

Accumulators

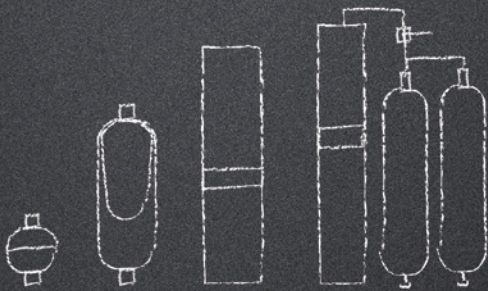
Bladder Accumulators

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Roth
Hydraulics

**Technical Information
Series CE + ASME**



excellent pressure solutions

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Construction and Description

■ General

 **BOLENZ & SCHÄFER** has been a leader in the area of accumulator technology for more than 60 years. As a specialist in hydraulic accumulator applications, it is our primary objective to develop efficient solutions in line with market needs. In accordance with the rebranding initiative of our parent company, Roth Industries – of which Bolenz & Schäfer has been a solid member for more than a quarter of a century – we are proud to continue our activities as Roth Hydraulics.

The **Roth bladder accumulator** enhances the product spectrum by a further innovative product. Cost optimised, low maintenance, practically wear resistant, durable, available in versions for special media and applications as well as suitable for use in extreme conditions – these are some of the product's distinguishing features. Roth hydraulic accumulators fulfil all applicable regulations and directives.

Accumulator adapters, safety and shut-off valve blocks along with other accessories can be found in our separate catalogue Accumulator Accessories.



The application fields of the Roth bladder accumulator are many and diverse. Amongst other applications, they can be used for:

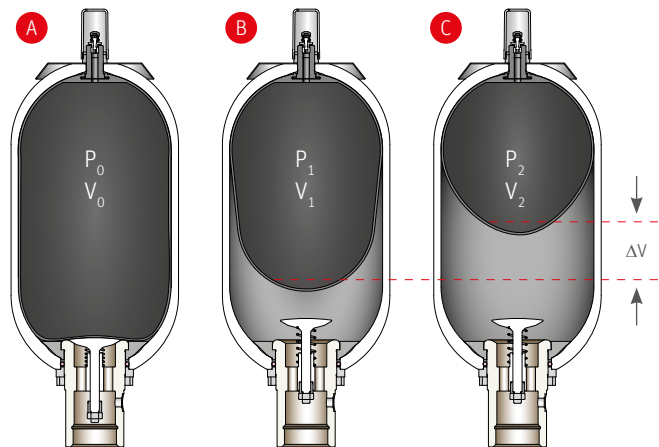
- > Energy storage
- > Pulsation damping
- > Volume compensation
- > Hydraulic springing
- > Shock absorption
- > Media transfer partition
- > Emergency operation

■ Function

Roth bladder accumulators enable the storage and release of hydraulic energy. As pressurised hydraulic fluid flows in at the oil port valve, the nitrogen within the accumulator bladder becomes compressed. Hydraulic energy is stored. When the pressure drops in the hydraulic system, the nitrogen gas and bladder expand and drive the hydraulic fluid out of the bladder accumulator back into the hydraulic system. Hydraulic energy is released. The bladder serves simultaneously as a media separator or transfer barrier.

The three basic settings of the bladder:

- A** The bladder is pre-charged with nitrogen. The fluid valve is closed and prevents escape from the bladder.
- B** Position at minimum working pressure. A small volume of fluid must remain between the bladder and fluid valve so that the bladder does not close the valve disc at each emptying. P_0 therefore has to be less than P_1 .
- C** Position at maximum working pressure. The volume change ΔV compared to the position at minimum working position corresponds to the stored fluid volume.



- V_0 = Total gas volume of the accumulator
- V_1 = Gas volume in the bladder accumulator at P_1
- V_2 = Gas volume in the bladder accumulator at P_2
- ΔV = Dissipated or absorbed useful volume between P_1/P_2
- P_0 = Pre-charge pressure of the bladder in the bladder accumulator
- P_1 = Minimum working pressure
- P_2 = Maximum working pressure

Construction and Description

Overview of Roth bladder accumulators

Overview of Roth bladder accumulators	
Volume	1 ... 57 l
Transport filling	approx. 2 bar
Operating pressure	max. 690 bar
Materials	Steel, special materials, stainless steel (on request)
Media	HFC, HLP, HFD ...
Temperature	-40 ... +100°C
Volume flow (Q _{max.})	max. 1600 l/min
Installation position	preferably vertical to ... horizontal
Accumulator shell	sand blasted
	primer coated
	top coat/ special coating available
Oil/ Gas valve	Carbon steel
	Stainless steel, nickel
Fluid ports	G inside thread G, M, NPT, SAE thread connections
	Flange connections available
	Special connections available
Bladder (elastomers)	NBR, TT-NBR, HNBR, ECO, IIR, FKM, EPDM
Acceptances	DGR 2014/68/EU, ASME, ML China, NR13, EAC, GL, ABS, BV, DNV, Canada, CCS, LRS, RINA

Gas filling

Only nitrogen of Class 4.0 is to be used, never oxygen or compressed air.

Design pressure (see selection table)

The design pressure corresponds to the maximum permissible operating pressure (PS) and is the maximum setting pressure of safety equipment against excess pressure (safety valves, burst discs) at the same time.

We recommend operating the accumulators with a maximum pressure of 0.9 x PS to prevent safety equipment from responding.

Operating temperature

Temperature range **standard: -15° C to +80° C**, different temperature ranges, e.g. -40° C to +100° C, available on request.

Condition on delivery

Accumulator shell base-coated with universal priming colour RAL 5010, manufactured seamless, inside sand-blasted. Colour treatment and blasting or other surface coatings (e.g. galvanic zinc plating) are possible.

Pressure fluids

Fluids of Group 2 according to DGR 2014/68/EU and nitrogen, or in relation to bladder elastomer and temperature range, according to data in the "Pressure fluids" table below. The oil purity class must be min. 19/17/14 (NAS 1638-KJ8) according to ISO 4406.

Gas pre-charge pressure

To prevent the oil valve from closing at each oil extraction, the gas pre-charge pressure should not be higher than 0.9 x the maximum working pressure (P1) and not lower than 0.25 x the maximum working pressure (P2).

Accumulator installation

To prevent damage to the bladder, a vertical accumulator assembly, with fluid connection below, is preferable.

If the assembly site requires a horizontal mounting, the inside of the accumulator shell must be provided with the plastic coating specially developed by Roth Hydraulics. This special coating minimises abrasive wear between the accumulator inside wall and bladder.



Note Operation and Maintenance

Please observe the information in the operating and maintenance instructions for this.

Selection of pressure fluids

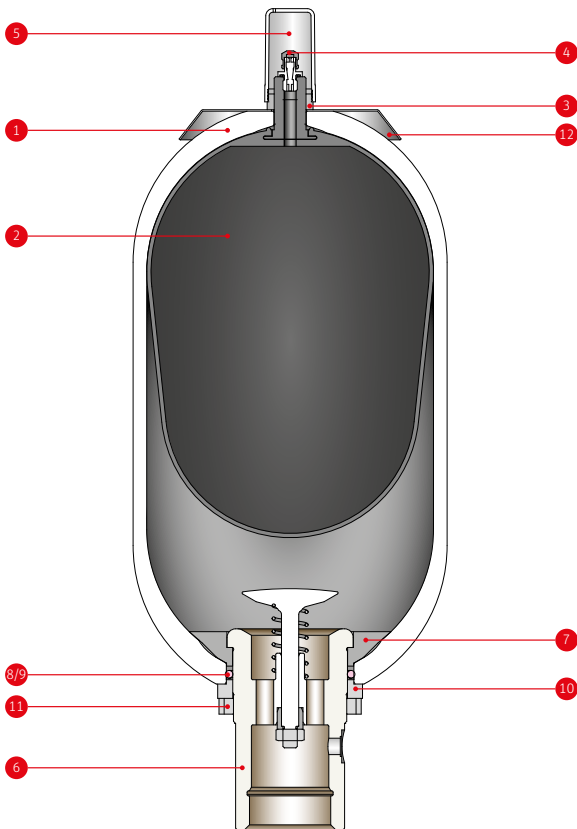
Fluid	Temperature range °C	Elastomer
... especially for low temperature range*	-32 ... +115	Hydrin C (ECO)
	-40 ... +130	HNBR
Fluids based on mineral oil*	-15 ... +90	NBR
	-28 ... +80	TT-NBR
HFA, HFB*	+5 ... +55	NBR
HFC*	-15 ... +60	NBR
Fluids based on phosphate ester and some synthetic fluids*	-15 ... +120	Butyl (IIR)
Fluids based on phosphate ester*	-40 ... +120	Ethylene propylene diene (EPDM)
Hardly flammable and/or synthetic fluids*	-20 ... +140	Viton (FKM)

*Fluid selections for low temperature ranges as well as for temperature applications below -20°C or above +80°C require consultation.

Construction and Description

■ CE Series BLAK/ASME Series BLUAK

Standard BLAK/BLUAK



Item	Designation	Material
1	Accumulator shell	Steel
2	Elastomer bladder	NBR
3	Lock nut	Steel
4	Gas-side valve	Stainless steel
5	Protection cap	PA6
6	Oil-side valve	Steel
7	Separated ring	Steel/Elastomer
8	O-ring	Elastomer
9	Back-up ring	PTFE
10	Spacer ring	Steel
11	Slotted nut = Threaded ring	Steel
12	Type plate	Aluminium

Rules and regulations

■ Acceptance

Roth hydraulic accumulators are manufactured and approved for the European market in accordance with the "Pressure Equipment Directive".

Hydraulic accumulators according to Pressure Equipment Directive >1 L volume are provided with a CE mark and are supplied with a declaration of conformity and a corresponding operating manual.

The Pressure Equipment Directive is also accepted by many other countries besides the EU member states. Only some additional approval documentation may be required.

Countries such as Russia or China also require an approval, which Roth Hydraulics has.

Pressure vessel shipment to the USA must correspond to the American regulations, the ASME Code. Roth Hydraulics has been approved since 1981, according to ASME Code Section VIII Division 1; and has the longest experience with these regulations in Germany as a hydraulic accumulator manufacturer. Vessels with ASME acceptance are marked with the so-called "U-stamp" and supplied with a data report as acceptance documentation.

The scope of the ASME Code only covers pressure vessels and accumulators with an internal diameter greater than 6 inches.

The CE series BLAK can therefore be used for accumulator diameters less than 6 inches.

Vessels according to the ASME Code are also accepted in Canada. In Canada, an additional approval (Canadian Registration Number, CRN) is required for the relevant Destination province. The province or installation site must be indicated along with the order. Maritime applications form part of daily business at Roth Hydraulics and are hence routine procedures. A selection of the potential maritime acceptances can be found in the following table.

Roth Hydraulics has all important product and company approvals worldwide.

The following tables contain a selection of the most common acceptance variants. If your planned installation country or the required acceptance is not listed, please indicate this in plain text along with the enquiry.

■ Selection table

Standard acceptances:

Country code	Countries	Approval regulation	Var. no.
EU	EU member states	Pressure Equipment Directive 2014/68/EU with CE mark	50
RUS	Russia	Pressure Equipment Directive 2014/68/EU + EAC TR-CU	520
PRC	China	Pressure Equipment Directive 2014/68/EU + ML (> 30 L)	534
PRC	China	Pressure Equipment Directive 2014/68/EU without ML (< 30 L)	533
BR	Brazil	Pressure Equipment Directive 2014/68/EU + CE mark + NR 13 (Brazil)	515
USA	USA	ASME Code Sect. VIII Div. 1	15

Special acceptances:

Country code	Countries	Approval regulation	Var. no.
CND	Canada	ASME Code + CRN (Canadian Registration No.) Approval depending on province – indicate province	29
ASME DOSH	Malaysia	ASME + DOSH Malaysia	61

Maritime acceptance:

Country code	Countries	Approval regulation	Var. no.
CCS	Various countries	China Classification Society	537
ABS	Various countries	American Bureau of Shipping	510
LRS	Various countries	Lloyd's Register of Shipment	5
GL	Various countries	Germanischer Lloyd	41
RINA	Various countries	RINA	536
BV	Various countries	Bureau Veritas	506
DNV	Various countries	Det Norske Veritas	509

Notes

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Type Code BLAK

CE Series BLAK/BLAK-HP

Order designation		Example: BLAK 50 - 330 - 22 - C+K -1- G - 50 - X - X - 30			
Series	BL.. -	...-	...-	...-	...-
	▲	▲	▲	▲	
	BLAK TYPE	Oil content [l]	max. operating pressure [bar]	Outside ø [cm]	
Material/Coating	...-	C	= Carbon steel (Standard)		
		N	= Nickel plated		
		X	= Stainless steel		
		V	= Carbon steel (Special coating)		
		A	= Special material		
		K	= Inside plastic coated		
Bladder material	...-	1	= NBR (Standard)		
		2	= ECO		
		3	= TT-NBR		
		4	= IIR		
		5	= FKM		
		6	= EPDM		
		7	= HNBR		
Oil connection	...-	G	= Pipe thread ISO 228 (Standard, without adapter)		
		R	= Pipe thread ISO 228 (with adapter)		
		L	= Flange connection, SAE 3000		
		H	= Flange connection, SAE 6000		
		M	= Metric thread		
		T	= NPT		
		S	= Special thread (please also indicate in plain text)		
Acceptance	...-	50	= Pressure Equipment Directive 2014/68/EU (Standard)		
		...	= Others see acceptance selection table		
Material of oil valve	...-	C	= Carbon steel (Standard)		
		P	= Carbon steel zinc plated		
		N	= Carbon steel nickel plated		
		X	= Stainless steel		
Material of gas valve	...-	X	= Stainless steel (Standard)		
		A	= Special material (please also indicate in plain text)		
Gas connection	...-	E1	= 7/8"-14 UNF		
		E2	= 2"-12 UN		
PO pre-charge pressure	= Filling according to customer request [bar]		

Product for order designation is:

Type:	BLAK
Oil content:	50 litre
Pressure:	330 bar
Outside ø:	22 cm
Material/Coating:	Carbon steel + inside plastic coated
Bladder material:	Standard (NBR)
Oil connection:	G2
Acceptance:	Pressure Equipment Directive
Material of oil valve:	Stainless steel
Material of gas valve:	Stainless steel
Pre-charge pressure as required by customer:	30 bar

Inside plastic coated
In the case of a plastic coated inside surface, please indicate "+K" in the order code (see example box "C+K").

For bladder material FKM, we recommend that the pre-filling should be done before the operation starts!

Please indicate the required thread size/connection nominal width along with this selection.

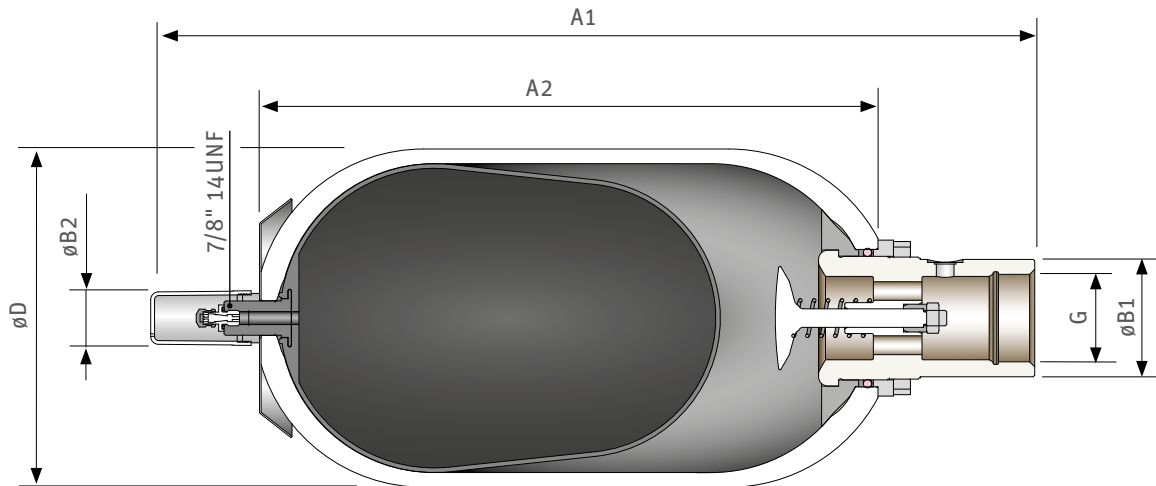
Filling according to customer request
For bladder material FKM, we recommend that the pre-filling should be done before the operation starts!

Note: Diverse bladder accumulators with order numbers are listed on the following pages. These are only valid for the types described there. Please observe the corresponding specification!

Note: High Pressure series, selection option only G, T, S

CE Series BLAK

■ CE Series BLAK 1 - 50 l - max. 350 bar

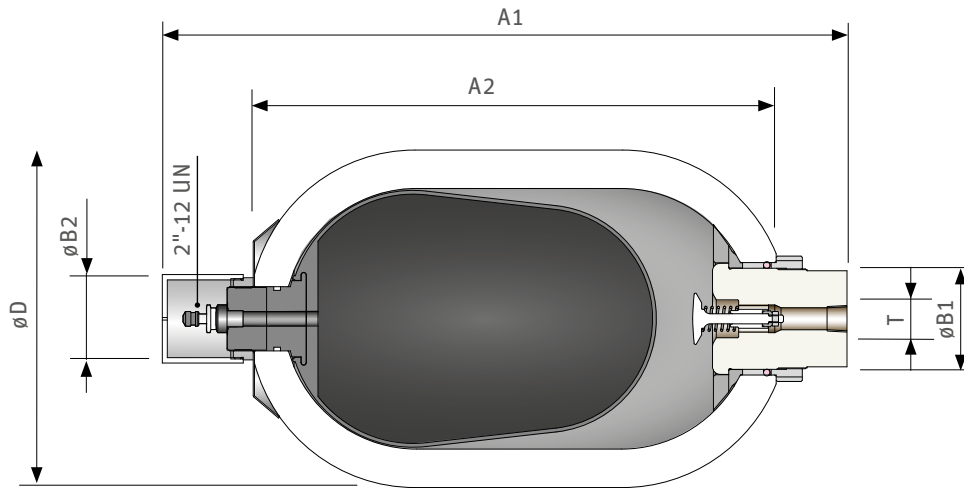


Gas volume [l]	Design pressure [bar]	Type/Order number	Note	Temperature range -15 ... +80°C	Weight [Kg]	Dimensions						
						G	ø D	A1	A2	ø B1	ø B2	Q [l/s]
1	350	BLAK 01-350-11,4 4204019650	only for BLAK ...-C-1-G-50-C-X		6	G1 1/4	114	338	202	53	35	7.5
2.5	350	BLAK 02.5-350-11,4 4204019639			10	G1 1/4	114	547	411	53	35	7.5
4	350	BLAK 04-350-16,8 4204019420			13	G1 1/4	168	421	287	53	35	7.5
5	350	BLAK 05-350-11,4 4204019638			16	G1 1/4	114	896	760	53	35	7.5
6	350	BLAK 06-350-16,8 4204019419			19	G1 1/4	168	551	416	53	35	7.5
10	330	BLAK 10-330-22 4204018514			30	G2	220	574	402	76	35	15
20	330	BLAK 20-330-22 4204018513			45	G2	220	884	712	76	35	15
24.5	330	BLAK 24.5-330-22 4204018512			54	G2	220	1019	847	76	35	15
32	330	BLAK 32-330-22 4204018511			80	G2	220	1404	1232	76	35	15
42	330	BLAK 42-330-22 4204018510			94	G2	220	1544	1372	76	35	15
50	330	BLAK 50-330-22 4204018509			108	G2	220	1919	1747	76	35	15

Note: The dimensions may vary slightly depending on the materials used and/or applied acceptances. In the event of an order, you will receive a binding drawing for approval for non-standard products.

CE Series BLAK High-Pressure

■ CE Series BLAK-HP 1 - 50 l - 690 bar



Gas volume	Design pressure	Type/Order number	Note	Temperature range	Weight	Dimensions					
						T	ø D	A1	A2	ø B1	ø B2
[l]	[bar]				[Kg]	[NPT]	[mm]				
1	690	BLAK-HP 01-690-12,3 4204034302	nur für BLAK-HP...-C-1-T-50-X-X	-15 ... +80°C	12	1/2"-14	123	369	231	53	35
2,5	690	BLAK-HP 2,5-690-12,3 4204034303			17	1/2"-14	123	520	406	53	35
5	690	BLAK-HP 05-690-12,3 4204034304			30	1/2"-14	123	893	755	53	35
10	690	BLAK-HP 10-690-27 4204033564			70	1/2"-14	267	555	425	76	70
20	690	BLAK-HP 20-690-27 4204033565			115	1/2"-14	267	857	728	76	70
35	690	BLAK-HP 35-690-27 4204033566			195	1/2"-14	267	1380	1250	76	70
50	690	BLAK-HP 50-690-27 4204033567			275	1/2"-14	267	1894	1765	76	70

Type Code BLAK

■ CE Series BLAK-HF

		Order designation			
Series	BL...-	...-	...-	...-	
	▲	▲	▲	▲	
	BLAK TYPE	Oil content [l]	max. operating pressure [bar]	Outside ø [cm]	
Material/Coating	...-	C = Carbon steel (Standard) N = Nickel plated X = Stainless steel V = Carbon steel (Special coating) A = Special material K = Inside plastic coated			
Bladder material	...-	1 = NBR (Standard) 2 = ECO 3 = TT-NBR 4 = IIR 5 = FKM 6 = EPDM			
Oil connection	...-	G = Pipe thread ISO 228 (Standard, without adapter) H = Flange connection, SAE 6000 S = Special thread (also indicate in plain text)			
Acceptance	...-	50 = Pressure Equipment Directive 2014/68/EU ... = Others see acceptance selection table			
Material of oil valve	...-	C = Carbon steel (Standard) P = Carbon steel zinc plated N = Carbon steel nickel plated X = Stainless steel			
Material of gas valve	...-	X = Stainless steel (Standard) A = Special material (also indicate in plain text)			
Gas connection	...-	E1 = 7/8"-14 UNF E2 = 2"-12 UN			
PO pre-charge pressure = Filling according to customer request [bar]			

Example: BLAK-HF 50 - 330 - 22 - C+K -1- G - 50 - C - X - 30

Product for order designation is:

Type: BLAK-HF
 Ölcontent: 50 liter
 Pressure: 330 bar
 Outside ø: 22 cm
 Material/Coating: C-Stahl + inside plastic coated
 Bladder material: Standard (NBR)
 Öl-connection: G 1/2
 Acceptance: Pressure Equipment Directive
 Material of oil valve: Carbon steel
 Material of gas valve: Stainless steel
 Pre-charge pressure as required: 30 bar

► **Inside plastic coated**
 In the case of a plastic coated inside surface, please indicate "+K" in the order code (see example box "C+K").

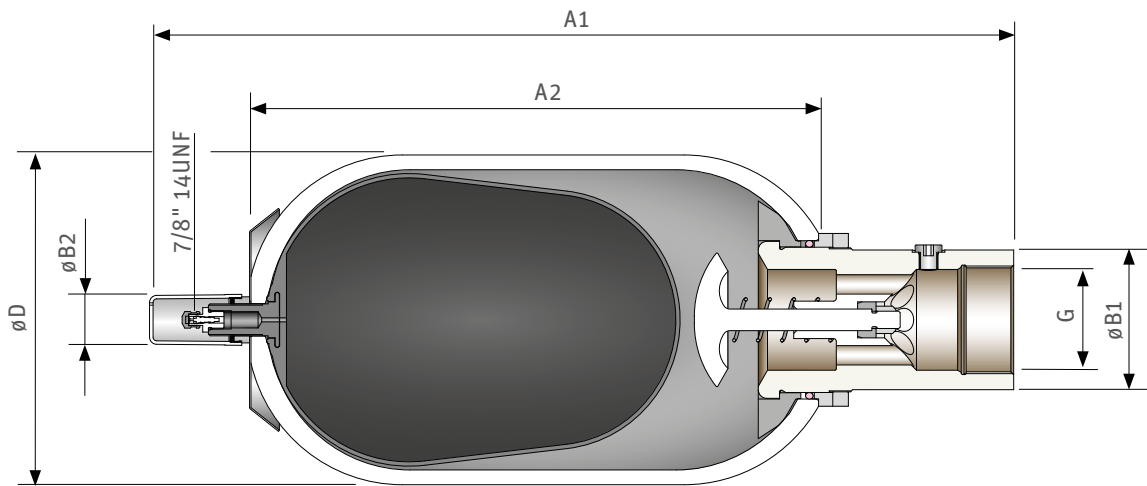
► For bladder material FKM, we recommend that the pre-filling should be done before the operation starts!

► **Filling according to customer request**
 For bladder material FKM, we recommend that the pre-filling should be done before the operation starts!

👉 **Note:** Diverse bladder accumulators with order numbers are listed on the following pages. These are only valid for the types described there. Please observe the corresponding specification!

CE Series BLAK High-Flow

■ CE Series BLAK-HF 10 - 50 l - 330 bar



Gas volume	Design pressure	Type/Order number	Note	Temperature range	Weight	Dimensions						
						G	Ø D	A1	A2	Ø B1	Ø B2	Q
[l]	[bar]				[Kg]		[mm]				[l/s]	
10	330	BLAK-HF 10-330-22 4204033628	nur für BLAK-HF ...-C-1-G-50-C-X	-15 ... +80°C	40	2 1/2	229	620	410	97	35	26,6
20	330	BLAK-HF 20-330-22 4204033629			65	2 1/2	229	925	715	97	35	26,6
24,5	330	BLAK-HF 24-330-22 4204033630			80	2 1/2	229	1090	880	97	35	26,6
32	330	BLAK-HF 32-330-22 4204033631			108	2 1/2	229	1440	1230	97	35	26,6
50	330	BLAK-HF 50-330-22 4204033632			150	2 1/2	229	1950	1740	97	35	26,6

Notes

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Type Code BLUAK

ASME Series BLUAK/BLUAK-HP High Pressure

Order designation		Example: BLUAK 5 - 5000 - 24,5 - C -1- G - 15 - C - X - E1 - 30			
Series	BL.. -	...-	...-	...-	...-
	▲	▲	▲	▲	
	BLUAK TYPE	Oil content [gal]	max. Operating pressure [psi]	Outside ø [cm]	
Material/Coating	...-	▲	C = carbon steel (Standard) N = Nickel plated X = Stainless steel V = carbon steel (Special coating) A = Special material K = Inside plastic coated		
Bladder material	...-	▲	1 = NBR (Standard) 2 = ECO 3 = TT-NBR 4 = IIR on request 5 = FKM 6 = EPDM 7 = NH1		<p>Inside plastic coated In the case of a plastic coated inside surface, please indicate "+K" in the order code (see example box "C+K").</p> <p>For bladder material FKM, we recommend that the pre-filling should be done before the operation starts!</p>
Oil connection	...-	▲	G = Pipe thread ISO 228 SAE (Standard, without adapter) R = Pipe thread (with adapter) ISO 228 L = Flange connection, SAE 1000 H = Flange connection, SAE 6000 M = Metric thread T = NPT B = SAE (without adapter) S = Special thread (please also indicate in plain text)		Please indicate the required thread size/connection nominal width along with this selection.
Acceptance	...-	▲	15 = ASME Code Section VIII Division I ... = Others see acceptance selection table		
Material of oil valve	...-	▲	C = (Standard) carbon steel P = Carbon steel zinc plated N = Carbon steel nickel plated X = Stainless steel		
Material of gas valve	...-	▲	X = (Standard) stainless steel A = Special material (please also indicate in plain text)		<p>Filling according to customer request For bladder material FKM, we recommend that the pre-filling should be done before the operation starts!</p>
Gas connection	...-	▲	E1 = Standard 7/8"-14 UNF-1A E2 = Special version on request		
P0 pre-charge pressure	...	▲	... = Filling according to customer request [psi]		

Hinweis:
High Pressure
Varianten nur
Auswahlmöglich-
lichkeit G, T, S

Product for order designation is:

Type:	BLUAK
Oil content:	5 gallons
Pressure:	5000 psi
Outside ø:	24.5 cm
Material/Coating:	Carbon steel
Bladder material:	Standard (NBR)
Oil connection:	G2
Acceptance:	ASME
Material of oil valve:	Carbon steel
Material of gas valve:	Stainless steel
Gas connection:	Standard 7/8"
Pre-charge pressure as required by customer	30 psi

Inside plastic coated
In the case of a plastic coated inside surface, please indicate "+K" in the order code (see example box "C+K").

For bladder material FKM, we recommend that the pre-filling should be done before the operation starts!

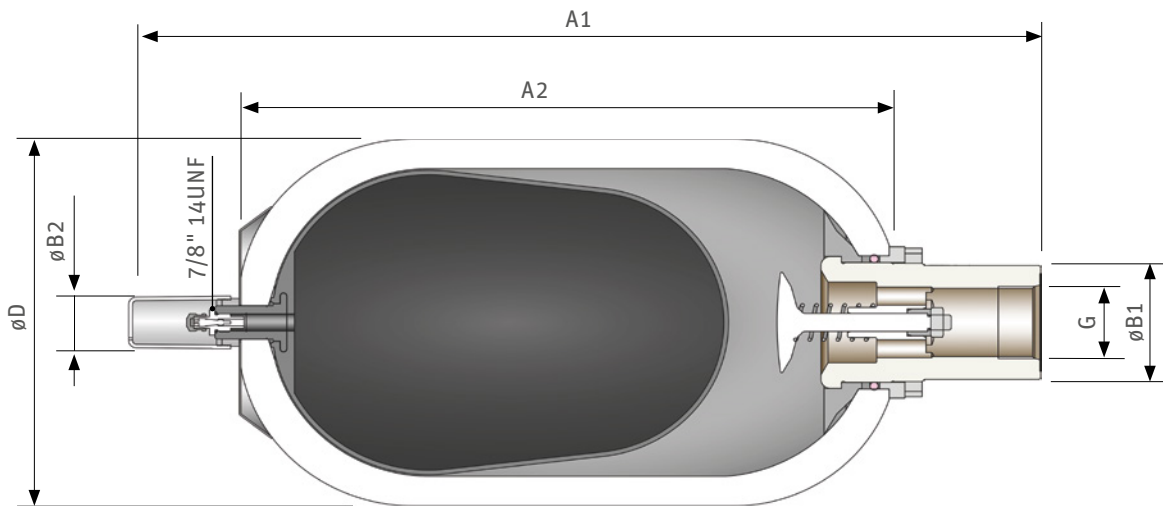
Please indicate the required thread size/connection nominal width along with this selection.

Filling according to customer request
For bladder material FKM, we recommend that the pre-filling should be done before the operation starts!

Note: Diverse bladder accumulators with order numbers are listed on the following pages. These are only valid for the types described there. Please observe the corresponding specification!

ASME Series BLUAK

■ ASME series BLUAK 2,5 Gal to 15 Gal – 3000 psi and 4000 psi series

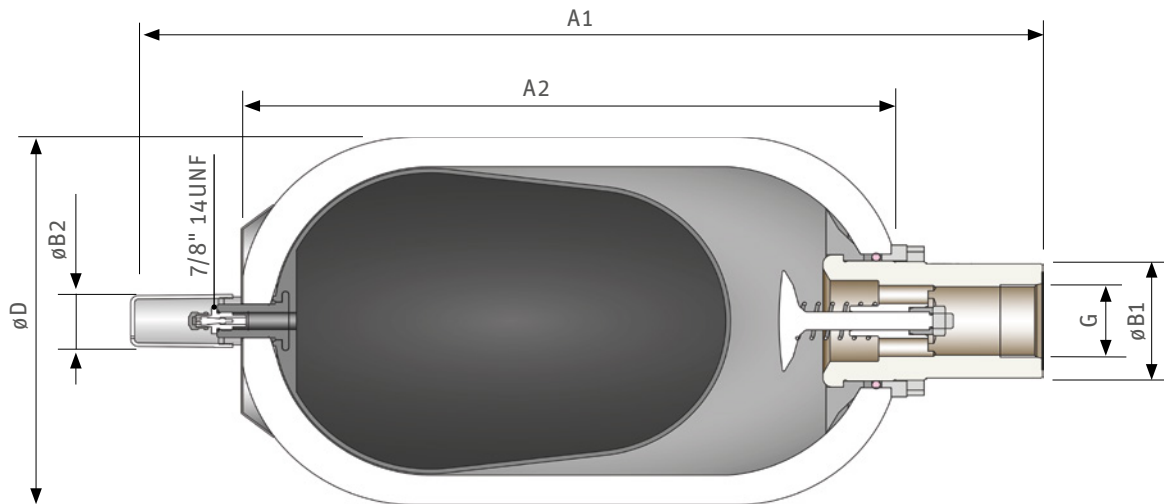


Gas volume	Design pressure	Type/Order number	Note	Temperature range	Weight	Dimensions						
						G	Ø D	A1	A2	Ø B1	Ø B2	Q
[gal]/[l]	[psi]/[bar]				[lbs]/[kg]	[inch]/[mm]					[gpm]/[l/s]	
2.5 10	3000 207	BLUAK 2.5-3000-22.9 4204037092	only for BLUAK ...-C-1-G-15-C-X-E1	5 ... 200°F/-15 ... +93° C	83.8 38	G2	9.01"	22.52"	15.63"	3"	1.4"	238
	229	572					397	76	35	15		
5 20	3000 207	BLUAK 5-3000-22.9 4204034648			134.5 61	G2	9.01"	34.80"	27.91"	3"	1.4"	238
	229	884					709	76	35	15		
10 32	3000 207	BLUAK 10-3000-22.9 4204037093			222.7 101	G2	9.01"	55.91"	49.02"	3"	1.4"	238
	229	1420					1245	76	35	15		
15 57	3000 207	BLUAK 15-3000-22.9 4204037094			321.9 146	G2	9.01"	78.94"	72.03"	3"	1.4"	238
	229	2005					1830	76	35	15		
	4000 276	BLUAK 15-4000-22.9 4204035182										

Note: The dimensions may vary slightly depending on the materials used and/or applied acceptances. In the event of an order, you will receive a binding drawing for approval for non-standard products.

ASME Series BLUAK

ASME series BLUAK 2.5 Gal to 15 Gal – 5000 psi and 6000 psi series

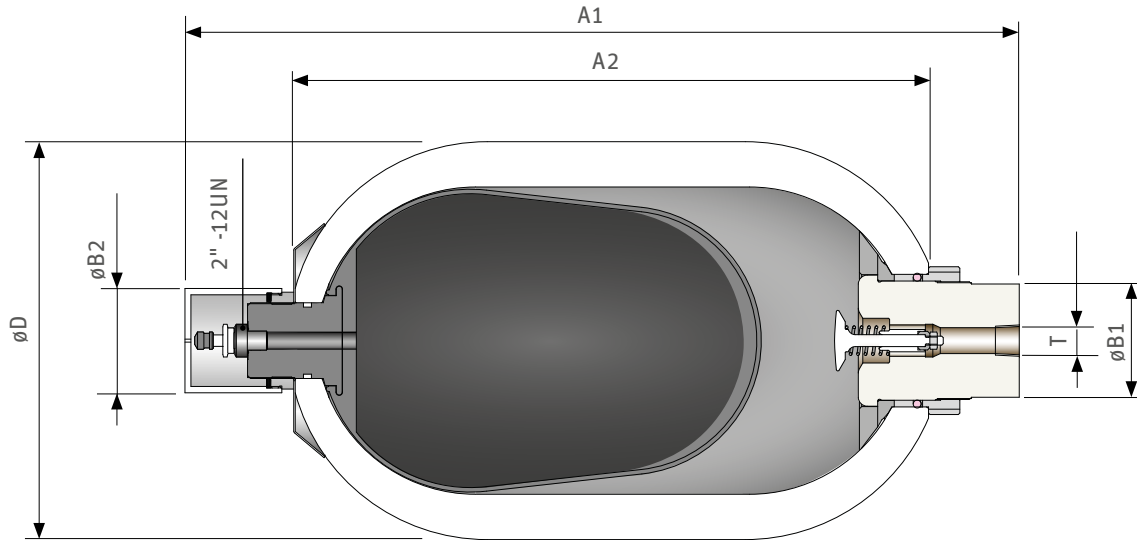


Gas volume [gal]/[l]	Design pressure [psi]/[bar]	Type/Order number	Note	Temperature range	Weight [lbs]/ [kg]	Dimensions						
						G	Ø D	A1	A2	Ø B1	Ø B2	Q
						[inch]/[mm]					[gpm]/[l/s]	
2.5 10	5000 345	BLUAK 2.5-5000-24.5 4204033722	only for BLUAK ...-C-1-G-15-C-X-E1	5 ... 200°F/-15 ... +93° C	127.9 58	G2	9.65" 245	22.87" 581	16.26" 413	3" 76	1.4" 35	238 15
	6000 414	BLUAK 2.5-6000-24.5 4204037096										
5 20	5000 345	BLUAK 5-5000-24.5 4204035350			209.4 95	G2	9.65" 245	34.88" 886	28.27" 718	3" 76	1.4" 35	238 15
	6000 414	BLUAK 5-6000-24.5 4204037097										
10 32	5000 345	BLUAK 10-5000-24.5 4204037098			354.9 161	G2	9.65" 245	55.63" 1413	48.02" 1245	3" 76	1.4" 35	238 15
	6000 414	BLUAK 10-6000-24.5 4204037099										
15 57	5000 345	BLUAK 15-5000-24.5 4204035393			545.9 234	G2	9.65" 245	78.62" 1997	72.01" 1829	3" 76	1.4" 35	238 15
	6000 414	BLUAK 15-6000-24.5 4204037100										

Note: The dimensions may vary slightly depending on the materials used and/or applied acceptances. In the event of an order, you will receive a binding drawing for approval for non-standard products.

ASME Series BLUAK High-Pressure

■ ASME Series BLUAK-HP – 2,5 Gal bis 15 Gal – 10000 psi Serie



Gas volume	Design Pressure	Type/order number	Note	Temperature range	Weight	Dimensions					
						T	ø D	A1	A2	ø B1	ø B2
[gal]/[l]	[psi]/[bar]				[lbs]/[Kg]	[NPT]	[Zoll]/[mm]				
2,5 10	10000 690	BLUAK-HP 2.5-10000-27 4204033568	only for BLUAK-HP...-C-1-T-15-X-X	5 ... 200°F/-15 ... +93° C	96 212	1/2"-14	267 10,51	544 21,42"	419 165"	3" 76	70 2,76"
5 20	10000 690	BLUAK-HP 5-10000-27 4204033569			135 298	1/2"-14	267 10,51	862 33,94"	737 29,02"	3" 76	70 2,76"
10 32	10000 690	BLUAK-HP 10-10000-27 4204033590			229 505	1/2"-14	267 10,51	1386 54,57"	1261 49,65"	3" 76	70 2,76"
15 57	10000 690	BLUAK-HP 15-10000-27 4204033591			322 710	1/2"-14	267 10,51	1830 72,05"	1830 72,05"	3" 76	70 2,76"



Note: The dimensions may vary slightly depending on the materials used and/or applied acceptances. In the event of an order, you will receive a binding drawing for approval for non-standard products.

Calculation



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■ Accumulator calculation form

Personalization	
Company name	
Name, first Name	
Email	
Phone	

Project title	Accumulator type	Quantity
	Diaphragm accumulator	
	Bladder accumulator	
	Piston accumulator	
	Pressure vessel eg..	

Date _____

Sign _____

Accumulator calculation					
Working pressure [bar]	min.	max.		Precharge pressure [bar] at 20 °C	
Discharge volume [l]				Discharge time [s]	
Alternatively to discharge volume and discharge time, total volume of accumulator [l]				Discharge profile	
Ambient temperature [°C]	min.	max.		Material	Accumulator shell
Medium temperature [°C]	min.	max.			Diaphragm
Medium fluid side					Bladder
Medium gas side					Seal
Load alternation per week	Number			Connection fluid side	
Operating mode	Short stroke	Long stroke	High frequency	Connection gas side	
Installation space - maximum height				Coating inside	
Acceptance	Country of installation	Regulations		Coating outside	

Special features/additions

Our strengths

Your benefits

Innovative

- > Own product development
- > In-house technology centre for all relevant tests and inspections including: Burst and swell test bench, endurance test rig, cold chamber, salt spray test
- > Close collaboration with universities and institutes
- > Tested and proven design and simulation program for all types of hydraulic accumulator

Global

- > Worldwide production, assembly and service sites
- > Certified according to DIN EN ISO 9001:2015, DIN EN ISO 14001
- > Proximity to customers thanks to own representatives and extensive dealer network worldwide
- > International production approvals, including ASME Code, Russian Customs Union TR-CU, Korea KGS

Complete product portfolio

- > Extensive range of diaphragm, bladder and piston accumulators
- > Complete and tested accessories range, including for professional installation and for (accumulator) safety
- > Accumulator measuring and monitoring systems, mechanical or non-contact
- > Customised special solutions

A large, stylized version of the Roth Hydraulics logo, with "Roth" in a bold, white, sans-serif font and "Hydraulics" in a smaller, white, sans-serif font below it, all set against a dark background. A hand is visible at the bottom left, appearing to hold up the logo.



Roth Hydraulics

Accumulators

- > Diaphragm accumulators
- > Bladder accumulators
- > Piston accumulators

Accumulator systems

- > Accumulator units
- > Monitoring systems
- > System accessories
- > Pressure vessels

Special solutions

- > Spring accumulators
- > Damper systems
- > Rail hydraulics
- > Special accumulators

Roth
Hydraulics



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