



HYDRAULIC AND PROCESS TECHNOLOGY

HYDRAULIC & LUBE OIL UNIT EQUIPMENTS

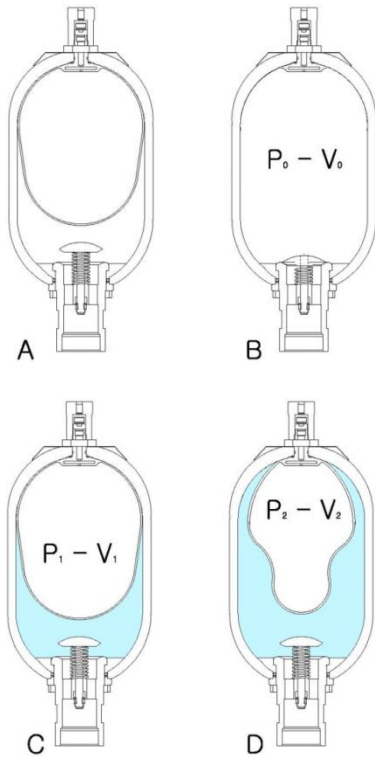
[Bladder Accumulators](#)



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BLADDER ACCUMULATORS



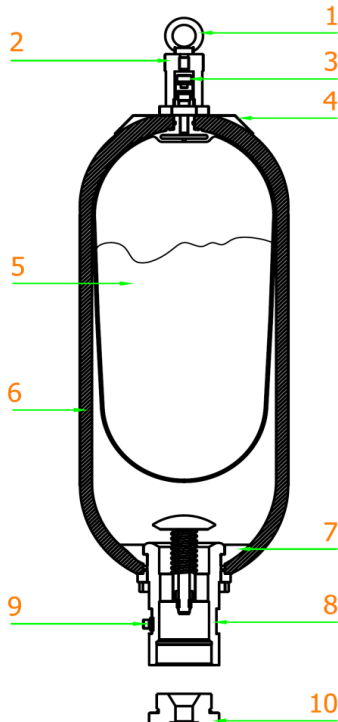
General operation procedure

- A flexible separator bladder is fitted into a pressure vessel(accumulator shell).
- Through a special valve an inert gas(nitrogen) is introduced into the bladder with pressure P_0 . The bladder expands, filling the entire volume V_0 of the accumulator shell.
- When circuit pressure P_1 is higher than the gas pre-charge pressure P_0 , the liquid valve opens. And the bladder is compressed reducing the gas volume to V_1 .
- When the liquid pressure rise to P_2 , the volume of gas reduces to V_2 with an attendant rise in pressure, thus balancing the liquid pressure.

This means that the accumulator has been pressurised $\Delta V = V_1 - V_2$ and a potential energy has been created to be utilized as desired.

일반적인 작동 절차

- 유연성 있는 bladder는 압력용기(accumulator shell)에 고정된다.
- 특별히 제작된 밸브를 통해 비활성 기체(질소)를 P_0 의 압력으로 bladder에 주입한다. Bladder는 팽창하고, 압력용기에 V_0 의 체적으로 주입된다.
- 압력라인 P_1 이 pre-charge된 압력 P_0 보다 높아졌을 때, 유체밸브(오일밸브)는 열린다. Bladder는 가스 볼륨 V_1 이 줄어들면서, 압축된다.
- 유체압력이 P_2 로 증가하면, 가스 볼륨 V_2 는 줄어들면서 유체의 압력과 밸런스를 맞춘다. Accumulator는 $\Delta V = V_1 - V_2$ 와 같은 압력유지를 하게 되면, 요구에 의해 이용되어질 잠재에너지가 발생된다.



Construction-구조

NO	Description	NO	Description
1	Eye bolt	6	Shell
2	Protection cap	7	Retaining ring
3	Gas valve	8	Poppet valve
4	Name plate	9	Bleed screw
5	Bladder	10	Adapter

Technical Data - 기술자료

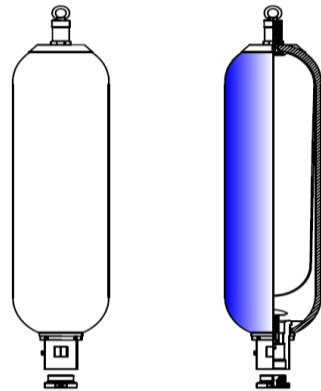
Capacity	:	Low pressure – 100liter ~ 5,000liter High pressure – 0.2liter ~ 60liter
Shell material	:	Carbon steel (Standard) Stainless steel (Optional) Others (As customer's requirement)
Bladder material	:	NBR(Standard) Viton(Optional) Others (As customer's requirement)

Certification	:	* TUV * ASME * Classification (ABS / BV / CCS / DNV / GL / KR / LR / RINA and others) * KGS * Others (As customer's requirement)
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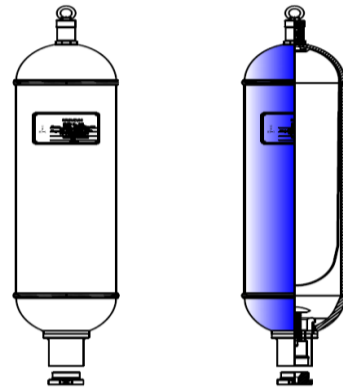
High Pressure Accumulator

Capacity	:	0.2liter ~ 60liter
Pressure	:	Max. 330bar / 360bar (Depends on capacity)
Material		
a. Shell	:	Stainless Steel / Carbon
b. Bladder	:	NBR / EPDM / Viton
Connection		
a. Oil port	:	2" (Maker Standard) / As customer's requirement
b. Gas port	:	UNF 7/8"
Certification	:	TUV / ASME / KGS / / API Seal Plan / Shipyard certification



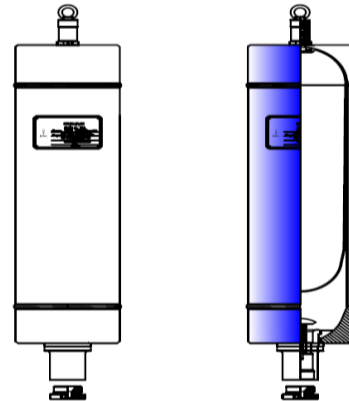
Welding type low pressure accumulator

Capacity	:	10liter ~ 200liter
Pressure	:	60bar / 85bar / 125bar
Material		
a. Shell	:	Stainless Steel / Carbon
b. Bladder	:	NBR / EPDM / Viton
Connection		
a. Oil port	:	2" (Maker Standard) / As customer's requirement
b. Gas port	:	UNF 7/8"
Certification	:	TUV / ASME / KGS / API Seal Plan / Shipyard certification



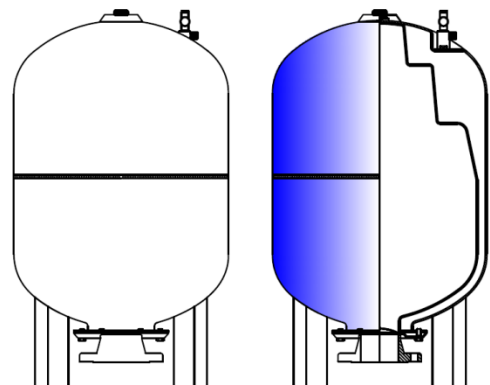
Welding type high pressure accumulator

Capacity	:	10liter ~ 60liter
Pressure	:	150bar / 210bar
Material		
a. Shell	:	Stainless Steel / Carbon
b. Bladder	:	NBR / EPDM / Viton
Connection		
a. Oil port	:	2" (Maker Standard) / As customer's requirement
b. Gas port	:	UNF 7/8"
Certification	:	TUV / ASME / KGS / API Seal Plan / Shipyard certification



Welding type high capacity accumulator

Capacity	:	100liter ~ 5,000liter
Pressure	:	Max. 330bar
Material		
a. Shell	:	Stainless Steel / Carbon
b. Bladder	:	NBR / EPDM
Connection		
a. Oil port	:	4" (Maker Standard) / As customer's requirement
b. Gas port	:	UNF 7/8"
Certification	:	TUV / ASME / KGS



DIAPHRAGM ACCUMULATORS & CHARGING KITS

Diaphragm accumulator-General information

The diaphragm accumulator consists of a welded pressure chamber on the oil side of which a connection tube is welded. The separation of the gas and the fluid is carried out by a diaphragm inserted in advance. There is a diaphragm button in the bottom of the diaphragm to prevent the diaphragm from being completely destroyed when the vessel is discharged. The diaphragm accumulator can be refilled by means of a gas filling screw or can be closed so that it is inseparable on the gas side. The fluid supply is available in different versions. Replacement of the diaphragm is not possible.

Diaphragm accumulator는 oil port부 연결용 tube가 용접된 압력챔버로 구성되어 있다. Oil과 Gas은 제품 중간에 삽입되어 있는 diaphragm으로 분리가 된다. Diaphragm button은 유체가 완전히 토출되었을 때 diaphragm의 손상을 막아 준다. Diaphragm accumulator은 gas filling screw 를 통해 충전 또는 누기를 막는다. 오일 공급부는 다른 버전들이 가능하며, diaphragm은 교체가 불가능 하다.



Diaphragm accumulator-Construction (구조)

NO	Description
1	Gas Filling screw
2	Pressure Vessel
3	Diaphragm
4	Diaphragm button
5	Fluid supply

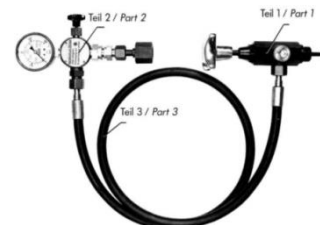
Charging Kit for Bladder accumulator

Max Working pressure	:	600bar
Accumulator connection	:	5/8" UNF – Fluen accumulator STD 1/4" ISO 228 – Special adaptor
Pressure gauge	:	Φ63 connection 1/4" – Fluen STD Full scale 400bar for high pressure Full scale 25bar for low pressure
Weight	:	3kg (Included case)
Item List		
- Gas charging block	:	With pressure gauge
- Hose	:	2.5m
- Adaptor	:	Fluen STD adapter Special adapter



Charging Kit for Piston accumulator

Working pressure	:	220bar / 350bar
Accumulator connection	:	
- Part 1	:	Accumulator : G 3/4"
- Part 2	:	Cylinder connector : W24, 32 x 1 1/4" DIN477
- Part 3	:	Hose DN6, 1.5m
Weight	:	5kg (Included case)



REFERENCE PICTURES



- Model : Piston Accumulator station
- Application : HFO Fuel Supply



- Model : Bladder Accumulator 150liter station
- Application : Lube oil unit



- Model : Bladder Accumulator 20liter (5G)
- Application : Mechanical seal plan 53B



- Model : Bladder Accumulator 54liter
- Application : Mechanical seal plan 54



- Model : Bladder Accumulator 54liter
- Application : FPSO Power unit



- Model : Bladder Accumulator 37liter
- Application : Desalination Power unit

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