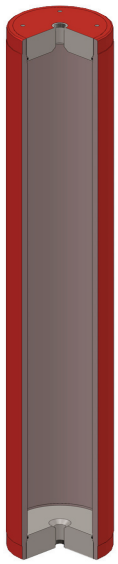
6.4.1 TECHNICAL DATA

MAX OPERATING PRESSURE (PS): 375 bar
PRESSURE TEST (PT): 1.43 x PS
NOMINAL CAPACITIES: 0.1 ÷ 1000 litres
WORKING TEMPERATURE: -50 ÷ +150 °C
BODY MATERIAL: - carbon steel shell painted with rust inhibitor RAL 8012
- nickel coating 25 - 40 µ
FLUID PORT CONNECTION: upon request
WEIGHT: see Table 6.4d

6.4.2 DESCRIPTION

Additional bottles type AB consist of a pipe of high-tensile steel. The same pipe of the piston accumulator type AP.
The additional bottles are used to take in and store nitrogen to increase the gas volume in the accumulator station (with bladder or piston accumulator). This means that smaller accumulators can be used for the same gas volume and costs can be reduced. EPE offers a wide selection of bottless type, such as forged “B” version, shell of bladder accumulator “ASS” and “ASSA” version or body piston type “AB” version.

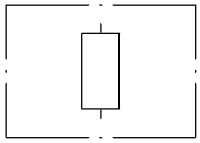


6.4a

6.4.3 “AB” ADDITIONAL CYLINDERS ADVANTAGES

- compact
- simple construction
- quick, easy installation
- large volume

6.4.4 HYDRAULIC SYMBOL



6.4b

6.4.5 SEALS-TEMPERATURE-LIQUID COMPATIBILITY

When selecting the additional cylinder variant, pay attention to the following non-binding notes with regard to hydraulic fluid, seals material and the permissive temperature range. (see Section)

Code letter	Polymer	ISO	Temperature range (°C)	Some of the liquids compatible with the polymer
P	Standard nitrile (Perburan)	NBR	-20 ÷ +80	Aliphatic hydrocarbons (propane, butane, gasoline, oils, mineral greases, diesel fuel, fuel oil, kerosene), mineral greases and oils, HFA - HFB - HFC fluids, many dilute acids, alkalis, saline solutions, water, water glycol.
F	Low temperature nitrile	NBR	-40 ÷ +70	The same as with standard nitrile + a number of different types of Freon. (This contains less acrylonitrile than the standard and is therefore more suitable for low temperatures, but its chemical resistance is slightly lower).
K	Hydrogenated nitrile	HNBR	-30 ÷ +130	The same as with standard nitrile but with excellent performance at high and low temperatures.
L	Hydrogenated nitrile	HNBR	-60 ÷ +130	The same as with standard nitrile but with excellent performance at high and very low temperatures.
V	Fluorocarbon	FKM	-10 ÷ +150	Mineral oils and greases, non-flammable fluids of HFD group, silicone oils and greases, animal and vegetable oils and greases, aliphatic hydrocarbons (gasoline, butane, propane, natural gas), aromatics hydrocarbons (benzene, toluene), chlorinated hydrocarbons (Tetrachloroethylene, carbon tetrachloride), fuel (regular, super and containing methanol), excellent resistance to ozone, weathering and aging.

For other hydraulic fluid and/or temperatures, please consult us.

6.4c

6.4.6 ORDER CODE

1	2	3	4	5	6	7	8	9	10	11
AB	200	P	220	C	350	G	6	G	5	-	8

1 Series

Additional bottle = **AB**

2 Nominal capacity (litres)

Internal diameter
ø 60 mm = **0.1 ÷ 2.5**
ø 100 mm = **1 ÷ 10**
ø 180 mm = **6 ÷ 80**
ø 250 mm = **30 ÷ 180**
ø 350 mm = **80 ÷ 400**
ø 520 mm = **180 ÷ 1000**

3 Seals material material

Nitrile rubber (NBR)	= **P**
Nitrile for low temp.	= **F**
Fluorocarbon (FKM)	= **V**
Hydrogenated nitrile	= **K**
Hydrogenated nitrile for low temp.	= **L**

4 Max working pressure (bar)

Internal diameter
ø 60 mm = **375**
ø 100 mm = **375**
ø 180 mm = **250 - 375**
ø 250 mm = **250 - 350**
ø 350 mm = **220 - 350**
ø 520 mm = **220 - 350**
(210 only for the version with connection L
or other pressure related to connections B or U)

5 Body material

Carbon steel	= **C**
Nickel coated carbon steel 25 µ	= **N**
Nickel coated carbon steel 40 µ	= **M**

6 Nominal internal diameter

Internal diameter
Ø 60mm =**60**
Ø 100mm =**100**
Ø 180mm =**180**
Ø 250mm =**250**
Ø 350mm =**350**
Ø 520mm =**520**

11 Test and certification

Factory testing	= **0**
TR (Russia)	= **1**
ML (China)	= **3**
PED 97/23/EC (for capacity greater than 1 l)	= **8**
EAC Passport (Russia)	= **11**
Algeria passport	= **12**
Standard regulation (NR13) (Brazil)	= **13**
Tunisia passport	= **14**

10 Dimension of port connection B

See the table on page 2

9 Type of port connection B

Without connection	= **0**
Female thread:	
BSP ISO 228	= **G**
BSP ISO 228 with chamfer for OR	= **A**
NPT-F	= **P**
SAE	= **S**
METRIC	= **M**
Holes for flange:	
SAE 3000 metric threads	= **L**
SAE 6000 metric threads	= **H**
ANSI metric threads	= **B**
UNI - DIN	= **U**
CETOP	= **C**
Special flange	= **F**

8 Dimension of port connection A

See the table on page 2

7 Type of port connection A

Without connection	= **0**
Female thread:	
BSP ISO 228	= **G**
BSP ISO 228 with chamfer for OR	= **A**
NPT-F	= **P**
SAE	= **S**
METRIC	= **M**
Holes for flange:	
SAE 3000 metric threads	= **L**
SAE 6000 metric threads	= **H**
ANSI metric threads	= **B**
UNI - DIN	= **U**
CETOP	= **C**
Special flange	= **F**

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8	Dimension of port connection A

Without connection = **0**
For the type of connection:
G-A-P-L-H 1/8" = **1**
1/4" = **2**
3/8" = **3**
1/2" = **4**(std. DN 60)
3/4" = **5**
1" = **6**(std. DN 100)
1"1/4 = **7**
1"1/2 = **8** (std. DN 180-250-350)
2" = **9**(std. DN 520)
2"1/2 = **10**
3" = **11**
3"1/2 = **12**
4" = **13**
S = **Diameter "inch"-Pitch "inch"**
Former. 9/16-18 = 9/16-18
M = **Diameter/pitch**
Former. M 22x1.5 = 22/1.5
B = **Dimension/Rating**
Former. 4" ANSI 300 = 4/300
U = **DN/PN**
Former. DN100 PN16 = 100/16
C = **Diameter "inch"/max Pressure "bar"**
Former. 3"Cetop 400 = 3/400
F = to specify and EPE will assign a number

9	Dimension of port connection B

Without connection = **0**
For the type of connection:
G-A-P-L-H 1/8" = **1**
1/4" = **2**
3/8" = **3**
1/2" = **4** (std. DN 60)
3/4" = **5**
1" = **6** (std. DN 100)
1"1/4 = **7**
1"1/2 = **8** (std. DN 180-250-350)
2" = **9** (std. DN 520)
2"1/2 = **10**
3" = **11**
3"1/2 = **12**
4" = **13**
S = **Diameter "inch" - Pitch "inch"**
Former. 9/16-18 = 9/16-18
M = **Diameter/pitch**
Former. M 22x1.5 = 22/1.5
B = **Dimension/Rating**
Former. 4" ANSI 300 = 4/300
U = **DN/PN**
Former. DN100 PN16 = 100/16
C = **Diameter "inch"/max Pressure "bar"**
Former. 3"Cetop 400 = 3/400
F = to specify and EPE will assign a number

6.4.7 EUROPE MARKET

All hydraulic bottles are pressure vessels and are subject to the national regulations and directives valid at the place of installation.
For additional cylinders type AB, every shipping batch is complete of a conformity declaration and instructions of use and maintenance and/or all documents requested. All vessel categories (see Table 6.4d) must be protected by means of a pressure relief valve in accordance with Directive 97/23/EC.

6.4.8 ACCESSORIES

For support equipment, see Cap. 7
For gas side's safety equipment, see Cap. 8
For pre-loading and charging set, see Cap. 11
For other components, see Cap. 12

6.4.9 DIMENSIONS

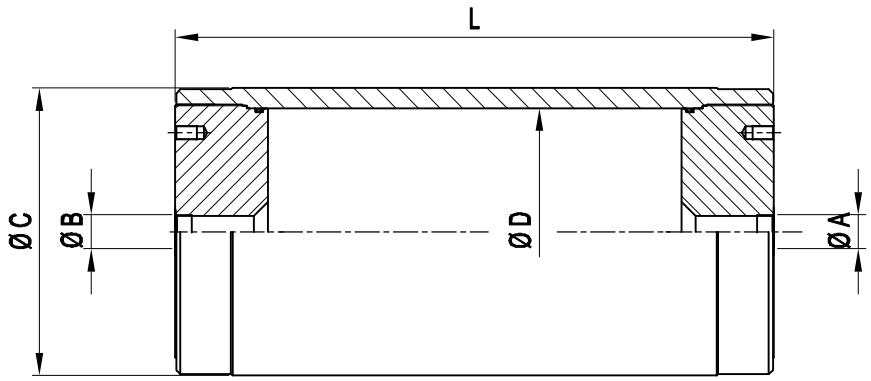

Fig. I

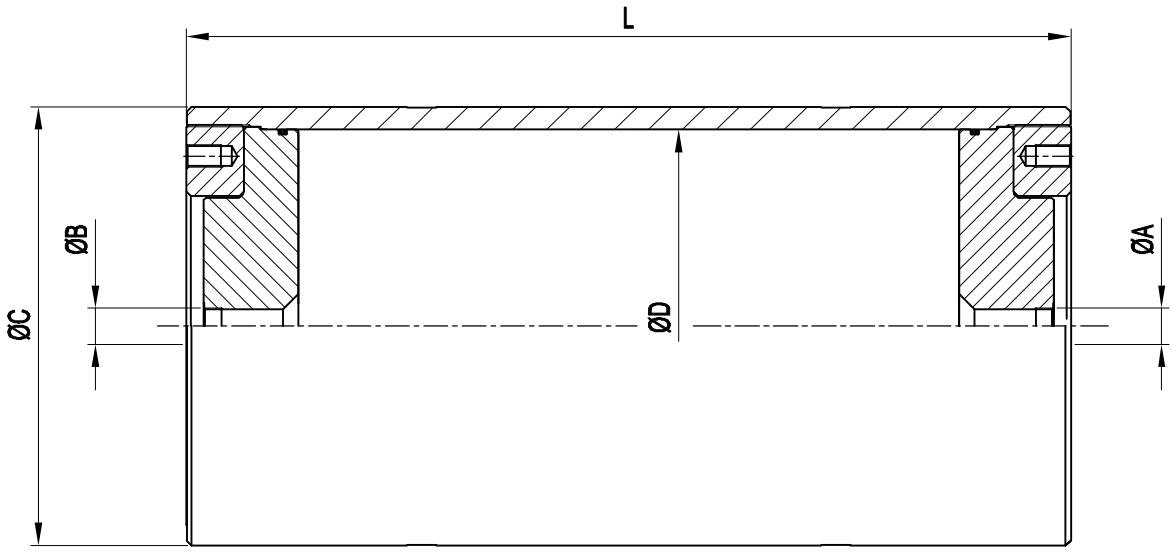

Fig. II

6.4d

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Accumulator type APXXX Ø bore (ØD)	Fig	Gas capacity liters	Working pressure bar	Ped category for the liquids of group 2	Maximum differential pressure bar	ØA	ØB	ØC mm	ØD mm	L mm	Dry Weigh Kg			
											220 bar	250 bar	350 bar	375 bar
60	I	0,25	375	Art III (III)	300	M12 x 1,5	1/2" BSP	80	60	169				4,9
		0,5								258				6,4
		1		II						436				9,5
		1,5								614				12,5
		2								790				15,5
100	I	1	375	II	300	M12 x 1,5	1" BSP	130	100	240				17,1
		1,5								304				19,8
		2								368				22,6
		2,5								430				25,2
		3		III						494				27,9
		4								622				33,3
		5								750				38,7
		6								878				44,1
		8		IV						1134				54,9
		10								1390				65,8
180	I	6	250	IV	180,5	M12 x 1,5	1 1/2" BSP	220	180	418				74,0
		8								495				81,5
		10								573				89,2
		15								652				96,9
		20								771				108,6
		25								968				127,9
		30								1163				147,0
		40	375		240			375		1360				166,6
		50								1754				204,9
		60								2145				243,2
		80								2538				281,8
250	I	30	250	IV	180	M12 x 1,5	1 1/2" BSP	298,5	250	874		252	302,3	
		40								1098		297,5	346,2	
		50								1322		342	389,0	
		60								1545		386	432,9	
		80								1993		316	519,5	
		100								2441		565	607,3	
		120	350		220			324		2889		655	695,5	
		150								3560		789	825,5	
		180								4232		885	966,1	
350	I	100	220	IV	165	M12 x 1,5	1 1/2" BSP	406	350	1387	649		772,5	
		120								1612	782		841,5	
		150								1950	891		942,6	
		180								2287	999		1036	
		200								2399	1034		1212,6	
		250								3075	1254		1282,7	
		300	350		210			419		3637	1435		1452,7	
		400								4762	1798		1806,7	
520	II	200	220	IV	120	M12 x 1,5	2" BSP	584	520	1298	1163			
		250								1549	1315			
		300								1800	1439			
		350								2050	1569			
		400								2300	1704			
		500								2801	1975			
		600			200					3302	2246			
		800								4304	2787			
		1000								5306	3328			

6.4e

* The maximum differential pressure is the maximum allowable difference between the maximum pressure and the minimum working pressure (P2-P1) to have an infinite life cycle of the accumulator (greater than 2,000,000 cycles).

6.4.10 SPARE PARTS CODES

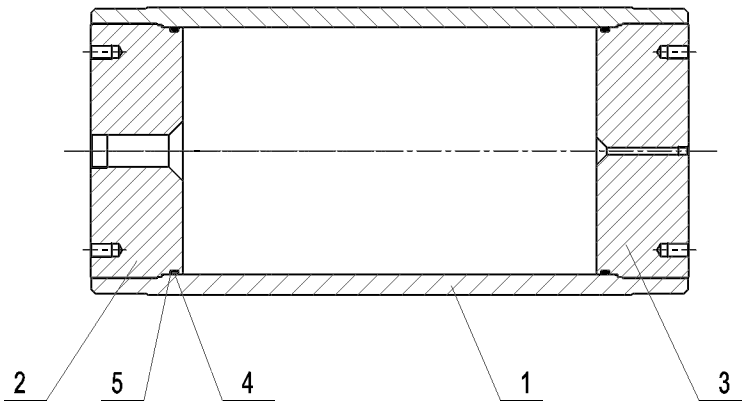

fig. I

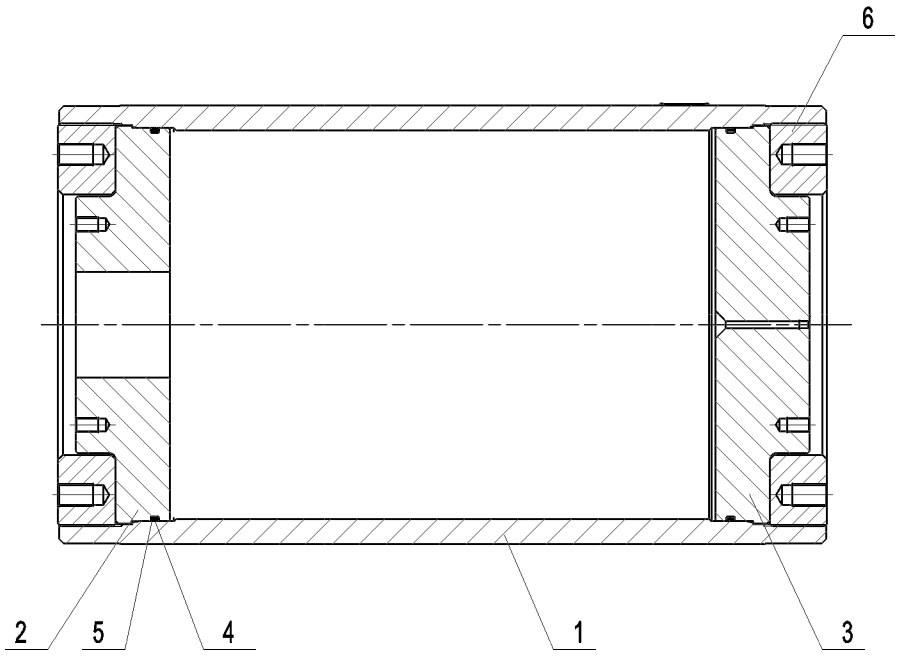

fig. II

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Pos.	Spare parts	Cylinder diameter	Fig.	Group code	Q.ty	Part description	Type / Code
1	Not supplied as spare parts					Accumulator cylinder	-
2						Oil side cap	
3						Gas side cap	
4	Accumulator gasket set	60	I	B2471-1 *	2	O - ring	0010R6200 - *
5					2	Anti-extrusion ring	0011P8329 - *
4	Accumulator gasket set	100	I	B2472-1 *	2	O - ring	0010R0185 - *
5					2	Anti-extrusion ring	0011P8341 - *
4	Accumulator gasket set	180	I	B2473-1 *	2	O - ring	0010R0228 - *
5					2	Anti-extrusion ring	0011P8439 - *
4	Accumulator gasket set	250	I	B2474-1 *	2	O - ring	0010R8925 - *
5					2	Anti-extrusion ring	0011P8447 - *
4	Accumulator gasket set	350	I	B2475-1 *	2	O - ring	0010R81300 - *
5					2	Anti-extrusion ring	0011P8455 - *
4	Accumulator gasket set	520	II	B2476-1 *	2	O - ring	0010R82000 - *
5					2	Anti-extrusion ring	0011P8469 - *
6	Not supplied as spare parts					Thread ring	-

* Gasket material

6.4g

6.4.11 COMMISSIONING AND MAINTENANCE

Delivery condition

The additional bottles type AB are shipped on pallets or wooden boxes upon request. Unless otherwise required, certificates and documentation are provided together with the bottles.

Handling

The original packaging is suitable for handling and storage.
Where necessary, you should use suitable lifting equipment to support the weight of the bottles.
However protect from impact the packaging and handle it with care.

Storage

During storage in the warehouse, leave the product in its original packaging, keeping it away from heat sources and naked flames. The storage temperature should be between +10 and +40°C.
After six years of storage, it is essential to proceed with the replacement of all elastomeric parts before the commissioning.

Marking on the nameplate of the additional cylinder

With reference to the PED 97/23/EC classification, Article 3, Paragraph 3 and / or risk categories I or IV depending on the volume and maximum working pressure, the cylinder indicates the following data:

- logo, name and country of the manufacturer
- month / year of production
- product code
- serial number
- maximum PS pressure and PT test pressure in bar
- min. and max. TS working temperature in Celsius
- volume V in litres
- group of fluids allowed
- CE marking (by category I ÷ IV) with the identification number of the notified body

It is strictly forbidden to:

- weld, rivet, bolt or screw any item of the cylinder shell
- engrave or permanently stamp the surfaces of the cylinder shell and / or carry out other operations that could affect or change the mechanical properties of the cylinder
- use the cylinder as a structural element: it should not be subjected to stresses or loads
- change the data of the nameplate and / or the cylinder without the permission of the manufacturer
- use a (dangerous) fluid of Group 1 with equipment designed and manufactured for fluids of Group 2.

Installation

Before installation, you must perform a visual check to verify that the bottles has not suffered any damage during shipping / handling.
Verify that the requested type matches with what stamped on the nameplate. We recommend using the additional bottles connected to the accumulator with a suitable safety valve (see Chapter 8). This device provides user and equipment protection against possible damages due to pressure peaks.
The additional bottles type AB may be installed in any position from horizontal to vertical (preferably with the connections vertically) and the nameplate must be visible.

Proceed to the assembly so that no abnormal force affects the pipes connected directly or indirectly to the additional bottles, so we recommend the use of supporting components and also fastening (please see Chapter 7) to avoid the transmission of vibrations.
Make sure that the bottle is connected to the hydraulic circuit through suitable connection devices.
Make sure the gas is compatible with the elastomer of the seals.
Check that the max. allowed bottle pressure is equal to or greater than that of the hydraulic circuit and that the temperature during operation is maintained within the range expected.
Make sure the fluid does not contain contaminants.

Maintenance

- Periodically check the pre-charge pressure of the system: after the commissioning, check after 2-3 weeks of operation and if there were no leaks, repeat the operation after 3 months; if the pressure at the same temperature was stable, repeat the test yearly. For heavy-duty applications, check the pre-charge every 6 months.
- Periodically (yearly) carry out a visual inspection of the bottle in order to detect any early signs of deterioration such as corrosion, deformation, etc.
- Comply with the requirements of the regulations concerning the verification of the functionality of the equipment according to the country of installation of the bottle.

Disassembly

If for failure, scheduled check or retest it is necessary to remove the additional bottle from the system, prior to removal, completely discharge the pressure within the circuit.
All additional EPE cylinders of the AB series can be repaired.

Repair

It may consist in replacing the seals.
For reasons of functionality and security, it is recommended to use only original spare parts.

Demolition and recycling of the additional cylinder

Before demolition or recycling of the additional cylinder, you should always discharge the internal pressure.
If needed, proceed decontaminating in relation to the gas/fluid used prior to demolition.

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