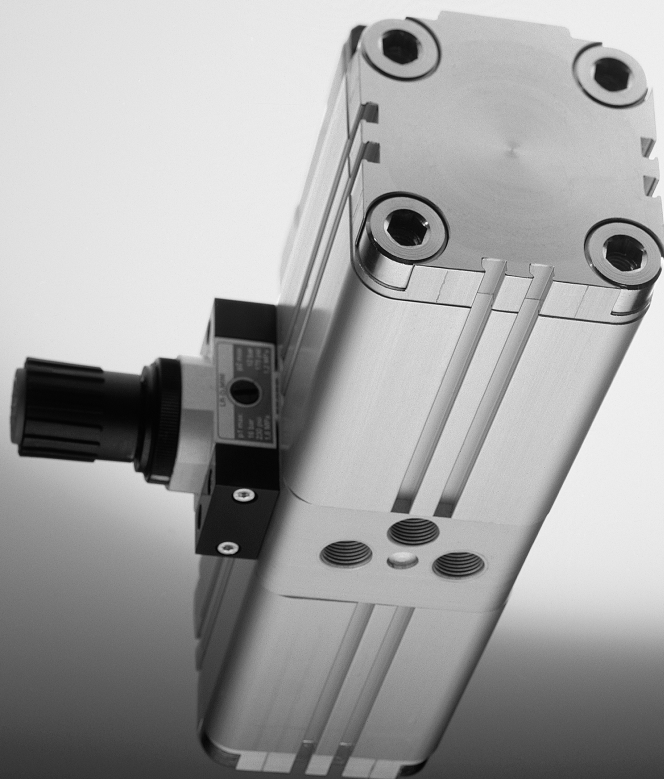


Pressure booster

DPA

FESTO

(en) Operating
instructions



8080164
2017-07e
[8080166]

Translation of the original instructions

Symbols:



Warning


Installation and commissioning may only be performed in accordance with these instructions by technicians with appropriate qualifications.




Caution



Note



Environment



Accessories

Pressure booster DPA

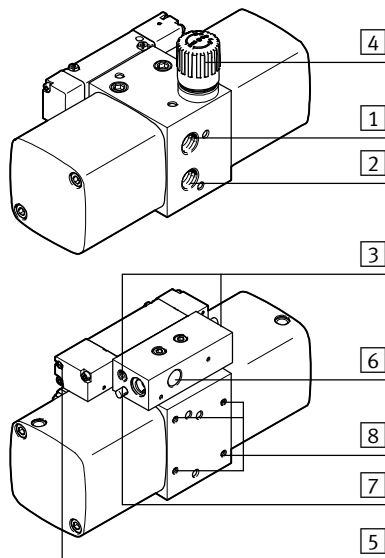
Documentation on the product



For all available product documentation → www.festo.com/pk

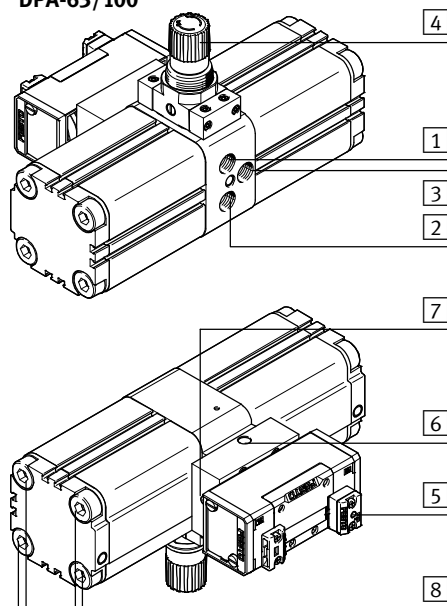
1 Operating elements and ports

DPA-40



- 1** Pneumatic connection 1 for input pressure
- 2** Pneumatic connection 2 for output pressure
- 3** Pneumatic connection 3 for exhaust air
- 4** Rotary knob for output pressure (not DPA-...-D)

DPA-63/100



- 5** Manual override
- 6** Exhaust hole; sealed with sintered filter
- 7** Valve exhaust port (on the right and left of the valve sub-base); DPA-40 with silencers in scope of delivery
- 8** Threaded holes for fastening

Fig. 1

2 Function and application

The type DPA pressure booster has been designed for increasing the pressure in air supply lines. Due to its two coupled pressure chambers, the DPA functions as a double piston compressor. No external energy other than compressed air is required to operate the DPA. Once the input pressure has been applied, the DPA starts up automatically. An integrated way valve conducts the pressure, which is applied constantly at pneumatic connection 1, alternately into one compression chamber then into the other. These generate an output pressure of up to double the value of the input pressure. On pressure boosters with a controller, the pressure increase can be reduced by setting the rotary knob. When the set output pressure is reached, the DPA stops operating to save energy but restarts automatically if the pressure drops due to application operation.

With the DPA-....A it is possible to record the individual strokes of the drive piston using an external sensor and an adding counter.

**Note**

Pressure boosters are intended to occasionally relieve compressed air. Pressure boosters are not suitable for use as compressor replacements, as wear on seals and drive pistons increases significantly during continuous operation without breaks.

3 Conditions of use

**Note**

Incorrect handling can result in malfunctioning.

- Make sure that the following specifications are always observed:
- Compare the maximum values specified in these operating instructions with your actual application (e.g. operating media, pressures, forces, temperatures, masses, flow rates).
- Ensure that there is a supply of correctly prepared compressed air.
- Take into consideration the ambient conditions at the location of use.
- Please comply with national and local safety laws and regulations (e.g. Safety regulations as per EN 1012, part 1).



- Use a three-way on-off valve on the input side of the DPA.
- Use a three-way on-off valve on the output side of the DPA.
In this way, the downstream switched system can be exhausted quickly.
- Remove the packing with the exception of the self-adhesive labels on the compressed air connections (to prevent dirt from entering).
It is intended that the packaging be recycled on the basis of its constituent materials (exception: oiled paper = other waste).
- Please observe the warnings and instructions
 - on the product and
 - in these operating instructions.
- Use the product in its original state. Unauthorised modification is not permitted.

4 Transport and storage




Warning

Falling loads may cause personal injuries.

- Take the weight of the DPA into consideration. Depending on the version, the DPA can weigh up to 13 kg.
The rotary knob must **not** be used as a support for transporting the DPA because the large load may dislodge the rotary knob.

5 Installation

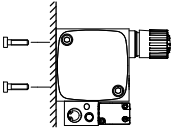
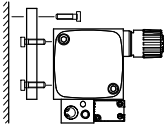
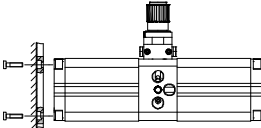
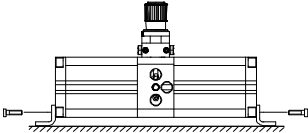
Mechanical



Note

The DPA must not be installed on the controller thread because the controller thread may be destroyed under the load of the DPA.

Fasten the DPA in one of the following ways only:

Type	Fastening method ¹⁾		Fastening
DPA-40	Direct fastening	– with 4 screws (M4) in the threaded holes of the DPA. Tightening torque 2 Nm.	
	With FDPA-40 flange mounting accessory	– Flange with 4 screws (M4) in the threaded holes of the DPA. Tightening torque 2 Nm. – Fit the flange to the wall with 2 screws (M5).	
DPA-63/100	Direct fastening	– With 4 screws (M10) in the threaded holes of the DPA. Tightening torque 30 Nm.	
	With HUA foot mounting accessory (2x)	– Foot mounting, with two screws each in the threaded holes of the DPA on the right and left. Tightening torque 30 Nm.	
1) The exhaust hole and both valve exhaust ports (6/7) → Fig. 1) must not be sealed.			

Fitting the proximity sensors for sensing option (DPA-...-A only) → Fig. 2

- Fasten the proximity sensor **1** in one of the 6 available sensor grooves on the right-hand side of the DPA (rotary knob top, pneumatic ports front). The proximity sensor must be positioned in the middle of the cylinder barrel.
- Connect the proximity sensors to the adding counter.

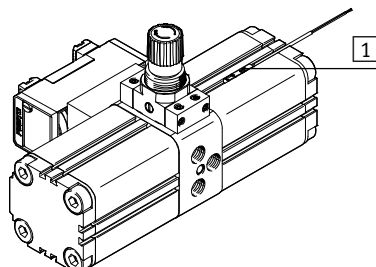


Fig. 2



Note

The proximity sensor records each individual stroke of the drive piston. In order to arrive at the usual count of double strokes, the number of individual strokes has to be halved.

Information of the proximity sensor and the adding counter can be found in the operating instructions for these products.

Pneumatic connection for input pressure, output pressure, exhaust air



Note

Incorrectly dimensioned cable cross-sections can impair the timing behaviour of downstream switched components.

- Use hoses with a minimum inner diameter or the hose types recommended in Fig. 3 for the input and output pressure.
- Use a silencer for the exhaust air. If the exhaust air is to be ducted, it must be vented relative to atmosphere.
The exhaust air from both valve exhaust ports (**7** → Fig. 1) must not be ducted.
- Check whether an air reservoir is required. In this way you will avoid pressure fluctuations.

- Connect the tubing to the supply ports as per Fig. 3.
With an output pressure greater than 10 bar, make sure that the permitted limits for the connecting elements used at output **2** are observed (if necessary connect the tubing to the DPA).

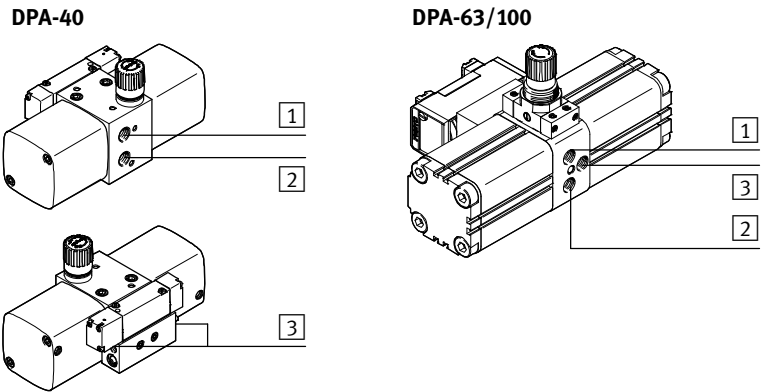


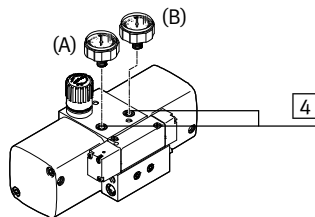
Fig. 3

Type		DPA-40	DPA-63	DPA-100
Connection number	1	Pneumatic connection 1 for input pressure		
	2	Pneumatic connection 2 for output pressure		
	3	Pneumatic connection 3 for exhaust air		
Pneumatic connection	1/2	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
	3	M7	G $\frac{3}{8}$	G $\frac{1}{2}$
Tightening torque	1/2	15 Nm	25 Nm	40 Nm
	3	2 Nm	25 Nm	40 Nm
Inner hose diameter/ recommended hose type	1	7 mm/ PAN-10x1.5	12 mm/ PAN-16x2	12 mm/ PAN-16x2
	2	5 mm/ PAN-R-8x1.25	10 mm/ PAN-R-16x3	10 mm/ PAN-R-16x3

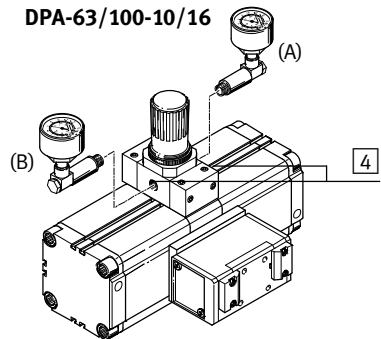
Pneumatic connection for pressure gauges → Fig. 4

1. Remove the screws plugs from the pressure gauge ports [4].
2. DPA-40 only:
Seal off the pressure gauges with PTFE tape.
The pressure gauges for the DPA-63/100 have a PTFE coating. It is not necessary to seal them with PTFE tape.
3. Firmly screw the pressure gauges into the ports [4] clockwise by hand. Pressure gauge (A) shows the input pressure, pressure gauge (B) shows the output pressure.
Use pressure gauges with a sufficient dial to show the input and output pressure (→ 10 Technical data). To show the output pressure, a pressure gauge with a larger final value on the dial is required.
Exception: The DPA-...-10-MA-SET pressure gauge set (→ 8 Accessories) contains two identical pressure gauges with a sufficient dial for the DPA-...-10.

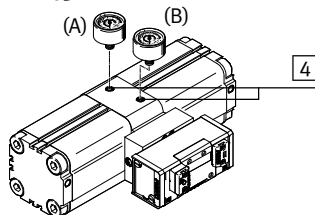
DPA-40-10/16/D



DPA-63/100-10/16



DPA-63-D



DPA-100-D

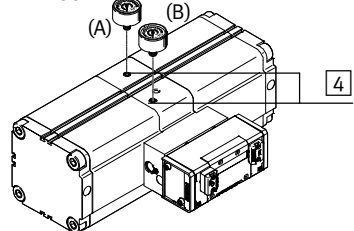


Fig. 4

4. Align the pressure gauge with the spanner by screwing it in further by a maximum of 1.5 turns.

6 Commissioning

**Warning**

Sudden expulsion of compressed air can cause injuries.

- Make sure that the compressed air outputs of the DPA for output air **2** and exhaust air **3** are connected (→ Fig. 3).

**Note**

High compressed air forces can damage equipment further along the compressed air path.

- Make sure that equipment connected downstream of the DPA is designed to withstand the maximum output pressure which can be achieved.

**Note**

The three-way on-off valve on the input side of the DPA must not be opened until the pressure in the system has been built up.

First open the three-way valve on the input side, then the three-way on-off valve on the output side.

**Note**

The output pressure on pressure boosters without a controller is twice the input pressure.

Consider the following correlations:

Setting	Reaction
The set output pressure is lower than the input pressure	The pressure controller on the DPA vents until the pressures are equal
The input pressure is always 2 bar lower than the set output pressure	The DPA reaches the set output pressure
Increase the output pressure	Increase of air consumption
Air volume/current on the input side is too low	Output pressure fluctuates
Maximum controller setting DPA-...-10: typ. 10 bar, max. 14 bar DPA-...-16: typ. 16 bar, max. 22 bar	The max. output pressure can be exceeded by up to 40 % (product-dependent scatter of the regulator springs)

Setting the output pressure:



Note

Pressure gauges are strongly recommended for checking pressure levels.

1. DPA-63/100-10 only:
Pull the rotary knob away from the housing.
2. Turn the adjusting knob (4) → Fig. 1) clockwise as far as it will go (status as at delivery).
3. Apply the input pressure to pneumatic port 1 on the DPA.
4. Turn the rotary knob (4) → Fig. 1) clockwise until the desired output pressure is shown on the pressure gauge.

The pressure statuses are monitored by pressure gauges (→ Fig. 4):

- Pressure gauge (A): input pressure
- Pressure gauge (B): output pressure

5. DPA-63/100-10 only:
Press the rotary knob towards the housing to lock it.

7 Removal

1. Switch off the compressed air. The system must be fully depressurised.
2. First close the on-off valve on the output side of the DPA, then the on-off valve on the input side of the DPA.
3. Then turn the rotary knob anti-clockwise as far as it will go.
4. Disconnect the pneumatic ports of the DPA.

8 Accessories

Designation	for	Type
Flange mounting	DPA-40	FDPA-40
Foot mounting	DPA-63	HUA-63
	DPA-100	HUA-100
Pressure gauge set	DPA-40-10	DPA-40-10-MA-SET
	DPA-40-16/DPA-40-D	DPA-40-16-MA-SET
	DPA-63-10	DPA-63-10-MA-SET
	DPA-63-16	DPA-63-16-MA-SET
	DPA-100-10	DPA-100-10-MA-SET
	DPA-100-16	DPA-100-16-MA-SET
Pressure gauges	DPA-63-D/DPA-100-D	MA-40-16-1/8-EN for input pressure, MA-40-25-1/8-EN for output pressure

9 Troubleshooting

Malfunction	Possible cause	Remedial action
Output pressure fluctuates too much	Air consumption of downstream equipment too high	Use air reservoir
The desired output pressure is not reached	<ul style="list-style-type: none"> – Input pressure too low – Too many consuming devices at the Output 	Increase the input pressure
Flow too low	Silencer, tubing or screw connectors with insufficient flow used	Use only components of sufficient sizes
	Insufficient air volume at compressed air input	Increase volume at compressed air input (e. g. with large compressed air reservoir)
Pressure booster does not start	Fault in commissioning/unfavourable Operating conditions (valve in mid-position)	Briefly exhaust the switching valve by pressing the manual override 5 (➔ Fig. 1)

10 Technical data

Type	DPA-40			DPA-63			DPA-100		
	-10	-16	-D	-10	-16	-D	-10	-16	-D
Input pressure [bar]	2.5 ... 8	2.5 ... 10	2.5 ... 8	2 ... 8	2 ... 10	2 ... 8	2 ... 8	2 ... 10	2 ... 8
Output pressure ¹⁾ [bar]	4.5 ... 10	4.5 ... 16	5 ... 16	4 ... 10	4 ... 16	4 ... 16	4 ... 10	4 ... 16	4 ... 16
Operating medium	Filtered compressed air, non-lubricated, grade of filtration 40 µm								
Installation position	as desired								
Ambient temperature [°C]	+5 ... +60								
Weight [kg]	1.5			6.0			13.0		
1) If the regulator spring is at maximum tension (rotary knob turned all the way clockwise), the maximum output pressure can be exceeded by 40 %: – Max. 14 bar on DPA-...-10 – Max. 22 bar on DPA-...-16									

DPA

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