

DFPK
Piston drive

FESTO
Festo SE & Co. KG
Ruiter Straße 82
73734 Esslingen
Germany
+49 711 347-0
www.festo.com

Operating instructions

8143604
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[8143606]



Translation of the original instructions

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1 Applicable documents

NOTICE!
Technical data for the product can have different values in other documents. For operation in an explosive atmosphere, the technical data in this document always have priority.

All available documents for the product -> www.festo.com/sp.

1.1 Identification EX

Table with 3 columns: Identification mark, II 2G, Ex h IIC T6 ... T4 Gb, II 2D, Ex h IIIC T80°C ... T120°C Db, 0 °C ≤ Tₐ ≤ +60 °C

Tab. 1

2 Safety

2.1 General safety instructions

- The device can be used under the stated operating conditions in zones 1 and 2, explosive gas atmospheres, and in zones 21 and 22, explosive dust atmospheres.
- Use the device in its original status without any unauthorised modifications.
- All work must be carried out outside of potentially explosive areas.
- Extraction of the operating medium outside the potentially explosive area.
- Use approved accessories.
- Only use media in accordance with the specifications. -> 9 Technical data.

Media

- When using saturated steam: take vapour pressure into account when designing the valve

Drive

- Do not open the drive (pressure in the drive or spring under tension).
- Avoid mechanical stresses on the valve. Do not use the drive as a lever.

2.2 Intended use

The piston drive DFPK is intended for use with an angle seat valve VZXA-... or a cover kit VAVC-F12-SCC-....

2.3 Training of qualified personnel

Work on the product should only be conducted by qualified personnel. The qualified personnel must be familiar with installation of process automation systems.

3 Further information

- Accessories -> www.festo.com/catalogue.
- Spare parts -> www.festo.com/spareparts.

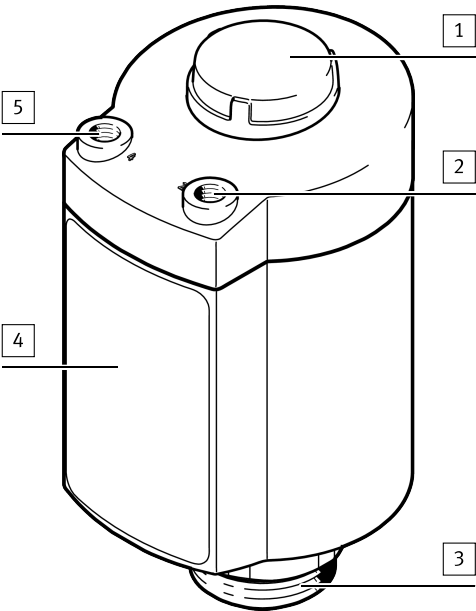
4 Service

Contact your regional Festo contact person if you have technical questions -> www.festo.com.

5 Product overview

5.1 Configuration

5.1.1 Product design



- 1 Position indicator
- 2 Pneumatic connection (2)
- 3 Drive/angle seat valve or cover kit interface
- 4 Drive housing
- 5 Pneumatic connection (4)

Fig. 1 Product design

Position indicator

The pneumatic position indication shows the position of the actuator stem.

Table with 2 columns: Indicator cylinder above, Indicator cylinder below. Rows show actuator stem retracted (valve opened) and actuator stem extended (valve closed).

Tab. 2 Position indicator

5.2 Function

The piston drive DFPK is a pneumatic drive actuated by compressed gas. The DFPK can be used for the following applications:
- valve drive in combination with angle seat valve VZXA-...
- valve block solution in combination with cover kit VAVC-F12-SCC-...
The piston drive can be supplied as a double-acting or single-acting drive. Single-acting drives have a spring system for opening and closing the connected valve in case of pressure drop or pressure loss. Control valves are required for switching the piston drive.

Flow over valve seat

- Only suitable for gaseous media, because use of incompressible media causes pressure surges in the piping.

Control function

Table with 3 columns: Single-acting, Double-acting. Rows show closed by spring force, opened by spring force, and opening/closing by two-way pressurising.

Tab. 3 Control function

6 Assembly and installation



For piston drives DFPK-46-... use exclusively G $\frac{1}{8}$ fittings with max. SW14.

1. Connect angle seat valve or cover kit.
2. Connect the operating medium line.
 - Pneumatic connection (2): operating medium
 - Pneumatic connection (4): exhaust port for single-acting drives or operating medium for double-acting drives
3. For single-acting drives: mount the silencer in the exhaust port or use a tubing connection for guided exhaust air.

7 Commissioning

⚠ WARNING!

The discharge of electrostatically charged parts can lead to ignitable sparks.

- Prevent electrostatic charging by taking appropriate installation and cleaning measures.
- Include the device in the system equipotential bonding.

NOTICE!

Strong charge-generating processes can charge non-conductive layers and coatings on metal surfaces.

NOTICE!

Escaping exhaust air can swirl up dust and create an explosive dust atmosphere.

NOTICE!

Related type of ignition protection: c (constructional safety)

Requirements

- Angle seat valve or cover kit is fully mounted and connected.

Checking operating conditions

1. Check operating conditions and limit values → 9 Technical data.
2. Check connection points for tightness.
3. Check compatibility of the devices in the system for maximum pressure (consider pressure peaks). If necessary, adjust the application parameters.

8 Disposal

♻ ENVIRONMENT!

Dispose of the product and packaging according to the applicable provisions of environmentally sound recycling.

9 Technical data

9.1 Technical data, general

DFPK-...	
Mounting position	any
Ambient temperature [°C]	0 ... 60
Degree of protection	IP65, IP67
Outdoor use	weatherproof locations class C1 in accordance with EN 606541
Operating pressure	[MPa] 0.5 ... 1
	[psi] 72.5 ... 145
	[bar] 5 ... 10
Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]
Materials	
Housing	Stainless steel casting
Seal	FPM
Piston rod	High-alloy stainless steel
Cover	Stainless steel casting

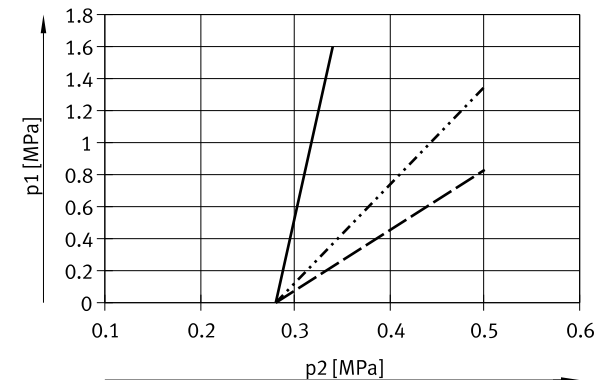
Tab. 4 Technical data DFPK-...

9.2 Technical data, pneumatic

Medium pressure and operating pressure DFPK-46-...-S (media flow under valve seat, N/O) in combination with VAVC-F12-SCC-...

Nominal width DN		13	20	25
Max. medium pressure	[MPa]	1.6	1.35	0.83
	[psi]	232	195.8	120.4
	[bar]	16	13.5	8.3
Min. operating pressure	[MPa]	0.34	0.5	
	[psi]	49.3	72.5	
	[bar]	3.4	5	

Tab. 5 Limit values of medium pressure and operating pressure DFPK-46-...-S



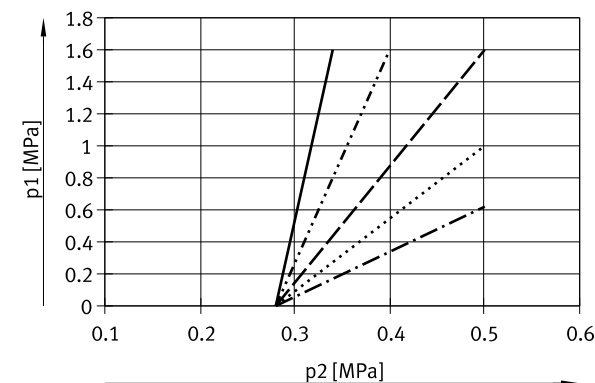
p1 Pressure of medium
p2 Operating pressure
— DN13
..... DN20
---- DN25

Fig. 2 Medium pressure and operating pressure DFPK-46-...-S

Medium pressure and operating pressure DFPK-75-...-S (media flow under valve seat, N/O) in combination with VAVC-F12-SCC-...

Nominal width DN		20	25	32	40	50
Max. medium pressure	[MPa]	1.6			1	0.62
	[psi]	232			145	89.9
	[bar]	16			10	6.2
Min. operating pressure	[MPa]	0.34	0.4	0.5		
	[psi]	49.3	58	72.5		
	[bar]	3.4	4	5		

Tab. 6 Limit values of medium pressure and operating pressure DFPK-75-...-S



p1 Pressure of medium
p2 Operating pressure
— DN20
..... DN25
---- DN32
-.-.-.- DN40
- - - - DN50

Fig. 3 Medium pressure and operating pressure DFPK-75-...-S

Medium pressure and operating pressure DFPK-46-...-D (media flow under valve seat, double-acting) in combination with VAVC-F12-SCC-...

Nominal width DN		13	20	25	32
Max. medium pressure	[MPa]	1.6		0.6	
	[psi]	232		87	
	[bar]	16		6	
Min. operating pressure	[MPa]	0.28	0.31	0.48	0.5
	[psi]	40.6	45	69.6	72.5
	[bar]	2.8	3.1	4.8	5

Tab. 7 Limit values of medium pressure and operating pressure DFPK-46-...-D

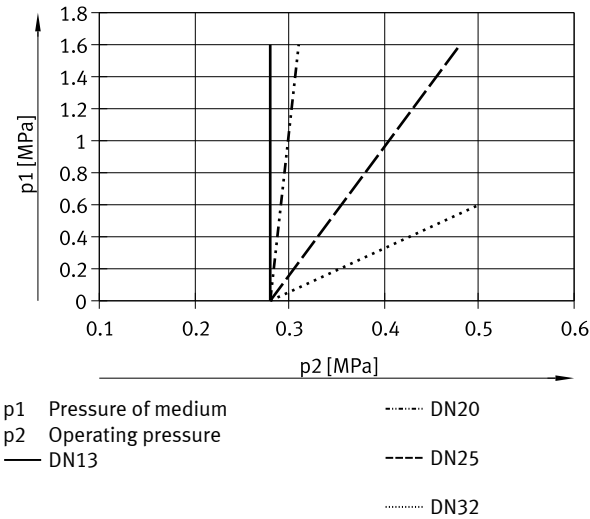


Fig. 4 Medium pressure and operating pressure DFPK-46-...-D

Medium pressure and operating pressure DFPK-75-...-D (media flow under valve seat, double-acting) in combination with VAVC-F12-SCC-...

Nominal width DN		20	25	32	40	50
Max. medium pressure	[MPa]	1.6			1	
	[psi]	232			145	
	[bar]	16			10	
Min. operating pressure	[MPa]	0.28		0.38	0.5	
	[psi]	40.6		55.1	72.5	
	[bar]	2.8		5.1	5	

Tab. 8 Limit values of medium pressure and operating pressure DFPK-75-...-D

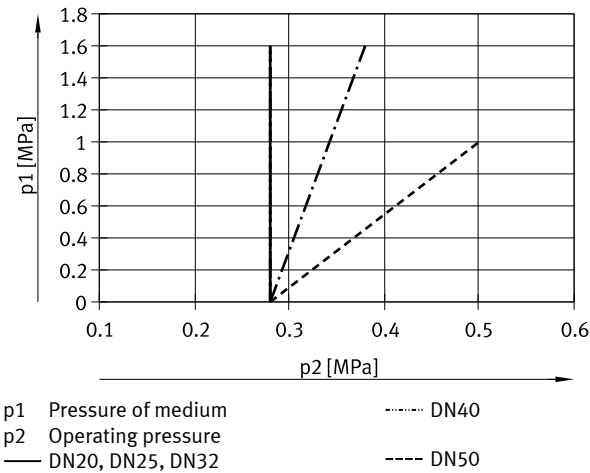


Fig. 5 Medium pressure and operating pressure DFPK-75-...-D

Medium pressure and operating pressure DFPK-46 (media flow under valve seat, NC) in combination with VAVC-F12-SCC-...

Nominal width DN		13	20	25	32
Pressure of medium	[MPa]	0 ... 3	0 ... 1.28	0 ... 0.83	0 ... 0.44
	[psi]	0 ... 435	0 ... 185.6	0 ... 120.4	0 ... 63.8
	[bar]	0 ... 30	0 ... 12.8	0 ... 8.3	0 ... 4.4
Min. operating pressure	[MPa]	0.48			
	[psi]	69.6			
	[bar]	4.8			

Tab. 9 Limit values of medium pressure and operating pressure DFPK-46

Medium pressure and operating pressure DFPK-75 (media flow under valve seat, NC) in combination with VAVC-F12-SCC-...

Nominal width DN		20	25	32	40	50
Pressure of medium	[MPa]	0 ... 3	0 ... 2.3	0 ... 1.35	0 ... 0.93	0 ... 0.56
	[psi]	0 ... 435	0 ... 333.5	0 ... 195.8	0 ... 134.9	0 ... 81.2
	[bar]	0 ... 30	0 ... 23	0 ... 13.5	0 ... 9.3	0 ... 5.6
Min. operating pressure	[MPa]	0.46				
	[psi]	66.7				
	[bar]	4.6				

Tab. 10 Limit values of medium pressure and operating pressure DFPK-75

Medium pressure and operating pressure DFPK-46-...-PR (media flow under valve seat, NC with reduced spring force) in combination with VAVC-F12-SCC-...

Nominal width DN		13	20
Max. medium pressure	[MPa]	1.15	0.6
	[psi]	166.8	87
	[bar]	11.5	6
Min. operating pressure	[MPa]	0.26	
	[psi]	37.7	
	[bar]	2.6	

Tab. 11 Limit values of medium pressure and operating pressure DFPK-46-...-PR

Medium pressure and operating pressure DFPK-75-...-PR (media flow under valve seat, NC with reduced spring force) in combination with VAVC-F12-SCC-...

Nominal width DN		20	25	32	40
Max. medium pressure	[MPa]	1.6	0.93	0.48	0.4
	[psi]	232	134.9	69.6	58
	[bar]	16	9.3	4.8	4
Min. operating pressure	[MPa]	0.22			
	[psi]	31.9			
	[bar]	2.2			

Tab. 12 Limit values of medium pressure and operating pressure DFPK-75-...-PR

Medium pressure and operating pressure DFPK-46-...-PR (media flow over valve seat, NC with reduced spring force) in combination with VAVC-F12-SCC-...

Nominal width DN		13	20	25	32
Max. medium pressure	[MPa]	1.6		1	0.68
	[psi]	232		145	98.6
	[bar]	16		10	6.8
Min. operating pressure	[MPa]	0.26	0.41	0.5	
	[psi]	37.7	59.5	72.5	
	[bar]	2.6	4.1	5	

Tab. 13 Limit values of medium pressure and operating pressure DFPK-46-...-PR

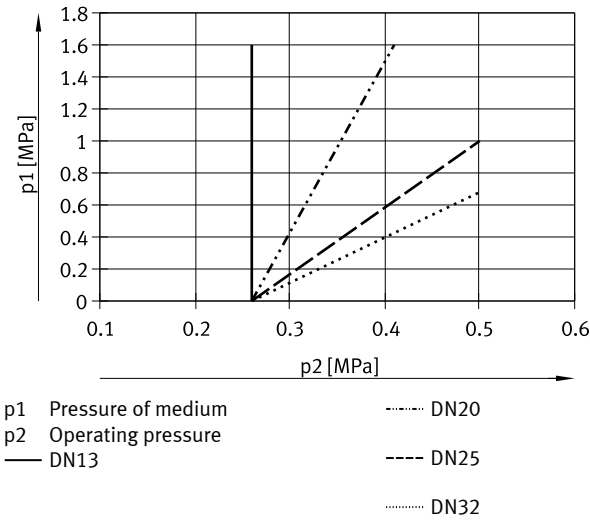


Fig. 6 Medium pressure and operating pressure DFPK-46-...-PR

Medium pressure and operating pressure DFPK-75-...-PR (media flow over valve seat, NC with reduced spring force) in combination with VAVC-F12-SCC-...

Nominal width DN		20	25	32	40	50
Max. medium pressure	[MPa]	1.6			1.55	0.8
	[psi]	232			224.8	116
	[bar]	16			15.5	8
Min. operating pressure	[MPa]	0.24	0.31	0.42	0.5	
	[psi]	34.8	45	60.9	72.5	
	[bar]	2.4	3.1	4.2	5	

Tab. 14 Limit values of medium pressure and operating pressure DFPK-75-...-PR

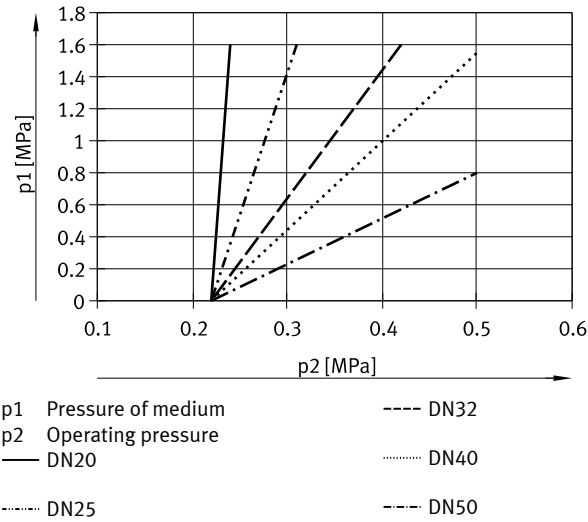


Fig. 7 Medium pressure and operating pressure DFPK-75-...-PR