
- Vacuum security valves
- Vacuum accessories
- Standard grippers
- Micro grippers
- Precision grippers
- Heavy-duty grippers

Sensors and monitoring units

- Proximity sensors
- Pressure and flow sensors
- Display and operating units
- Inductive and optical proximity sensors
- Displacement encoders for positioning cylinders
- Optical orientation detection and quality inspection

Controllers/bus systems

- Pneumatic and electropneumatic controllers
- Programmable logic controllers
- Fieldbus systems and accessories
- Timers/counters
- Software for visualisation and data acquisition
- Display and operating units

Accessories

- Pipes
- Tubing
- Pipe connectors and fittings
- Electrical connection technology
- Silencers
- Reservoirs
- Air guns

All in all, 100% product and service quality

A customer-oriented range with unlimited flexibility:
Components combine to produce ready-to-install modules and systems. Included in this are special designs – since at Festo, most industry-specific products and customer-specific solutions are based on the 23,000 plus catalogue products. Combined with the services for the entire value creation sequence, the end result is unbeatable economy.

Assembly – for greater speed in the assembly/commissioning process

- Prepack
- Preassembly
- Turnkey pneumatics
- Handling solutions

Operation – for greater speed in the operational process

- Spare parts service
- Energy saving service
- Compressed air consumption analysis
- Compressed air quality analysis
- Customer service

What must be observed when using Festo components?

Specified limit values for technical data and any specific instructions must be adhered to by the user in order to ensure recommended operating conditions.
When pneumatic components are used, the user shall ensure that they are operated using correctly prepared compressed air without aggressive media.
When Festo components are used in safety-oriented applications, the user shall ensure that all applicable national and local safety laws and regulations, for example the machine directive, together with the relevant references to standards are observed.
Unauthorised conversions or modifications to products and systems from Festo involve a safety risk and are thus not permissible.
Festo does not accept any liability for resulting damages.
You should contact Festo's advisors if one of the following apply to your application:

- The ambient conditions and conditions of use or the operating medium differ from the specified technical data.
- The product is to perform a safety function.
- A risk or safety analysis is required.
- You are unsure about the product's suitability for use in the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.