

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

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Новокузнецк (3843)20-46-81
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Омск (3812)21-46-40
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Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
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Саратов (845)249-38-78
Севастополь (8692)22-31-93
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Сочи (862)225-72-31
Ставрополь (8652)20-65-13
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Томск (3822)98-41-53
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Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

Diaphragm accumulator

Type HAD



HAD0,7-210_d

- ▶ Component series 1X and 2X
- ▶ Nominal volume 0.075 ... 3.5 liters
- ▶ Maximum operating pressure 350 bar

CE

EAC

Features

- ▶ Hydro-pneumatic accumulator for use in mobile machines and stationary machinery and systems
- ▶ Use:
 - Energy storage in intermittent operation systems
 - Energy reserve for emergencies
 - Impact and vibration absorption
 - Volume compensation in case of pressure and temperature change
- ▶ Approval:
 - according to PED 2014/68/EU
 - according to TR CU 032/2013

Contents

Features	1
Ordering code	2, 3
Function, section	4
Technical data	5
Application, mode of operation	6
Calculation	6, 7
Characteristic curves	8, 9
Dimensions	10 ... 13
Accessories	14 ... 18
Important notes, safety equipment	19
Commissioning, further information	20

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14
HAD		-	-	/			-		1	1	1	-	-

01	Diaphragm accumulator	HAD
----	-----------------------	-----

Nominal volume

02		0.075	0.16	0.35	0.5	0.6	0.7	1.0	1.4	2.0	2.8	3.5	
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Maximum operating pressure

03	55 bar												o	55	
	70 bar											o	70		
	100 bar								o				o	100	
	140 bar											o			140
	160 bar				o	o								160	
	180 bar							o						180	
	200 bar									o				200	
	210 bar				o				o					210	
	250 bar	•	•	•	•	•	•	•	•	•	•	•	•	250	
	330 bar						•							330	
350 bar									o			o	o	o	350

Component series

04	Component series 10 ... 19 (only with these nominal volume/ pressure combinations)	250	250	160 210 250	160	330	100 180 210 250	200 250	140 250	100 250	70		1X
	Component series 20 ... 29 (only with these nominal volume/ pressure combinations)				250		350		350	350	250 350	55 250	2X

Preload pressure

05	0 bar	•	•	•	•	•	•	•	•	•	•	•	0
	1 ... 250 bar	o	o	o	o	o	o	o	o	o	o	o	1 ... 250

Port size for hydraulic fluid ¹⁾

06	M14x1.5	o											Z04	
	M18x1.5		o	o	o		o		o				Z06	
	M22x1.5								o	o	o	o		Z08
	G1/2	•	•	•	•	•	•	•	•	o	o		G04	
	G3/4										•	•	•	G05

Type of mounting for hydraulic fluid ¹⁾

07	Mounting cavity		o	o	o		o						A	
	Mounting cavity with external hexagon	•	•	•	•	•	•	•	•	•	•	•	C	
	Screw-in stud	o	o										F	
	Screw-in stud M33x1.5 with internal thread							o	o	o				E
	Screw-in stud M45x1.5 with internal thread										o	o	o	E5

•	Preferred program
o	Delivery range
	On request

¹⁾ Other ports upon request

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14
HAD		-	-	/			-		1	1	1	-	-

Nominal volume

02		0.075	0.16	0.35	0.5	0.6	0.7	1.0	1.4	2.0	2.8	3.5	
----	--	-------	------	------	-----	-----	-----	-----	-----	-----	-----	-----	--

Gas port form ¹⁾

08	Standard	•	•	•	•	•	•	•	•	•	•	•	1
----	----------	---	---	---	---	---	---	---	---	---	---	---	---

Diaphragm material

09	NBR	•	•	•	•	•	•	•	•	•	•	•	N
	ECO		o	o	o		o	o	o		o	o	E
	FKM						o						F

Tank material

10	Steel	•	•	•	•	•	•	•	•	•	•	•	1
----	-------	---	---	---	---	---	---	---	---	---	---	---	---

Surface of the tank inside

11	Steel	•	•	•	•	•	•	•	•	•	•	•	1
----	-------	---	---	---	---	---	---	---	---	---	---	---	---

Surface of the connection side

12	Steel	•	•	•	•	•	•	•	•	•	•	•	1
----	-------	---	---	---	---	---	---	---	---	---	---	---	---

Approval ²⁾

13	Operating instructions	EU	•	•	•	•	•	•	•				BA
	PED 2014/68/EU	EU							•	•	•	•	CE
	TR CU 032/2013	EU + Eurasian customs union							o	o	o	o	CE+ EAC

Additional details

14	Further details in the plain text, e.g. special versions												*
----	---	--	--	--	--	--	--	--	--	--	--	--	---

•	Preferred program
o	Delivery range
	On request

¹⁾ Other ports upon request

²⁾ Further approvals upon request

Function, section

General

One of the main tasks of hydro-pneumatic accumulators is e.g. to accept certain volumes of pressurized liquids of hydro-pneumatic installations and to return them to the system if required.

As the liquid is pressurized, the hydro-pneumatic accumulators are treated like pressure vessel and must be designed for the max. operating over-pressure considering the acceptance standards of the country of installation.

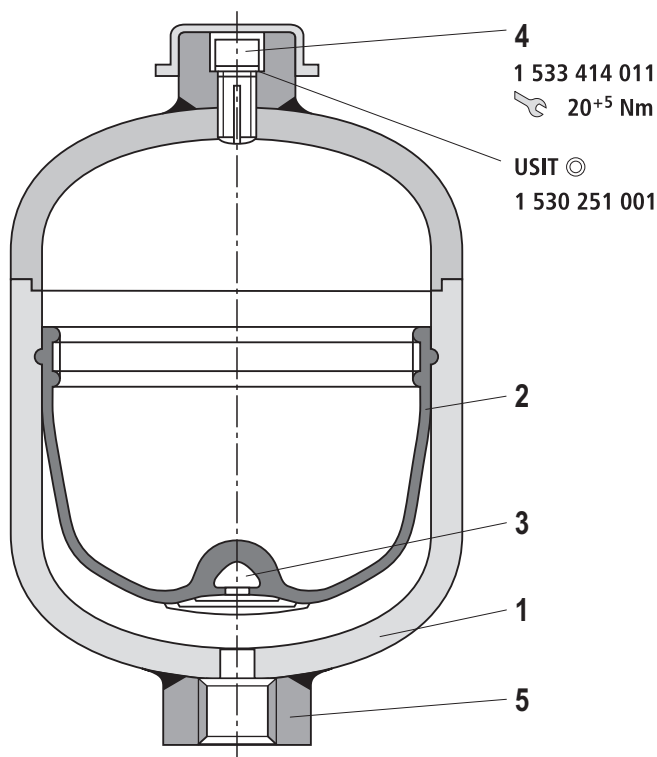
In most hydro-pneumatic systems, hydro-pneumatic accumulators with separator element are used.

The difference between bladder, piston and diaphragm accumulators lies in the type of separator element.

Hydro-pneumatic accumulators essentially consist of a fluid section and a gas section with a gas-tight separator element. The fluid section has a connection to the hydraulic circuit. During the pressure increase, the gas is compressed and liquid accepted in the hydro-pneumatic accumulator. When the pressure decreases, the compressed gas expands and displaces the accumulated fluid into the circuit.

Diaphragm accumulator

Diaphragm accumulators consist of a pressure-resistant steel vessel (1) which most commonly has a spherical to cylindrical form. Inside the accumulator, there is the separator element, namely a diaphragm (2) made of an elastic, flexible material (elastomer) with the closing button (3) and the plug screw (4). They correspond to Pressure Equipment Directive 2014/68/EU.



- 1 Tank
- 2 Diaphragm
- 3 Closing button
- 4 Plug screw (gas filling screw)
- 5 Fluid connection

Symbol



Technical data

(For applications outside these values, please consult us!)

General	
Design	Diaphragm accumulator, welded
Installation position	Any, preferably with the fluid connection socket at the bottom
Type of mounting	With clamps or via stud end connectors
Line connection	Screw-in thread
Surface	Painted, color glossy black

Hydraulic															
Nominal volume V_{nom}	l	0.075	0.16	0.35	0.5	0.6	0.7	1.0	1.4	2.0	2.8	3.5			
Effective gas volume V_{eff}	l	0.075	0.16	0.32	0.48	0.6	0.75	1.0	1.4	1.95	2.7	3.5			
Maximum admissible flow q_{max}	l/min	10		40						60					
Maximum admissible operating pressure p_{max}	bar											55 [45]			
												70 [50]			
								100 [50]				100 [50]			
										140 [80]					
						160 [90]	160 [90]								
								180 [93]							
		[Durable within pressure fluctuation range] $[\Delta p_{dyn} = p_2 - p_1]$	[bar]							200 [115]					
							210 [120]				210 [93]				
				250 [140]	250 [140]	250 [120]	250 [90]			250 [140]	250 [140]	250 [140]	250 [140]	250 [140]	250 [140]
									330 [140]						
						350 [140]				350 [140]	350 [140]	350 [140]			

Hydraulic fluid	Classification	Material	Standards	Data sheet	
Mineral oils	HLP, HLPD, HVLP, HVLPD	NBR, ECO	DIN 51524	90220	
Special fluids	▶ containing water, flame-resistant	HETG, HEES, HEPG	FKM, NBR	ISO 15380	90223
	▶ environmentally compatible	HFC	NBR	ISO 12922	90221
	▶ water-free, flame-resistant	HFDU, HFDR	FKM	ISO 12922	90222
	▶ containing water, flame-resistant	HFC	NBR	ISO 12922	90223

Pneumatic	
Charging gas	Nitrogen, at least cleanliness class 4.0, $N_2 = 99.99 \text{ vol.}\%$
Gas filling pressure (at 20 °C room temperature)	p_0 bar see preferred types page 12 , page 13

Further information on the hydraulic fluids:	
Temperature range (others on request)	°C NBR: -15 ... +80 ¹⁾ ECO: -35 ... +80 ²⁾ FKM: -10 ... +80 ³⁾
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)	Class 20/18/15

1) Acrylonitrile-butadiene rubber

2) Epichlorhydrin rubber

3) Fluorocarbon rubber

Application, mode of operation

Applications

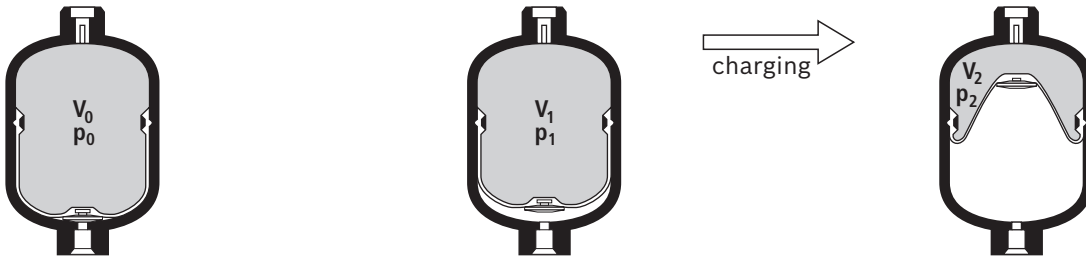
Various applications exist for hydro-pneumatic accumulators:

- ▶ Energy storage in order to save pump drive power in intermittent operation systems.
- ▶ Energy reserve for emergencies, e.g. upon failure of the hydraulic pump.
- ▶ Compensation of leakage losses.
- ▶ Impact and vibration absorption in case of periodic vibrations.
- ▶ Volume compensation in case of pressure and temperature changes.
- ▶ Suspension element for vehicles.
- ▶ Shock absorption with mechanical shocks.

Mode of operation

Fluids are almost incompressible and therefore cannot store pressure energy. Hydro-pneumatic accumulators use the compressibility of a gas for fluid storage. The nitrogen used must at least comply with cleanliness class 4.0:

N₂ 99.99 vol.%



Calculation

Pressures

For calculation of an accumulator, the following pressures play a respective role:

- p_0 = Preset gas pressure at room temperature and drained fluid chamber
- p_{0T} = Preset gas pressure at operating temperature
- p_1 = Minimum operating over-pressure
- p_2 = Maximum operating over-pressure
- t_{max} = Maximum operating temperature

In order to achieve the best utilization of the accumulator volume possible as well as a long life cycle, compliance with the following values is recommended:

$$p_0, t_{max} \approx 0.9 p_1 \quad (1)$$

The highest hydraulic pressure should not exceed four times the filling pressure, as otherwise too much stress will be put on the elasticity of the diaphragm, resulting in too great a compression change with strong gas heating.

The life cycle of the diaphragm is the higher the smaller the difference between p_1 and p_2 is. However, the operating ratio of the maximum accumulator capacity will also be reduced accordingly.

Diaphragm accumulator

$$p_2 \leq 4 \cdot p_0 \quad (2)$$

On request

$$p_2 \leq 8 \cdot p_0$$

Notice:

To achieve an increased pressure ratio ($p_0 : p_2 > 1 : 4$) in the accumulator, a filler can be installed on the gas side of the accumulator.

This way, the usable gas volume V_1 is decreased while the diaphragm is protected against inadmissible deformation.

Calculation

Oil volume

According to the pressures $p_0 \dots p_2$, the gas volumes $V_0 \dots V_2$ will result.

In this process, V_0 simultaneously is the nominal volume of the accumulator.

The available oil volume ΔV corresponds to the difference of the gas volumes V_1 and V_2 :

$$\Delta V \leq V_1 - V_2$$

The gas volume variable within a pressure differential is determined by the following equations:

- For an **isothermal state change of gases**, i.e. when the change of the gas cushion happens so slowly as to leave sufficient time for a complete heat exchange between the nitrogen and its environment, therefore keeping the temperature constant, the following applies:

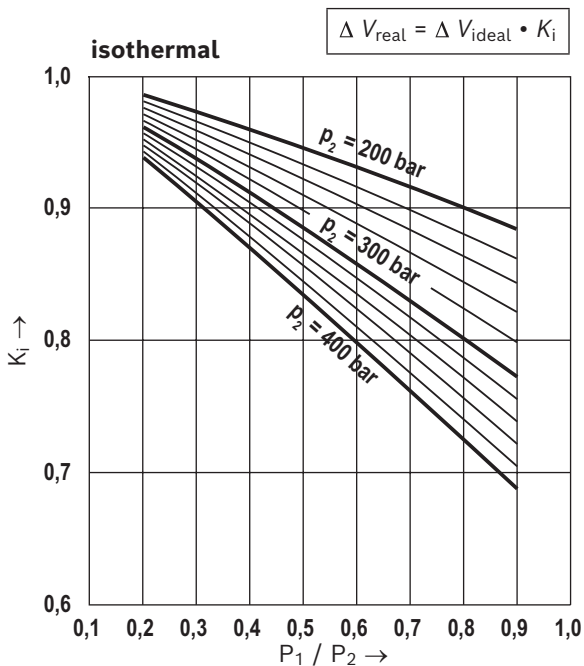
$$p_0 \cdot V_0 = p_1 \cdot V_1 = p_2 \cdot V_2 \quad (4.1)$$

Calculation diagram

For graphic determination, the formulas (4.1) and (4.2) are converted into diagrams on pages 9 and 10. Depending on the task, the available oil volume, the accumulator size or the pressures can be determined.

Correction factor K_i and K_a

The equations (4.1) and (4.2) apply to ideal gases only. The behavior of real gases, however, will show considerable variation at operating pressures above 200 bar which will have to be accounted for by correction factors. These can be taken from the following diagrams. The correction factors the ideal sampling volume ΔV is to be multiplied with lie within a range of 0.6 ... 1.



- For an **adiabatic state change**, i.e. a quick change of the gas cushion accompanied by a temperature change of the nitrogen, the following applies:

$$p_0 \cdot V^{\chi_0} = p_1 \cdot V^{\chi_1} = p_2 \cdot V^{\chi_2} \quad (4.2)$$

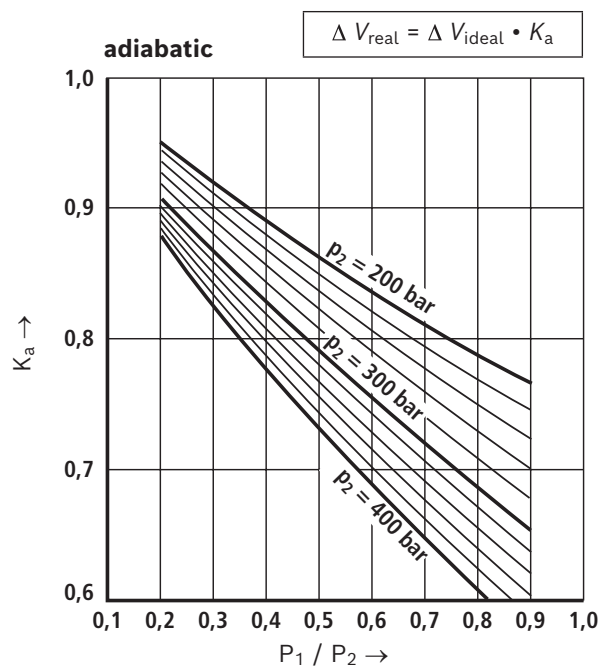
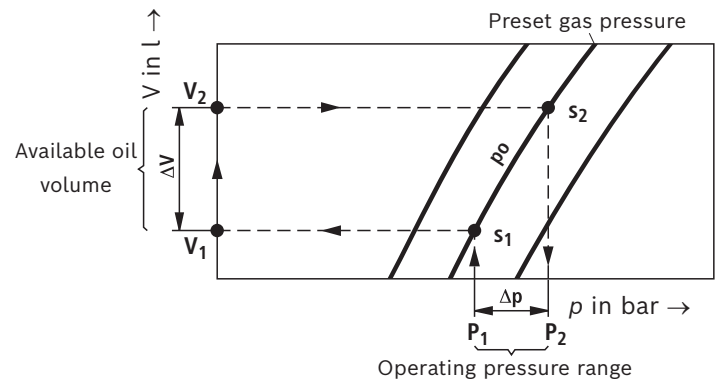
χ = Ratio of the specific gas heats (adiabatic exponent), for nitrogen = 1.4

In practice, state changes rather follow adiabatic laws. Often charging is isothermal and discharge is adiabatic.

Considering the equations (1) and (2), ΔV is between 50% and 70% of the nominal accumulator volume. The following applies as a guiding principle:

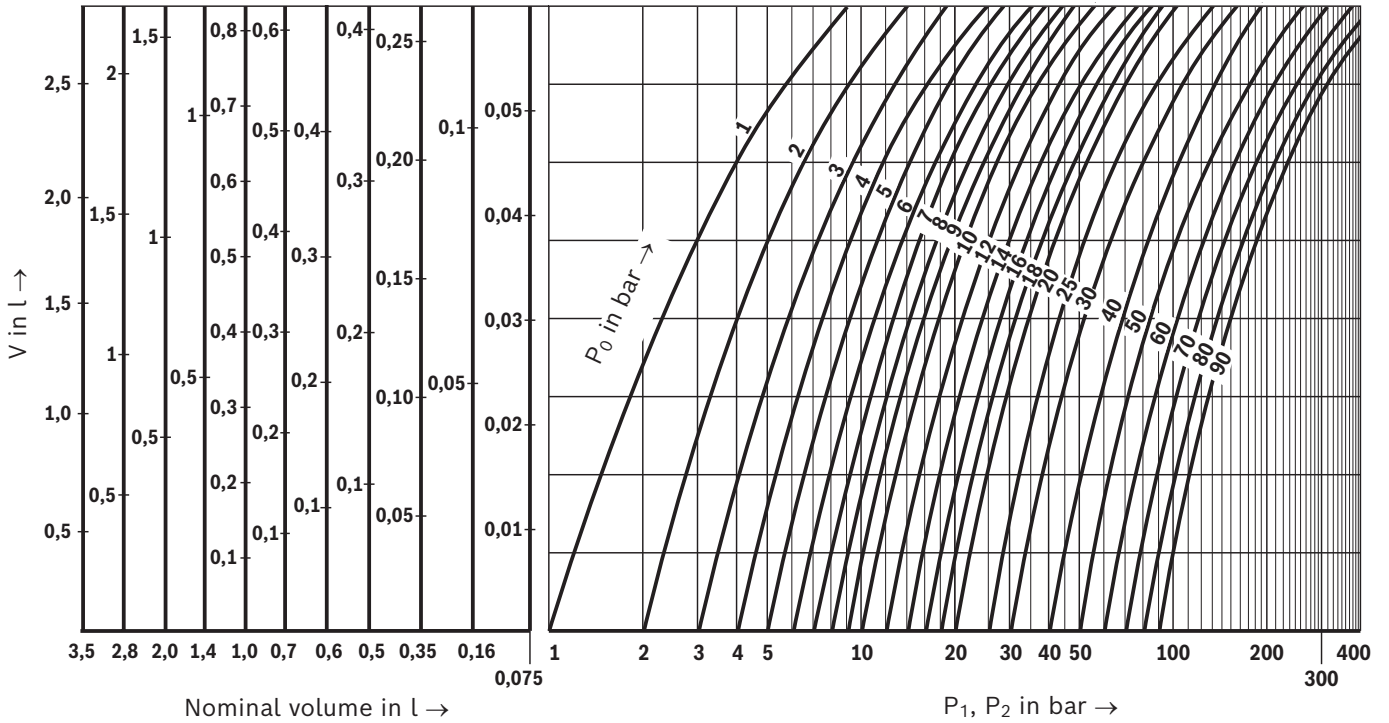
$$V_0 = 1.5 \dots 3 \times \Delta V \quad (5)$$

Application of calculation diagrams

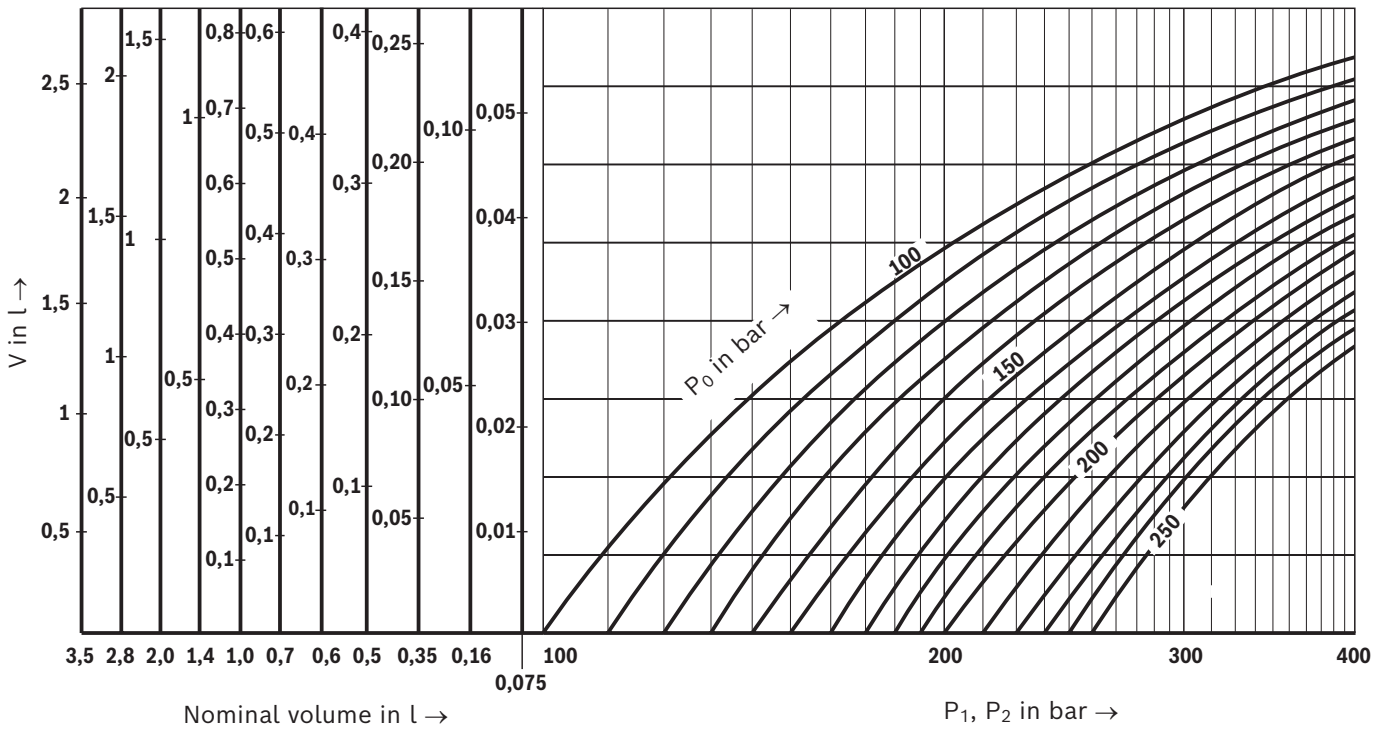


Characteristic curves

Isothermal state changes $p_0 = 1$ to 90 bar

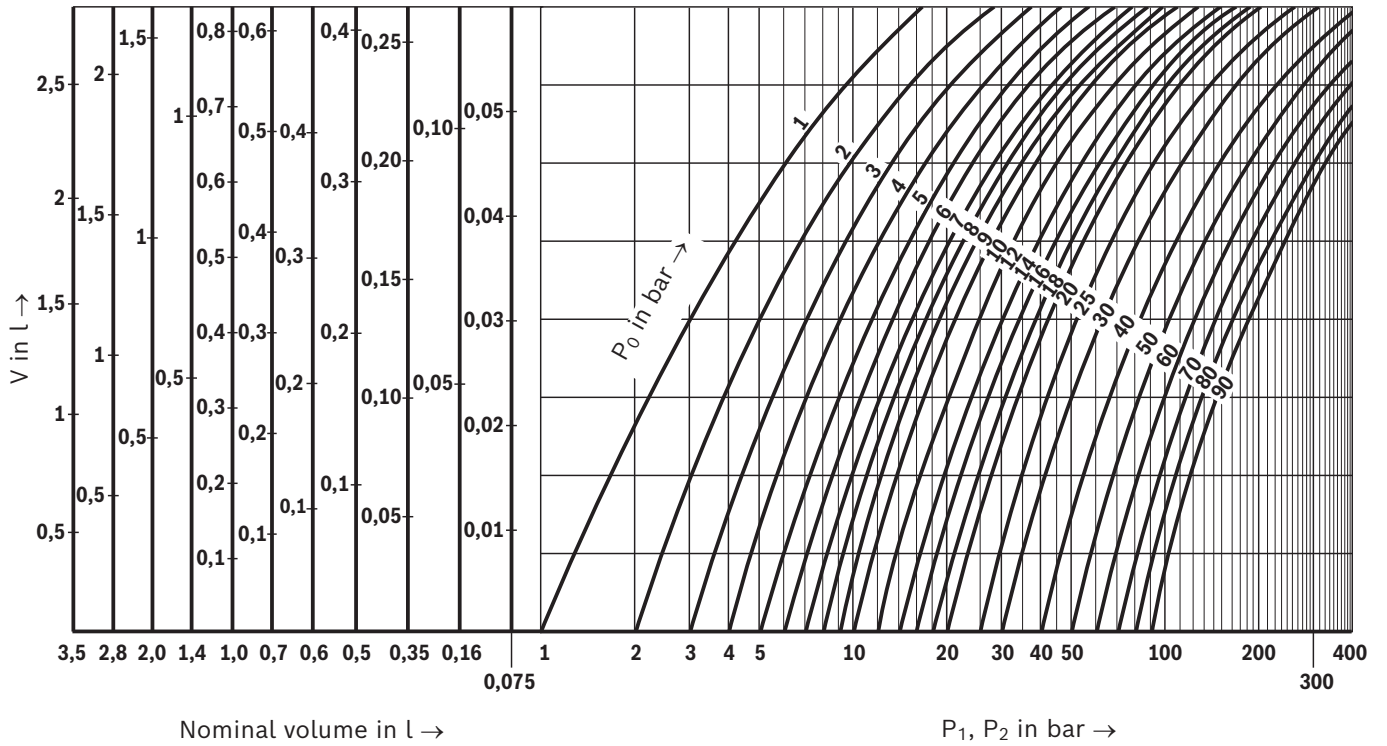


Isothermal state changes $p_0 = 100$ to 250 bar

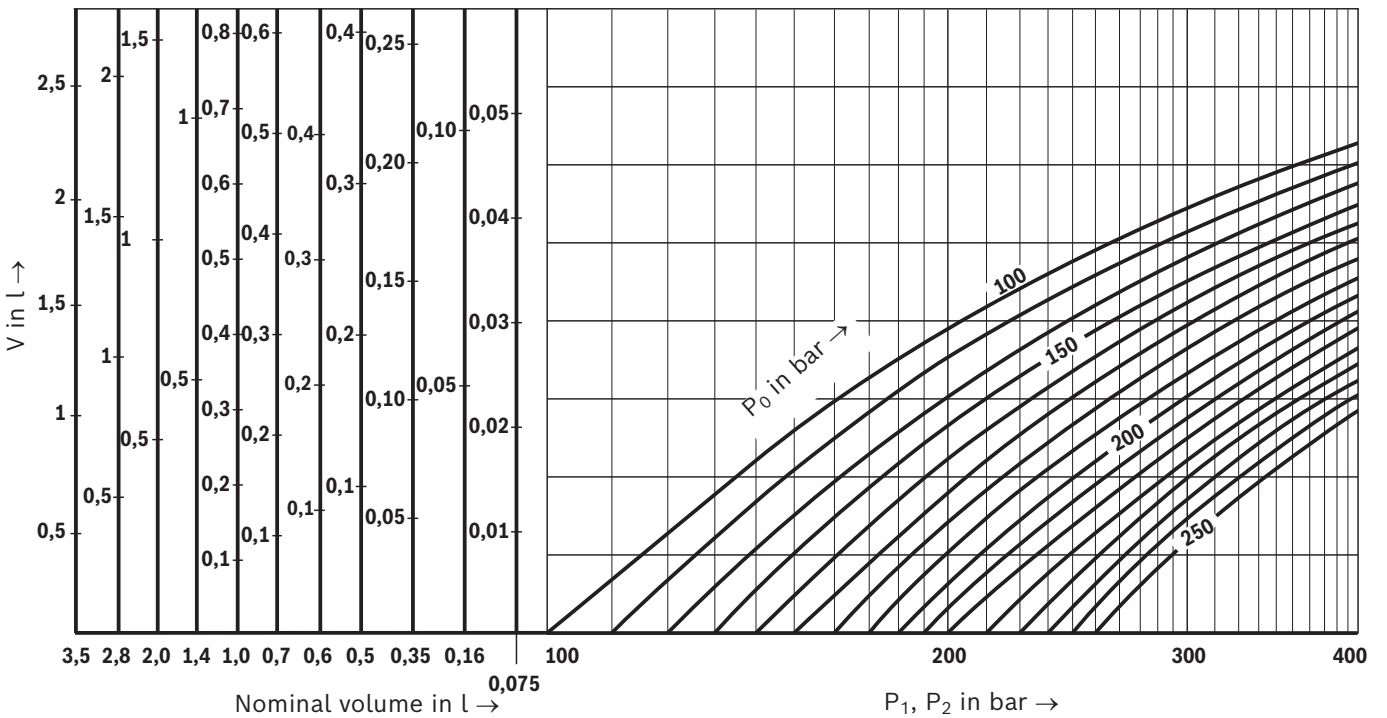


Characteristic curves

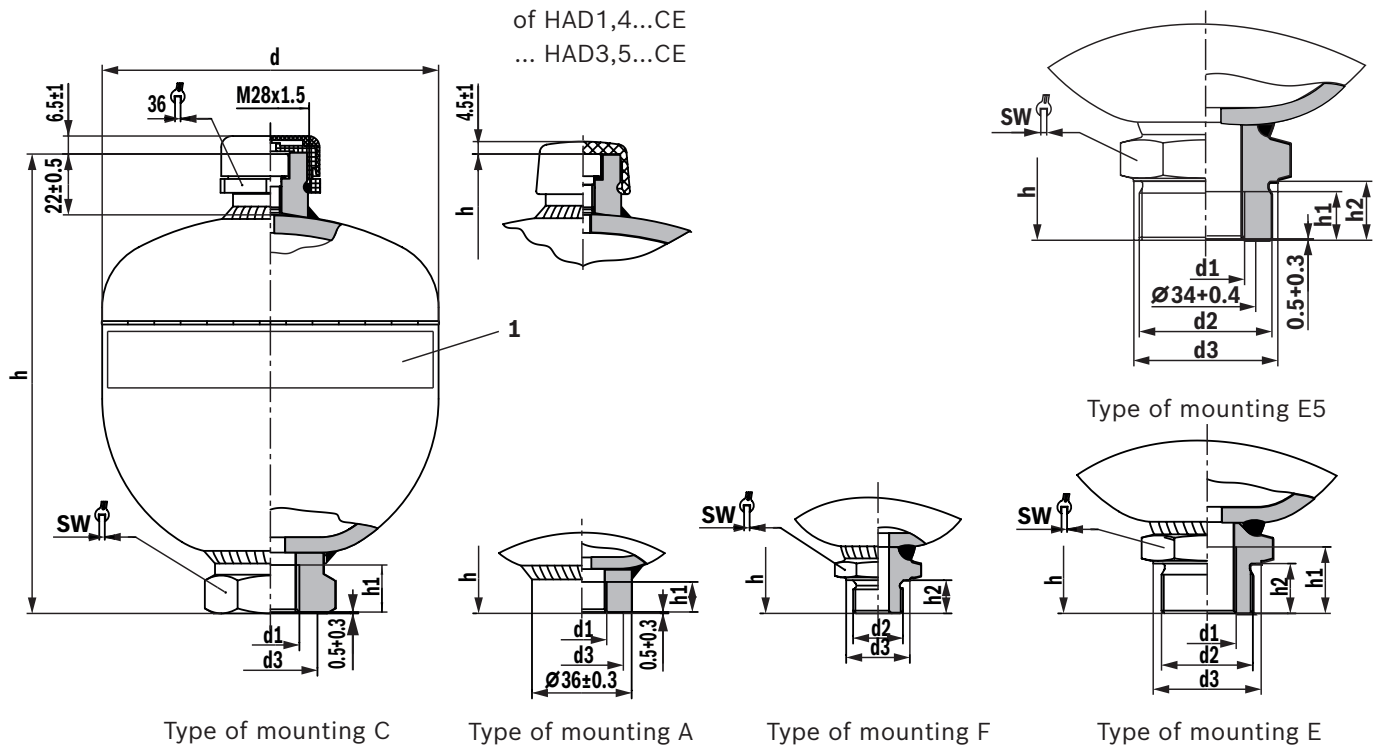
Adiabatic state changes $p_0 = 1$ to 90 bar



Adiabatic state changes $p_0 = 100$ to 250 bar



Dimensions: Total overview
(dimensions in mm)



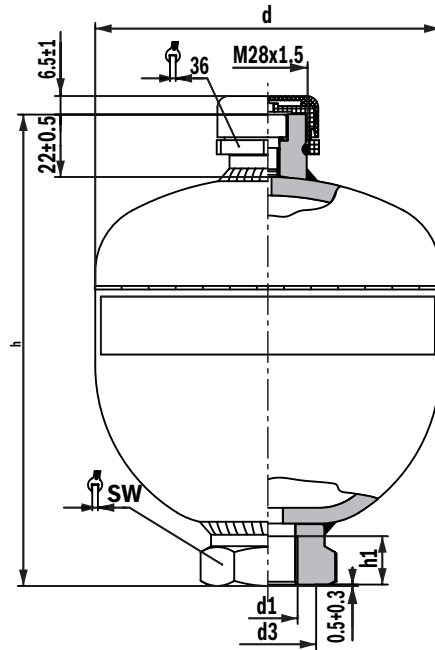
1 Labeling

Volume/pressure/ series	Port size	Type of mounting	h	h1	h2	d	d1	d2	d3	SW	Weight [kg]
0.075-250-1X	G04	C	110.5±1.5	14min.	-	Ø64+0.3	G1/2	-	Ø29+0.4	32	~0.9
	Z04	F	112±1.5	-	12±0.2	Ø64+0.3	-	M14x1.5	Ø19±0.2	19	~0.7
0.16-250-1X	Z06	A	114±1.5	14min.	-	Ø75+0.3	M18x1.5	-	Ø30+0.4	-	~1.0
	G04	C	119±1.5	14min.	-	Ø75+0.3	G1/2	-	Ø29+0.4	32	~0.9
	Z06	F	123±1.5	-	12±0.2	Ø75+0.3	-	M18x1.5	Ø23±0.2	27	~0.9
0.35-160-1X	Z06	A	130±1.5	14min.	-	Ø92.5+0.3	M18x1.5	-	Ø30+0.4	-	~1.3
	G04	A	130±1.5	14min.	-	Ø92.5+0.3	G1/2	-	Ø34+0.4	-	~1.3
0.35-210-1X	Z06	C	136±1.5	14min.	-	Ø92.5+0.3	M18x1.5	-	Ø30+0.4	41	~1.4
	G04	C	136±1.5	17min.	-	Ø92.5+0.3	G1/2	-	Ø34+0.4	41	~1.4
0.35-250-1X	G04	C	141±1.5	17min.	-	Ø95+0.3	G1/2	-	Ø34+0.4	41	~1.7
0.5-160-1X	Z06	C	149±1.5	14min.	-	Ø103+0.3	M18x1.5	-	Ø30+0.4	41	~1.6
	Z06	A	143±1.5	14min.	-	Ø103+0.3	M18x1.5	-	Ø30+0.4	-	~1.5
	G04	A	143±1.5	14min.	-	Ø103+0.3	G1/2	-	Ø34+0.4	-	~1.6
0.5-250-2X	Z06	C	151±1.5	14min.	-	Ø106.7+0.3	M18x1.5	-	Ø30+0.4	41	~2.1
	G04	C	151±1.5	17min.	-	Ø106.7+0.3	G1/2	-	Ø34+0.4	41	~2.1
0.6-330-1X	G04	C	170±1.5	17min.	-	Ø110+0.3	G1/2	-	Ø34+0.4	-	~2.9

Dimensions: Total overview
(dimensions in mm)

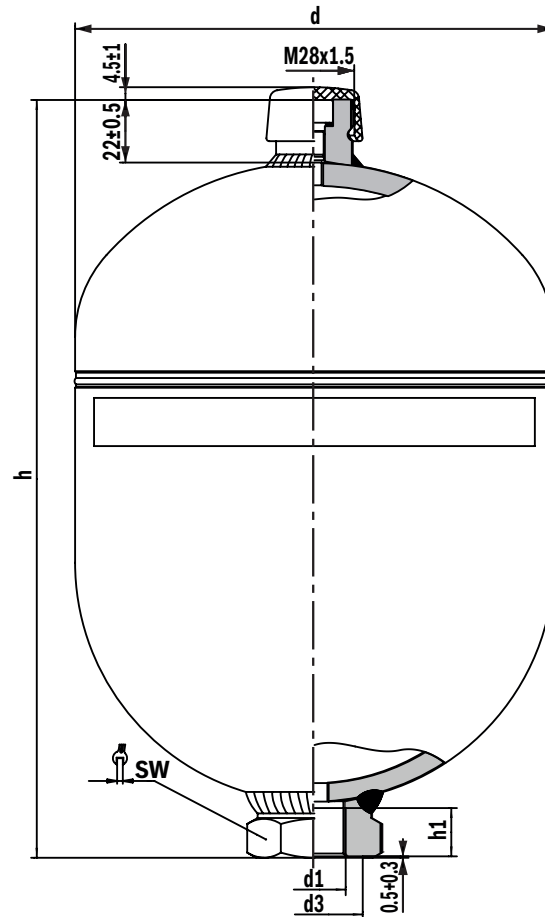
Volume/pressure/ series	Port size	Type of mounting	h	h1	h2	d	d1	d2	d3	SW	Weight [kg]
0.7-100-1X	G04	C	161±1.5	14min.	-	Ø117+0.3	G1/2	-	Ø34+0.4	41	~1.7
	G04	E	172±1.5	24min.	18±0.2	Ø117+0.3	G1/2	M33x1.5	Ø39±0.3	41	~2.0
0.7-180-1X	G04	C	166±1.5	17min.	-	Ø121.5+0.3	G1/2	-	Ø34+0.4	41	~2.6
	Z06	C	166±1.5	14min.	-	Ø121.5+0.3	M18x1.5	-	Ø30+0.4	41	~3.0
	Z06	A	160±1.5	14min.	-	Ø121.5+0.3	M18x1.5	-	Ø30+0.4	-	~2.6
	G04	A	160±1.5	14min.	-	Ø121.5+0.3	G1/2	-	Ø34+0.4	-	~2.6
0.7-210-1X	G04	E	177±1.5	24min.	18±0.2	Ø121.5+0.3	G1/2	M33x1.5	Ø39±0.3	41	~2.6
	G04	C	166±1.5	14min.	-	Ø121.5+0.3	G1/2	-	Ø34+0.4	41	~2.7
0.7-250-1X	G04	C	169±1.5	17min.	-	Ø123.6+0.3	G1/2	-	Ø34+0.4	41	~3.2
	Z06	A	163±1.5	14min.	-	Ø123.6+0.3	M18x1.5	-	Ø30+0.4	-	~2.9
	G04	A	163±1.5	14min.	-	Ø123.6+0.3	G1/2	-	Ø34+0.4	-	~2.9
	G04	E	180±1.5	24min.	18±0.5	Ø168.5±1.5	G1/2	M33x1.5	Ø39±0.2	41	~3.1
0.7-350-2X	G04	C	173±1.5	14min.	-	Ø128.5+0.6	G1/2	-	Ø34+0.4	41	~4.0
	G04	E	184±1.5	24min.	18±0.2	Ø128.5+0.6	G1/2	M33x1.5	Ø39±0.3	41	~4.0
1.0-200-1X	G04	C	180±1.5	14min.	-	Ø136.2+0.3	G1/2	-	Ø34+0.4	41	~3.5
	Z08	C	180±1.5	17min.	-	Ø136.2+0.3	M22x1.5	-	Ø34+0.4	41	~3.5
	G04	E	191±1.5	24min.	18±0.2	Ø136.2+0.3	G1/2	M33x1.5	Ø39±0.3	41	~3.6
1.0-250-1X	G04	C	181±1.5	17min.	-	Ø137+0.3	G1/2	-	Ø34+0.3	41	~3.8
1.4-140-1X	G04	C	191±1.5	14min.	-	Ø147+0.6	G1/2	-	Ø34+0.4	41	~4.3
	G04	E	202±1.5	24min.	18±0.2	Ø147+0.6	G1/2	M33x1.5	Ø39±0.3	41	~4.2
1.4-250-1X	G04	C	195±1.5	14min.	-	Ø152+0.6	G1/2	-	Ø34+0.4	41	~5.5
	Z08	C	195±1.5	14min.	-	Ø152+0.6	M22x1.5	-	Ø34+0.4	41	~5.5
	G04	E	206±1.5	24min.	18±0.2	Ø152+0.6	G1/2	M33x1.5	Ø39±0.3	41	~5.5
1.4-350-2X	G04	C	198±1.5	14min.	-	Ø156+0.6	G1/2	-	Ø34+0.4	41	~6.8
	G04	E	209±1.5	24min.	18±0.2	Ø156+0.6	G1/2	M33x1.5	Ø39±0.3	41	~6.8
2.0-100-1X	G04	C	240±2	17min.	-	Ø144.7+0.5	G1/2	-	Ø34+0.4	41	~4.1
	Z08	C	240±2	14min.	-	Ø144.7+0.5	M22x1.5	-	Ø34+0.4	41	~4.1
	G05	E5	258±1.5	16min.	20±0.2	Ø144.7+0.5	G3/4	M45x1.5	Ø49±0.3	50	~4.3
2.0-250-1X	G04	C	251±1.5	14min.	-	Ø156+0.6	G1/2	-	Ø34+0.4	41	~8.6
	Z08	C	251±1.5	14min.	-	Ø156+0.6	M22x1.5	-	Ø34+0.4	41	~8.6
	G05	C	251±0.5	16min.	-	Ø156+0.6	G3/4	-	Ø33+0.4	41	~8.6
	G05	E5	269±1.5	16min.	20±0.5	Ø156+0.6	G3/4	M45x1.5	Ø49±0.3	50	~8.9
2.0-350-2X	G05	C	251±1.5	14min.	-	Ø156+0.6	G3/4	-	Ø33+0.4	41	~9.5
	G05	E5	269±1.5	16min.	20±0.5	Ø156+0.6	G3/4	M45x1.5	Ø49±0.3	50	~8.9
2.8-70-1X	G04	C	266±2	17min.	-	Ø160+0.3	G1/2	-	Ø34+0.4	41	~10.0
	Z08	C	266±2	17min.	-	Ø160+0.3	M22x1.5	-	Ø34+0.4	41	~10.0
2.8-250-2X	Z08	C	267±1.5	17min.	-	Ø168.5±1.5	M22x1.5	-	Ø34+0.4	41	~8.0
	G05	C	267±1.5	16min.	-	Ø168.5±1.5	G3/4	-	Ø33+0.4	41	~8.3
	G05	E5	286±1.5	16min.	20±0.5	Ø168.5±1.5	G3/4	M45x1.5	Ø49±0.3	50	~8.6
2.8-350-2X	G05	C	271±1.5	16min.	-	Ø175±0.6	G3/4	-	Ø34+0.4	41	~11.5
	G05	E5	290±1.5	16min.	20±0.5	Ø175±0.6	G3/4	M45x1.5	Ø49±0.3	50	~11.8
3.5-55-2X	G05	C	312±1.5	16min.	-	Ø168.5±1.5	G3/4	-	Ø33+0.4	41	~9.6
3.5-250-2X	G05	C	312±1.5	16min.	-	Ø168.5±1.5	G3/4	-	Ø33+0.4	41	~9.6
	G05	E5	331±1.5	16min.	20±0.5	Ø168.5±1.5	G3/4	M45x1.5	Ø49±0.3	50	~9.8

Dimensions: Preferred types: 0.075 to 1 l
(dimensions in mm)



Ordering code/type	Volume/ pressure/series	Material number	h	h1	d	d1	d3	SW	Weight [kg]
HAD0,075-250-1X/OG04C-1N111-BA	0.075-250-1X	R901359266	110.5±1.5	14min.	Ø64+0.3	G1/2	Ø29+0.4	32	~0.9
HAD0,16-250-1X/OG04C-1N111-BA	0.16-250-1X	R901359268	119±1.5	14min.	Ø75+0.3	G1/2	Ø29+0.4	32	~0.9
HAD0,35-250-1X/OG04C-1N111-BA	0.35-250-1X	R901461019	141±1.5	17min.	Ø95+0.3	G1/2	Ø34+0.4	41	~1.7
HAD0,5-250-2X/OG04C-1N111-BA	0.5-250-2X	R901463743	151±1.5	17min.	Ø106.7+0.3	G1/2	Ø34+0.4	41	~2.1
HAD0,6-330-1X/OG04C-1N111-BA	0.6-330-1X	R901445989	170±1.5	17min.	Ø110+0.3	G1/2	Ø34+0.4	41	~2.9
HAD0,7-250-1X/OG04C-1N111-BA	0.7-250-1X	R901463745	169±1.5	17min.	Ø123.6+0.3	G1/2	Ø34+0.4	41	~3.0
HAD1,0-250-1X/OG04C-1N111-BA	1.0-250-1X	R901461023	181±1.5	17min.	Ø137+0.3	G1/2	Ø34+0.4	41	~3.8

Dimensions: Preferred types: 1.4 to 3.5 l
(dimensions in mm)



Ordering code/type	Volume/ pressure/series	Material number	h	h1	d	d1	d3	SW	Weight [kg]
HAD1,4-250-1X/OG04C-1N111-CE	1.4-250-1X	R901463746	195±1.5	14min.	Ø152+0.6	G1/2	Ø34+0.4	41	~5.5
HAD2,0-250-1X/OG05C-1N111-CE	2.0-250-1X	R901463747	251±1.5	16min.	Ø156+0.6	G3/4	Ø33+0.4	41	~8.6
HAD2,8-250-2X/OG05C-1N111-CE	2.8-250-2X	R901463748	267±1.5	16min.	Ø168.5±1.5	G3/4	Ø33+0.4	41	~8.3
HAD3,5-250-2X/OG05C-1N111-CE	3.5-250-2X	R901463764	312±1.5	16min.	Ø168.5±1.5	G3/4	Ø33+0.4	41	~9.6

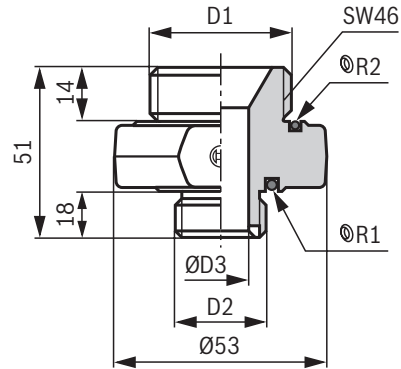
Accessories

(dimensions in mm)

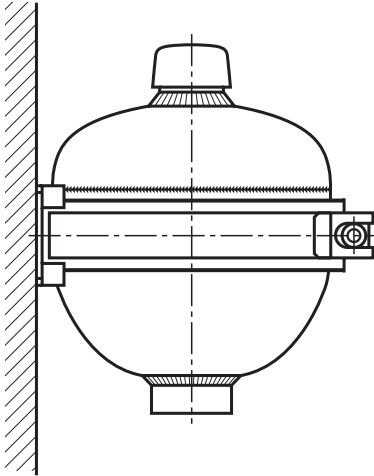
Accumulator adapter for accumulator shut-off blocks type ABZSS

Please select the matching type according to data sheet 50131.

Accumulator D1	Block D2	ØD3	Material number
M 22 x 1.5	M 33 x 2	12	1 533 359 012
M 18 x 1.5		8	1 533 359 013
G 1/2 ISO 228		8	1 533 359 034



Mounting clamp, see selection table



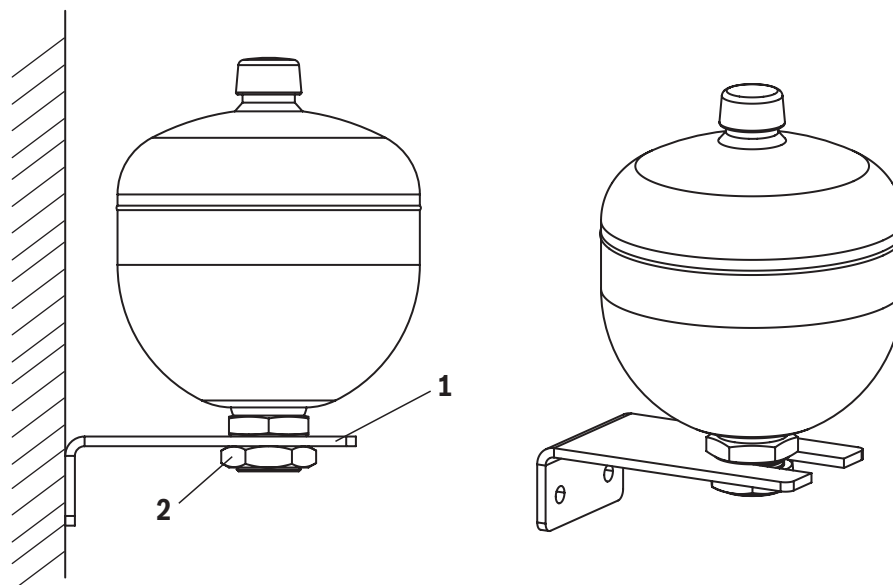
Type	Material number	Denomination
HAD0,075-250-1X	-	
HAD0,16-250-1X	-	
HAD0,35-160-1X	1531316017	MOUNTING CLAMP 92-97 MM
HAD0,35-210-1X		
HAD0,35-250-1X		
HAD0,5-160-1X	1531316018	MOUNTING CLAMP 101-111 MM
HAD0,5-250-2X		
HAD0,6-330-1X	1531316021	MOUNTING CLAMP 110-120 MM
HAD0,7-100-1X		
HAD0,7-180-1X	1531316015	MOUNTING CLAMP 119-128 MM
HAD0,7-210-1X		
HAD0,7-250-1X		
HAD0,7-350-2X	R901073992	MOUNTING CLAMP 128-136 MM
HAD1,0-200-1X	1531316019	MOUNTING CLAMP 135-145 MM
HAD1,0-250-1X		
HAD1,4-140-1X	1531316016	MOUNTING CLAMP 145-155 MM
HAD1,4-250-1X		
HAD1,4-350-2X	R901526730	MOUNTING CLAMP 155-163 MM
HAD2,0-100-1X	1531316016	MOUNTING CLAMP 145-155 MM
HAD2,0-250-1X	R901526730	MOUNTING CLAMP 155-163 MM
HAD2,0-350-2X		
HAD2,8-70-1X	1531316022	MOUNTING CLAMP 160-170 MM
HAD2,8-250-2X		
HAD2,8-350-2X		
HAD3,5-55-2X	1531316022	MOUNTING CLAMP 160-170 MM
HAD3,5-250-2X		

Accessories

(dimensions in mm)

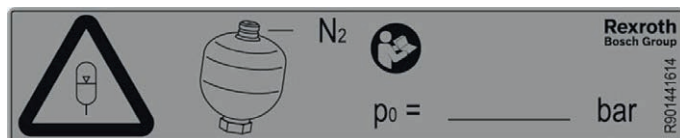
Mounting kit for mounting type E and E5

consisting of mounting bracket and hexagon nut



Position	Designation	Material number
1+2	MOUNTING KIT ZN10060-K 0,7-1,4 Liter	R901273946
1+2	MOUNTING KIT ZN10060-K 2,0-3,5 Liter	R901273947
2	HEXAGON NUT M33X1,5X11-CM-FE-ZN-&	R901285712
2	HEXAGON NUT M45X1,5X13-CM-FE-ZN-	R901280785

Warning sign ^{2) 3)}



Warning sign	Material number
► for diaphragm accumulator (HAD) Size: 100 mm x 20 mm Color: yellow	R901441614

²⁾ The warning sign can be directly attached at the accumulator as of nominal volume 0.35 l.

³⁾ The warning sign is available for order as of a batch size of 100 units.

Spare protective cap for gas valve ⁴⁾



Protective cap HAD	Material number
► for all diaphragm accumulators (HAD) Color: red	R913002007

⁴⁾ The protective cap is available for order as of a batch size of 10 units.

Accessories

(dimensions in mm)

Charging and test device

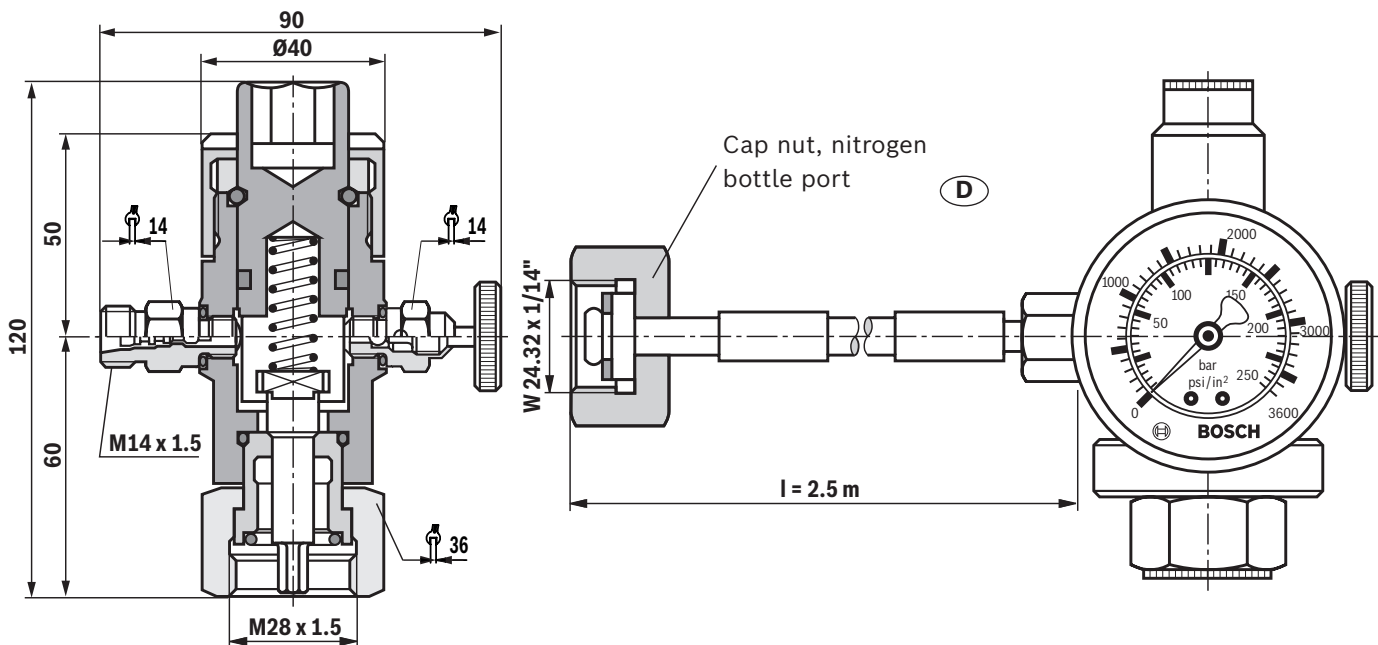


Supplemental parts (separate order)		Material number
Pressure gauge 0 ... 25 bar		R900033955
Pressure gauge 0 ... 60 bar		1537231002
Pressure gauge 0 ... 400 bar		1537231005
Adapter for nitrogen bottle to cap nut	(F)	1533391010
	(GB)	1533391011
	(USA)	1533391012
	(KR)	1533391013
	(J)	R900216133
Hose l = 5 m with cap nut	(RUS)	1533391015
	(D)	1530712006

Measurement case	Material number
► for diaphragm accumulator (HAD)	0538103012
► for bladder and diaphragm accumulator (HAB/HAD)	0538103014
► Spare parts:	
- Case (without contents)	R901079781
- Charging and test valve HAB	0538103005
- Charging and test valve HAD	0538103006
- Pressure gauge 0 ... 250 bar	1537231001
- Hose l = 2.5 m with cap nut	1530712005

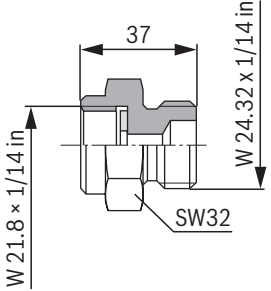
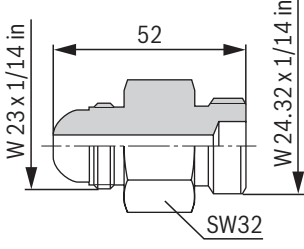
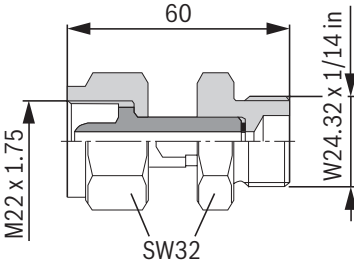
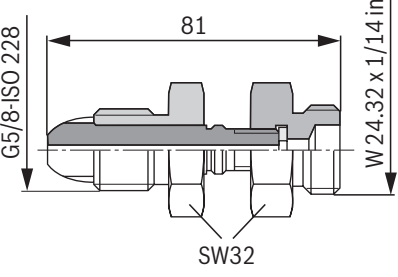
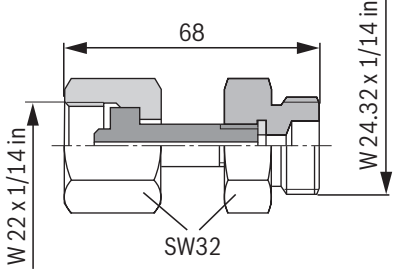
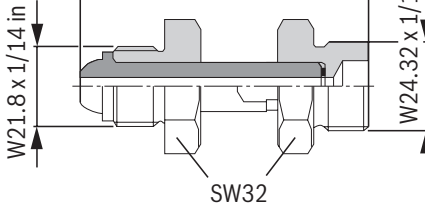
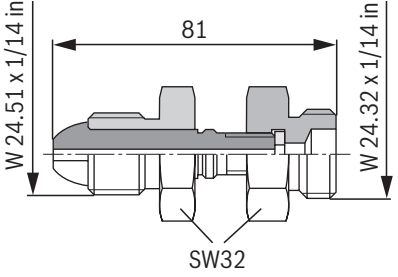
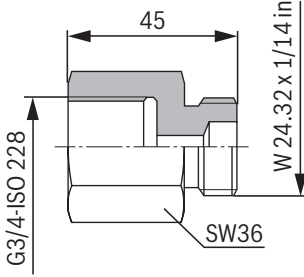
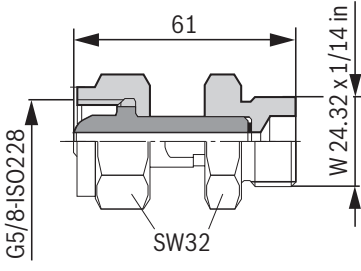


Dimensions: Charging and test valve



Accessories
(dimensions in mm)

Adapter for nitrogen bottle to cap nut

<p>Material number: 1533391010</p> 	<p>Material number: 1533391013</p> 	<p>Material number: R900034782</p> 
<p>Material number: 1533391011</p> 	<p>Material number: R900216133</p> 	<p>Material number: R900708208</p> 
<p>Material number: 1533391012</p> 	<p>Material number: 1533391015</p> 	<p>Material number: R901070776</p> 

Accessories**Adapter for nitrogen bottle to cap nut**

Country ¹⁾	Material number								
	1533391010	1533391011	1533391012	1533391013	R900216133	1533391015	R900034782	R900708208	R901070776
Brazil		x							
Bulgaria		x							
China									x
France	x								
Greece		x							
United Kingdom		x							
India		x							
Italy								x	
Japan					x				
Canada			x						
North Korea				x					
South Korea				x					
Malaysia		x							
Mexico	x								
Romania	x								
Russia						x			
Spain		x							
Saudi Arabia	x								
Singapore		x							
Taiwan							x		
Turkey		x							
USA			x						

¹⁾ Other countries upon request

Important notices

Intended use

Rexroth diaphragm accumulators type HAD..-1X/2X are intended for the set-up of hydraulic drive systems in stationary mechanical engineering and plant construction. In mobile applications or applications in which acceleration forces are applied to the diaphragm accumulator during intended use, its use is permitted only following release by the competent Rexroth product manager. Please contact technical sales for this.

Rexroth diaphragm accumulators type HAD..-1X/2X are not intended for private use.

Project planning information

Diaphragm accumulators have to be safely and permanently fastened to the machine or system using mounting elements. The fastening is intended to keep the oil port tension-free. Particularly, no tension forces or static or dynamic inertia forces should be applied to the oil port. Thermal expansion of the supporting structure and vibrations originating from the environment should be considered in the selection of suitable mounting points.

Safety instructions for hydro-pneumatic accumulators

The machine end-user is required to enclose operating instructions RE 50150-B for the machine or system and the CE Declaration of Conformity for containers > 1 liters.

General information for hydro-pneumatic accumulators in hydraulic system can be found in DIN EN ISO 4413.

Keep all documents included in the delivery in a safe place.

They will be required by the expert in recurring tests.

Safety equipment

Notice:

Hydro-pneumatic accumulators have to be secured against operation outside of the admissible limits according to Pressure Equipment Directive 2014/68/EU.

Legal provisions

Hydro-pneumatic accumulators are pressure vessels and subject to the application national provisions and/or regulations valid at the place of installation.

In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.

In special applications, additional regulations for shipbuilding, aircraft construction or mining may apply.

Authorized persons

According to Ordinance on Industrial Safety and Health (BetrSichV), only authorized persons may carry out tests.

Authorized persons are such persons having obtained the required expert knowledge through professional training, experience and recent professional activity.

In order not to exceed the maximum operating pressure, Bosch Rexroth recommends the use of an accumulator shut-off block type ABZSS according to data sheet 50131.

Commissioning

Installation conditions

Charging pressure

Diaphragm accumulators are usually delivered in condition ready for operation. The charging pressure (p_0) is engraved on the accumulator housing.

Charging gas

Hydro-pneumatic accumulators must only be filled with nitrogen of class 4.0, pure N₂ content of 99.99 vol.%.

Admissible operating temperature

In "**standard version**", Rexroth hydro-pneumatic accumulators are suitable for operating temperatures of $-15...+80$ °C.

For deviating temperatures, please contact Bosch Rexroth.

Installation position

Diaphragm accumulators may be installed in any installation position.

Above the gas valve, an installation space of 200 mm must be provided for the charging and test device.

Mounting

When mounting the accumulator, make sure that possible forces, such as the ones created by vibrations or acceleration specific for that application, are absorbed safely. When using several mounting points, avoid stress caused by operational, elastic deformations or temperature expansions.

Bosch Rexroth offers corresponding mounting clamps (see page 14).

Further information

Operating instructions in different languages and declarations of conformity for tank sizes of 1.4 to 3.5 liters are included in the scope of delivery of the product.

Operating instructions

Language	Operating instructions
German	RD 50150-B
English	RE 50150-B
Spanish	RS 50150-B
French	RF 50150-B
Italian	RI 50150-B
Russian	R-RS 50150-B
Czech	R-CZ 50150-B
Polish	R-PL 50150-B
Chinese	RC 50150-B
Turkish	RT 50150-B

CE Declarations of Conformity

in German, English, French

Type	Declaration of conformity
HAD up to 1.0	-
HAD1,4 - HAD3,5	RA83506544

Bladder-type accumulator

Type HAB



- ▶ Component series 6X
- ▶ Nominal volume 1 ... 50 liters
- ▶ Maximum operating pressure 350 bar



Features

- ▶ Hydro-pneumatic accumulators for use in stationary machinery and systems
- ▶ Use:
 - Energy storage in intermittent operation systems
 - Energy reserve for emergencies
 - Compensation of leakage losses
 - Impact and vibration absorption
 - Volume compensation in case of pressure and temperature change
- ▶ Approval:
 - according to PED 2014/68/EU
 - according to NR13
 - according to TR CU 032/2013

Contents

Features	1
Ordering code	2, 3
Function, section	4
Technical data	5
Application, mode of operation	6
Calculation	6, 7
Characteristic curves	8, 9
Dimensions	10
Accessories	11 ... 18
Spare parts	19, 20
Important notes	21
Safety equipment	21
Further information	22

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14			
HAB		-		-	6X	/			-		1	1	1	-		

Device designation

01	Bladder-type accumulator	HAB
----	--------------------------	-----

Nominal volume

02		1	2.5	4	6	10	20	24	32	50	
----	--	---	-----	---	---	----	----	----	----	----	--

Maximum operating pressure

03	350 bar	●	●	●	●							350
	330 bar	○	○	○	○	●	●	●	●	●		330
	50 bar			○								50
	30 bar				○							30
	20 bar						○					20
	10 bar							○				10

Component series

04	60 ... 69 (unchanged installation and connection dimensions)	6X
----	--	----

Preload pressure

05	0 bar	●	●	●	●	●	●	●	●	●	0
	> 0 bar	○	○	○	○	○	○	○	○	○	

Port size for hydraulic fluid ¹⁾

06	G3/4" pipe thread	●										G05
	G1 1/4" pipe thread		●	●	●							G07
	G2" pipe thread					●	●	●	●	●		G09
	2" SAE flange (high-pressure series)					○	○	○	○	○		S19

Type of mounting for hydraulic fluid ¹⁾

07	Pipe thread with radial sealing surface	●	●	●	●	●	●	●	●	●	G
	Flange mounting with axial sealing surface					○	○	○	○	○	F

Gas port form ¹⁾

08	Gas valve ISO 4570 8V1	●	●	●	●	●	●	●	●	●	2
	Gas valve 5/8"-18 UNF	○	○	○	○	○	○	○	○	○	3

Diaphragm material

09	NBR	●	●	●	●	●	●	●	●	●	N
	ECO			○		○			○		E
	FKM				○	○	○		○	○	F
	HNBR	○	○	○	○	○	○	○	○	○	H

Tank material

10	Steel	1
----	-------	---

Surface of the tank inside

11	Steel	1
----	-------	---

Surface of the connection side

12	Steel	1
----	-------	---

¹⁾ Other ports upon request

●	Preferred program
○	Delivery range
	Upon request

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14				
HAB		-	-	6X	/				-			1	1	1	-		

Nominal volume

02							1	2.5	4	6	10	20	24	32	50	
----	--	--	--	--	--	--	---	-----	---	---	----	----	----	----	----	--

Approval ²⁾

13	Operating instructions	EU	●														BA
	PED 2014/68/EU	EU		●	●	●	●	●	●	●	●	●	●	●	●	●	CE
	National Requirement 13	EU + Brazil			○	○	○	○	○	○	○	○	○	○	○	○	CE+NR13
	TR CU 032/2013	EU + Eurasian customs union		○	○	○	○	○	○	○	○	○	○	○	○	○	CE+EAC

Additional details

14	Further details in the plain text, e.g. special versions	*
----	--	---

²⁾ Further approvals upon request

●	Preferred program
○	Delivery range
■	Upon request

Preferred types HAB-6X

Type	Material no.
HAB1-350-6X/OG05G-2N111-BA	R901435300
HAB2.5-350-6X/OG07G-2N111-CE	R901435301
HAB4-350-6X/OG07G-2N111-CE	R901435302
HAB6-350-6X/OG07G-2N111-CE	R901435303
HAB10-330-6X/OG09G-2N111-CE	R901435304
HAB20-330-6X/OG09G-2N111-CE	R901435305
HAB24-330-6X/OG09G-2N111-CE	R901435306
HAB32-330-6X/OG09G-2N111-CE	R901435307
HAB50-330-6X/OG09G-2N111-CE	R901435308

Function, section

General information

Hydro-pneumatic accumulators are hydrostatic devices capable of storing a certain amount of energy in order to release it to the hydraulic system when needed.

Fluids only possess low compressibility; however, gases are highly compressible. The working principle of all gas-loaded hydro-pneumatic accumulators is based on this difference.

The difference between bladder and diaphragm type accumulators lies in the type of separator element.

Hydro-pneumatic accumulators essentially consist of a fluid section and a gas section with a gas-tight separator element. The fluid section has a connection to the hydraulic circuit.

If a higher liquid pressure is applied to a specific quantity of pressurized gas, the gas volume decreases as the liquid pressure increases, with the gas pressure increasing with the liquid pressure.

If the pressure of the fluid decreases, the fluid is pushed back into the hydraulic system by the expanding gas until the pressure is balanced again.

Bladder-type accumulator

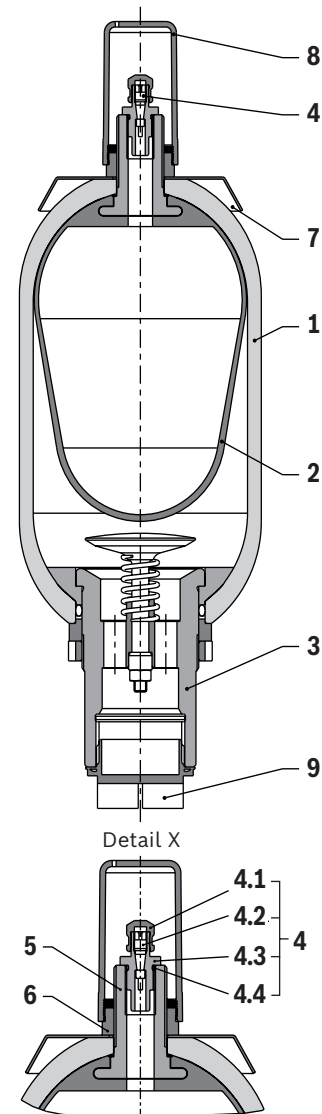
Bladder-type accumulators consist of a seamless cylindrical pressure container (1) made of high-strength steel.

An elastic bladder (2) mounted inside the container separates the accumulator into a gas side and a fluid side. Via the gas valve (4), the bladder is filled with nitrogen up to the intended gas filling pressure p_0 .

The oil valve (3) located inside the oil port of the bladder-type accumulator closes if the pressure on the gas side is higher compared to the fluid side. This prevents the bladder from entering the oil channel and being destroyed. When the minimum operating pressure is reached, a small fluid volume (approx. 10% of the nominal volume of the hydro-pneumatic accumulator) should remain between the bladder and the oil valve in order to prevent the bladder from hitting the valve during each expansion process.

The gas valve (4) consists of sealing cap (4.1), gas valve insert (4.2), gas prefill valve body (4.3), and O-ring (4.4). These parts can be replaced individually.

The type cap (7) includes the technical data and features of the hydro-pneumatic accumulator.



Symbol



- 1 Tank
- 2 Bladder
- 3 Oil valve
- 4 Gas valve
- 5 Gas valve support
- 6 Nut
- 7 Type cap
- 8 Cover cap
- 9 Protective cap of oil valve

Technical data

(For applications outside these values, please consult us!)

General											
Nominal volume	V_{nom}	l	1	2.5	4	6	10	20	24	32	50
Weight		kg	7	10	16.5	20	32	53	61	85	123
Design	Bladder-type accumulator										
Installation position	Bottom fluid connection socket, others upon request										
Type of mounting	With clamping collars and console										
Line connection	Screw-in thread										
Surface	Primed, blue color (RAL 5010)										

Hydraulic											
Nominal volume	V_{nom}	l	1	2.5	4	6	10	20	24	32	50
Effective gas volume	V_{eff}	l	1.0	2.4	3.7	5.9	9.2	18.1	24.5	33.4	48.7
Maximum flow	q_{max}	l/min	240	450	450	450	900	900	900	900	900
Maximum operating pressure	p_{max}	bar	330	330	330	330	330	330	330	330	330
			350	350	350	350	–	–	–	–	–
Maximum pressure fluctuation range	$\Delta p_{dyn} = p_2 - p_1$	bar	200	200	200	200	125	125	125	125	125
Operating pressures and useful volume	See calculations on page 6 ... 9										

Pneumatic											
Charging gas	Nitrogen, at least cleanliness class 4.0, N ₂ = 99.99 vol.%										
Gas filling pressure (at 20 °C room temperature)	p_0	bar	$p_0 \leq 0.8$ of p_{max}								

Hydraulic fluid	Classification	Material	Standards	Data sheet
Mineral oils	HLP, HLPD, HVLP, HVLPD	NBR, ECO, HNBR	DIN 51524	90220
Special fluids	▶ environmentally compatible	HETG		
		HEES	FKM	ISO 15380
	HEPG			90221
▶ water-free, flame-resistant	HFDU	FKM	ISO 12922	90222
	HFDR			
▶ containing water, flame-resistant	HFC	NBR	ISO 12922	90223

Further information on the hydraulic fluids:	
Temperature range (others on request)	°C
	NBR: –15 ... +80 ¹⁾ FKM: –20 ... +80 ²⁾ HNBR: –30 ... +80 ³⁾ ECO: –32 ... +80 ⁴⁾
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)	Class 20/18/15

- 1) Acrylonitrile butadiene rubber
- 2) Flour rubber
- 3) Hydrated acrylonitrile butadiene rubber
- 4) Epichlorohydrin rubber

Application, mode of operation

Applications

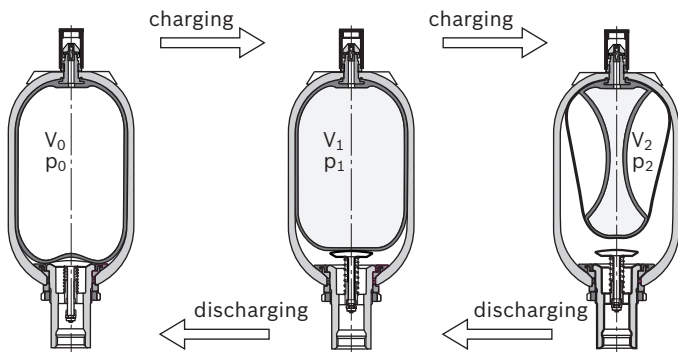
Various applications exist for hydro-pneumatic accumulators:

- ▶ Energy storage in order to save pump drive power in intermittent operation systems.
- ▶ Energy reserve for emergencies, e.g. upon failure of the hydraulic pump.
- ▶ Compensation of leakage losses.
- ▶ Impact and vibration absorption in case of periodic vibrations.
- ▶ Volume compensation in case of pressure and temperature changes.

Mode of operation

Fluids are almost incompressible and therefore cannot store pressure energy. Hydro-pneumatic accumulators use the compressibility of a gas for fluid storage. Exclusively use nitrogen with a minimum cleanliness class of 4.0!

$N_2 = 99.99 \text{ vol.}\%$



Calculation

Pressures

For calculation of an accumulator, the following pressures play a respective role:

p_0	Gas filling pressure at room temperature and drained fluid chamber
$p_0(t)$	Gas filling pressure at operating temperature
$p_0(t_{max})$	Gas filling pressure at maximum operating temperature
p_1	Minimum operating over pressure
p_2	Maximum operating over pressure

In order to achieve the best utilization of the accumulator volume possible as well as a long life cycle, compliance with the following values is recommended:

$$p_0(t_{max}) \sim 0.9 \times p_1 \quad (1)$$

The highest hydraulic pressure should not exceed four times the filling pressure, as otherwise too much stress will be put on the elasticity of the bladder, resulting in too great a compression change with strong gas heating:

$$p_2 \leq 4 \times p_0 \quad (2)$$

The life cycle of the accumulator bladder is the higher the smaller the difference between p_1 and p_2 is. However, the operating ratio of the maximum accumulator capacity will also be reduced accordingly.

Calculation

Oil volume

According to the pressures $p_0 \dots p_2$, the gas volumes $V_0 \dots V_2$ will result.

In this process, V_0 simultaneously is the nominal volume of the accumulator.

The available oil volume ΔV corresponds to the difference of the gas volumes V_1 and V_2 :

$$\Delta V \cong V_1 - V_2 \quad (3)$$

The gas volume variable within a pressure differential is determined by the following equations:

- For an isothermal state change of gases, i.e. when the change of the gas cushion happens so slowly as to leave sufficient time for a complete heat exchange between the nitrogen and its environment, therefore keeping the temperature constant, the following applies:

$$p_0 \times V_0 = p_1 \times V_1 = p_2 \times V_2 \quad (4.1)$$

- For an adiabatic state change, i.e. a quick change of the gas cushion accompanied by a temperature change of the nitrogen, the following applies:

$$p_0 \times V_0^\chi = p_1 \times V_1^\chi = p_2 \times V_2^\chi \quad (4.2)$$

χ = ratio of the specific gas heats (adiabatic exponent),
for nitrogen = 1.4

In practice, state changes rather follow adiabatic laws. Often charging is isothermal and discharge is adiabatic. Considering the equations (1) and (2), ΔV is between 50% and 70% of the nominal accumulator volume. The following applies as a guiding principle:

$$V_0 = 1.5 \dots 3 \times \Delta V \quad (5)$$

Calculation diagram

For graphic determination, the formulas (4.1) and (4.2) are converted into diagrams on pages 8 and 9.

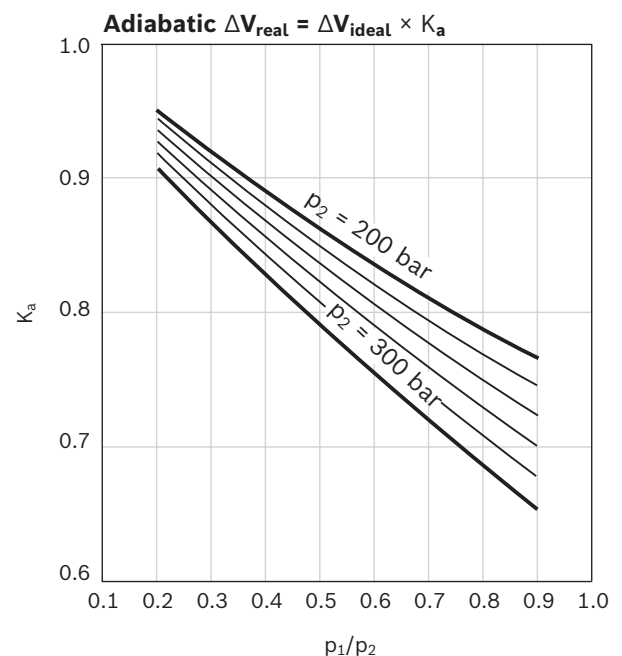
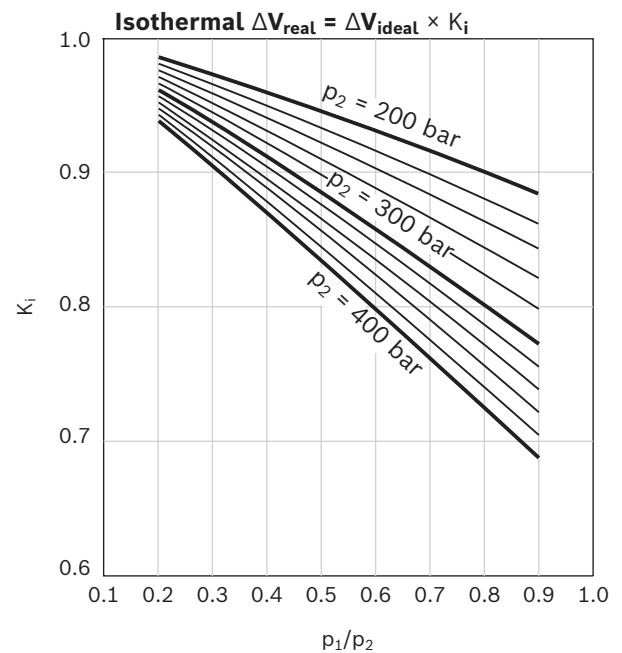
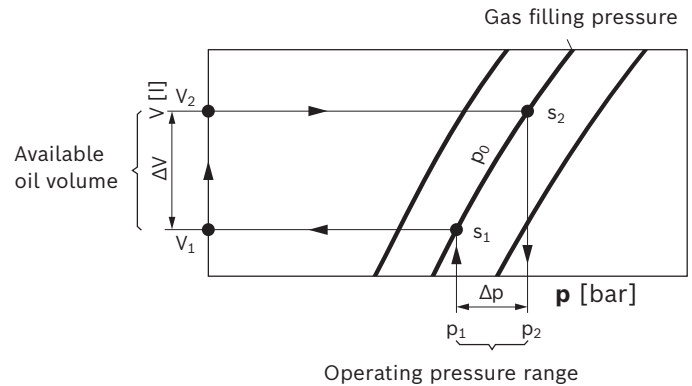
Depending on the task, the available oil volume, the accumulator size or the pressures can be determined.

Correction factor K_i and K_a

The equations (4.1) and (4.2) apply to ideal gases only. The behavior of real gases, however, will show considerable variation at operating pressures above 200 bar which will have to be accounted for by correction factors. These can be taken from the following diagrams. The correction factors the ideal sampling volume ΔV is to be multiplied with lie within a range of 0.6 ... 1.

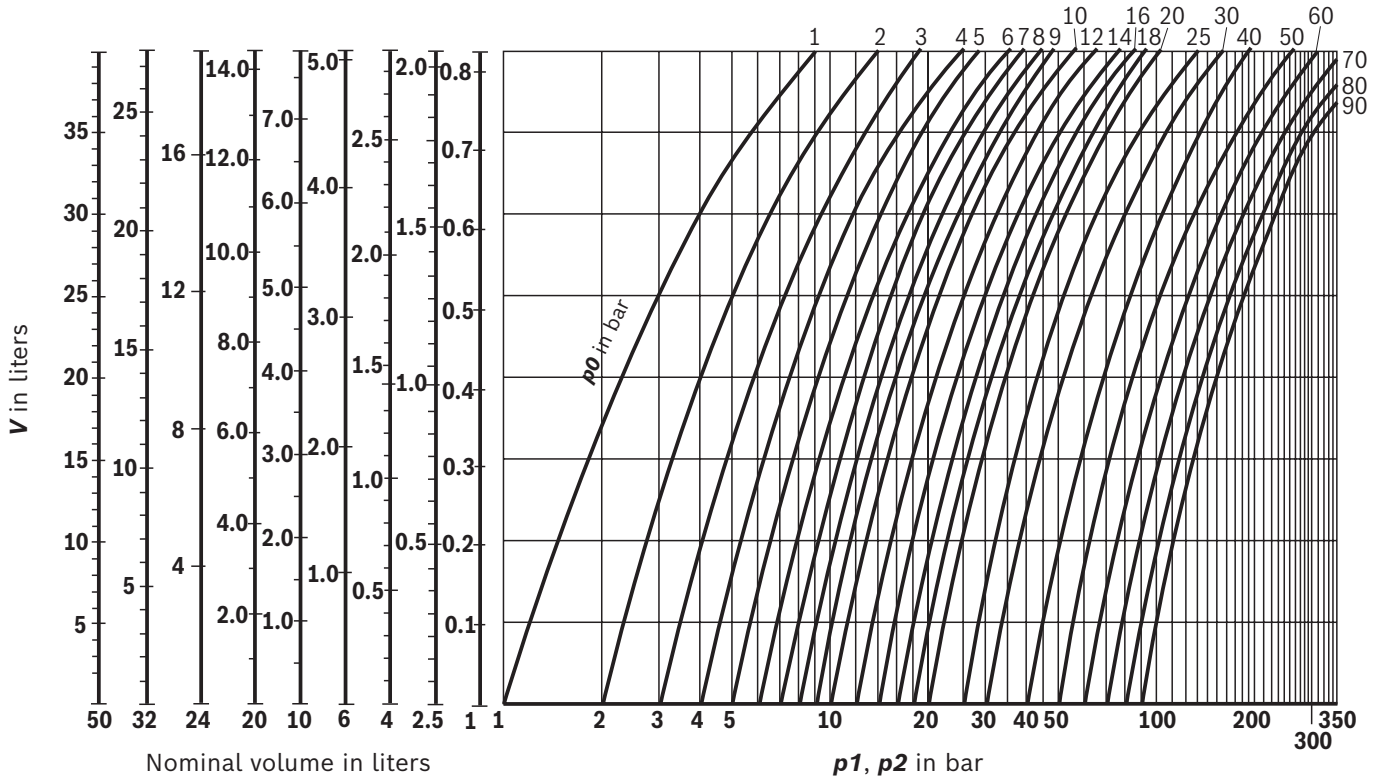
Application of calculation diagrams

(see page 8 ... 9)

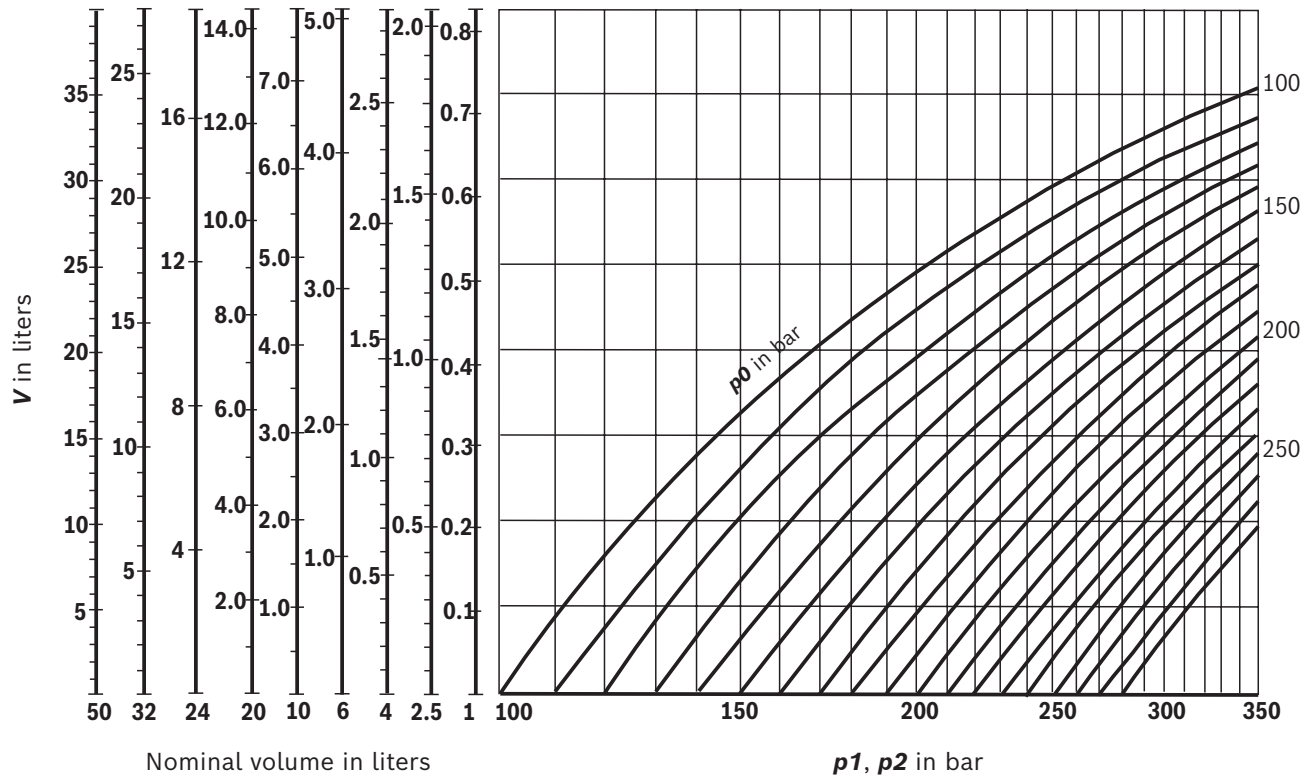


Characteristic curves

Isothermal state changes $p_0 = 1 \dots 90$ bar

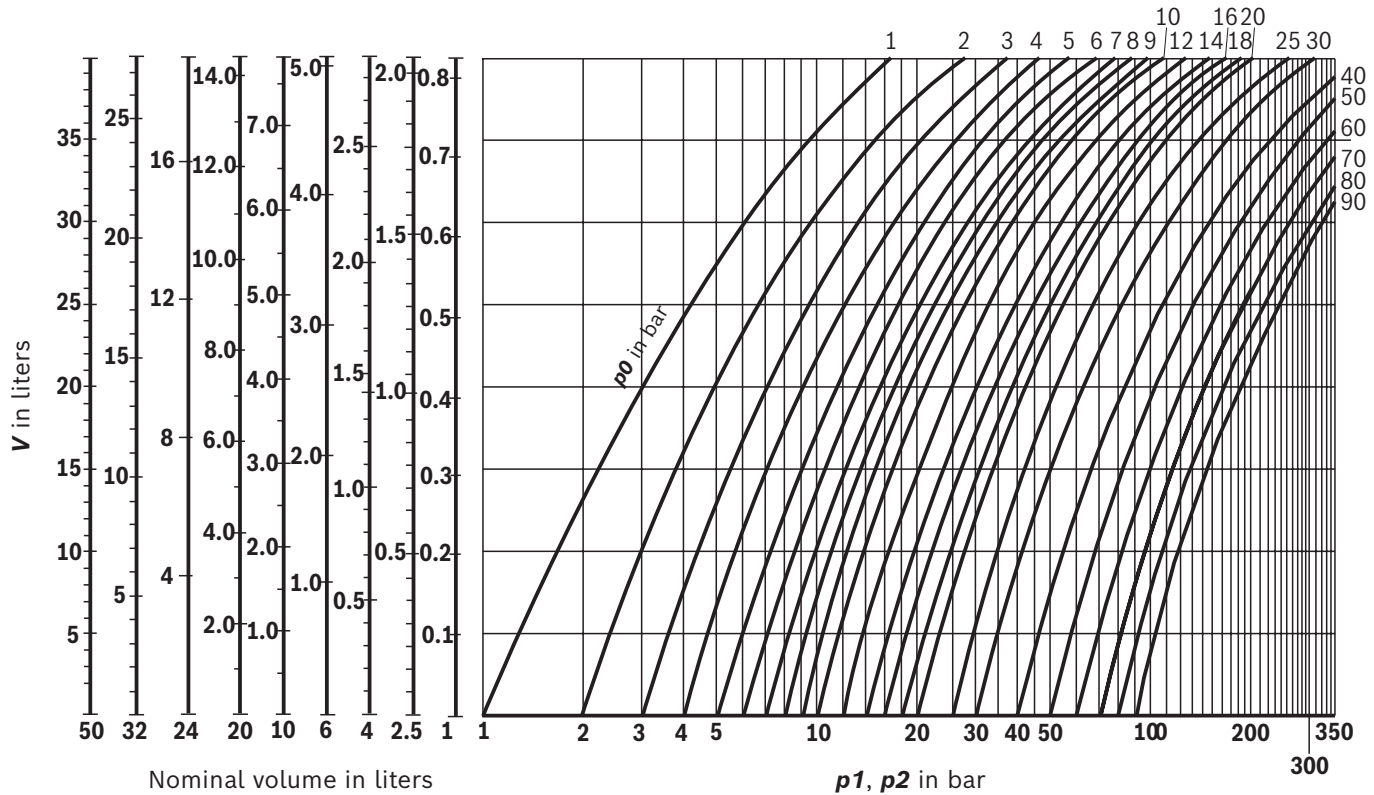


Isothermal state changes $p_0 = 100 \dots 280$ bar

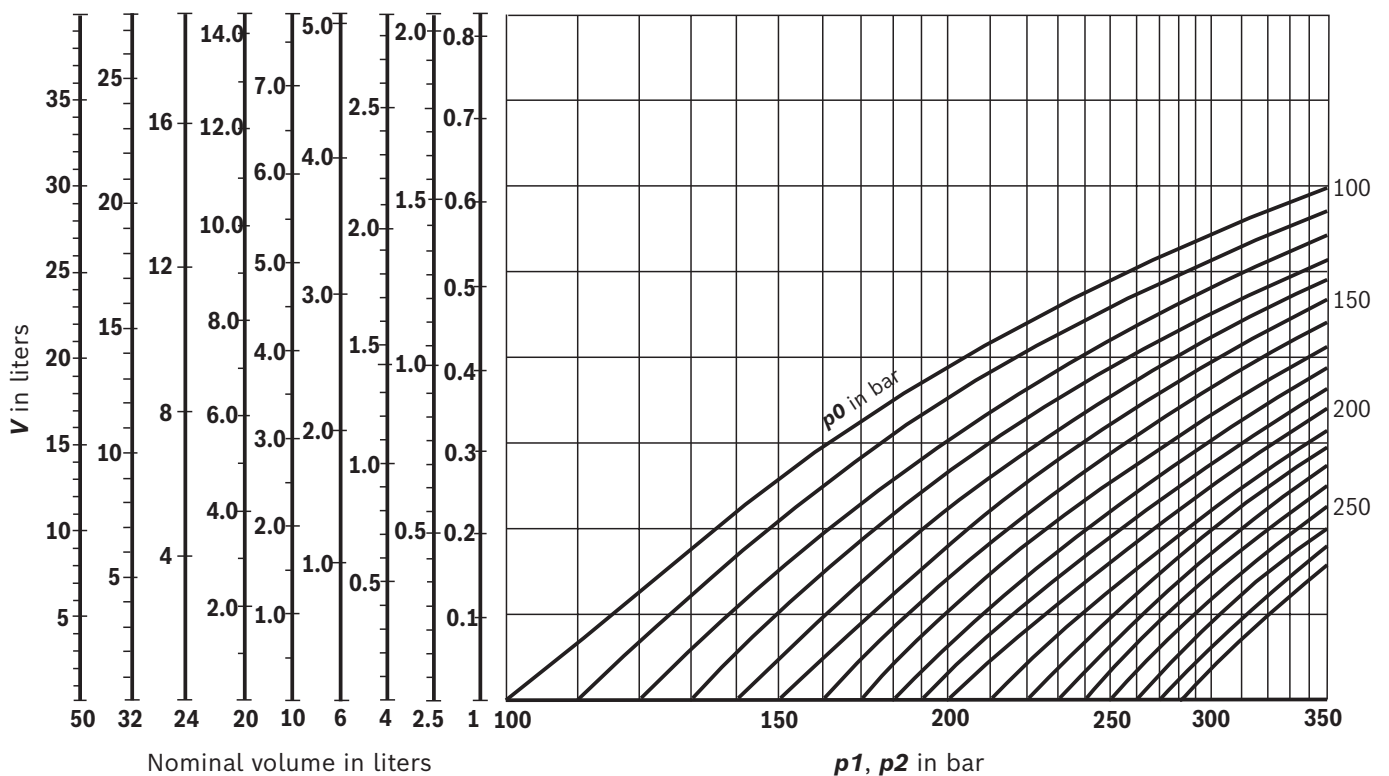


Characteristic curves

Adiabatic state changes $p_0 = 1 \dots 90$ bar

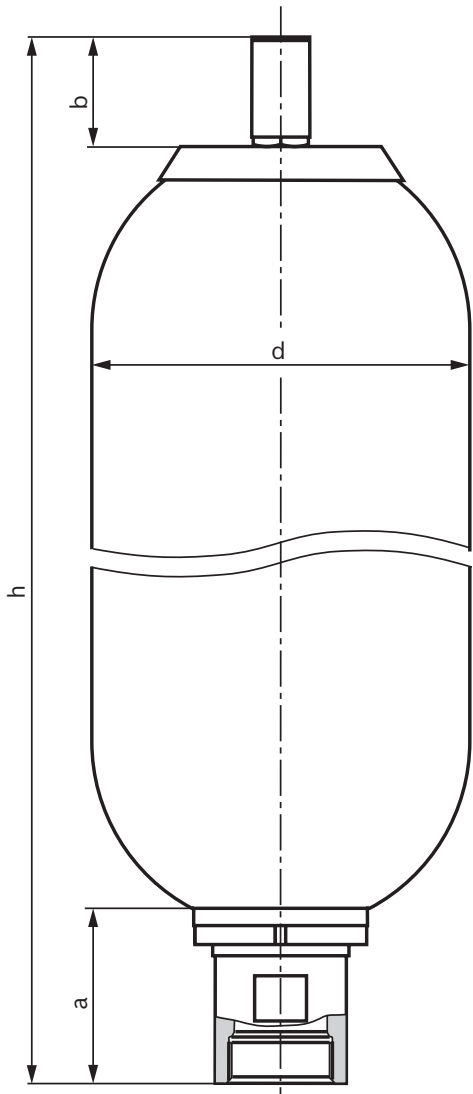


Adiabatic state changes $p_0 = 100 \dots 280$ bar



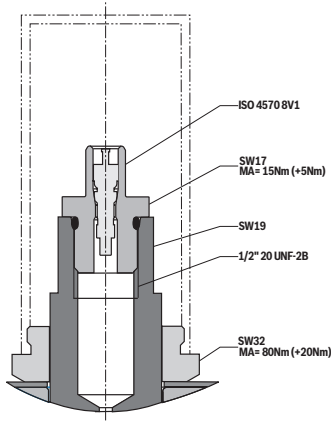
Dimensions

(dimensions in mm)



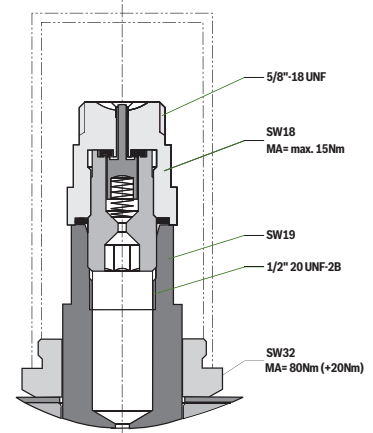
Gas port form "2"

Gas valve ISO 4570 8V1



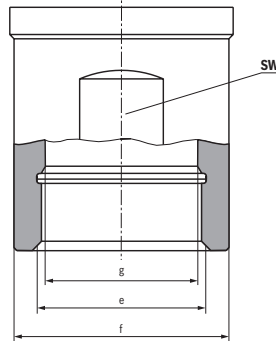
Gas port form "3"

Gas valve 5/8"-18 UNF



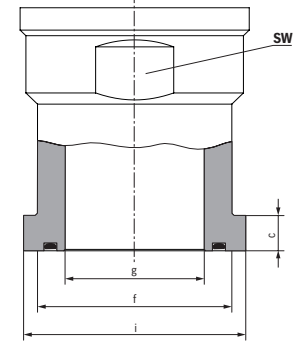
Type of mounting "G"

Pipe thread with radial sealing surface



Type of mounting "F"

Flange mounting with axial sealing surface



Type of mounting G

Nominal volume [L]	Port size	h	d	a	b	e	f	g	i	j	SW
1	G05	337.5±17	Ø114±1.14	65±3	71.5±3	G ³ / ₄ "	Ø52.4	Ø23H7	-	-	50
2.5	G07	541.5±21	Ø114±1.14	65±3	71.5±3	G1 ¹ / ₄ "	Ø52.4	Ø36H8	-	-	50
4	G07	421.5±21	Ø168±1.68	65±3	71.5±3	G1 ¹ / ₄ "	Ø52.4	Ø36H8	-	-	50
6	G07	552.5±17	Ø168±1.68	65±3	71.5±3	G1 ¹ / ₄ "	Ø52.4	Ø36H8	-	-	50
10	G09	575±16	Ø219±2.19	101.5±3	71.5±3	G2"	Ø76	Ø54H7	-	-	70
20	G09	885±16	Ø219±2.19	101.5±3	71.5±3	G2"	Ø76	Ø54H7	-	-	70
24	G09	1020±16	Ø219±2.19	101.5±3	71.5±3	G2"	Ø76	Ø54H7	-	-	70
32	G09	1405±16	Ø219±2.19	101.5±3	71.5±3	G2"	Ø76	Ø54H7	-	-	70
50	G09	1920±16	Ø219±2.19	101.5±3	71.5±3	G2"	Ø76	Ø54H7	-	-	70

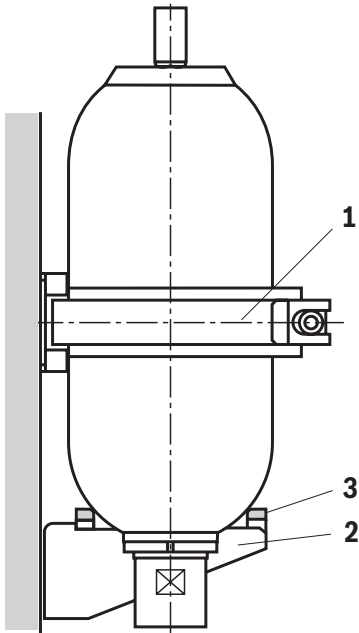
Type of mounting F

Nominal volume [L]	Port size	h	d	a	b	e	f	g	i	j	SW
10	S19	577±16	Ø219±2.19	103.5±3	71.5±3	-	Ø67	Ø48	Ø76.6	12.6	70
20	S19	887±16	Ø219±2.19	103.5±3	71.5±3	-	Ø67	Ø48	Ø76.6	12.6	70
24	S19	1022±16	Ø219±2.19	103.5±3	71.5±3	-	Ø67	Ø48	Ø76.6	12.6	70
32	S19	1407±16	Ø219±2.19	103.5±3	71.5±3	-	Ø67	Ø48	Ø76.6	12.6	70
50	S19	1922±16	Ø219±2.19	103.5±3	71.5±3	-	Ø67	Ø48	Ø76.6	12.6	70

Accessories

(dimensions in mm)

HAB mounting elements

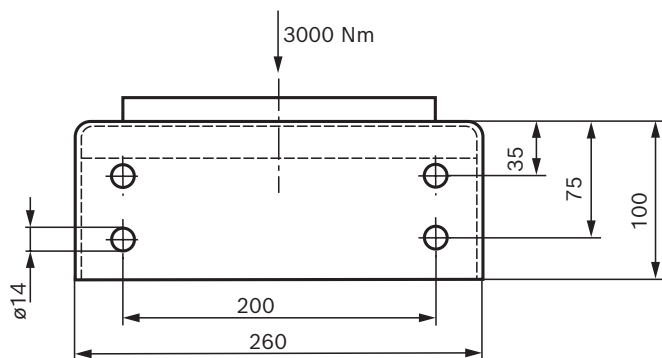


Description	Material number	Nominal volume in liters				
		1 ... 2.5	4 ... 6	10	20 ... 32	50
Mounting clamp 110-120 MM	1531316021	1				
Mounting clamp 160-170 MM	1531316022		2			
Mounting clamp 214-224 MM	1531316023			1	2	
Mounting clamp 216-222 MM	R901446479					2
Console	1531334008			1	1	1
Rubber support ring	1530221042			1	1	1

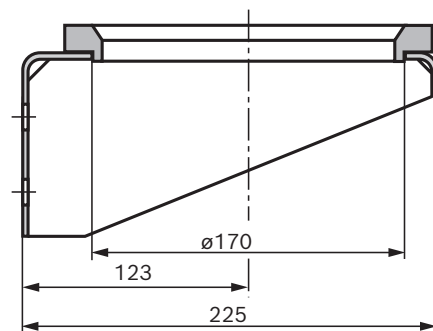
- 1 Clamp
- 2 Console
- 3 Rubber support ring

Console and rubber support ring

Console (material number: 1531334008)

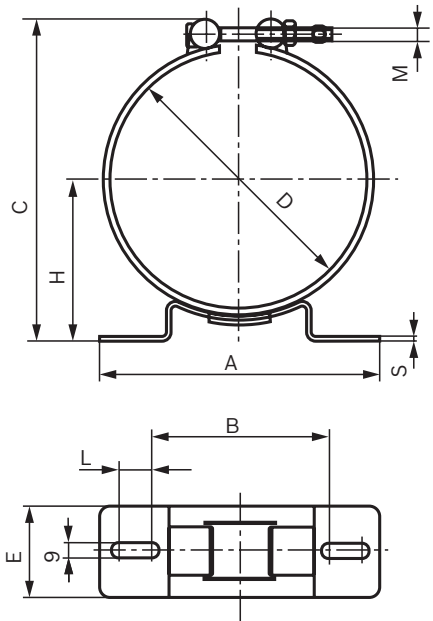


Rubber support ring (material number: 1530221042)

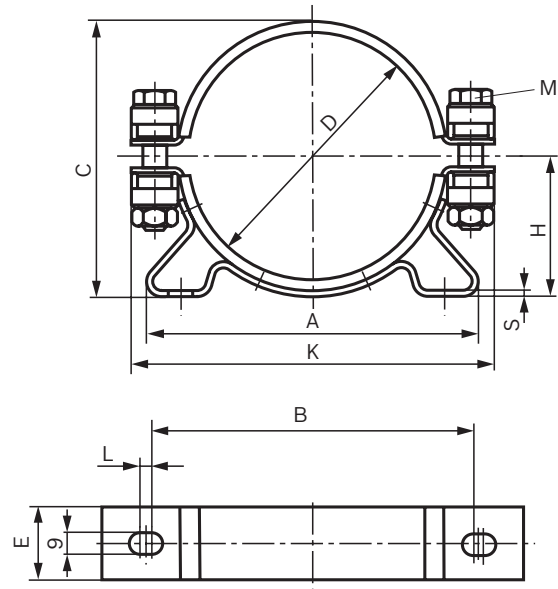


Accessories: Mounting clamps
(dimensions in mm)

Type F1



Type F2



Denomination		Dimensions										Material number
		A	B	C	D	E	H	K	L	M	S	
Mounting clamp 110-120 MM	F1	135	96	150	110-120	50	64-69	-	6	M8	3	1531316021
Mounting clamp 160-170 MM	F1	237	147	200	160-170	50	90-95	-	35	M8	4	1531316022
Mounting clamp 214-224 MM	F1	237	147	254	214-224	50	120-125	-	35	M8	4	1531316023
Mounting clamp 216-222 MM	F2	254	212	233	216-222	30	121.5-124.5	278	4	M12	3	R901446479

Accessories: Charging and test device (dimensions in mm)

Measurement case



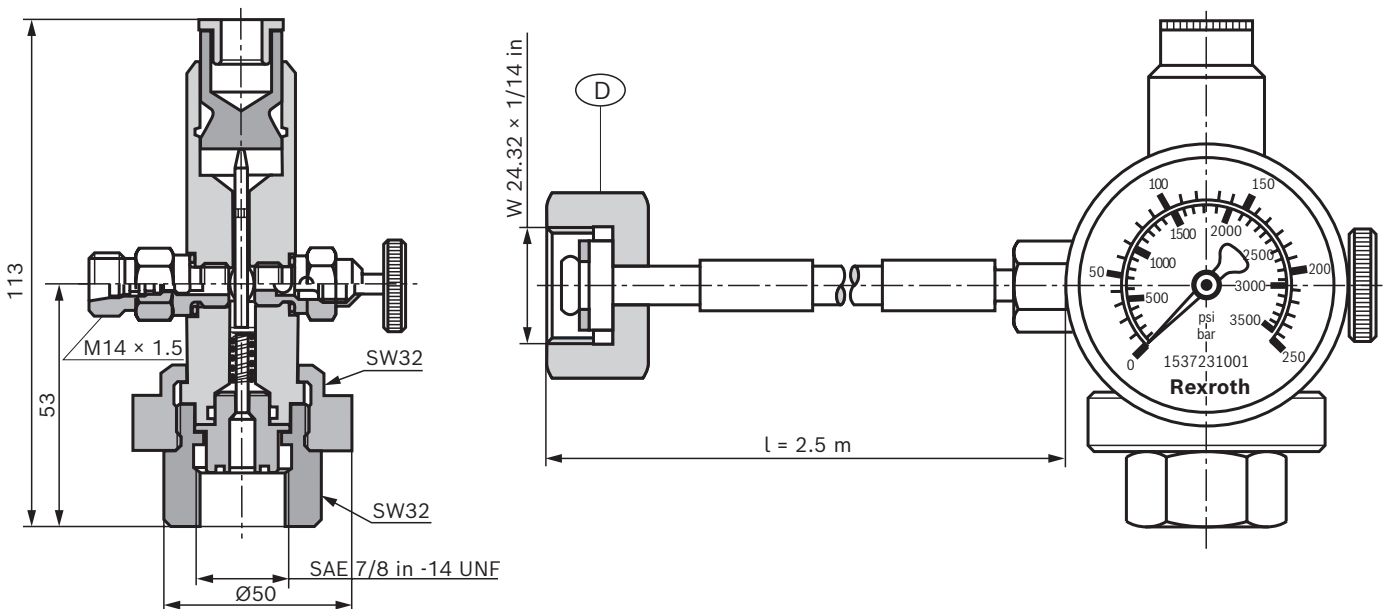
Measurement case	Material number
▶ for bladder-type accumulators (HAB)	0538103011
▶ for bladder and diaphragm accumulator (HAB/HAD)	0538103014
▶ Spare parts:	
– Case (without contents)	R901079781
– Charging and test valve HAB	0538103005
– Charging and test valve HAD	0538103006
– Pressure gauge 0 to 250 bar	1537231001
– Hose l = 2.5 m with transition socket	1530712005

(D)

Supplemental parts (separate order)		Material number
Pressure gauge 0 ... 25 bar		R900033955
Pressure gauge 0 ... 60 bar		1537231002
Pressure gauge 0 ... 400 bar		1537231005
Transition socket	(F)	1533391010
	(GB)	1533391011
	(USA)	1533391012
	(KR)	1533391013
	(J)	R900216133
	(RUS)	1533391015
Hose l = 5 m with transition socket	(D)	1530712006

Charging and test valve

Valve body with check valve, drain valve, pressure gauge connection and gas hose connection

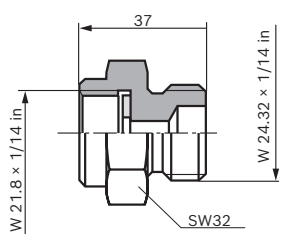
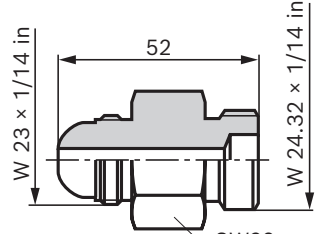
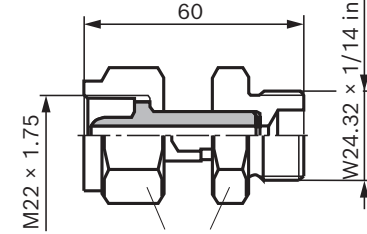
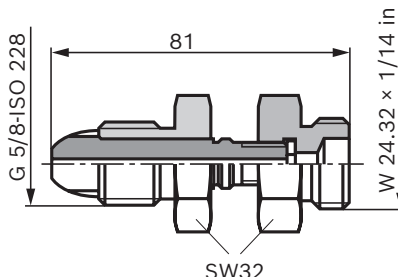
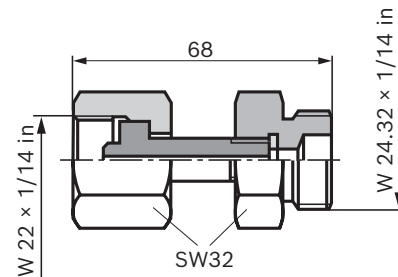
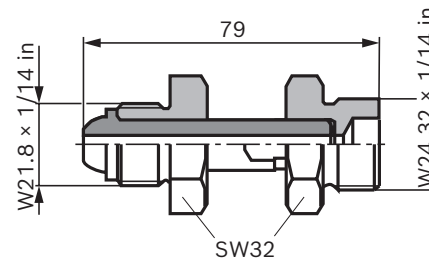
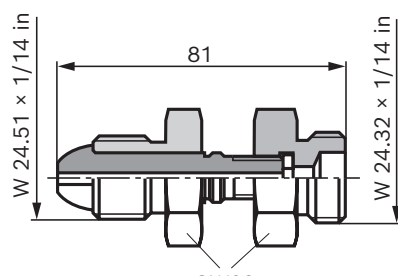
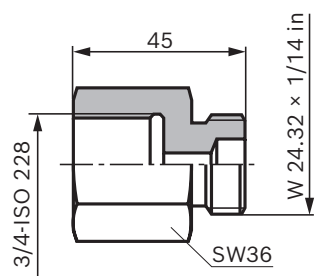
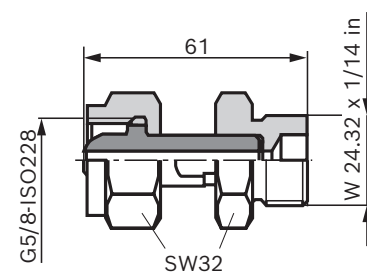


Notices:

Above the gas valve of the accumulator, an installation space of 200mm must be provided for use of the testing and charging device.

For respective adapters, see page 14 and 15

Accessories: Adapter for nitrogen bottle to cap nut
(dimensions in mm)

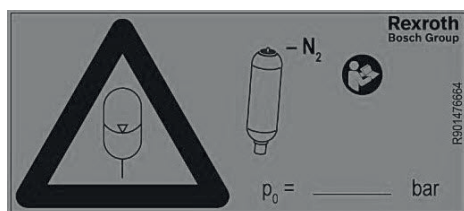
<p>Material number: 1533391010</p> 	<p>Material number: 1533391013</p> 	<p>Material number: R900034782</p> 
<p>Material number: 1533391011</p> 	<p>Material number: R900216133</p> 	<p>Material number: R900708208</p> 
<p>Material number: 1533391012</p> 	<p>Material number: 1533391015</p> 	<p>Material number: R901070776</p> 

Accessories: Adapter for nitrogen bottle to cap nut (dimensions in mm)

Country ¹⁾	Material number								
	1533391010	1533391011	1533391012	1533391013	R900216133	1533391015	R900034782	R900708208	R901070776
Brazil		x							
Bulgaria		x							
China									x
France	x								
Greece		x							
United Kingdom		x							
India		x							
Italy								x	
Japan					x				
Canada			x						
North Korea				x					
South Korea				x					
Malaysia		x							
Mexico	x								
Pakistan		x							
Romania	x								
Russia						x			
Spain		x							
Saudi Arabia	x								
Singapore		x							
Taiwan							x		
Turkey		x							
USA			x						

¹⁾ Other countries upon request

Accessories: Warning sign ¹⁾

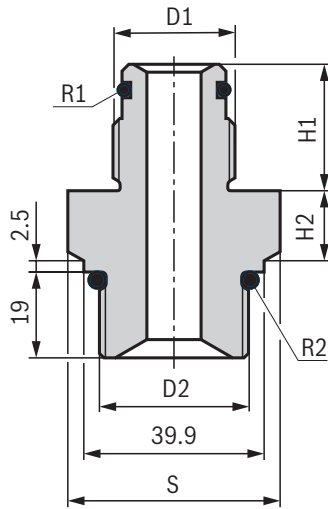


Warning sign	Material number
<ul style="list-style-type: none"> ▶ for bladder-type accumulators HAB1-HAB2.5 Size: 100 mm x 45 mm Color: yellow 	R901476664
<ul style="list-style-type: none"> ▶ for bladder-type accumulators HAB4-HAB50 Size: 200 mm x 90 mm Color: yellow 	R901440344

¹⁾ The warning sign is available for order as of a batch size of 100 units.

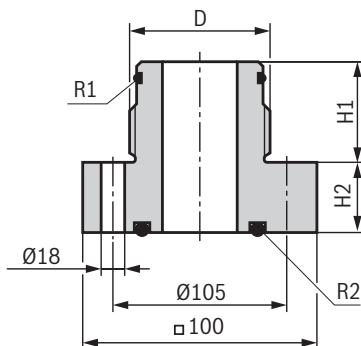
Accessories: Accumulator adapter
(dimensions in mm)

Adapter on metric male thread



Nominal volume [L]	according to ISO 228		Dimensions [mm]			Order number complete with seal rings R1 and R2
	D1	D2	H1	H2	S	
1	G3/4	M33 × 2	28	15.5	SW41	R900862699
2.5 ... 6	G1 1/4	M33 × 2	37	16.5	SW46	R900862700
10 ... 50	G2	M33 × 2	43	20.5	SW65	R900862701

Adapter on flange connection

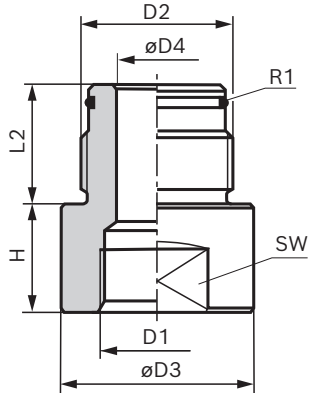


Nominal volume [L]	according to ISO 228	Dimensions [mm]		Order number complete with seal rings R1 and R2
	D	H1	H2	
10 ... 50	G2	44	29	R901518464

Accessories: Accumulator adapter (dimensions in mm)

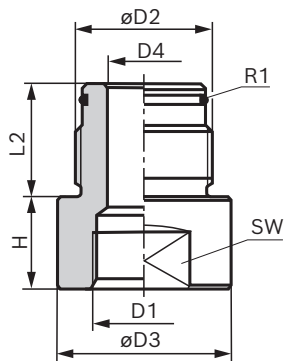
Adapter on metric internal thread

(HAB..-1X auf HAB..-4X und -6X)



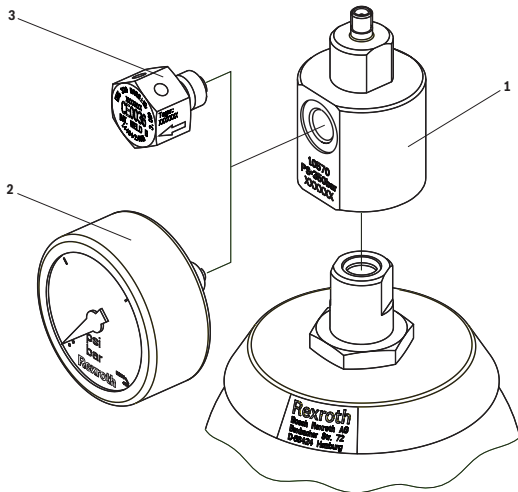
Nominal volume [L]	according to ISO 228		according to ISO 228		Dimensions [mm]					Material number complete with seal ring R1
	D2	M _A [Nm]	D1	M _A [Nm]	H	L2	ØD3	ØD4	SW	
1	G3/4	180 ⁺¹⁸	M30 × 1.5	180 ⁺¹⁸	32	28	46	12	41	R901252863
2.5 ... 6	G1 1/4	450 ⁺⁴⁵	M40 × 1.5	400 ⁺⁴⁰	43	37	60	20	55	R901252864
10 ... 50	G2	500 ⁺⁵⁰	M50 × 1.5	450 ⁺⁴⁵	41	44	78	32	70	R901252865

Adapter for reduction of pipe connection



Nominal volume [L]	according to ISO 228		according to ISO 228		Dimensions [mm]					Material number complete with seal ring R1
	D2	M _A [Nm]	D1	M _A [Nm]	H	L2	ØD3	ØD4	SW	
1	G3/4	180 ⁺¹⁸	G3/8	70 ⁺⁷	8	28	38	12	32	R901252880
2.5 ... 6	G1 1/4	450 ⁺⁴⁵	G1/2	115 ⁺¹²	8	37	60	24	55	R901252884
	G1 1/4	450 ⁺⁴⁵	G3/4	180 ⁺¹⁸	8	37	60	24	55	R901252881
10 ... 50	G2	500 ⁺⁵⁰	G1/2	115 ⁺¹²	20	44	75	30	65	R901252885
	G2	500 ⁺⁵⁰	G3/4	180 ⁺¹⁸	20	44	75	30	65	R901252882
	G2	500 ⁺⁵⁰	G1	310 ⁺³¹	20	44	75	30	65	1533C45045
	G2	500 ⁺⁵⁰	G1 1/2	450 ⁺⁴⁵	40	44	75	32	65	R901252883

Accessories: Pressure monitoring



1 Adapter with G1/4 port

1535400171 Adapter HAB gas-side BG

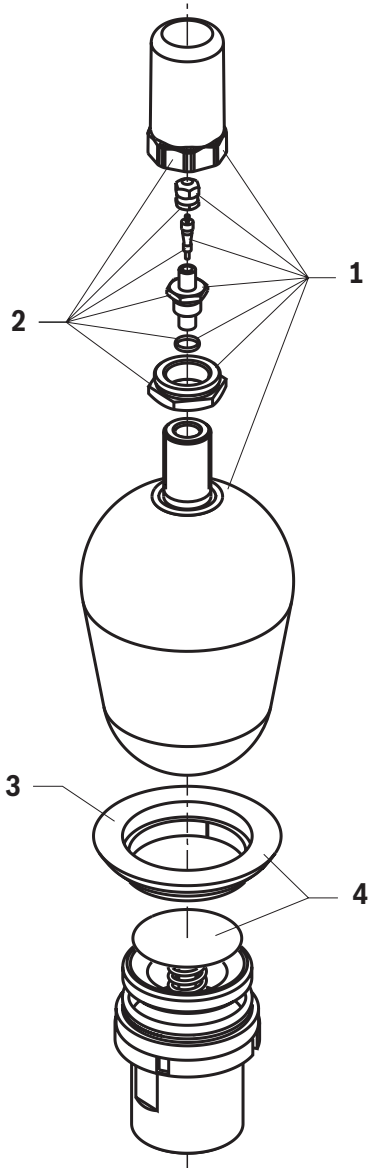
2 Pressure gauge for G1/4 port

1537231002 Pressure gauge 0...60 bar
1537231001 Pressure gauge 0...250 bar
1537231005 Pressure gauge 0...400 bar

3 Bursting discs for G1/4 port

R901476100 Bursting disc G1/4; 300 bar
R901480366 Bursting disc G1/4; 330 bar
R901480367 Bursting disc G1/4; 350 bar
R901480368 Bursting disc G1/4; 410 bar

Spare parts



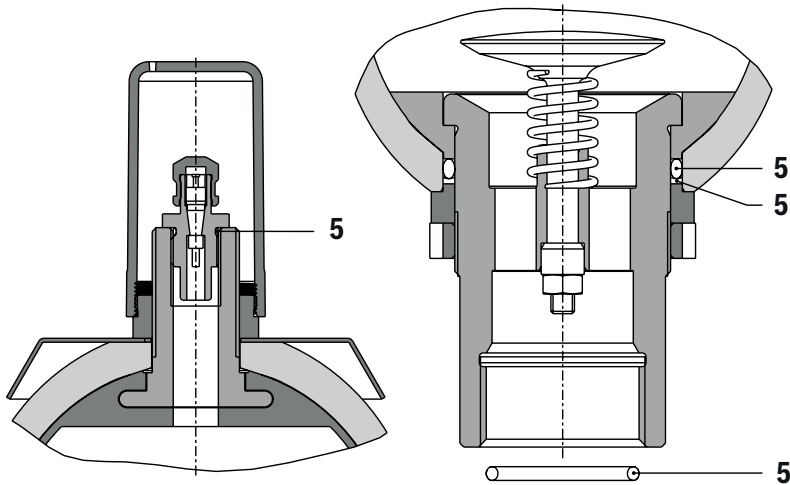
V_{nom} [L]	Pos. 1 Spare bladder with gas valve form "2" and seal kit ¹⁾			
	Material number			
	NBR	ECO	FKM	HNBR
1	R901437540	-	-	R901438250
2.5	R901437541			R901438251
4	R901437542	R901438234	-	R901438252
6	R901437543	-		R901438253
10	R901437544	R901438235	R901438240	R901438254
20	R901437545	-	R901438241	R901438255
24	R901437546		-	R901438256
32	R901437547	R901438236	R901438242	R901438257
50	R901437548	-	R901438243	R901438258

V_{nom} [L]	Pos. 2 Gas valve		Pos. 3 Holding ring	
	Material number		Material number	
	Form "2" ISO 4570 8V1	Form "3" 5/8"-18 UNF	NBR, HNBR, ECO	FKM
1	R901438300	R901531340	R901438280	-
2.5				
4				
6				
10			R901438281	R901438291
20				
24				
32				
50				

V_{nom} [L]	Pos. 4 Oil valve kit consisting of holding ring and oil valve	
	Material number	
	NBR, HNBR, ECO	FKM
1	-	-
2.5		
4		
6	R901438270	R901449230
10		
20	R901438271	
24		
32		
50		

¹⁾ Spare bladder with gas valve form "3" and seal kit on request.

Spare parts
(dimensions in mm)



V_{nom} [L]	Pos. 5 Seal kit	
	Material number	
	NBR, HNBR, ECO	FKM
1	R901441920	
2.5	R901441921	-
4		
6		
10	R901441922	R901441923
20		
24		
32		
50		

Important notes

Intended use

Rexroth bladder-type accumulators type HAB..-6X are intended for set-up of hydraulic drive systems in stationary mechanical engineering and plant construction.

In mobile applications or applications in which acceleration forces are applied to the bladder-type accumulator during intended use, its use is permitted only following release by the competent Rexroth product manager. Please contact technical sales for this.

Rexroth bladder-type accumulators type HAB..-6X are not intended for private use.

Project planning information

Bladder-type accumulators have to be safely and permanently fastened to the machine or system using mounting elements. The fastening is intended to keep the oil port tension-free. Particularly, no tension forces or static or dynamic inertia forces should be applied to the oil port. Thermal expansion of the supporting structure and vibrations originating from the environment should be considered in the selection of suitable mounting points.

Safety instructions for hydraulic accumulators

For bladder-type accumulators type HAB..-6X, operating instructions 50171-B must be observed. The machine end-user will have sole responsibility for complying. General information for hydro-pneumatic accumulators in hydraulic system can be found in ISO 4413.

Keep all documents included in the delivery in a safe place; they will be required by the expert in recurring tests.

Legal provisions

Hydro-pneumatic accumulators are pressure vessels and subject to the application of national provisions and/or regulations valid at the place of installation.

In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.

Special regulations are to be observed in shipbuilding, aircraft construction, mining, etc.

Authorized persons

According to Ordinance on Industrial Safety and Health (BetrSichV), only authorized persons may carry out tests. Authorized persons are such persons having obtained the required expert knowledge through professional training, experience and recent professional activity.

Safety equipment

Notice:

Hydro-pneumatic accumulators have to be secured against operation outside of the admissible limits according to Pressure Equipment Directive 2014/68/EU.

In order not to exceed the maximum operating pressure, Bosch Rexroth recommends the use of an accumulator shut-off block type ABZSS according to data sheet 50131.

Further information**Operating instructions valid for HAB1 ... HAB50**

Language	Operating instructions
German	RE 50171-B
English	RE 50171-B
French	RF 50171-B
Spanish	RS 50171-B
Italian	RI 50171-B
Chinese	RC 50171-B
Russian	R-RS 50171-B
Norwegian	R-NO 50171-B
Polish	R-PL 50171-B
Czech	R-CZ 50171-B
Romanian	R-RU 50171-B
Hungarian	RU 50171-B
Portuguese	RP 50171-B
Swedish	R-SK 50171-B
Finnish	R-SF 50171-B
Turkish	RT 50171-B

CE Declarations of Conformity

In German, English, French

Type	Document number
HAB1-...-60/...BA	-
HAB2.5-...-60/...CE	RA56313069
HAB4-...-60/...CE HAB6-...-60/...CE	RA56313070
HAB10-...-60/...CE HAB20-...-60/...CE HAB24-...-60/...CE HAB32-...-60/...CE HAB50-...-60/...CE	RA56313071

- ▶ Accumulator shut-off block:
- ▶ Selection of filters:
- ▶ Information on available spare parts:

Data sheet 50131

Accumulator stations

Type ABSBG

RE 50135

Edition: 2016-07

Replaces: 01.15



H7860_d

- ▶ Component series 1X
- ▶ With diaphragm type accumulator according to data sheet 50150

Features

- ▶ Accumulator station with shut-off block
- ▶ Diaphragm type accumulator
- ▶ Shut-off block with integrated shut-off valve, safety valve (type-examination tested) and drain valve
- ▶ Drain valve can be operated manually or electrically
- ▶ Glycerin-filled pressure gauge with red indication of the maximum admissible operating pressure on the dial
- ▶ Console for weld or screw connection
- ▶ Assembly prepared for external equipotential bonding

Contents

Features	1
Ordering code	2, 3
Technical data	4, 5
Symbols	6
Spare parts and accessories	6
Standard program including preferred types	7, 8
Dimensions	9 ... 11
Commissioning, maintenance and operating instructions	12 ... 14

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15					
ABSBG	-	1X	/	M		N	-		/				G24	V	/	K	6		

01	Accumulator station (with diaphragm type accumulator according to directive 2014/68/EU)	ABSBG
02	Component series 10 to 19 (10 to 19: unchanged installation and connection dimensions)	1X

Hydraulic accumulator

03	Design	
	Diaphragm type accumulator according to data sheet 50150	M

Accumulator volume in liters (design)

04	Diaphragm type accumulator	
	0.7 liters	0.7
	1.4 liters	1.4
	2.0 liters	2.0
	2.8 liters	2.8
	3.5 liters	3.5

Bladder/diaphragm material

05	e.g. Acrylonitrile-butadiene rubber (NBR)	N
----	---	---

Country acceptance for hydraulic accumulator

06	Short symbol for country acceptance in Europe, Russia and China from the manufacturer's type key e.g.	
	Acceptance according to 2014/68/EU	CE
	Acceptance according to SELO (China)	88/CHN
	Acceptance according to GOST (Russia)	71/GOST
	Operating instructions	BA

Accumulator shut-off block according to data sheet 50131

07	ABZSS 10 pressure relief valve 6E	10
----	-----------------------------------	----

Unloading

08	manual and electro-magnetic	E
	manual	M

Set pressure at the pressure relief valve

09	100 bar	100
	140 bar	140
	210 bar	210
	330 bar	330

Voltage type

10	Direct voltage 24 V	G24
----	---------------------	-----

Seal material

11	FKM	V
----	-----	---

Mounting construction kit

12	Mounting using assembly kit K (console K)	K
----	---	---

ABZMM pressure gauge according to data sheet 50205

13	DN63	6
----	------	---

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15			
ABSBG	-	1X	/	M		N	-		/		G24	V	/	K	6		

Pressure gauge scale

14	bar/MPa	M
	bar/psi	P

Accumulator manufacturer

15	Bosch Rexroth	DC
	Parker Olaer	OL

Order example:**ABSBG-1X/M0,7N-CE/10E140G24V/K6MDC**

Technical data

(For applications outside these parameters, please consult us!)

Accumulator		
Design		Diaphragm type accumulator
Installation position		Any, preferably with the fluid connection socket at the bottom
Ambient temperature range	°C	-15 ... +65
Line connection		Screw-in thread
Hydraulic fluid		Hydraulic oil according to DIN 51524; other liquids on request
Hydraulic fluid temperature range (others on request)	°C	-10 ... +80 (NBR diaphragm) -35 ... +80 (ECO diaphragm)
Acceptance specification for the accumulator	CE/BA	Acceptance according to 2014/68/EU or the operating instructions
	China	SELO
	Russia	GOST

hydraulic, diaphragm type accumulator								
Nominal volume	V_{rated}	l	0.7	1.4	2.0	2.8	3.5	
Effective gas volume	V_{eff}	l	0.75	1.4	1.95	2.7	3.5	
Maximum flow	q_{max}	l/min	40	40	60	60	60	
Maximum operating pressure	p_{max}	bar	350	350	350	350	350	
Max. adm. pressure fluctuation range	Δp_{dyn}	bar	130	130	130	130	130	

pneumatic		
Charging gas		Nitrogen, cleanliness class 4.0, N ₂ = 99.99 vol. %
Gas filling pressure	p_0	bar 2 (Exception: diaphragm type accumulators with SELO acceptance are not prestressed)

Technical data

(For applications outside these parameters, please consult us!)

Shut-off block		
Seal material		FKM seals (NBR seals on request)
Operating temperature range	°C	-15 ... +80
Maximum operating pressure	bar	350
Block material		Steel
Direct operated pressure relief valve		DBDS...K1X/...VB or DBDS...K1X/...E according to data sheet 25402
Cartridge seat valve		KSDER1PB/HN9V according to data sheet 18136-20
Protection class according to VDE 0470-1 – version "K4" (DIN EN 60529), DIN 40050-9		IP 65 with mating connector mounted and locked
Voltage type	V	24 (in case of electro-magnetic unloading "E")
Maximum admissible degree of contamination of the hydraulic fluid; Cleanliness class according to ISO 4406 (c)		Class 20/18/15

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oils	HL, HLP	NBR, FKM	DIN 51524
Bio-degradable	– insoluble in water	HETG	VDMA 24568
		HEES	
	– soluble in water	HEPG	VDMA 24568

Important information on hydraulic fluids!

- ▶ For more information and data on the use of other hydraulic fluids, please refer to data sheet 90220 or contact us!
- ▶ There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- ▶ The flash point of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.

- ▶ **Flame-resistant – containing water:** The maximum pressure differential per control edge is 50 bar. Pressure pre-loading at the tank port > 20% of the pressure differential; otherwise, increased cavitation. The pressure peaks should not exceed the maximum operating pressures!
- ▶ **Bio-degradable:** When using bio-degradable hydraulic fluids that are zinc-solvent, zinc may accumulate in the fluid (700 mg zinc per pole tube).

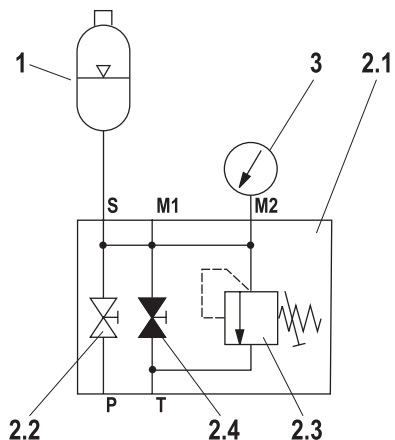
Pressure gauge		
Size	bar	63
Pressure gauge		Glycerin
Double scale		bar/MPa

Surface treatment

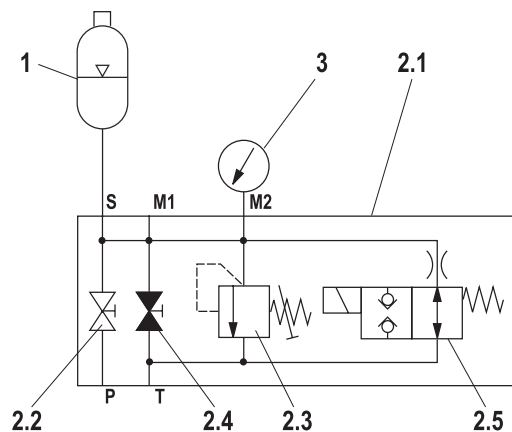
All steel components and components without protective coating are coated prior to installation (minimum corrosion protection time of 12 h in salt spray test). Then, the devices, components and the piping are installed. All components, assemblies, controls, pipes, fittings and standard parts keep the supplied surface protection and are not additionally coated. The corrosion protection is determined by the least protected element in the assembly.

Symbols

Accumulator station with manually operated drain valve



Accumulator station with electro-mechanically operated drain valve



- 1** Hydraulic accumulator
- 2.1** Accumulator shut-off block with:
- 2.2** System shut-off cock
- 2.3** Pressure relief valve (type-examination tested)
- 2.4** Manual unloading
- 2.5** Electro-magnetic unloading (only version E)
- 3** Pressure gauge with red indication of the maximum admissible operating pressure

Spare parts and accessories

- ▶ Diaphragm type accumulator with CE/BA acceptance according to data sheet 50150
- ▶ Shut-off block manual/electrical according to data sheet 50131
- ▶ Pressure gauge according to data sheet 50205
- ▶ Warning sign according to RNI 17506-001

Consoles contained in the assembly kit are intended for mounting by means of screws and nuts or for welding to suitable frames or design components.

Standard program including preferred types: Accumulator stations

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	$\sim qv_{max}$ DBDS in l/min	CE/BA acceptances				Acceptance China		Acceptance Russia		
					Description	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾
Diaphragm type accumulator	0.7	100	10	25	ABSBG-1X/M 0,7N-BA /10M100 V/K6M DC	R901301879	11	A3		R901302149	A3	R901302248	A3
		140	10	52	ABSBG-1X/M 0,7N-BA /10M140 V/K6M DC	R901301881	11	A3		R901302150	A3	R901302250	A3
		210	10	52	ABSBG-1X/M 0,7N-BA /10M210 V/K6M DC	R901280011	11	A3	K	R901302151	A3	R901302251	A3
	1.4	330	10	52	ABSBG-1X/M 0,7N-BA /10M330 V/K6M DC	R901280012	11	A3		R901302152	A3	R901302252	A3
		100	10	25	ABSBG-1X/M 1,4N-CE /10M100 V/K6M DC	R901301884	14	A3		R901302157	A3	R901302259	A3
		140	10	52	ABSBG-1X/M 1,4N-CE /10M140 V/K6M DC	R901280013	14	A2		R901290489	A3	R901302261	A3
	2	210	10	52	ABSBG-1X/M 1,4N-CE /10M210 V/K6M DC	R901301885	14	A3	K	R901302158	A3	R901302262	A3
		330	10	52	ABSBG-1X/M 1,4N-CE /10M330 V/K6M DC	R901280014	14	A3		R901302159	A3	R901302263	A3
		100	10	25	ABSBG-1X/M 2,0N-CE /10M100 V/K6M DC	R901280015	16	A3		R901302167	A3	R901302269	A3
	2.8	140	10	52	ABSBG-1X/M 2,0N-CE /10M140 V/K6M DC	R901301889	16	A3		R901302168	A3	R901302270	A3
		210	10	52	ABSBG-1X/M 2,0N-CE /10M210 V/K6M DC	R901301890	16	A3	K	R901302169	A3	R901302271	A3
		330	10	52	ABSBG-1X/M 2,0N-CE /10M330 V/K6M DC	R901280016	16	A3		R901302170	A3	R901302272	A3
3.5	100	10	25	ABSBG-1X/M 2,8N-CE /10M100 V/K6M DC	R901301893	21	A3		R901302175	A3	R901302277	A3	
	140	10	52	ABSBG-1X/M 2,8N-CE /10M140 V/K6M DC	R901301894	21	A3		R901302176	A3	R901302278	A3	
	210	10	52	ABSBG-1X/M 2,8N-CE /10M210 V/K6M DC	R901301895	21	A3	K	R901302177	A3	R901302279	A3	
3.5	330	10	52	ABSBG-1X/M 2,8N-CE /10M330 V/K6M DC	R901280017	21	A3		R901302178	A3	R901302281	A3	
	100	10	25	ABSBG-1X/M 3,5N-CE /10M100 V/K6M DC	R901301900	24	A3		R901302186	A3	R901302286	A3	
	140	10	52	ABSBG-1X/M 3,5N-CE /10M140 V/K6M DC	R901301901	24	A3		R901302187	A3	R901302287	A3	
3.5	210	10	52	ABSBG-1X/M 3,5N-CE /10M210 V/K6M DC	R901301902	24	A3	K	R901302188	A3	R901302289	A3	
	330	10	52	ABSBG-1X/M 3,5N-CE /10M330 V/K6M DC	R901280018	24	A3		R901302189	A3	R901302290	A3	

¹⁾ MKZ = material mark; A2 = preferred delivery range; A3 = standard delivery range

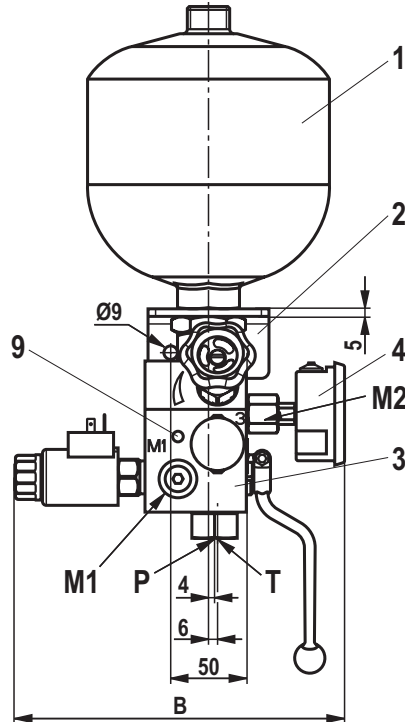
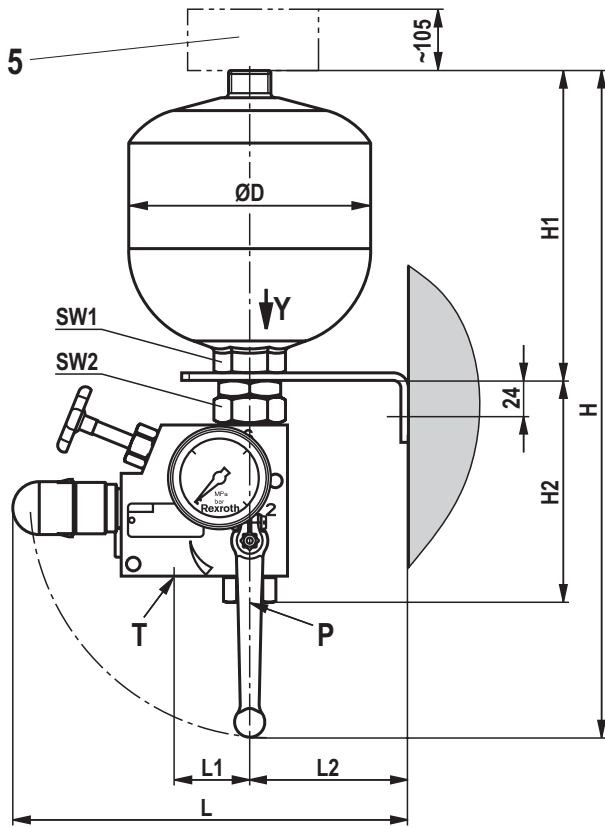
Standard program including preferred types: Accumulator stations

Standard program including preferred types with electrically operated drain valve (other versions on request)													
Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	~ qv _{max} DBDS in l/min	Description	CE/BA acceptances				Acceptance China		Acceptance Russia	
						Material no.	Weight in kg	MKZ 1)	Type of mounting	Material no.	MKZ 1)	Material no.	MKZ 1)
Diaphragm type accumulator	0.7	100	10	25	ABSBG-1X/M 0,7N-BA /10E100G 24V/K6M DC	R901301882	11	A3		R901302153	A3	R901302254	A3
		140	10	52	ABSBG-1X/M 0,7N-BA /10E140G 24V/K6M DC	R901301883	11	A3	K	R901302154	A3	R901302255	A3
		210	10	52	ABSBG-1X/M 0,7N-BA /10E210G 24V/K6M DC	R901280001	12	A3		R901302155	A3	R901302256	A3
		330	10	52	ABSBG-1X/M 0,7N-BA /10E330G 24V/K6M DC	R901280002	11	A3		R901302156	A3	R901302258	A3
	1.4	100	10	25	ABSBG-1X/M 1,4N-CE /10E100G 24V/K6M DC	R901301886	14	A3		R901302160	A3	R901302264	A3
		140	10	52	ABSBG-1X/M 1,4N-CE /10E140G 24V/K6M DC	R901280003	14	A2	K	R901302161	A3	R901302265	A3
		210	10	52	ABSBG-1X/M 1,4N-CE /10E210G 24V/K6M DC	R901301887	14	A3		R901302163	A3	R901302266	A3
		330	10	52	ABSBG-1X/M 1,4N-CE /10E330G 24V/K6M DC	R901280004	14	A3		R901302164	A3	R901302267	A3
	2.0	100	10	25	ABSBG-1X/M 2,0N-CE /10E100G 24V/K6M DC	R901280005	16	A3		R901302171	A3	R901302273	A3
		140	10	52	ABSBG-1X/M 2,0N-CE /10E140G 24V/K6M DC	R901301891	17	A3	K	R901302172	A3	R901302274	A3
		210	10	52	ABSBG-1X/M 2,0N-CE /10E210G 24V/K6M DC	R901301892	17	A3		R901302173	A3	R901302275	A3
		330	10	52	ABSBG-1X/M 2,0N-CE /10E330G 24V/K6M DC	R901280006	16	A3		R901302174	A3	R901302276	A3
2.8	100	10	25	ABSBG-1X/M 2,8N-CE /10E100G 24V/K6M DC	R901301896	22	A3		R901302181	A3	R901302282	A3	
	140	10	52	ABSBG-1X/M 2,8N-CE /10E140G 24V/K6M DC	R901301898	22	A3	K	R901302182	A3	R901302283	A3	
	210	10	52	ABSBG-1X/M 2,8N-CE /10E210G 24V/K6M DC	R901301899	22	A3		R901302183	A3	R901302284	A3	
	330	10	52	ABSBG-1X/M 2,8N-CE /10E330G 24V/K6M DC	R901280007	22	A3		R901302185	A3	R901302285	A3	
3.5	100	10	25	ABSBG-1X/M 3,5N-CE /10E100G 24V/K6M DC	R901301903	24	A3		R901302190	A3	R901302291	A3	
	140	10	52	ABSBG-1X/M 3,5N-CE /10E140G 24V/K6M DC	R901301904	24	A3	K	R901302191	A3	R901302292	A3	
	210	10	52	ABSBG-1X/M 3,5N-CE /10E210G 24V/K6M DC	R901301905	25	A3		R901302192	A3	R901302293	A3	
	330	10	52	ABSBG-1X/M 3,5N-CE /10E330G 24V/K6M DC	R901280008	24	A3		R901302193	A3	R901302294	A3	

1) MKZ = material mark; A2 = preferred delivery range; A3 = standard delivery range

Dimensions: Mounting with bracket K (dimensions in mm)

Accumulator station with diaphragm type accumulator 0.7 to 3.5 liters

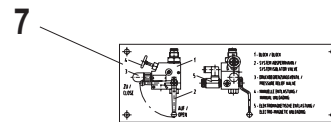
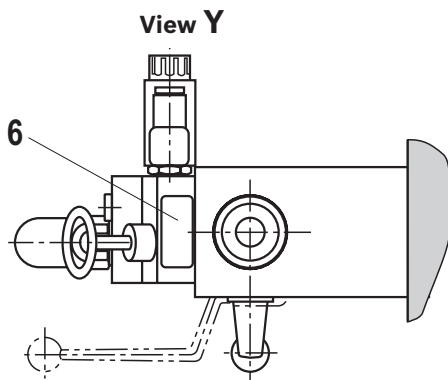


- 1 Hydraulic accumulator
- 2 Bracket
- 3 Shut-off block
- 4 Pressure gauge with red indication of the maximum admissible operating pressure
- 5 Space required for filling device
- 6 Name plate of the accumulator station
- 7 Functional sign (loose)
- 8 Warning sign (loose)
- 9 Threaded connection M8 for equipotential bonding

Connection designations:

- M1** Measuring port G 1/4
- M2** Pressure gauge connection G 1/4
- P** Pump connection G 1/2
- T** Tank port G 3/8

The gas filling pressure of the accumulators upon delivery is 2 bar.



ABSBG-... assembly kit	ØD	H	H1	H2	L	L1	L2	B	SW1	SW2
M0,7/10	128.5	402.5	171	132.5	262	50	105	217	SW 41	SW 41
M1,4/10	156	427.5	196						SW 50	SW 60
M2,0/10		512.5	281						SW 50	
M2,8/10	180	501.5	270						SW 55	
M3,5/10		541.5	310							

Commissioning, maintenance and operating instructions

General Information

- ▶ Observe the documentation for the machinery.
- ▶ Also observe the documentation pertaining to the other components, assemblies and partly completed machinery, which form part of the complete machinery.
- ▶ Observe the generally applicable, legal or otherwise binding European and national regulations as well as the relevant legislation for your country pertaining to the prevention of accidents and protection of the environment.
- ▶ Operating instructions according to data sheet of the accumulator
- ▶ Depending on the country of installation, national pressure vessel regulations need to be complied with.
- ▶ In the standard, the country acceptance is effected according to BA, CE as well as for China and Russia Other acceptances on request.
- ▶ Please indicate the country of installation in the order.
- ▶ Keep all documents included in the delivery in a safe place; they will be required by the expert in recurring tests.
- ▶ The machine end-user will have sole responsibility for complying with existing provisions.
- ▶ The accumulator stations in this edition are assemblies in the sense of directive 2014/68/EU, article 2, section 6 (Pressure Equipment Directive). However, they are not intended for exclusive commissioning. They are installed as a component of a larger assembly or system.
- ▶ The accumulator stations described here contain the entire equipment which is required for safety reasons according to DIN EN ISO 4413.
- ▶ The accumulator stations must not be modified; otherwise, the operating license according to directive 2014/68/EU will be lost and the dealer and/or manufacturer warranty will be forfeited.
- ▶ The accumulator stations may only be operated within the admissible limit values.
- ▶ Repairs may only be carried out by the manufacturer or their authorized dealers and agencies. Repairs performed by third parties invalidate the approval and release the manufacturer from all claims resulting from an unauthorized intervention.
- ▶ Assembly and maintenance must be implemented by authorized, instructed persons only.

Commissioning, maintenance and operating instructions

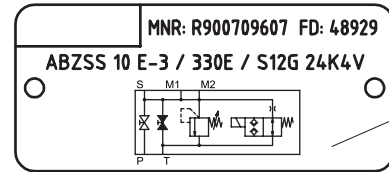
- ▶ The accumulator stations are provided with signs: **1**
 - 1. Name plate** specifying the pressure rating, identifies the device
 - 2. Functional sign**, identifies the components and elementary lever positions
 - 3. Warning sign**, has to be clearly visible and attached at the device or next to it.

Usually, the warning sign is in the languages according to the country acceptance. Other languages on request.

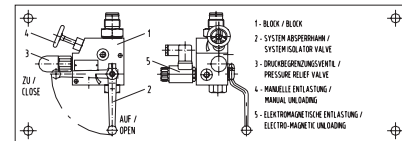
For hydraulic systems with one or several hydraulic accumulators whose warning signs are not visible after installation into the machine, an additional warning sign has to be attached visibly to the system, stating:

"CAUTION - system contains hydraulic accumulators."

The circuit diagram has to contain the same notice. With mounting "B" and "K", the warning signs and functional signs are supplied loosely and must be attached to or close to the accumulator station in a clearly visible position. The attachment of the signs must already be considered in the design.



Example





Vorsicht Druckbehälter	
Druckentlastung vor Beginn der Demontage	
Gasvorfülldruck: _____ bar	
Füllen nur mit Stickstoff _____ bar	
<p>Attention: Pressure vessel Discharge pressure prior to disassembly Gas pre-charge pressure: _____ bar Only fill with nitrogen.</p>	<p>Attenzione! Serbatoio in pressione Scaricare la pressione prima di iniziare lo smontaggio Pressione di precarica del gas: _____ bar Riempiere solo con azoto.</p>
<p>Attention: réservoir sous pression Déchargement avant le démontage Pression de précharge de gaz: _____ bars Seulement remplissage d'azote.</p>	<p>Atención. Recipiente a presión Descargar la presión antes del desmontaje Presión precarga gas: _____ bar Llenar sólo con nitrógeno.</p>
<p>Varning: Tryckbehållare Före demontering måste anläggningen göras trycklös Gas-försladdningsgas: Fylls enbart med kväve. _____ bar</p>	<p>Cuidado: Reservatório sob pressão Descarga antes da desmontagem Pressão de pré-charge de gás: Encher só com nitrogênio. _____ bar</p>
<p>ADVARSEL TRYKBEHOLDER TRYKFLASTES FOR FÆRDYNDELSE AF DEMONTAGE GAS- FØRSLADNING MA KUN FYLDES MED KVÆLSTOF. _____ BAR</p>	<p>Voorzichtig drukvat Druk ontlasten voor aanvang demontage Gas - voorvuldruk: _____ bar Alleen met stikstof vullen.</p>
<p>ADVARSEL TRYKBEHOLDER Trykk skal avlastes før demontasje Gas - Førladningsgass Ma kun fylles med nitrogen. _____ bar</p>	<p>HUOMIOI PAINEASTIA PAINEEPURKU ENHEN KÖRILAUSTOIDEN ALOITTAMISTA KAASUN ESITÄHTÖPAINA TÄTTÖ SALLITTU VAIN TYPIKKAASULLA. _____ BAR</p>
<p>ΠΡΟΣΟΧΗ ΔΕΞΙΩ ΤΥΠΟ ΠΙΣΤΙΣ ΕΠΙΣΤΡΟΦΗ ΠΡΟΣ ΤΗΝ ΑΡΧΗ ΤΗΣ ΕΡΓΑΣΙΑΣ ΠΡΟΣ ΤΗ ΣΥΜΠΛΗΡΩΣΗ ΤΗΣ ΠΡΟΕΤΙΜΑΣΙΑΣ ΤΗΣ ΠΙΣΤΙΣ ΕΠΙΣΤΡΟΦΗ ΜΟΝΟ ΜΕ ΑΖΩΤΟ ΕΠΙΣΤΡΟΦΗ ΜΟΝΟ ΜΕ ΑΖΩΤΟ. _____ BAR</p>	<p>Vigyázat, nyomtartály Szétzerelés előtt nyommentesíteni kell Gáz előtöltőnyomás: Csak nitrogénnel tölthető fel. _____ bar</p>
<p>Uwaga zbiornik ciśnieniowy Przed demontażem ciśnienie napełnienia gazu: Napełniać tylko azotem. _____ bar</p>	<p>Pozor tlakova nadoba Pred demontaz odslakovat Prisic tlak plynu. Plini jen dusikem. _____ bar</p>


MNR: R900751679

Commissioning, maintenance and operating instructions

Commissioning - Operating instructions according to data sheet of the accumulator!

	<p>DANGER Do not charge hydraulic accumulators with oxygen or air. Explosion hazard!</p> <ul style="list-style-type: none"> ▶ Prior to the initial commissioning, the hydraulic accumulator must be filled with nitrogen of class 4.0, pure (N₂ content 99.99 vol. %). The preset gas pressure necessary for the operation is indicated in the circuit diagrams and operating instructions. ▶ Only use suitable filling and testing devices for filling. We recommend using the charging and test devices by Bosch Rexroth according to data sheet 50150.
	<p>WARNING</p> <ul style="list-style-type: none"> ▶ Risk of injury caused by improper assembly. ▶ Hydraulic accumulators are energy stores. They may supply the energy for uncontrolled movements to actuators. ▶ Before beginning any repairs, the system must be depressurized on the oil and gas side and protected against unauthorized re-start. ▶ Do not carry out welding and soldering works or any mechanical processing at the accumulator tank! Any kind of work at the product invalidates the declaration of conformity and the operating license! <ul style="list-style-type: none"> – Explosion hazard due to welding and soldering works! – Danger of bursting during and after mechanical processing. ▶ A warning sign is enclosed to the accumulator station. It is to be attached to or close to the accumulator station in a clearly visible position.

Maintenance

	<p>Attention</p> <ul style="list-style-type: none"> ▶ In case of damage at the accumulator bladder or diaphragm, the accumulator will lose its function immediately. ▶ Loss of the initial gas tension will lead to damage at the accumulator bladder or the accumulator diaphragm if operation of the system is continued nevertheless. ▶ Check the initial gas tension in regular intervals.
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Legal provisions

- ▶ Hydraulic accumulators are pressure vessels and subject to the application national provisions and/or regulations valid at the place of installation.
- ▶ In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.
- ▶ As a standard, country acceptances are effected according to BA, CE as well as for China and Russia. Other acceptances on request.
- ▶ Special regulations are to be observed in shipbuilding, aircraft construction, mining, etc.
- ▶ Design, production and testing are effected according to the data sheets according to AD 2000. Installation, equipment and operation are controlled by the "Technical rules Pressure vessels" (TRB).

Note pursuant to the EC Machinery Directive 2006/42/EC, according to annex II part 1, section A, manufacturer's declaration:

- ▶ The assemblies were manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100, EN 983, and EN 60204-1.
- ▶ Commissioning is prohibited until it was confirmed that the machine into which the assemblies are to be integrated complies with the regulations laid down in the EC Directives.

Accumulator stations

Type ABSBG

RE 50136

Edition: 2019-01

Replaces: 2016-08



- ▶ Component series 2X
- ▶ With bladder-type accumulator according to data sheet 50171

Features

- ▶ Accumulator station with shut-off block
- ▶ Bladder-type accumulator
- ▶ Shut-off block with integrated shut-off valve, safety valve (type-examination tested) and drain valve
- ▶ Drain valve can be operated manually or electrically
- ▶ Glycerin-filled pressure gauge with red indication of the maximum admissible operating pressure on the dial
- ▶ Console for weld or screw connection
- ▶ Assembly prepared for external equipotential bonding

Contents

Features	1
Ordering code	2, 3
Technical data	4, 5
Symbols	6
Spare parts and accessories	6
Standard program including preferred types	7, 8
Accumulator stations for advanced flows	9
Dimensions	10 ... 12
Commissioning, maintenance and operating instructions	13 ... 15

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ABSBG	-	2X	/	B		N	-		/		G24	V	/	6

01	Accumulator station	ABSBG
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02	Component series 20 ... 29 (20 ... 29: unchanged installation and connection dimensions)	2X
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Hydraulic accumulator, design

03	Bladder-type accumulator according to data sheet 50171	B
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Accumulator volume in liters

04	1.0 liter	1.0
	2.5 liters	2.5
	4.0 liters	4.0
	6.0 liters	6.0
	10.0 liters	10.0
	20.0 liters	20.0
	24.0 liters	24.0
	32.0 liters	32.0
	50.0 liters	50.0

Bladder material

05	e.g. acrylonitrile butadiene rubber (NBR)	N
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Country acceptance for hydraulic accumulator

06	Short symbol for country acceptance in Europe, Russia and China from the manufacturer's type key	
	Acceptance according to 2014/68/EU	CE
	Acceptance according to SELO (China)	534
	Acceptance according to EAC (Russia)	EAC
	Operating instructions	BA

Accumulator shut-off block according to data sheet 50131

07	ABZSS 10 pressure relief valve 6E	10
	ABZSS 20 pressure relief valve 10E	20
	ABZSS 30 pressure relief valve 20E	30
	ABZSS 30 SO30 pressure relief valve 30E	31

Accumulator shut-off block - Unloading

08	Manual and electro-magnetic	E
	Manual	M

Accumulator shut-off block - Set pressure at the pressure relief valve

09	100 bar	100
	140 bar	140
	210 bar	210
	315 bar	315
	330 bar	330

Accumulator shut-off block - Voltage type

10	Direct voltage 24 V	G24
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Accumulator shut-off block - Seal material

11	FKM	V
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Mounting construction kit

12	Mounting with assembly kit A according to DCCS 10060 (console C)	A
	Mounting with clamp according to DCCS 10060	B

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
ABSBG	-	2X	/	B		N	-	/			G24	V	/	6

ABZMM pressure gauge according to data sheet 50205

13	DN 63	6
----	-------	----------

Pressure gauge scale

14	bar/MPa	M
	bar/psi	P

Accumulator manufacturer

15	Bosch Rexroth	DC
	Roth Hydraulics	RH

Order example:**ABSBG-2X/B32,0N-CE/30E315G24V/A6MDC**

Technical data

(for applications outside these values, please consult us!)

Accumulators		
Design		Bladder-type accumulator
Installation position		Any, preferably with the fluid connection socket at the bottom
Ambient temperature range	°C	-15 ... +65
Line connection		Screw-in thread
Hydraulic fluid		Hydraulic oil according to DIN 51524; other liquids on request
Hydraulic fluid temperature range (others upon request)	°C	-15 ... +80 (NBR bladder) -32 ... +80 (ECO bladder)
Acceptance specification for the accumulator	CE/BA	Acceptance according to 2014/68/EU or the operating instructions
	China	SELO
	Russia	EAC

Hydraulic, bladder-type accumulator											
Nominal volume	V_{rated}	l	1	2.5	4.0	6.0	10	20	24	32	50
Effective gas volume	V_{eff}	l	1.0	2.4	3.7	5.9	9.2	18.1	24.5	33.4	48.7
Maximum flow	q_{max}	l/min	240	450	450	450	900	900	900	900	900
Maximum operating pressure	p_{max}	bar	350	350	350	350	330	330	330	330	330
Max. adm. pressure fluctuation range	Δp_{dyn}	bar	200	200	200	200	125	125	125	125	125

Pneumatic			
Charging gas		Nitrogen, cleanliness class 4.0, N ₂ = 99.99 vol. %	
Gas filling pressure	p_0	bar	CE, BA, EAC: 0
	p_0	bar	China: >30 l: 2-5

Shut-off block		
Seal material		FKM seals (NBR seals on request)
Operating temperature range	°C	-15 ... +80
Maximum operating pressure	bar	350
Block material		Steel
Direct-operated pressure relief valve		DBDS...K1X/...VB or DBDS...K1X/...E according to data sheet 25402
Cartridge seat valve		KSDER1PB/HN9V according to data sheet 18136-20
Protection class according to VDE 0470-1 – type "K4" (DIN EN 60529), DIN 40050-9		IP 65 with mating connector mounted and locked
Voltage type	V	24 (in case of electro-magnetic unloading "E")
Maximum admissible degree of contamination of the hydraulic fluid Cleanliness class according to ISO 4406 (C)		Class 20/18/15

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oils	HL, HLP	NBR, FKM	DIN 51524
Bio-degradable	▶ Insoluble in water	HETG	VDMA 24568
		HEES	
	▶ Soluble in water	HEPG	VDMA 24568

Important notices on hydraulic fluids:

- ▶ For further information and data on the use of other hydraulic fluids, please refer to data sheet 90220 or contact us!
- ▶ There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- ▶ The flash point of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.

- ▶ **Flame-resistant – containing water:** The maximum pressure differential per control edge is 50 bar. Pressure pre-loading at the tank port > 20% of the pressure differential; otherwise, increased cavitation. The pressure peaks should not exceed the maximum operating pressures!
- ▶ **Bio-degradable:** When using bio-degradable hydraulic fluids that are zinc-soluble, zinc may accumulate in the fluid (700 mg zinc per pole tube).

Technical data

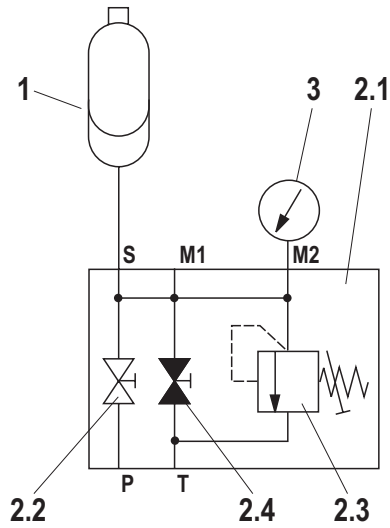
(for applications outside these values, please consult us!)

Pressure gauge		
Size	bar	63
Pressure gauge		Glycerin
Double scale		bar/MPa

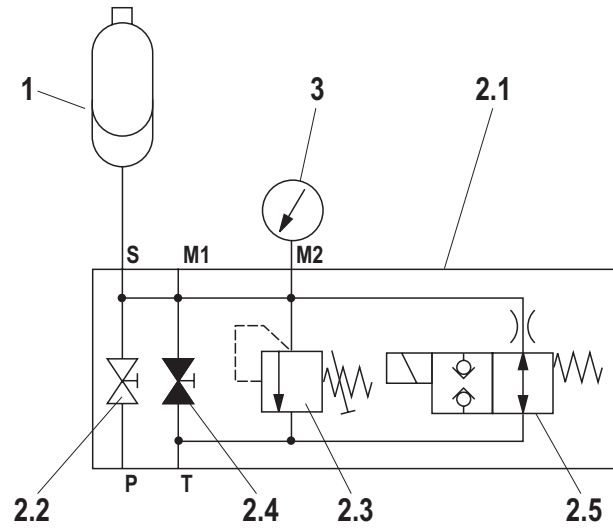
Surface treatment		
All steel components and components without protective coating are coated prior to installation (minimum corrosion protection time of 12 h in salt spray test). Then, the devices, components and the piping are installed. All components, assemblies, controls, pipes, fittings and standard parts keep the supplied surface protection and are not additionally coated. The corrosion protection is determined by the least protected element in the assembly.		

Symbols

Accumulator station with manually operated drain valve



Accumulator station with electro-mechanically operated drain valve



- 1** Hydraulic accumulator
- 2.1** Accumulator shut-off block with:
- 2.2** System shut-off cock
- 2.3** Pressure relief valve (type-examination tested)
- 2.4** Manual unloading
- 2.5** Electro-magnetic unloading (only version E)
- 3** Pressure gauge with red indication of the maximum admissible operating pressure

Spare parts and accessories

- ▶ Bladder-type accumulator according to data sheet 50171
- ▶ Shut-off block manually/electrically according to data sheet 50131
- ▶ Pressure gauge according to data sheet 50205
- ▶ Warning sign according to RNI 17506-001

Consoles contained in the assembly kit are intended for mounting by means of screws and nuts or for welding to suitable frames or design components.

Standard program including preferred types: Accumulator stations

Standard program including preferred types with manually operated drain valve (other versions on request)

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	Q _{Vmax} DBDS in l/min	Acceptance CE/BA				Acceptance China		Acceptance Russia		
					Denomination	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾
Bladder-type accumulator	1.0	100	10	25	ABSBG-2X/B 1,0N-BA /10M100 V/B6M DC	R901450000	14	A3	B	R901450000	A3	R901488461	A3
		140	10	52	ABSBG-2X/B 1,0N-BA /10M140 V/B6M DC	R901450001	14	A3	B	R901450001	A3	R901488462	A3
		210	10	52	ABSBG-2X/B 1,0N-BA /10M210 V/B6M DC	R901450002	14	A3	B	R901450002	A3	R901488463	A3
		330	10	52	ABSBG-2X/B 1,0N-BA /10M330 V/B6M DC	R901450003	14	A2	B	R901450003	A2	R901488464	A3
	2.5	100	10	25	ABSBG-2X/B 2,5N-CE /10M100 V/B6M DC	R901450004	18	A3	B	R901450004	A3	R901488465	A3
		140	10	52	ABSBG-2X/B 2,5N-CE /10M140 V/B6M DC	R901450005	18	A3	B	R901450005	A3	R901488466	A3
		210	10	52	ABSBG-2X/B 2,5N-CE /10M210 V/B6M DC	R901450006	18	A3	B	R901450006	A3	R901488467	A3
		330	10	52	ABSBG-2X/B 2,5N-CE /10M330 V/B6M DC	R901450007	18	A2	B	R901450007	A2	R901488468	A3
	4.0	100	10	25	ABSBG-2X/B 4,0N-CE /10M100 V/A6M DC	R901450008	28	A3	A	R901450008	A3	R901488469	A3
		140	10	52	ABSBG-2X/B 4,0N-CE /10M140 V/A6M DC	R901450009	28	A3	A	R901450009	A3	R901488470	A3
		210	10	52	ABSBG-2X/B 4,0N-CE /10M210 V/A6M DC	R901450010	28	A3	A	R901450010	A3	R901488471	A3
		330	10	52	ABSBG-2X/B 4,0N-CE /10M330 V/A6M DC	R901450011	28	A2	A	R901450011	A2	R901488472	A3
	6.0	330	10	52	ABSBG-2X/B 6,0N-CE /10M330 V/A6M DC	R901454612	31	A2	A	R901454612	A2	R901488391	A3
	10.0	210	20	140	ABSBG-2X/B10,0N-CE /20M210 V/A6M DC	R901450012	49	A3	A	R901450012	A3	R901488473	A3
		330	20	140	ABSBG-2X/B10,0N-CE /20M330 V/A6M DC	R901450013	49	A2	A	R901450013	A2	R901488474	A3
	20.0	210	20	140	ABSBG-2X/B20,0N-CE /20M210 V/A6M DC	R901450014	75	A3	A	R901450014	A3	R901488475	A3
		330	20	140	ABSBG-2X/B20,0N-CE /20M330 V/A6M DC	R901450015	75	A2	A	R901450015	A2	R901488476	A3
	24.0	210	20.0	140	ABSBG-2X/B24,0N-CE /20M210 V/A6M DC	R901450115	83	A3	A	R901450115	A3	R901488479	A3
		330	20.0	140	ABSBG-2X/B24,0N-CE /20M330 V/A6M DC	R901450116	83	A2	A	R901450116	A2	R901488480	A3
	32.0	315	30	165	ABSBG-2X/B32,0N-CE /30M315 V/A6M DC	R901450016	132	A2	A	R901450034	A3	R901488477	A3
50.0	315	30	165	ABSBG-2X/B50,0N-CE /30M315 V/A6M DC	R901450017	170	A2	A	R901450035	A3	R901488478	A3	

1) MKZ = Material mark: A2 = preferred delivery range; A3 = standard delivery range

Standard program including preferred types: Accumulator stations**Standard program including preferred types with electrically operated drain valve** (other versions on request)

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	$\approx Q_{Vmax}$ DBDS in l/min	Acceptance CE/BA				Acceptance China		Acceptance Russia		
					Denomination	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾
Bladder-type accumulator	1.0	100	10	25	ABSBG-2X/B 1,0N-BA /10E100G 24V/B6M DC	R901450054	14	A3	B	R901450054	A3	R901488364	A3
		140	10	52	ABSBG-2X/B 1,0N-BA /10E140G 24V/B6M DC	R901450055	14	A3	B	R901450055	A3	R901488365	A3
		210	10	52	ABSBG-2X/B 1,0N-BA /10E210G 24V/B6M DC	R901450056	14	A3	B	R901450056	A3	R901488366	A3
		330	10	52	ABSBG-2X/B 1,0N-BA /10E330G 24V/B6M DC	R901450057	14	A2	B	R901450057	A2	R901488368	A3
	2.5	100	10	25	ABSBG-2X/B 2,5N-CE /10E100G 24V/B6M DC	R901450058	18	A3	B	R901450058	A3	R901488369	A3
		140	10	52	ABSBG-2X/B 2,5N-CE /10E140G 24V/B6M DC	R901450059	18	A3	B	R901450059	A3	R901488370	A3
		210	10	52	ABSBG-2X/B 2,5N-CE /10E210G 24V/B6M DC	R901450060	18	A3	B	R901450060	A3	R901488371	A3
		330	10	52	ABSBG-2X/B 2,5N-CE /10E330G 24V/B6M DC	R901450061	18	A2	B	R901450061	A2	R901488372	A3
	4.0	100	10	25	ABSBG-2X/B 4,0N-CE /10E100G 24V/A6M DC	R901450062	28	A3	A	R901450062	A3	R901488374	A3
		140	10	52	ABSBG-2X/B 4,0N-CE /10E140G 24V/A6M DC	R901450063	28	A3	A	R901450063	A3	R901488375	A3
		210	10	52	ABSBG-2X/B 4,0N-CE /10E210G 24V/A6M DC	R901450064	28	A3	A	R901450064	A3	R901488376	A3
		330	10	52	ABSBG-2X/B 4,0N-CE /10E330G 24V/A6M DC	R901450065	28	A2	A	R901450065	A2	R901488377	A3
	6.0	330	10	52	ABSBG-2X/B 6,0N-CE /10E330G 24V/A6M DC	R901467840	31	A2	A	R901467840	A2	R901488390	A3
	10.0	210	20	140	ABSBG-2X/B10,0N-CE /20E210G 24V/A6M DC	R901450066	49	A3	A	R901450066	A3	R901488378	A3
		330	20	140	ABSBG-2X/B10,0N-CE /20E330G 24V/A6M DC	R901450067	49	A2	A	R901450067	A2	R901488379	A3
	20.0	210	20	140	ABSBG-2X/B20,0N-CE /20E210G 24V/A6M DC	R901450068	75	A3	A	R901450068	A3	R901488380	A3
		330	20	140	ABSBG-2X/B20,0N-CE /20E330G 24V/A6M DC	R901450069	75	A2	A	R901450069	A2	R901488381	A3
	24.0	210	20.0	140	ABSBG-2X/B24,0N-CE /20E210G 24V/A6M DC	R901450121	83	A3	A	R901450121	A3	R901488384	A3
		330	20.0	140	ABSBG-2X/B24,0N-CE /20E330G 24V/A6M DC	R901450122	83	A2	A	R901450122	A2	R901488385	A3
	32.0	315	30	165	ABSBG-2X/B32,0N-CE /30E315G 24V/A6M DC	R901450070	132	A2	A	R901450088	A3	R901488382	A3
50.0	315	30	165	ABSBG-2X/B50,0N-CE /30E315G 24V/A6M DC	R901450071	170	A2	A	R901450089	A3	R901488383	A3	

¹⁾ MKZ = Material mark: A2 = preferred delivery range; A3 = standard delivery range

Accumulator stations for advanced flows

Standard program including preferred types with manually operated drain valve (other versions on request)

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	Q _{Vmax} DBDS in l/min	Acceptance CE/BA						Acceptance China		Acceptance Russia	
					Denomination	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾	
Bladder-type accumulator	1.0	330	20	140	ABSBG-2X/B 1,0N-BA /20M330 V/B6M DC	R901448603	17	A3	B	R901448603	A3	-	-	
	2.5	330	20	140	ABSBG-2X/B 2,5N-CE /20M330 V/B6M DC	R901448605	21	A3	B	R901448605	A3	-	-	
	4.0	330	20	140	ABSBG-2X/B 4,0N-CE /20M330 V/A6M DC	R901448607	31	A3	A	R901448607	A3	-	-	
	6.0	330	20	140	ABSBG-2X/B 6,0N-CE /20M330 V/A6M DC	R901495532	40	A3	A	R901495532	A3	-	-	
	10.0	315	30	165	ABSBG-2X/B10,0N-CE /30M315 V/A6M DC	R901448609	63	A3	A	R901448609	A3	-	-	
		315	31	165	ABSBG-2X/B10,0N-CE /31M315 V/A6M DC	R901448612	71	A3	A	R901448612	A3	-	-	
	20.0	315	30	165	ABSBG-2X/B20,0N-CE /30M315 V/A6M DC	R901448615	89	A3	A	R901448615	A3	-	-	
		315	31	300	ABSBG-2X/B20,0N-CE /31M315 V/A6M DC	R901448617	97	A3	A	R901448617	A3	-	-	
	32.0	315	31	300	ABSBG-2X/B32,0N-CE /31M315 V/A6M DC	R901448619	141	A3	A	R901448619	A3	R901488723	A3	
	50.0	315	31	300	ABSBG-2X/B50,0N-CE /31M315 V/A6M DC	R901448621	179	A3	A	R901448624	A3	R901488721	A3	

¹⁾ MKZ = Material mark: A2 = preferred delivery range; A3 = standard delivery range

Accumulator stations for advanced flows

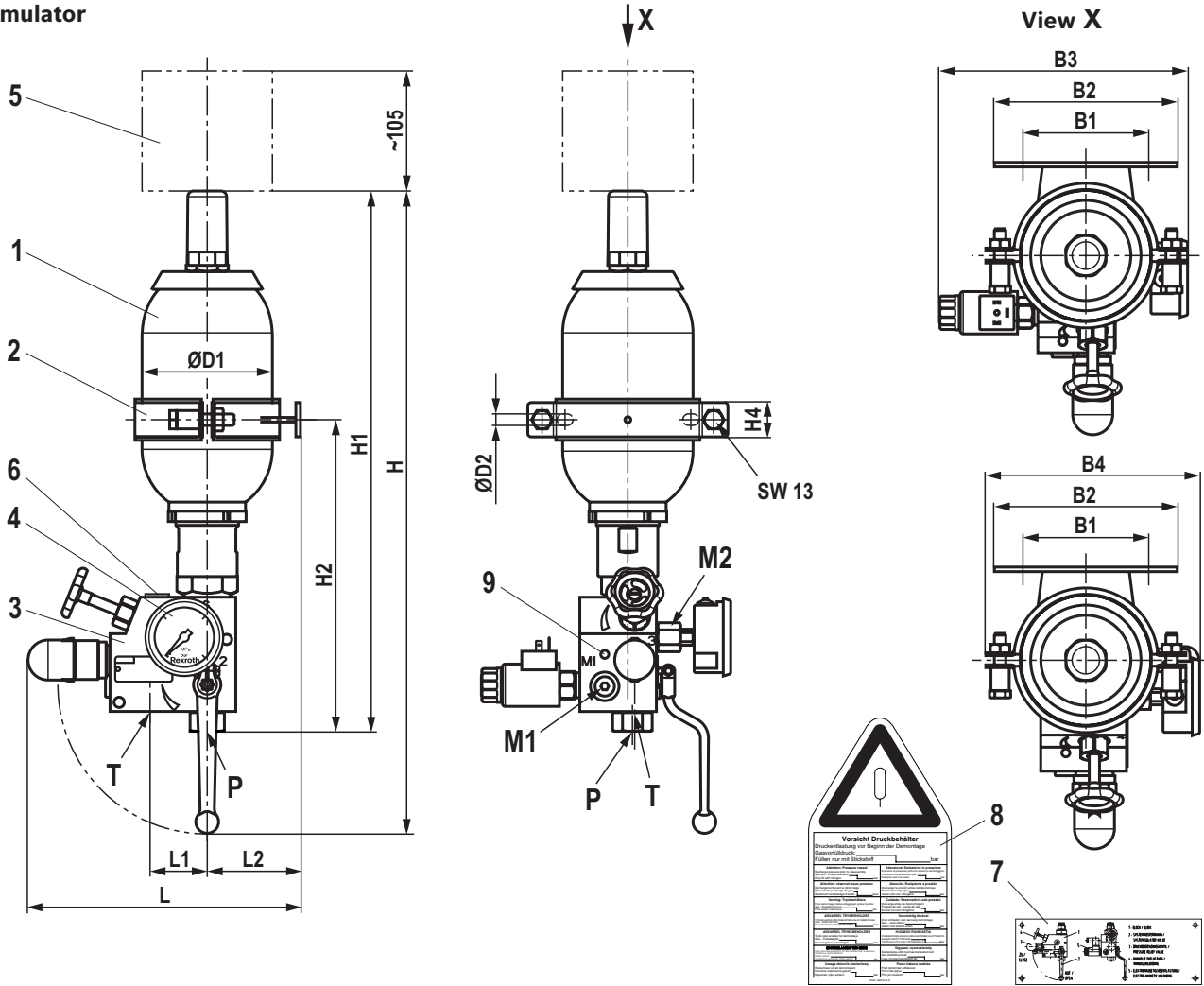
Standard program including preferred types with electrically operated drain valve (other versions on request)

Accumulator type	Nominal volume in liters	Relief pressure in bar	Shut-off block DN	Q _{Vmax} DBDS in l/min	Acceptance CE/BA						Acceptance China		Acceptance Russia	
					Denomination	Material no.	Weight in kg	MKZ ¹⁾	Type of mounting	Material no.	MKZ ¹⁾	Material no.	MKZ ¹⁾	
Bladder-type accumulator	1.0	330	20	140	ABSBG-2X/B 1,0N-BA /20E330G 24V/B6M DC	R901448604	14	A3	B	R901448604	A3	-	-	
	2.5	330	20	140	ABSBG-2X/B 2,5N-CE /20E330G 24V/B6M DC	R901448606	21	A3	B	R901448606	A3	-	-	
	4.0	330	20	140	ABSBG-2X/B 4,0N-CE /20E330G 24V/A6M DC	R901448608	31	A3	A	R901448608	A3	-	-	
	6.0	330	20	140	ABSBG-2X/B 6,0N-CE /20E330G 24V/A6M DC	R901495533	41	A3	A	R901495533	A3	-	-	
	10.0	315	30	165	ABSBG-2X/B10,0N-CE /30E315G 24V/A6M DC	R901448611	63	A3	A	R901448611	A3	-	-	
		315	31	165	ABSBG-2X/B10,0N-CE /31E315G 24V/A6M DC	R901448613	71	A3	A	R901448613	A3	-	-	
	20.0	315	30	165	ABSBG-2X/B20,0N-CE /30E315G 24V/A6M DC	R901448616	89	A3	A	R901448616	A3	-	-	
		315	31	300	ABSBG-2X/B20,0N-CE /31E315G 24V/A6M DC	R901448618	97	A3	A	R901448618	A3	-	-	
	32.0	315	31	300	ABSBG-2X/B32,0N-CE /31E315G 24V/A6M DC	R901448620	141	A3	A	R901488718	A3	R901488716	A3	
	50.0	315	31	300	ABSBG-2X/B50,0N-CE /31E315G 24V/A6M DC	R901448622	179	A3	A	R901488722	A3	R901488720	A3	

¹⁾ MKZ = Material mark: A2 = preferred delivery range; A3 = standard delivery range

Dimensions: Mounting B with clamp
(dimensions in mm)

Accumulator station with 1.0 liter bladder-type accumulator



- 1 Hydraulic accumulator
- 2 Clamp
- 3 Shut-off block
- 4 Pressure gauge with red indication of the maximum admissible operating pressure
- 5 Space required for filling device
- 6 Name plate of the accumulator station
- 7 Functional sign (loose)
- 8 Warning sign (loose)
- 9 Threaded connection M8 for equipotential bonding

Connection designations:

- M1** Measuring port G1/4
- M2** Pressure gauge connection G1/4
- P** Pump port s. table
- T** Tank port s. table

Gas filling pressure of the accumulators upon delivery:

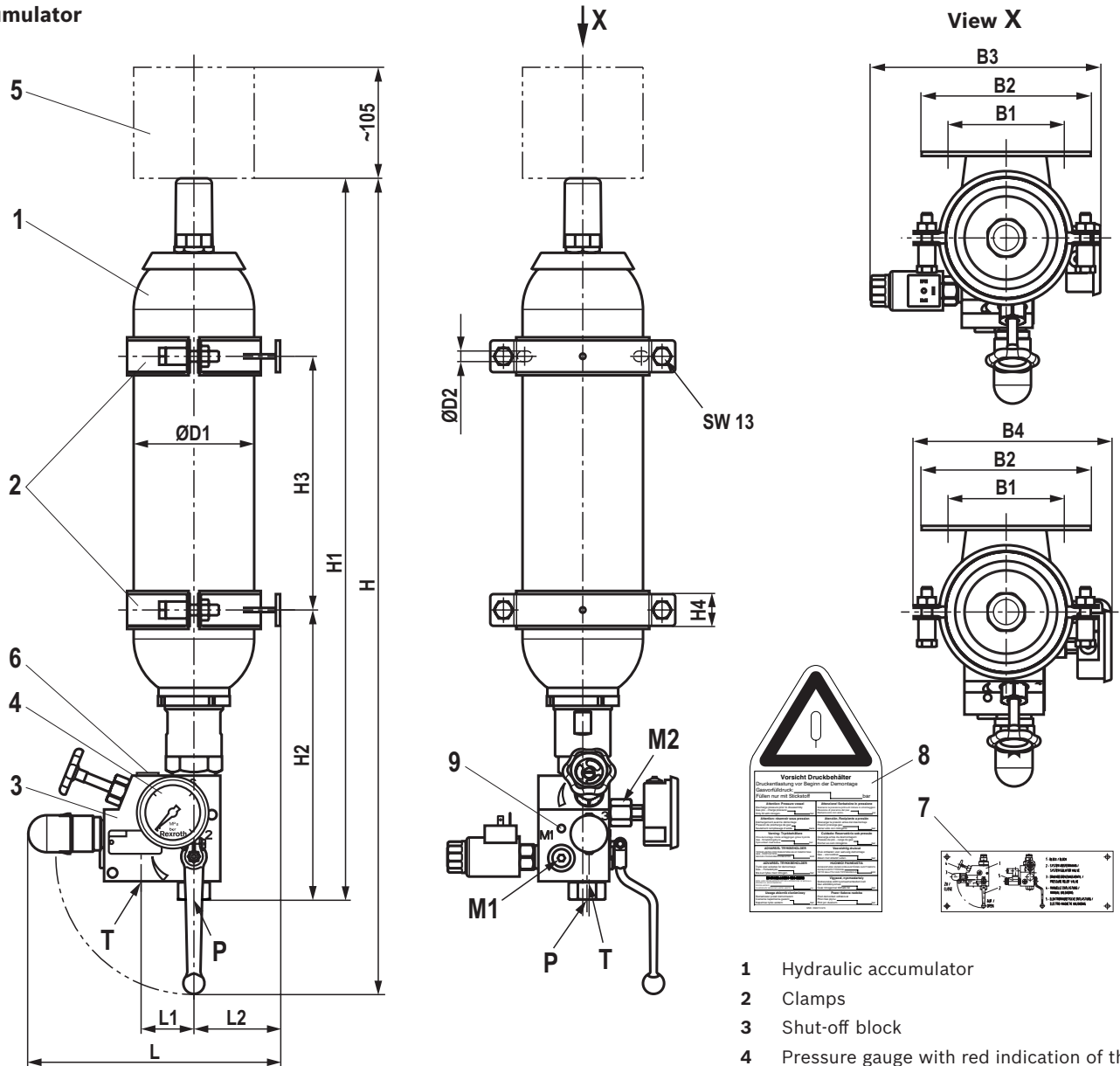
- BA/CE 0 bar
- EAC 0 bar
- China > 30 l 2 ... 5 bar

Assembly kit ABSBG-...	ØD1 _{max}	ØD2	B1	B2	B3	B4	H1	H2	H4	H _{max}	L1	L2	L	P	T
B 1.0.../10M	116	10	110	160	-	178	490	275	30	557	50	82	239	G1/2	G3/8
B 1.0.../10E	116	10	110	160	223	-	490	275	30	557	50	82	239	G1/2	G3/8
B 1.0.../20M	116	10	110	160	-	191	516	301	30	631	56	82	253	G1	G1/2
B 1.0.../20E	116	10	110	160	234	-	516	301	30	631	56	82	253	G1	G1/2

approx. dimensions - for precise dimensions, please refer to the dimensional drawings

Dimensions: Mounting B with clamps
(dimensions in mm)

Accumulator station with 2.5 liters bladder-type accumulator



Connection designations:

M1 Measuring port	G1/4
M2 Pressure gauge connection	G1/4
P Pump port	s. table
T Tank port	s. table

Gas filling pressure of the accumulators upon delivery:

BA/CE	0 bar
EAC	0 bar
China > 30 l	2 ... 5 bar

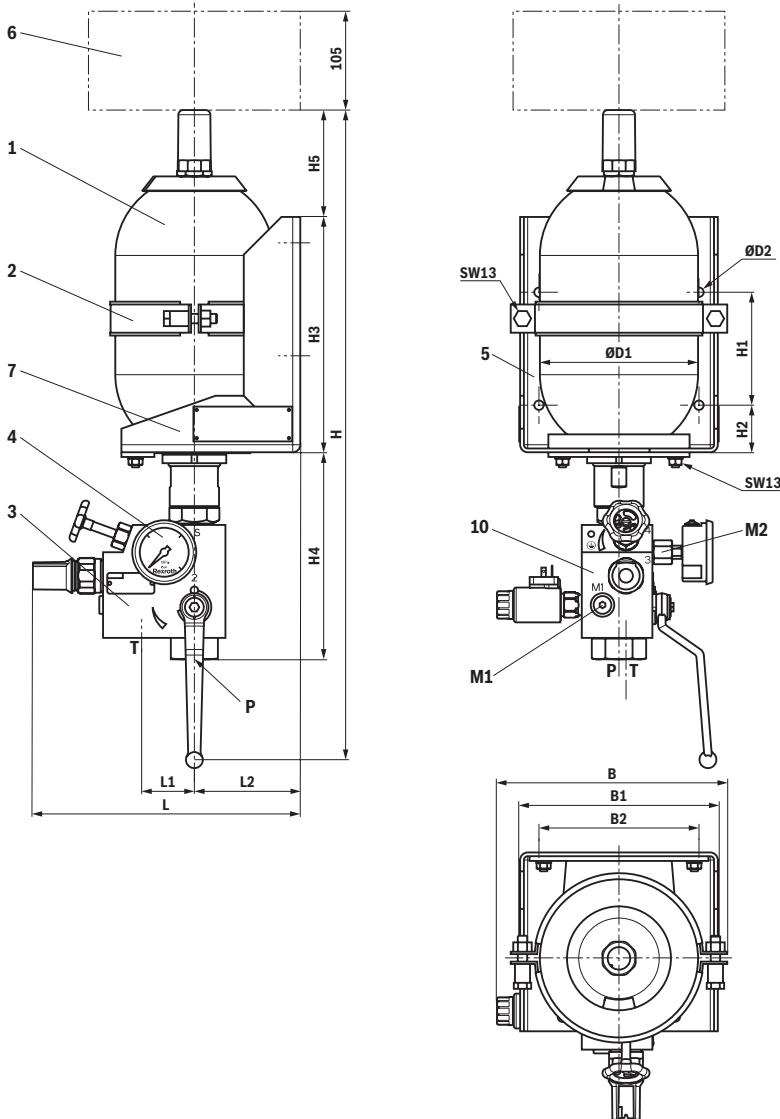
- 1 Hydraulic accumulator
- 2 Clamps
- 3 Shut-off block
- 4 Pressure gauge with red indication of the maximum admissible operating pressure
- 5 Space required for filling device
- 6 Name plate of the accumulator station
- 7 Functional sign (loose)
- 8 Warning sign (loose)
- 9 Threaded connection M8 for equipotential bonding

Assembly kit ABSBG-...	ØD1 _{max}	ØD2	B1	B2	B3	B4	H1	H2	H3	H4	H _{max}	L1	L2	L	P	T
B 2.5.../10M...	116	10	110	160	-	178	699	276	240	30	766	50	82	239	G1/2	G3/8
B 2.5.../10E...	116	10	110	160	223	-	699	276	240	30	766	50	82	239	G1/2	G3/8
B 2.5.../20M...	116	10	110	160	-	191	725	302	240	30	840	56	82	253	G1	G1/2
B 2.5.../20E...	116	10	110	160	234	-	725	302	240	30	840	56	82	253	G1	G1/2

approx. dimensions - for precise dimensions, please refer to the dimensional drawings

Dimensions: Mounting A in console
(dimensions in mm)

Accumulator station with 4.0 ... 50.0 liters bladder-type accumulator



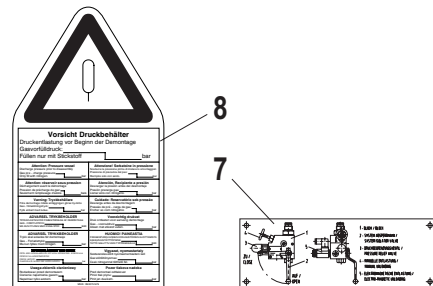
- 1 Hydraulic accumulator
- 2 Clamp
- 3 Shut-off block
- 4 Pressure gauge with red indication of the maximum admissible operating pressure
- 5 Console
- 6 Space required for filling device
- 7 Name plate of accumulator station
- 8 Functional sign (loose)
- 9 Warning sign (loose)
- 10 Threaded connection M8 for equipotential bonding

Connection designations:

M1 Measuring port	G1/4
M2 Pressure gauge connection	G1/4
P Pump port	s. table
T Tank port	s. table

Gas filling pressure of the accumulators upon delivery:

BA/CE	0 bar
EAC	0 bar
China >30 l	2 ... 5 bar



Dimensions: Mounting A in console
(dimensions in mm)

Assembly kit ABSBG-...	ØD1 _{max}	ØD2	B1	B2	B	H1	H2	H3	H4±10	H5	H _{max}	L1	L2	L	P	T
B 4.0.../10M...	170	10	212	170	230	120	50	250	200	112	640	50	113	277	G1/2	G3/8
B 4.0.../10E...	170	10	212	170	243	120	50	250	200	112	640	50	113	277	G1/2	G3/8
B 4.0.../20M...	170	10	212	170	230	120	50	250	220	114	700	56	113	284	G1	G1/2
B 4.0.../20E...	170	10	212	170	245	120	50	250	220	114	700	56	113	284	G1	G1/2
B 6.0.../10M...	170	10	212	170	230	120	50	250	200	240	776	50	113	278	G1/2	G3/8
B 6.0.../10E...	170	10	212	170	243	120	50	250	200	240	776	50	113	278	G1/2	G3/8
B 6.0.../20M...	170	10	212	170	230	120	50	250	220	243	830	56	113	284	G1	G1/2
B 6.0.../20E...	170	10	212	170	245	120	50	250	220	243	830	56	113	284	G1	G1/2
B10.0.../20...	221	10	288	250	-	130	75	280	269	208	872	56	113	284	G1	G1/2
B10.0.../30...	221	10	288	250	-	130	75	280	314	208	972	80	128	361	G1 1/2	G1/2
B10.0.../31...	221	10	288	250	-	130	75	280	336	208	994	111	128	361	G1 1/2	G1 1/2
B20.0.../20...	221	10	288	250	-	360	100	560	269	238	1182	56	126	297	G1	G1/2
B20.0.../30...	221	10	288	250	-	360	100	560	314	238	1282	80	126	359	G1 1/2	G1/2
B20.0.../31...	221	10	288	250	-	360	100	560	336	238	1304	111	126	359	G1 1/2	G1 1/2
B24.0.../20...	221	10	288	250	-	360	100	560	269	373	1317	56	126	297	G1	G1/2
B32.0.../30...	221	12	288	250	-	820	150	1120	314	198	1802	80	127	360	G1 1/2	G1/2
B32.0.../31...	221	12	288	250	-	820	150	1120	336	198	1824	111	127	360	G1 1/2	G1 1/2
B50.0.../30...	221	12	288	250	-	820	150	1120	314	713	2317	80	127	360	G1 1/2	G1/2
B50.0.../31...	221	12	288	250	-	820	150	1120	336	713	2339	111	127	360	G1 1/2	G1 1/2

approx. dimensions - for precise dimensions, please refer to the dimensional drawings

Commissioning, maintenance and operating instructions

General Information

- ▶ Observe the documentation for the machinery.
- ▶ Also observe the documentation pertaining to the other components, assemblies and partly completed machinery, which form part of the complete machinery.
- ▶ Observe the generally applicable, legal or otherwise binding European and national regulations as well as the relevant legislation for your country pertaining to the prevention of accidents and protection of the environment.
- ▶ Operating instructions according to the data sheet of the accumulator
- ▶ Depending on the country of installation, national pressure vessel regulations need to be complied with.
- ▶ In the standard, the country acceptance is effected according to BA, CE as well as for China and Russia. Other acceptances on request.
- ▶ Please indicate the country of installation in the order.
- ▶ Keep all documents included in the delivery in a safe place; they will be required by the expert in recurring tests.
- ▶ The machine end-user will have sole responsibility for complying with existing provisions.
- ▶ The accumulator stations in this edition are assemblies in the sense of directive 2014/68/EU, article 2, section 6 (Pressure Equipment Directive). However, they are not intended for exclusive commissioning. They are installed as a component of a larger assembly or system.
- ▶ The accumulator stations described here contain the entire equipment which is required for safety reasons according to DIN EN ISO 4413.
- ▶ The accumulator stations must not be modified; otherwise, the operating license according to directive 2014/68/EU will be lost and the dealer and/or manufacturer warranty will be forfeited.
- ▶ The accumulator stations may only be operated within the admissible limit values.
- ▶ Repair works may only be carried out by the manufacturer or their authorized dealers and agencies. Repair works performed by third parties invalidate the approval and release the manufacturer from all claims resulting from an unauthorized intervention.
- ▶ Assembly and maintenance must be implemented by authorized, instructed persons only.

Commissioning, maintenance and operating instructions

► The accumulator stations are provided with signs: **1**

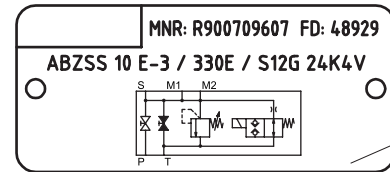
- 1. Name plate** specifying the pressure rating, identifies the device
- 2. Functional sign** identifies the components and elementary lever positions
- 3. Warning sign** has to be clearly visible and attached at the device or next to it, however not at the pressure vessel itself.

Usually, the warning sign is in the languages according to the country acceptance. Further languages at request.

For hydraulic systems with one or several hydraulic accumulators whose warning signs are not visible after installation into the machine, an additional warning sign has to be attached visibly to the system, stating:

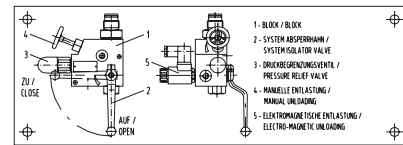
"CAUTION -- system contains hydraulic accumulators."

The circuit diagram has to contain the same notice. With mounting "B" and "K", the warning signs and functional signs are supplied loosely and must be attached to or close to the accumulator station in a clearly visible position. The attachment of the signs must already be considered in the design.



Example

2





3


Vorsicht Druckbehälter	
Druckentlastung vor Beginn der Demontage	
Gasvorfülldruck:	
Füllen nur mit Stickstoff _____ bar	
<p>Attention: Pressure vessel Discharge pressure prior to disassembly Gas pre - charge pressure: _____ bar Only fill with nitrogen.</p>	<p>Attenzione! Serbatoio in pressione Scaricare la pressione prima di iniziare lo smontaggio Pressione di precarica del gas: _____ bar Riempi solo con azoto.</p>
<p>Attention: réservoir sous pression Déchargement avant le démontage Pression de précharge de gaz: _____ bars Seulement remplissage d'azote.</p>	<p>Atención, Recipiente a presión Descargar la presión antes del desmontaje Presión precarga gas: _____ bar Llenar solo con nitrógeno.</p>
<p>Warning: Trykbeholdere Före demontage måste anläggningen göras trycklös Gas - förinfyllningstryck: _____ bar Fylls enbart med kväve.</p>	<p>Cuidado: Reservatório sob pressão Descarga antes da desmontagem Pressão de pré - carga de gás: _____ bar Encher só com nitrogênio.</p>
<p>ADVARSEL TRYKBEHOLDER TRYKPLASTES FOR PÅBEGYNDELSE AF DEMONTAGE GAS - FØRINFYLDNING: _____ BAR MA KUN FYLDES MED KVÆLSTOF.</p>	<p>Voorzichtig drukvat Druk ontlasten voor aanvang demontage Gas - voorvulruk: _____ bar Alleen met stikstof vullen.</p>
<p>ADVARSEL TRYKBEHOLDER Trykk skal avlastes før demontasje GAS - Forinfyllingstrykk: _____ bar Ma kun fylles med nitrogen.</p>	<p>HUOMIO! PAINEAESTIA PAINENPURKUI ENNEN KORJAUSTOIDEN ALOITTAAMISTA KAASUJA ESTÄTTÄMÄKSI. TÄTTÖ BALLITTU VAIN TYPPIKKAASULLA. _____ BAR</p>
<p>IPPOZICIONE AZZIUNO YIHO IREZIO PRIN ARIU DEZALASTARE EFALIA EPICKETIVE II MONAIA GASULI NA AZIUNYIHEZIEI TESI ARIU. ELIMPEZICATE SAUVO ME AZEPRI AZIUNO. _____ bar</p>	<p>Vigyázat, nyomtartály Szétszerelés előtt nyommentesíteni kell Gáz előtöltőnyomás Csak nitrogénnel tölthető fel. _____ bar</p>
<p>Uwaga zbiornik ciśnieniowy Rozładować przed demontażem Ciśnienie napełnienia gazem Napełniać tylko azotem. _____ bar</p>	<p>Pozor tlakova nadoba Pred demontazijo odtlakovat Prilni tlak oljni _____ bar Prilni jen dusikem. _____ bar</p>
MNR: R900751679	

Commissioning, maintenance and operating instructions

Commissioning - Operating instructions according to the data sheet of the accumulator!

	<p>DANGER Do not charge hydraulic accumulators with oxygen or air. Explosion hazard!</p> <ul style="list-style-type: none"> ▶ Prior to the initial commissioning, the hydraulic accumulator must be filled with nitrogen of class 4.0, pure (N₂ content 99.99 vol. %). The preset gas pressure necessary for the operation is indicated in the circuit diagrams and operating instructions. ▶ Only use suitable filling and testing devices for filling. We recommend using the charging and test devices by Bosch Rexroth according to data sheet 50150.
	<p>WARNING</p> <ul style="list-style-type: none"> ▶ Risk of injury caused by improper assembly. ▶ Hydraulic accumulators are energy stores. They may supply the energy for uncontrolled movements to actuators. ▶ Before beginning any repairs, the system must be depressurized on the oil and gas side and protected against unauthorized re-start. ▶ Do not carry out welding and soldering works or any mechanical processing on the accumulator tank! Any kind of processing at the product invalidates the declaration of conformity and the operating license! <ul style="list-style-type: none"> – Explosion hazard due to welding and soldering works! – Danger of bursting during and after mechanical processing. ▶ A warning sign is enclosed to the accumulator station. It is to be attached to or close to the accumulator station in a clearly visible position.

Maintenance

	<p>Attention</p> <ul style="list-style-type: none"> ▶ In case of damage at the accumulator bladder or diaphragm, the accumulator will lose its function immediately. ▶ Loss of the initial gas tension will lead to damage at the accumulator bladder or the accumulator diaphragm if operation of the system is continued nevertheless. ▶ Check the initial gas tension in regular intervals.
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Legal provisions

- ▶ Hydraulic accumulators are pressure vessels and subject to the application of national provisions and/or regulations valid at the place of installation.
- ▶ In Germany, the Ordinance on Industrial Safety and Health (BetrSichV) applies.
- ▶ As a standard, country acceptances are effected according to BA, CE as well as for China and Russia. Other acceptances on request.
- ▶ Special regulations are to be observed in shipbuilding, aircraft construction, mining, etc.
- ▶ Design, production and testing are effected according to the data sheets according to AD 2000. Installation, equipment and operation are regulated by the "Technical rules for pressure vessels" (TRB).

Notes pursuant to the EC Machinery

Directive 2006/42/EC, according to annex II part 1, section A, manufacturer's declaration:

- ▶ The assemblies were manufactured in accordance with the harmonized standards DIN EN ISO 4413, DIN EN ISO 12100, EN 983, and EN 60204-1.
- ▶ Commissioning is prohibited until it was confirmed that the machine into which the assemblies are to be integrated complies with the regulations laid down in the EC Directives.

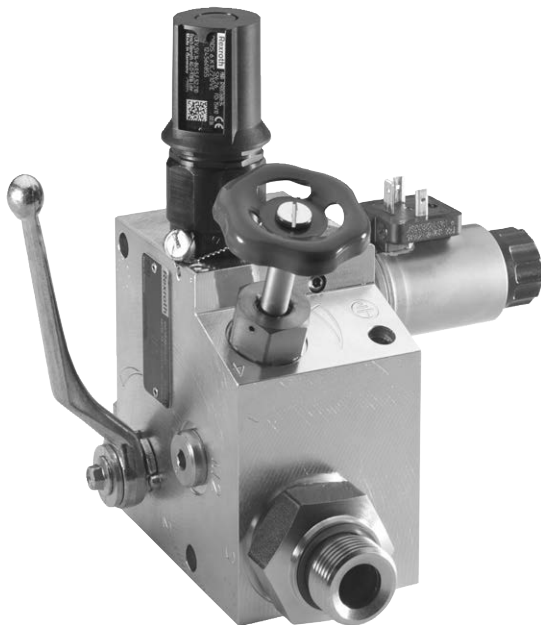
RE 50131

Ausgabe: 2021-10

Ersetzt: 2020-10

Accumulator shut-off block

Type ABZSS



HAD8066

- ▶ Nominal diameter DN08; DN10; DN20; DN30
- ▶ Component series 3X
- ▶ Maximum operating pressure 350 bar [5075 psi]

Contents

Features	1
Ordering code	2, 3
Symbols, function	4
Preferred types	5, 6
Technical data	7
Characteristic curves	8
Dimensions	9 ... 14
Special versions	15
Tightening torque	16
Mating connectors	16
Accessories	17 ... 20

**Type-examination tested safety valves type DBD...E
according to Pressure Equipment Directive 2014/68/EU
(in the following shortly PED)**

Safety instructions	20
Characteristic curves	21 ... 25
Further information	26

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	
ABZSS				-	3X	/		E	/				-	*

01	Accumulator shut-off block	ABZSS
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Type of connection

02	Piping connection	no code
	Subplate mounting	-P ¹⁾

Nominal diameter

03	DN08	08
	DN10	10
	DN20	20
	DN30	30

Unloading

04	Manual	M
	Manual and electro-magnetic (without manual override), normally open	E ²⁾
	Manual and electro-magnetic, normally closed	C ²⁾

Component series

05	Component series 30 ... 39 (30 ... 39: unchanged installation and connection dimensions)	3X
----	--	-----------

Pressure adjustment (others upon request)


06	50 bar [730 psi]	50
	100 bar [1450 psi]	100
	140 bar [2030 psi]	140
	210 bar [3050 psi]	210
	350 bar [5075 psi]	350 ³⁾

Pressure relief valve

07	Pressure relief valve, type-examination tested (with CE mark) ⁴⁾	E
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Accumulator adapter

08	Without accumulator adapter	no code
	- With BSP thread G1/2	
	DN08	S104
	DN10; DN20	S30
	- With BSP thread G3/4	
	DN08	S108
	DN10; DN20	S31
	DN08	S105
	DN10; DN20	S10
	- With BSP thread G1 1/4	
	DN08	S107
	DN10; DN20	S12
	DN30	S307
	- With BSP thread G2	
	DN08	S109
	DN10; DN20	S13
	DN30	S309

 **Notice:** Preferred types and standard units are contained in the EPS (standard price list).

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14
ABZSS				-	3X	/		E	/			-	*

Accumulator adapter

08	- With SAE thread 3/4 - 16 UNF	
	DN10; DN20	S64
	- With SAE thread 1 1/16 - 12 UN	
	DN10; DN20	S60
	- With SAE thread 1 5/8 - 12 UN	
	DN10; DN20	S62
	DN30	S620
	- With SAE thread 1 7/8 - 12 UN	
DN10; DN20	S63	
DN30	S630	

Voltage type ⁵⁾

09	Direct voltage 24 V	G24
	Alternating voltage 110 V	G96 ⁸⁾
	Alternating voltage 230 V	G205 ⁸⁾

Electrical connection ⁵⁾

10	Without mating connector with protective cap	K4 ⁶⁾
----	--	------------------

Seal material

11	FKM seals	V
	NBR seals	W ⁷⁾

Connection thread

12	BSP thread (ISO 228 Part 1)	no code
	SAE thread (ANSI B1.1)	12 ²⁾

Special versions

13	- DN30 with DBDS valve NG30	SO30
	- Shut-off device (2 positions) DN10 ... DN30	103
	- Shut-off device (1 position) DN10 ... DN30	104
	- Prepared for use in mining and explosion protection applications	869 ⁹⁾

Connection thread

14	Further details in the plain text	
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1) "DN30" only

2) Not with "DN08"

3) Type SO30 is supplied with a pressure rating of 315 bar [4570 psi]

4) According to the Pressure Equipment Directive 2014/68/EU

5) Only with electro-magnetic unloading design "E" or electro-magnetic pressure holding design "C"


6) Mating connectors, separate order, see page 16 and data sheet 08006.

7) Special version

8) For the connection to the AC voltage mains, a DC solenoid which is controlled by a rectifier is to be used (see table on the right). For individual connection, a large mating connector with integrated rectifier can be used (separate order, see page 16).

9) Manual accumulator discharge only, seal material "V" only. Assembly free from aluminum, without electrically operated components, housing electroplated FE//Zn8//Cn//T0 according to ISO 19598

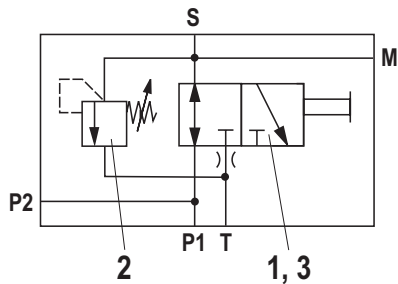
AC voltage mains (admissible voltage tolerance ±10%)	Nominal voltage of the DC solenoid in case of operation with alternating voltage	Ordering code
110 V - 50/60 Hz 120 V - 60 Hz	96 V	G96
230 V - 50/60Hz	205 V	G205

 **Notice:** Unlike the ABZSS30 standard accumulator safety block, the ABZSS30 ...SO30 is equipped with a direct operated pressure relief valve NG30. Version ABZSS-P30 for subplate mounting.

Symbols

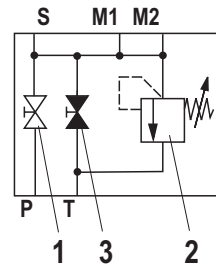
DN08

Version "M" (manual unloading)



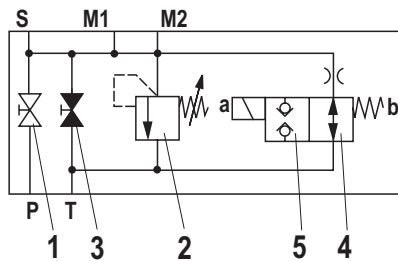
DN10, 20 and 30

Version "M" (manual unloading)



Version "E"

(manual and electro-magnetic unloading), normally open



Connection designation

M; M1; M2	Measuring port
P; P1; P2	Pump port
S	Accumulator port
T	Tank port
1	System shut-off cock
2	Pressure relief valve
3	Manual unloading
4	Electro-magnetic unloading, normally open, optional
5	Electro-magnetic unloading, normally closed, optional

Function


The accumulator shut-off block serves for the protection, isolation and unloading of hydraulic accumulators. It is classified based on its use according to the Pressure Equipment Directive 2014/68/EU article 4, section 3. The connection between the accumulator shut-off block and the accumulator is realized by means of an accumula-

tor adapter.

The accumulator is protected from inadmissible overpressure by means of the pressure relief valve. The **pressure relief valve** must **not be used for any control tasks**. Sufficient difference between the maximum operating pressure and the working pressure must be ensured. Response of the pressure relief valve should be prevented, if possible.


Preferred types

Accumulator type	Data sheet	Accumulator NG in l [gal]	Pressure set at the pressure relief valve in bar [psi]	Accumulator shut-off block DN	Denomination	Material no.		
Diaphragm type accumulator	50150	0.5 [0.13]	160 [2320]	08	ABZSS 08 M-3X/160E/S104V	R901263004		
				10	ABZSS 10 M-3X/160E/S30V	R900711145		
		0.7 [0.18]	180 [2610]	08	ABZSS 08 M-3X/180E/S104V	R901263013		
				10	ABZSS 10 M-3X/180E/S30V	R904100876		
			250 [3625]	08	ABZSS 08 M-3X/260E/S104V	R901263011		
				10	ABZSS 10 M-3X/260E/S30V	R901147802		
		1.0 [0.26]	200 [2900]	08	ABZSS 08 M-3X/200E/S104V	R901263012		
				10	ABZSS 10 M-3X/200E/S30V	R904100849		
		1.4 [0.37]	140 [2030]	08	ABZSS 08 M-3X/140E/S104V	R901263020		
				10	ABZSS 10 M-3X/140E/S30V	R900711138		
			250 [3625]	08	ABZSS 08 M-3X/260E/S104V	R901263011		
				10	ABZSS 10 M-3X/260E/S30V	R901147802		
		2.0 [0.53]	100 [1450]	08	ABZSS 08 M-3X/100E/S108V	R901263014		
				10	ABZSS 10 M-3X/100E/S31V	R900711131		
			250 [3625]	08	ABZSS 08 M-3X/260E/S108V	R901263015		
				10	ABZSS 10 M-3X/260E/S31V	R901147799		
		2.8 [0.74]	70 [1015]	08	ABZSS 08 M-3X/070E/S108V	R901263016		
				10	ABZSS 10 M-3X/070E/S31V	R901259516		
			250 [3625]	08	ABZSS 08 M-3X/260E/S108V	R901263015		
				10	ABZSS 10 M-3X/260E/S31V	R901147799		
		3.5 [0.91]	250 [3625]	08	ABZSS 08 M-3X/260E/S108V	R901263015		
				10	ABZSS 10 M-3X/260E/S31V	R901147799		
		Bladder-type accumulator	50170	1.0 [0.26]	350 [5075]	08	ABZSS 08 M-3X/350E/S105V	R901263022
						10	ABZSS 10 M-3X/350E/S10V	R901259519
2.5 [0.66]	08			ABZSS 08 M-3X/350E/S107V		R901272573		
	10			ABZSS 10 M-3X/350E/S12V		R901272576		
4.0 [1.06]	08			ABZSS 08 M-3X/350E/S107V		R901272573		
	10			ABZSS 10 M-3X/350E/S12V		R901272576		
6.0 [1.56]	08			ABZSS 08 M-3X/350E/S107V		R901272573		
	10			ABZSS 10 M-3X/350E/S12V		R901272576		
10 [2.64]	20			20		ABZSS 20 M-3X/330E/S13V	R900711415	
20 [5.28]				30		ABZSS 30 M-3X/330E/S 309V	R900713383	
32 [8.45]	ABZSS-P 30 M-3X/330E/S309V					R901146459		
	50 [13.2]					ABZSS 30 M-3X/330E/S 309V	R900713383	
ABZSS-P 30 M-3X/330E/S309V						R901146459		

 **Notice:** Preferred types and standard units are contained in the EPS (standard price list).

Preferred types

Accumulator type	Data sheet	Accumulator NG in l [gal]	Pressure set at the pressure relief valve in bar [psi]	Accumulator shut-off block DN	Denomination	Material no.
Diaphragm type accumulator	50150	0.5 [0.13]	160 [2320]	10	ABZSS 10 E-3X/160E/S30G 24K4V	R901263026
		0.7 [0.18]	180 [2610]	10	ABZSS 10 E-3X/180E/S30G 24K4V	R901263028
			250 [3625]	10	ABZSS 10 E-3X/260E/S30G 24K4V	R901147797
		1.0 [0.26]	200 [2900]	10	ABZSS 10 E-3X/200E/S30G 24K4V	R900709591
		1.4 [0.37]	140 [2020]	10	ABZSS 10 E-3X/140E/S30G 24K4V	R900709589
			250 [3625]	10	ABZSS 10 E-3X/260E/S30G 24K4V	R901147797
		2.0 [0.53]	100 [1450]	10	ABZSS 10 E-3X/100E/S31G 24K4V	R900709586
			250 [3625]	10	ABZSS 10 E-3X/260E/S31G 24K4V	R900709604
		2.8 [0.74]	70 [1015]	10	ABZSS 10 E-3X/070E/S31G 24K4V	R901263029
			250 [3625]	10	ABZSS 10 E-3X/260E/S31G 24K4V	R900709604
		3.5 [0.91]		250 [3625]	10	ABZSS 10 E-3X/260E/S31G 24K4V
		Bladder-type accumulator	50170	1.0 [0.26]	350 [5075]	10
2.5 [0.66]	10			ABZSS 10 E-3X/350E/S12G 24K4V		R901272591
4.0 [1.06]	10			ABZSS 10 E-3X/350E/S12G 24K4V		R901272591
6.0 [1.56]	10			ABZSS 10 E-3X/350E/S12G 24K4V		R901272591
10 [2.64]	330 [4785]			20	ABZSS 20 E-3X/330E/S13G 24K4V	R900709636
20 [5.28]				30	ABZSS 30 E-3X/330E/S 309G 24K4V	R900709657
32 [8.45]					ABZSS-P 30 E-3X/330E/S 309G 24K4V	R901147879
					ABZSS 30 E-3X/330E/S 309G 24K4V	R900709657
50 [13.2]					ABZSS-P 30 E-3X/330E/S 309G 24K4V	R901147879

 **Notice:** Preferred types and standard units are contained in the EPS (standard price list).

Technical data

(For application outside these values, please consult us!)

general							
Nominal diameter	DN	08	10	20	30	30S030	P30...
Weight	▶ Version "M"	kg	4.0	5.2	8.5	20.5	33.1
		[lbs]	[8.8]	[11.5]	[18.7]	[45.2]	[72.8]
	▶ Version "C" and "E"	kg	-	5.5	8.8	20.8	33.4
		[lbs]	-	[12.1]	[19.4]	[45.8]	[73.5]
Ambient temperature range	°C [°F]	-15 ... +80 [+5... +176]					

hydraulic	
Maximum operating pressure	bar [psi] 350 [5076]
Seal material	FKM seals or NBR seals ¹⁾
Block material	Steel
Hydraulic fluid	See table below
Maximum admissible degree of contamination of the hydraulic fluid Cleanliness class according to ISO 4406 (c)	Class 20/18/15 ²⁾
Hydraulic fluid temperature range	°C [°F] -10 ... +60 [+14... +140]
Viscosity range	mm ² /s [SUS] 12 ... 230 [55 ... 1066]

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HL, HLP	NBR, FKM	DIN 51524	90220

Important notices on hydraulic fluids:

- ▶ For more information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.
- ▶ There may be limitations regarding the technical valve data

(temperature, pressure range, life cycle, maintenance intervals, etc.).

- ▶ The ignition temperature of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.

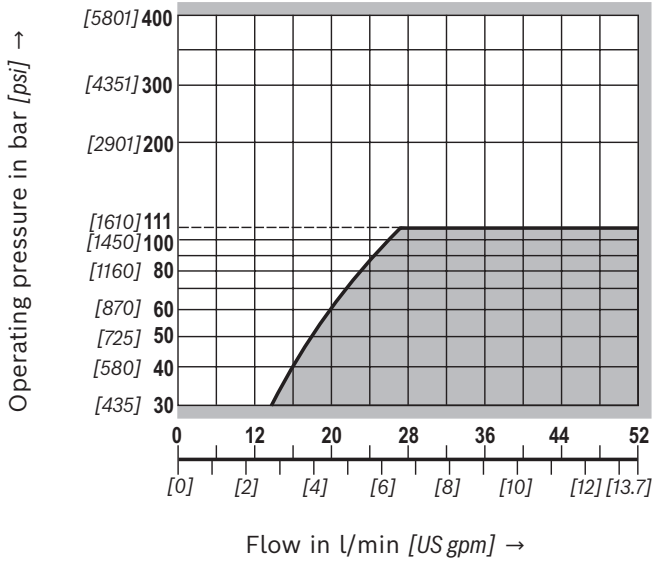
electrical	
Protection class according to DIN EN 60529	▶ With connector "K4" IP 65 (with mating connector mounted and locked)

1) Special version

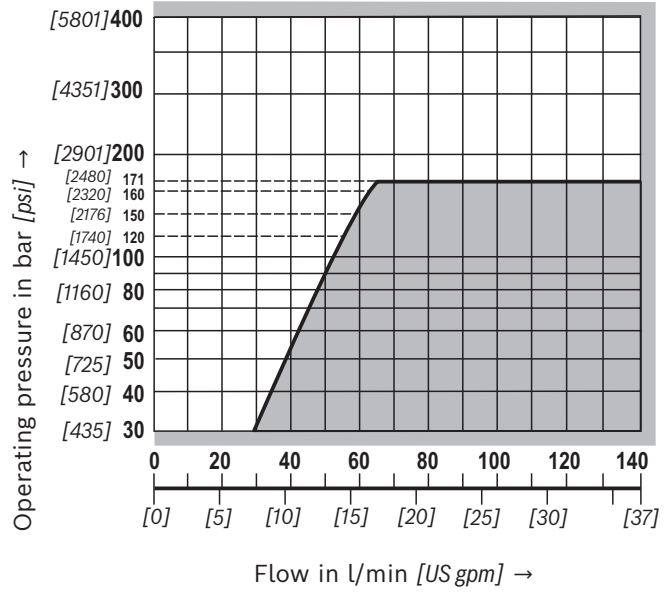
2) The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.

Characteristic curves: Type-examination tested safety valves type DBD 1)

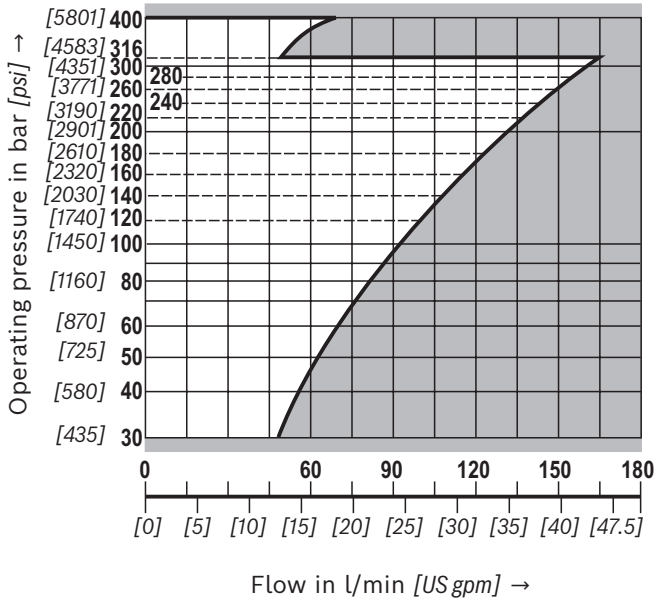
Size 6 (ABZSS 08, 10)



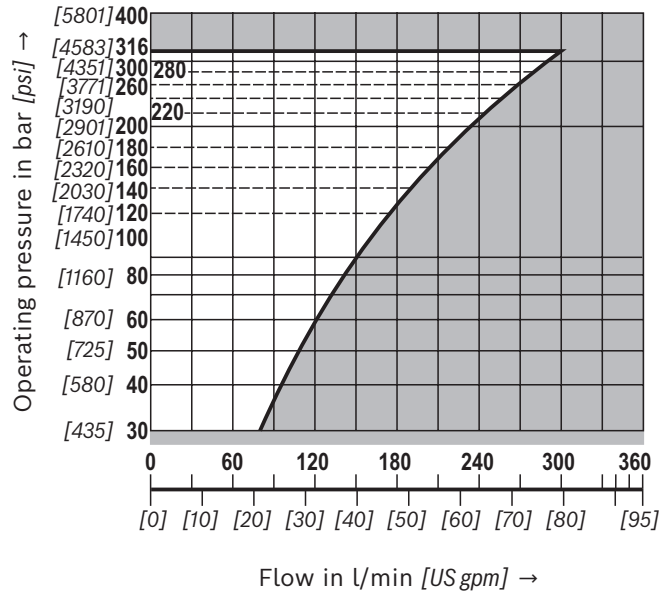
Size 10 (ABZSS 20)



Size 20 (ABZSS 30, -P30)



Size 30 (ABZSS 30...SO30)

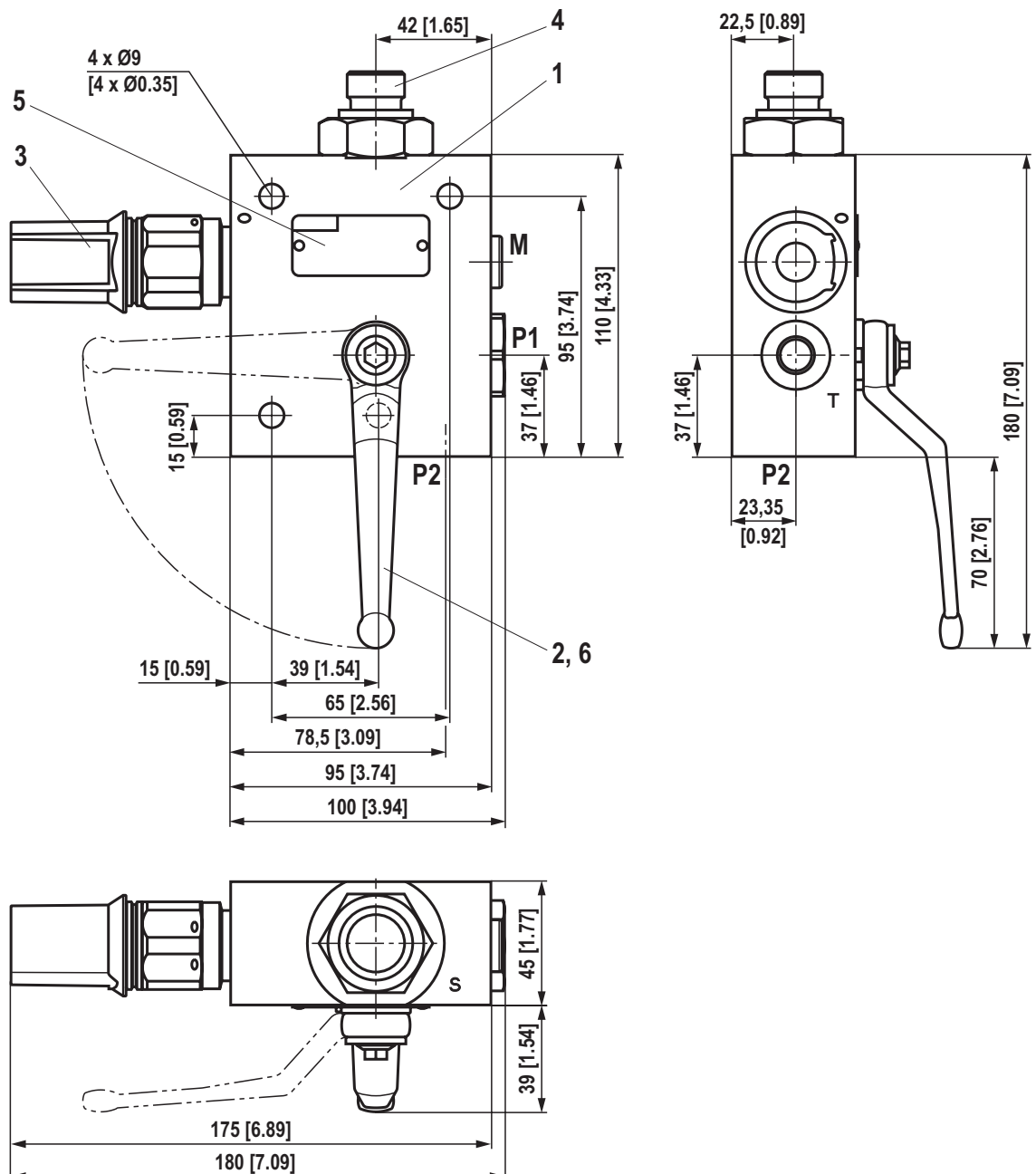


Notice:

Value pairs located in the areas of the characteristic curves with gray background can not be realized with the safety valve. The characteristic curves shown here are only valid for a counter pressure of 0 bar in the discharge line.

1) Component series 1X according to the Pressure Equipment Directive 2014/68/EU

Dimensions: Version "08..." (DN08)
(dimensions in mm [inch])



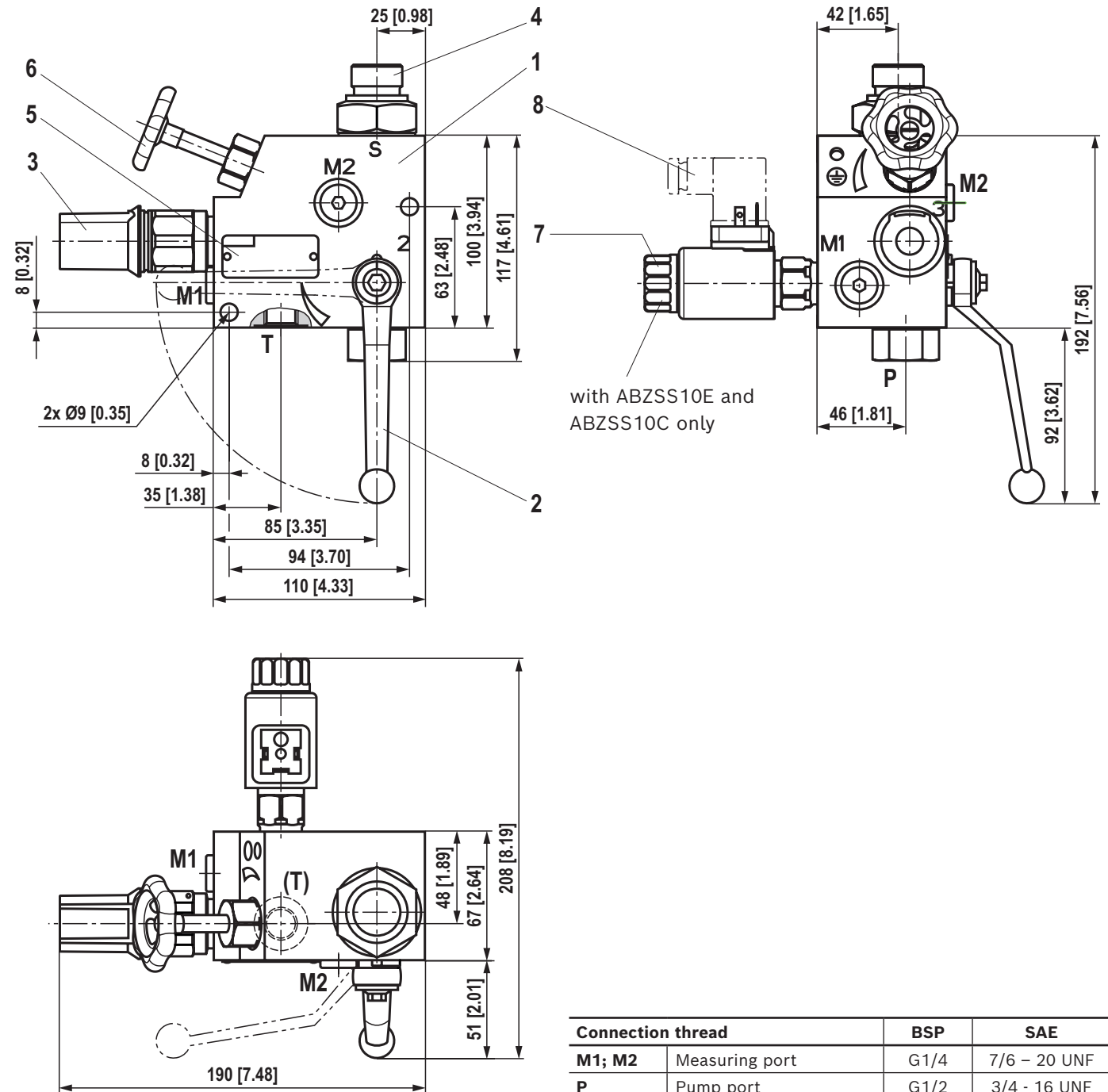
Connection thread		BSP
M1; M2	Measuring port	G1/4
P1	Pump port	G3/8
P2	Pump port	G1/2
T	Tank port	G1/4
S	Accumulator port	M20 x 1.5 ¹⁾

¹⁾ Mounting cavity according to DIN EN 9974-1

Item explanations see page [16](#)

Characteristic curves for type-examination tested safety valves type DBDS can be found on page [8](#)

Dimensions: Version "10..." (DN10)
(dimensions in mm [inch])

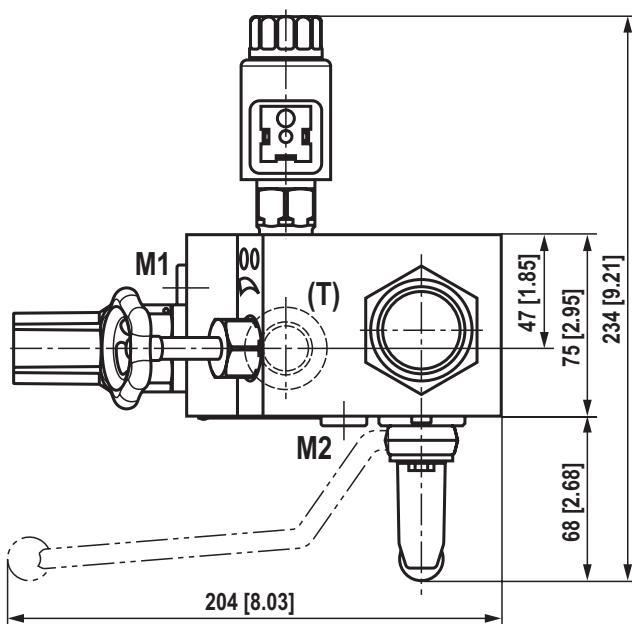
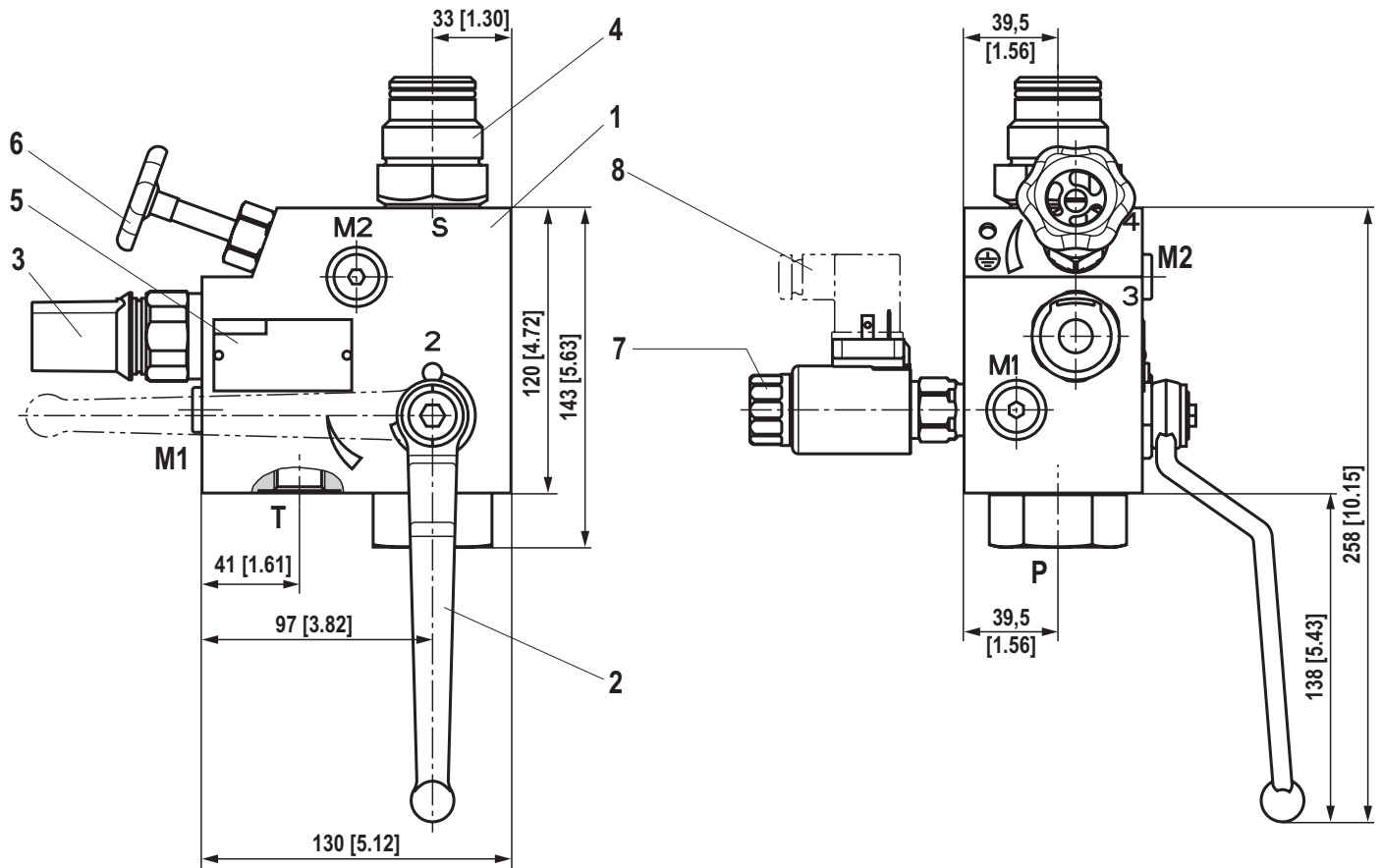


Connection thread		BSP	SAE
M1; M2	Measuring port	G1/4	7/6 - 20 UNF
P	Pump port	G1/2	3/4 - 16 UNF
T	Tank port	G3/8	9/16 - 18 UNF
S	Accumulator port	M33 x 2	M33 x 2

Item explanations see page 16

Characteristic curves for type-examination tested safety valves type DBDS can be found on page 8

Dimensions: Version "20..." (DN20)
(dimensions in mm [inch])

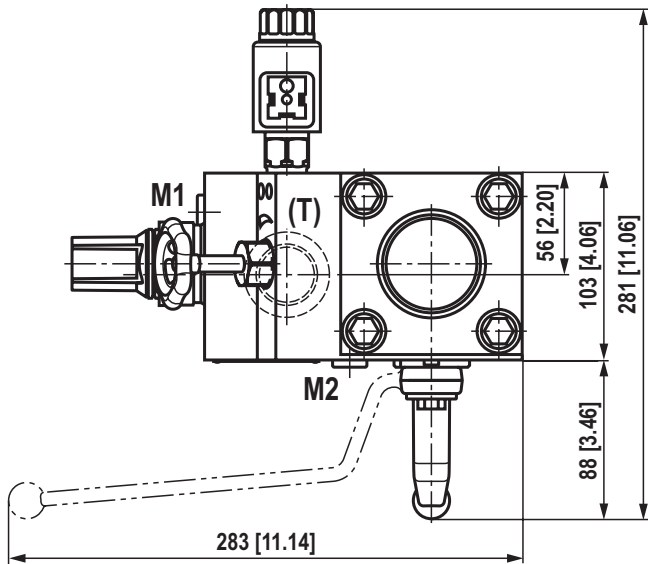
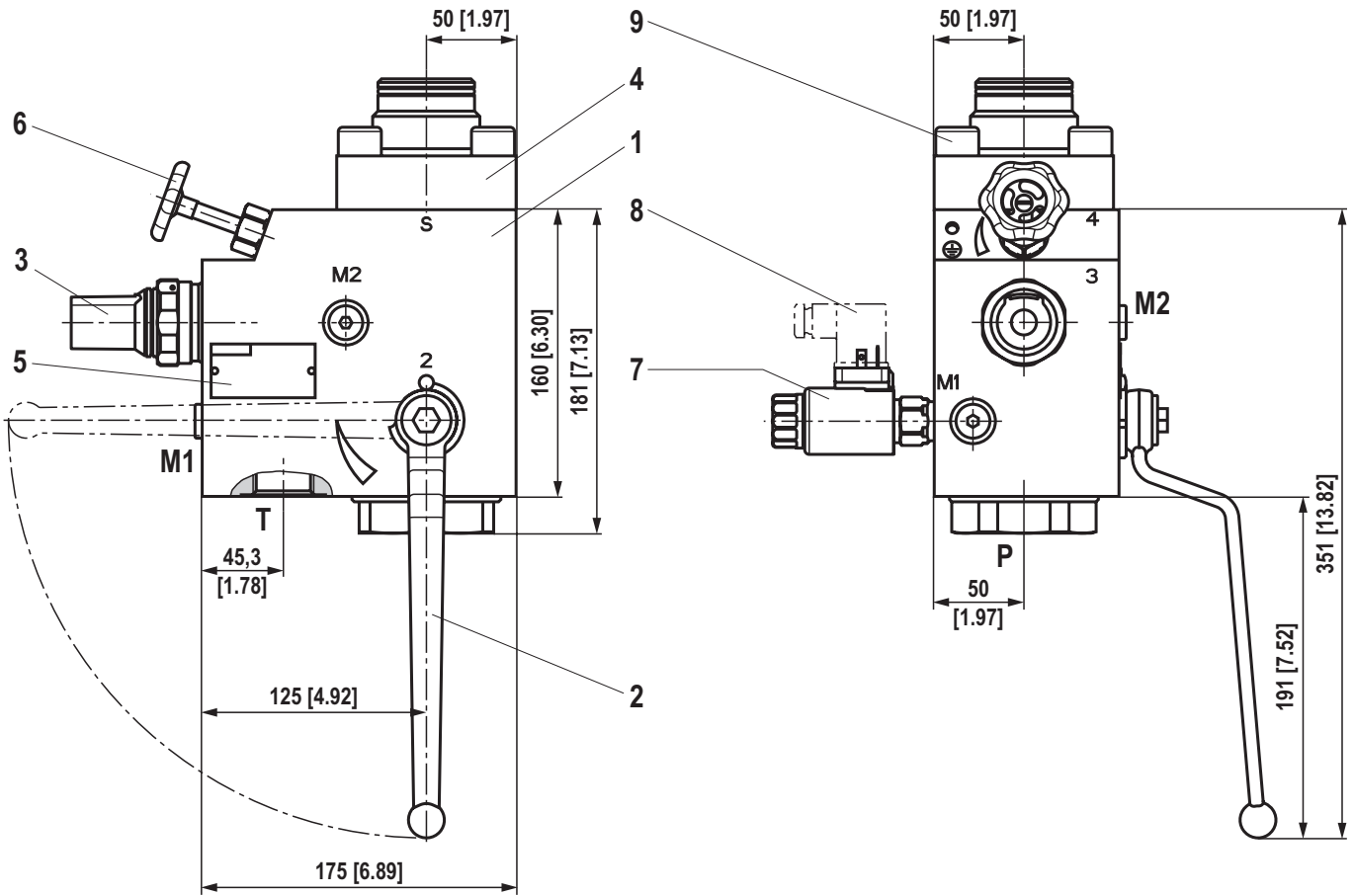


Connection thread		BSP	SAE
M1; M2	Measuring port	G1/4	7/6 - 20 UNF
P	Pump port	G1	1 5/16 - 12 UNF
T	Tank port	G1/2	3/4 - 16 UNF
S	Accumulator port	M33 x 2	M33 x 2

Item explanations see page 16

Characteristic curves for type-examination tested safety valves type DBDS can be found on page B

Dimensions: Version "30..." (DN30)
(dimensions in mm [inch])

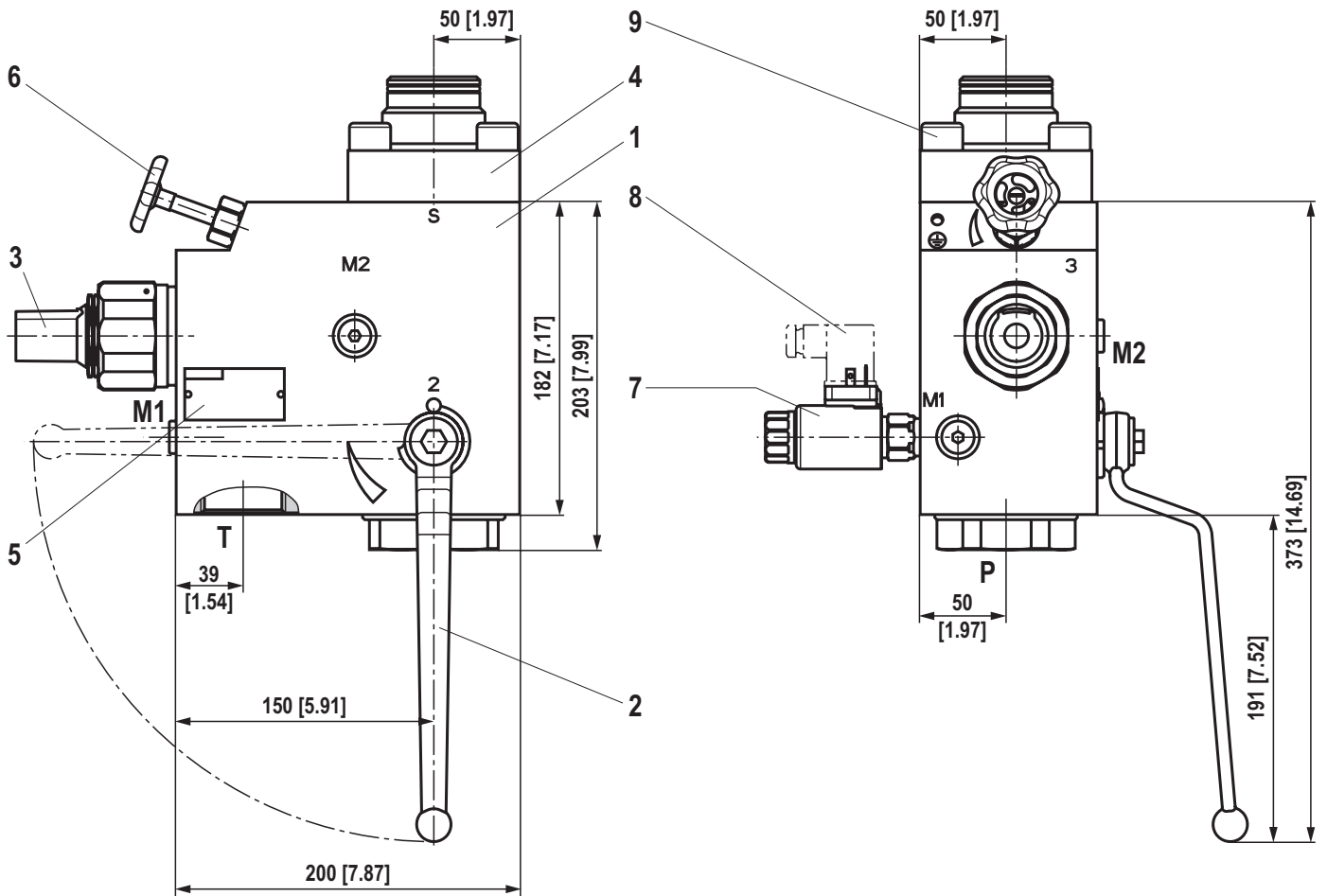


Connection thread		BSP	SAE
M1; M2	Measuring port	G1/4	7/6 - 20 UNF
P	Pump port	G1 1/2	1 7/8 - 12 UNF
T	Tank port	G1	1 5/16 - 12 UNF
S	Accumulator port (flange)	Page 16	Page 19

Item explanations see page 16

Characteristic curves for type-examination tested safety valves type DBDS can be found on page 8

Dimensions: Version "30...SO30" (DN30)
(dimensions in mm [inch])

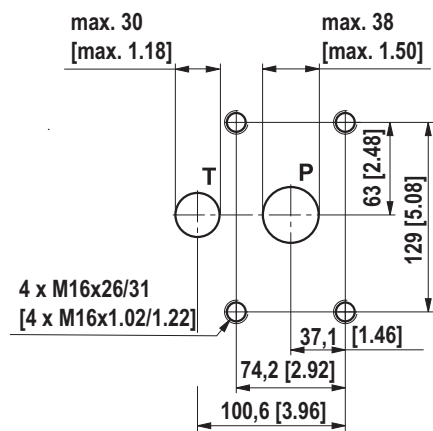
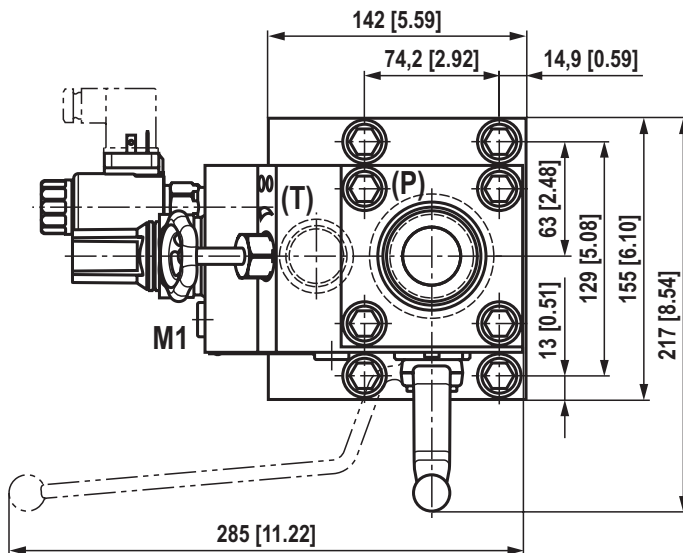
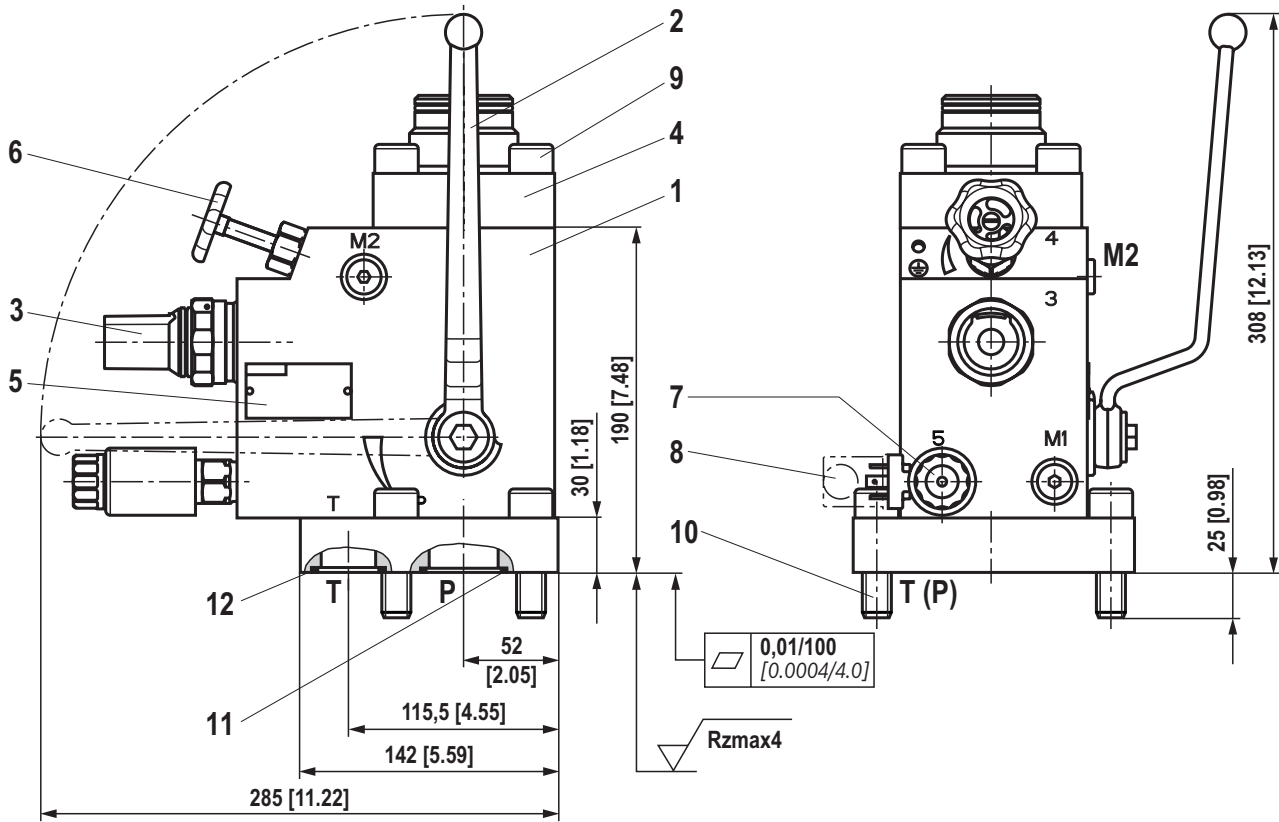


Connection thread		BSP	SAE
M1; M2	Measuring port	G1/4	7/6 - 20 UNF
P	Pump port	G1 1/2	1 7/8 - 12 UNF
T	Tank port	G1 1/2	1 7/8 - 12 UNF
S	Accumulator port (flange)	Page 16	Page 19

Item explanations see page 16

Characteristic curves for type-examination tested safety valves type DBDS can be found on page 8

Dimensions: Version "P30..." subplate mounting (DN30)
(dimension in mm [inch])



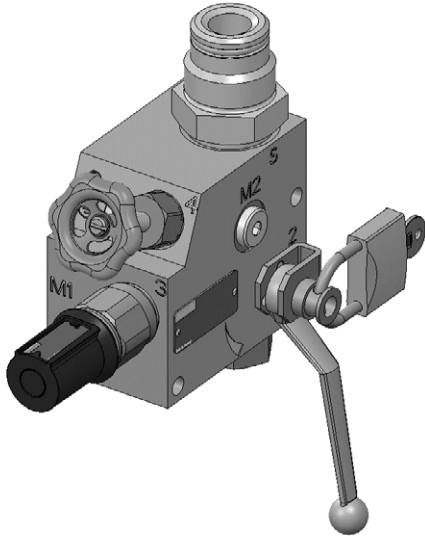
Connection thread	BSP	SAE
M1; M2	Measuring port	G1/4
S	Accumulator port (flange)	7/6 – 20 UNF

Item explanations see page 16

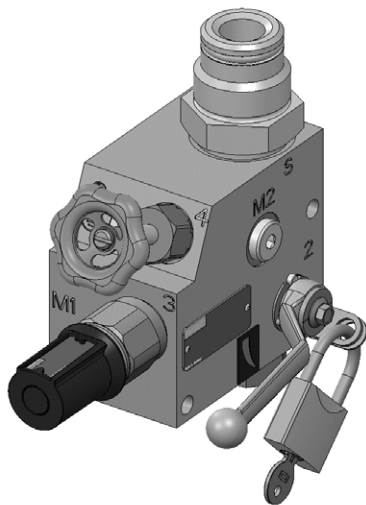
Characteristic curves for type-examination tested safety valves type DBDS can be found on page 8

Dimensions: Special versions "SO103" and "SO104" (for NG10 to NG30 only)

"SO103" shut-off device with two shut-off positions
(open or closed)



"SO104" shut-off device with one shut-off position
(closed)



(padlock not included in the scope of delivery)

Dimensions

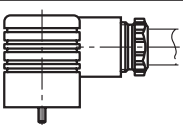
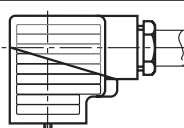
- 1 Block
- 2 System shut-off cock
- 3 Pressure relief valve, tightening torque see page 16
- 4 Accumulator adapter, see Accessories on page 17 ... 20
- 5 Name plate
- 6 Manual unloading
- 7 Electro-magnetic unloading, optional (only with design "E")
- 8 Mating connector, separate order, see page 16
- 9 Hexagon socket head cap screws
4 pieces ISO 4762 - M16 x 50 - 10.9
 Tightening torque $M_A = 250^{+10}$ Nm [184.07.4 ft-lbs]
- 10 Hexagon socket head cap screws
4 pieces ISO 4762 - M16 x 55 - 10.9
 Tightening torque $M_A = 250^{+10}$ Nm [184.07.4 ft-lbs]
- 11 R-ring 42.5 x 3.00 x 3.00 Shore 90
- 12 R-ring 34.52 x 3.53 x 3.53 Shore 90

Tightening torque: Pressure relief valve DBD

NG	Tightening torques M_A in Nm [ft-lbs] for screw-in cartridge valves ¹⁾	
	Pressure rating in bar [psi]	
	up to 200 [2900]	up to 400 [5800]
6	50±5 [37±3.7]	80±5 [59±4]
10	100±5 [74±3.5]	150±10 [110±3.5]
20	150±10 [111±7.5]	300±15 [221±11]
30	350±20 [258±19.5]	500±30 [369±22]

¹⁾ The tightening torques are guidelines with a friction coefficient $\mu_{\text{total}} = 0.12$ and when using a manual torque wrench.

Mating connectors according to DIN EN 175301-803

For details and more mating connectors see data sheet 08006					
Valve side	Color	Material number			
		Without circuitry	With indicator light 12 ... 240 V	With rectifier 12 ... 240 V	With indicator light and Zener diode suppression circuit 24 V
a	gray	R901017010	-	-	-
b	black	R901017011	-	-	-
a/b	black	-	R901017022	R901017025	R901017026

Accessories: Accumulator adapter BSP thread, maximum operating pressure 350 bar [5075 psi] (dimensions in mm [inch])

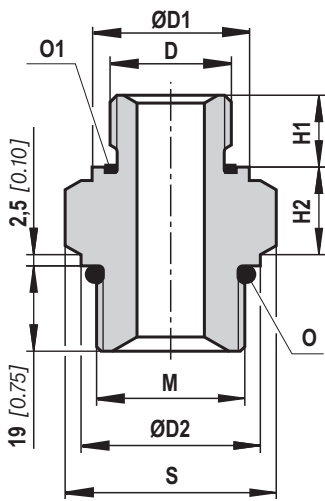


Fig. 1

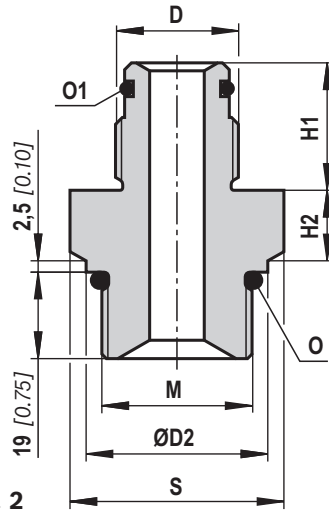


Fig. 2

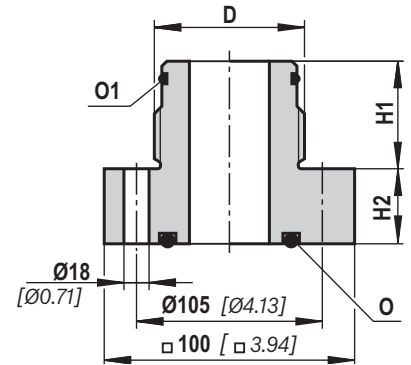


Fig. 3

Nominal Ø version	Accumulator type	Accumulator DN	Accumulator adapter	Fig.	D	ØD1	ØD2	H1	H2	M	O	O1	S							
ABZSS 08 10 20	Diaphragm type accumulator data sheet 50150	0.075	S30 ¹⁾ S104 ²⁾	1	G1/2A	26.9 [1.06]		14 [0.55]	19.5 [0.76] ¹⁾ 17.5 [0.68] ²⁾			Profile seal ring G1/2A according to DIN 3869	S30 ¹⁾ , S31 ¹⁾ , S108 ²⁾ , Wrench size 41 [1.61A/F], S104 ²⁾ Wrench size 36 [1.41A/F]							
		0.16						19.5 [0.76] ¹⁾ 18 [0.70] ²⁾												
		0.32																		
		0.5																		
		0.7																		
		1.0																		
	1.4																			
	2.0	S31 ¹⁾ S108 ²⁾																		
	2.8																			
	3.5																			
ABZSS 30 P30	Bladder-type accumulator data sheet 50171	1.0	S10 ¹⁾ S105 ²⁾	2	G3/4A	-	39.9 [1.57] ¹⁾ 35.0 [1.37] ²⁾	28 [1.10]	15.5 [0.61]	33x2 ¹⁾ ; 20x1.5 ²⁾	29.7x2.8 ¹⁾ ; 24x2.0 ²⁾	18x2.5 [0.71x0.10]	wrench size 41 [1.61A/F] ¹⁾ Wrench size 36 [1.41A/F] ²⁾							
		2.5	S12 ¹⁾ S107 ²⁾					37 [1.46]	16.5 [0.65] ¹⁾ 17.5 [0.68] ²⁾					30x3 [1.18x0.12]	Wrench size 46 [1.81A/F]					
		4.0																		
		6.0																		
		10.0	S13 ¹⁾ S109 ²⁾					43 [1.69]	20.5 [0.81] ¹⁾ 18.5 [0.73] ²⁾							48x3 [1.89x0.12]	Wrench size 65 [2.55A/F]			
		20.0																		
		35.0																		
		50.0																		
		2.5	S307					37 [1.46]										56.52 x 5.33	48x3 [1.89x0.12]	-
		4.0																		
6.0																				
10.0	S309	43 [1.69]	30 [1.18]																	
20.0																				
35.0																				
50.0																				

 ▶ ¹⁾ applies to ABZSS10 and ABZSS20 only

²⁾ applies to ABZSS08 only

Accessories: ordering code accumulator adapter BSP thread

Version	ACCUMULATOR ADAPTER	Material no. FKM	ACCUMULATOR ADAPTER	Material no. NBR ²⁾
S10	S10V/G3/4-M33X2 *BG	R900545254	S10M/G3/4-M33X2 *BG	R900862699
S12	S12V/G1 1/4-M33X2 *BG	R900545255	S12M/G1 1/4-M33X2 *BG	R900862700
S13	S13V/G2-M33X2 *BG	R900545256	S13M/G2-M33X2 *BG	R900862701
S30	S30V/G1/2-M33X2 *BG	R900545252	S30M/G1/2-M33X2 *BG	R900862695
S31	S31V/G3/4-M33X2 *BG	R900545253	S31M/G3/4-M33X2 *BG	R900862697
S104	S104V/G1/2-M20X1.5* &	R901265402	S104M/G1/2-M20X1.5* &	R901265401
S105	S105V/G3/4-M20X1.5* &	R901265411	S105M/G3/4-M20X1.5* &	R901265407
S107	S107V/G11/4-M20X1.5*&	R901265412	S107M/G11/4-M20X1.5*&	R901265422
S108	S108V/G3/4-M20X1.5* &	R901265434	S108M/G3/4-M20X1.5* &	R901265425
S109	S109V/G2-M20X1,5* &	R901265408	S109M/G2-M20X1,5* &	R901265404
S307 ¹⁾	S307V/G 11/4-DN32 *BG	R900085303	S307M/G 11/4-DN32 *BG	R900067050
S309 ¹⁾	S309V/G2-DN32 *BG	R900545858	S309M/G2-DN32 *BG	R900862702

¹⁾ Scope of delivery includes 4 hexagon socket head cap screws ISO 4762-M16 x 50 - 10.9

²⁾ Special version

Accessories: Accumulator adapter SAE thread, maximum operating pressure 350 bar [5075 psi] (dimensions in mm [inch])

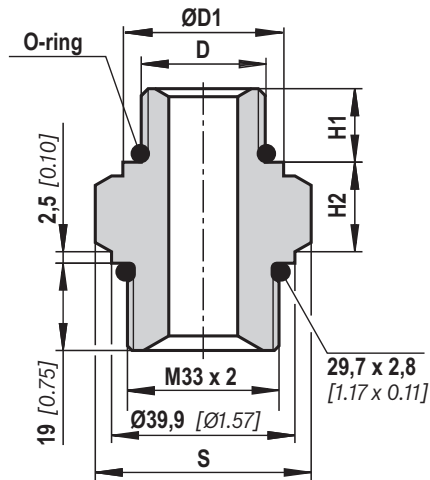


Fig. 1

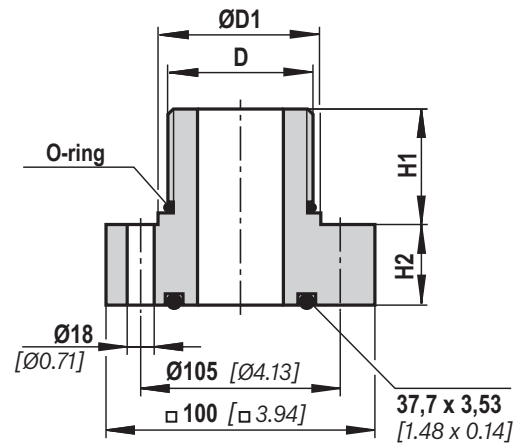


Fig. 2

Nominal Ø version	Accumulator type	Accumulator DN	Accumulator adapter	Fig.	S	H1	H2	D	ØD1	O-ring							
ABZSS 10 20	Diaphragm type accumulator data sheet 50150	0.075	S64	1	Wrench size 41 [1.61A/F]	11.4 [0.45]	18.1 [0.71]	3/4-16UNF-2A	23 [0.91]	16.36 x 2.21 [0.64 x 0.87]							
		0.16															
		0.32															
		0.5															
		0.7															
		1.0															
	1.4	S60	1	Wrench size 41 [1.61A/F]	15.2 [0.60]	18.3 [0.72]	1 1/16-12UN-2A	32 [1.26]	23.0 x 3.0 [0.91 x 0.12]								
	2.0																
	2.8																
	3.5																
Bladder-type accumulator data sheet 50171	1.0	S60	1	Wrench size 41 [1.61A/F]	15.2 [0.60]	18.3 [0.72]	1 1/16-12UN-2A	32 [1.26]	23.0 x 3.0 [0.91 x 0.12]								
										2.5	S62	Wrench size 65 [2.55A/F]	15.2 [0.60]	20.3 [0.80]	1 5/8-12UN-2A	48 [1.89]	38.0 x 3.0 [1.50 x 0.12]
	6.0	S63	Wrench size 65 [2.55A/F]	15.2 [0.60]	20.3 [0.80]	1 7/8-12UN-2A	54 [2.13]	44.0 x 3.0 [1.73 x 0.12]									
									10.0								
	20.0	S620	2	-	15.2 [0.60]	32 [1.33]	1 5/8-12UN-2A	48 [1.89]		38.0 x 3.0 [1.50 x 0.12]							
									35.0								
	50.0	S630	Wrench size 65 [2.55A/F]	15.2 [0.60]	32 [1.33]	1 7/8-12UN-2A	54 [2.13]	44.0 x 3.0 [1.73 x 0.12]									
10.0																	
	20.0																
35.0																	
	50.0																


Accessories: ordering code accumulator adapter SAE thread


Version	ACCUMULATOR ADAPTER	Material no. FKM	ACCUMULATOR ADAPTER	Material no. NBR ²⁾
S60	S60V/ 1 1/16-12UN-M33x2	R900618788	S60M/ 1 1/16-12UN-M33x2	R900618799
S62	S62V/ 1 5/8-12UN-M33x2	R900618800	S62M/ 1 5/8-12UN-M33x2	R900618801
S63	S63V/ 1 7/8-12UN-M33x2	R900618803	S63M/ 1 7/8-12UN-M33x2	R900618804
S64	S64V/ 3/4-16UNF-M33x2	R900618805	S64M/ 3/4-16UNF-M33x2	R900618806
S620 ¹⁾	S620V/ 1 5/8-12UN-DN32	R900618813	S620M/ 1 5/8-12UN-DN32	R900618814
S630 ¹⁾	S630V/ 1 7/8-12UN-DN32	R900618817	S630M/ 1 7/8-12UN-DN32	R900618815

¹⁾ Scope of delivery includes 4 hexagon socket head cap screws ISO 4762-M16 x 50 - 10.9

²⁾ Special version

Safety instructions: Type-examination tested safety valves type DBDS ¹⁾

- ▶ Before ordering a type-examination tested safety valve, ensure that for the desired **response pressure p** , the maximum admissible **flow q_{Vmax}** of the safety valve is larger than the maximum possible flow of the system/accumulator to be secured.
According to the Pressure Equipment Directive **2014/68/EU**, the increase in the system pressure due to the flow must not exceed 10% of the set response pressure (see component marking).
 - ▶ The maximum admissible flow q_{Vmax} stated in the component marking must not be exceeded.
 - ▶ Discharge lines of safety valves must end in a risk-free manner. An accumulation of fluids in the discharge system must **not** be possible (see data sheet AD2000 A2).
-  **It is imperative to observe the application notes!**
- ▶ In the plant, the response pressure specified in the component marking is set at a flow of 2 l/min [0.53 US gpm].
 - ▶ The maximum flow stated in the component marking applies for applications without counter pressure in the discharge line (port T).
- ▶ By removing the lead seal at the safety valve, the approval according to the Pressure Equipment Directive becomes void!
 - ▶ Basically, the requirements of the Pressure Equipment Directive and of data sheet AD 2000 A2 have to be observed!
 - ▶ It is recommended to secure type-examination tested safety valves against inadmissible disassembly by wiring and sealing them with the housing/block (bore available in the adjustment type).

 **Notice:**

The system pressure increases by the counter pressure in the discharge line (port T) due to the increasing flow. (Observe the data sheet AD 2000 A 2, point 6.3!)

To ensure that this increase in system pressure caused by the flow does not exceed 10% of the set response pressure, the admissible flow has to be reduced dependent on the counter pressure in the discharge line (port T) (see diagrams on page 22 ... 25).

¹⁾ Component series 1X according to the Pressure Equipment Directive 2014/68/EU

Characteristic curves: Counter pressure in the discharge line

In principle, the valve should be operated without counter pressure in the discharge line, if possible. In case of counter pressure in the discharge line, the maximum possible flow is reduced. There is a relationship between maximum counter pressure p_T in the discharge line and flow q_v , which can be seen from the following characteristic curve. Characteristic curves for intermediate values of the response pressure which are not listed must be determined by means of interpolation.

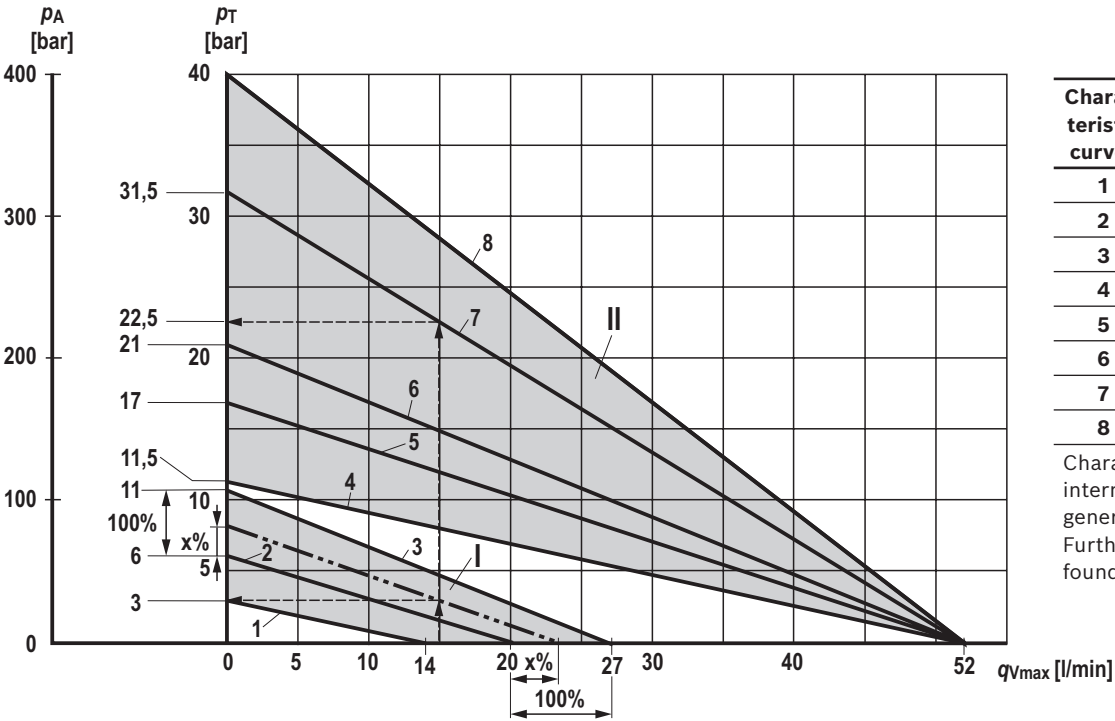
When the flow approaches zero, the maximum counter pressure p_T is in each case 10% of the response pressure. With increasing flow, the maximum counter pressure p_T decreases.

Interpolation of intermediate values from the diagram

1. At the axis p_T , mark 1/10 of the value of p_A .
2. Determine the next lower and the next higher characteristic curve for this point. The point marked at p_T divides the section between lower and higher characteristic curve on the p_T axis with a certain percentage.
3. At the q_{Vmax} axis, divide the section between next lower and next higher characteristic curve in the same percentage as the section at the p_T axis. From the zero position flow on the q_{Vmax} axis determined in that way, draw a straight line to the value on the p_T axis marked before.
4. Mark the system flow to be secured at the q_{Vmax} axis.
5. Read off the maximum counter pressure for this value using the line at the p_T axis drawn before.

Characteristic curves: Counter pressure in the discharge line – size 6

Diagram for determining the maximum counter pressure p_T in the discharge line at port T of the valve dependent on the flow q_{Vmax} for valves DBDS 6...1X/...E with different response pressures p_A .



Characteristic curves	Response pressure p_A in bar [psi]
1	30 [435]
2	60 [870]
3	110 [1595]
4	115 [1668]
5	170 [2465]
6	210 [3046]
7	315 [4568]
8	400 [5800]

Characteristic curves for intermediate values can be generated by interpolation. Further explanations can be found on page 21.

- p_A Response pressure in bar
- p_T Maximum counter pressure in the discharge line (port T) in bar
- q_{Vmax} Maximum flow in l/min
- I** Interpolation area I, for valves with $p_A = 30 \dots 110$ bar and $q_{Vmax} = 14 \dots 27$ l/min
- II** Interpolation area II, for valves with $p_A = 115 \dots 400$ bar and $q_{Vmax} = 52$ l/min

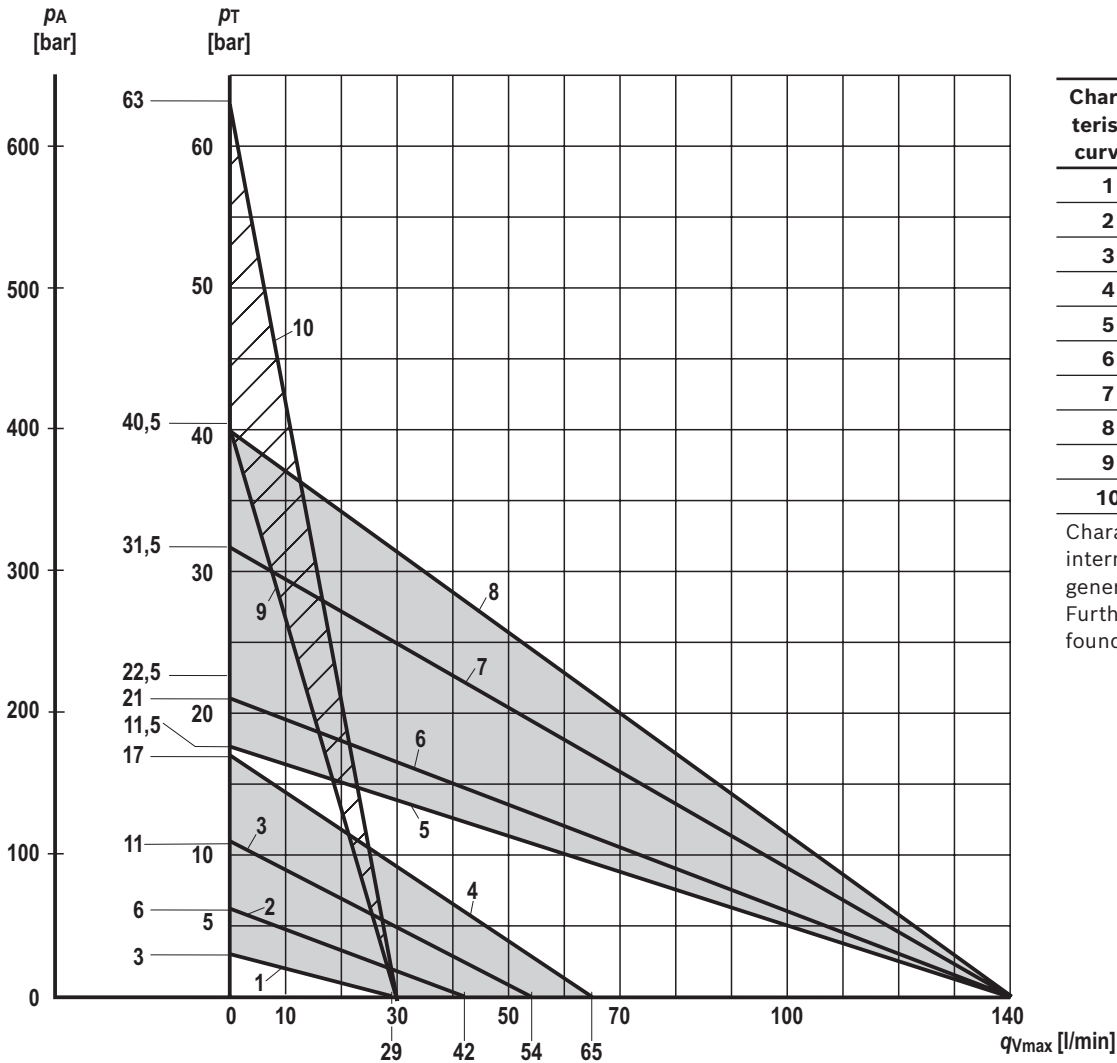
Determination of the maximum counter pressure

Example 1 (with already existing characteristic curve):
 Flow of the system / accumulator to be secured: $q_{Vmax} = 15$ l/min
 Safety valve set to: $p_A = 315$ bar.
 Read off the maximum counter pressure p_T of approx. 22.5 bar from the diagram (see arrows, characteristic curve 7).

Example 2 (with interpolated characteristic curve):
 Flow of the system / accumulator to be secured: $q_{Vmax} = 15$ l/min
 Safety valve set to: $p_A = 80$ bar.
 Value to be marked at the axis referred to as p_T :
 $1/10 \times 80$ bar = 8 bar.
 Read off the maximum counter pressure p_T of approx. 3 bar from the diagram (see arrows, dashed characteristic curve).



Characteristic curves: Counter pressure in the discharge line – size 10

Diagram for determining the maximum counter pressure p_T in the discharge line at port T of the valve dependent on the flow q_{Vmax} for valves DBDS 10...1X/...E with different response pressures p_A .



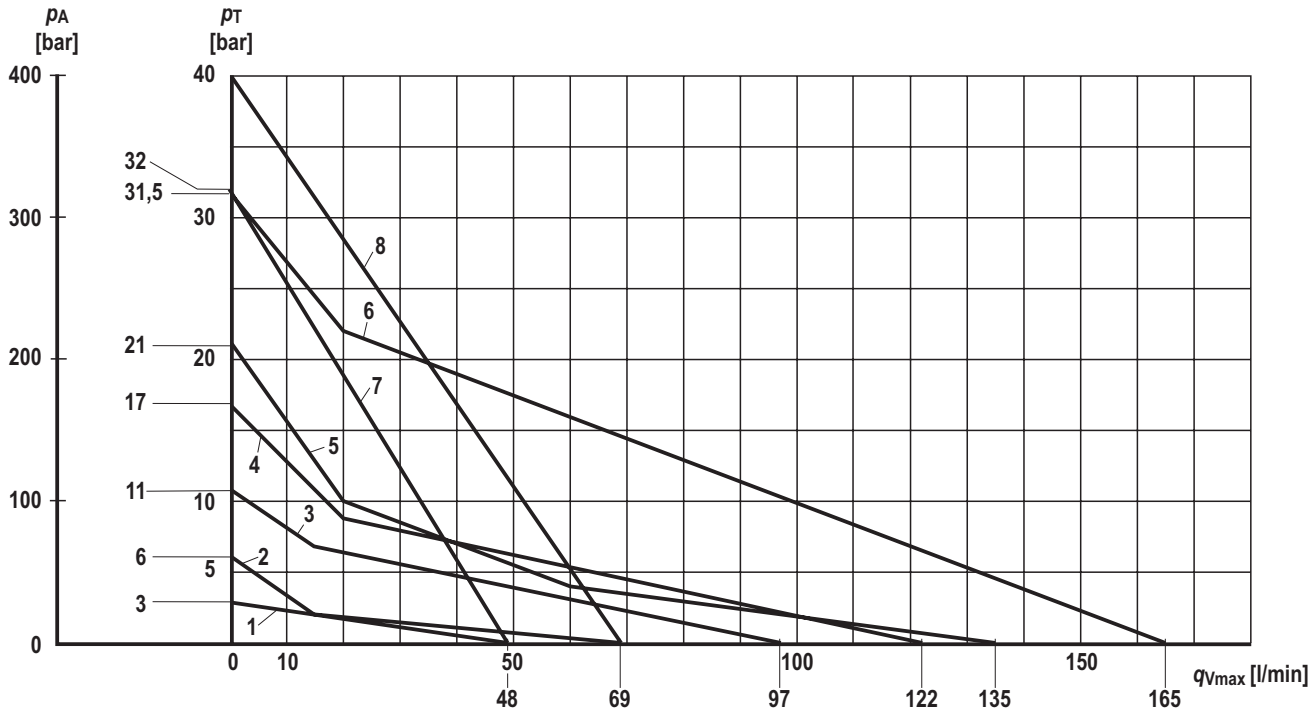
Characteristic curves	Response pressure p_A in bar [psi]
1	30 [435]
2	60 [870]
3	110 [1595]
4	170 [2465]
5	175 [2538]
6	210 [3046]
7	315 [4568]
8	400 [5800]
9	405 [5874]
10	630 [9150]

Characteristic curves for intermediate values can be generated by interpolation. Further explanations can be found on page 21.

- p_A Response pressure in bar
- p_T Maximum counter pressure in the discharge line (port T) in bar
- q_{Vmax} Maximum flow in l/min
-  Interpolation areas
- 

Characteristic curves: Counter pressure in the discharge line – size 20

Diagram for determining the maximum admissible counter pressure p_T in the discharge line at port T of the valve dependent on the flow q_{Vmax} for valves DBDS 20...1X/...E with different response pressures p_A .



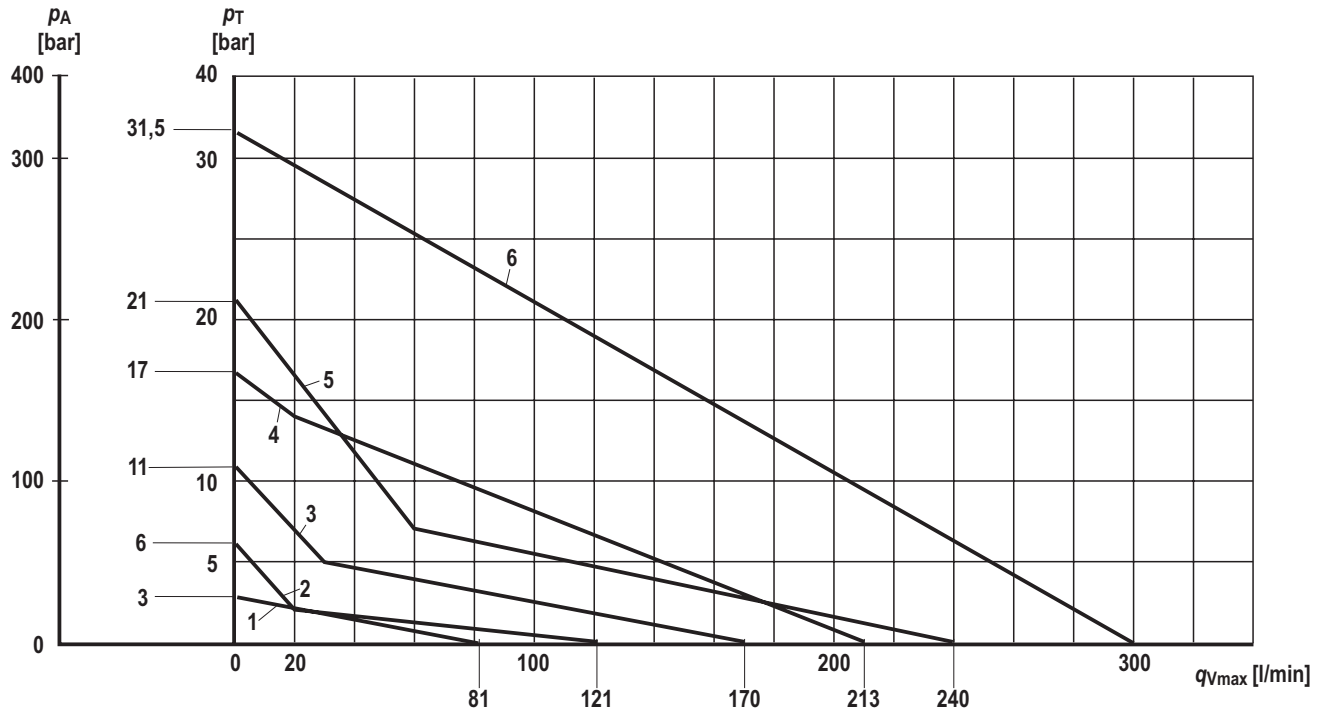
- p_A Response pressure in bar
 p_T Maximum counter pressure in the discharge line (port T) in bar
 q_{Vmax} Maximum flow in l/min

Characteristic curves	Response pressure p_A in bar [psi]
1	30 [435]
2	60 [870]
3	110 [1595]
4	170 [2465]
5	210 [3046]
6	315 [4568]
7	320 [4641]
8	400 [5800]

Characteristic curves for intermediate values can be generated by interpolation. Further explanations can be found on page [21](#).

Characteristic curves: Counter pressure in the discharge line – size 30

Diagram for determining the maximum counter pressure p_T in the discharge line at port T of the valve dependent on the flow q_{Vmax} for valves DBDS 30...1X/...E with different response pressures p_A .



- p_A Response pressure in bar
 p_T Maximum counter pressure in the discharge line (port T) in bar
 q_{Vmax} Maximum flow in l/min

Characteristic curves	Response pressure p_A in bar [psi]
1	30 [435]
2	60 [870]
3	110 [1595]
4	170 [2465]
5	210 [3046]
6	315 [4568]

Characteristic curves for intermediate values can be generated by interpolation. Further explanations can be found on page 21.

Further information

- ▶ Accumulator shut-off block
 - ▶ 2/2 directional seat valve, direct operated with solenoid actuation
 - ▶ Pressure relief valve, direct operated
 - ▶ Hydraulic fluids on mineral oil basis
 - ▶ Environmentally compatible hydraulic fluids
 - ▶ Hexagon socket head cap screw, metric/UNC
 - ▶ Hydraulic valves for industrial applications
 - ▶ General product information on hydraulic products
 - ▶ Selection of the filters
 - ▶ Information on available spare parts
- Operating instructions 50129-B
Data sheet 18136-20
Data sheet 25402
Data sheet 90220
Data sheet 90221
Data sheet 08936
Operating instructions 07600-B
Data sheet 07008

Accumulator safety block

Type 0532VAW



H7559

- ▶ Nominal diameter DN20, DN32
- ▶ Component series A1
- ▶ Maximum operating pressure 330 bar [4800 psi]

Features

- ▶ Ready for connection
- ▶ Manual or electro-magnetic unloading
- ▶ Large number of variants
- ▶ Compact design
- ▶ Direct operated pressure relief valve according to data sheet 50153

Contents

Features	1
Ordering code	2, 3
Symbols	3
Preferred types	4, 5
Function	6
Technical data	7, 8
Characteristic curves	8
Dimensions	10 ... 21
Accessories	21, 22
Safety instructions	23
Further information	23

Ordering code

01	02	03	04	05	06	07	08	09	10
0532VAW	/	/	/	/	/	/	/	/	/

01	Accumulator shut-off block	0532VAW
----	----------------------------	---------

Nominal diameter

02	DN20	20
	DN32	32

Symbol (see preferred types on pages 4 and 5)

03	Symbol 1	1
	Symbol 2	2
	Symbol 3	3
	Symbol 4	4
	Symbol 5	5 ¹⁾
	Symbol 6	6 ¹⁾
	Symbol 7	7 ¹⁾
	Symbol 8	8
	Symbol 9	9 ¹⁾
	Symbol 10	10

Seal material

04	FKM seal	FKM
	Observe compatibility of seals with hydraulic fluid used! (Other seals upon request)	

Pressure adjustment

05	40 bar [585 psi]	40
	50 bar [730 psi]	50
	70 bar [1015 psi]	70
	100 bar [1450 psi]	100
	140 bar [2030 psi]	140
	160 bar [2320 psi]	160
	211 bar [3060 psi]	211
	250 bar [3625 psi]	250
	280 bar [4060 psi]	280
	330 bar [4800 psi]	330
	Without pressure relief valve	– ²⁾

Adjustment type at the pressure relief valve

06	With hand wheel	D
	Spindle with protective cap	K
	Without pressure relief valve	– ²⁾

Order example:

0532VAW20/1/FKM/-/Z/00/-/A1**Notice:** Preferred types and standard units are contained in the EPS (standard price list).

Ordering code

01	02	03	04	05	06	07	08	09	10
0532VAW	/		/		/		/		/

Connection thread P

07	Inch	Z
	Flange	F ¹⁾

Unloading

08	Without directional valve	00 ³⁾
	2/2 directional valve, manual operation	01 ⁴⁾
	2/2 directional valve, electrical operation, normally open	03 ⁵⁾

Voltage type

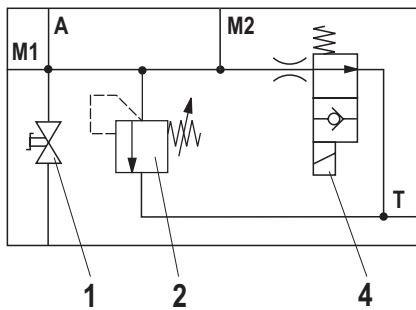
09	Direct voltage 24 V / Frequency	G24/00 ⁵⁾
	Without directional valve	-/- ⁶⁾

Component series

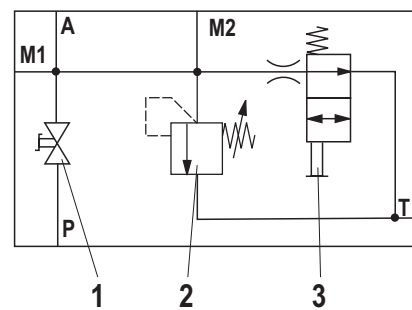
10	Component series A with standard version 1	A1
	Component series A with special version S	AS

- 1) Not possible with version "20"
- 2) Only for symbols 1, 2, 5, 8 and 9
- 3) Only for symbols 1, 3 and 6
- 4) Only for symbols 8, 9 and 10
- 5) Only for symbols 2, 4, 5 and 7
- 6) Only for symbols 1, 3, 6, 8, 9 and 10

Symbols



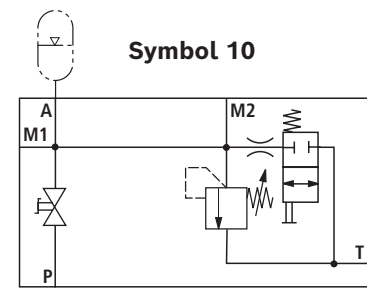
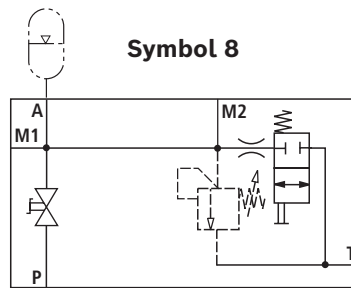
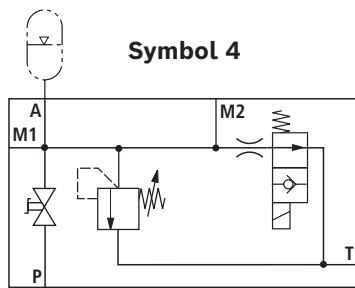
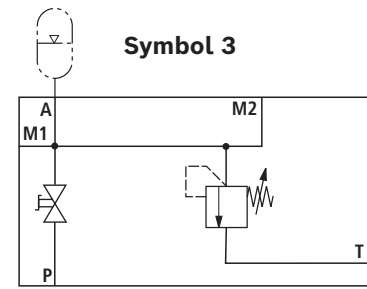
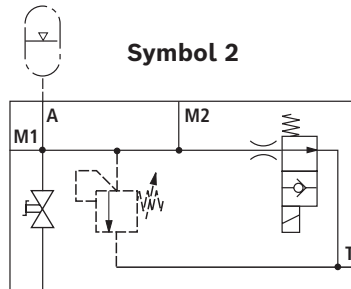
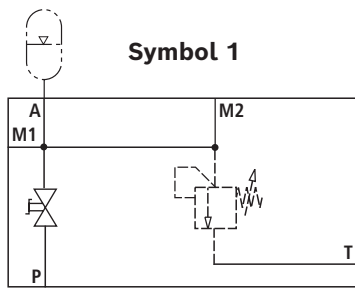
- 1 System shut-off cock
- 2 Pressure relief valve
- 3 Manual unloading
- 4 Electro-magnetic unloading



Connection designation:

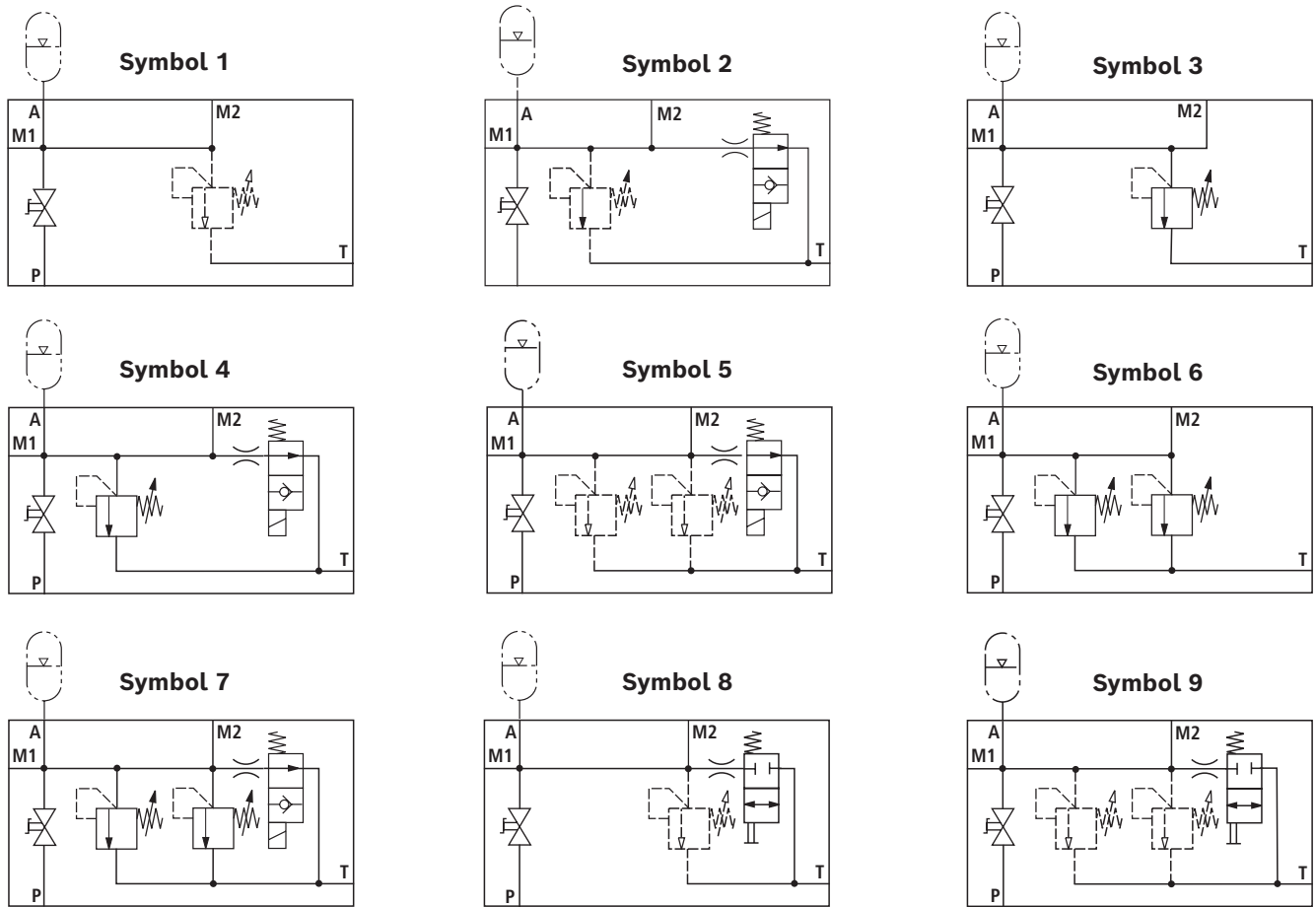
- M1, M2** Measuring port
- P** Pump port
- A** Accumulator port
- T** Tank port

Preferred types DN20



Symbol	Pressure set at the pressure relief valve in bar [psi]	Maximum securable flow l/min [gpm]	Denomination	Material no.
1	–	–	0532VAW20/1/FKM/-/-/Z/00/-/-/A1	0532015120
2	–	–	0532VAW20/2/FKM/-/-/Z/03/G/24/00/A1	0532015121
3	50 [730]	40 [10.56]	0532VAW20/3/FKM/050/D/Z/00/-/-/A1	R901192665
3	70 [1015]	50 [13.20]	0532VAW20/3/FKM/070/D/Z/00/-/-/A1	0532015123
3	100 [1450]	100 [26.40]	0532VAW20/3/FKM/100/D/Z/00/-/-/A1	0532015125
3	140 [2030]	100 [26.40]	0532VAW20/3/FKM/140/D/Z/00/-/-/A1	0532015127
3	160 [2320]	100 [26.40]	0532VAW20/3/FKM/160/D/Z/00/-/-/A1	0532015129
3	211 [3060]	100 [26.40]	0532VAW20/3/FKM/211/D/Z/00/-/-/A1	0532015131
3	250 [3625]	130 [34.32]	0532VAW20/3/FKM/250/D/Z/00/-/-/A1	0532015133
3	280 [4060]	130 [34.32]	0532VAW20/3/FKM/280/D/Z/00/-/-/A1	0532015137
3	330 [4800]	150 [39.60]	0532VAW20/3/FKM/330/D/Z/00/-/-/A1	0532015135
4	70 [1015]	50 [13.20]	0532VAW20/4/FKM/070/D/Z/03/G/24/00/A1	0532015122
4	100 [1450]	100 [26.40]	0532VAW20/4/FKM/100/D/Z/03/G/24/00/A1	0532015124
4	160 [2320]	100 [26.40]	0532VAW20/4/FKM/160/D/Z/03/G/24/00/A1	0532015126
4	211 [3060]	100 [26.40]	0532VAW20/4/FKM/211/D/Z/03/G/24/00/A1	0532015128
4	250 [3625]	130 [34.32]	0532VAW20/4/FKM/250/D/Z/03/G/24/00/A1	0532015130
4	280 [4060]	130 [34.32]	0532VAW20/4/FKM/280/D/Z/03/G/24/00/A1	0532015134
4	330 [4800]	150 [39.60]	0532VAW20/4/FKM/330/D/Z/03/G/24/00/A1	0532015132
8	–	–	0532VAW20/8/FKM/-/-/Z/01/-/-/A1	0532015139
10	211 [3060]	100 [26.40]	0532VAW20/10/FKM/211/K/Z/01/-/-/A1	R901131132
10	330 [4800]	150 [39.60]	0532VAW20/10/FKM/330/K/Z/01/-/-/A1	R901174602

Preferred types DN32



Symbol	Pressure set at the pressure relief valve in bar [psi]	Maximum securable flow l/min [gpm]	Denomination	Material no.
1	-	-	0532VAW32/1/FKM/-/Z/00/-/A1	0532016051
2	-	-	0532VAW32/2/FKM/-/Z/03/G/24/00/A1	0532016050
3	211 [3060]	100 [26.40]	0532VAW32/3/FKM/211/D/Z/00/-/A1	0532016053
3	330 [4800]	150 [39.60]	0532VAW32/3/FKM/330/D/Z/00/-/A1	0532016055
4	160 [2320]	100 [26.40]	0532VAW32/4/FKM/160/D/Z/03/G/24/00/A1	0532016054
4	211 [3060]	100 [26.40]	0532VAW32/4/FKM/211/D/Z/03/G/24/00/A1	0532016056
4	330 [4800]	150 [39.60]	0532VAW32/4/FKM/330/D/F/03/G/24/00/A1	0532016060
4	330 [4800]	150 [39.60]	0532VAW32/4/FKM/330/D/Z/03/G/24/00/A1	0532016058
5	-	-	0532VAW32/5/FKM/-/Z/03/G/24/00/A1	0532016052
7	211 [3060]	200 [52.80]	0532VAW32/7/FKM/211/DK/F/03/G/24/00/A1	0532016070
7	250 [3625]	260 [68.63]	0532VAW32/7/FKM/250/DK/F/03/G/24/00/A1	0532016072
7	330 [4800]	300 [79.20]	0532VAW32/7/FKM/330/DK/F/03/G/24/00/A1	R901166828
8	-	-	0532VAW32/8/FKM/-/Z/01/-/A1	0532016061
9	-	-	0532VAW32/9/FKM/-/F/01/-/A1	R901115110
9	-	-	0532VAW32/9/FKM/-/Z/01/-/A1	0532016063

Function

The accumulator shut-off block serves for protection, isolation and unloading of hydraulic accumulators. It is classified according to its use according to Pressure Equipment Directive 2014/68/EU article 4, section 3.

The connection between the accumulator shut-off block and the accumulator is realized by means of an accumulator adapter. An optional additional 2-way valve with electrical operation (normally open) enables automatic unloading of the accumulator in case of shutdown or "emergency off function".

The accumulator is protected from inadmissible overpressure by means of the pressure relief valve.

The **pressure relief valve** must **not be applied for any control tasks!**

Sufficient difference between the pressure set at the pressure relief valve and the operating pressure must be ensured. Response of the pressure relief valve should be prevented.

Technical data

(For applications outside these parameters, please consult us.)

general		
Weight		See table below
Installation position		Any
Ambient temperature range	°C [°F]	-10 ... +80 [+14... +176]
hydraulic		
Maximum operating pressure	bar [psi]	330 [4800]
Maximum securable flow	l/min [US gpm]	See pages 4 and 5
Δp - q_V characteristic curve		See page 8 and 9
Hydraulic fluid		See table below
Hydraulic fluid temperature range	°C [°F]	-15 ... +80 [+14... +176]
Seal material		FKM seals
Viscosity range	mm ² /s [SUS]	12 ... 380 [56 ... 1761]
Maximum admissible degree of contamination of the hydraulic fluid Cleanliness class according to ISO 4406 (c)		Class 20/18/15 ¹⁾

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HL, HLP	FKM	DIN 51524	90220
Other hydraulic fluids on request				

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.

Weight

Symbol	Nominal diameter	
	DN20 kg [lbs]	DN32 kg [lbs]
1	4.4 [9.7]	13.8 [30.3]
2	4.7 [10.3]	14.3 [31.4]
3	4.8 [10.5]	15.2 [33.4]
4	5.6 [12.3]	14.7 [32.3]
5	-	14.2 [31.2]
7	-	14.4 [31.6]
8	4.6 [10.1]	14.4 [31.6]
9	-	14.3 [31.4]
10	4.5 [9.9]	-

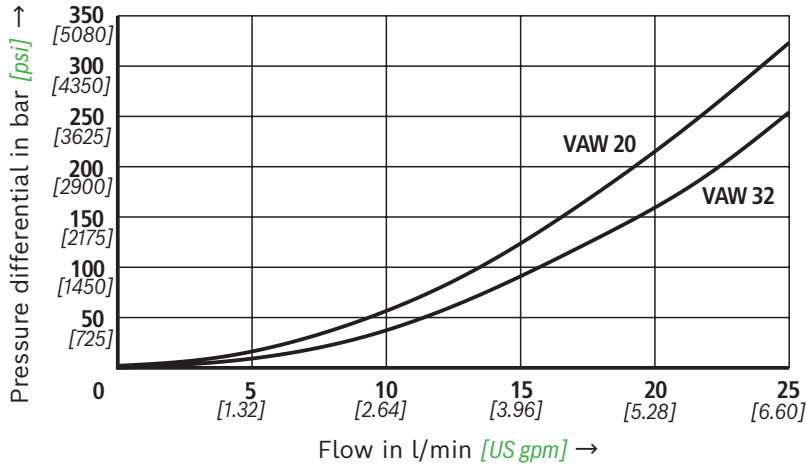
electrical		
Voltage type		Direct voltage
Available voltages	V	24
Protection class according to DIN EN 60529	► With connector "K4"	IP 65 (with mating connector mounted and locked)

Characteristic curves

(measured at $v = 35 \text{ mm}^2/\text{s}$, $\vartheta_{\text{oil}} = 50 \text{ }^\circ\text{C}$ [122 °F])

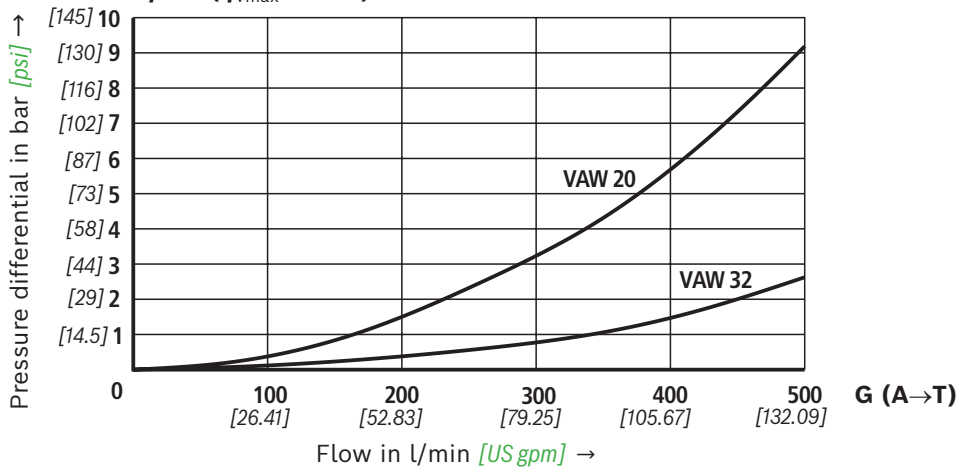
Flow accumulator via unloading valve to the tank

$$\Delta p = f(q_{V\text{max}} \text{ A} \rightarrow \text{T})$$



Flow from pump to accumulator

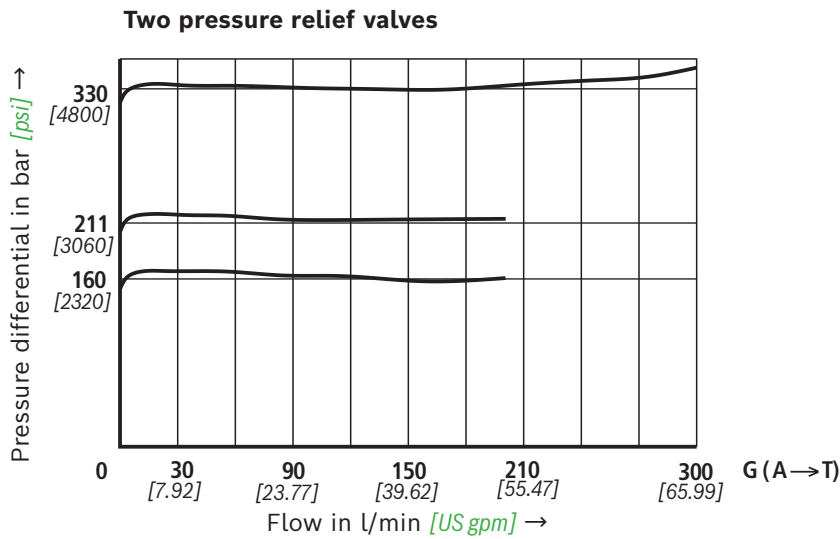
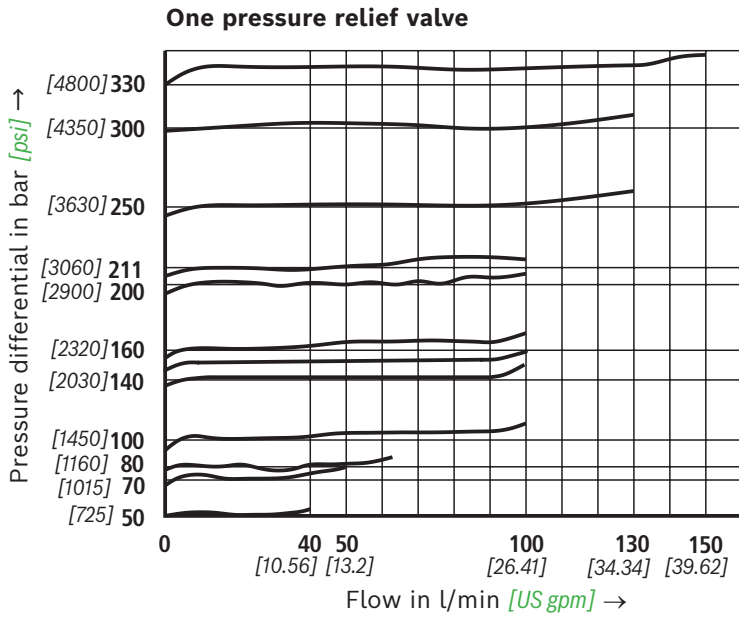
$$\Delta p = f(q_{V\text{max}} \text{ P} \rightarrow \text{A})$$



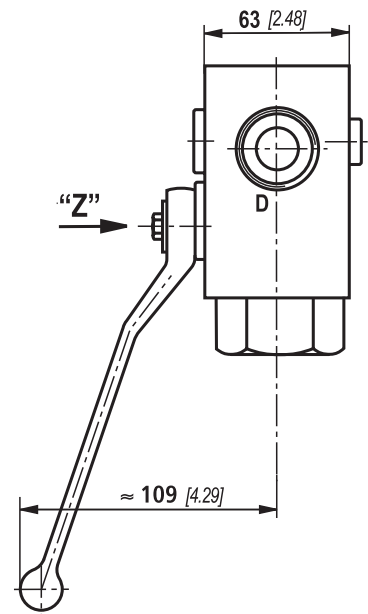
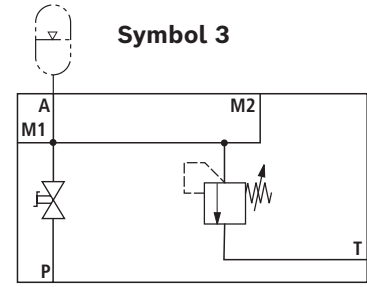
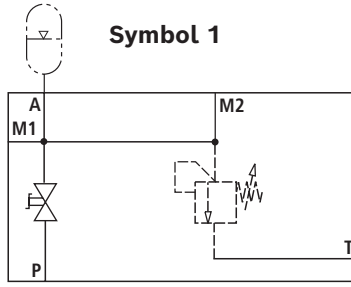
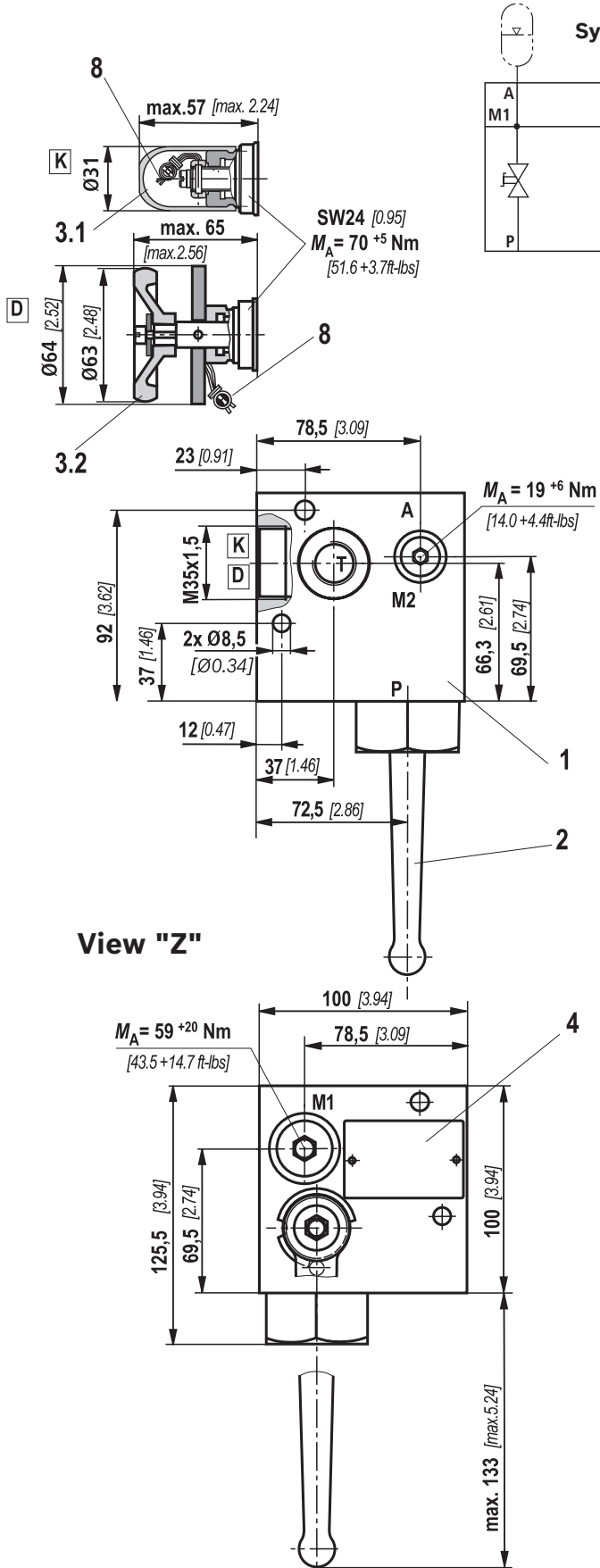
Characteristic curves

(measured at $v = 35 \text{ mm}^2/\text{s}$, $\vartheta_{\text{oil}} = 50 \text{ }^\circ\text{C}$ [122 °F])

Maximum securable flow of the pressure relief valve



Dimensions: Version "20", symbol 1 and 3
(dimensions in mm [*inch*])

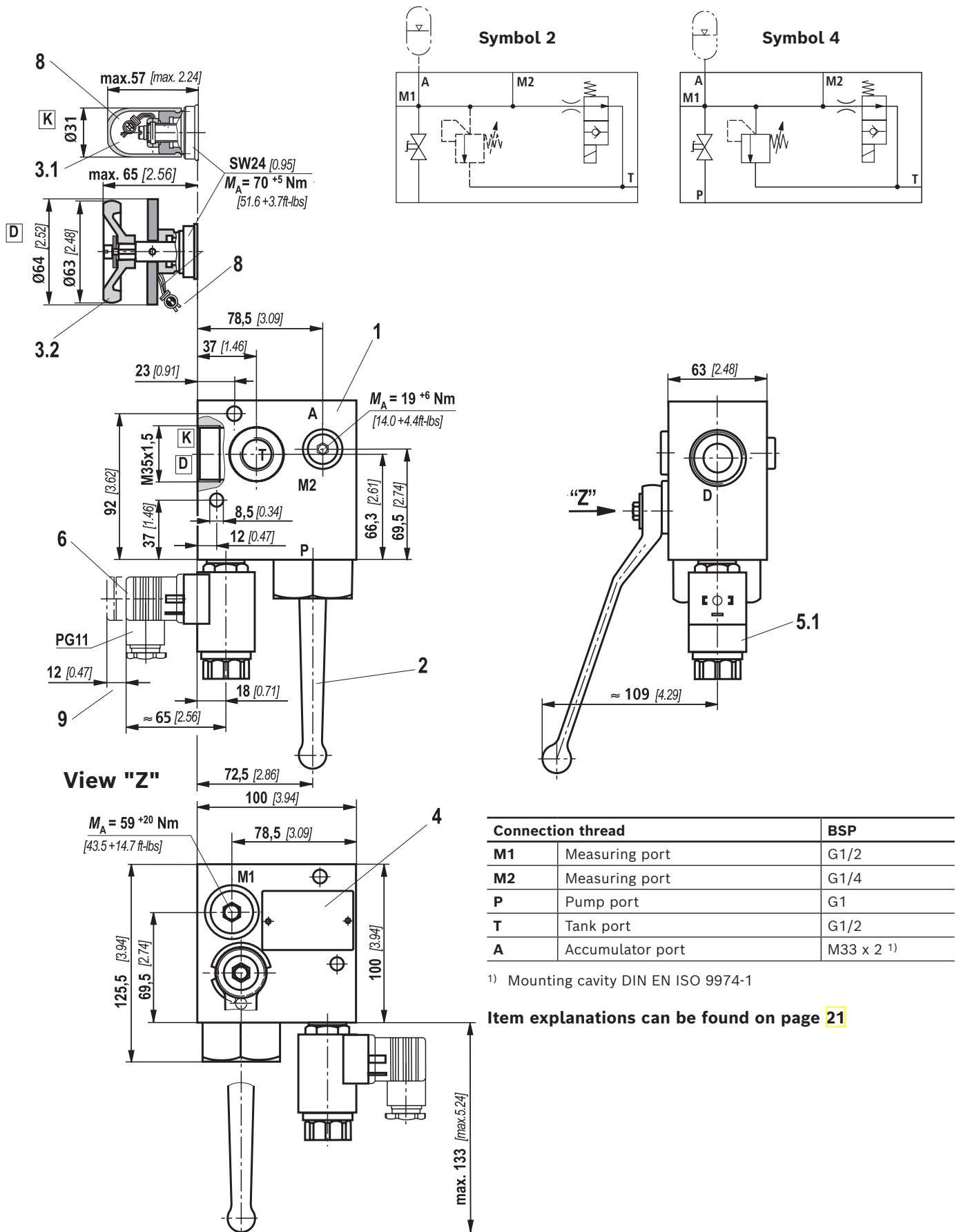


Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port	G1
T	Tank port	G1/2
A	Accumulator port	M33 x 2 ¹⁾

1) Mounting cavity DIN EN ISO 9974-1

Item explanations can be found on page **21**

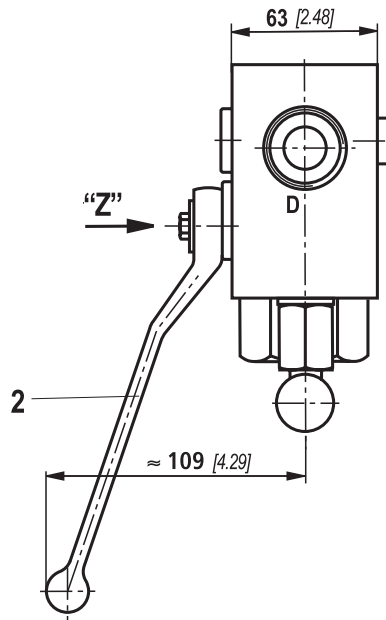
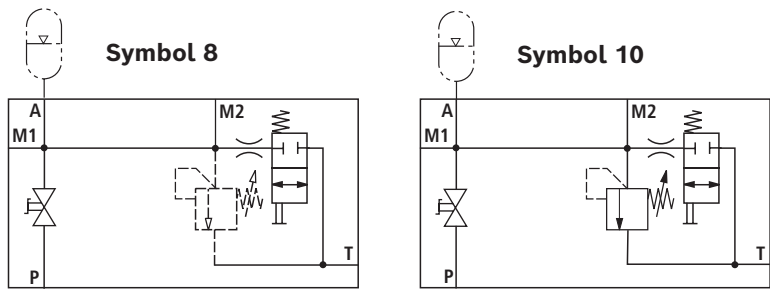
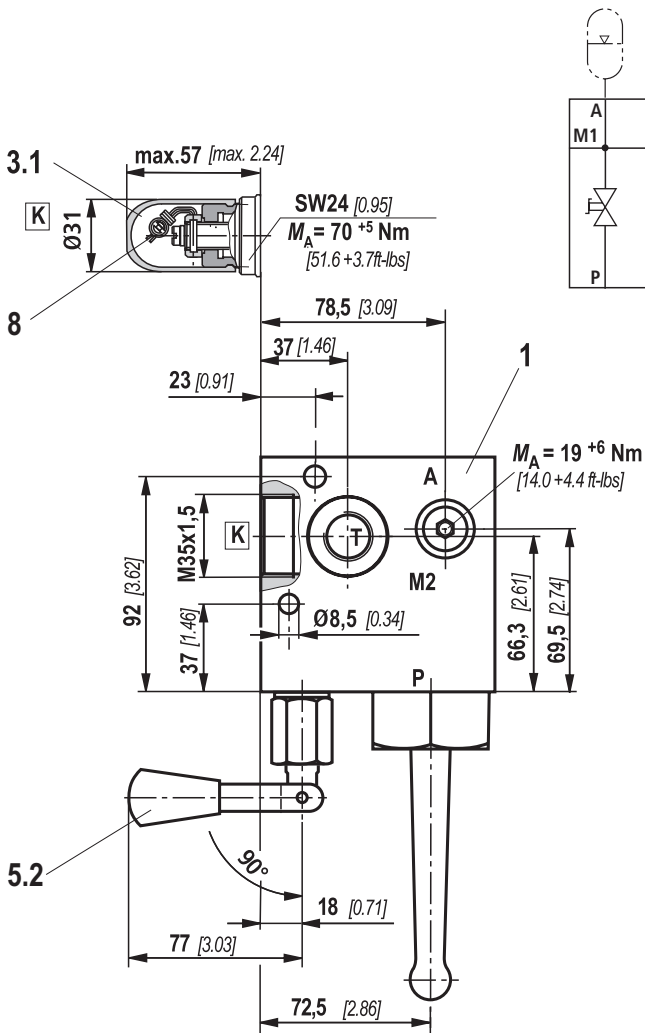
Dimensions: Version "20", symbol 2 and 4
(dimensions in mm [inch])



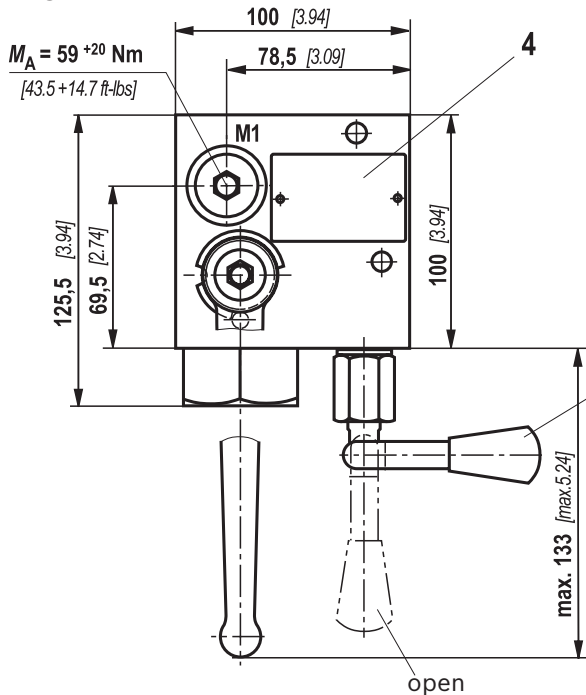
¹⁾ Mounting cavity DIN EN ISO 9974-1

Item explanations can be found on page 21

Dimensions: 0532VAW20...DN20, symbol 8 and 10
(dimensions in mm [inch])



View "Z"



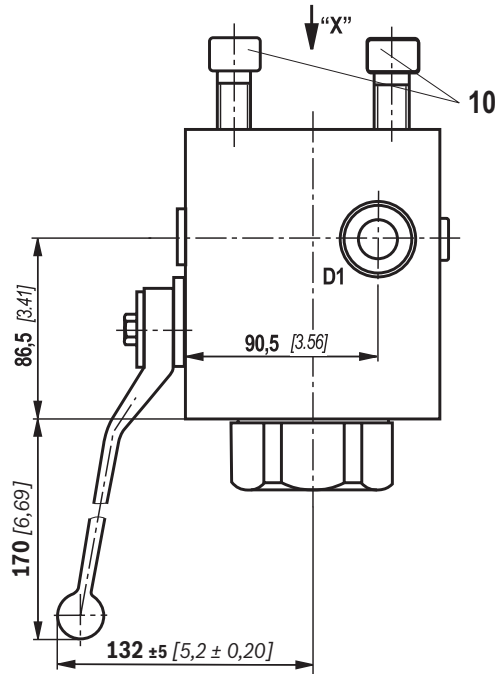
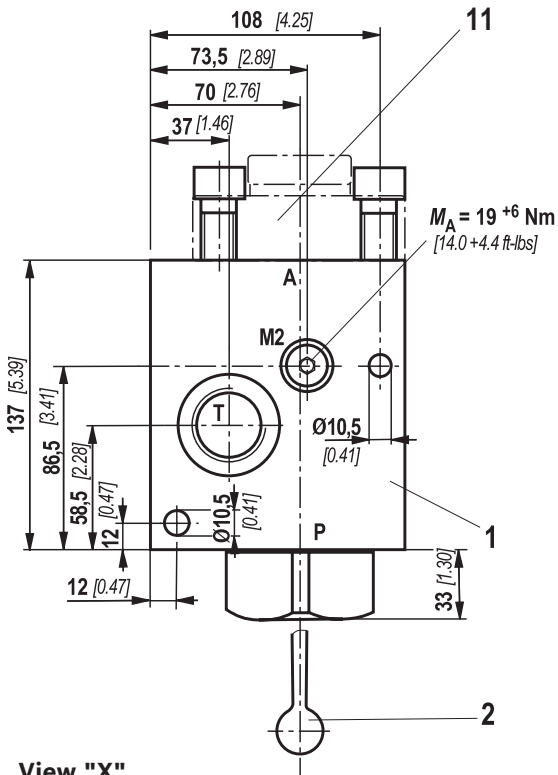
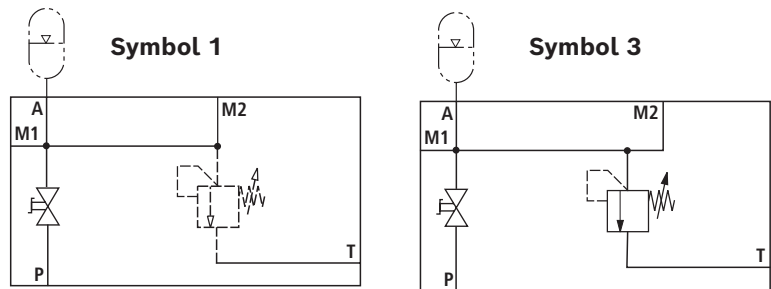
Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port	G1
T	Tank port	G1/2
A	Accumulator port	M33 x 2 1)

1) Mounting cavity DIN EN ISO 9974-1

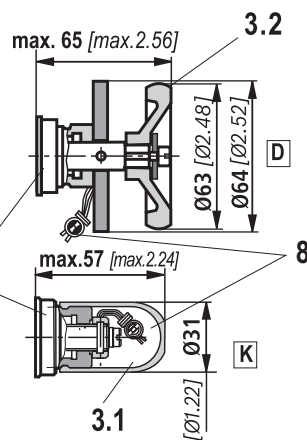
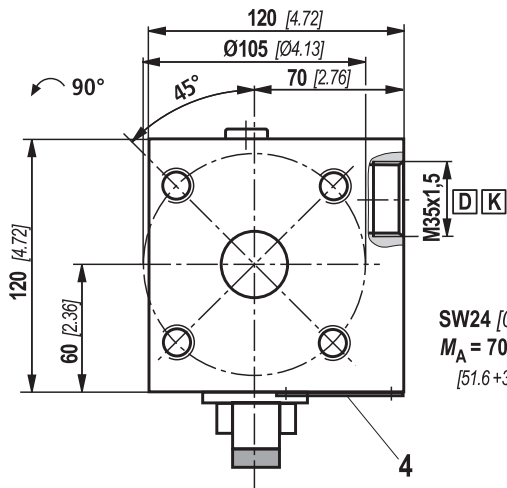
closed

Item explanations can be found on page 21

Dimensions: Version "32", symbol 1 and 3
(dimensions in mm [inch])



View "X"

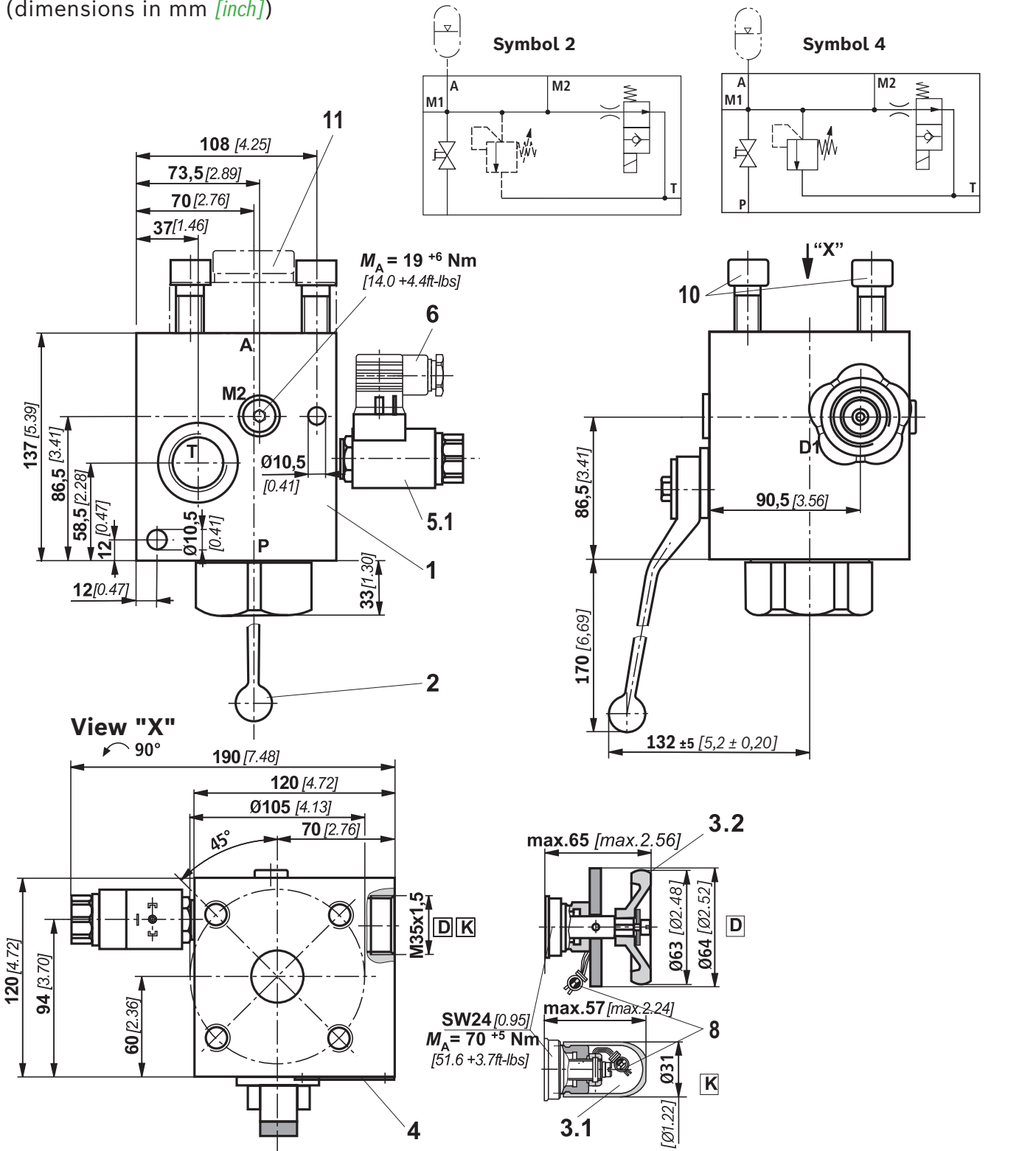


Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port	G1 1/2
T	Tank port	G1
A	Accumulator port	Page 21

Accumulator adapter separate order, see page 21

Item explanations can be found on page 21

Dimensions: Version "32", symbol 2 and 4
(dimensions in mm [*inch*])

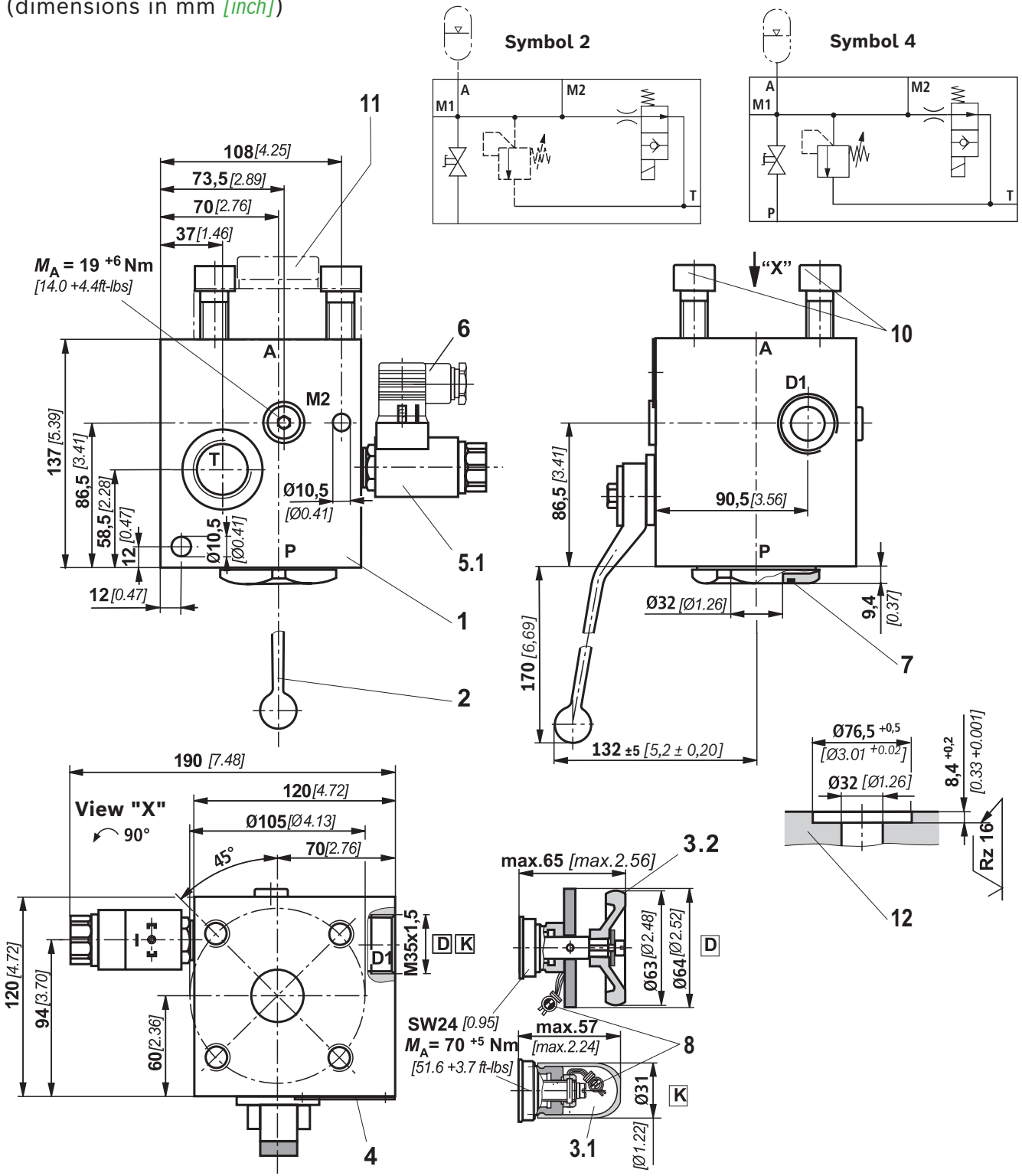


Accumulator adapter separate order, see page 21

Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port	G1 1/2
T	Tank port	G1
A	Accumulator port	Page 21

Item explanations can be found on page 21

Dimensions: Version "32", switching symbol 2 and 4
(dimensions in mm [inch])

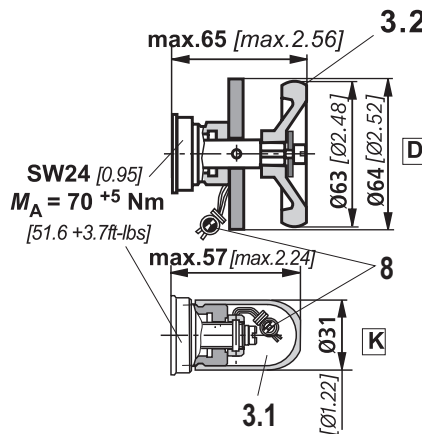
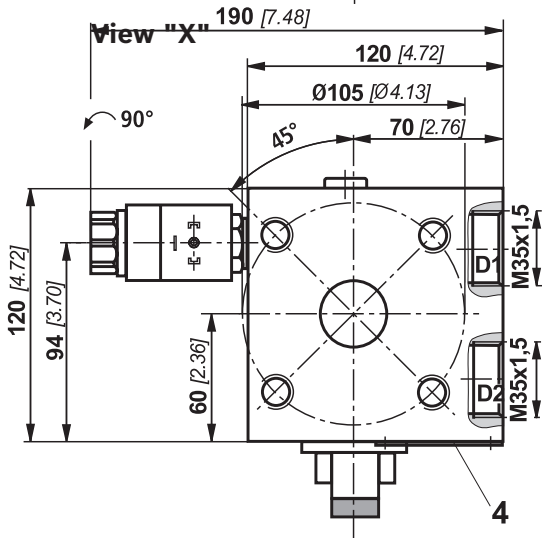
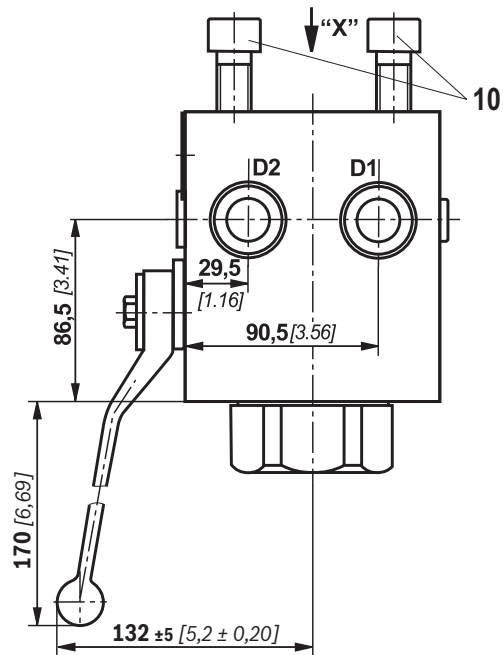
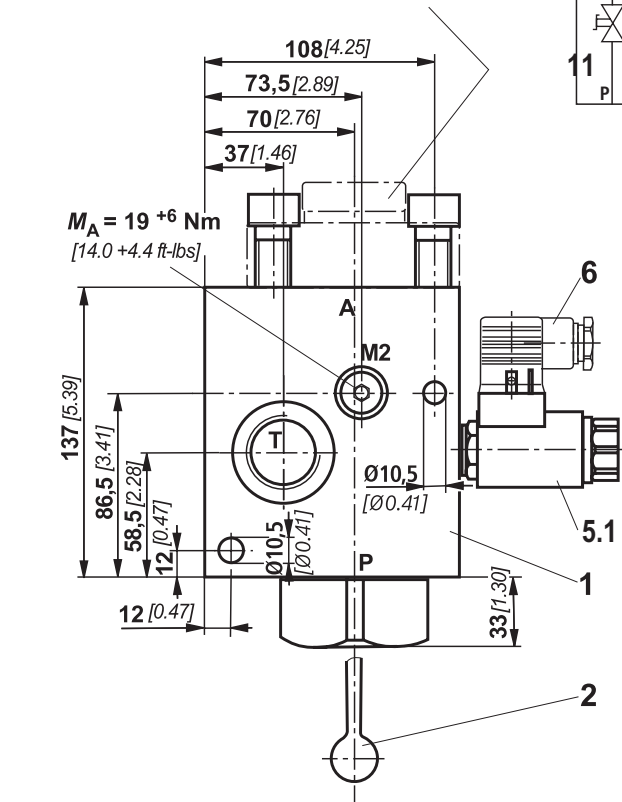
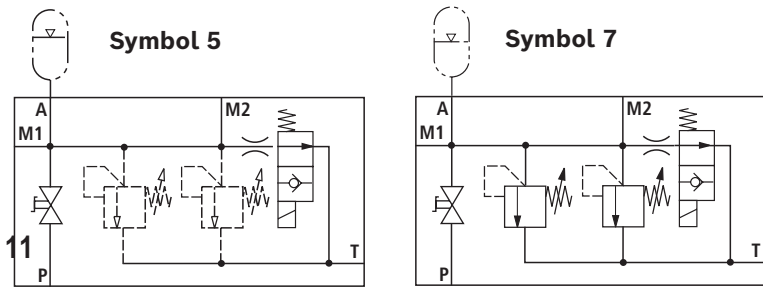


Accumulator adapter separate order, see page 21

Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port (flange)	TK = $\varnothing 98$; 4 x M16
T	Tank port	G1
A	Accumulator port	Page 21

Item explanations can be found on page 21

Dimensions: Version "32", symbol 5 and 7
(dimensions in mm [*inch*])

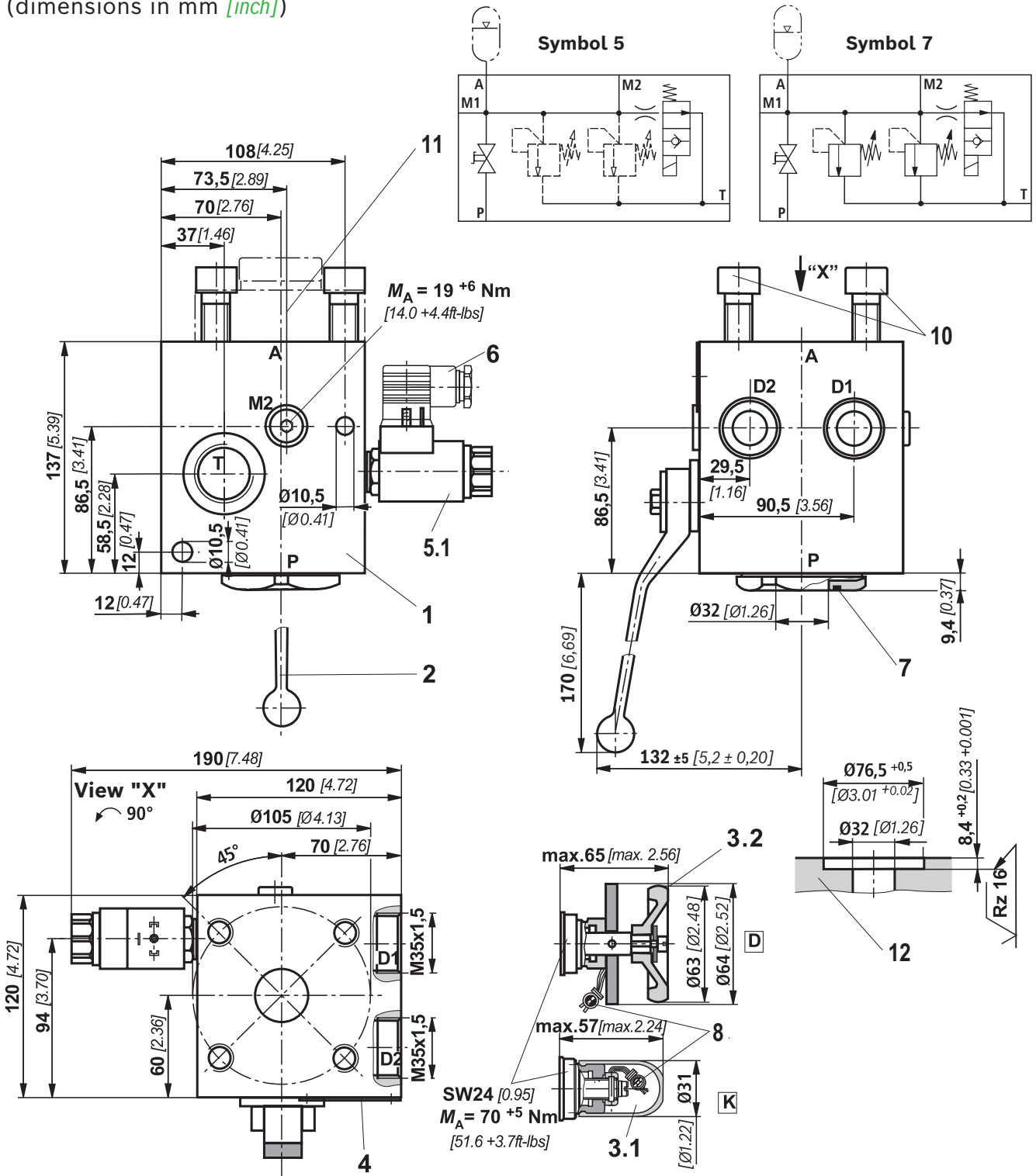


Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port	G1 1/2
T	Tank port	G1
A	Accumulator port	Page 21

Accumulator adapter separate order, see page 21

Item explanations can be found on page 21

Dimensions: Version "32", symbol 5 and 7
(dimensions in mm [*inch*])

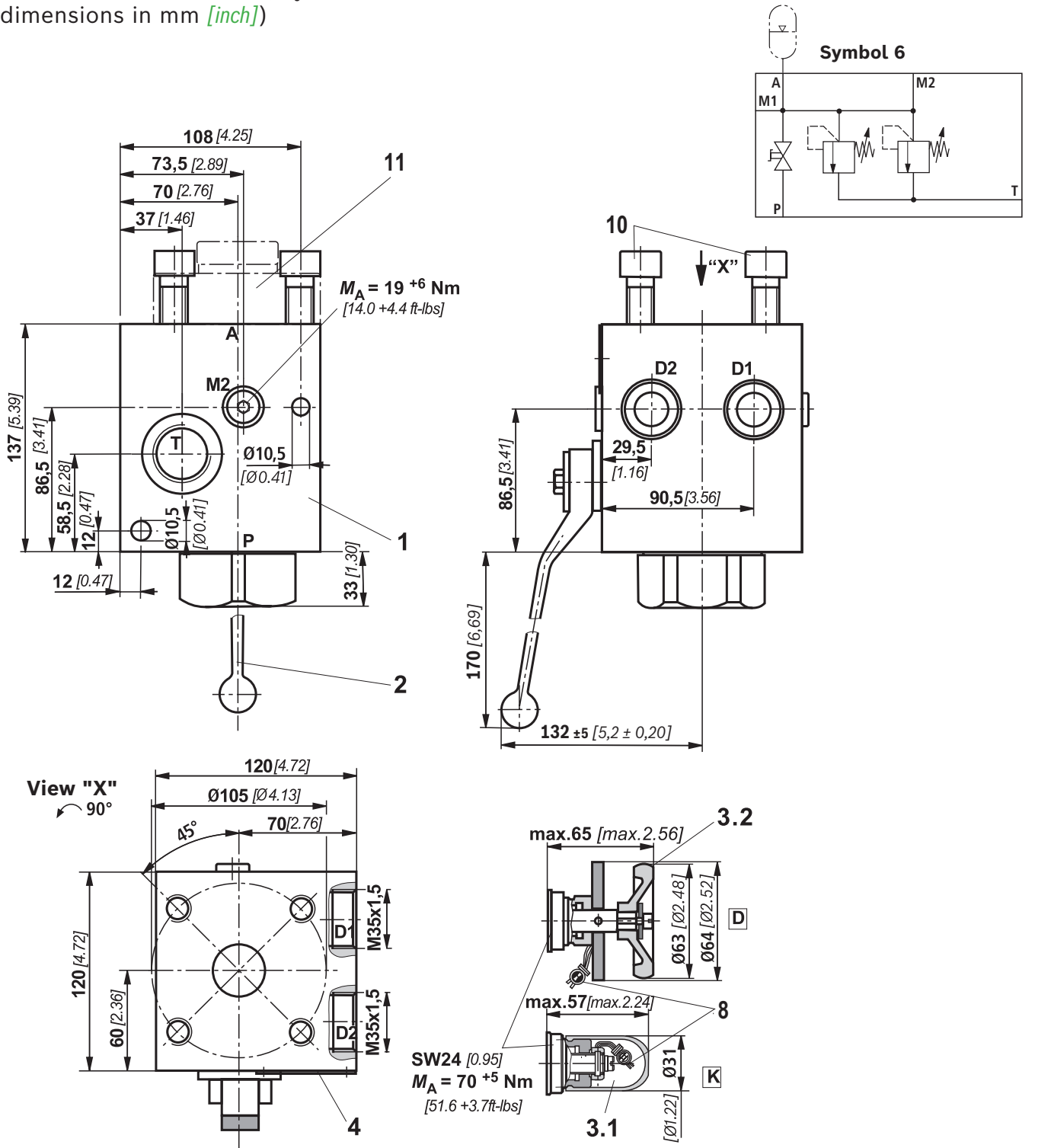


Accumulator adapter separate order, see page 21

Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port (flange)	TK = Ø98; 4 x M16
T	Tank port	G1
A	Accumulator port	Page 21

Item explanations can be found on page 21

Dimensions: Version "32", symbol 6
(dimensions in mm [inch])

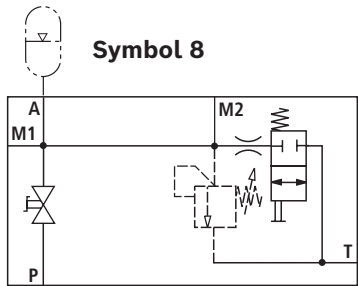
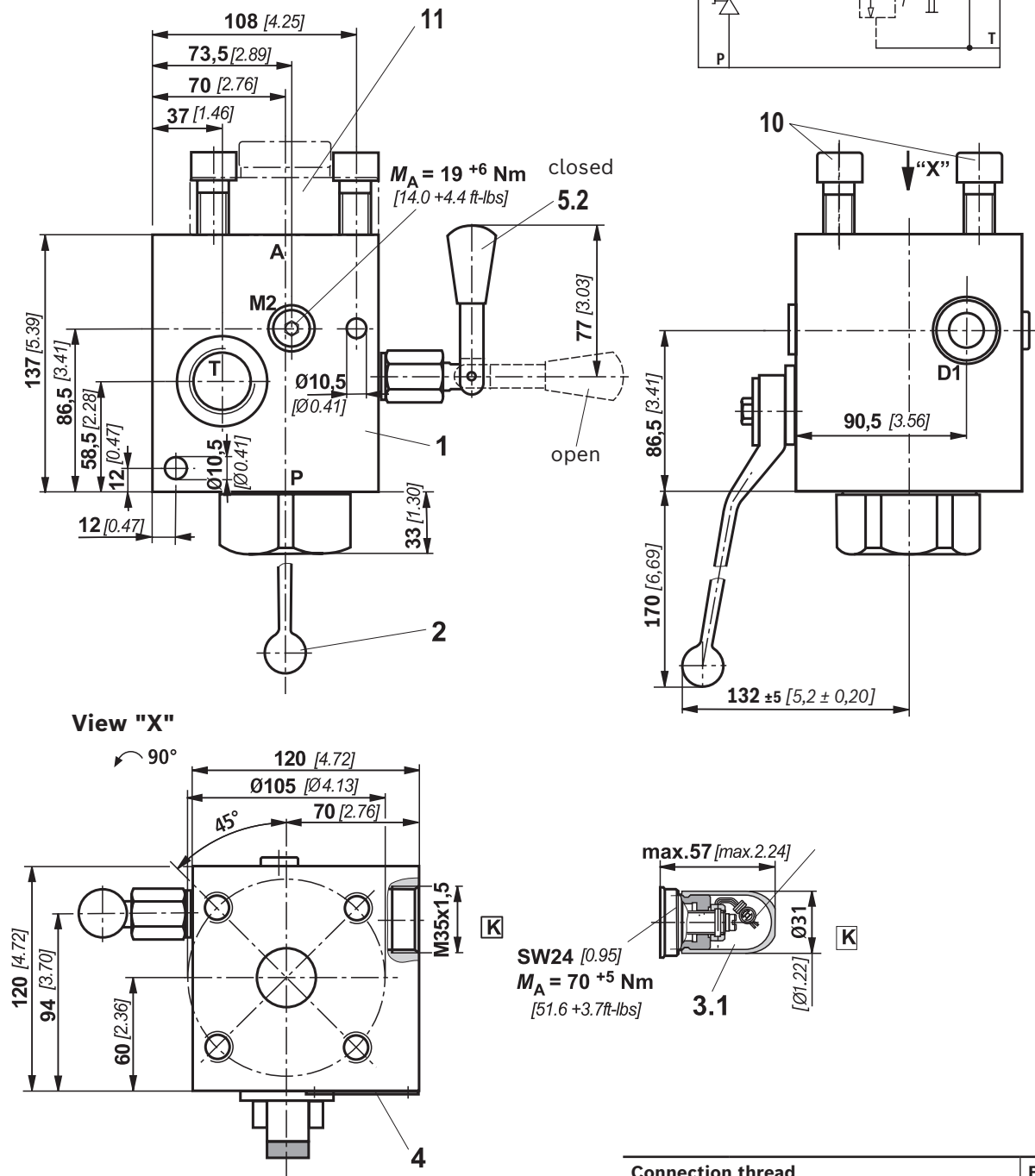


Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port	G1 1/2
T	Tank port	G1
A	Accumulator port	Page 21

Accumulator adapter separate order, see page 21

Item explanations can be found on page 21

Dimensions: Version "32", symbol 8
(dimensions in mm [inch])

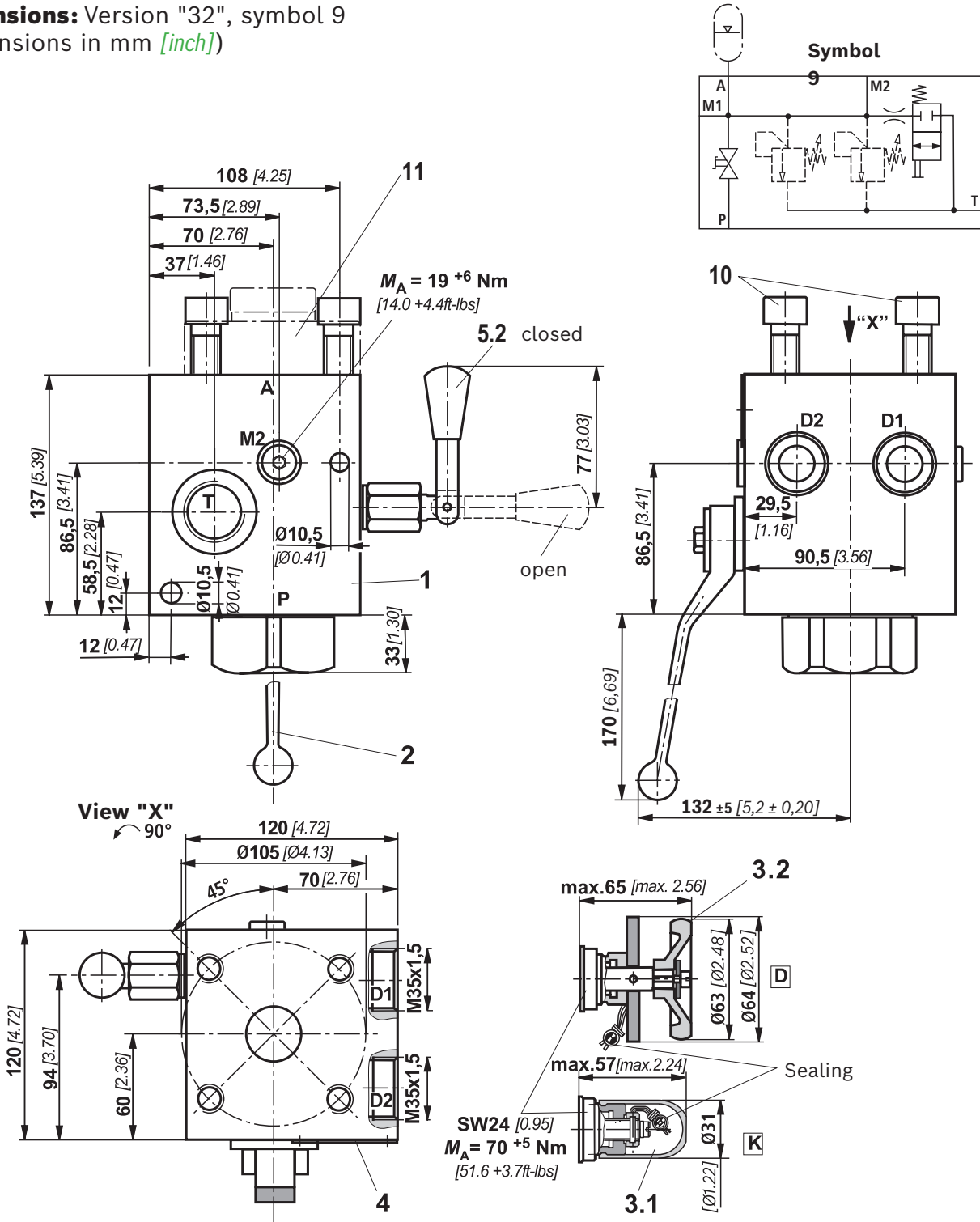


Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port	G1 1/2
T	Tank port	G1
A	Accumulator port	Page 21

Accumulator adapter separate order, see page 21

Item explanations can be found on page 21

Dimensions: Version "32", symbol 9
(dimensions in mm [inch])



Accumulator adapter separate order, see page 21

Connection thread		BSP
M1	Measuring port	G1/2
M2	Measuring port	G1/4
P	Pump port	G1 1/2
T	Tank port	G1
A	Accumulator port	Page 21

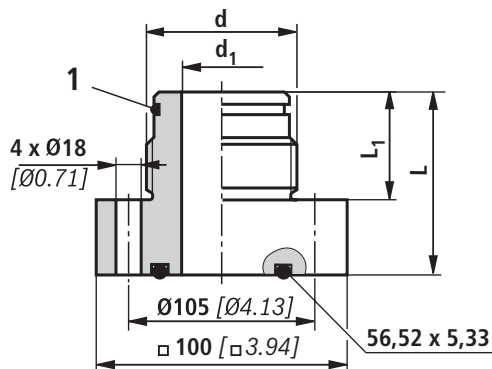
Item explanations can be found on page 21

Dimensions: Item explanations

- 1 Block
- 2 System shut-off cock
- 3.1 Pressure relief valve, adjustment type "K" with spindle and protective cap; sealed
- 3.2 Pressure relief valve, adjustment type "D" with hand wheel and manual unloading; sealed
- 4 Name plate
- 5.1 Electro-magnetic unloading
- 5.2 Manual unloading, closed
- 6 Mating connector included in the scope of delivery
- 7 Seal ring $\varnothing 40 \times 3$
- 8 Sealing
- 9 Space required to remove the connector
- 10 Hexagon socket head cap screw **4 x ISO 4762- M16 x 45-10**
Tightening torque $M_A = 250 \pm 10 \text{ Nm}$
[184.0 + 7.4 ft-lbs]
- 11 Accumulator adapter, separate order, see page 21
- 12 Counterflange for port P (separate order)

Accessories: Accumulator adapter BSP thread
(dimensions in mm *[inch]*)**Accumulator adapter for version "32", maximum operating pressure 330 bar *[4800 psi]***

Type: S307V/G1 1/4-DN32 and
S309V/G2-DN32





4 x hexagon socket head cap screw,
ISO 4762 - M16 x 45 - 10.9
included in the scope of delivery

1 Seal ring, see table

Short designation	Accumulator adapter	Material no.	d	d1	L	L1	Seal ring
S307	S307V/G1 1/4-DN32	R900085303	G1 1/4	20	67	37	$\varnothing 30.00 \times 3.00$
S309	S309V/G2-DN32	R900545858	G 2	32	73	43	$\varnothing 48.00 \times 3.00$

Accessories: Pressure relief valve

Pressure set at the pressure relief valve in bar [psi]	Adjustment type at the pressure relief valve		Maximum securable flow l/min [gpm]	Material no. (FKM seal material)
	Hand wheel	Spindle with protective cap		
50 [730]		/	40 [10.56]	0532004200
70 [1015]			50 [13.20]	0532004201
100 [1450]			100 [26.40]	0532004202
120 [1740]			100 [26.40]	0532004211
140 [2030]			100 [26.40]	0532004203
160 [2320]			100 [26.40]	0532004204
200 [3480]			100 [26.40]	0532004209
211 [3060]			100 [26.40]	0532004205
250 [3625]			130 [34.32]	0532004206
280 [4060]			130 [34.32]	0532004210
300 [4350]			130 [34.32]	0532004207
330 [4800]			150 [39.60]	0532004208
50 [730]			/	
70 [1015]	50 [13.20]	0532004103		
80 [1160]	60 [15.84]	0532004111		
100 [1450]	100 [26.40]	0532004104		
120 [1740]	100 [26.40]	0532004114		
140 [2030]	100 [26.40]	0532004107		
160 [2320]	100 [26.40]	0532004105		
180 [2610]	100 [26.40]	0532004113		
200 [3480]	100 [26.40]	0532004110		
211 [3060]	100 [26.40]	0532004100		
250 [3625]	130 [34.32]	0532004106		
260 [3770]	130 [34.32]	0532004115		
280 [4060]	130 [34.32]	0532004112		
300 [4350]	130 [34.32]	0532004101		
330 [4800]	150 [39.60]	0532004108		

Safety instructions: Type-examination tested safety valves type 0532VA according to Pressure Equipment Directive 2014/68/EU

- ▶ Before ordering a type-examination tested safety valve, it must be observed that for the desired **response pressure p** , the maximum admissible **flow q_{Vmax}** of the safety valve must be larger than the maximum possible flow of the system/accumulator to be secured. In this respect, the applicable regulations must be observed!
- ▶ According to the **Pressure Equipment Directive 2014/68/EU**, the increase in the system pressure due to the flow must not exceed 10% of the set response pressure (see component marking).
- ▶ The maximum admissible flow **q_{Vmax}** stated in the component marking must not be exceeded.
- ▶ Discharge lines of safety valves must end in a risk-free manner. Accumulation of fluids in the discharge system must **not** be possible (see AD2000 - data sheet A2).

Application notes must always be observed!

- ▶ The response pressure specified in the component marking is set at the plant.
- ▶ The maximum admissible flow stated in the component marking applies for applications without counter pressure in the discharge line (port T).
- ▶ By removing the lead seal at the safety valve, the approval according to the Pressure Equipment Directive becomes void!
- ▶ The requirements of the Pressure Equipment Directive and of data sheet AD2000 A2 must be generally observed!
- ▶ It is recommended to secure type-examination tested safety valves against inadmissible removal from the screw-in housing/block by means of wiring and sealing with the housing/block (bore available in the adjustment element).

Notice:

The system pressure increases by the counter pressure in the discharge line (port T) due to the increasing flow. (Observe the data sheet AD2000 A2, point 6.3!)

To ensure that this increase in system pressure caused by the flow does not exceed the value of 10% of the set response pressure, the admissible flow has to be reduced depending on the counter pressure in the discharge line (port T) (see diagram on pages [8](#) and [9](#)).

Further information

- | | |
|--|--------------------|
| ▶ Accumulator shut-off block operating instructions; type ABZSS, 0532VAW | Data sheet 50129-B |
| ▶ Pressure relief valve, direct operated; type DBD | Data sheet 25402 |
| ▶ Type-examination tested safety valves | Data sheet 50153 |
| ▶ Operating instructions for safety valves | Data sheet 50153-B |
| ▶ Hydraulic fluids on mineral oil basis | Data sheet 90220 |
| ▶ Selection of the filters | |
| ▶ Information on available spare parts | |

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