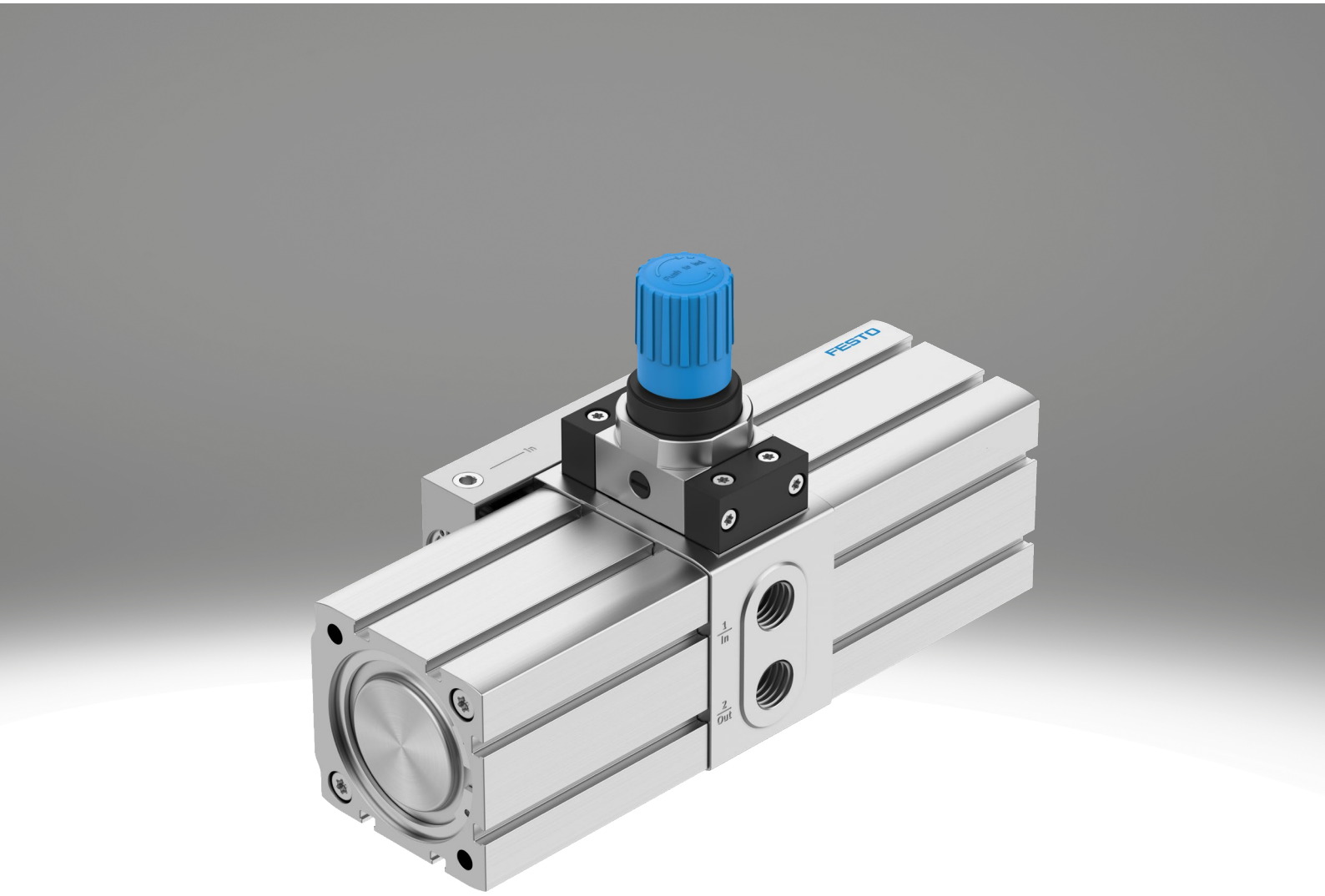
Pressure amplifier PBPA



Characteristics

At a glance

The pressure booster is one of the twin-piston pressure intensifiers that can only compress air. When the pressure booster is supplied with compressed air, integrated non-return valves automatically ensure the pressure is built up on the secondary side. The output pressure p2 can rise to twice the value of the input pressure p1. The required output pressure for pressure boosters with regulators can be reduced depending on the setting. The output pressure for pressure boosters without a pressure regulator is always 2 times the input pressure. The two drive pistons are supplied with air by a pneumatic directional control valve, which is switched automatically when the switching positions are reached. If the input pressure is switched onand the required output pressure has not yet been reached, the pressure booster starts automatically. The pressure booster assumes its energy-saving operating mode as soon as the set output pressure is reached; it automatically starts up again when the application operation causes the output pressure to drop.

- Optionally as a pressure intensifier/air reservoir combination
- Long service life
- Compact design
- Available with sensing option

Note: A pressure gauge is strongly recommended for checking the output pressure p2, as a desired output pressure p2 must be set.

Additional documents

Link pbpa



The additional document PRESSURE-BOOSTER-ADD contains further instructions for use.

Diagrams

Link pbpa



The diagrams shown in this document are also available online. These can be used to display precise values.

Outlet pressure

Available with or without pressure regulator.

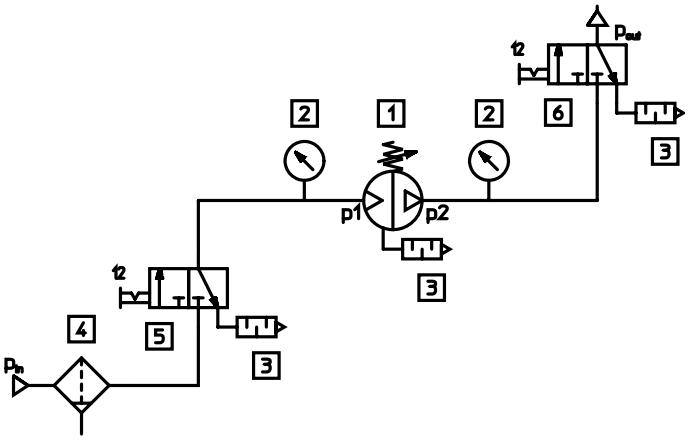
Position sensing

[A]	For proximity sensor

The individual strokes of the drive piston can be detected using an external sensor (SMT-8M) and an adding counter (CCES).

Characteristics

Connection to the compressed air network



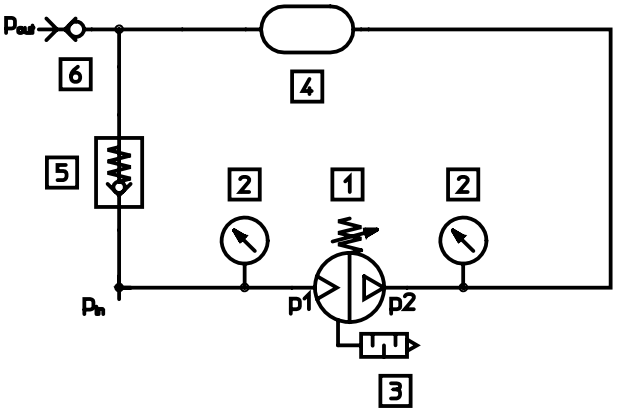
[1] Pressure booster
[2] Pressure gauge
[3] Silencer
[4] Filter
[5] 3/2-way on/off valve on the input pressure side
[6] 3/2-way on/off valve on the output pressure side

Input pressure side
The use of a 3/2-way on/off valve (e.g. MS4/6-EM1, MS4/6-EE or a comparable type) in the compressed air line to the pressure amplifier is recommended. The 3/2-way on/off valve must only be opened once the input pressure has been built up.
Note: If the system includes a soft-start valve, it is essential to position a 3/2-way on/off valve between the soft-start valve and the pressure booster.

Output pressure side
It is recommended that a 3/2-way on/off valve is connected to the output pressure side of the pressure booster to ensure safe exhausting of the output pressure pout. If a 3/2-way valve is not used, the output pressure can only be exhausted by completely relaxing the regulator spring (turning the regulator knob all the way to the left).
Note: For pressure boosters without a pressure regulator, the air must be exhausted externally via a 3/2-way on/off valve.

Characteristics

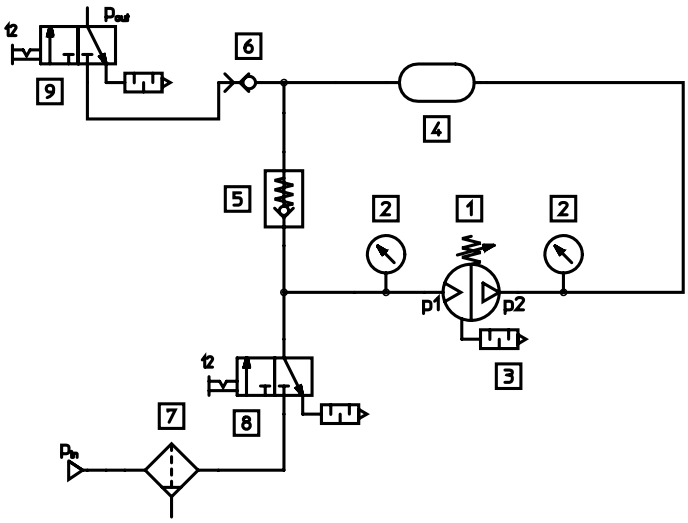
Installation with air reservoir



[1] Pressure booster
[2] Pressure gauge
[3] Silencer
[4] Air reservoir
[5] Check valve
[6] Coupling socket

An air reservoir should always be used on the output pressure side to compensate for pressure fluctuations. The air reservoir smooths the pulsation of the pressure booster. It is sensible to fill the volume of the air reservoir with the input pressure p1 via a connecting line. The pressure booster only needs to compensate for the difference between input and output pressure. Filling the air reservoir takes less time. A check valve prevents the air from flowing back out of the reservoir. This arrangement corresponds to the scope of delivery of the pressure booster/air reservoir combination available to order.

Installation with air reservoir and two on/off valves

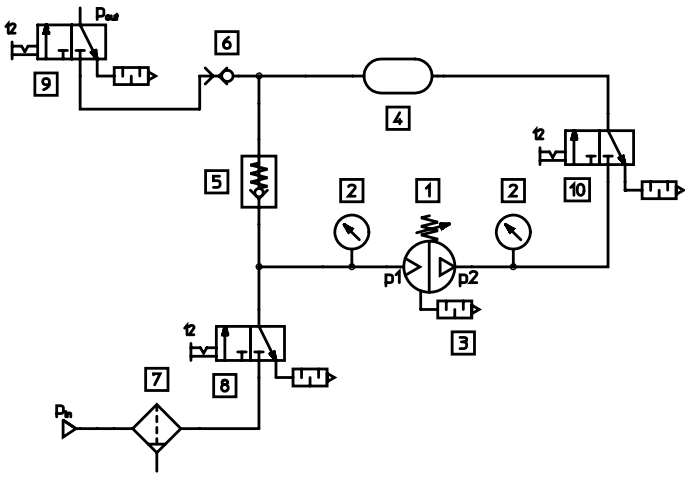


[1] Pressure booster
[2] Pressure gauge
[3] Silencer
[4] Air reservoir
[5] Check valve
[6] Coupling socket
[7] Filter
[8] 3/2-way on/off valve on the input pressure side
[9] 3/2-way on/off valve on the output pressure side

The air reservoir is exhausted via the control knob of the pressure booster.

Characteristics

Installation with air reservoir and three on/off valves



[1] Pressure booster
[2] Pressure gauge
[3] Silencer
[4] Air reservoir
[5] Check valve
[6] Coupling socket
[7] Filter
[8] 3/2-way on/off valve on the input pressure side
[9] 3/2-way on/off valve on the output pressure side
[10] 3/2-way on/off valve for exhausting the air reservoir

The air reservoir is exhausted via the additional on/off valve.

Type code

001	Series	
PBPA	Pressure amplifier	

002	Size [mm]	
40	40	
63	63	
100	100	

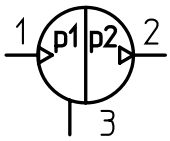
003	Outlet pressure	
10	Max. 10 bar	
16	Max. 16 bar	
D	Double input pressure, without pressure regulator	

004	Position sensing	
A	For proximity sensor	

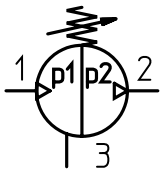
Datasheet

General technical data – Pressure booster PBPA			
Piston diameter	40 mm	63 mm	100 mm
Pneumatic connection, port 1	G1/4	G3/8	G1/2
Pneumatic connection, port 2	G1/4	G3/8	G1/2
Pneumatic connection, port 3	G1/8	G1/4	G3/8
Design	Twin-piston pressure booster		
Type of mounting	with female thread M4	With female thread	
Mounting position	Any		
Pressure gauge (ANALOG) or Pressure display (DIGITAL)	Prepared for G1/8		

Function – pressure booster without pressure regulator



Function – pressure booster with pressure regulator



Operating and environmental conditions – Pressure booster PBPA						
Piston diameter	40 mm			63 mm		
Outlet pressure	Max. 10 bar [10]	Max. 16 bar [16]	Double input pressure, without pressure regulator [D]	Max. 10 bar [10]	Max. 16 bar [16]	Double input pressure, without pressure regulator [D]
Operating pressure	0.2 ... 0.8 MPa	0.2 ... 1 MPa		0.2 ... 0.8 MPa	0.2 ... 1 MPa	
Operating pressure	2 ... 8 bar	2 ... 10 bar		2 ... 8 bar	2 ... 10 bar	
Operating pressure	29 ... 116 psi	29 ... 145 psi		29 ... 116 psi	29 ... 145 psi	
Inlet pressure 1	0.2 ... 0.8 MPa	0.2 ... 1 MPa		0.2 ... 0.8 MPa	0.2 ... 1 MPa	
Inlet pressure 1	2 ... 8 bar	2 ... 10 bar		2 ... 8 bar	2 ... 10 bar	
Inlet pressure 1	29 ... 116 psi	29 ... 145 psi		29 ... 116 psi	29 ... 145 psi	
Output pressure 2	0.4 ... 1 MPa	0.4 ... 1.6 MPa	0.4 ... 2 MPa	0.4 ... 1 MPa	0.4 ... 1.6 MPa	0.4 ... 2 MPa
Output pressure 2	4 ... 10 bar	4 ... 16 bar	4 ... 20 bar	4 ... 10 bar	4 ... 16 bar	4 ... 20 bar
Output pressure 2	58 ... 145 psi	58 ... 232 psi	58 ... 290 psi	58 ... 145 psi	58 ... 232 psi	58 ... 290 psi
Note on pressure regulation range	If the controller spring is tensioned to the maximum, the maximum output pressure can be exceeded by 40%.	–		If the controller spring is tensioned to the maximum, the maximum output pressure can be exceeded by 40%.	–	
Operating medium	Compressed air to ISO 8573-1:2010 [7:3:4]					
Note on operating and pilot medium	Lubricated operation not possible					
Ambient temperature	5 ... 60°C					
Storage temperature	5 ... 60°C					
Corrosion resistance class CRC [1]	1 - Low corrosion stress					

1) More information www.festo.com/x/topic/crc

Datasheet

Operating and environmental conditions – Pressure booster PBPA

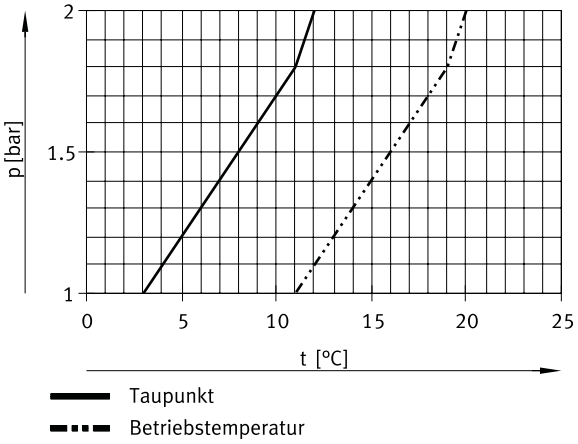
Piston diameter	100 mm		
Outlet pressure	Max. 10 bar [10]	Max. 16 bar [16]	Double input pressure, without pressure regulator [D]
Operating pressure	0.2 ... 0.8 MPa	0.2 ... 1 MPa	
Operating pressure	2 ... 8 bar	2 ... 10 bar	
Operating pressure	29 ... 116 psi	29 ... 145 psi	
Inlet pressure 1	0.2 ... 0.8 MPa	0.2 ... 1 MPa	
Inlet pressure 1	2 ... 8 bar	2 ... 10 bar	
Inlet pressure 1	29 ... 116 psi	29 ... 145 psi	
Output pressure 2	0.4 ... 1 MPa	0.4 ... 1.6 MPa	0.4 ... 2 MPa
Output pressure 2	4 ... 10 bar	4 ... 16 bar	4 ... 20 bar
Output pressure 2	58 ... 145 psi	58 ... 232 psi	58 ... 290 psi
Note on pressure regulation range	If the controller spring is tensioned to the maximum, the maximum output pressure can be exceeded by 40%.	–	
Operating medium	Compressed air to ISO 8573-1:2010 [7:3:4]		
Note on operating and pilot medium	Lubricated operation not possible		
Ambient temperature	5 ... 60°C		
Storage temperature	5 ... 60°C		
Corrosion resistance class CRC [1)]	1 - Low corrosion stress		

1) More information www.festo.com/x/topic/crc

Materials

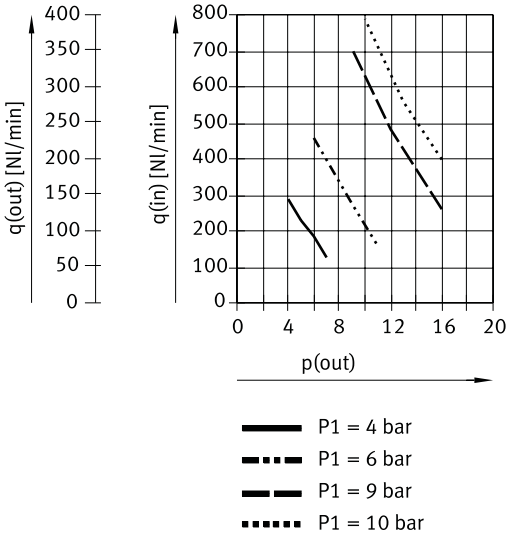
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Minimum permissible operating temperature t as a function of the pressure dew point and pressure amplification p



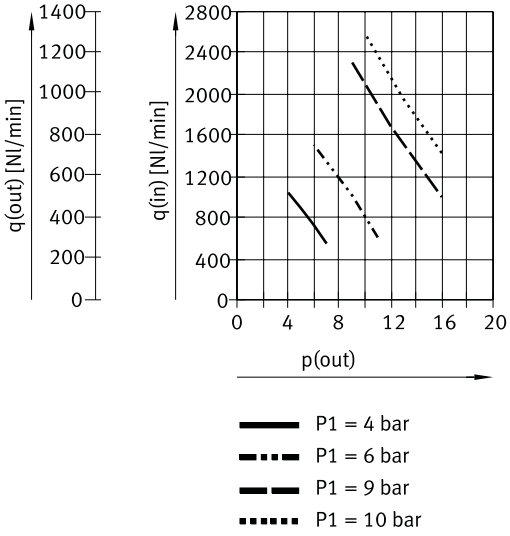
Datasheet

Flow rate at input q(in) and flow rate at output q(out) as a function of output pressure p(out) – PBPA-40 (p2=20 bar)



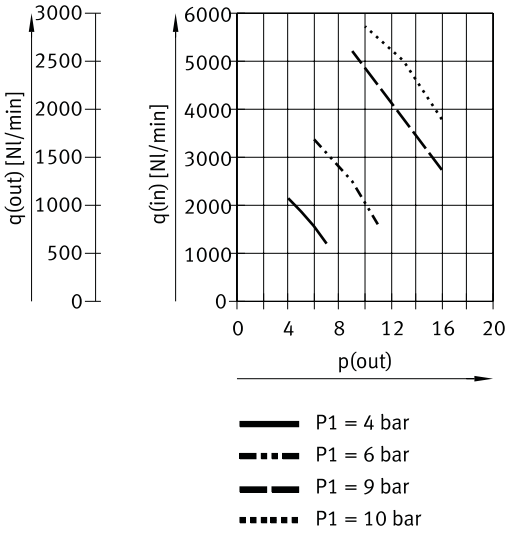
Note: Theoretical values without switching losses and friction.

Flow rate at input q(in) and flow rate at output q(out) as a function of output pressure p(out) – PBPA-63 (p2=20 bar)



Note: Theoretical values without switching losses and friction.

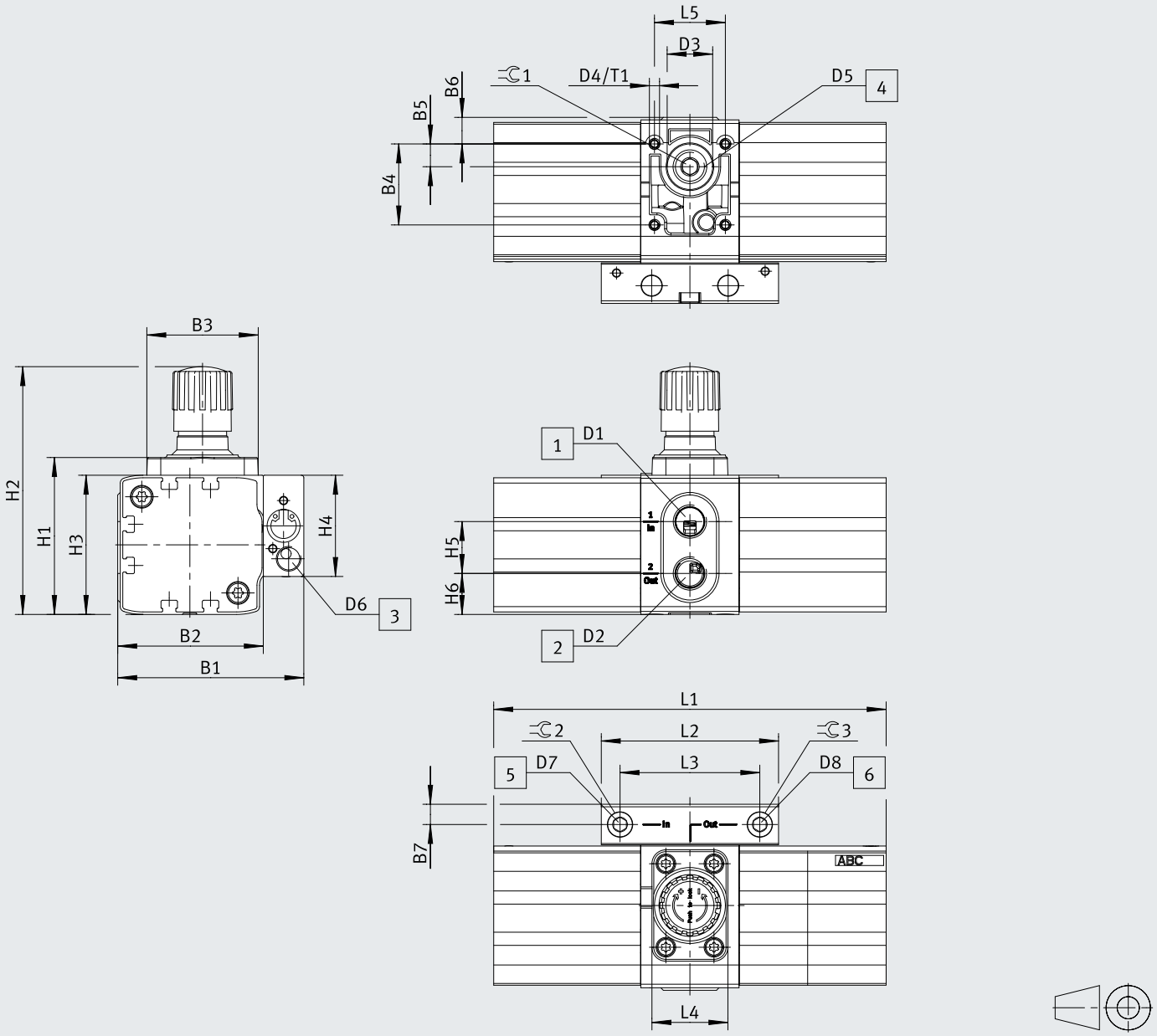
Flow rate at input q(in) and flow rate at output q(out) as a function of output pressure p(out) – PBPA-100 (p2=20 bar)



Note: Theoretical values without switching losses and friction.

Dimensions

Dimensions – PBPA-40/63-10/16-A Download CAD data www.festo.com



[1] Inlet connection 1
[2] Outlet connection 2
[3] Exhaust air port 3
[4] Outlet connection 2
[5] Connection for inlet pressure gauge
[6] Connection for outlet pressure gauge

Dimensions

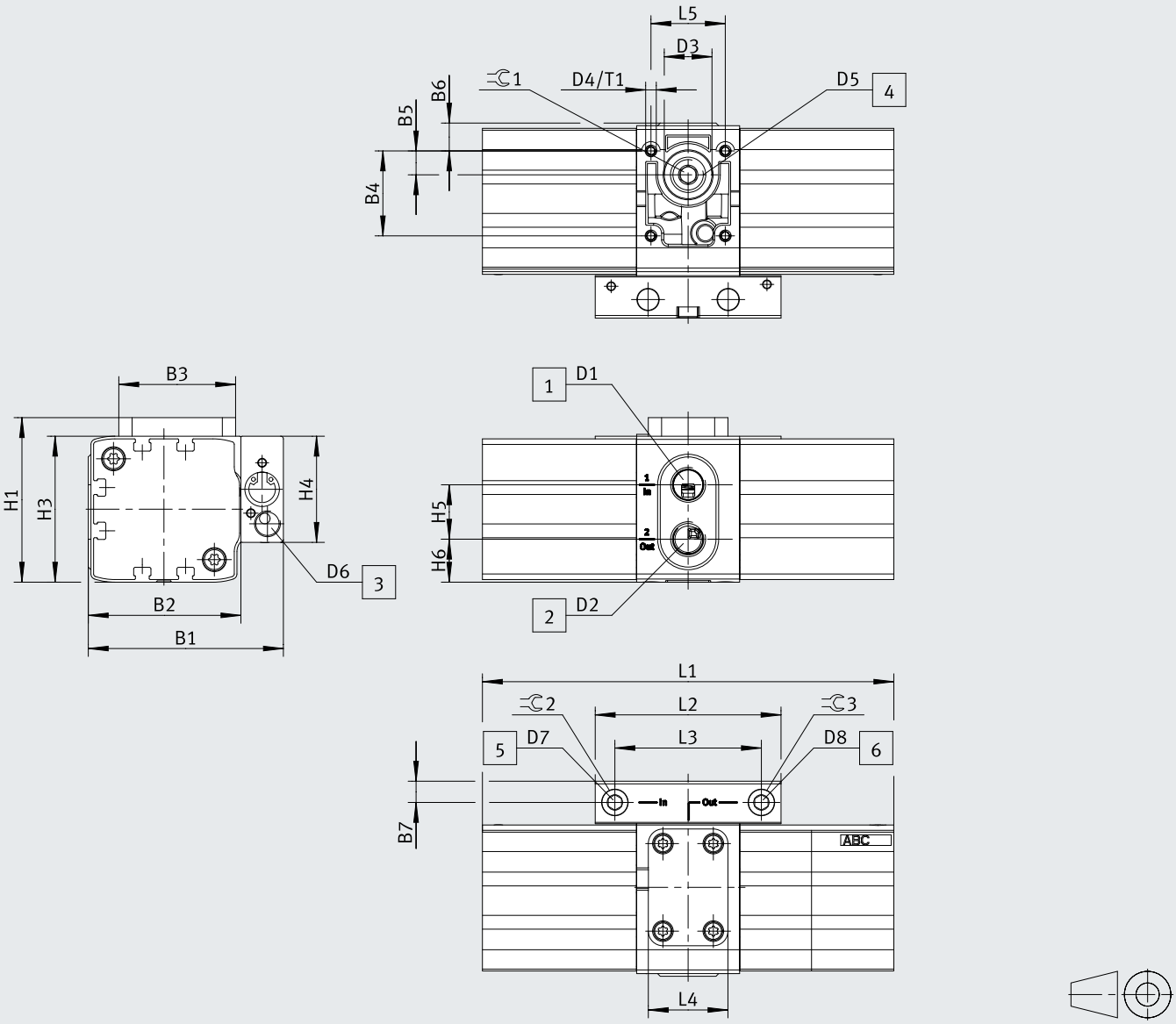
	B1	B2	B3	B4	B5	B6	B7	D1	D2	D3 Ø
PBPA-40-10-A	73,5	57,5	44	32	9	10,5	8	G1/4	G1/4	18
PBPA-40-16-A										
PBPA-63-10-A	105,5	80,5	70	46	26	14	12,5	G3/8	G3/8	22
PBPA-63-16-A										
PBPA-100-10-A	155	120	102	74	37	21,5	17,5	G1/2	G1/2	33,3
PBPA-100-16-A										

	D4	D5	D6	D7	D8	H1	H2	H3	H4	H5
PBPA-40-10-A	M4	G1/4	G1/8	G1/8	G1/8	62	98	55	40	20,5
PBPA-40-16-A										
PBPA-63-10-A	M5	G3/8	G1/4	G1/8	G1/8	96,7	159	77	57	29,5
PBPA-63-16-A										
PBPA-100-10-A	M8	G1/2	G3/8	G1/8	G1/8	–	233	117	77	32
PBPA-100-16-A										

	H6	L1	L2	L3	L4	L5	T1 min.	⌀1	⌀2	⌀3
PBPA-40-10-A	16,2	155	70	5,2	30	28	6	6	5	5
PBPA-40-16-A										
PBPA-63-10-A	22	249	106	88	40	33	9	8	5	5
PBPA-63-16-A										
PBPA-100-10-A	40	333,4	144,7	122,7	55	46	14	10	6	6
PBPA-100-16-A										

Dimensions

Dimensions – PBPA-40/63-D-A Download CAD data www.festo.com



[1] Inlet connection 1
[2] Outlet connection 2
[3] Exhaust air port 3
[4] Outlet connection 2
[5] Connection for inlet pressure gauge
[6] Connection for outlet pressure gauge

Dimensions

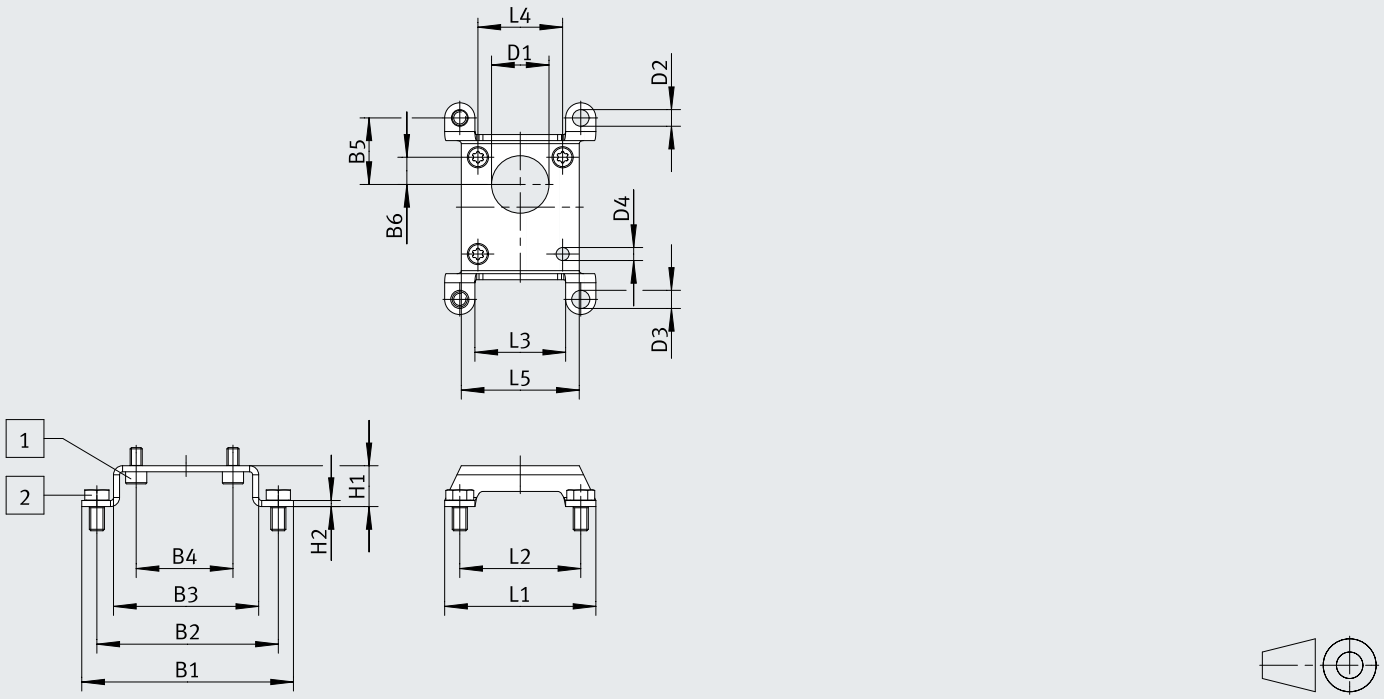
	B1	B2	B3	B4	B5	B6	B7	D1	D2	D3 Ø
PBPA-40-D-A	73,5	57,5	44	32	9	10,5	8	G1/4	G1/4	18
PBPA-63-D-A	105,5	80,5	71	46	26	14	12,5	G3/8	G3/8	22
PBPA-100-D-A	155	120	–	74	37	21,5	17,5	G1/2	G1/2	33,3

	D4	D5	D6	D7	D8	H1	H3	H4	H5	H6
PBPA-40-D-A	M4	G1/4	G1/8	G1/8	G1/8	62	55	40	20,5	16,2
PBPA-63-D-A	M5	G3/8	G1/4	G1/8	G1/8	84	77	57	29,5	22
PBPA-100-D-A	M8	G1/2	G3/8	G1/8	G1/8	–	117	77	32	40

	L1	L2	L3	L4	L5	T1 min.	⬡1	⬡2	⬡3
PBPA-40-D-A	155	70	5,2	30	28	6	6	5	5
PBPA-63-D-A	249	106	88	40	33	9	8	5	5
PBPA-100-D-A	333,4	144,7	122,7	–	46	14	10	6	6

Dimensions

Dimensions – PAMA-P1-MB-... Download CAD data www.festo.com



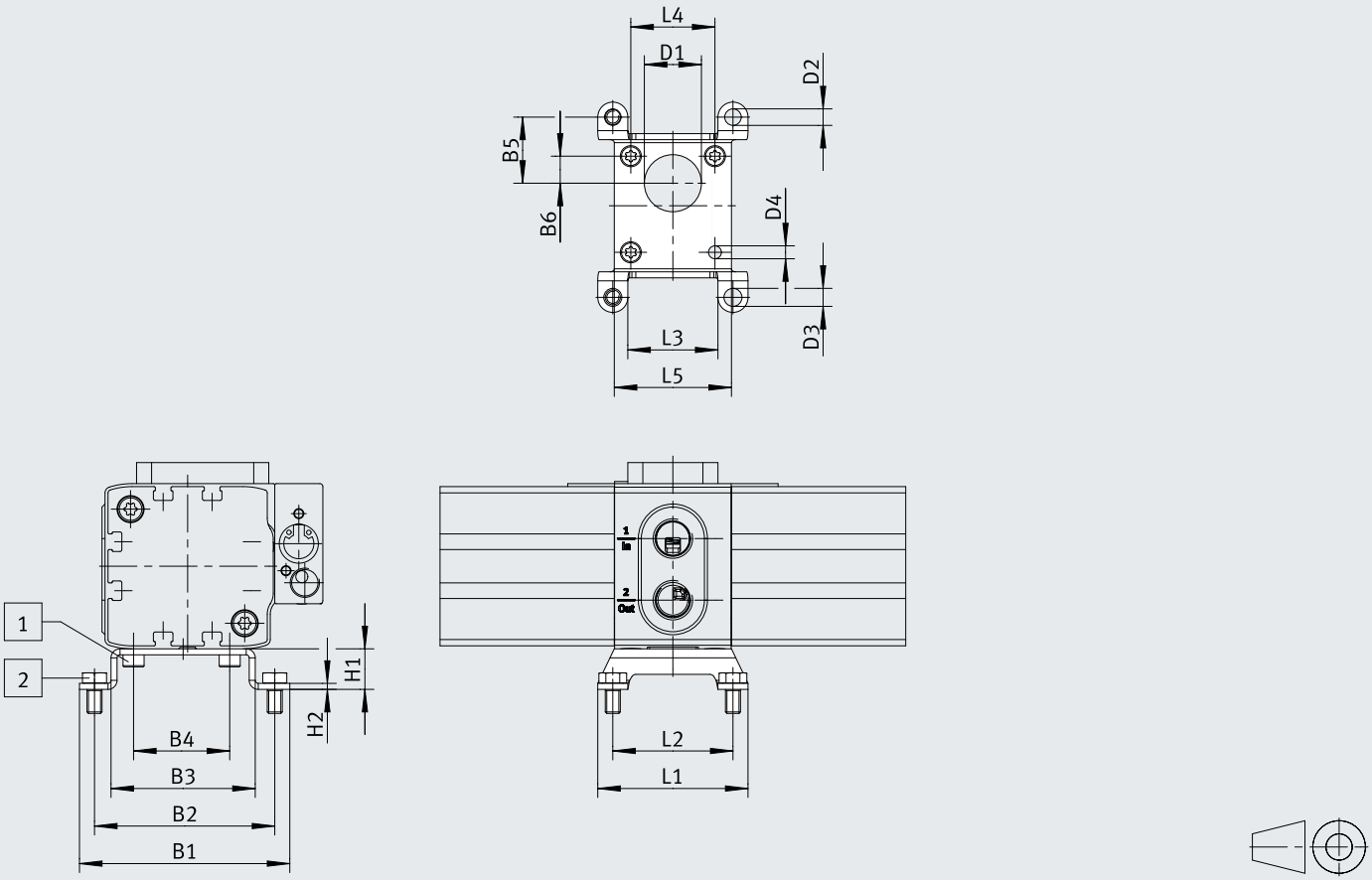
[1] Socket head screw ISO 14579-M4x8-10.9
[2] Hex screw ISO 4017-M5X10-A2-70

	B1	B2	B3	B4	B5	B6	D1 ø	D2 ø	D3 ø
PAMA-P1-MB-40	70	60	48	32	22	9	19	5,5	6
PAMA-P1-MB-63	116	98	74	46	49	26	25	11	11
PAMA-P1-MB-100	153,6	130	106,4	74	65	37	34,2	11,5	11,5

	D4 ø	H1	H2	L1	L2	L3	L4	L5
PAMA-P1-MB-40	4,3	13,5	2	50	40	30	28	39
PAMA-P1-MB-63	5,5	18	3,5	71	53	35	33	56,4
PAMA-P1-MB-100	8,6	18,5	3,5	119,6	96	72,4	46	89,6

Dimensions

Dimensions – PAMA-P1-MB-... (with PBPA-...) Download CAD data www.festo.com



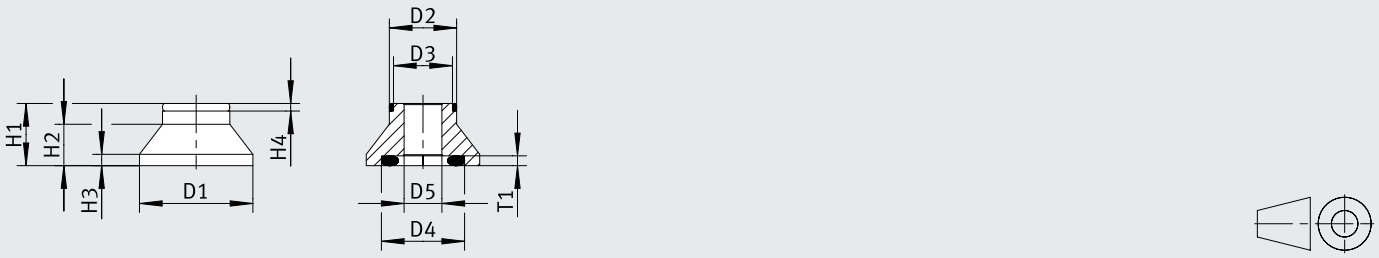
[1] Socket head screw ISO 14579-M4x8-10.9
[2] Hex screw ISO 4017-M5X10-A2-70

	B1	B2	B3	B4	B5	B6	D1 ø	D2 ø	D3 ø
PAMA-P1-MB-40	70	60	48	32	22	9	19	5,5	6
PAMA-P1-MB-63	116	98	74	46	49	26	25	11	11
PAMA-P1-MB-100	153,6	130	106,4	74	65	37	34,2	11,5	11,5

	D4 ø	H1	H2	L1	L2	L3	L4	L5
PAMA-P1-MB-40	4,3	13,5	2	50	40	30	28	39
PAMA-P1-MB-63	5,5	18	3,5	71	53	35	33	56,4
PAMA-P1-MB-100	8,6	18,5	3,5	119,6	96	72,4	46	89,6

Dimensions

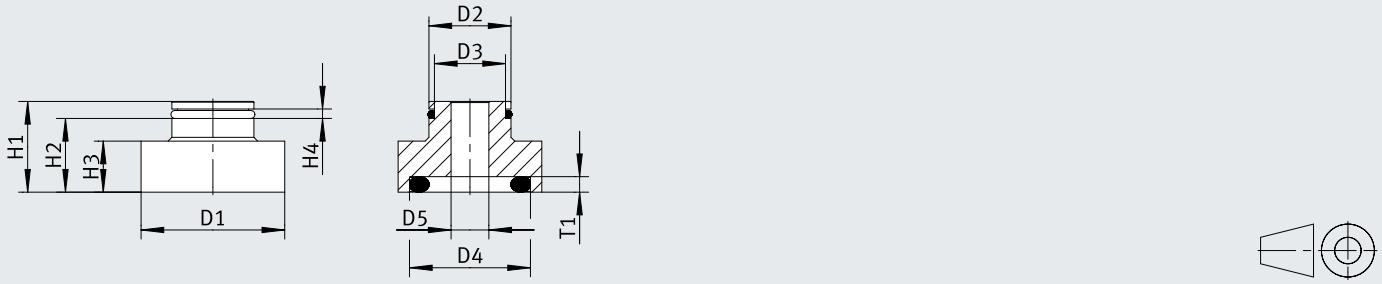
Dimensions – PAMA-P1-CK-40 Download CAD data www.festo.com



	D1 ø ±0,1	D2 ø ±0,05	D3 ø ±0,05	D4 ø ±0,1	D5 ø ±0,1	H1 ±0,05	H2	H3 ±0,1	H4 ±0,1	T1
PAMA-P1-CK-40	30	17,8	15,6	22	10	16,5	11	3	2	2,6

Dimensions

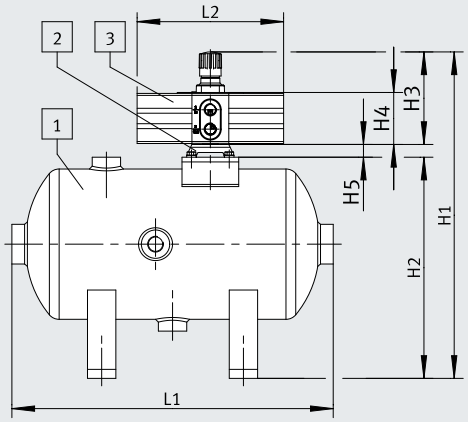
Dimensions – PAMA-P1-CK-63/100 Download CAD data www.festo.com

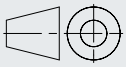


	D1 ø ±0,1	D2 ø	D3 ø ±0,05	D4 ø ±0,1	D5 ø ±0,1	H1 ±0,05	H2 ±0,1	H3 ±0,1	H4 ±0,1	T1
PAMA-P1-CK-63	38	21,7 ±0,1	18,8	32	10	24	19,5	13,5	2,5	4,1 ±0,1
PAMA-P1-CK-100	38	33 ±0,05	30	32	18,6	24,5	20	14	2,5	4

Dimensions

Dimensions – PBPA with air reservoir ARVA-...-P1 Download CAD data www.festo.com



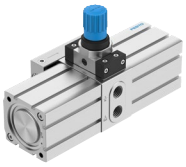


[1] Air reservoir ARVA
[2] Bracket PAMA
[3] Pressure amplifier PBPA

			H1	H2 ±3	H3	H4	H5	L1 ±3	L2
ARVA- 5-P1	PAMA-P1-MB-40	PBPA-40-...-A	345,5	234	98	55	13,5	340	155
ARVA-10-P1	PAMA-P1-MB-63	PBPA-63-...-A	411	234	159	77	18	616	249
ARVA-20-P1	PAMA-P1-MB-100	PBPA-100-...-A	525,5	274	233	117	18,5	726	333,4

Ordering data

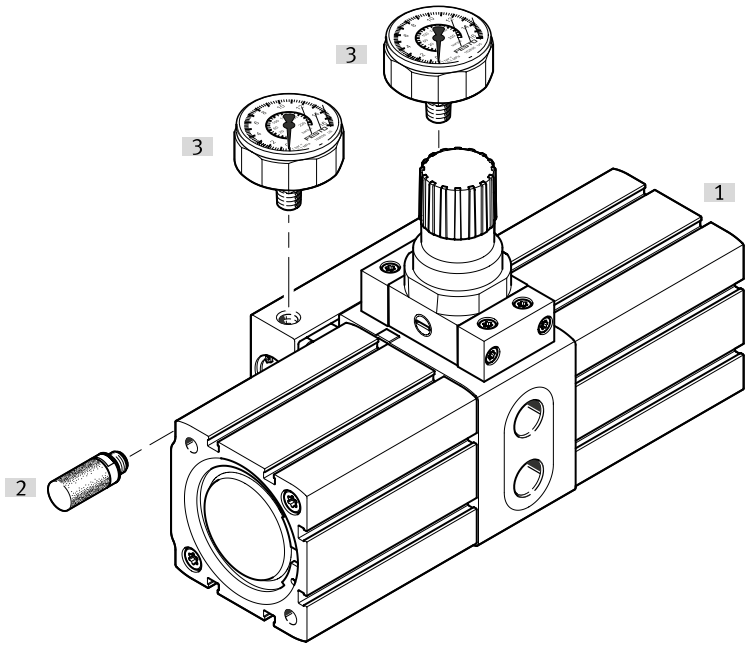
Ordering data – Pressure booster PBPA



Piston diameter	Output pressure 2	Position sensing	Product weight	Part no.	Type
40 mm	4 ... 10 bar	For proximity sensor	1,000 g	**8210527**	**PBPA-40-10-A**
	4 ... 16 bar			**8210528**	**PBPA-40-16-A**
	4 ... 20 bar		980 g	**8210529**	**PBPA-40-D-A**
63 mm	4 ... 10 bar		3,150 g	**8210530**	**PBPA-63-10-A**
	4 ... 16 bar			**8210531**	**PBPA-63-16-A**
	4 ... 20 bar		3,050 g	**8210532**	**PBPA-63-D-A**
100 mm	4 ... 10 bar		9,800 g	**8210533**	**PBPA-100-10-A**
	4 ... 16 bar			**8210534**	**PBPA-100-16-A**
	4 ... 20 bar		9,660 g	**8210535**	**PBPA-100-D-A**

Peripherals

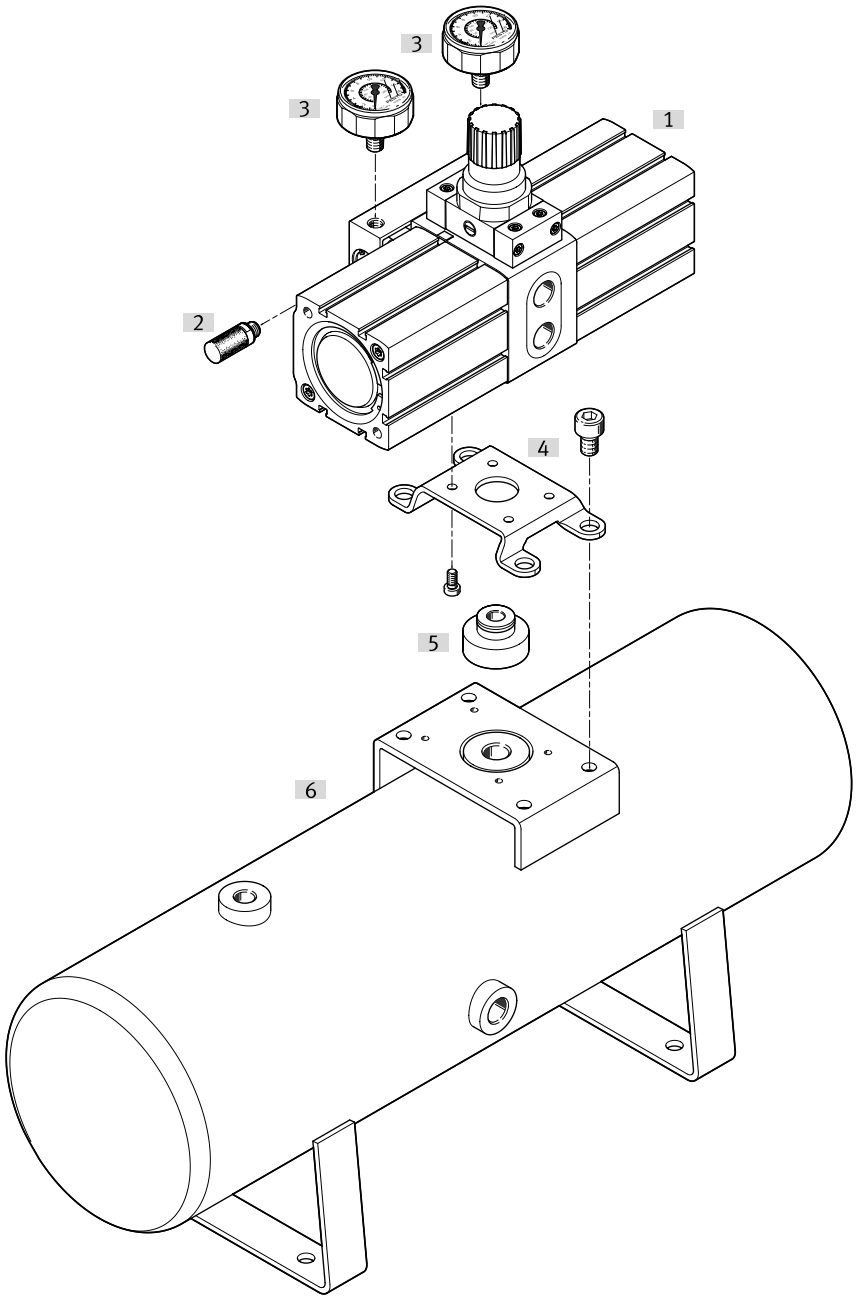
Peripherals overview PBPA



Accessories			→ Link
	Type/order code	Description	
[1]	Pressure booster PBPA		pbpa
[2]	Silencer UC	For noise reduction at the valve exhaust port	22
[3]	Pressure gauge MA/PAGN		22
[4]	Adding counter CCES	Not shown	cces
[5]	Proximity switch SMT (for adding counter CCES)	Not shown	smt-8m-a

Peripherals

Peripherals overview PBPA (with compressed air reservoir ARVA)



Accessories			→ Link
	Type/order code	Description	
[1]	Pressure booster PBPA		pbpa
[2]	Silencer UC	For noise reduction at the valve exhaust port	22
[3]	Pressure gauge MA/PAGN		22
[4]	Mounting kit PAMA-...-MB		22
[5]	Connection kit PAMA-...-CK		22
[6]	Compressed air reservoir ARVA		23
[7]	Adding counter CCES	Not shown	cces
[8]	Proximity switch SMT (for adding counter CCES)	Not shown	smt-8m-a

Accessories

Mounting kit PAMA-...-MB



Size	Material mounting bracket	Corrosion resistance class CRC [1]	Product weight	Part no.	Type
40	Galvanised steel	1 - Low corrosion stress	59 g	**8215793**	**PAMA-P1-MB-40**
63			246 g	**8215794**	**PAMA-P1-MB-63**
100			450 g	**8215795**	**PAMA-P1-MB-100**

1) More information www.festo.com/x/topic/crc

Connection kit PAMA-...-CK



Size	Material module connector	Corrosion resistance class CRC [1]	Product weight	Part no.	Type
40	Wrought aluminium alloy	2 - Moderate corrosion stress	15 g	**8215796**	**PAMA-P1-CK-40**
63			41 g	**8215797**	**PAMA-P1-CK-63**
100			45 g	**8215798**	**PAMA-P1-CK-100**

1) More information www.festo.com/x/topic/crc

Pressure gauge MA/PAGN



Pneumatic connection	Scale	Product weight	Part no.	Type
G1/8	Double scale, Bar (external), psi (inner scale)	60 g	**526167**	**MA-40-25-1/8-EN**
R1/8	Double scale, MPa (outer scale), bar (inner scale)		**2849916**	**PAGN-40-1M-R18-1.6**
			8037012	**PAGN-40-1.6M-R18-1.6**

Silencer UC



Pneumatic connection	Flow rate to atmosphere	Sound pressure level	Product weight	Part no.	Type
M7	800 l/min	58 dB(A)	1.2 g	**161418**	**UC-M7**
G1/8	1,700 l/min	59 dB(A)	2.6 g	**161419**	**UC-1/8**
G1/4	3,200 l/min	60 dB(A)	5.2 g	**165004**	**UC-1/4**
G3/8	5,000 l/min		10.5 g	**1707427**	**UC-3/8**

Accessories

Adding counter CCES



Display	Power supply [1]	Product weight	Part no.	Type
8 characters	Lithium battery	30 g	**549403**	**CCES-P-C8-E**

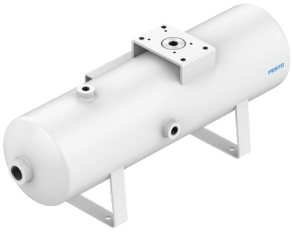
1) Value retention nominal 7 years

Proximity switch SMT (for adding counter CCES)



Switching element function	Switching output	Cable length	Product weight	Part no.	Type
N/C contact	PNP	7.5 m	85.1 g	**574340**	**SMT-8M-A-PO-24V-E-7,5-OE**

Compressed air reservoir ARVA



Volume	Material air reservoir	Corrosion resistance class CRC [1]	Product weight	Part no.	Type
5 l	Powder-coated steel	3 - high corrosion stress	5,980 g	**8240348**	**ARVA-5**
			6,100 g	**8240345**	**ARVA-5-P1**
10 l			7,960 g	**8240349**	**ARVA-10**
			9,400 g	**8240346**	**ARVA-10-P1**
20 l			11,720 g	**8240350**	**ARVA-20**
			14,350 g	**8240347**	**ARVA-20-P1**

1) More information www.festo.com/x/topic/crc

Plastic tubing PAN (for input pressure)



Pneumatic connection	Shore hardness	Colour	Product weight according to length	Part no.	Type
For push-in connector O.D. 10 mm	D 55 +/-3	Blue	0.042 kg/m	**553909**	**PAN-10X1,5-BL**
For push-in connector O.D. 16 mm			0.092 kg/m	**553911**	**PAN-16X2-BL**

Accessories

Plastic tubing PAN-R (for output pressure)



Pneumatic connection	Shore hardness	Colour	Product weight according to length	Part no.	Type
For push-in connector O.D. 8 mm	D 62 +/-3	Silver	0.032 kg/m	**541676**	**PAN-R-8X1,5-SI**
For push-in connector O.D. 16 mm			0.126 kg/m	**541679**	**PAN-R-16X3-SI**