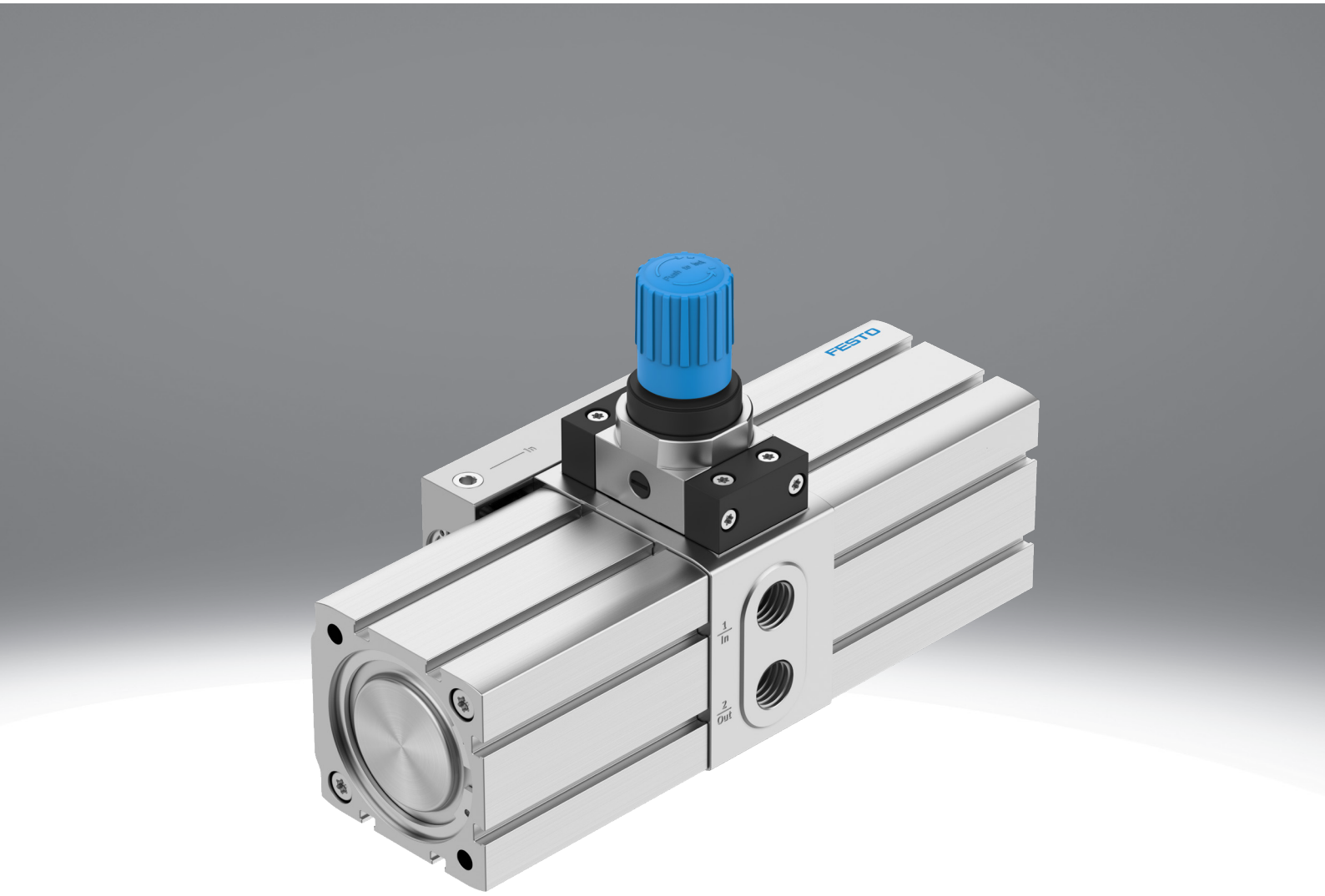
Pressure amplifier PBPA



Characteristics

At a glance

The pressure booster is one of the twin-piston pressure intensifiers that can only compress air. If the pressure booster is pressurized with compressed air, integrated non-return valves automatically ensure pressure build-up on the secondary side. The outlet pressure p2 can rise to twice the value of the inlet pressure p1. For pressure boosters with regulators, the desired output pressure can be reduced depending on the setting. For pressure boosters without a pressure regulator, the outlet pressure is always 2times the inlet pressure. The air supply to the two drive pistons is provided by a pneumatic directional control valve, which is switched automatically when the switching positions are reached. If the inlet pressure is switched toand the desired outlet pressure has not yet been reached, the pressure booster starts automatically. When the set outlet pressure is reached, the pressure booster stops operating to save energy, but restarts automatically when the outlet pressure drops due to application operation.

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

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

Additional documents

Link pbpa



The additional document PRESSURE-BOOSTER-ADDcontains additional instructions for use.

Diagrams

Link pbpa



The diagrams shown in this document are also available online. There, it is possible to display precise values.

Outlet pressure

Available with or without pressure regulator.

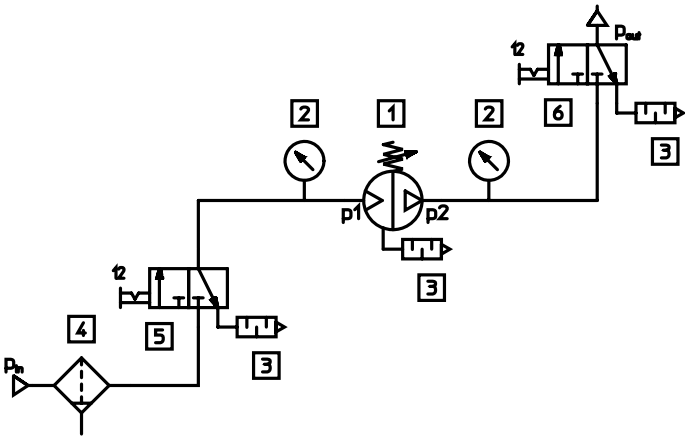
Position sensing

[A]	For proximity sensor

It is possible to record individual strokes of the drive piston using an external sensor (SMT-8M) and an addition counter (CCES).

Characteristics

Connection to the compressed air network



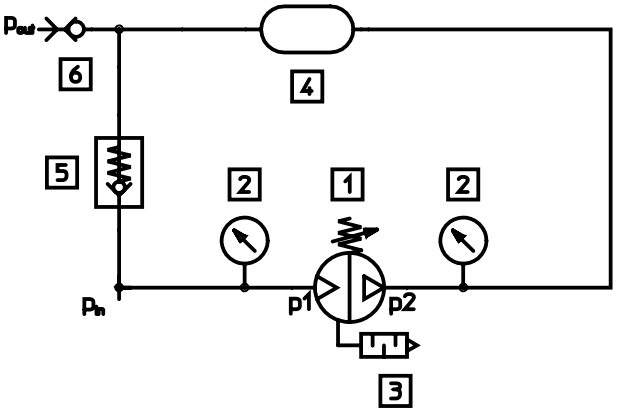
[1] pressure amplifier
[2] Pressure gauge
[3] muffler
[4] Filter
[5] 3/2-way on/off valve on the input pressure side
[6] 3/2-way on/off valve on the output pressure side

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 may only be opened once the input pressure has already been established.
Note: If a soft-start valve is present in the system, a 3/2-way on/off valve is mandatory between the soft-start valve and the pressure amplifier.

Output pressure side
For the safe venting of the output pressure, it is recommended to connect a 3/2-way on/off valve on the output pressure side of the pressure amplifier. If no 3/2-way valve is used, the output pressure can only be vented by completely relaxing the regulator spring (turning the regulator knob fully to the left).
Note: For pressure amplifiers without a pressure regulator, the venting must be ensured externally via a 3/2-way on/off valve.

Characteristics

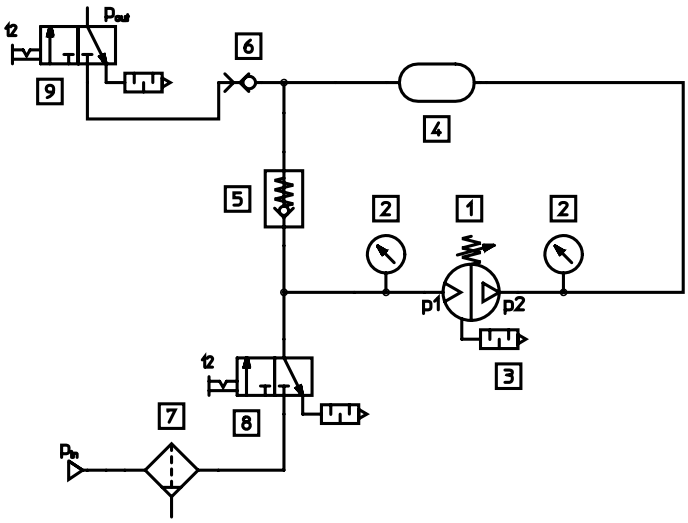
Installation with air reservoir



[1] pressure amplifier
[2] Pressure gauge
[3] muffler
[4] Air reservoir
[5] Check valve
[6] coupling socket

To compensate for pressure fluctuations, an air reservoir should always be used on the output pressure side. The air reservoir smooths the pulsation of the pressure booster. It is advisable to fill the volume of the air reservoir with the input pressure p1 via a connecting line. The pressure amplifier only needs to provide the difference between the input and output pressure. Filling the air reservoir is faster. A check valve prevents the backflow of air from the volume. This arrangement corresponds to the scope of delivery of the orderable pressure amplifier/air reservoir combination.

Installation with air reservoir and two on/off valves

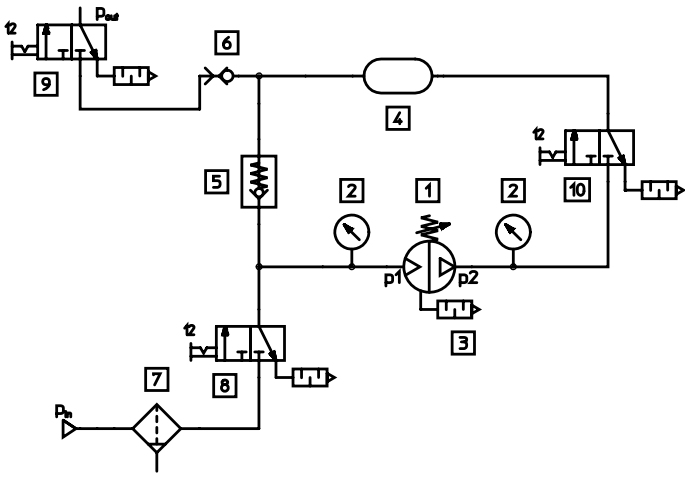


[1] pressure amplifier
[2] Pressure gauge
[3] muffler
[4] Air reservoir
[5] Check valve
[6] coupling socket
[7] Filter
[8] 3/2-way on/off valve on the input pressure side
[9] 3/2-way on/off valve on the output pressure side

The air reservoir is vented via the control knob of the pressure amplifier.

Characteristics

Installation with air reservoir and three on/off valves



[1] pressure amplifier
[2] Pressure gauge
[3] muffler
[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 venting the pressure accumulator

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

Type code

001	Series	
PBPA	Pressure amplifier	

002	Size [mm]	
40	40	
63	63	
100	100	

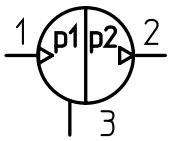
003	Outlet pressure	
10	Max. 10 bar	
16	Max. 16 bar	
D	Double input pressure, without pressure regulator	

004	Position sensing	
A	For proximity sensor	

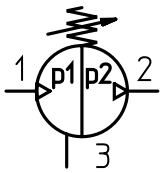
Datasheet

General technical data - Pressure booster PBPA			
Piston diameter	40 mm	63 mm	100 mm
Pneumatic connection 1	G1/4	G3/8	G1/2
Pneumatic connection 2	G1/4	G3/8	G1/2
Pneumatic connection 3	G1/8	G1/4	G3/8
Structural design	Double-piston pressure booster		
Type of mounting	With internal thread M4	With internal thread	
Mounting position	Any		
Pressure gauge	Set up 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 MPa	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 psi	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
Outlet 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
Information on pressure regulation range	If the controller spring is tensioned to the maximum, the maximum output pressure may be exceeded by 40%.	–		If the controller spring is tensioned to the maximum, the maximum output pressure may be exceeded by 40%.	–	
Operating medium	Compressed air as per ISO 8573-1:2010 [7:3:4]					
Information on operating and pilot media	Operation with oil lubrication not possible					
Ambient temperature	5 ... 60°C					
Storage temperature	5 ... 60°C					
Corrosion resistance class (CRC) [1]	1 - Low corrosion stress					

1) For more information, visit www.festo.com/x/topic/kbk

Datasheet

Operating and environmental conditions - Pressure booster PBPA

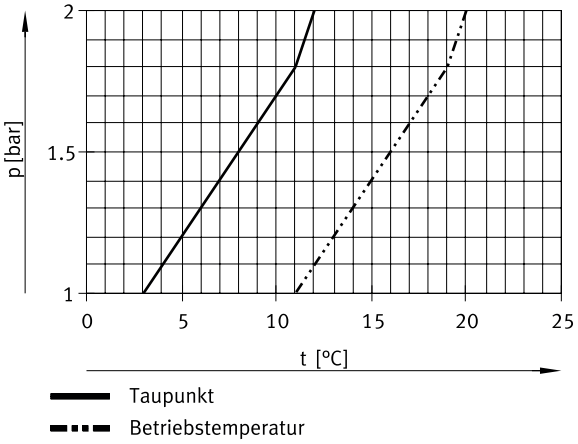
Piston diameter	100 mm		
Outlet pressure	Max. 10 bar [10]	Max. 16 bar [16]	Double input pressure, without pressure regulator [D]
Operating pressure	0.2 ... 0.8 MPa	0.2 ... 1 MPa	
Operating pressure	2 ... 8 bar	2 ... 10 bar	
Operating pressure	29 ... 116 psi	29 ... 145 psi	
Inlet pressure 1 MPa	0.2 ...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

1) For more information, visit www.festo.com/x/topic/kbk

Materials

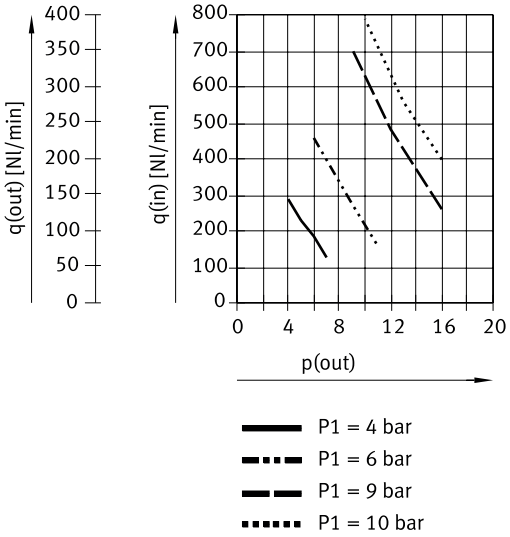
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

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



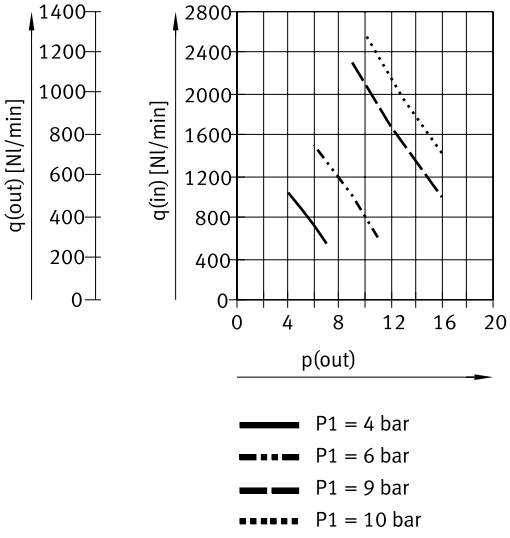
Datasheet

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



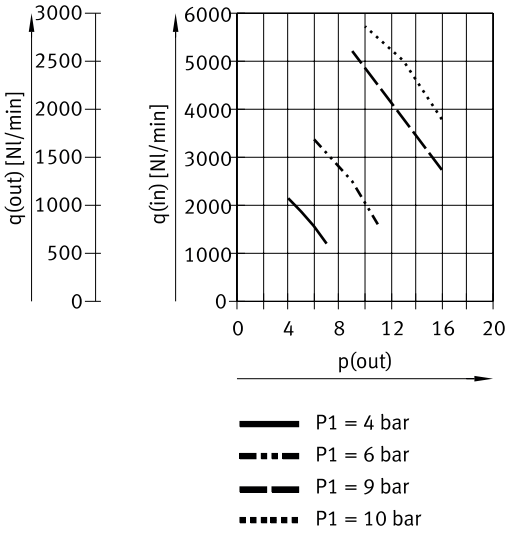
Note: Theoretical values without switching losses and friction.

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



Note: Theoretical values without switching losses and friction.

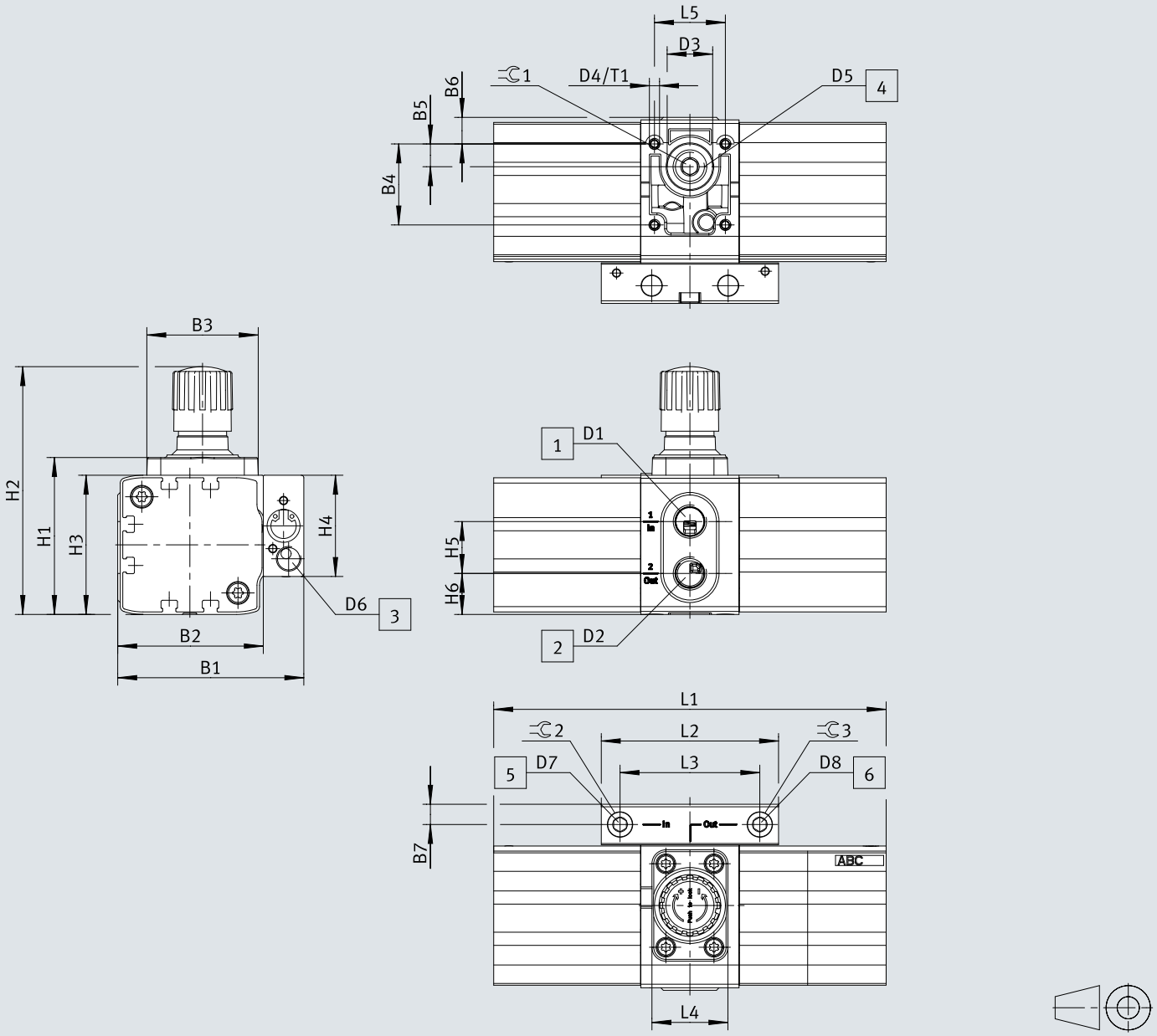
Flow rate at inlet q(in) and flow rate at outlet q(out) as a function of outlet pressure p(out) - PBPA-100 (p2=20bar)



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

Dimensions

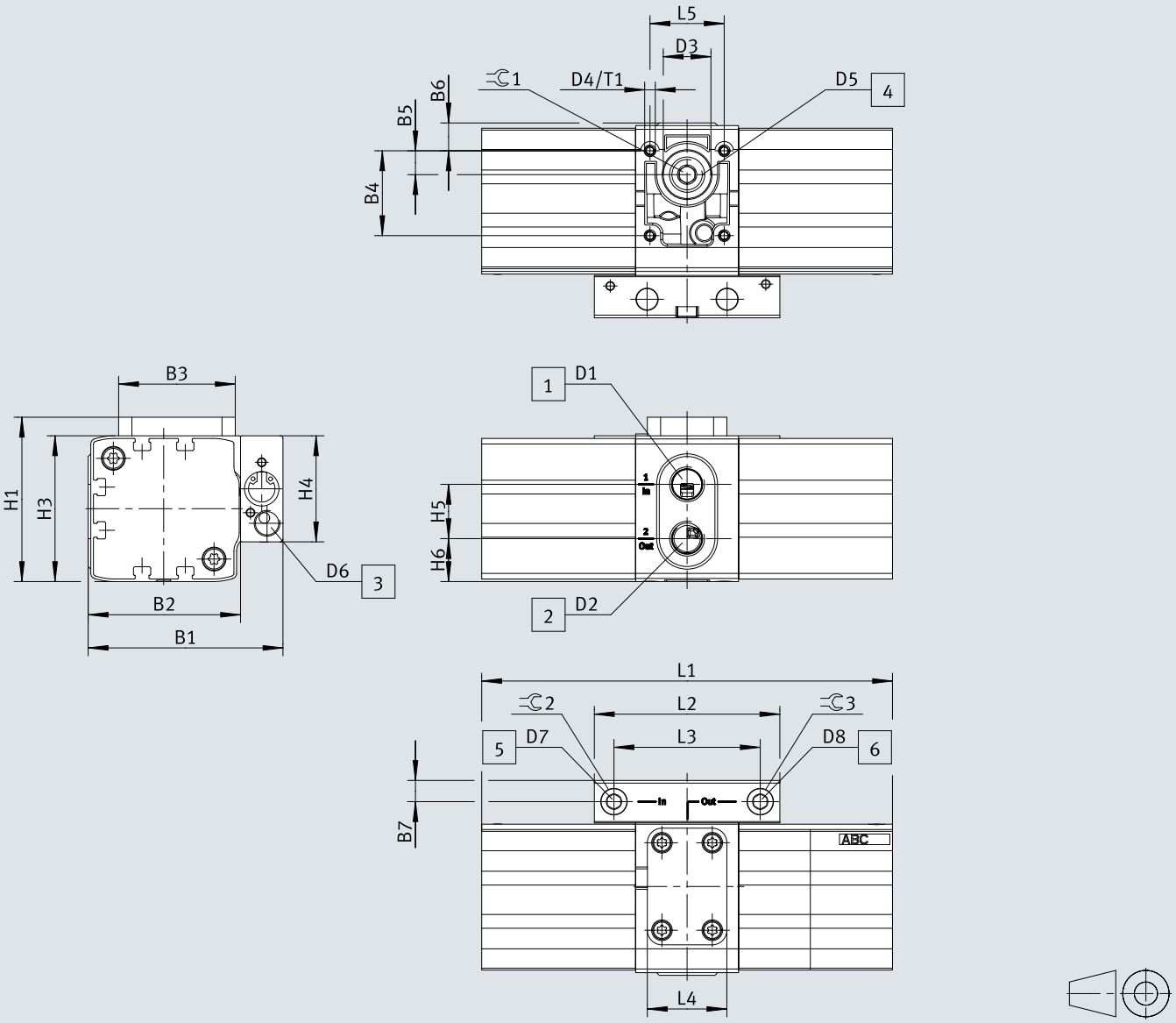
	B1	B2	B3	B4	B5	B6	B7	D1	D2	D3 Ø
PBPA-40-10-A	73,5	57,5	44	32	9	10,5	8	G1/4	G1/4	18
PBPA-40-16-A										
PBPA-63-10-A	105,5	80,5	70	46	26	14	12,5	G3/8	G3/8	22
PBPA-63-16-A										
PBPA-100-10-A	155	120	102	74	37	21,5	17,5	G1/2	G1/2	33,3
PBPA-100-16-A										

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

Dimensions

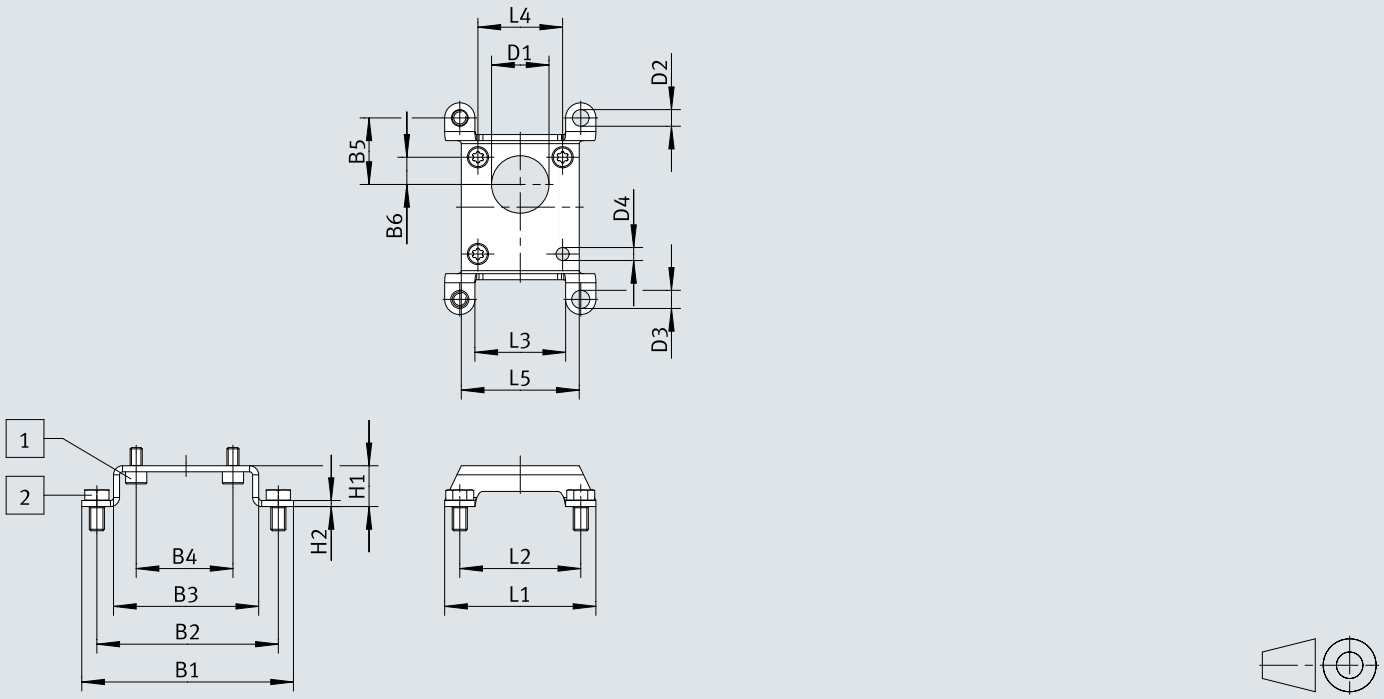
	B1	B2	B3	B4	B5	B6	B7	D1	D2	D3 Ø
PBPA-40-D-A	73,5	57,5	44	32	9	10,5	8	G1/4	G1/4	18
PBPA-63-D-A	105,5	80,5	71	46	26	14	12,5	G3/8	G3/8	22
PBPA-100-D-A	155	120	–	74	37	21,5	17,5	G1/2	G1/2	33,3

	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



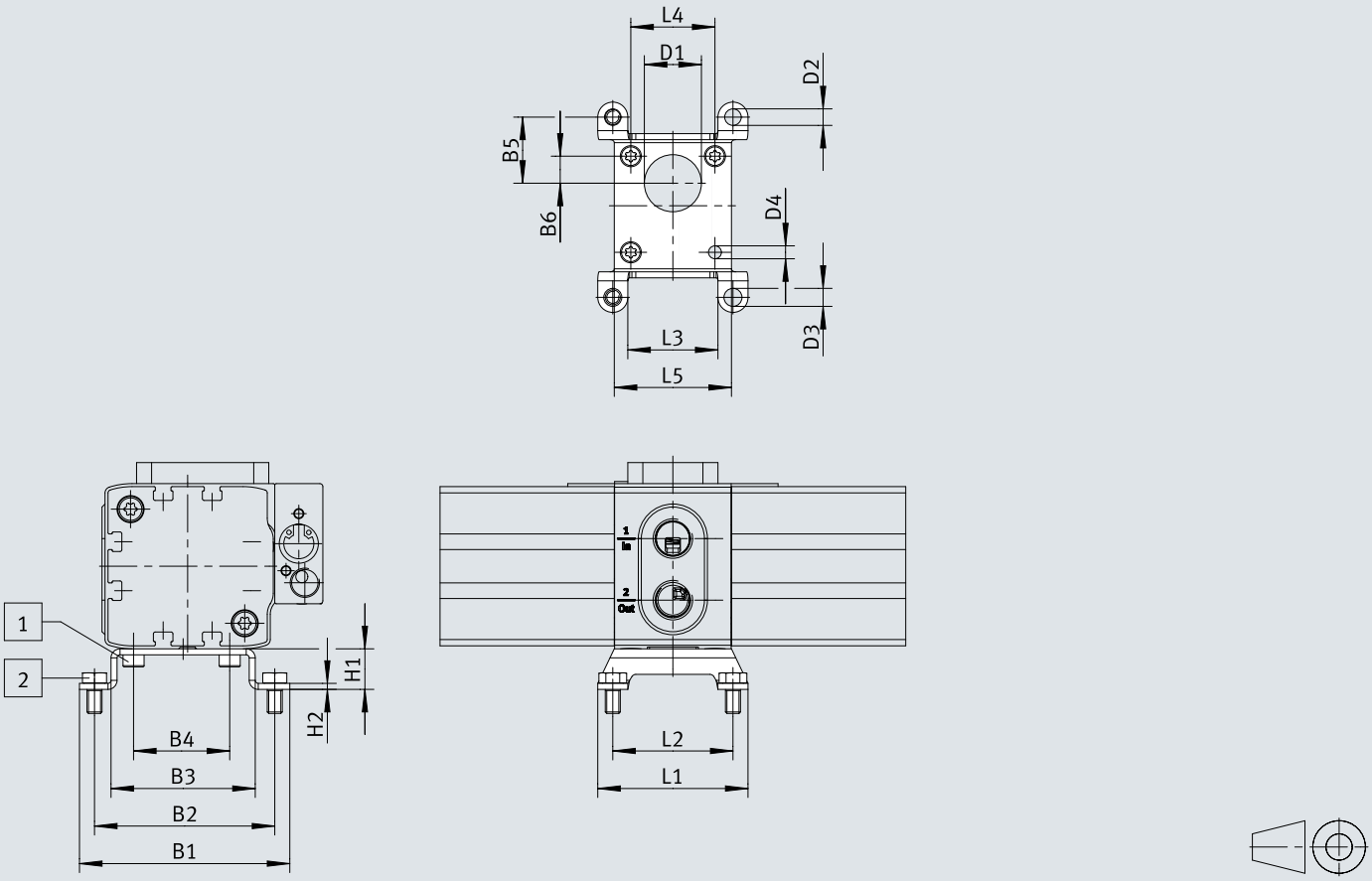
[1] S-head screw ISO 14579-M4x8-10.9
[2] Socket head screw ISO 4017-M5x10-A2-70

	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



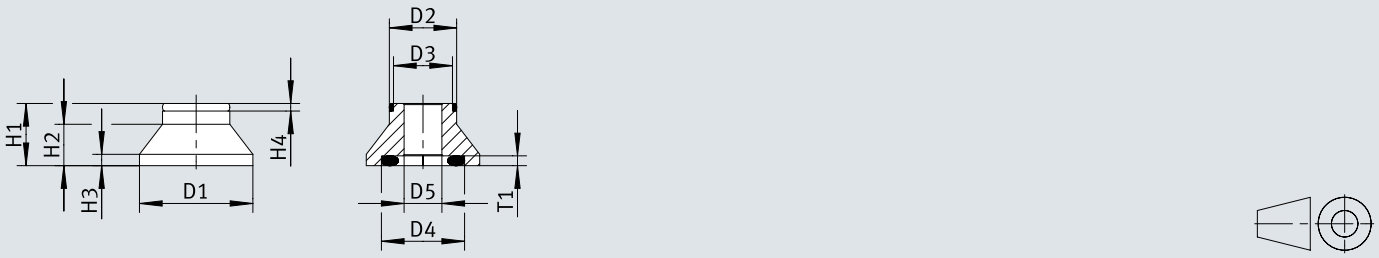
[1] S-head screw ISO 14579-M4x8-10.9
[2] Socket head screw ISO 4017-M5x10-A2-70

	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

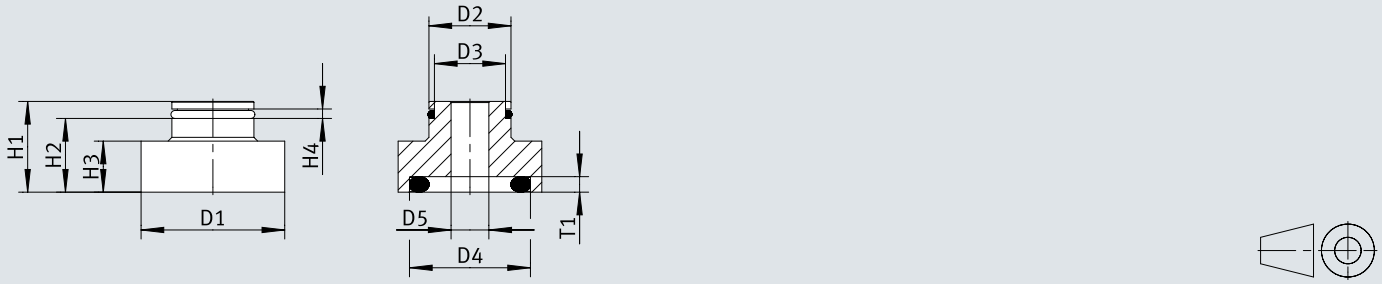
Dimensions – PAMA-P1-CK-40 Download CAD data www.festo.com



	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

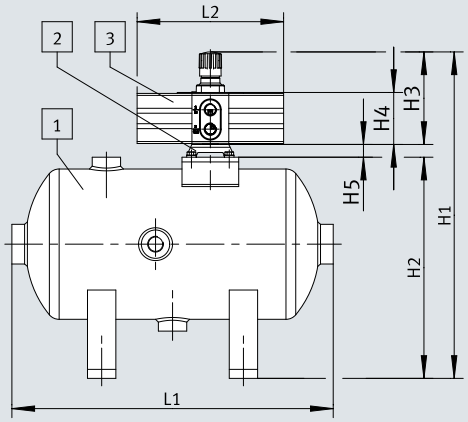
Dimensions – PAMA-P1-CK-63/100 Download CAD data www.festo.com

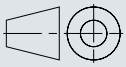


	D1 ø ±0,1	D2 ø	D3 ø ±0,05	D4 ø ±0,1	D5 ø ±0,1	H1 ±0,05	H2 ±0,1	H3 ±0,1	H4 ±0,1	T1
PAMA-P1-CK-63	38	21,7 ±0,1	18,8	32	10	24	19,5	13,5	2,5	4,1 ±0,1
PAMA-P1-CK-100	38	33 ±0,05	30	32	18,6	24,5	20	14	2,5	4

Dimensions

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



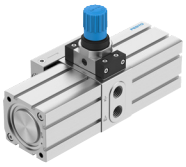


[1] ARVA air reservoir
[2] PAMA bracket
[3] Pressure amplifier PBPA

			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

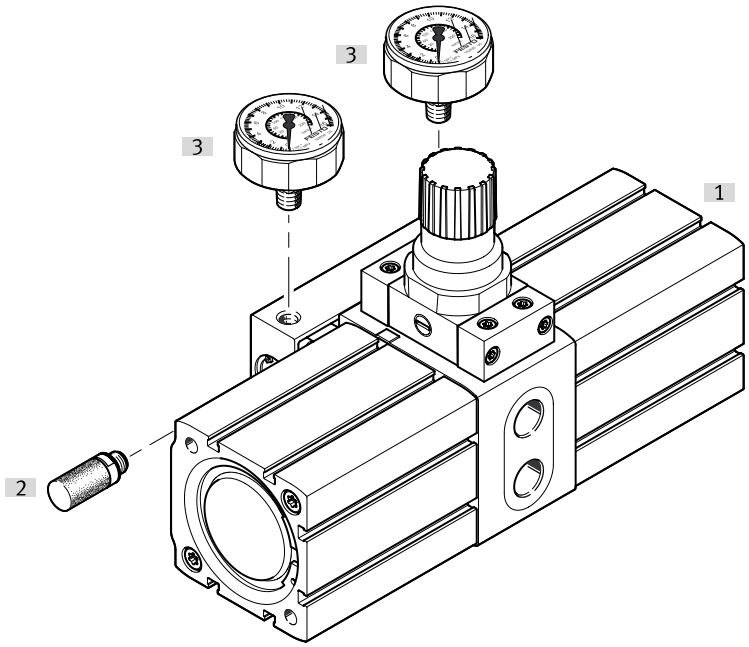
Ordering information - Pressure booster PBPA



Piston diameter	Outlet 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 overview

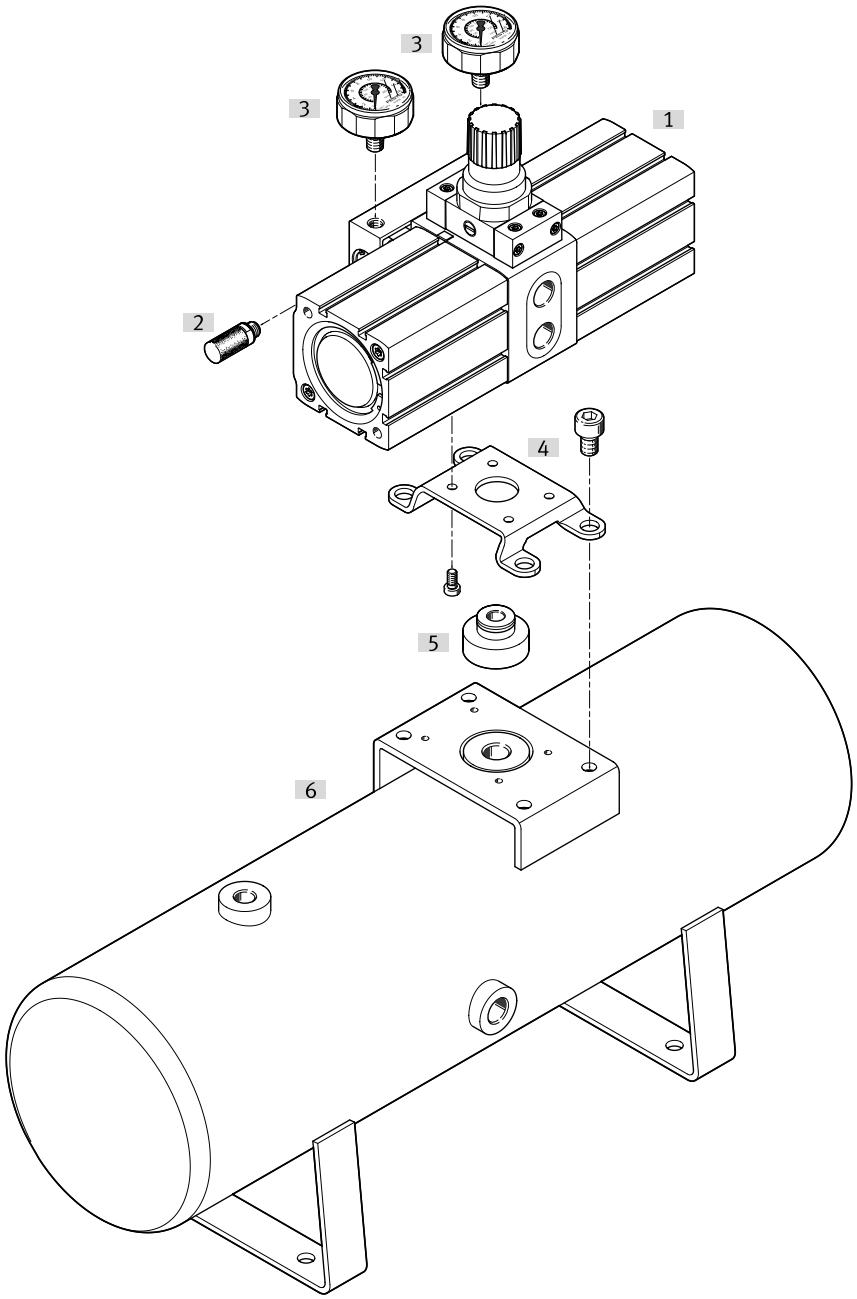
Peripherals overview PBPA



Accessories			→ Page/Internet
	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 SME/SMT (for adding counter CCES)	Not shown	smt-8m-a

Peripherals overview

Peripherals overview PBPA (with ARVA compressed air reservoir)



Accessories			→ Page/Internet
	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]	ARVA compressed air reservoir		23
[7]	Adding counter CCES	Not shown	cces
[8]	Proximity switch SME/SMT (for adding counter CCES)	Not shown	smt-8m-a

Accessories

Mounting kit PAMA-...-MB



Size	Material of mounting bracket	Corrosion resistance class (CRC) [1]	Product weight	Part no.	Type
40	Steel, galvanized	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) For more information, visit www.festo.com/x/topic/kbk

Connection kit PAMA-...-CK



Size	Module connector material	Corrosion resistance class (CRC) [1]	Product weight	Part no.	Type
40	Wrought aluminum 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) For more information, visit www.festo.com/x/topic/kbk

Pressure gauge MA/PAGN



Pneumatic connection	Scale	Product weight	Part no.	Type
G1/8	Double scale, bar (außen), 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**

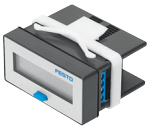
Silencer UC



Pneumatic connection	Flow rate with respect to atmosphere	Noise 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 digit	Lithium battery	30 g	**549403**	**CCES-P-C8-E**

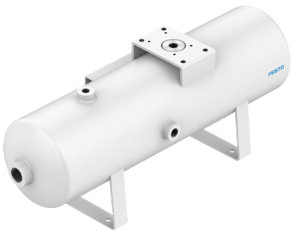
1) Value retention nominal 7 years

Proximity switch SME/SMT (for adding counter CCES)



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

ARVA compressed air reservoir



Volume	Air reservoir material	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) For more information, visit www.festo.com/x/topic/kbk

Plastic tubing PAN (for inlet pressure)



Pneumatic connection	Shore hardness	Color	Product weight by length	Part no.	Type
For plug connection outside diameter 10 mm	D 55 +/-3	Blue	0.042 kg/m	**553909**	**PAN-10X1,5-BL**
For plug connection outside diameter 16 mm			0.092 kg/m	**553911**	**PAN-16X2-BL**

Accessories

Plastic tubing PAN-R (for outlet pressure)



Pneumatic connection	Shore hardness	Color	Product weight by length	Part no.	Type
For plug connection outside diameter 8 mm	D 62 +/-3	Silver	0.032 kg/m	**541676**	**PAN-R-8X1,5-SI**
For plug connection outside diameter 16 mm			0.126 kg/m	**541679**	**PAN-R-16X3-SI**