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Type WA

WAL series
Limited Edition

Welded diaphragm accumulators

SAIP
energy flow

Welded diaphragm accumulators Type **WA**

WAL series

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Principle of Operation

One of the main tasks of hydraulic accumulators is to take up a certain amount of fluid under pressure from a hydraulic system, and then return it all, or part of it, to the system when required.
Since they are pressure vessels, they must be sized for the maximum working (over) pressure, taking into account the acceptance standards valid in the country of installation.
In most hydraulic systems, accumulators with a separating element between the fluid and gas side are used. Type WA maintenance-free diaphragm accumulators consist of two shells made of high-strength steel and electron-beam welded together.
The U-shaped diaphragm separates the gas side from the fluid side. A special back plate closes the bore of the fluid side when the accumulator is preloaded to prevent extrusion of the diaphragm. The gas valve is available in the classical M28x1.5 version with an Allen locking screw and metal-to-rubber sealing washer (for pre-charging, the DP100 pre-charging and control equipment must be used). The fluid connection is available in the standard threaded connections shown in the table. Compared to other types, these accumulators have a high energy efficiency, as they have a higher energy density (energy content / mass); this characteristic is due to the almost spherical shape of the accumulator body.
Type WA accumulators can be installed in any position.
Type WA maintenance-free membrane accumulators cannot be repaired.

Product Description

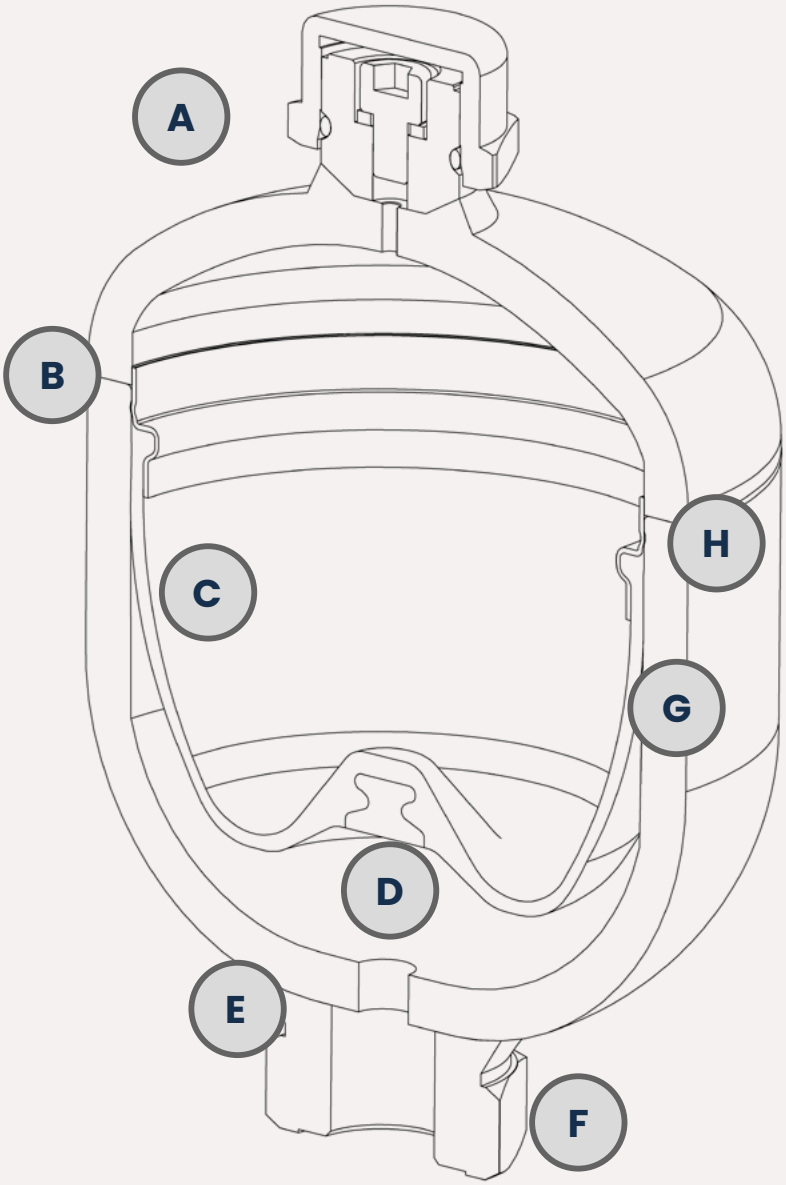
Non-repairable membrane accumulator, with carbon steel caps, electron beam welded, painted, for use in mobile machines and stationary systems.

Applications

- Energy reserve in systems with intermittent operation due to reduced pump power.
- Energy reserve for emergency cases, such as in the event of pump-motor unit failure or power failure.
- Compensation of losses due to leakage.
- Pressure compensator (balancing).
- Vibration dampening in the event of periodic oscillations.
- Volume compensation in the event of pressure and temperature variations.
- Hydraulic suspension spring on vehicles.
- Shock absorption in the event of mechanical impact.

Characteristics

A Upper cap
B Ring
C Diaphragm
D Plate
E MAG Welding
F Fluid Connection
G Lower cap
H Electron-beam welding



General characteristics

Nominal volume
from 0,16 to 0,75 litres

Fino a pressione
MAX 210 barg

According to
PED 2014/68/EU
EN 14359:2017
EN13445-3:2021

Technical characteristics

Electron-beam welded construction, not reparaible

High-strength alloy steel body

Standard painting

RAL 9005

Anticorrosive primer

Gas side connection M28x1,5

Fluid side connection
(see table)

Separating element material
(see table)

Welded diaphragm accumulators **Type WA - WAL series** Limited Edition

Description

Electron-beam welded accumulator WAL M28x1,5 - Vol. 0,75 L - NBR - CARB. STEEL - F. 1/2" GAS (DIN3852-2 Form X large) - Mod. 210 bar

CODE EXAMPLE*																	
WAL	·	2	·	0,75	·	1	·	O	·	G4	·	A	·	210			
1		2		3		4		5		6		7		8			

1. ACCUMULATOR TYPE

WAL

2. GAS CONNECTION (NITROGEN)

2	ATTACCO M28X1,5

3. NOMINAL VOLUME

0,16	L
0,32	L
0,5	L
0,75	L

4. SEPARATING ELEMENT MATERIAL

1	NITRILE (NBR)
8	EPICHLOROHYDRINE (ECO)

5. BODY MATERIAL

O	CARBON STEEL

6. FLUID CONNECTION

G4	F. 1/2" BSP-P
G4	F. 1/2" BSP-P
M8	F. M18X1,5
G4	F. 1/2" BSP-P
M8	F. M18X1,5
G4	F. 1/2" BSP-P
M8	F. M18X1,5

7. CERTIFICATION

A	PED 2014/68/EU EN 14359:2017 EN13445-3:2021

8. DESIGN PRESSURE

210	210 barg
210	210 barg
210	210 barg
210	210 barg

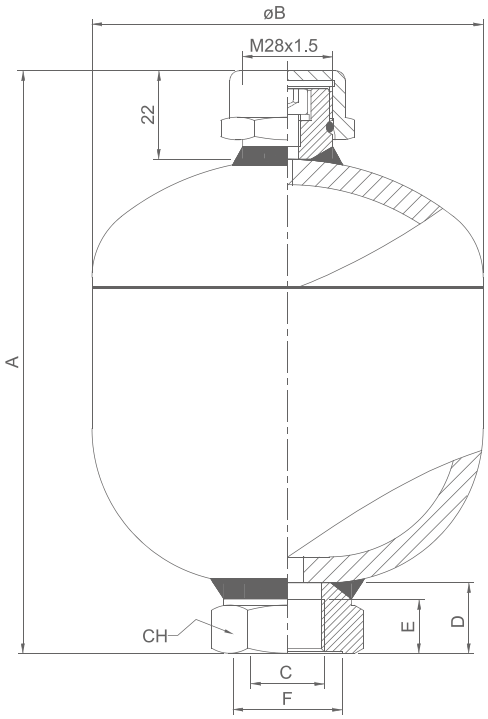
* For different codes or characteristics please contact SAIP

Diaphragm compatibility/ Temperature / Fluid *

1	Rubber in Perbunan (NBR)	-15 / +80°C	**Suitable for:** Mineral fats and oils. Aliphatic hydrocarbons (propane, butane, petrol, oils, mineral fats, diesel fuel, fuel oil, kerosene). HFA - HFB - HFC fluids. Many dilute acids. Saline solutions. Water. Glycol water.
8	Rubber in Epichlorohydrin (ECO)	-30 / +120°C	Low gas permeability, good resistance to ozone, ageing and weathering. **Suitable for:** Mineral fats and oils. Aliphatic hydrocarbons (propane, butane, petrol). Silicone oils and greases. Water at room temperature.

* For use with other fluids and/or temperatures please contact SAIP

Technical Drawing



Fluid Connection	
G4	F. 1/2" BSP-P (DIN3852-2 Form X)
M8	F. M18x1,5 (DIN3852-1 Form X)

Technical data

Type	Nominal Volume	Effective Volume	Design pressure *	ΔP MAX ** dynamic $P_2 - P_1$	MAX Compression Ratio $P_0 : P_2$	Flowrate MAX ***	Pre-charge MAX ****	PED Category (for Group 2 Fluids)	Weight
	[L]	[L]	[barg]	[barg]		[L/min]	[barg]		[Kg]
WAL 0,16	0,16	0,16	**210**	140	8:1	10	130	Art.4 Par.3	1,1
WAL 0,32	0,35	0,32	**210**	120	8:1	40	130	Art.4 Par.3	1,5
WAL 0,5	0,5	0,48	**210**	90	8:1	40	130	Art.4 Par.3	2
WAL 0,75	0,75	0,7	**210**	90	8:1	40	130	Art.4 Par.3	3,5

* Design pressure calculated according to EN14359:2017 (for pressure values according to other standards please contact SAIP)

** Maximum permissible differential pressure (pressure difference between maximum operating pressure P2 and minimum operating pressure P1) to have an infinite life cycle (greater than 2,000,000 cycles)

*** Flow rate measured using mineral oil with a viscosity of 36 cSt at 50 °C and ΔP = 5 bar

**** For higher values please contact SAIP

Dimensions

Type	Design Pressure [barg]	Nitrogen (gas) Connection	A [mm]	Ø B [mm]	C	D [mm]	E [mm]	F [mm]	CH [mm]
WAL 0,16	210	M28x1,5	121,5	74	F. 1/2" BSP-P	20	15	ø29	32
WAL 0,32	210	M28x1,5	139	95	F. 1/2" BSP-P	20	15	ø29	32
			140		F. M18x1,5	21	16	ø25	30
WAL 0,5	210	M28x1,5	152,5	103	F. 1/2" BSP-P	22	22	ø34	41
			151,5		F. M18x1,5	21	16	ø30	41
WAL 0,75	210	M28x1,5	176	122	F. 1/2" BSP-P	22	22	ø34	41
			175		F. M18x1,5	21	16	ø30	41

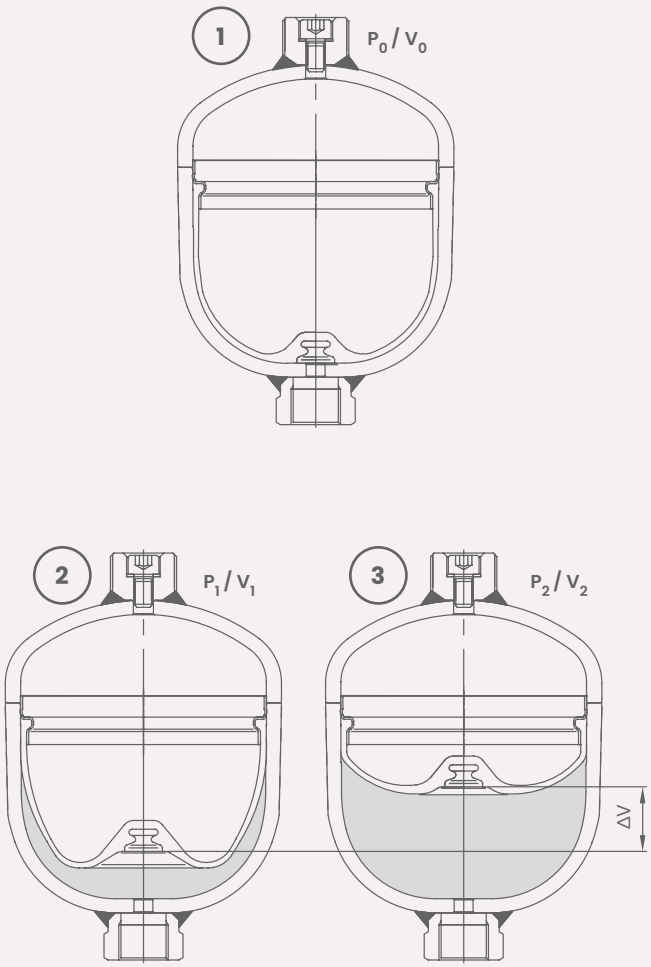
Sizing

Several factors must be considered
when sizing an accumulator:

- Minimum (P1) and maximum (P2) working pressures
- Minimum (T1) and maximum (T2) working temperatures
- Precharge pressure (P0)
- Required volumes

The formulas for correct dimensioning
can be found in the tab
GENERAL INFORMATION -> SIZING

Status conditions



Certifications

All hydraulic accumulators are pressure vessels and are subject to the national norms and to the norms valid in the country of installation.
WA-type accumulators are built according to the European Directive PED 2014/68/EU.
In the table Technical Data the relevant category related to the use with non dangerous fluids (group 2) is stated. For the use with dangerous fluids (group 1) please contact SAIP. For other countries, applications, norms, SAIP has to be contacted.

Information for use

Refer to SAIP documents:

- USE AND MAINTENANCE MANUAL WA

- USE, MAINTENANCE, STORAGE
  AND MAINTENANCE MANUAL FOR HYDROPNEUMATIC
  ACCUMULATORS / PUL SATION DAMPERS

Safety Equipment

Notice:
Hydropneumatic accumulators must be protected against operation outside the permissible limits according to the Pressure Equipment Directive 2014/68/UE on pressure equipment.

In order to not exceed the maximum operating pressure, SAIP recommends the use of a safety block.

CAUTION!

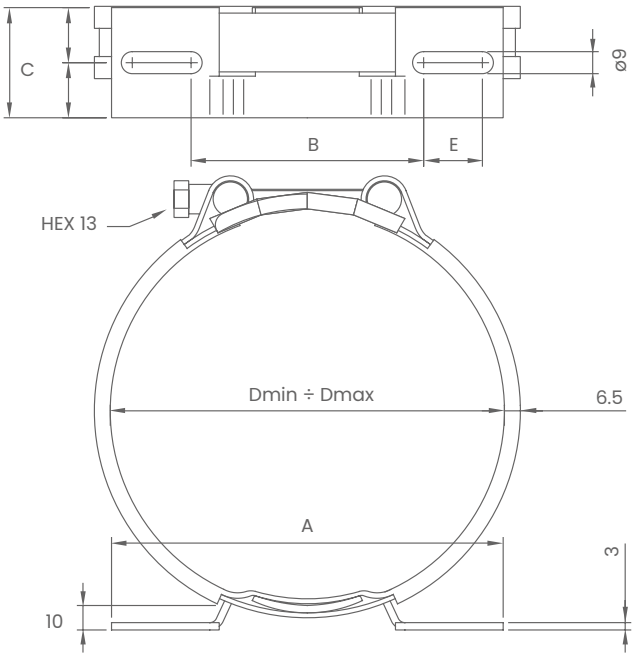
HIGH PRESSURE ACCUMULATOR. NEVER USE OXYGEN OR SHOP AIR.

1. Do not operate without sufficient dry nitrogen gas precharge.
2. Release all pressure prior to servicing or disassembly.
3. Consult the instruction manual before use.
4. Do not operate beyond stamped maximum working pressure.
5. Do not weld or modify this unit in any way.

Accessories

Fastening collars

AIP fastening collars type CFOZ_LF_ can be used to securely fix various type of WA accumulators and ensure in modo sicuro i vari tipi di accumula- tori WA ed ensure independent and non-rigid mounting on plants. The rubber insert serves to reduce the transmission of vibrations, compensate manufacturing tolerances and relieve external stresses on the con- nection. This type of collar has a two-piece construction for easier installation, greater modularity and stability according to requirements and available space. The base plate is made of white galvanised carbon steel with excellent corrosion resistance. The band that fixes the accumulator to the base is made in carbon steel with the same characteristics as the base and is isolated from the accumulator body by a nitrile rubber band (NBR)



Type	Description						Weight	Use on WA
	Dmin	Dmax	A	B	C	E		
	[mm]		[mm ±1]		[mm ±0,5]		[Kg]	[barg]
CFOZ78LF120	73	78	124	81	45	13	0,3	WAL 0,16
CFOZ96LF120	90	96	124	81	45	13	0,3	WAL 0,35
CFOZ96LF160			164	95	45	17	0,4	
CFOZ111LF160	103	111	164	95	45	17	0,4	WAL 0,51
CFOZ120LF160	121	129	164	95	45	17	0,4	WAL 0,75

energy flow

WA - WAL series Limited Edition
edizione 2023 rev.1

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