saip.it

Type LA/LAS/LALS

Bladder accumulators in carbon steel For pressures up to 350 bar

SAIP

energy flow

Bladder accumulators in carbon steel For pressures up to 350 bar Type **LA/LAS/LALS**

Principle Of Operation

One of the main tasks of accumulators is to take a certain amount of pressurised fluid from a hydraulic system, and then return it, in whole or in part, to the system when required. Bladder accumulators work like a hydraulic spring: the gas (nitrogen), contained in the rubber bladder, is separated from the fluid in the system. When the hydraulic system pressure becomes greater than the pre-charge pressure of the nitrogen, the fluid enters the accumulator and is stored as potential energy inside, due to the compressibility of the gas. When the system fluid pressure decreases, the nitrogen pressure expands and returns the stored fluid to the system. Operating pressures adapted to the maximum permitted pressure, allow a pressurised fluid to be accumulated, stored and recovered at any time.

As pressure vessels, they must be sized for the maximum operating (over) pressure, taking into account the acceptance standards valid in the country of installation.

Bladder-type LA accumulators consist of a seamless cylindrical body made of high-strength steel.

The plate, located at the lower part of the bladder, is placed on the bottom of the of the body, preventing extrusion of the same when the gas pressure is higher than the fluid pressure. This prevents the bag from being pushed into the fluid line and destroying it.

Product description

Top-repairable bladder type accumulator, with seamless steel body, for use in mobile machines and static 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.
- Pulsation damping

Suggested positions for certain applications

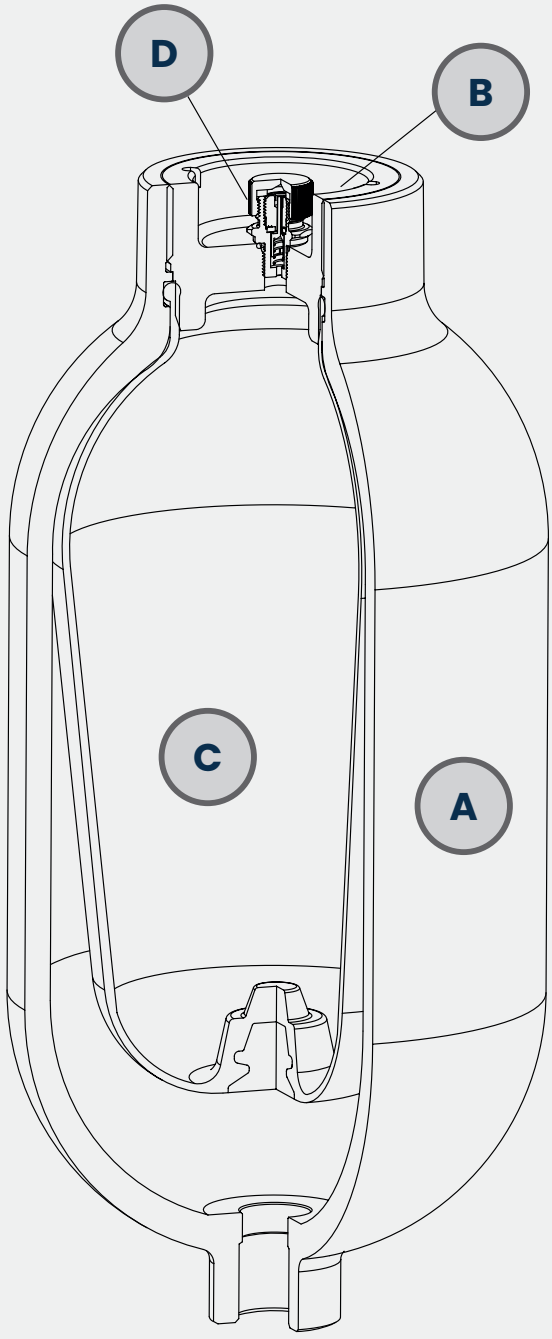
The fluid-side connection is available with the threaded connections shown in the table.

The technical data and characteristics of the accumulator are shown on the marking and/or label applied to the accumulator body.

Bladder accumulators can be installed vertically, in an inclined position (with oil valve at the bottom), horizontally. If the installation position is horizontal or inclined, the effective fluid volume and the maximum permissible flow rate of the operating fluid are reduced.

Features

A SEAMLESS BODY
B ACCUMULATOR CAP
C BLADDER
D GAS VALVE 5/8’ UNF



General characteristics

Nominal Volume
from 0.75 to 6 litres

Up to
MAX pressure 350 barg

In accordance with:
PED 2014/68/EU
EN 14359
EN13445-3

Technical features

Repairable construction with bladder extraction from the top

Seamless high-strength steel body

Standard painting

RAL 9005

Sandblasting + two-component anticorrosive primer with epoxy resins >= 75 µm
alternatively
Thermoplastic polyamide coating

Gas-side connection 5/8’ UNF

Fluid-side connection (see table)

Separator element Material (see table)

Type **LA/LAS/LALS** bladder accumulators in carbon steel for pressures up to 350 bar

Description

Accumulator/ pulsation dampener type LA - Valv. 5/8' UNF - Vol. 0,75 L - NBR - CARB. STEEL. - 1/2' GAS-F

CODE EXAMPLE*													
LA	•	**1**	•	**0,75**	•	**1**	•	**O**	•	**G4**	•	**A**
1		2		3		4		5		6		7

1. ACCUMULATOR TYPE	
MODEL	PMAX
LA	250
LAS	350
LALS	250

3. NOMINAL VOLUME	
0,75	L
1	L
1,5	L
0,75	L
1	L
1,5	L
3	L
4	L
6	L

6. FLUID CONNECTION	
M8	F.M18x1,5
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
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
G5	F. 3/4" BSP-P

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

2. GAS CONNECTION (NITROGEN)	
1	gas 5/8" UNF

5. BODY MATERIAL	
O	Carbon steel
OR	Carbon steel coated with thermoplastic polyamide powder

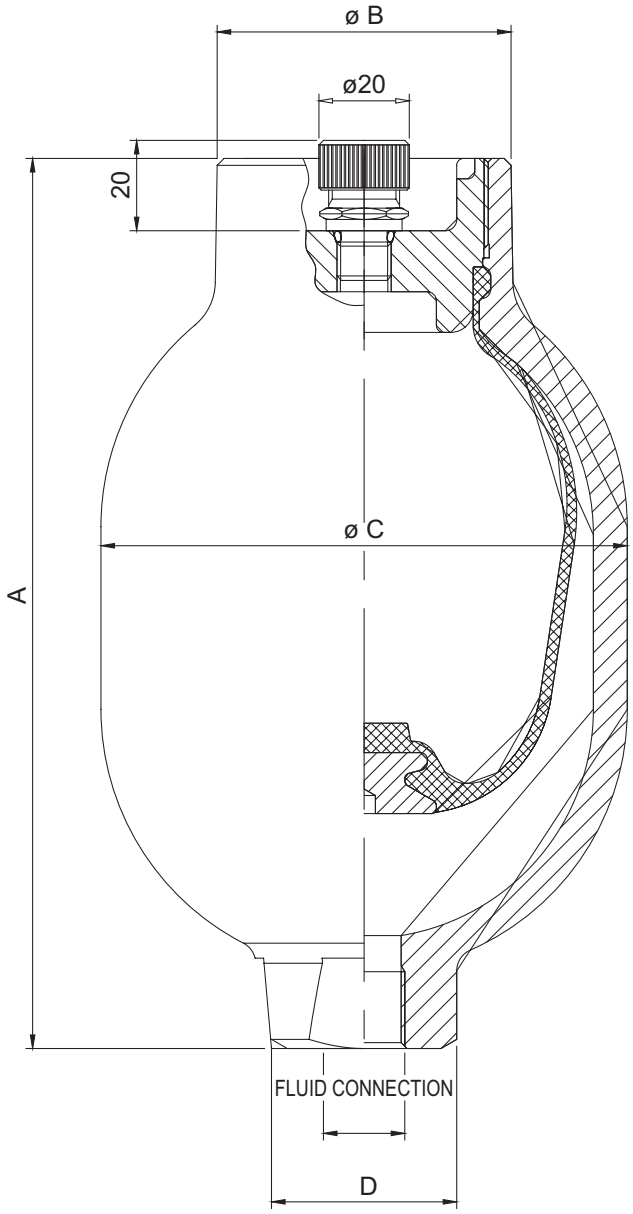
4. SEPARATOR ELEMENT MATERIAL	
1	Nitrile (NBR)
2	Butyl
4	Ethylene/propylene (EPDM)
8	Epichlorohydrin (ECO)
10	Fluororated Rubber (FKM)

* For different codes or features please contact SAIP

BLADDER COMPATIBILITY / TEMPERATURE / FLUID*			
1	Rubber Perbunan Nitrile (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 diluted acids • Saline solutions • Water • Glycol water
8	Rubberin 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
2	Butyl	-20 / +100°C	**Suitable for:** • Hot water up to 100° C • glycol-based brake fluids • silicone oils and greases • many acids and bases of phosphoric acid esters • salt solutions, polar solvents such as alcohols, ketones and esters • polyglycol-based hydraulic fluids
4	Ethylene/propylene (EPDM)	-30 / +130°C	**Suitable for:** • Hot water up to 100° C • glycol-based brake fluids • silicone oils and greases • many acids and bases of phosphoric acid esters • many polar solvents such as alcohols, ketones and esters
10	Fluororated Rubber (FKM)	10 / +150°C	**Suitable for:** • Mineral oils and fats, silicone oils and fats, animal and vegetable oils and fats • aliphatic hydrocarbons (petrol, butane, propane, natural gas), aromatic hydrocarbons (benzole, toluol) • chlorinated hydrocarbons (tetrachloroethylene, carbon tetrachloride) • fuels (normal, super and methanol-containing) • non-flammable fluids of the HFD group

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

Type **LA/LAS/LALS** bladder accumulators in carbon steel for pressures up to 350 bar



Technical Data Threaded Fluid Connection

Type	Volume	Effective gas volume	Nominal volume	Design pressure EN (1)	Gas valve	A	B	C	D	Fluid connection		Weight
		[L]	[L]	[barg]		[mm]	[mm]	[mm]				[kg]
LA	0,75	0,90	0,75	**250**	5/8" UNF	205	65	116	CH41	1/2" GAS	M18x1,5	4,4
LAS		0,90	0,75	**350**		205	65	116		1/2" GAS	M18x1,5	4,4
LA	1	1,00	1,00	**250**		215	65	116		1/2" GAS	M18x1,5	4,6
LAS		1,00	1,00	**350**		215	65	116		1/2" GAS	M18x1,5	4,6
LA	1,5	1,58	1,50	**250**		297	65	116		1/2" GAS	M18x1,5	8,0
LAS		1,58	1,50	**350**		297	65	116		1/2" GAS	M18x1,5	8,0
LALS	3	2,9	3	**250**		485	65	114	CH38	3/4" GAS		10,5
LALS	4	4,3	4	**250**		365	90	168				14,5
LALS	6	5,63	6	**250**		435	90	168				16,0

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

Sizing

For the sizing of an accumulator various factors have to be considered:

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

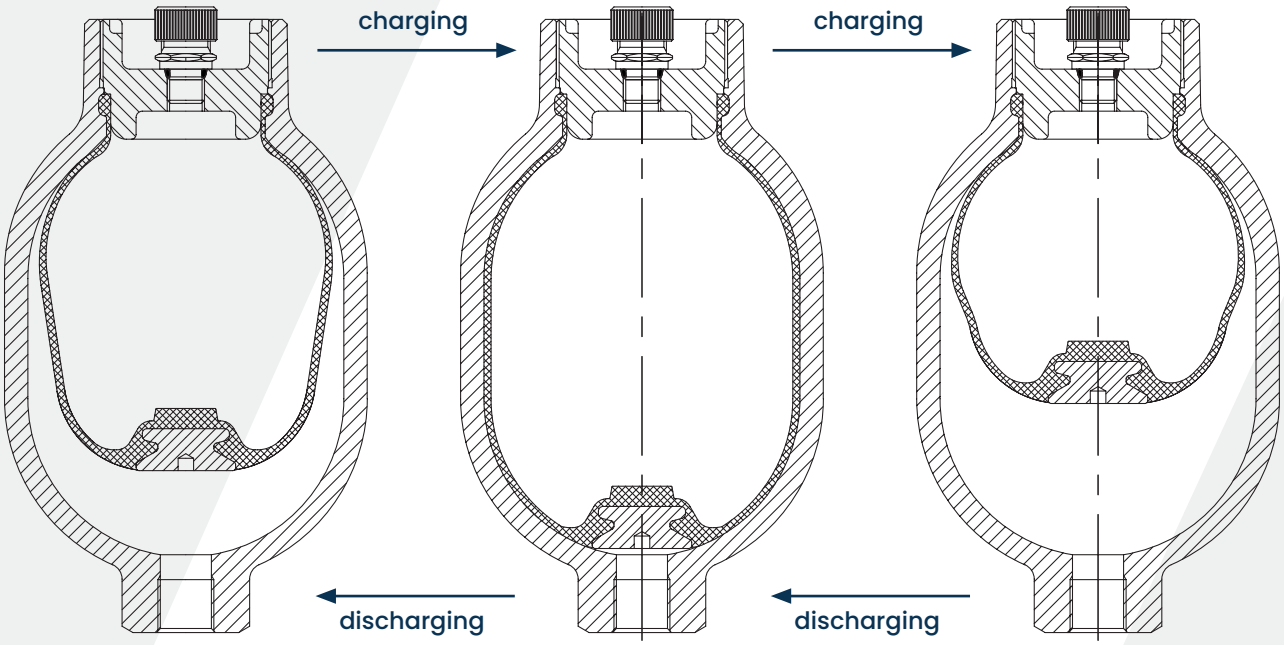
For the correct sizing, you can find the formulas in the document under the section
GENERAL INFORMATION -> SIZING

Certifications

All hydraulic accumulators are pressure vessels and are subject to the national regulations and directives in force in the country of installation.
The accumulators type SI are manufactured in accordance with the European Directive PED 2014/68/EU, reference standards EN 14359:2017 and EN13445-3:2021;
The Technical Data table shows the category for use with non-hazardous fluids (group 2).

For use with hazardous fluids (group 1), please contact SAIP.
For other countries, applications, regulations, please contact SAIP.

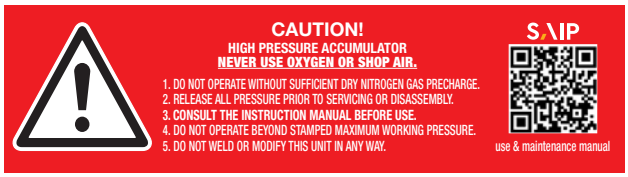
State conditions



Information for Use

Refer to SAIP documents:

- OPERATING AND MAINTENANCE MANUAL MODEL SI
- MAINTENANCE, OPERATING, STORING AND CONSERVATION MANUAL FOR HYDROPNEUMATIC ACCUMULATORS



Safety equipment

Notice:
Hydropneumatic accumulators must be protected against operation outside the permissible limits according to the Pressure Equipment Directive 2014/68/EU.
In order not to exceed the maximum operating pressure, SAIP recommends the use of a safety block.
(see BSF Saip catalogue).

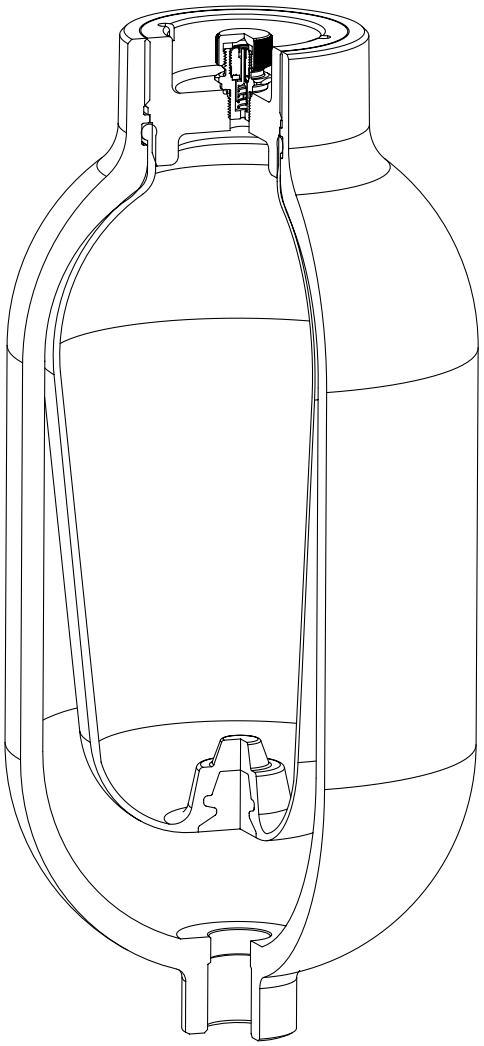
Type **LA/LAS/LALS** bladder accumulators in carbon steel for pressures up to 350 bar

Replacement parts

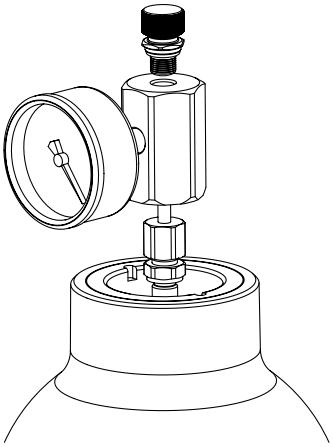
Type	Complete Bladder assembly	5/8" UNF Nitrogen valve only
	1	1V
LA/LAS 0,75	KRLA0,75-**xx**O32-01	VALPRE58OZ-1V2
LA/LAS 1	KRLA1-**xx**O32-01	VALPRE58OZ-1V2
LA/LAS 1,5	KRLA1,5-**xx**O32-01	VALPRE58OZ-1V2
LALS 3	KRLA3-**xx**O32-01	VALPRE58OZ-1V2
LALS 4	KRLA4-**xx**O32-01	VALPRE58OZ-1V2
LALS 6	KRLA6-**xx**O32-01	VALPRE58OZ-1V2

Replace xx with code of the rubber part as for table below

1	Nitrile (NBR)
8	Epichlorohydrin (ECO)
2	Butyl
4	Ethylene/propylene (EPDM)
10	Fluororated rubber (FKM)

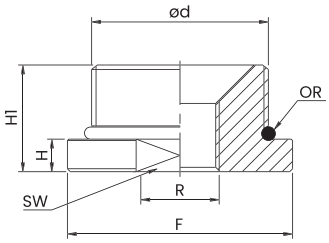


Accessories



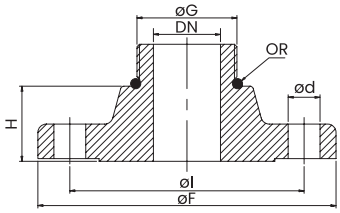
Nitrogen side pressure monitoring

Nozzle assembly with provision for mounting pressure gauge and/or fitting with rupture disk.
For codes or characteristics contact SAIP



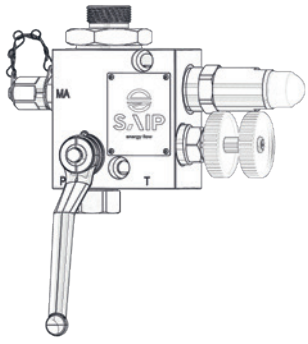
Adapters and reductions for Fluid connection

Adaptors and reductions for fluid connection:
suppliable on request in different dimensions, materials, etc.
For codes or characteristics please contact SAIP



Flange for fluid connection

Flange for fluid connection: suppliable on request for norm (i.e. ASME B16.5, EN1092-1) dimensions, different material, etc.
For codes or characteristics please contact SAIP



Safety block

See BSF saip catalogue

Type **LA/LAS/LALS** bladder accumulators in carbon steel for pressures up to 350 bar

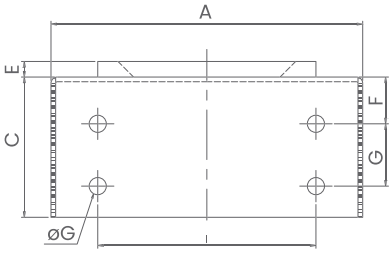
Brackets and fixing collars

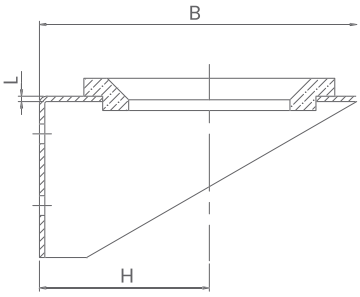
Brackets with rubber ring support SAIP clamping brackets and collars can be used to securely fasten the various types of SI accumulators and ensure independent, non-rigid mounting on the installations.
The rubber inserts serve to reduce vibration transmission, compensate for manufacturing tolerances and relieve the connection from external stress.
The brackets and collars are made of galvanised carbon steel; a stainless steel version can be supplied on request.

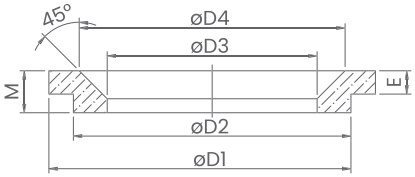
The support ring of the brackets and the band of the collars are made of black NBR nitrile rubber.
Brackets and collars can be easily bolted to the system or supports.
It is recommended to use only one collar when the length of the accumulator is less than twice the diameter.

We recommend:
_ to use a bracket with support ring and one or two collars in other cases.
_ to use brackets and collars supplied by SAIP, as they are tested and guaranteed for the selected accumulator model.

Brackets with rubber ring support



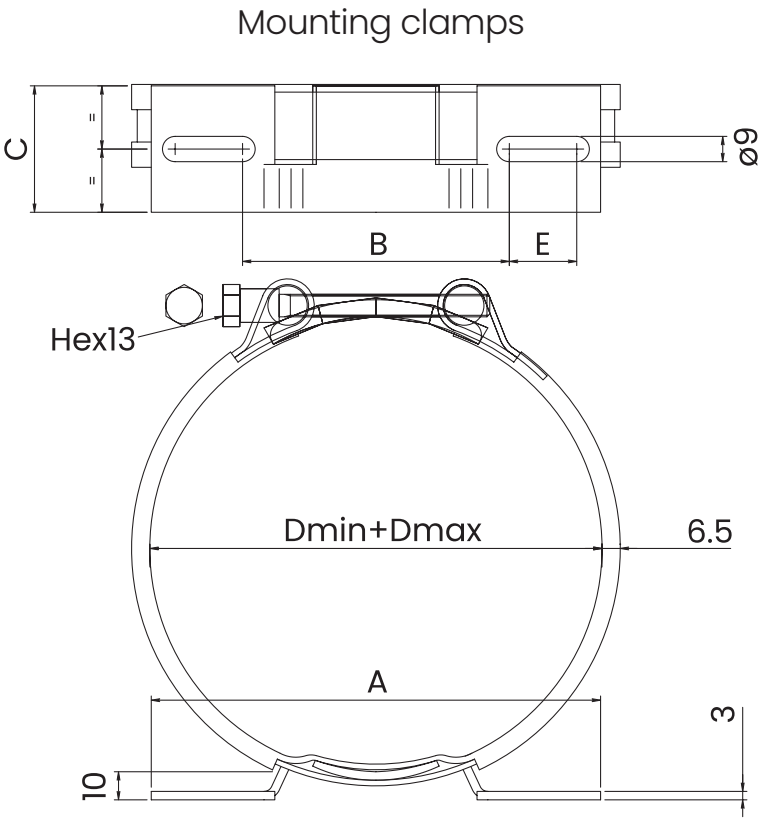




Dimensions

Bracket part n°	Ring part n°	A	B	C	D	D1	D2	D3	D4	E	F	G	H	I	L	M	Weight	Use on LALS
		mm															Kg	Lt
MOZ175-1	ANE175-1	200	177	90	10	140	120	91	114	10	30	40	95	140	3	18	1,6	4 - 6

Mounting clamps light series



Dimensions

Type		Description							
AISI 316L	CARBON STEEL	Dmin	Dmax	A	B	C	E	Weight	Use on LA/LAS/LALS
		[mm]		[mm ±1]		[mm ±0,5]		[Kg]	
CFX120LF160	CFOZ120LF160	115	123	144	93	45	17	0,5	LA/LAS/LALS/ 0,75-3 Lt
CFX172LF160	CFOZ172LF160	168	181	144	93	45	17	0,5	LALS 4/6 lt
CFX172LF210	CFOZ172LF210			214	145	50	24	0,5	

SAIP

energy flow

LA/LAS/LALS - May 2025

saip.it

SAIP S.r.l.
Hydropneumatic
Accumulator Company

Via Lambro 23/25/27
20073 Opera (MI) Italy
P.Iva 10218550159

DONWLOAD
DATA SHEET