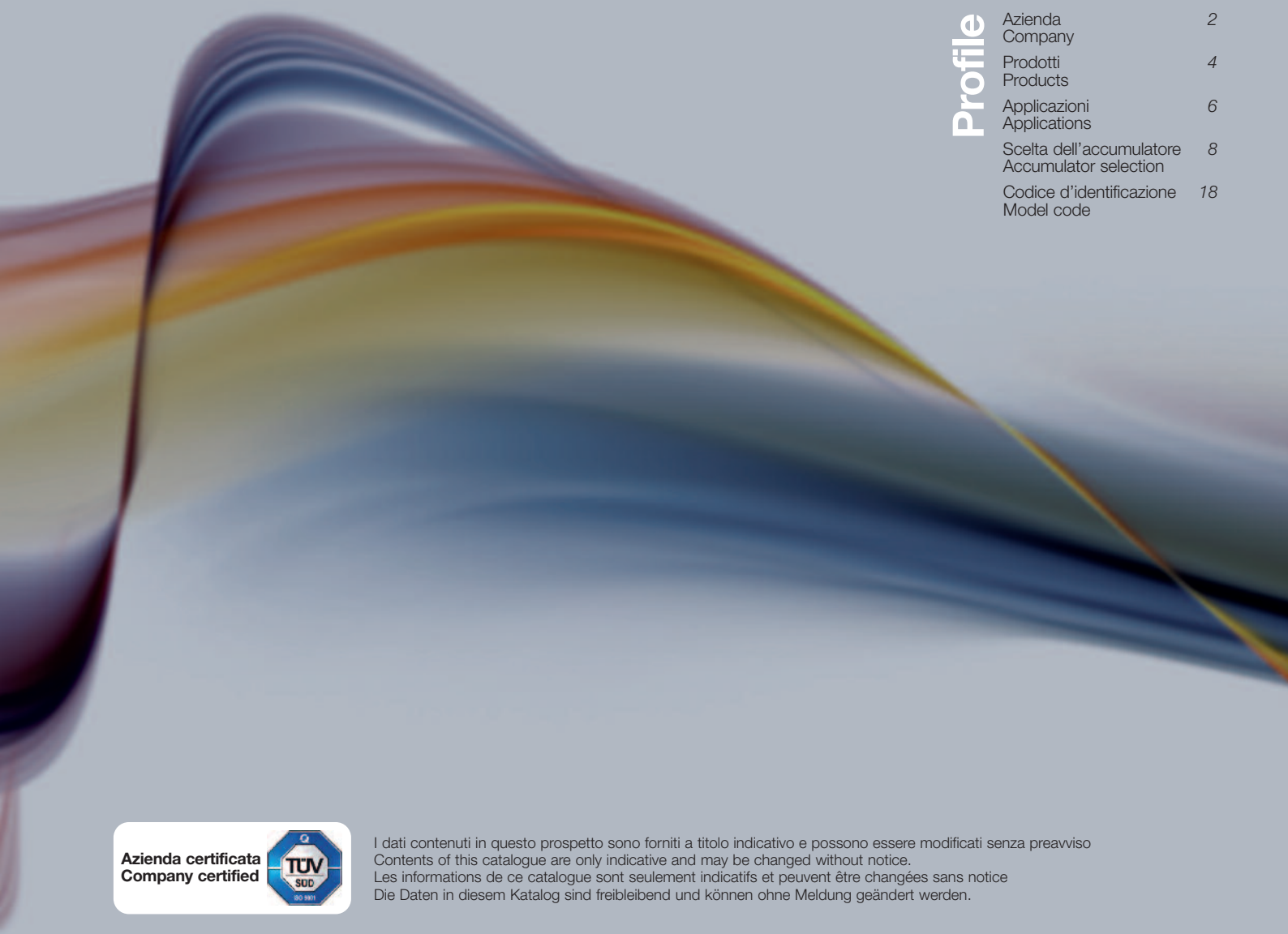
CATALOGUE 2016

ACCUMULATORI IDROPNEUMATICI
SMORZATORI DI PULSAZIONI
HYDROPNEUMATIC ACCUMULATORS
PULSATION DAMPENERS

ACCUMULATEURS HYDROPNEUMATIQUES
AMORTISSEURS DE PULSATIONS
HYDROPNEUMATISCHE DRUCKSPEICHER
PULSATIONS DÄMPFER

SAIP
Fluid Sentinel

Profile



Azienda certificata
Company certified

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L'azienda
The company

SAIP è impegnata verso i propri clienti a fornire prodotti sempre conformi alle specifiche concordate, attraverso il Sistema di Gestione della Qualità in accordo alla norma UNI EN ISO 9001.
Gli accumulatori idropneumatici e gli smorzatori di pulsazione SAIP, a membrana, sacca e pistone, sono infatti apprezzati in tutto il mondo per il loro elevato standard di affidabilità e qualità.

La gestione della qualità integrata in tutti i processi d'azienda consente il costante miglioramento di prodotti e servizi a favore delle esigenze e delle aspettative della clientela.
Questo nostro impegno è avvalorato dalle numerose certificazioni ed omologazioni ottenute da Enti e Aziende di tutto il mondo.
Possiamo affermare che la qualità, unitamente alla continua innovazione, **rappresenta il nostro vantaggio competitivo**.

Dalla collaborazione sinergica tra il nostro ufficio tecnico e il cliente nascono sempre prodotti innovativi, come gli smorzatori di pulsazioni a flusso passante per il settore alimentare e la verniciatura industriale, per fluidi ad alta viscosità o applicazioni in cui è necessaria la sterilizzazione e la pulizia totale dello smorzatore senza rimozione dalle linee.

Grazie alla sua rete internazionale di distributori ed agenti specializzati, SAIP è in grado di vendere e fornire assistenza e consulenza tecnica in tutto il mondo.

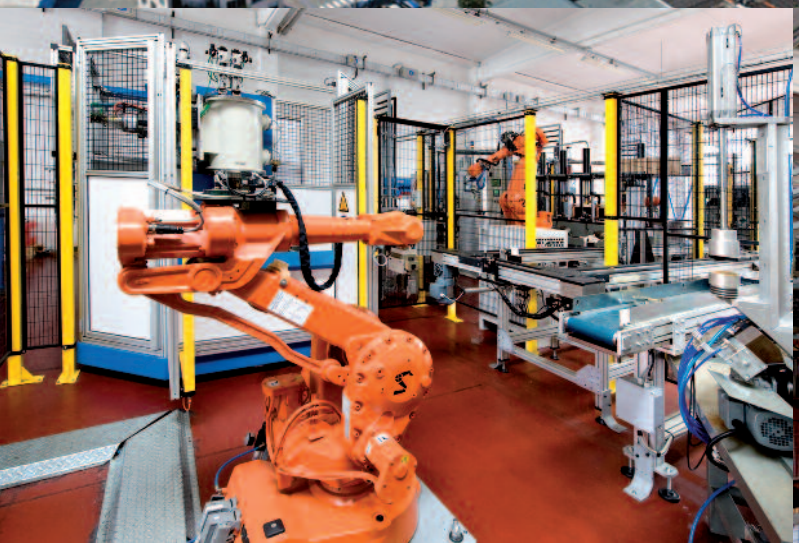
SAIP is committed towards its customers to constantly delivery products that are conform to the agreed specifications, through the Quality Management System according to the UNI EN ISO 9001 norm.
SAIP's hydropneumatic accumulators and pulsation dampers, with diaphragm, bladder and piston are appreciated in the whole world for their high standard of reliability and quality.

The integrated quality management into all company's processes allows the constant improvement of products and services, which meet the needs and expectations of the customers. Our commitment is corroborated by the several certifications and approvals obtained by entities and companies in the whole world.
We can say that the quality, combined with continuous innovation, **represents our competitive advantage**.

From the synergic collaboration between our technical office and the customer innovative products are created, like the flow-through dampers for the food sector or the industrial painting, for high viscosity fluids or applications where the sterilization and total cleaning of the damper is necessary, without removing it from the lines.

Thanks to its international network of distributors and specialized agents, SAIP is abl to sell and supply assistance and technical support in the whole world.






Le principali applicazioni tecniche

Gli accumulatori e smorzatori di pulsazioni SAIP trovano impiego in svariate applicazioni tecniche.
Le principali sono:

- **Accumulo di energia:**
  si utilizza l'accumulatore per impieghi dove bisogna fornire nei circuiti grandi portate in poco tempo.

- **Riserva di energia di emergenza:**
  l'accumulatore fornisce energia quando nei circuiti per un black-out delle pompe si perde portata e pressione.

- **Compensazione di volume:**
  l'accumulatore serve per compensare nelle tubazioni eventuali sovrapressioni causate dalla dilatazione dei liquidi sottoposti a variazioni di temperatura.

- **Assorbimento di colpi d'ariete:**
  l'accumulatore assorbe le sovrapressioni nelle tubazioni dovute alle onde d'urto generate da rapide chiusure di valvole d'intercettazione.

The main technical applications

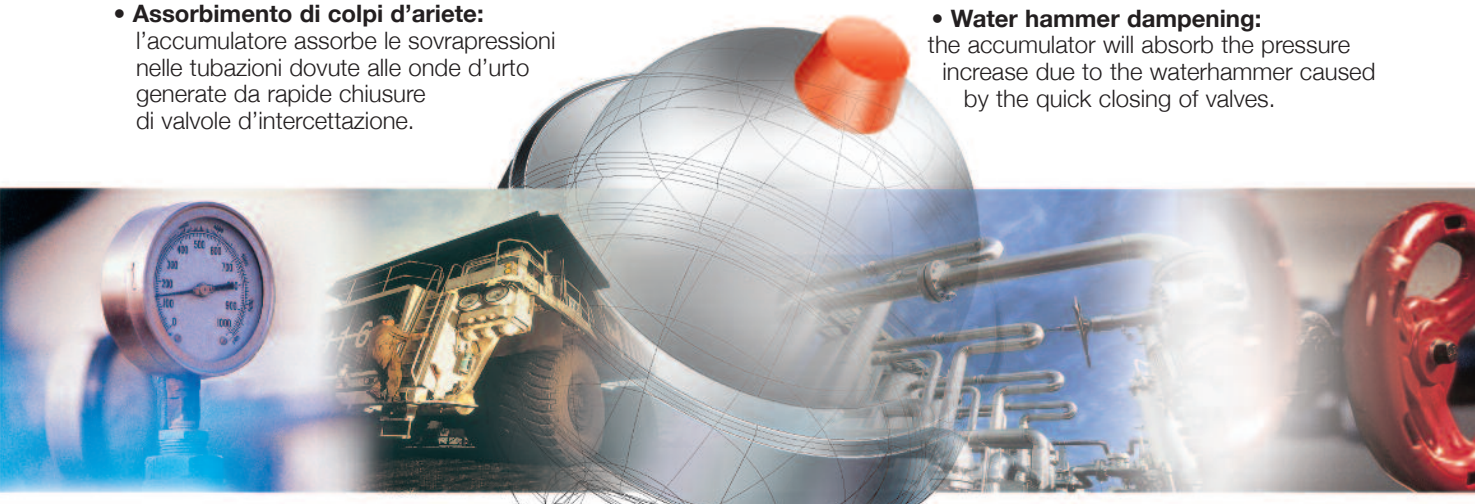
The hydropneumatic accumulators and pulsation dampers from SAIP can be used in a big variety of technical applications. The most important are:

- **Storing energy:**
  the accumulator is used in cases where the circuits need a big flow of oil in a short period.

- **Standby energy storage:**
  the accumulator must deliver energy when a circuit is loosing flow and pressure due to a black-out of the pump(s).

- **Compensation for volume variations:**
  if due to temperature changes there are volume changes due to dilatation of the fluid the accumulator will compensate the volume preventing pressure increases in the circuit.

- **Water hammer dampening:**
  the accumulator will absorb the pressure increase due to the waterhammer caused by the quick closing of valves.



- **Compensazione di fughe:**
  l'accumulatore deve garantire il mantenimento di una pressione statica costante per un lungo periodo nei circuiti.

- **Ammortizzatore**:
  gli urti meccanici vengono assorbiti dall'accumulatore.

- **Separazione di fluidi:**
  nei processi dove è necessario trasferire energia sotto forma di pressione tra due fluidi diversi.

- **Smorzamento di pulsazioni e attenuatori di rumore:**
  nei circuiti dove è necessario smorzare le oscillazioni di pressione generate da pompe volumetriche alternative o peristaltiche e ridurre di conseguenza anche il rumore generato.

- **Leakage make-up:**
  the accumulator must keep the pressure constant for applications which require static pressure for long periods.

- **Shock absorption**:
  mechanical shocks are absorbed by the accumulator.

- **Fluid separation:**
  in the processes where energy in the form of pressure must be transferred between two liquids non compatible between each other.

- **Pulsation dampening and noise dampening:**
  in the circuits where it is necessary to dampen the pressure oscillations caused by dosing pumps and, as a consequence, damping also the noise caused by the pulsations.

La produzione SAIP può essere suddivisa in due linee di prodotti: accumulatori e smorzatori di pulsazioni standard, a membrana, a sacca e a pistone e accumulatori e smorzatori di pulsazione speciali.
Gli **accumulatori standard**, prodotti in acciaio al carbonio o acciaio inox con membrane o sacche compatibili con il liquido pompato, sono destinati alle applicazioni dell'oleodinamica, industrie chimiche, petrolchimiche, di dosaggio e trattamento acque.
Gli accumulatori e **smorzatori speciali** sono destinati all'industria petrolchimica, alimentare, farmaceutica ecc. e possono essere costruiti in una grande varietà di materiali: AISI 316L, Hastelloy, Titanio, Incolloy, acciaio al carbonio rivestito con PTFE, Ebanite, Kanigen nonchè varie materie plastiche come PVC, Polipropilene, PVDF, PVC-C e PTFE con rinforzo metallico per pressioni e/o temperature elevate.
Le sacche, le membrane nonchè le guide e le guarnizioni per i pistoni, possono essere prodotti in NBR, IIR, CR, FKM, EPDM, ECO, HNBR, VMQ, NR, ACM, PTFE ed in alcuni casi anche in acciaio inox AISI 316L.
Pertanto per ogni tipo di fluido e per una vastissima gamma di temperature esiste la soluzione più adatta.

The products of SAIP can be divided into two main groups: hydropneumatic accumulators and pulsation dampers of the standard type, with bladder, diaphragm or piston and special accumulators and pulsation dampers.
The **standard accumulators**, manufactured in carbon steel or stainless steel with diaphragms or bladders that are compatible with the pumped liquid for applications in the hydraulic field, the chemical and petrochemical industries, dosing plants and water treatment plants.
The **special accumulators** and **pulsation dampers** are destinated for the petrochemical industries, the food industry, the pharmaceutical industry a.s.o. and can be manufactured in a multitude of different materials: AISI 316L, Hastelloy, Titanio, Incolloy, carbon steel with PTFE internal lining , Ebanite, Kanigen and also various engineering plastic like PVC, Polipropilene, PVDF, PVC-C and PTFE with steel reinforced for high temperatures and/or pressures.
The bladders, diaphragms and the guiderings and joints for the pistons, may be manufactured in NBR, IIR, CR, FKM, EPDM; ECO, HNBR, VMQ, NR,ACM, PTFE, and in certain cases also in stainless steel AISI 316L.
So for every type of fluid and for a big temperature range exists the best solution.

1.1 **Descrizione e funzionamento**

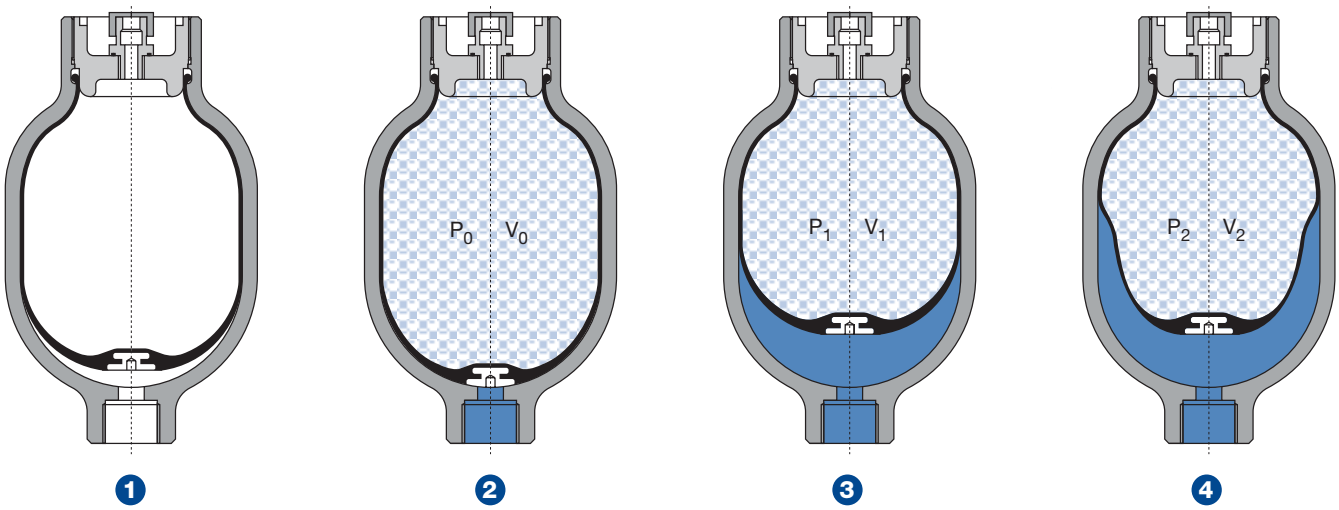
L'accumulatore idropneumatico è un apparecchio capace di immagazzinare nei circuiti idraulici una notevole quantità di energia in spazi ridotti. Essendo i liquidi pressochè incomprimibili e perciò non idonei all'accumulo di energia, si sfrutta, per raggiungere lo scopo, la comprimibilità del gas.

1. In un contenitore metallico (corpo accumulatore) è montata una membrana o sacca che separa la camera del liquido dal gas.
2. Dall'apposita valvola si introduce un gas inerte (azoto) ad una pressione P_0 adatta all'impiego dell'accumulatore, ed il gas occupa tutto il volume interno dell'accumulatore V_0. Un piattello metallico o plastico vulcanizzato nella membrana o sacca impedisce che questa venga estrusa attraverso il foro di collegamento con il liquido.
3. Quando la pressione P_1 dell'impianto supera la pressione di precarica P_0 dell'accumulatore, la membrana o la sacca si alza e si comprime riducendo il volume a V_1.
4. Aumentando ulteriormente la pressione a P_2, si riduce ulteriormente il volume del gas a V_2 con l'aumento della sua pressione per equilibrare la pressione del liquido. In questo modo si ottiene un accumulo di liquido in pressione $\Delta V = V_1 - V_2$ del quale potremo disporre secondo necessità.

1.1 **Description and operation**

A hydropneumatic accumulator is a device that can store a large amount of energy in little space in a process circuit. Since liquids are virtually incompressible and therefore unsuitable for energy-storage, a compressible gas is used for this purpose.

1. A metal vessel (the accumulator shell) is fitted with a diaphragm or bladder separating the liquid side from the gas side.
2. An inert gas (nitrogen) is pumped in through a valve at pressure P_0, suitable for use in the accumulator; the gas fills the whole inner volume of the accumulator V_0. A metal or plastic disc is inserted in the diaphragm or bladder to prevent its extrusion through the port fluid connection.
3. When the pressure P_1 in the circuit exceeds the filling pressure P_0 the diaphragm or bladder contracts, thereby compressing the gas and reducing the volume to V_1.
4. When the pressure is further increased to P_2, the gas volume for the same reason will be reduced to V_2 and its pressure will increase to balance the pressure of the fluid. Thus, a volume $\Delta V = V_1 - V_2$ of pressurized fluid is stored and available for any purpose.



1.2 **Caratteristiche costruttive**

Gli accumulatori a membrana ed a sacca SAIP sono composti da un contenitore esterno, da una membrana o sacca con fondello anti-estrusione incorporato e da una valvola per la carica del gas (azoto).
Per gli accumulatori con capacità superiore a 5 litri, il fondello della membrana è sostituito dalla valvola a fungo antiestrusione.

Il corpo accumulatore è progettato e costruito in accordo alle normative europee (PED), americane (ASME), russe (CU-TR), cinesi (ML), australiane (AS1210), algerine (ARH) e tunisine.

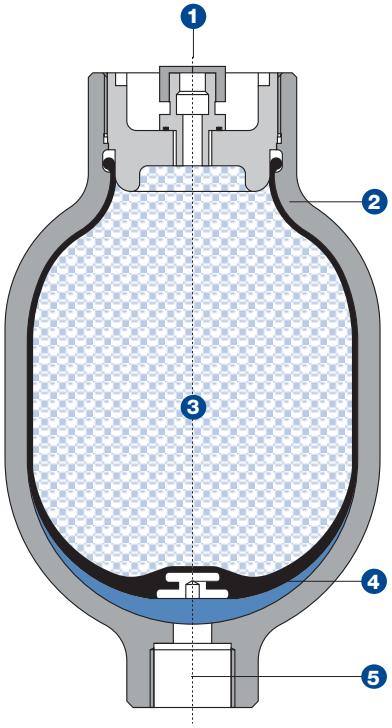
Sono disponibili a richiesta, per il corpo accumulatore, vari trattamenti/rivestimenti interni/esterni (esempio: Kanigenatura (Nichelatura), Zincatura, Ebanitatura, PTFE ecc.)
Le membrane o sacche sono disponibili nelle mescole indicate nella tabella successiva.
Le sacche o membrane sono prodotte in un pezzo unico senza giunzioni.
La valvola gas a tenuta perfetta è munita di tappo di chiusura.

1.2 **Construction characteristics**

The SAIP diaphragm and bladder type accumulators, consist of an external shell, a diaphragm or bladder, with fitted-in anti-extrusion plate and a gas (nitrogen)-filling valve.
In the accumulators having a volume of 5 litres and more the disc in the bottom of the diaphragm is replaced by an anti extrusion poppet-valve, mounted at the port fluid connection.

The accumulator body is designed and produced according to european (PED), american (ASME) and russian (CU-TR), chinese (ML), australian (AS1210), algerian (ARH), tunisian standards.

For the accumulator body are available, on request, various internal/external treatments and or coatings (p.e.: Nickel coating (Kanigen), Zinc coating, Ebonite lining, PTFE lining etc.)
Diaphragms and bladders are available in the following table (see below).
The bladders and diaphragms are vulcanised as a single piece, without joints.
The gas valve is perfectly tight and hase a closing cap.



1. Valvola gas
   Gas valve
2. Corpo accumulatore
   Accumulator shell
3. Membrana o sacca
   Diaphragm or bladder
4. Fondello anti-estrusione
   Anti-extrusiondisc
5. Attacco liquido
   Port fluid connection

Code	Elemento separatore Separating element	Temperatura d'esercizio Operating temperature
NBR	Acrylonitrile butadiene rubber, perbunan standard / Standard perbunan	-15/+80
NBR -40°C	Perbunan -40°C / Perbunan -40°C	-40/+80
Hydrocarbonproof NBR	Perbunan per idrocarburi / Hydrocarbonproof perbunan	-15/+80
BUTILE	Butile / Butyl	-20/+100
EPDM	Etilene-propilene / Ethilene-propylene	-30/+130
H-NBR	Perbunan idrogenato / Hydrogenated perbunan	-35/+130
H-NBR Peroxide Cured ACN 36%	Perbunan idrogenato vulcanizzato peroxide / Hydrogenated perbunan peroxide cured	-35/+130
ECO	Epicloridina / Epichlorohydrin	-30/+120
VMQ	Silicone / Silicon rubber	-20/+150
FKM	Gomma fluirata / Fluorated rubber	-10/+150
FKM GLT	Viton® GLT / Viton® GLT	-35/+150
PTFE+BUTILE	Politetrafluoroetilene +Butile / Polytetrafluorethylene +butyl	-20/+100
PTFE+FKM	Politetrafluoroetilene +Gomma fluorata / Polytetrafluorethylene +Fluorated rubber	-10/+150
PTFE+EPDM	Politetrafluoroetilene +Etilene-propilene / Polytetrafluorethylene +Ethilene-propylene	-30/+130
TFM	Politetrafluoroetilene / Polytetrafluorethylene	-100/+260
Poliuretano	Poliuretano / Polyurethane	-20/+100
PTFE bellow	Soffietto in politetrafluoroetilene / Polytetrafluorethylene bellow	-30/+200
AISI 316 bellow	Soffietto in acciaio inox / Stainless steel bellow	-100/+300

2.1 **Accumulatore di energia**

Nei circuiti idraulici spesso viene richiesto una grande portata per un breve periodo, alternato da piccole erogazioni. In questo caso montare un accumulatore si rivela molto utile perché fa risparmiare sia sul costo della pompa che del motore, che possono essere più piccoli, sia sui costi d'esercizio. Il ciclo operativo della figura 2.1 richiederebbe una pompa con portata Q_2.
Impiegando un accumulatore idropneumatico è possibile immagazzinare liquido durante i tempi, (t_1-t_2) e (t_3-t_4) in cui la richiesta è inferiore o nulla, per riutilizzarlo nei tempi (t_0-t_1) e (t_2-t_3) quando la portata richiesta supera la portata della pompa Q_1.
Questa dev'essere proporzionata per avere i volumi $V_1+V_2 \leq V_3+V_4$.
Tanti sono gli impieghi: macchine utensili, presse idrauliche, presse per iniezione e per soffiaggio ecc.

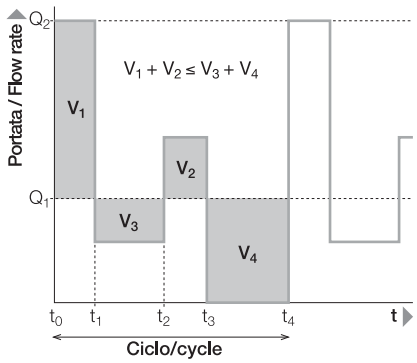


Fig. 2.1

2.2 **Compensatore di volume**

In un circuito chiuso il diverso coefficiente di dilatazione termica delle tubazioni e del fluido può causare aumenti di pressione in caso di aumento della temperatura.
L'installazione di un accumulatore idropneumatico permette l'assorbimento della variazione di volume del fluido evitando cosi danni a valvole, guarnizioni, strumenti di misura ecc.
Campi tipici di impiego sono raffinerie ed industrie chimiche.
(Figura 2.2)

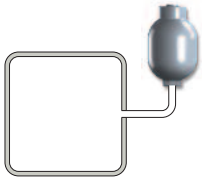


Fig. 2.2

2.3 **Compensazione di fughe**

Quando è necessario mantenere in un circuito una pressione statica costante per un lungo periodo è necessario avere un accumulatore idropneumatico che compensi le fughe, i drenaggi ecc.
La stessa funzione viene svolta dinamicamente dall'accumulatore nel compensare gli sbalzi di pressione che si verificano nei circuiti durante il ciclo operativo.
Applicazioni tipiche: presse, macchine utensili, impianti di lubrificazione, piani di caricamento ecc.
(Figura 2.3)

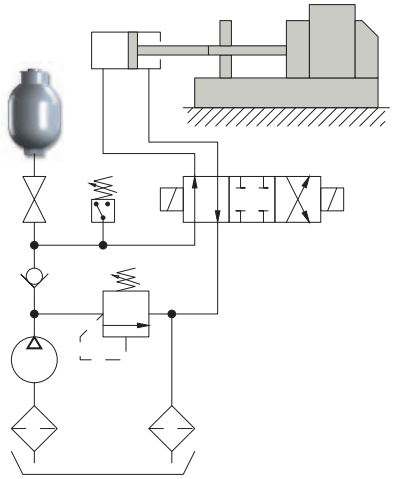


Fig. 2.3

2.1 **Fluid power storage**

In hydraulic circuits often a large flowrate is required for a small period alternating with low or no flow conditions. Installing a hydropneumatic accumulator allows to use smaller pumps and motors, reducing thus installation and operation costs.
The operating cycle shown in the figure 2.1 would require a pump having a capacity Q_2. Using a hydropneumatic accumulator it is possible to store liquid during the periods (t_1-t_2) and (t_3-t_4) in which requirements are low or zero and to reutilize the stored liquid during (t_0-t_1) and (t_2-t_3) when the required flowrate is higher than the pumps capacity Q_1.
The pump to be used must be selected to have the volumes $V_1+V_2 \leq V_3+V_4$.
There are many possible applications like machinetools, hydraulic presses, injection moulding and blow moulding machines etc.

2.2 **Volume compensator**

In a closed circuit the different coefficient of thermal expansion of the piping and the fluid may create pressure increases when temperature increase occurs.
The installation of a hydropneumatic accumulator permits to absorb the bigger volume of fluid and to event pressure increases which might dammage valves, joints, instrumentation etc.
(figure 2.2)

2.3 **Pressure loss compensation**

When a constant static pressure is required for a long period an accumulator is indispensable as it will compensate for pressure loss due to seepage through joints, seals etc.
The accumulator will also absorb pressure peaks which may occur during the operating cycle.
Tipical applications are presses, machine tools, central lubrication systems, loading platforms etc.
(figure 2.3)

2.4 **Riserva di energia per emergenza**

Nei casi di mancanza improvvisa di energia o un blackout alla pompa l'accumulatore puo fungere come fonte di energia di riserva in modo da poter completare un ciclo operativo, in modo da evitare danni che una brusca interruzione provocherebbe nella macchina o nel prodotto.
Inoltre è conveniente avere disponibile e facilmente utilizzabile energia, dove sia necessaria un azionamento veloce di una paratia di sicurezza, di un interruttore elettrico, un deviatore, un freno d'emergenza ecc.
La figura 2.4 mostra ad esempio una pressa che deve rimanere sotto pressione in caso di rottura della pompa.

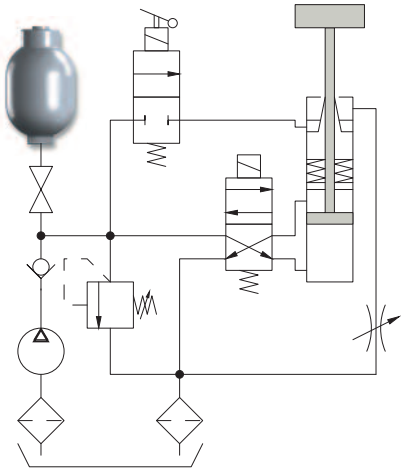


Fig. 2.4

2.5 **Assorbimento di colpi d'ariete**

La rapida chiusura di una valvola crea un onda d'urto che si propaga all'interno della tubazione.
Questa sovrapressione, che può danneggiare componenti ed impianti può essere ridotta o neutralizzata da un accumulatore (figura 2.5).
Impieghi tipici: macchine movimento terra ed agricole, acquedotti, oleodotti, impianti di lavaggio auto etc.

2.6 **Ammortizzatore d'urti**

Gli urti meccanici nelle macchine movimentate idraulicamente sono facilmente assorbibili da un accumulatore.
Tipici gli impieghi nei carelli elevatori, nelle gru semoventi, mietitrebbiatrici, sospensioni di automobili ecc.

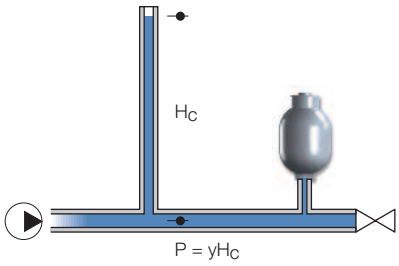


Fig. 2.5

2.7 **Smorzatore di pulsazioni**

Le pompe volumetriche alternative o peristaltiche producono inevitabilmente una pressione pulsante nel circuito.
Questo fattore compromette sia il buon funzionamento dell'impianto che la durata dei componenti.
L'inserimento di uno smorzatore di pulsazioni a membrana o a sacca sulla linea di mandata, il più vicino possibile alla pompa, smorza le oscillazioni entro valori accettabili, a secondo del dimensionamento dello smorzatore stesso (figura 2.7).
Impieghi tipici: pompe a membrana e pistoni, pompe dosatrici, pompe peristaltiche e pompe pneumatiche.

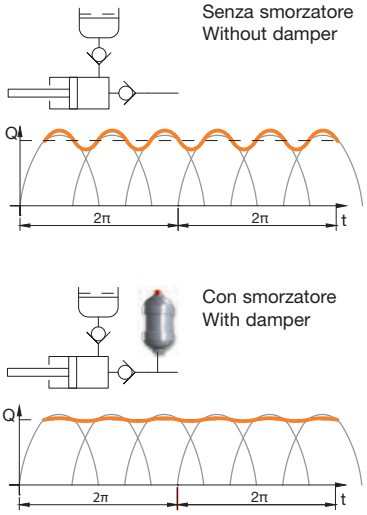


Fig. 2.7

2.4 **Energy reserve for emergency**

In the case of a sudden power loss e.g. energy blackout or pump breakdown etc. the accumulator can provide sufficient energy to complete the operational cycle, and thus prevent damages to equipment and/or product. In addition the availability of an emergency power supply is essential in those cases where the hydraulic power is needed for closing a safety door, an electrical switch an emergency brake etc.
The figure 2.4 shows as example a press which must remain under pressure in case of pump breakdown.

2.5 **Peak pressure and waterhammer absorption**

Sudden valve closing can cause pressure peaks (waterhammer) resulting in overpressurisation of pipes, joints and valves.
The use of a suitable accumulator can neutralize or significantly reduce the shock (figure 2.5).
Typical applications are: earth moving equipment, agricultural machines, pipelines for oil and water, car wash equipment etc.

2.6 **Shock absorber**

Mechanical shocks in hydraulic driven equipment can be easily absorbed by accumulators.
Possible applications are in drive and suspension systems for fork-lifts, mobile cranes, agricultural and civil engineering machinery etc.

2.7 **Pulsation damper**

As a consequence of their design piston and diaphragm pumps create pulsations and pressure peaks in the circuits during operation.
This fact reduces lifetime of the pump and reflects negatively on the correct functionning of the systems.
Fitting a pulsationdamper of diaphragm or bladder type on the discharge side of the pump, and as close as possible to it, will lower the pulsations to an acceptable level, also according to the volume of the damper (figure 2.7)
Typical applications are piston pumps, metering pumps, peristaltic and air operated pumps.

Scelta dell'accumulatore
Accumulator selection

Scelta dell'accumulatore

Per scelta dell'accumulatore si intende il calcolo del suo volume minimo (V_0) una volta definito l'impiego tipico dell'accumulatore. I casi più comuni/frequenti d'impiego industriale degli accumulatori, sono i seguenti:

A) **Compensatore di fughe**
B) **Riserva di energia per emergenza**
C) **Assorbitore di "colpi di ariete"**
D) **Smorzatore di pulsazioni**
E) **Compensatore di volume**

Nei paragrafi successivi verranno descritti brevemente i calcoli relativi ad ogni tipo di impiego per ricavare il parametro con il quale effettuare la scelta dell'accumulatore.
Per situazioni diverse o impieghi particolari SAIP è pronta a fornire il supporto adeguato ad ogni esigenza e/o necessità.

Si ricorda che generalmente le pressioni sono espresse in bar (bar relativi o bar G), ma nelle formule essi **devono** essere espressi in bar assoluti (bar A).
La relazione tra essi è:
bar assoluti = bar relativi +1.

A - **Compensatore di fughe**

È un tipo di impiego per il quale l'accumulatore deve fornire al circuito una certa quantità di fluido in un determinato tempo (generalmente lungo per considerare il processo isotermico) senza che la pressione scenda sotto un certo valore.

Input
- ΔV volume complessivo che l'accumulatore dovrà fornire al circuito (litri)
- P_0 pressione di precarica (bar assoluti)
- P_1 pressione minima raggiungibile nel circuito (bar assoluti)
- P_2 pressione massima raggiungibile nel circuito (bar assoluti)
- k esponente per trasformazioni politropiche (k=1.4 per adiabatica, k=1.1 per isoterma - processo lento)

Output
- V_0 volume necessario dell'accumulatore (litri)

$$V_0 = \frac{\Delta V}{\left(\frac{P_0}{P_1}\right)^{\frac{1}{k}} - \left(\frac{P_0}{P_2}\right)^{\frac{1}{k}}}$$

Esempio

Una pressa lavora a 350 (bar) e lo stampo deve rimanere chiuso per un tempo t=60 (minuti) a pompa ferma.
Si hanno dei trafilamenti f = 3 [cm^3/minuto] (= 0,003 [lt/minuto]) che devono essere compensati da un accumulatore con pressione di precarica di 310 (bar) in modo tale che la pressione del circuito non scenda sotto i 345 (bar).

Scelta
- ΔV $f \cdot t = 0.003 \cdot 60 = 0.18$ (litri)
- P_0 311 (bar assoluti)
- P_1 346 (bar assoluti)
- P_2 351 (bar assoluti)

$$V_0 = \frac{\Delta V}{\left(\frac{P_0}{P_1}\right)^{\frac{1}{k}} - \left(\frac{P_0}{P_2}\right)^{\frac{1}{k}}} = \frac{0.18}{\left(\frac{311}{346}\right)^{\frac{1}{1.4}} - \left(\frac{311}{351}\right)^{\frac{1}{1.4}}} = \mathbf{19.05}\ \text{(litri/litres)}$$

Selecting the accumulator

Selecting the accumulator implies calculating its minimum volume (V0) after defining its typical use.
The most common/frequent industrial applications are the following:

A) **Leak compensator**
B) **Energy spare for emercency situations**
C) **"Water hammering" absorber**
D) **Pulse dampener**
E) **Volume compensator**

The following paragraphs briefly explain how to perform the calculations for each application in order to obtain the parameter required to select the accumulator.
SAIP is and will happy to provide further assistance for different applications and/or specific requirements.

Please note that pressures are generally expressed in bar (relative bar or bar G), but **should** be entered as absolute bar (bar A) in the formulas.
The relation between these units is:
absolute bar = relative bar +1.

A - **Leak compensator**

In this application, the accumulator must supply the circuit with a specific amount of liquid within a preset interval of time (that must generally be long enough to allow the isothermal process to occur), while preventing pressure from falling below a set value.

Input
- ΔV overall volume that the accumulator must supply to the circuit (litres)
- P_0 pre-charge pressure (absolute bar)
- P_1 minimum pressure that can be reached in the circuit (absolute bar)
- P_2 maximum pressure that can be reached in the circuit (absolute bar)
- k exponent for politrophic transformations (k=1.4 for adiabatic transformation, k=1.1 for slow isothermal process)

Output
- V_0 volume required by the accumulator (litres)

Example

A press runs at 350 (bar) and the mould must stay closed for an interval of time t=60 (minutes), when the pump is not running. The leaks that occur, f = 3 [cm^3/minute] (= 0,003 [lt/minute]), must be compensated by an accumulator with a pre-charge pressure of 310 (bar), so that the circuit pressure does not fall below 345 (bar).

Selection
- ΔV $f \cdot t = 0.003 \cdot 60 = 0.18$ (litres)
- P_0 311 (absolute bar)
- P_1 346 (absolute bar)
- P_2 351 (absolute bar)

B - **Riserva di energia per emergenza**

È un tipico impiego che si ha quando viene lentamente accumulato del fluido ed istantaneamente rilasciato al circuito a seguito di una necessità dell'impianto. In questi termini le variazioni di volume del fluido avvengono in due modi distinti: l'accumulo avviene con trasformazione isoterma mentre il rilascio avviene con trasformazione adiabatica.

Input
- ΔV_{adiab} volume complessivo che l'accumulatore dovrà fornire al circuito (litri)
- P_0 pressione di precarica (bar assoluti)
- P_1 pressione minima raggiungibile nel circuito (bar assoluti)
- P_2 pressione massima raggiungibile nel circuito (bar assoluti)
- k esponente per trasformazioni politropiche (k=1.4 per adiabatica)

Output
V_0 volume necessario dell'accumulatore (litri)

$$V_0 = \frac{\Delta V_{adiab} \cdot \frac{P_2}{P_0}}{\left(\frac{P_2}{P_1}\right)^{\frac{1}{k}} - 1}$$

Esempio

Un accumulatore con pressione di precarica di 198 (bar) è sottoposto ad una richiesta istantanea di fluido dal circuito di 4.6 (litri) e questo comporta una variazione di pressione da 280 (bar) a 220 (bar).

Scelta
- ΔV_{adiab} 4.6 (litri)
- P_0 199 (bar assoluti)
- P_1 221 (bar assoluti)
- P_2 281 (bar assoluti)

$$V_0 = \frac{\Delta V_{adiab} \cdot \frac{P_2}{P_0}}{\left(\frac{P_2}{P_1}\right)^{\frac{1}{k}} - 1} = \frac{4.6 \cdot \frac{281}{199}}{\left(\frac{281}{221}\right)^{\frac{1}{1.4}} - 1} = \mathbf{34.7}\ \text{(litri/litres)}$$

B - **Energy spare for emergency situations**

This application typically occurs when a liquid is slowly accumulated and immediately released into the circuit when a request from the plant is received. In this application, the liquid volume variations occur in two different ways: accumulation occurs through an isothermal transformation while the release occurs by means of an adiabatic transformation.

Input
- ΔV_{adiab} overall volume that the accumulator must supply to the circuit (litres)
- P_0 pre-charge pressure (absolute bar)
- P_1 minimum pressure that can be reached in the circuit (absolute bar)
- P_2 maximum pressure that can be reached in the circuit (absolute bar)
- k exponent for polytrophic transformations (k=1.4 for adiabatic transformation)

Output
V_0 volume required by the accumulator (litres)

Example

An accumulator with a pre-charge pressure of 198 (bar) receives from the circuit a sudden request for 4.6 (litres) of fluid, which causes a pressure variation from 280 (bar) to 220 (bar).

Selection
- ΔV_{adiab} 4.6 (litres)
- P_0 199 (absolute bar)
- P_1 221 (absolute bar)
- P_2 281 (absolute bar)

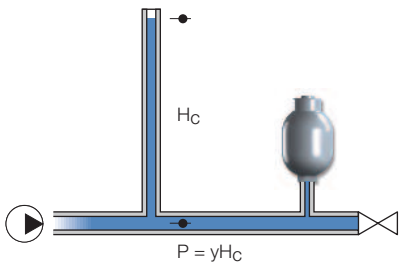
Scelta dell'accumulatore
Accumulator selection

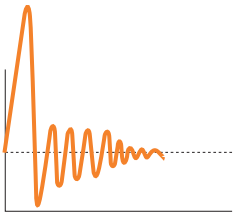
C - **Assorbitore di "colpi d'ariete"**

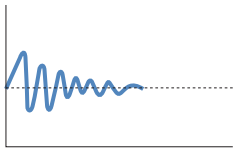
È definito "colpo d'ariete" quel fenomeno per il quale si ha, in un circuito idraulico, la trasformazione 'istantanea' di energia cinetica in energia di pressione dovuto alla variazione di velocità del flusso. In questo caso l'accumulatore deve assorbire la variazione istantanea della pressione dell'impianto.
L'applicazione dipende dai parametri di funzionamento dell'impianto.

C - **"Water hammering" absorber**

"Water hammering" is a typical phenomenon of hydraulic circuits, which leads to the 'instant' transformation of kinetic energy into pressure energy as a result of the variation in the flow rate. In this case the accumulator must absorb the sudden pressure variation of the plant.
The application is influenced by the operating parameters of the plant.







Input
- L lunghezza della tubazione in cui scorre il fluido (metri)
- d diametro della tubazione (mm)
- Q portata della tubazione (m^3/h)
- ρ densità del fluido (kg/m^3)
- t tempo in cui avviene la variazione di velocità del fluido (sec)
- P_0 pressione di precarica (bar assoluti)
- P_1 pressione minima del circuito (bar assoluti)
- P_2 pressione massima raggiungibile nel circuito (bar assoluti)
- k esponente per trasformazioni politropiche (k=1.4 per adiabatica)

Output
- V_0 volume necessario dell'accumulatore (litri)

Input
- L length of the pipe in which the liquid flows (meters)
- d pipe diameter (mm)
- Q pipe capacity (m^3/h)
- ρ liquid density (kg/m^3)
- t time required for the liquid rate variation (sec)
- P_0 pre-charge pressure (absolute bar)
- P_1 minimum pressure of the circuit (absolute bar)
- P_2 maximum pressure that can be reached in the circuit (absolute bar)
- k exponent for polytrophic transformations (k=1.4 for adiabatic transformation)

Output
- V_0 volume required by the accumulator (litres)

$$V_0 = \frac{Q \cdot \left[\frac{4 \cdot \rho \cdot L \cdot Q}{\pi \cdot d^2 \cdot (P_2 - P_1) \cdot 10^5} - \frac{t}{2} \right] \cdot 10^3}{\left(\frac{P_0}{P_1}\right)^{\frac{1}{k}} - \left(\frac{P_0}{P_2}\right)^{\frac{1}{k}}}$$

Nota: il risultato è valido solo se V_0 risulta positivo

Note: the result is valid only if V_0 is positive.

Esempio

Un accumulatore con pressione di precarica di 5.85 (bar) deve servire all'assorbimento di "colpi d'ariete" in un circuito lungo 500 (m) con portata di 2 (litri/sec) e diametro 50 (mm) in cui scorre dell'olio di densità 1 (kg/dm^3) quando una valvola chiude il circuito arrestando il movimento nel tempo di 1 secondo.
La pressione di esercizio del circuito è P_1 = 6.5 (bar) e si vuole che la pressione massima non superi il valore di P_2 = 10 (bar).

Scelta
- L 500 (metri)
- d 50 (mm)
- Q 7.2 (m^3/h)
- ρ 1000 (kg/m^3)
- t 1 (sec)
- P_0 6.85 (bar assoluti)
- P_1 7.5 (bar assoluti)
- P_2 11 (bar assoluti)

Example

An accumulator with a pre-charge pressure of 5.85 (bar) is used to absorb the "water hammering" of a circuit with a length of 500 (m), a flow rate of 2 (litres/sec) and a diameter of 50 (mm), where oil with a density of 1 (kg/dm^3) flows, when the valve closes the circuit stopping the movement within 1 second.
The operating pressure of the circuit is P_1 = 6.5 (bar) and the maximum pressure should not exceed value P_2 = 10 (bar).

Selection
- L 500 (meters)
- d 50 (mm)
- Q 7.2 (m^3/h)
- ρ 1000 (kg/m^3)
- t 1 (sec)
- P_0 6.85 (absolute bar)
- P_1 7.5 (absolute bar)
- P_2 11 (absolute bar)

$$V_0 = \frac{Q \cdot \left[\frac{4 \cdot \rho \cdot L \cdot Q}{\pi \cdot d^2 \cdot \left(P_2 - P_1\right) \cdot 10^5} - \frac{t}{2} \right] \cdot 10^3}{\left(\frac{P_0}{P_1}\right)^{\frac{1}{k}} - \left(\frac{P_0}{P_2}\right)^{\frac{1}{k}}} = \frac{0.002 \cdot \left[\frac{4 \cdot 1000 \cdot 500 \cdot 0.002}{\pi \cdot 0.05^2 \cdot \left[\left(11 - 7.5\right) \cdot 10^5\right]} - \frac{1}{2} \right] \cdot 10^3}{\left(\frac{6.85}{7.5}\right)^{\frac{1}{1.4}} - \left(\frac{6.85}{11}\right)^{\frac{1}{1.4}}} = \mathbf{8.52}\ \text{(litri/litres)}$$

D - **Smorzatore di pulsazioni**

Si intende, in questo caso, l'impiego dell'accumulatore come stabilizzatore di fluttuazioni cicliche istantanee di pressione all'interno di un circuito idraulico dovute al funzionamento di una pompa a pistoni.
Risulta chiaro che l'impiego risulta fortemente dipendente dai parametri caratteristici della pompa idraulica a pistoni.

Input
- Q portata della pompa (litri/minuto)
- n numero di giri della pompa (giri/minuto)
- P pressione di esercizio (bar)
- Θ pulsazione residua (±%)
- k esponente per trasformazioni politropiche (k=1.4 per adiabatica)
- μ coefficiente caratteristico della pompa (vedi tabella sotto)
- m parametro caratteristico della pompa (vedi tabella sotto)

Output
- V_0 volume necessario dell'accumulatore (litri)
- P_1 pressione minima del circuito (bar)
- P_2 pressione massima del circuito (bar)

D - **Pulse dampener**

In this case, the accumulator is used to stabilize the cyclical and sudden pressure fluctuations within the hydraulic circuit, which originate from the use of the piston pump.
It is obvious that the application is significantly influenced by the typical parameters of the hydraulic piston pump.

Input
- Q pump capacity (litres/minute)
- n number of revolutions of the pump (revolutions/minute)
- P operating pressure (bar)
- Θ residual pulsation (±%)
- k exponent for polytrophic transformations (k=1.4 per for adiabatic transformation)
- μ typical coefficient of pump (see following table)
- m typical parameter of pump (see following table)

Output
- V_0 volume required by the accumulator (litres)
- P_1 minimum pressure of the circuit (bar)
- P_2 maximum pressure of the circuit (bar)

$$V_0 = \frac{\frac{\mu \cdot Q}{n \cdot m}}{0.8527 \cdot \left[\left(\frac{100}{100 - \Theta}\right)^{\frac{1}{k}} - \left(\frac{100}{100 + \Theta}\right)^{\frac{1}{k}} \right]}$$

Volendo verificare le pressioni minima e massima del circuito si applicano le seguenti formule:

The minimum and maximum pressures of the circuit can be checked using the following formulas:

$$P_1 = P \cdot \left(1 - \frac{\Theta}{100}\right) \qquad P_2 = P \cdot \left(1 + \frac{\Theta}{100}\right)$$

Tipo di pompa	μ	Pump type	m
1 pistone / semplice effetto	0.69	1 piston / single action	1
1 pistone / doppio effetto	0.29	1 piston / double action	2
2 pistoni / semplice effetto	0.29	2 pistons / single action	2
2 pistoni / doppio effetto	0.17	2 pistons / double action	4
3 pistoni / semplice effetto	0.12	3 pistons / single action	3
3 pistoni / doppio effetto	0.07	3 pistons / double action	6
4 pistoni / semplice effetto	0.13	4 pistons / single action	4
4 pistoni / doppio effetto	0.07	4 pistons / double action	8
5 pistoni / semplic effetto	0.07	5 pistons / single action	5
5 pistoni / doppio effetto	0.023	5 pistons / double action	10
6 pistoni / doppio effetto	0.07	6 pistons / double action	12
7 pistoni / doppio effetto	0.023	7 pistons / double action	14

Scelta dell'accumulatore
Accumulator selection

Esempio

Un accumulatore è posto su un circuito in cui scorre del fluido ad una pressione di esercizio di P = 10 (bar) e con una portata di 120 (litri/min).
Il circuito è asservito da una pompa con 3 pistoni a semplice effetto la cui irregolarità percentuale è del 3% (± 1.5%) e gira a 300 (giri/min).

Scelta
- Q 120 (litri/min)
- n 300 (giri/min)
- P 10 (bar)
- ϴ ± 1.5%
- μ 0.12
- m 3

Example

An accumulator is installed in a circuit where the liquid flows at an operating pressure of P = 10 (bar) and with a flow rate of 120 (litres/min).
The circuit is driven by a double-acting pump with 3 pistons, the percentage irregularity is 3% (± 1.5%) and the speed is 300 (revolutions/min).

Selection
- Q 120 (litres/min)
- n 300 (revolutions/min)
- P 10 (bar)
- ϴ ± 1.5%
- μ 0.12
- m 3

$$V_0 = \frac{\frac{\mu \cdot Q}{n \cdot m}}{0.8527 \cdot \left[\left(\frac{100}{100 - \vartheta}\right)^{\frac{1}{k}} - \left(\frac{100}{100 + }\right)^{\frac{1}{k}}\right]} = \frac{\frac{0.12 \cdot 120}{300 \cdot 4}}{0.8527 \cdot \left[\left(\frac{100}{100-1.5}\right)^{\frac{1}{1.4}} - \left(\frac{100}{100+1.5}\right)^{\frac{1}{1.4}}\right]} = \mathbf{0.89}\ \text{(litri/litres)}$$

$$P_1 = P \cdot \left(1 - \frac{\vartheta}{100}\right) = 10 \cdot \left(1 - \frac{1.5}{a}\right) = \mathbf{9.85}\ \text{(bar)} \qquad P_2 = P \cdot \left(1 + \frac{\vartheta}{100}\right) = 10 \cdot \left(1 + \frac{1.5}{100}\right) = \mathbf{10.15}\ \text{(bar)}$$

Calcolo rapido
Per un veloce (e approssimativo) dimensionamento di uno smorzatore, trovate il fattore **Z** nella tabella seguente, con il quale moltiplicare la cilindrata di un pistone della pompa per ottenere il dimensionamento approssimativo, all'incrocio tra la riga con il n° di pistoni a semplice o doppio effetto e la colonna con la % di pulsazione residua picco su picco.

Esempio

Una pompa con tre pistoni a semplice effetto ed una pulsazione residua picco su picco del 3% (± 1.5%) da Z = 6.64.
Se la cilindrata di un pistone è di 0.133 litri, il volume dello smorzatore deve essere 0.133 · 6.64 = 0.88 litri.

Fast calculation
For a quick (and approximate) sizing of a pulsation damper, you will find the factor **Z** in the following table, to multiply with the cubic capacity of one pison of the pump, in order to obtain the approximate sizing of the damper, at the crossing of the row with the n° of piston , simple or double acting, with the column of the % residual pulsation peak desired.

Example

A 3-piston pump, single acting and a residual pulsation peak to peak of 3% (± 1.5%) gives Z = 6.64.
If the cubic capacity of the piston is 0.133 litre, the size of the damper must be 0.133 · 6.64 = 0.88 litres.

Tipo di pompa Pump type	μ	Z																			
1 pistone / semplice effetto 1 piston / single action	0,69	113	57	38	28	23	19,2	16,6	14,5	13	11,7	10,7	9,84	9,11	8,49	7,95	7,48	7,06	6,69	6,37	6,06
1 pistone / doppio effetto 1 piston / double action	0,29	47,8	29,9	16,04	12,07	9,69	8,1	7	6,12	5,4	5	4,5	4,1	8,9	3,6	3,3	3,14	2,9	2,8	2,7	2,54
2 pistoni / semplice effetto 2 pistons / single action	0,29	47,8	23,9	16,04	12,07	9,69	8,1	7	6,12	5,4	5	4,5	4,1	8,9	3,6	3,3	3,14	2,9	2,8	2,7	2,54
2 pistoni / doppio effetto 2 pistons / double action	0,17	28,2	14	9,4	7	5,6	4,7	4	3,6	3,2	2,9	2,6	2,4	2,24	2,1	1,95	1,84	1,74	1,64	1,56	1,5
3 pistoni / semplice effetto 3 pistons / single action	0,12	19,8	10	6,64	5	4	3,35	2,88	2,53	2,25	2	1,86	1,71	1,58	1,47	1,38	1,3	1,23	1,16	1,1	1
3 pistoni / doppio effetto 3 pistons / double action	0,07	11,5	5,8	3,9	2,9	2,3	1,9	1,7	1,5	1,3	1,2	1,08	1	0,92	0,86	0,8	0,75	0,71	0,68	0,64	0,61
4 pistoni / semplice effetto 4 piston / single action	0,13	21,4	10,7	7,2	5,4	4,34	3,6	3,1	2,74	2,44	2,2	2	1,85	1,71	1,6	1,5	1,4	1,33	1,26	1,19	1,14
4 pistoni / doppio effetto 4 pistons / double action	0,07	11,5	5,8	3,9	2,9	2,3	1,9	1,7	1,5	1,3	1,2	1,08	1	0,92	0,86	0,8	0,75	0,71	0,68	0,64	0,61
5 pistoni / semplice effetto 5 pistons / single action	0,07	11,5	5,8	3,9	2,9	2,3	1,9	1,7	1,5	1,3	1,2	1,08	1	0,92	0,86	0,8	0,75	0,71	0,68	0,64	0,61
5 pistoni / doppio effetto 5 pistons / double action	0,023	3,8	1,9	1,3	0,95	0,76	0,64	0,55	0,48	0,43	0,39	0,35	0,32	0,3	0,28	0,26	0,24	0,23	0,22	0,21	0,2
6 pistoni / doppio effetto 6 pistons / double action	0,07	11,5	5,8	3,9	2,9	2,3	1,9	1,7	1,5	1,3	1,2	1,08	1	0,92	0,86	0,8	0,75	0,71	0,68	0,64	0,61
7 pistoni / doppio effetto 7 pistons / double action	0,023	3,8	1,9	1,3	0,95	0,76	0,64	0,55	0,48	0,43	0,39	0,35	0,32	0,3	0,28	0,26	0,24	0,23	0,22	0,21	0,2
Θ= ±% pulsazione residua ±% residual pulsation		±0,5	±1	±1,5	±2	±2,5	±3	±3,5	±4	±4,5	±5	±5,5	±6	±6,5	±7	±7,5	±8	±8,5	±9	±9,5	±10

$$\Theta = \pm \frac{P_{max} - P_{min}}{P_{medio/medium} \cdot 2}$$

±0,5	±1	±1,5	±2	±2,5	±3	±3,5	±4	±4,5	±5	±5,5	±6	±6,5	±7	±7,5	±8	±8,5	±9	±9,5	±10

$$Z = \frac{\mu}{R}$$

$$R = 0.8527 \cdot \left[\left(\frac{100}{100 - \Theta} \right)^{0.71428} - \left(\frac{100}{100 + \Theta} \right)^{0.71428} \right]$$

0.00606	0.012	0.018	0.024	0.029	0.035	0.041	0.047	0.053	0.058
0.064	0.070	0.075	0.081	0.086	0.092	0.097	0.103	0.108	0.113

E - **Compensatore di volume**

È l'impiego dell'accumulatore che si ha quando le variazioni di temperatura a cui può andare soggetto il contenitore del fluido (circuito, serbatoio,ecc..) genera variazioni di pressione che devono rimanere nei limiti prescritti.
A ciò sopperisce l'accumulatore trasformando le variazioni di pressione in variazioni di volume. Le variazioni di temperatura si intende che avvengano lentamente in modo di considerare il processo come isotermico.

Input
- ΔV variazione di volume a cui sarà soggetto l'accumulatore (litri)
- P_0 pressione di precarica (bar assoluti)
- P_1 pressione minima raggiungibile nel circuito (bar assoluti)
- P_2 pressione massima raggiungibile nel circuito (bar assoluti)

Output
- V_0 volume necessario dell'accumulatore (litri)

E - **Volume compensator**

In this application, the accumulator is used when the temperature variations to which the liquid vessel (circuit, reservoir, etc.) is exposed generate pressure variations, which must remain within set limits. This condition is ensured by the accumulator, which transforms the pressure variations into volume variations. Temperature variations are expected to occur slowly, so that the process can be considered isothermal.

Input
- ΔV volume variations to which the accumulator is exposed (litres)
- P_0 pre-charge pressure (absolute bar)
- P_1 minimum pressure that can be reached in the loop (absolute bar)
- P_2 maximum pressure that can be reached in the circuit (absolute bar)

Output
- V_0 volume required by the accumulator (litres)

$$V_0 = \frac{V}{\left(\frac{P_0}{P_1} - \frac{P_0}{P_2}\right)}$$

Esempio

Un serbatoio in acciaio di un circuito contenente olio, ha un diametro di 200 (mm) ed una altezza di 300 (mm); la pressione di esercizio è di P = 15 (bar) ed è ammessa una variazione di pressione non superiore al ±9% quando la temperatura vari tra –5 (°C) e +60 (°C). A questo deve sopperire un accumulatore con pressione di precarica di 13.5 (bar).

Scelta
- P_0 14.5 (bar assoluti)
- P_1 (1 - 0.09) · P = 0.91 · 15 = 13.65 (bar) = 14.65 (bar assoluti)
- P_2 (1 + 0.09) · P = 1.09 · 5 = 16.35 (bar) = 17.35 (bar assoluti)
- ΔV si calcola come differenza tra la dilatazione termica del volume di olio contenuto (ΔV_{olio}) e la dilatazione del serbatoio ($\Delta V_{Serbatoio}$). Cioè:

Example

A steel reservoir of a circuit containing oil has a diameter of 200 (mm) and a height of 300 (mm). The operating pressure is P = 15 (bar) and the acceptable pressure variation must not exceed ±9%, when the temperature changes from -5 (°C) to +60 (°C). This result can be achieved by using a pressure accumulator with a pre-charge pressure of 13.5 (bar).

Selection
- P_0 14.5 (absolute bar)
- P_1 (1 - 0.09) · P = 0.91 · 15 = 13.65 (bar) = 14.65 (absolute bar)
- P_2 (1 + 0.09) · P = 1.09 · 15 = 16.35 (bar) = 17.35 (absolute bar)
- ΔV Calculated as difference between the thermal dilatation of the volume of oil contained in the vessel (ΔV_{oil}) and the vessel dilatation (ΔV_{vessel}). That is:

$$\Delta V_{olio/oil} = \beta \cdot V_{olio/oil} \cdot \Delta V = 9.5 \cdot 10^{-4} \cdot (\pi/4 \cdot 2^2 \cdot 3) \cdot [60 - (-5)] = 9.5 \cdot 10^{-4} \cdot 9.425 \cdot 65 = 0.582 \text{ (litri/litres)}$$

$$\Delta V_{serbatoio/vessel} = V_{serbatoio/vessel} \cdot [(\alpha \cdot \Delta T + 1)^3 - 1] = 9.425 \cdot [(1.2 \cdot 10^{-5} \cdot 65 + 1)^3 - 1] = 2.2 \cdot 10^{-2} \text{ (litri/litres)}$$

$$\Delta V = (\Delta V_{olio/oil}) - (\Delta V_{serbatoio/vessel}) = 0.582 - 0.022 = 0.56 \text{ (litri/litres)}$$

$$V_0 = \frac{V}{\left(\frac{P_0}{P_1} - \frac{P_0}{P_2}\right)} = \frac{0.56}{\left(\frac{14.5}{14.65} - \frac{14.5}{17.35}\right)} = \mathbf{3.64} \text{ (litri/litres)}$$

Notizie supplementari

Vengono qui brevemente fornite le informazioni teorico/pratiche che possono servire ad un corretto impiego degli accumulatori. I termini che verranno usati sono i seguenti :

Trasformazioni termodinamiche (isoterma e adiabatica)

Le trasformazioni termodinamiche nel piano (Pressione, Volume) sono rappresentate con l'equazione:

$$P \cdot V^n = \text{Costante/Constant}$$

La trasformazione termodinamica si dice **isoterma** se durante il passaggio da una condizione (P_1, V_1) ad un'altra (P_2, V_2), la temperatura T del fluido rimane costante.
Questo significa che il sistema può, ed ha il tempo, di scambiare calore con l'esterno. È tipico di espansioni / compressioni che avvengono lentamente in contenitori non isolati termicamente.

Nel piano (P, V) il coefficiente "n = 1" e la trasformazione **isoterma** è rappresentata dalla seguente formula:

$$P_1 \cdot V_1 = P_2 \cdot V_2 = \text{Costante / Constant}$$

La trasformazione termodinamica si dice **adiabatica** se durante il passaggio da una condizione (P1, V1) ad un'altra (P2, V2), il sistema non scambia calore con l'esterno.
Cioè il sistema non può, o non ha il tempo, di scambiare calore con l'esterno quindi la temperatura varia.
È tipico di espansioni / compressioni che avvengono, di solito, molto rapidamente o in contenitori isolati termicamente.

Nel piano (P, V) il coefficiente "$n = k = c_P / c_V$" e la trasformazione **adiabatica** è rappresentata dalla seguente formula:

$$P_1 \cdot V_1^k = P_2 \cdot V_2^k = \text{Costante / Constant}$$

dove "c_P" è il calore specifico a pressione costante e "c_V" è il calore specifico a volume costante.
Per azoto ed aria **k = 1.4**

Additional information

The sections that follow provide the theoretical/practical information required for a correct use of accumulators. The terms used are the following:

Thermo-dynamic transformations (isothermal and adiabatic)

Thermodynamic transformations along the plane (Pressure, Volume) are represented by means of the following equation:

$$P \cdot V^n = \text{Costante/Constant}$$

A thermodynamic transformation is called **isothermal** if, during the transition from one condition (P_1, V_1) to another (P_2, V_2), the temperature T of the liquid remains constant. This means that the system is able and has time to exchange heat with the environment. This condition is typical of dilatations/compressions that occur slowly in non thermally insulated vessels.

Along the plane (P, V), coefficient "n = 1" and the **isothermal** transformation are represented by the following formula:

$$P_1 \cdot V_1 = P_2 \cdot V_2 = \text{Costante / Constant}$$

A thermodynamic transformation is called **adiabatic** if, during the transition from one condition (P1, V1) to another (P2, V2), the system does not exchange heat with the environment.
In other words, in this case the system is unable or has no time to exchange heat with the environment, which results in a temperature variation. This condition is typical of dilations/compressions that occur very swiftly or in thermally insulated vessels.

Along the plane (P, V) coefficient "$n = k = c_P / c_V$" and the **adiabatic** transformation is represented by the following formula:

$$P_1 \cdot V_1^k = P_2 \cdot V_2^k = \text{Costante / Constant}$$

Where "c_P" is the specific heat at constant pressure and "c_V" is the specific heat at constant volume.
For nitrogen and air, **k = 1.4**

Precarica

In linea di massima la precarica (P_0) di un accumulatore si calcola con la formula:

$$P_0 = 0.9 \cdot P_1$$

È buona norma verificare che la precarica sia compresa tra i seguenti limiti: $0.25 \cdot P_2 \le P_0 \le 0.9 \cdot P_1$

Per impieghi come **smorzatore di pulsazioni**, la precarica si calcola con le due formule seguenti:
1) se si conosce la pressione media di esercizio
   $P_0 = 0.6 \div 0.75 \cdot P_m$
2) se si conosce la pressione minima di esercizio
   $P_0 = 0.8 \cdot P_1$

Per impieghi come **assorbitore di "colpi d'ariete"**, la precarica è data da: $P_0 = 0.6 \div 0.9 \cdot P_m$

I valori sopra riportati sono validi sino alla temperatura massima di funzionamento (T_2) prevista per l'accumulatore, ma dato che la precarica viene effettuata e/o controllata generalmente a temperatura ambiente (T_C=20°C) il valore che vi dovrà misurare e/o controllare (P_{0C}) sarà il seguente:

$$P_{0C} = P_0 \cdot \frac{293}{T_2 + 273}$$

Se la temperatura di controllo è diversa da 20°C la formula da usare è:

$$P_{0C} = P_0 \cdot \frac{T_C + 273}{T_2 + 273}$$

SAIP consegna l'accumulatore con la precarica eseguita e controllata alla temperatura di 20°C.

Pre-charge

The pre-charge (P_0) of an accumulator is generally calculated with the following formula:

$$P_0 = 0.9 \cdot P_1$$

It is generally advisable to verify that the pre-charge is within the following limits: $0.25 \cdot P_2 \le P_0 \le 0.9 \cdot P_1$

If the accumulator is used as **pulse dampener**, the pre-charge is calculated with the two following formulas:
1) If the average operating pressure is known:
   $P_0 = 0.6 \div 0.75 \cdot P_m$
2) If the minimum operating pressure is known:
   $P_0 = 0.8 \cdot P_1$

If the accumulator is used as **"water hammering" absorber**, the pre-charge is calculated with the following formula:
$P_0 = 0.6 \div 0.9 \cdot P_m$

These values are valid up to the maximum operating temperature (T_2) expected for the accumulator. However, as the pre-charge is carried out and generally checked at ambient temperature (T_C=20°C), the value to measure and/or check (P_{0C}) is the following:

$$P_{0C} = P_0 \cdot \frac{293}{T_2 + 273}$$

If the control temperature differs from 20°C, the applicable formula is:

$$P_{0C} = P_0 \cdot \frac{T_C + 273}{T_2 + 273}$$

SAIP delivers all accumulator after performing and checking the pre-charge at a temperature of 20°C.

Influenza della temperatura su pressione e volume

Quando la temperatura di esercizio di un accumulatore varia in modo sensibile, occorrerà tenerne in conto nel calcolo del suo volume V_0. Detta T_1 (°C) la temperatura minima di esercizio e T2 (°C) la temperatura massima, il volume dell'accumulatore V_{0T} che terrà conto dell'escursione termica sarà dato dalla seguente formula:

Influence of temperature on pressure and volume

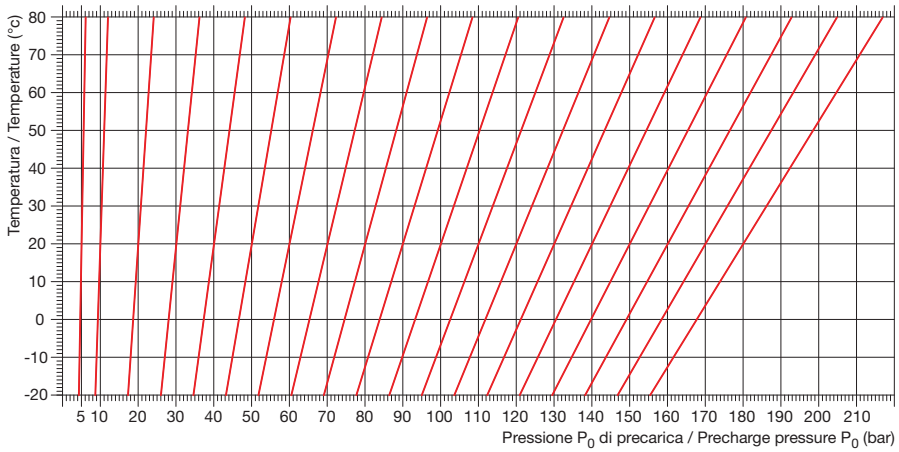
When the operating temperature of an accumulator varies significantly, it is necessary to take into account even volume V_0 during calculations. If T_1 (°C) is the minimum operating temperature and T_2 (°C) the maximum one, the volume of the accumulator V_{0T} subject to thermal expansion can be calculated with the following formula:

$$V_{0T} = V_0 \cdot \frac{(T_2 + 273)}{(T_1 + 273)}$$

dove V_0 è il volume calcolato come descritto nei punti A)-B)-C)-D)-E).

where V_0 is the volume calculated as per steps A)-B)-C)-D)-E).

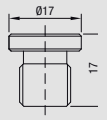
Variazione della pressione di precarica in funzione della temperatura
Changes of precharge pressure according to temperature



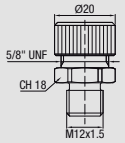
Codice d'identificazione
Model code

LAV	1	1,5	1	0	S	A

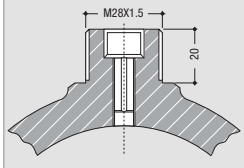
Tipo	Valvola gas 0	Valvola gas 1	Valvola gas 2	Volume (litri)
L	Tappo chiuso	5/8" UNF	M28x1,5	0,025÷0,35
LA	Tappo chiuso	5/8" UNF		0,75÷12
LAS		5/8" UNF		0,75÷12
LASS		5/8" UNF		0,75÷5
LAV	Tappo chiuso	5/8" UNF	M28x1,5	0,025÷2,5
AMP		5/8" UNF	M28x1,5	0,5
BPL		5/8" UNF		1,5÷8,5
SPM		5/8" UNF		0,8÷1,5
SL		5/8" UNF		1,5÷55
SI		5/8" UNF		0,2÷55
APT		5/8" UNF		0,1÷5
APTL		5/8" UNF		0,1÷15
APTD		5/8" UNF		3÷12
ASM		5/8" UNF		A richiesta
ASP		5/8" UNF		A richiesta
LP		5/8" UNF		A richiesta
LAP		5/8" UNF		A richiesta
BA		5/8" UNF		100÷5500
SA		5/8" UNF		15÷400
BAD				50÷75
APV		5/8" UNF		0,025÷12
PAM		5/8" UNF		0,4÷80
WA[1]				0,05÷4



Valvola gas versione **0**



Valvola gas versione **1**



Valvola gas versione **2**

Elemento separatore			
1	*	NBR	-15/+80
1C	*	NBR -40°C	-40/+80
1F		NBR PER IDROC.	-15/+80
2	*	BUTILE	-20/+100
4	*	EPDM	-30/+130
6		H-NBR	-35/+130
6C		H-NBR Peroxide Cured ACN 36%	-35/+130
8		ECO	-30/+120
9	*	VMQ (silicone)	-20/+150
10	*	FKM	-10/+150
10G	**	FKM GLT	-35/+150
13	*, ****	PTFE+BUTILE	-20/+100
15	*, ****	PTFE+FKM	-10/+150
16	*, ****	PTFE+EPDM	-30/+130
17	*, ****	TFM	-100/+260
23	*****	POLIURETANO	-20/+100
SP	***	SOFFIETTO PTFE	-30/+200
SX	***	SOFFIETTO AISI 316	-100/+300

Per dettaglio elementi separatori vedere capitolo 1.2

Materiali corpo
A2 = Alloy 20
A4 = Alloy C4
A6 = Alloy 625
A7 = Hastelloy C-276
C = PVC/C
D = F51
FX = PTFE + reinforced AISI 316L
O = Acciaio carbonio
O2 = Acc. carb. kanigenato 25 micr.
O4 = Acc. carb. kanigenato 40 micr.
OZ = Acciaio carboniozincato
P = PP
S = F53 / F55
T2 = Titanio
V = PVDF
X = AISI 316L
Y = PVC

Rivestimenti interni
E = Ebanite
H = Riporto PTFE
G = Rivestimento a spruzzo PTFE
Altri a richiesta

Attacco fluido
A2 = M. 1/4" GAS
C4 = F. 1/2" GAS [2]
C5 = F. 3/4" GAS [2]
C6 = F. 1" GAS [2]
C7 = F. 1.1/4" GAS [2]
C8 = F. 1.1/2" GAS [2]
C9 = F. 2" GAS [2]
G4 = F. 1/2" GAS
G5 = F. 3/4" GAS
G6 = F. 1" GAS
G7 = F. 1.1/4" GAS
G8 = F. 1.1/2" GAS
G9 = F. 2" GAS
M8 = F. M18x1,5
N4 = F. 1/2" NPT
N5 = F. 3/4" NPT
N6 = F. 1" NPT
F = Con flangia (Tipo da precisare)
Z = Con riduzione o nipplo (Tipo da precisare)
Altri a richiesta

Collaudi
A = EN13445-3 + PED
B = ASME Stamp
C = EN13445-3 + PED + Modulo G
D = AD2000 + PED
E = ASME VIII Div.1 + PED
F = PD5500 + PED
G = ASME VIII Div.1 + CUTR
H = ASME VIII Div.1 + ML (Selo)
L = EN13445-3
M= ASME VIII Div.1
Z = INTERNA SAIP

[1] Si veda catalogo specifico

* Disponibili per uso alimentare
** Esclusi tipi LA, SI e SL
*** Solo per ASM e ASP
**** Solo per APT, APTD e APTL
***** Solo per BA

[2] Con smusso per O-Ring

Il numero dei cicli è inversamente proporzionale all'aumentare del rapporto di compressione / The number of cycles is inversely proportional with the increase of the pressure relationship
Le numero des cycles est inversement proportionnel à l'augmentation du rapport de pression / Di Nummer der Lastzahlen ist umgekehrt proportional mit die Erhöhung des Druckverhältnis.
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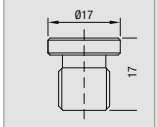
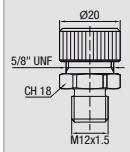
LAV	1	1,5	1	0	S	A

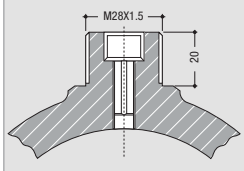
Type	Gas Valve 0	Gas Valve 1	Gas Valve 2	Volume (litres)
L	Plug	5/8" UNF	M28x1,5	0,025÷0,35
LA	Plug	5/8" UNF		0,75÷12
LAS		5/8" UNF		0,75÷12
LASS		5/8" UNF		0,75÷5
LAV	Plug	5/8" UNF	M28x1,5	0,025÷2,5
AMP		5/8" UNF	M28x1,5	0,5
BPL		5/8" UNF		1,5÷8,5
SPM		5/8" UNF		0,8÷1,5
SL		5/8" UNF		1,5÷55
SI		5/8" UNF		0,2÷55
APT		5/8" UNF		0,1÷5
APTL		5/8" UNF		0,1÷15
APTD		5/8" UNF		3÷12
ASM		5/8" UNF		On request
ASP		5/8" UNF		On request
LP		5/8" UNF		On request
LAP		5/8" UNF		On request
BA		5/8" UNF		100÷5500
SA		5/8" UNF		15÷400
BAD				50÷75
APV		5/8" UNF		0,025÷12
PAM		5/8" UNF		0,4÷80
WA[1]				0,05÷4



Gas valve version **0**



Gas valve version **1**



Gas valve version **2**

Separating element			
1	*	NBR	-15/+80
1C	*	NBR -40°C	-40/+80
1F		Hydrocarbonproof NBR	-15/+80
2	*	Butyl	-20/+100
4	*	EPDM	-30/+130
6		H-NBR	-35/+130
6C		H-NBR Peroxide Cured ACN 36%	-35/+130
8		ECO	-30/+120
9	*	VMQ (silicon rubber)	-20/+150
10	*	FKM	-10/+150
10G	**	FKM GLT	-35/+150
13	*, ****	PTFE+Butyl	-20/+100
15	*, ****	PTFE+FKM	-10/+150
16	*, ****	PTFE+EPDM	-30/+130
17	*, ****	TFM	-100/+260
23	*****	Polyurethane	-20/+100
SP	***	PTFE bellow	-30/+200
SX	***	AISI 316 bellow	-100/+300

For separating element details, see cap 1.2

Body material
A2 = Alloy 20
A4 = Alloy C4
A6 = Alloy 625
A7 = Hastelloy C-276
C = PVC/C
D = F51
FX = PTFE + reinforced AISI 316L
O = Carbon steel
O2 = Carbon steel kan. 25 micr.
O4 = Carbon steel kan. 40 micr.
OZ = Galvanized carbon steel
P = PP
S = F53 / F55
T2 = Titanium
V = PVDF
X = AISI 316L
Y = PVC

Internal lining
E = Ebonite
H = PTFE covered
G = PTFE coated
Other on request

Port fluid connection
A2 = M. 1/4" GAS
C4 = F. 1/2" GAS [2]
C5 = F. 3/4" GAS [2]
C6 = F. 1" GAS [2]
C7 = F. 1.1/4" GAS [2]
C8 = F. 1.1/2" GAS [2]
C9 = F. 2" GAS [2]
G4 = F. 1/2" GAS
G5 = F. 3/4" GAS
G6 = F. 1" GAS
G7 = F. 1.1/4" GAS
G8 = F. 1.1/2" GAS
G9 = F. 2" GAS
M8 = F. M18x1,5
N4 = F. 1/2" NPT
N5 = F. 3/4" NPT
N6 = F. 1" NPT
F = Flanged (to be stated)
Z = With reduction or nipple (to be stated)
Other on request

Tests
A = EN13445-3 + PED
B = ASME Stamp
C = EN13445-3 + PED + Modulo G
D = AD2000 + PED
E = ASME VIII Div.1 + PED
F = PD5500 + PED
G = ASME VIII Div.1 + CUTR
H = ASME VIII Div.1 + ML (Selo)
L = EN13445-3
M= ASME VIII Div.1
Z = INTERNAL SAIP

[1] See specific catalog

* Also available for food applications
** LA, SI and SL types excluded
*** For ASM and ASP only
**** For APT, APTD and APTL only
***** For BA only

[2] With O-Ring chamfer

Il numero dei cicli è inversamente proporzionale all'aumentare del rapporto di compressione / The number of cycles is inversely proportional with the increase of the pressure relationship
Le numero des cycles est inversement proportionnel à l'augmentation du rapport de pression / Di Nummer der Lastzahlen ist umgekehrt proportional mit die Erhöhung des Druckverhältnis.
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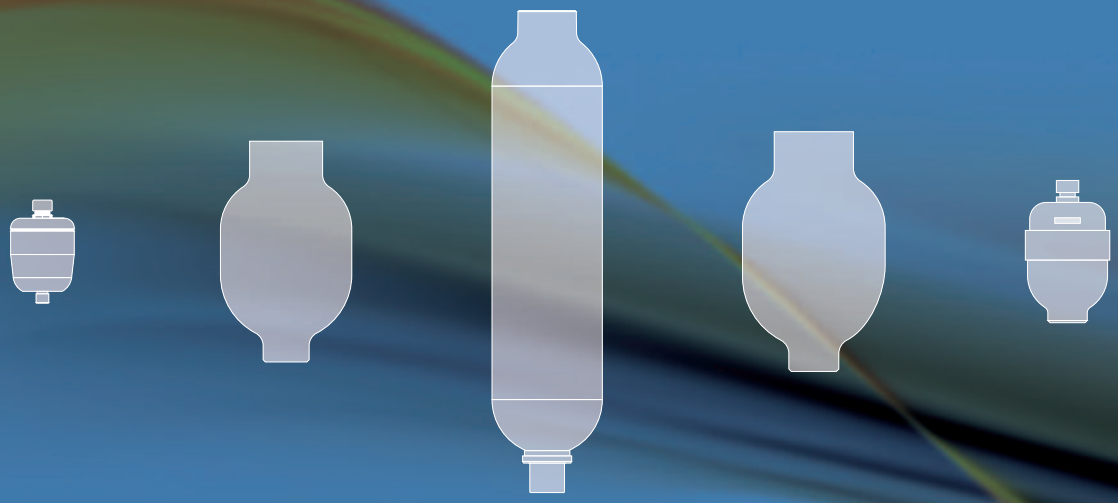
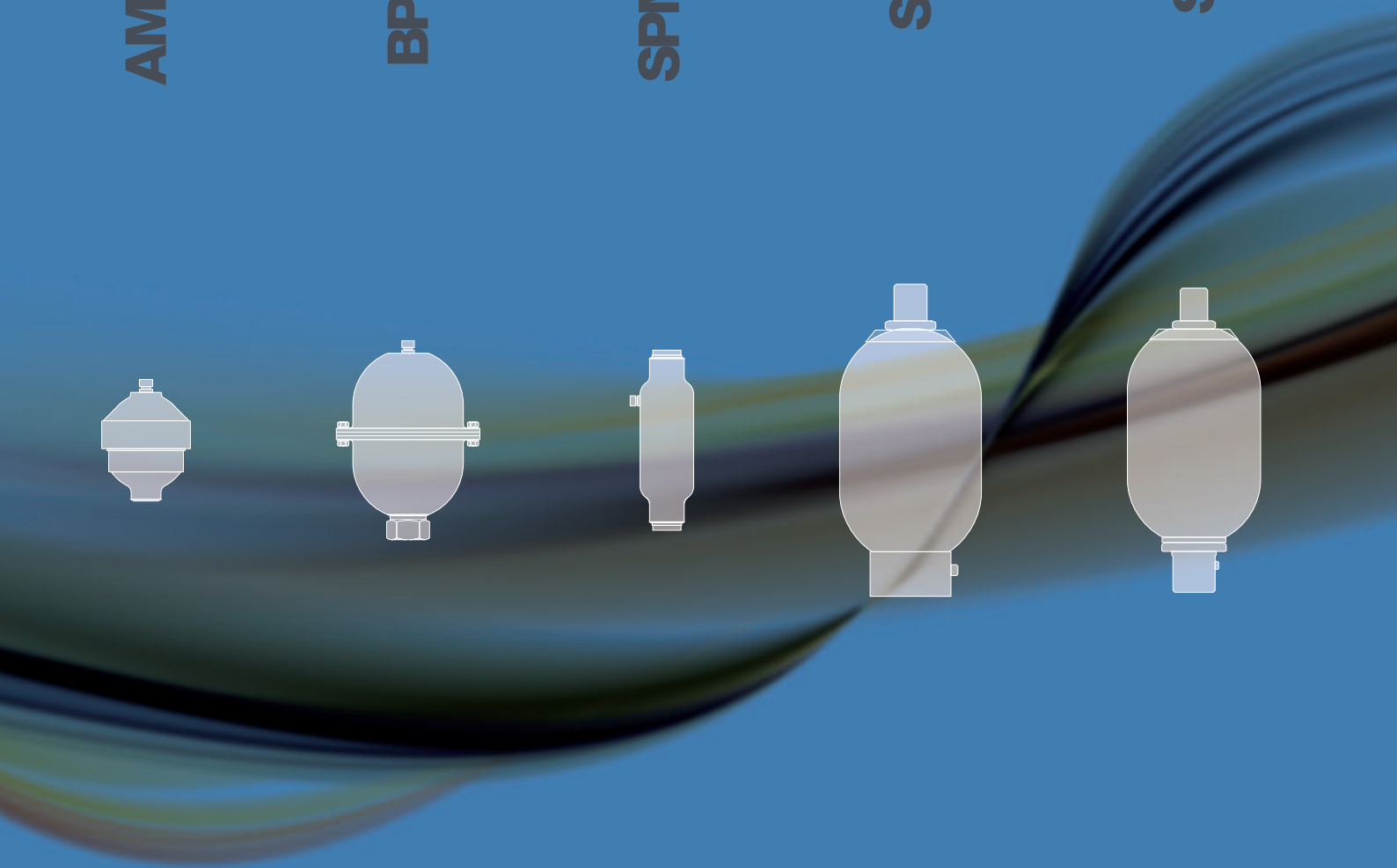


CE 1370 CHINA-ML TC N RU

Standard Types



L Type

Carbon, stainless or duplex steel body

Accumulatore con membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 150/210/250 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla membrana)
Montaggio:	in qualsiasi posizione

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L acciaio duplex F51
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 150/210/250 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the diaphragms)
Mounting:	any position

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L duplex steel F51
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

		Stainless steel	Carbon steel	Duplex steel	Stainless-Duplex steel	Carbon steel						
Tipo	**Volume***	**Pressione**			**Attacco lato liquido (FIG.)**		**Valvola gas**	**A**	**ØB**	**C**	**ØD**	**Peso**
Type	**Volume***	**Pressure**			**P.F.C.**		**Gas valve**					**Weight**
	cm³	max bar			E		Tappo Plug Bouton Zapfen	mm				kg
L 0.025	25	150	210	210/250	1/2" GAS (II)	1/4" GAS (I)	Plug • 5/8"UNF	105	-	-	65	1,2
L 0.05	50	150	210	210/250	1/2" GAS (II)	1/4" GAS (I)	Plug • 5/8"UNF	105	-	-	65	1,2
L 0.1	100	150	210	210/250	1/2" NPT (II)	M18x1,5 (II)	M28x1,5 • 5/8"UNF	128	73	36	77	1,9
L 0.35	350	150	210	210/250	1/2" NPT (II)	M18x1,5 (II)	M28x1,5 • 5/8"UNF	157	94	40	99,5	2,9
Type	**Volume***	**Pression**			**Connection fluide**		**Valve pour Gaz**					**Poids**
Typ	**Volumen***	**Druck**			**Medium Anschluss (FIG.)**		**Gasventil**	**A**	**ØB**	**C**	**ØD**	**Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen

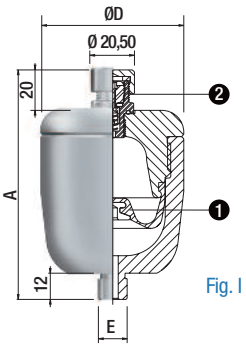


Fig. I

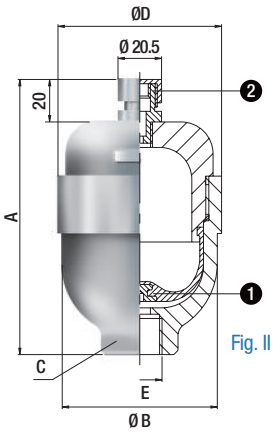


Fig. II

Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas
Type	**Diaphragm**	**Gas valve**
	❶	❷
L 0.025	MEML005*	VALPRE580NV2
L 0.05	MEML005*	VALPRE580NV2
L 0.1	MEML01*	VALPRE580NV2 - VALPRE58X
L 0.35	MEML035*NV1	VALPRE580NV2 - VALPRE58X
Type	**Membrane**	**Valve de gonflage**
Typ	**Membran**	**Gasventil**

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 150/210/250 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour les membranes)
Montage:	dans n'importe quelle position

Caractéristiques constructives standard

Corps:	acier aù carbone forgé acier inoxidable AISI 316L acier duplex F51
Membrane:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 150/210/250 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Membran zugelassenen Temperaturen)
Montage:	in jeder Position

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L Duplex Stahl F51
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

Carbon, stainless or duplex steel body

Accumulatore a sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 145/250/270 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L (Fig. II) acciaio duplex F51 (Fig. II)
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	max. 145/250/270 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L (Fig. II) duplex steel F51 (Fig. II)
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

		Stainless steel	Carbon steel	Duplex steel	Stainless-Duplex steel	Carbon steel							
Tipo	**Volume***	**Pressione**			**Attacco lato liquido**		**Valvola gas**	**A**	**ØB**	**C**	**ØD**	**Peso**
Type	**Volume***	**Pressure**			**P.F.C.**		**Gas valve**					**Weight**
	cm³	max bar			E		Tappo Plug Bouton Zapfen	mm				kg
LA 0.75	750	145	250	270	3/4"NPT	M18x1,5	5/8"UNF	192	65	41	116	4,35
LA 1	1000	145	250	270	3/4"NPT	M18x1,5	5/8"UNF	210	65	41	116	5
LA 1.5	1500	145	250	270	3/4"NPT	M18x1,5	5/8"UNF	292	65	41	116	6,76
LA 3	3000	145	250	270	3/4"NPT	3/4" GAS	5/8"UNF	485	65	41	116	10,5
LA 4	4000	145	250	270	1"NPT	3/4" GAS	5/8"UNF	370	90	60	168.5	14,5
LA 5	5000	145	250	270	1"NPT	3/4" GAS	5/8"UNF	420	90	60	168.5	15,5
Type	**Volume***	**Pression**			**Connection fluide**		**Valve pour Gaz**					**Poids**
Typ	**Volumen***	**Druck**			**Medium Anschluss**		**Gasventil**	**A**	**ØB**	**C**	**ØD**	**Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen

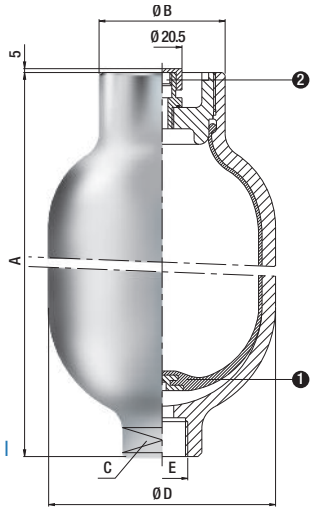


Fig. I

Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Sacca	Valvola gas
Type	Bladder	Gas valve
	❶	❷
LA 0.75	MEMLA075*	VALPRE580NV2-VALPRE58X
LA 1	MEMLA075*	VALPRE580NV2-VALPRE58X
LA 1.5	MEMLA1.5*	VALPRE580NV2-VALPRE58X
Type	**Vessie**	**Valve de gonflage**
Typ	**Blase**	**Gasventil**

Tipo	Sacca	Valvola gas	Serie guarnizioni
Type	Bladder	Gas valve	Gasket kit
	❶	❷	
LA 3	MEMLA3*	VALPRE580NV2-VALPRE58X	-
LA 4	MEMLA4*	VALPRE580NV2-VALPRE58X	PAR168PTFE
LA 5	MEMLA5*	VALPRE580NV2-VALPRE58X	PAR168PTFE
Type	**Vessie**	**Valve de gonflage**	**Etanchéité**
Typ	**Blase**	**Gasventil**	**Dichtungen**

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

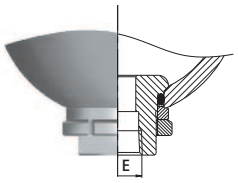


Fig. II

Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	max. 145/250/270 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier aù carbone forgé acier inoxidable AISI 316L (Fig. II) acier duplex F51 (Fig. II)
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 145/250/270 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L (Fig. II) Duplex Stahl F51 (Fig. II)
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

LA Type

Carbon, stainless or duplex steel body

Accumulatore a sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 145/250/270 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L acciaio duplex F51
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	max. 145/250/270 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	horizontal or vertical with gas valve upwards

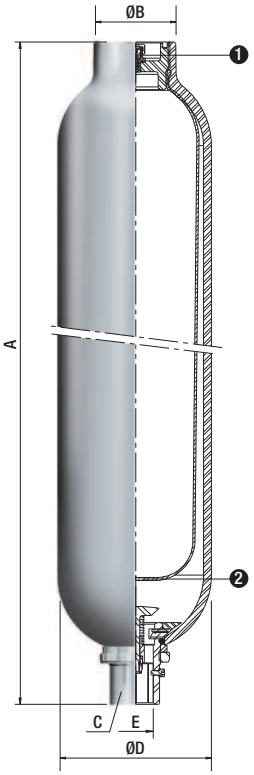
Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L duplex steel F51
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

		Stainless steel	Carbon steel	Duplex steel								
Tipo	**Volume***	**Pressione**			**Attacco lato liquido**	**Valvola gas**	**A**	**ØB**	**C**	**ØD**	**Peso**
Type	**Volume***	**Pressure**			**P.F.C.**	**Gas valve**					**Weight**
	cm³	max bar			E		mm				kg
LA 10	10000	145	250	270	1"1/4 GAS	5/8"UNF	740	90	50	168.5	28,5
LA 12	12000	145	250	270	1"1/4 GAS	5/8"UNF	820	90	50	168.5	32,5
Type	**Volume***	**Pression**			**Connection fluide**	**Valve pour Gaz**					**Poids**
Typ	**Volumen***	**Druck**			**Medium Anschluss**	**Gasventil**	**A**	**ØB**	**C**	**ØD**	**Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Sacca	Valvola gas	Serie guarnizioni
Type	**Bladder**	**Gas valve**	**Gasket kit**
	1	2	
LA 10	MEMLA10*	VALPRE580NV2 - VALPRE58X	PAR168PTFE
LA 12	MEMLA10*	VALPRE580NV2 - VALPRE58X	PAR168PTFE
Type	**Vessie**	**Valve de gonflage**	**Etanchéité**
Typ	**Blase**	**Gasventil**	**Dichtungen**

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	max. 145/250/270 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier aù carbone forgé acier inoxidable AISI 316L acier duplex F51
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 145/250/270 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L Duplex Stahl F51
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

Accumulatore a sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 350 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	max. 350 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	horizontal or vertical with gas valve upwards

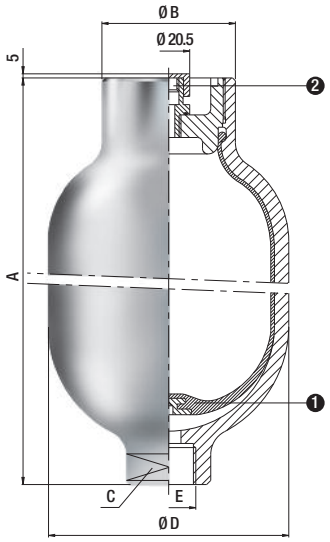
Standard construction characteristics

Material of body:	carbon steel
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo Type Typ	Volume* Volume* Volumen*	Pressione Pressure Druck	Attacco lato liquido P.F.C. Medium Anschluss	Valvola gas Gas valve Gasventil	A	ØB	C	ØD	Peso Weight Gewicht
	cm³	max bar	E	Tappo Plug Bouton Zapfen		mm			kg
LAS 0.75	750	350	M18x1,5	5/8"UNF	192	65	41	116	4,35
LAS 1	1000	350	M18x1,5	5/8"UNF	210	65	41	116	5
LAS 1.5	1500	350	M18x1,5	5/8"UNF	292	65	41	116	6,76
LAS 3	3000	350	3/4" GAS	5/8"UNF	485	65	41	116	10,5
LAS 4	4000	350	3/4" GAS	5/8"UNF	370	90	60	168.5	14,5
LAS 5	5000	350	3/4" GAS	5/8"UNF	420	90	60	168.5	15,5

* Volume nominale - Nominal volume - Nominal Volumen



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo Type Typ	Sacca Bladder Blase	Valvola gas Gas valve Gasventil	Serie guarnizioni Gasket kit Dichtungen
	1	2	
LAS 0.75	MEMLA075*	VALPRE580NV2	-
LAS 1	MEMLA075*	VALPRE580NV2	-
LAS 1.5	MEMLA1.5*	VALPRE580NV2	-
LAS 3	MEMLA3*	VALPRE580NV2	-
LAS 4	MEMLA4*	VALPRE580NV2	PAR168PTFE
LAS 5	MEMLA5*	VALPRE580NV2	PAR168PTFE

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	max. 350 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier aù carbone forgé
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille
Réception:	sur demande

Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 350 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz
Abnahme:	Auf Anfrage

LASType
Carbon steel body

Accumulatore a sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 350 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	max. 350 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	horizontal or vertical with gas valve upwards

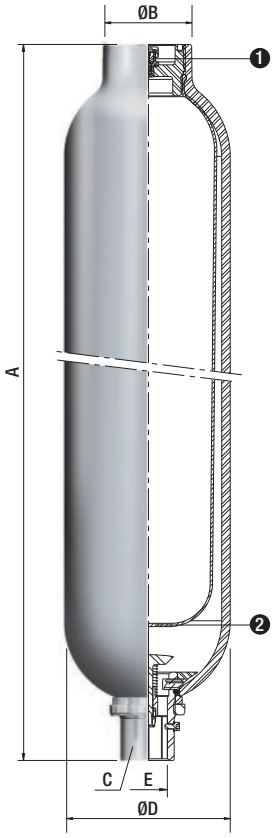
Standard construction characteristics

Material of body:	carbon steel
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØB	C	ØD	Peso
Type	Volume*	Pressure	P.F.C.	Gas valve					Weight
	cm^3	max bar	E			mm			kg
LAS 10	10000	350	1"1/4 GAS	5/8"UNF	740	90	50	168,5	28,5
LAS 12	12000	350	1"1/4 GAS	5/8"UNF	820	90	50	168,5	32,5
Type	Volume*	Pression	Connection fluide	Valve pour Gaz					Poids
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	C	ØD	Gewicht

* Volume nominale - Nominal volume - Nominal Volumen



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Sacca	Valvola gas	Serie guarnizioni
Type	Bladder	Gas valve	Gasket kit
	1	2	
LAS 10	MEMLA10*	VALPRE580NV2	PAR168PTFE
LAS 12	MEMLA10*	VALPRE580NV2	PAR168PTFE
Type	Vessie	Valve de gonflage	Etanchéité
Typ	Blase	Gasventil	Dichtungen

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	max. 350 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier aù carbone forgé
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille
Réception:	sur demande

Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 350 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz
Abnahme:	Auf Anfrage

Accumulatore a sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 500 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	max. 500 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	horizontal or vertical with gas valve upwards

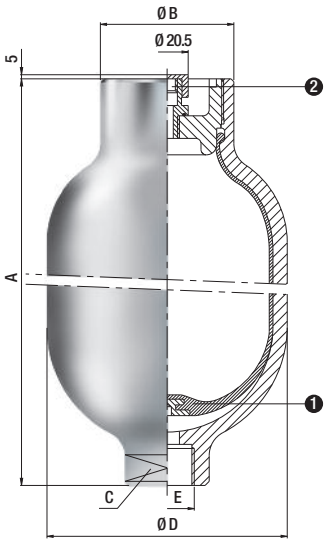
Standard construction characteristics

Material of body:	carbon steel
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØB	C	ØD	Peso
Type	Volume*	Pressure	P.F.C.	Gas valve					Weight
	cm^3	max bar	E	Tappo Plug Bouton Zapfen		mm			kg
LASS 0.75	750	500	M18x1,5	5/8"UNF	192	70	41	120	4,8
LASS 1	1000	500	M18x1,5	5/8"UNF	210	70	41	120	5,1
LASS 1.5	1500	500	M18x1,5	5/8"UNF	292	70	41	120	7,8
LASS 3	3000	500	3/4" GAS	5/8"UNF	485	70	41	120	12,3
LASS 4	4000	500	3/4" GAS	5/8"UNF	370	94	60	175	18,4
LASS 5	5000	500	3/4" GAS	5/8"UNF	415	94	60	175	20,9
Type	Volume*	Pression	Connection fluide	Valve pour Gaz					Poids
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	C	ØD	Gewicht

* Volume nominale - Nominal volume - Nominal Volumen



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Sacca	Valvola gas	Serie guarnizioni
Type	Bladder	Gas valve	Gasket kit
	❶	❷	
LASS 0.75	MEMLA075*	VALPRE580NV2	-
LASS 1	MEMLA075*	VALPRE580NV2	-
LASS 1.5	MEMLA1.5*	VALPRE580NV2	-
LASS 3	MEMLA3*	VALPRE580NV2	-
LASS 4	MEMLA4*	VALPRE580NV2	PAR168PTFE
LASS 5	MEMLA5*	VALPRE580NV2	PAR168PTFE
Type	Vessie	Valve de gonflage	Etanchéité
Typ	Blase	Gasventil	Dichtungen

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	max. 500 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier aù carbone forgé
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille
Réception:	sur demande

Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 500 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz
Abnahme:	Auf Anfrage

LAVType

Carbon steel body

Accumulatore con membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 330 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla membrana)
Montaggio:	in qualsiasi posizione

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 330 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the diaphragm)
Mounting:	any position

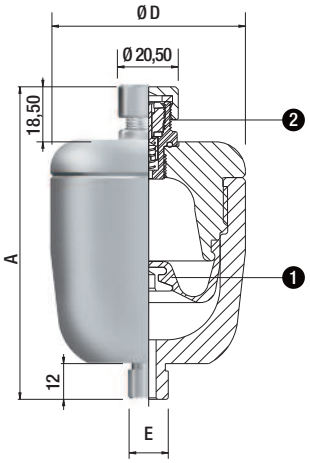
Standard construction characteristics

Material of body:	carbon steel
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØB	C	ØD	Peso
Type	Volume*	Pressure	P.F.C.	Gas valve					Weight
	cm^3	max bar	E	Tappo Plug Bouton Zapfen		mm			kg
LAV 0.025	25	330	1/4" GAS	5/8"UNF	105	-	-	65	1,2
LAV 0.05	50	330	1/4" GAS	5/8"UNF	105	-	-	65	1,4
Type	Volume*	Pression	Connection fluide	Valve pour Gaz					Poids
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	C	ØD	Gewicht

* Volume nominale - Nominal volume - Nominal Volumen



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	Diaphragm	Gas valve	Gasket kit
	1	2	
LAV 0.025	MEML005*	VALPRE580NV2	-
LAV 0.05	MEML005*	VALPRE580NV2	-
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 330 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour les membranes)
Montage:	dans n'importe quelle position

Caractéristiques constructives standard

Corps:	acier aù carbone forgé
Membrane:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 330 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Membran zugelassenen Temperaturen)
Montage:	in jeder Position

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz
Abnahme:	Auf Anfrage

Carbon steel body

Accumulatore con membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 330 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla membrana)
Montaggio:	in qualsiasi posizione

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 330 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the diaphragm)
Mounting:	any position

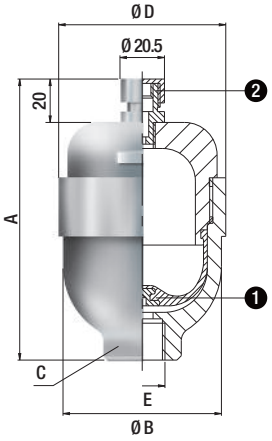
Standard construction characteristics

Material of body:	carbon steel
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØB	C	ØD	Peso
Type	Volume*	Pressure	P.F.C.	Gas valve					Weight
	cm^3	max bar	E	Tappo Plug Bouton Zapfen		mm			kg
LAV 0.1	100	330	M18x1,5	M28x1,5 • 5/8"UNF	128	73	36	77	1,9
LAV 0.35	350	330	M18x1,5	M28x1,5 • 5/8"UNF	157	94	40	99,5	2,9
Type	Volume*	Pression	Connection fluide	Valve pour Gaz					Poids
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	C	ØD	Gewicht

* Volume nominale - Nominal volume - Nominal Volumen



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	Diaphragm	Gas valve	Gasket kit
	1	2	
LAV 0.1	MEML01*	VALPRE580NV2	-
LAV 0.35	MEML035*NV1	VALPRE580NV2	-
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 330 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour les membranes)
Montage:	dans n'importe quelle position

Caractéristiques constructives standard

Corps:	acier aù carbone forgé
Membrane:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 330 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Membran zugelassenen Temperaturen)
Montage:	in jeder Position

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

LAVType

Carbon, stainless or duplex steel body

Accumulatore con membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 150/210/250 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla membrana)
Montaggio:	in qualsiasi posizione

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L acciaio duplex F51
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 150/210/250 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the diaphragm)
Mounting:	any position

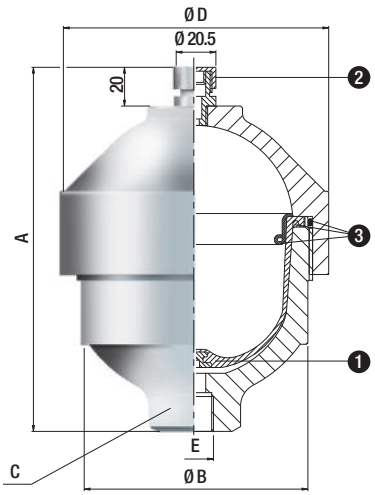
Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L duplex steel F51
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

		Stainless steel	Carbon steel	Duplex steel	Stainless-Duplex steel	Carbon steel						
Tipo	**Volume***	**Pressione**			**Attacco lato liquido**		**Valvola gas**	**A**	**ØB**	**C**	**ØD**	**Peso**
Type	**Volume***	**Pressure**			**P.F.C.**		**Gas valve**					**Weight**
	cm³	max bar			E		Tappo Plug Bouton Zapfen	mm				kg
LAV 0.5	500	150	210	210/250	1/2"NPT	M18x1,5	M28x1,5 • 5/8"UNF	172	94	40	116	4,1
LAV 0.75	750	150	210	210/250	3/4"NPT	M18x1,5	M28x1,5 • 5/8"UNF	226	115,5	41	137	6,1
Type	**Volume***	**Pression**			**Connection fluide**		**Valve pour Gaz**					**Poids**
Typ	**Volumen***	**Druck**			**Medium Anschluss**		**Gasventil**	**A**	**ØB**	**C**	**ØD**	**Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

		Stainless-Duplex steel	Carbon steel	
Tipo	**Membrana**	**Valvola gas**		**Serie guarnizioni**
Type	**Diaphragm**	**Gas valve**		**Gasket kit**
	❶	❷		❸
LAV 0.5	MEMLAV05*NV1	VALPRE58X	VALPRE580NV2	ANEMEM05 - ANETEN05
LAV 0.75	MEMLAV075*	VALPRE58X	VALPRE580NV2	ANEMEM075 - OR4450*
Type	**Membrane**	**Valve de gonflage**		**Etanchéité**
Typ	**Membran**	**Gasventil**		**Dichtungen**

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 150/210/250 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour les membranes)
Montage:	dans n'importe quelle position

Caractéristiques constructives standard

Corps:	acier aù carbone forgé acier inoxidable AISI 316L acier duplex F51
Membrane:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 150/210/250 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Membran zugelassenen Temperaturen)
Montage:	in jeder Position

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L Duplex Stahl F51
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

Carbon, stainless or duplex steel body

Accumulatore con membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 150/210/250 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla membrana)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L acciaio duplex F51
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 150/210/250 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the diaphragm)
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L duplex steel F51
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

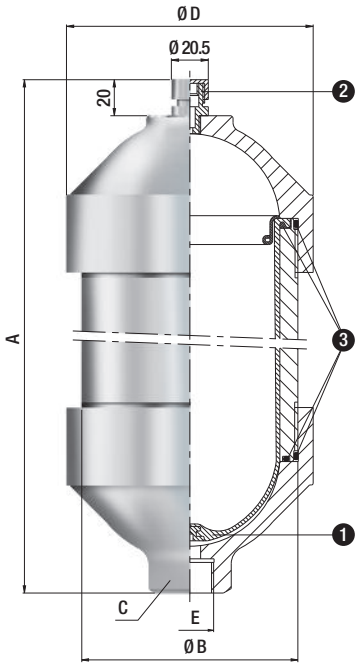
		Stainless steel	Carbon steel	Duplex steel	Stainless-Duplex steel	Carbon steel						
Tipo	**Volume***	**Pressione**			**Attacco lato liquido**		**Valvola gas**	**A**	**ØB**	**C**	**ØD**	**Peso**
Type	**Volume***	**Pressure**			**P.F.C.**		**Gas valve**					**Weight**
	cm³	max bar			E		Tappo Plug Bouton Zapfen	mm				kg
LAV 1.5	1500	150	210	210/250	3/4" NPT	M18x1,5	M28x1,5 • 5/8" UNF	285	120	41	137	10
LAV 2.5	2500	150	210	210/250	3/4" NPT	3/4" GAS	M28x1,5 • 5/8" UNF	440	120	41	137	14
Type	**Volume***	**Pression**			**Connection fluide**		**Valve pour Gaz**					**Poids**
Typ	**Volumen***	**Druck**			**Medium Anschluss**		**Gasventil**	**A**	**ØB**	**C**	**ØD**	**Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen

Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

		Stainless-Duplex steel	Carbon steel	
Tipo	**Membrana**	**Valvola gas**		**Serie guarnizioni**
Type	**Diaphragm**	**Gas valve**		**Gasket kit**
	❶	❷		❸
LAV 1.5	MEMLAV1.5*	VALPRE580X	VALPRE580NV2	ANEMEM075 - 2 OR4450* - OR4412*
LAV 2.5	MEMLAV2.5*	VALPRE580X	VALPRE580NV2	ANEMEM075 - 2 OR4450* - OR4412*
Type	**Membrane**	**Valve de gonflage**		**Etanchéité**
Typ	**Membran**	**Gasventil**		**Dichtungen**

* Secondo fluido - According to fluid - Selon fluide - Nach Medium



Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 150/210/250 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour les membranes)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier aù carbone forgé acier inoxidable AISI 316L acier duplex F51
Membrane:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 150/210/250 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Membran zugelassenen Temperaturen)
Montage:	beliebig waagrecht oder senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L Duplex Stahl F51
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

AMPType
Carbon steel body

Accumulatore con membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 330 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla membrana)
Montaggio:	in qualsiasi posizione

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

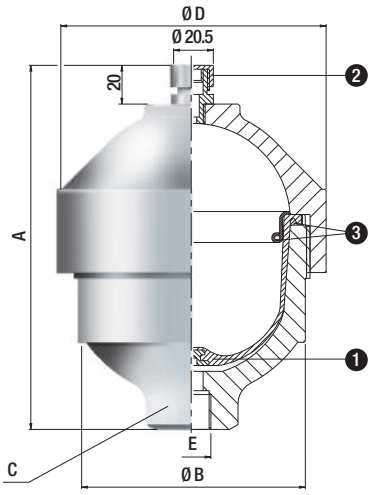
Operating pressure:	max. 330 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the diaphragm)
Mounting:	any position

Standard construction characteristics

Material of body:	carbon steel
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo / Type / Typ	Volume* / Volume* / Volumen*	Pressione / Pressure / Druck	Attacco lato liquido / P.F.C. / Medium Anschluss	Valvola gas / Gas valve / Gasventil	A	ØB	C	ØD	Peso / Weight / Gewicht
	cm^3	max bar	E	Tappo Plug Bouton Zapfen		mm			kg
AMP 0.5	500	330	M18x1,5	M28x1,5 • 5/8"UNF	172	94	40	116	4,1



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo / Type / Typ	Membrana / Diaphragm / Membran ❶	Valvola gas / Gas valve / Gasventil ❷	Serie guarnizioni / Gasket kit / Dichtungen ❸
AMP 0.5	MEMLAV05*NV1	VALPRE580NV2	ANEMEM05 - ANETEN05

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 330 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour les membranes)
Montage:	dans n'importe quelle position

Caractéristiques constructives standard

Corps:	acier au carbone forgé
Membrane:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 330 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Membran zugelassenen Temperaturen)
Montage:	in jeder Position

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz
Abnahme:	Auf Anfrage

BPL Type
Stainless steel body

Accumulatore con membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 30 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 2/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla membrana)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio inox AISI 316L
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 30 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 2/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the diaphragm)
Mounting:	horizontal or vertical with gas valve upwards

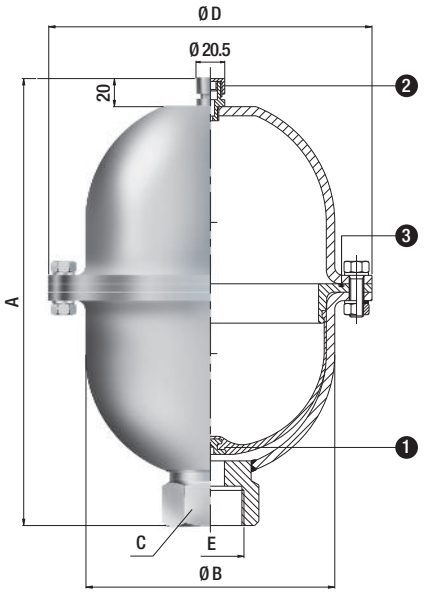
Standard construction characteristics

Material of body:	stainless steel AISI 316L
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume	Pressione	Attacco lato liquido	Valvola gas	A	ØB	C	ØD	Peso
Type	Volume*	Pressure	P.F.C.	Gas valve					Weight
	cm^3	max bar	E			mm			kg
BPL 1.5	1500	30	1" GAS	5/8" UNF	240	132	46	180	6,35
BPL 3	3000	30	1" GAS	5/8" UNF	272	177	60	230	9,3
BPL 5	5000	30	1"1/2 GAS	5/8" UNF	358	177	70	230	11,05
BPL 8.5	8000	30	2" GAS	5/8" UNF	450	202	70	270	17,4
Type	Volume*	Pression	Connection fluide	Valve pour Gaz					Poids
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	C	ØD	Gewicht

* Volume nominale - Nominal volume - Nominal Volumen



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	Diaphragm	Gas valve	Gasket kit
	❶	❷	❸
BPL 1.5	MEMBPL1.5*	VALPRE58X	OR3550*
BPL 3	MEMBPL3*	VALPRE58X	OR3750*
BPL 5	MEMBPL5*	VALPRE58X	OR3750*
BPL 8.5	MEMBPL85*	VALPRE58X	OR3850*
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 30 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 2/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour les membranes)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier inoxidable AISI 316L
Membrane:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 30 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 2/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Membran zugelassenen Temperaturen)
Montage:	beliebig waagrecht oder senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Edelstahl AISI 316L
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage

SPM Type

Carbon steel or stainless steel body

Smorzatore di pulsazioni e di rumore con sacca tubolare sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 250/330 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla membrana)
Montaggio:	in linea

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Pulsation and noise damper with tubolar exchangeable bladder

Technical data

Operating pressure:	max. 250/330 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	in line

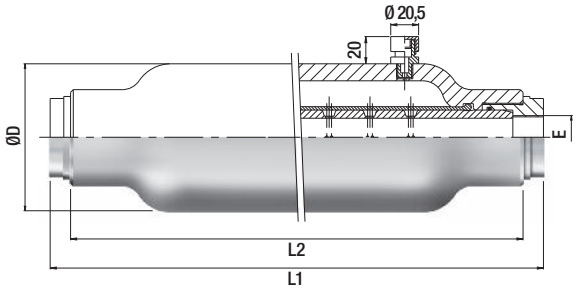
Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

		Stainless steel	Carbon steel							
Tipo	**Volume***	**Pressione**		**Portata max pompa**	**Pressione azoto**	**E**	**ØD**	**L1**	**L2**	**Peso**
Type	**Volume***	**Pressure**		**Max flowrate**	**Nitrogen pressure**					**Weight**
	cm^3	max bar		lit/min	max bar	gas		mm		kg
SPM 10	80	250	330	40	150	1/2"G	75	-	224	5,5
SPM 15	400	250	330	150	150	1"G	108	252	224	7
SPM 25	1000	250	330	150	150	1"G	108	402	374	20
SPM 40	1500	250	330	200	150	1"1/2G	108	602	522	27
Type	**Volume***	**Pression**		**Dèbit max**	**Pression azote**					**Poids**
Typ	**Volumen***	**Druck**		**Pumpenleistung**	**Stickstoffdruck**	**E**	**ØD**	**L1**	**L2**	**Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen



Amortisseur de pulsations et de bruit avec vessie tubulaire remplaçable

Caractéristiques techniques

Pression de service:	max. 250/330 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	en ligne

Caractéristiques constructives standard

Corps:	acier aù carbone forgé acier inoxidable AISI 316L
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Pulsations-und Lärmdämpfer mit schlauchförmiger und auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 250/330 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	in Linie

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

Carbon steel or stainless steel body

Accumulatore con sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 25÷40 / 30÷70 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 4/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	max. 25÷40 / 30÷70 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 4/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	horizontal or vertical with gas valve upwards

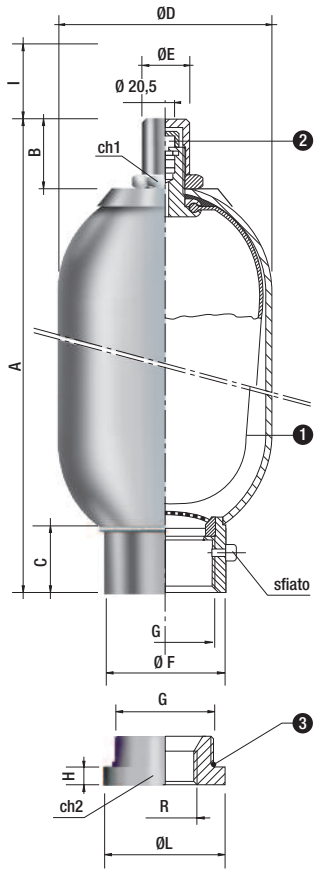
Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

		Stainless steel	Carbon steel														
Tipo	**Volume***	**Pressione**		**Attacco lato liquido**		**A**	**B**	**C**	**ØD**	**ØE**	**ØF**	**H**	**l****	**ØL**	**ch1**	**ch2**	**Peso**
Type	**Volume***	**Pressure**		**P.F.C.**													**Weight**
	cm³	max bar		G (ISO228)	R (ISO228)	mm											kg
SL 1.5	1500	40	70	2"	3/4"-1"-1"1/4	330	47	48	114	25	72	11	140	74	32	70	4,2
SL 3	2950	40	70	2"	3/4"-1"-1"1/4	510	47	48	114	25	72	11	140	74	32	70	6,0
SL 5	5000	30	50	2"1/2	1"-1"1/4 -1"1/2	423	47	48	168	25	88	11	140	88	32	80	8,0
SL 10	9500	25	30	4"	3"- 2"	475	60	50	219	55	130	14	140	130	70	120	22,5
SL 15	14500	25	30	4"	3"- 2"	615	60	50	219	55	130	14	140	130	70	120	29,0
SL 20	18800	25	30	4"	3"- 2"	755	60	50	219	55	130	14	140	130	70	120	36,0
SL 25	23500	25	30	4"	3"- 2"	900	60	50	219	55	130	14	140	130	70	120	43,0
SL 35	33500	25	30	4"	3"- 2"	1285	60	50	219	55	130	14	140	130	70	120	58,0
SL 55	50000	25	30	4"	3"- 2"	1765	60	50	219	55	130	14	140	130	70	120	83,0
Type	**Volume***	**Pression**		**Connection fluide**													**Poids**
Typ	**Volumen***	**Druck**		**Medium Anschluss**		**A**	**B**	**C**	**ØD**	**ØE**	**ØF**	**H**	**l****	**ØL**	**ch1**	**ch2**	**Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen **Con DP - Dispositivo di precarica e controllo / With DP - Gas filling and checking apparatus



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

		Stainless steel	Carbon steel	
Tipo	**Sacca**	**Valvola gas**		**OR**
Type	**Bladder**	**Gas valve**		**O-Ring**
	1	2		3
SL 1.5	0150S*	VALPRE58X	VALPRE580NV2	OR3218*
SL 3	0003S*	VALPRE58X	VALPRE580NV2	OR3218*
SL 5	0005S*	VALPRE58X	VALPRE580NV2	OR3281*
SL 10	0010S*	VALPRE58X	VALPRE580NV2	OR4425*
SL 15	0015S*	VALPRE58X	VALPRE580NV2	OR4425*
Type	**Vessie**	**Valve de gonflage**		**O-Ring**
Typ	**Blase**	**Gasventil**		**O-Ring**

		Stainless steel	Carbon steel	
Tipo	**Sacca**	**Valvola gas**		**OR**
Type	**Bladder**	**Gas valve**		**O-Ring**
	1	2		3
SL 20	0020S*	VALPRE58X	VALPRE580NV2	OR4425*
SL 25	0025S*	VALPRE58X	VALPRE580NV2	OR4425*
SL 35	0035S*	VALPRE58X	VALPRE580NV2	OR4425*
SL 55	0055S*	VALPRE58X	VALPRE580NV2	OR4425*
Type	**Vessie**	**Valve de gonflage**		**O-Ring**
Typ	**Blase**	**Gasventil**		**O-Ring**

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	max. 25÷40 / 30÷70 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 4/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier aù carbone forgé acier inoxidable AISI 316L
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 25÷40 / 30÷70 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 4/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	beliebig waagrecht oder senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

SI Type
Carbon steel body

Accumulatore con sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 360 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 4/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	max. 360 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 4/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	horizontal or vertical with gas valve upwards

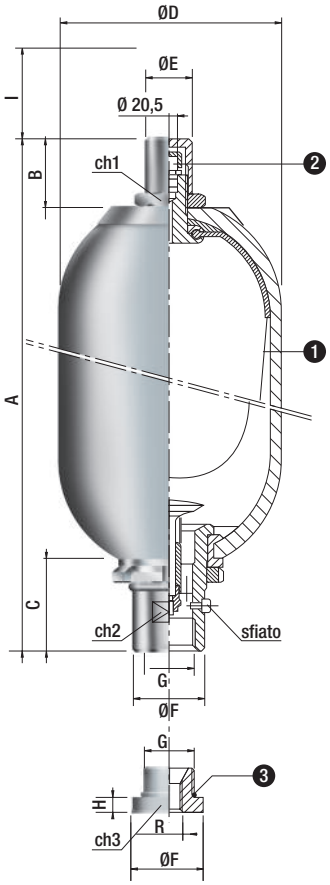
Standard construction characteristics

Material of body:	carbon steel
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido		A	B	C	ØD	ØE	ØF	H	l**	ch1	ch2	ch3	Peso
Type	Volume*	Pressure	P.F.C.													Weight
	cm³	max bar	G (ISO228)	R (ISO228)	mm											kg
SI 0.2	200	360	1/2"	-	250	22	40	53	20	26	-	140	24	23	-	1,7
SI 0.7	650	360	3/4"	-	280	47	52	90	25	36	11	140	32	32	32	4,2
SI 1	1000	360	3/4"	3/8"	295	47	52	114	25	36	11	140	32	32	32	5,2
SI 1.5	1500	360	3/4"	1/2"	355	47	52	114	25	36	11	140	32	32	32	6,3
SI 3	2950	360	11/4"	3/8"-1/2"-3/4"	553	47	65	114	25	53	11	140	32	50	48	11,0
SI 5	5000	360	11/4"	3/8"-1/2"-3/4"	458	47	65	168	25	53	11	140	32	50	48	15,0
SI 10	9100	360	2"		568	60	101	220	55	77	11	140	70	70	70	33,0
SI 15	14500	360	2"		718	60	101	220	55	77	11	140	70	70	70	43,0
SI 20	18200	360	2"	- 3/8",1/2", 3/4", 1", 1"1/4, 1"1/2	873	60	101	220	55	77	11	140	70	70	70	48,0
SI 25	23500	360	2"		1043	60	101	220	55	77	11	140	70	70	70	53,0
SI 35	33500	360	2"		1392	60	101	220	55	77	11	140	70	70	70	78,0
SI 55	50000	360	2"		1910	60	101	220	55	77	11	140	70	70	70	108,0
Type	Volume*	Pression	Connection fluide		A	B	C	ØD	ØE	ØF	H	l**	ch1	ch2	ch3	Poids
Typ	Volumen*	Druck	Medium Anschluss													Gewicht

* Volume nominale - Nominal volume - Nominal Volumen **Con DP - Dispositivo di precarica e controllo / With DP - Gas filling and checking apparatus



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Sacca	Valvola gas	Serie guarnizioni
Type	Bladder	Gas valve	Gasket kit
	1	2	3
SI 0.2	0002S*	VALPRE580NV2	-
SI 0.7	0007S*	VALPRE580NV2	OR2093*
SI 1	001S*	VALPRE580NV2	OR2093*
SI 1.5	0150S*	VALPRE580NV2	OR2093*
SI 3	0003S*	VALPRE580NV2	OR3150*
SI 5	0005S*	VALPRE580NV2	OR3150*
Type	Vessie	Valve de gonflage	Etanchéité
Typ	Blase	Gasventil	Dichtungen

Tipo	Sacca	Valvola gas	Serie guarnizioni
Type	Bladder	Gas valve	Gasket kit
	1	2	3
SI 10	0010S*	VALPRE580NV2	OR3218*
SI 15	0015S*	VALPRE580NV2	OR3218*
SI 20	0020S*	VALPRE580NV2	OR3218*
SI 25	0025S*	VALPRE580NV2	OR3218*
SI 35	0035S*	VALPRE580NV2	OR3218*
SI 55	0055S*	VALPRE580NV2	OR3218*
Type	Vessie	Valve de gonflage	Etanchéité
Typ	Blase	Gasventil	Dichtungen

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	max. 360 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 4/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier aù carbone forgé
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille
Réception:	sur demande

Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 360 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 4/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz
Abnahme:	Auf Anfrage

Stainless steel or duplex steel body

Accumulatore con sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 145/270 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 4/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio inox AISI 316L acciaio duplex F51
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	max. 145/270 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 4/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	stainless steel AISI 316L duplex steel F51
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Test:	on request

Dimensioni / Dimensions / Abmessungen

		Stainless steel	Duplex steel				
Tipo	**Volume***	**Pressione**		**Attacco lato liquido**	**Valvola gas**	**A**	**Peso**
Type	**Volume***	**Pressure**		**P.F.C.**	**Gas valve**		**Weight**
	cm³	max bar		E		mm	kg
SI 10	9100	145	270	2" GAS	5/8" UNF	568	33
SI 15	14500	145	270	2" GAS	5/8" UNF	718	43
SI 20	18200	145	270	2" GAS	5/8" UNF	873	48
SI 25	23500	145	270	2" GAS	5/8" UNF	1043	50
SI 35	33500	145	270	2" GAS	5/8" UNF	1392	78
SI 55	50000	145	270	2" GAS	5/8" UNF	1910	108
Type	**Volume***	**Pression**		**Connection fluide**	**Valve pour Gaz**		**Poids**
Typ	**Volumen***	**Druck**		**Medium Anschluss**	**Gasventil**	**A**	**Gewicht**

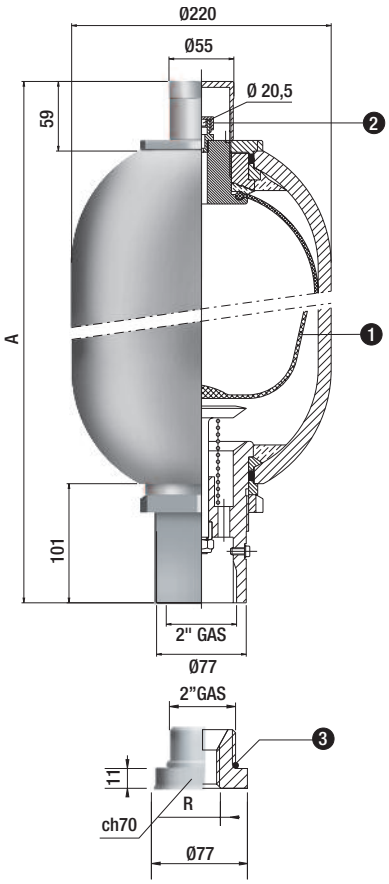
* Volume nominale - Nominal volume - Nominal Volumen

Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	**Sacca**	**Valvola gas**	**Serie guarnizioni**
Type	**Bladder**	**Gas valve**	**Gasket kit**
	❶	❷	❸
SI 10	0010S*	VALPRE58X	OR3218*
SI 15	0015S*	VALPRE58X	OR3218*
SI 20	0020S*	VALPRE58X	OR3218*
SI 25	0025S*	VALPRE58X	OR3218*
SI 35	0035S*	VALPRE58X	OR3218*
SI 55	0055S*	VALPRE58X	OR3218*
Type	**Vessie**	**Valve de gonflage**	**Etanchéité**
Typ	**Blase**	**Gasventil**	**Dichtungen**

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

R=
0 (cieca)
3/8"
1/2"
3/4"
1"
1"1/4
1"1/2



Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	max. 145/270 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 4/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier inoxidable AISI 316L acier duplex F51
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande

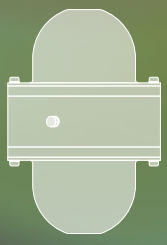
Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 145/270 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 4/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Edelstahl AISI 316L Duplex Stahl F51
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage



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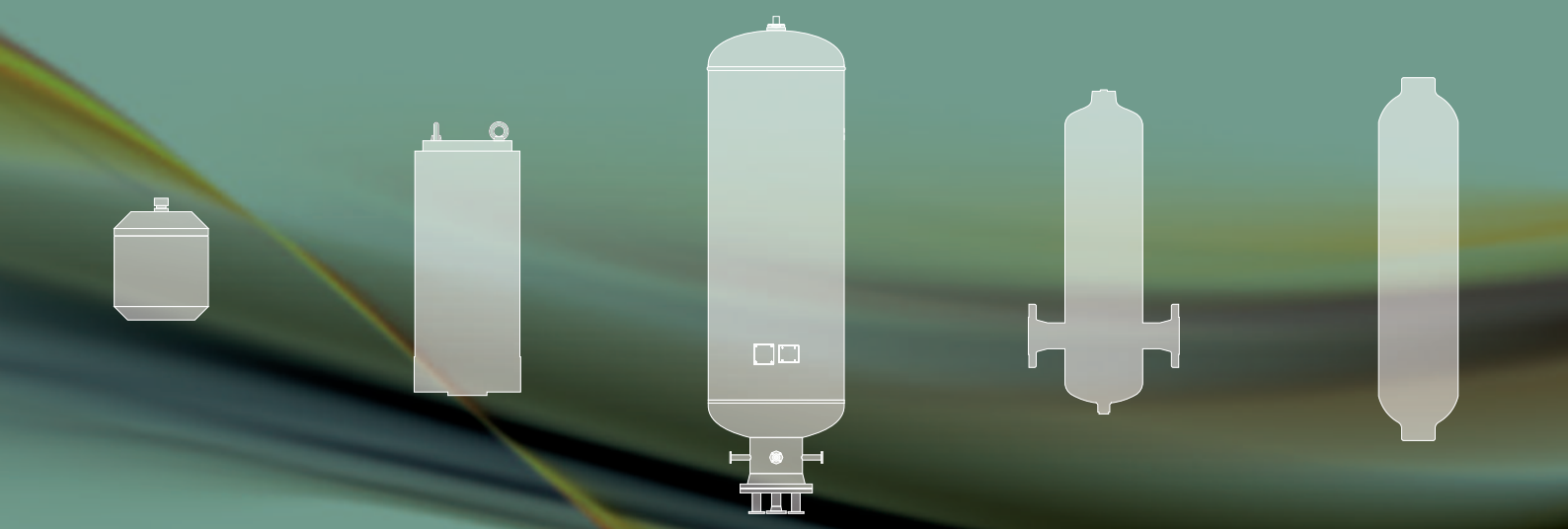
Special Types



APT Type

Stainless steel body

Smorzatore di pulsazioni con membrana in PTFE sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 30 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 10/1
Temperatura di esercizio:	-20°C / +140°C
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio AISI 316L
Membrana:	PTFE
Valvola attacco gas:	5/8"UNF versione 1
Collaudo:	a richiesta
Disponibile anche per Pmax:	60/100/150/200/300/400 bar

Pulsation damper with exchangeable PTFE diaphragm

Technical data

Operating pressure:	max. 30 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 10/1
Operating temperature:	-20°C / +140°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	stainless steel AISI 316L
Diaphragm:	PTFE
Gas connection valve:	5/8"UNF version 1
Test:	on request
Also available for Pmax :	60/100/150/200/300/400 bar

****Dimensioni / Dimensions / Abmessungen**

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØB	ØD	Peso	Fig
Type	Volume*	Pressure	P.F.C.	Gas valve				Weight	
	cm^3	max bar	E			mm		kg	
APT 0.05	50	30	1/2" GAS	5/8" UNF	73,4		150	6	I
APT 0.1	100	30	1/2" GAS	5/8" UNF	87		200	14	I
APT 0.35	350	30	1/2" GAS	5/8" UNF	107		200	14,7	I
APT 0.5	500	30	1/2" GAS	5/8" UNF	107,2		250	14,5	II
APT 0.75	750	30	1/2" GAS	5/8" UNF	137		250	21,5	II
APT 1	1000	30	3/4" GAS	5/8" UNF	181	177	230	16,4	III
APT1.5	1500	30	3/4" GAS	5/8" UNF	218	177	230	17,6	III
APT3	3000	30	1"1/2 GAS	5/8" UNF	253	177	280	31,5	III
APT5	5000	30	1"1/2 GAS	5/8" UNF	300	202	300	38,5	III
Type	Volume*	Pression	Connection fluide	Valve pour Gaz				Poids	
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	ØD	Gewicht	FIG

* Volume nominale - Nominal volume - Nominal Volumen

** Altri volumi su richiesta - Other volumes on request - Autres volumes sur demande - Weitere Volumen auf Anfrage zur Verfügung

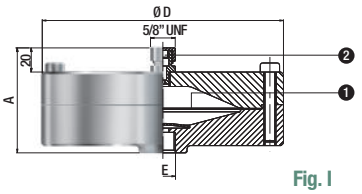


Fig. I

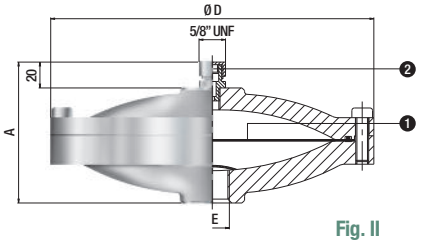


Fig. II

Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	Diaphragm	Gas valve	Gasket kit
	❶	❷	❸
APT 0.1	MEM164PTFE	VALPRE58X	-
APT 0.35	MEM164PTFE	VALPRE58X	-
APT 0.5	MEM220PTFE	VALPRE58X	-
APT 0.75	MEM220PTFE	VALPRE58X	-
APT 1	MEM180PTFE	VALPRE58X	OR3750VIT
APT1.5	MEM180PTFE	VALPRE58X	OR3750VIT
APT 3	MEM230PTFE	VALPRE58X	OR4875VIT
APT 5	MEM230PTFE	VALPRE58X	OR4875VIT
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen

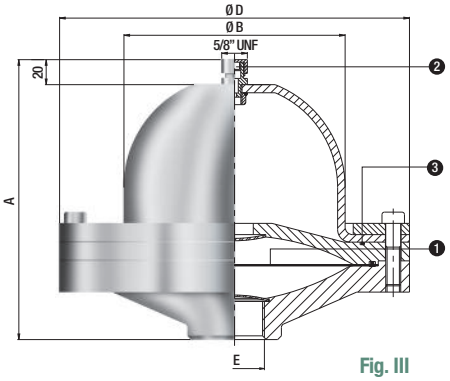


Fig. III

Amortisseur de pulsations avec membrane en PTFE remplaçable

Caractéristiques techniques

Pression de service:	max. 30 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 10/1
Temperature de service:	-20°C / +140°C
Montage:	indifférente horizontal ou vertical avecraccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier inoxydable AISI 316L
Membrane:	PTFE
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande
Aussi disponible pour Pmax:	60/100/150/200/300/400 bar

Pulsationsdämpfer mit auswechselbarer PTFE Membran

Technische Angaben

Betriebsdruck:	max. 30 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 10/1
Betriebstemperaturbereich:	-20°C / +140°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Edelstahl AISI 316L
Membran:	PTFE
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage
Auch lieferbar für Pmax:	60/100/150/200/300/400 bar

Smorzatore di pulsazioni con membrana in PTFE sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 10 bar
Precarica gas (solo azoto):	max 90% P. min. di esercizio
Rapporto pressione ammessa:	max ≤ 10/1
Temperatura di esercizio:	PVC: -10°C / +30°C PP, PVDF, PVC-C: -10°C / +40°C
Montaggio:	orizzontale o verticale con valvola rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	AISI 316L + plastica
Membrana:	PTFE
Valvola attacco gas:	5/8" UNF versione 1
Collaudo:	a richiesta

Pulsation damper with exchangeable PTFE diaphragm

Technical data

Operating pressure:	max. 10 bar
Gas filling (nitrogen only):	max 90% of min. operating pressure
Admissible pressure ratio:	max ≤ 10/1
Operating temperature:	PVC: -10°C / +30°C PP, PVDF, PVC-C: -10°C / +40°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	AISI 316L + plastic
Diaphragm:	PTFE
Gas connection valve:	5/8" UNF version 1
Test:	on request

****Dimensioni / Dimensions / Abmessungen**

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØD	Peso	FIG
Type	Volume*	Pressure	P.F.C.	Gas valve			Weight	
	cm^3	max bar	E		mm		kg	
APT 0.1	100	10	1/2" GAS	5/8" UNF	98,6	200	8,3	I
APT 0.35	350	10	1/2" GAS	5/8" UNF	117,6	200	8,9	I
APT 0.5	500	10	1/2" GAS	5/8" UNF	119,2	250	13,6	I
APT 0.75	750	10	1/2" GAS	5/8" UNF	129,2	250	14,8	I
APT 1	1000	10	3/4" GAS	5/8" UNF	182,4	230	10,3	II
APT 1.5	1500	10	3/4" GAS	5/8" UNF	211,4	230	11,5	II
APT 3	3000	10	1"1/2 GAS	5/8" UNF	250	280	23,6	II
APT 5	5000	10	1"1/2 GAS	5/8" UNF	290	300	24,5	II
Type	Volume*	Pression	Connection fluide	Valve pour Gaz			Poids	
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØD	Gewicht	FIG

* Volume nominale - Nominal volume - Nominal Volumen
** Peso riferito a PVC - Weight based on PVC - Poids sur la base de PVC - Bezogen auf PVC

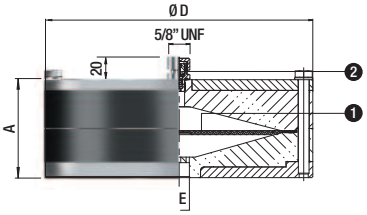


Fig. I

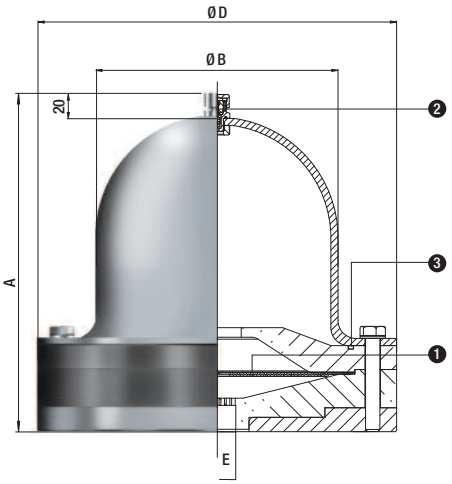


Fig. II

Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	Diaphragm	Gas valve	Gasket kit
	❶	❷	❸
APT 0.1	MEM164PTFE	VALPRE58X	-
APT 0.35	MEM164PTFE	VALPRE58X	-
APT 0.5	MEM220PTFE	VALPRE58X	-
APT 0.75	MEM220PTFE	VALPRE58X	-
APT 1	MEM180PTFE	VALPRE58X	OR3750VIT
APT 1.5	MEM180PTFE	VALPRE58X	OR3750VIT
APT 3	MEM230PTFE	VALPRE58X	OR4875VIT
APT 5	MEM230PTFE	VALPRE58X	OR4875VIT
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen

Amortisseure de pulsations avec membrane PTFE remplaceable

Caractéristiques techniques

Pression de service:	max. 10 bar
Gonflage (uniquement azote):	max 90% de la pression de service inférieure
Rapport de pression admissible:	max ≤ 10/1
Temperature de service:	PVC: -10°C / +30°C PP, PVDF, PVC-C: -10°C / +40°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	AISI 316L + plastique
Membrane:	PTFE
Valve de gonflage:	5/8" UNF exécution 1
Réception:	sur demande

Pulsationsdämpfer mit auswechselbarer PTFE Membran

Technische Angaben

Betriebsdruck:	max. 10 bar
Gasfüllung: (Ausschließlich Stickstoff)	max 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max ≤ 10/1
Betriebstemperaturbereich:	PVC: -10°C / +30°C PP, PVDF, PVC-C: -10°C / +40°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	AISI 316L + Kunstoff
Membran:	PTFE
Gasanschluss:	5/8" UNF Variante 1
Abnahme:	Auf Anfrage

APT Type

Stainless steel and plastic body

Smorzatore di pulsazioni con membrana in PTFE sostituibile per liquidi aggressivi

Caratteristiche tecniche

Pressione di esercizio:	max. 10 bar
Precarica gas (solo azoto):	max 90% P. min. di esercizio
Rapporto pressione ammessa:	max ≤ 10/1
Temperatura di esercizio:	PTFE: -20°C / +40°C
Montaggio:	orizzontale o verticale con valvola rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	AISI 316L + PTFE
Membrana:	PTFE
Valvola attacco gas:	5/8" UNF versione 1
Collaudo:	a richiesta

Pulsation damper with exchangeable PTFE diaphragm for agressive liquids

Technical data

Operating pressure:	max. 10 bar
Gas filling (nitrogen only):	max 90% of min. operating pressure
Admissible pressure ratio:	max ≤ 10/1
Operating temperature:	PTFE: -20°C / +40°
Mounting:	horizontal or vertical with gas valve upwards

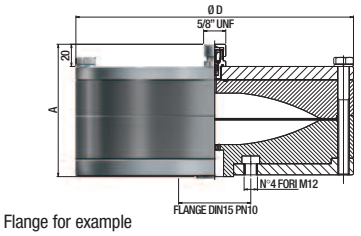
Standard construction characteristics

Material of body:	AISI 316L + PTFE
Diaphragm:	PTFE
Gas connection valve:	5/8" UNF version 1
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØD	Peso**	FIG
Type	Volume*	Pressure	P.F.C.	Gas valve			Weight**	
	cm^3	max bar	E		mm		kg	
APT 0.1	100	10	1/2" ANSI 150 RF	5/8" UNF	98,6	200	9,5	I
APT 0.35	350	10	1/2" ANSI 150 RF	5/8" UNF	117,6	200	10,4	I
APT 0.5	500	10	1/2" ANSI 150 RF	5/8" UNF	119,2	250	15,8	I
APT 0.75	750	10	1/2" ANSI 150 RF	5/8" UNF	129,2	250	17,3	I
APT 1	1000	10	3/4" ANSI 150 RF	5/8" UNF	182,4	230	11,8	II
APT 1.5	1500	10	3/4" ANSI 150 RF	5/8" UNF	211,4	230	12,9	II
APT 3	3000	10	1"1/2 ANSI 150 RF	5/8" UNF	250	280	26,2	II
APT 5	5000	10	1"1/2 ANSI 150 RF	5/8" UNF	290	300	27,2	II
Type	Volume*	Pression	Connection fluide	Valve pour Gaz			Poids**	
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØD	Gewicht**	FIG

* Volume nominale - Nominal volume - Nominal Volumen

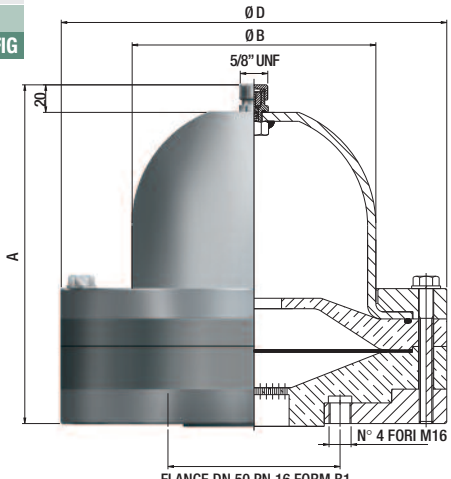


Flange for example

Fig. I

Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	Diaphragm	Gas valve	Gasket kit
	❶	❷	❸
APT 0.1	MEM164PTFE	VALPRE58X	OR2075NBR
APT 0.35	MEM164PTFE	VALPRE58X	OR2075NBR
APT 0.5	MEM220PTFE	VALPRE58X	OR2075NBR
APT 0.75	MEM220PTFE	VALPRE58X	OR2075NBR
APT 1	MEM180PTFE	VALPRE58X	OR3750VIT
APT 1.5	MEM180PTFE	VALPRE58X	OR3750VIT
APT 3	MEM230PTFE	VALPRE58X	OR3775VIT
APT 5	MEM230PTFE	VALPRE58X	OR3775VIT
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen



Flange for example

Fig. II

Amortisseur de pulsations avec membrane en PTFE remplaçable

Caractéristiques techniques

Pression de service:	max. 10 bar
Gonflage (uniquement azote):	max 90% de la pression de service inférieure
Rapport de pression admissible:	max ≤ 10/1
Temperature de service:	PTFE: -20°C / +40°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	AISI 316L + PTFE
Membrane:	PTFE
Valve de gonflage:	5/8" UNF exécution 1
Réception:	sur demande

Pulsationsdämpfer mit auswechselbarer PTFE-Membrane

Technische Angaben

Betriebsdruck:	max. 10 bar
Gasfüllung: (Ausschließlich Stickstoff)	max 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max ≤ 10/1
Betriebstemperaturbereich:	PTFE: -20°C / +40°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	AISI 316L + PTFE
Membran:	PTFE
Gasanschluss:	5/8" UNF Variante 1
Abnahme:	Auf Anfrage

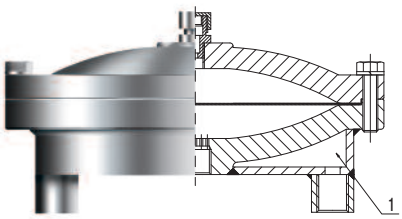
Possible options for APT dampers

Camicia di riscaldamento/raffreddamento
Solo per serie a pagina 46

Chemise de rechauffement/rafraichement
Soulement pour version sur page 46

Heating/cooling jacket
Only for version on page 46

Heiz-/Kühlmantel
Nur für Ausführung wie auf Seite 46

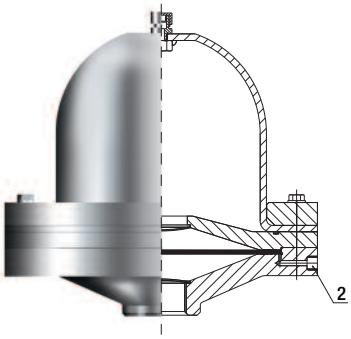


Segnalatore di rottura membrana

Indication rupture membrane

Invication of diaphragm rupture

Membranbruch-Angabe

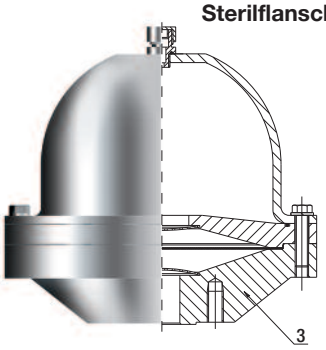


Flangiato: UNI, DIN EN 1092-1, ANSI, API e Asettiche (alimentari o farmaceutici)

Avec brides: UNI, DIN EN 1092-1, ANSI, API et Stérile (alimentaire et pharma)

Flanged: UNI, DIN EN 1092-1, ANSI, API and Aseptic (food or pharma)

Mit Flanschen: UNI, DIN EN 1092-1, ANSI, API und Sterilflanschen (für Lebensmittel und Pharma)



Nota: Tutte le opzioni sopra elencate possono essere realizzate anche su un solo smorzatore
Attention: Tous les options indiqués peuvent etre appliqués sur le mème amortisseur

Note: All options can be applied also to the same damper

Achtung: Alle angegebenen Sonderausführungen können auch gleichzeitig auf dem gleichen Dämpfer verwendet werden

APTD Type

Stainless steel body

Smorzatore di pulsazioni passante con 2 membrane in PTFE sostituibili

Caratteristiche tecniche

Pressione di esercizio:	max. 30 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 10/1
Temperatura di esercizio:	-20°C / +140°C
Montaggio:	in linea

Caratteristiche costruttive standard

Costruzione corpo:	acciaio inox AISI 316L
Membrana:	PTFE
Valvola attacco gas:	5/8"UNF versione 1
Collaudo:	a richiesta
Disponibile anche per Pmax:	60/100/150/200/300/400 bar

Through pulsation damper with 2 exchangeable PTFE diaphragms

Technical data

Operating pressure:	max. 30 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 10/1
Operating temperature:	-20°C / +140°C
Mounting:	in line

Standard construction characteristics

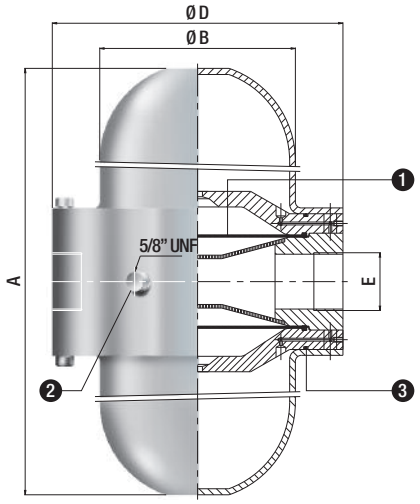
Material of body:	stainless steel AISI 316L
Diaphragm:	PTFE
Gas connection valve:	5/8"UNF version 1
Test:	on request
Also available for Pmax :	60/100/150/200/300/400 bar

****Dimensioni / Dimensions / Abmessungen**

Tipo Type	Volume* Volume*	Pressione Pressure	Attacco lato liquido P.F.C.	Valvola gas Gas valve	A	ØB	ØD	Peso Weight
	cm^3	max bar	E			mm		kg
APTD3	3000	30	1" GAS	5/8" UNF	362	177	230	35
APTD5	5000	30	1"1/2 GAS	5/8" UNF	420	177	300	38,8
APTD10	10000	30	2" GAS	5/8" UNF	508	202	300	81,8
APTD12	12000	30	2" GAS	5/8" UNF	588	202	300	105
Type	Volume*	Pression	Connection fluide	Valve pour Gaz				Poids
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	ØD	Gewicht

* Volume nominale - Nominal volume - Nominal Volumen

** Altri volumi e pressioni tra 0.1 e12 litri su richiesta - Other volumes between 0.1 and 12 litres available on request - Autres volumes entre 0.1 et 12 litres disponibles sur demande - Weitere Volumen zwischen 0.1 und 12 Liter auf Anfrage zur Verfügung



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo Type	Membrana Diaphragm	Valvola gas Gas valve	Serie guarnizioni Gasket kit
	❶	❷	❸
APTD3	MEM180PTFE	VALPRE58X	OR3750VIT
APTD5	MEM230PTFE	VALPRE58X	OR4875VIT
APTD7.5	MEM230PTFE	VALPRE58X	OR4875VIT
APTD10	MEM230PTFE	VALPRE58X	OR4875VIT
APTD12	MEM230PTFE	VALPRE58X	OR4875VIT
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen

Amortisseur de pulsations à flux passant avec 2 membranes en PTFE remplaçables

Caractéristiques techniques

Pression de service:	max. 30 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 10/1
Temperature de service:	-20°C / +140°C
Montage:	en ligne

Caractéristiques constructives standard

Corps:	acier inoxydable AISI 316L
Membrane:	PTFE
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande
Aussi disponible pour Pmax:	60/100/150/200/300/400 bar

Durchströmter Pulsationsdämpfer mit 2 auswechselbaren PTFE-Membranen

Technische Angaben

Betriebsdruck:	max. 30 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 10/1
Betriebstemperaturbereich:	-20°C / +140°C
Montage:	in Linie

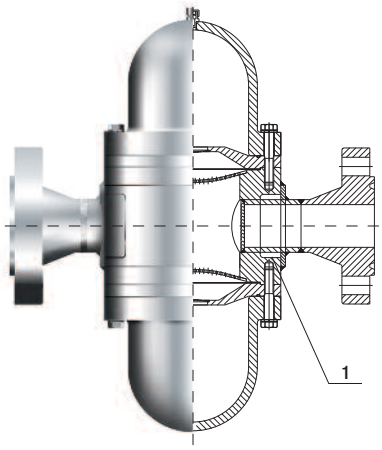
Standard Konstruktionsmerkmale

Gehäuse:	Edelstahl AISI 316L
Membran:	PTFE
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage
Auch lieferbar für Pmax:	60/100/150/200/300/400 bar

Possible options for APTD dampers

Camicia di riscaldamento/raffreddamento

Chemise de rechauffement/rafraichement

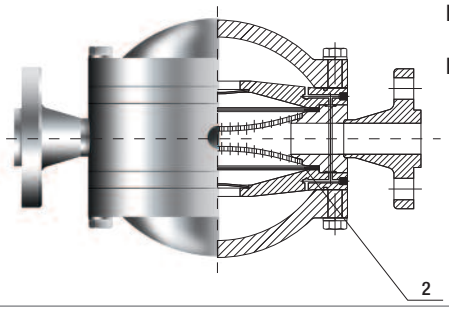


Heating/cooling jacket

Heiz/Kühlmantel

Segnalatore di rottura membrana

Indication rupture membrane

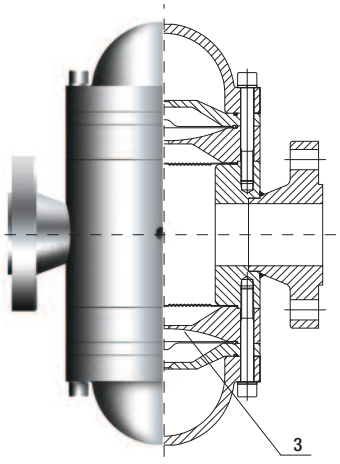


Indication of diaphragm rupture

Membranbruch-Angabe

Elettropulitura interna con liquido di separazione (compatibile con il liquido pompato) per applicazioni alimentari

Electrofinissage de l'intérieur et liquide de séparation (compatible avec le liquide pompé) pour applications alimentaires et en pharma

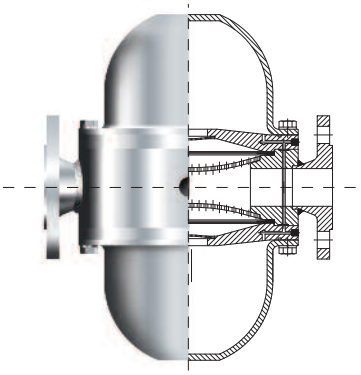


Electropolish of the inside surface and separating liquid (adapted to process liquid) for food and pharma applications

Elektropolierung und Trennflüssigkeit (kompatibel mit dem Medium) für Lebensmittel- und pharmazeutische Anwendungen

Flangiato: UNI, DIN EN 1092-1, ANSI, API e ASETTICHE (alimentari o farmaceutici)

Avec brides: UNI, DIN EN 1092-1, ANSI, API et Stérile (alimentaire et pharma)



Flanged: UNI, DIN EN 1092-1, ANSI, API and ASEPTIC (food or pharma)

Mit Flanschen: UNI, DIN EN 1092-1, ANSI, API und (für Lebensmittel und Pharma)

Nota: Tutte le opzioni sopra elencate possono essere realizzate anche su un solo smorzatore
Attention: Tous les options indiqués peuvent etre appliqués sur le mème amortisseur

Note: All options can be applied also to the same damper

Achtung: Alle angegebenen Sonderausführungen können auch gleichzeitig auf dem gleichen Dämpfer verwendet werden

APTL Type

Carbon steel or stainless steel body

Smorzatore di pulsazioni con membrane sostituibili e anelli di rinforzo

Caratteristiche tecniche

Pressione di esercizio:	max 30 bar
Precarica gas (solo azoto):	max 90% P.min esercizio
Rapportodi pressione ammessa:	max ≤ 10/1
Temperatura di esercizio:	-20°C / +140°C
Montaggio:	orizzontale o verticale con valvola rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio AISI 316L
Anelli di rinforzo:	acciaio AISI 316L
Viteria:	acciaio AISI 316L
Membrana:	PTFE o gomma (NBR, FKM, EPDM)
Valvola attacco gas:	5/8" UNF versione 1
Collaudo:	a richiesta

Pulsation damper with replaceable diaphragm and reinforcement rings

Technical data

Operating pressure:	max 30 bar
Gas filling (nitrogen only):	max 90% P.min operating pressure
Admissible pressure ratio:	max ≤ 10/1
Operating temperature:	-20°C / +140°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

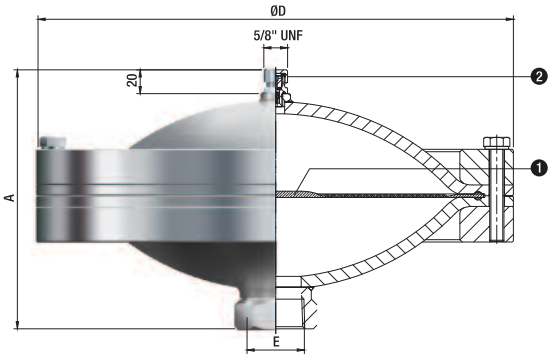
Body material:	stainless steel AISI 316L
Reinforcement rings:	stainless steel AISI 316L
Screws and nuts:	stainless steel AISI 316L
Diaphragm:	PTFE or rubber (NBR, FKM, EPDM)
Gas filling valve:	5/8" UNF version 1
Test:	on request

****Dimensioni / Dimensions / Abmessungen**

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	ØA	ØD	Peso
Type	Volume*	Pressure	P.F.C.	Gas valve			Weight
	lt	max bar	E		mm		kg
APTL 0,1	0,1	30	1/2" GAS	5/8" UNF	105,5	200	5,9
APTL 0,35	0,35	30	1/2" GAS	5/8" UNF	114	200	6,7
APTL 0,5	0,5	30	1/2" GAS	5/8" UNF	113,6	260	20,9
APTL 0,75	0,75	30	1/2" GAS	5/8" UNF	133	260	21,2
APTL 1	1	30	1" GAS	5/8" UNF	125,5	330	24,7
APTL 1,5	1,5	30	1" GAS	5/8" UNF	155	330	41,7
APTL 2,5	2,5	30	1.1/2" GAS	5/8" UNF	168	330	40,9
APTL 3	3	30	1.1/2" GAS	5/8" UNF	194,8	330	41,4
APTL 5	5	30	1.1/2" GAS	5/8" UNF	217,9	400	47,5
APTL 10	10	30	2" GAS	5/8" UNF	280	450	93,5
Type	Volume*	Pression	Connection fluide	Valve pour Gaz			Poids
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	ØA	ØD	Gewicht

* Volume nominale - Nominal volume - Nominal Volumen

** Altri volumi e pressioni su richiesta - Other volumes and pressures on request - Autres volumes et pressions sur demande - Weitere Volumen und Drücke auf Anfrage



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas
Type	Diaphragm	Gas valve
	1	2
APTL 0,1	MEM164PTFE	VALPRE58X
APTL 0,35	MEM164PTFE	VALPRE58X
APTL 0,5	MEM220PTFE	VALPRE58X
APTL 0,75	MEM220PTFE	VALPRE58X
APTL 1	MEM280PTFE	VALPRE58X
Type	Membrane	Valve de gonflage
Typ	Membran	Gasventil

Tipo	Membrana	Valvola gas
Type	Diaphragm	Gas valve
	1	2
APTL 1,5	MEM280PTFE	VALPRE58X
APTL 2,5	MEM280PTFE	VALPRE58X
APTL 3	MEM280PTFE	VALPRE58X
APTL 5	MEM350PTFE	VALPRE58X
APTL 10	MEM400PTFE	VALPRE58X
Type	Membrane	Valve de gonflage
Typ	Membran	Gasventil

Amortisseur de pulsations avec membrane remplaçable et anneaux de renforcement

Caractéristiques techniques

Pression de service:	max 30 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 10/1
Temperature de service:	-20°C / +140°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier inoxydable AISI 316L
Anneaux de renforcement:	acier inoxydable AISI 316L
Vis	acier inoxydable AISI 316L
Membrane:	PTFE ou élastomère (NBR, FKM, EPDM
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande

Pulsationsdämper mit auswechselbarer Membrane und Verstärkungsringen

Technische Angaben

Betriebsdruck:	max 30 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 10/1
Betriebstemperaturbereich:	-20°C / +140°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Edelstahl AISI 316L
Verstärkungsringe:	Edelstahl AISI 316L
Schrauben und Muttern:	Edelstahl AISI 316L
Membran:	PTFE oder Elastomer (NBR, FKM, EPDM)
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage

Carbon steel or stainless steel body

Smorzatore di pulsazioni con soffietto metallico

Caratteristiche tecniche

Precarica gas (solo azoto):	in funzione della Pressione di esercizio e temperatura
Temperatura di esercizio:	-150°C / +300°C
Montaggio:	orizzontale o verticale con valvola rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L
Soffietto:	AISI 316L
Valvola attacco gas:	5/8" UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Note: volumi, temperatura e pressioni a richiesta

Pulsation damper with metal bellows

Technical data

Gas filling (nitrogen only):	according the operating pressure and temperature
Operating temperature:	-150°C / +300°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L
Bellows:	AISI 316L
Gas connection valve:	5/8" UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Attention: volume, temperature and pressure on request

Amortisseur de pulsations avec souflette metalique

Caractéristiques techniques

Gonflage (uniquement azote):	selon pression et temperature de service
Temperature de service:	-150°C / +300°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier au carbone forgé acier inoxydable AISI 316L
Souflette:	AISI 316L
Valve de gonflage:	5/8" UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Attention: volume, temperature et pression sur demande

Pulsationsdämpfer mit Metallfaltenbalg

Technische Angaben

Gasfüllung: (Ausschließlich Stickstoff)	je nach Betriebsdruck und Temperatur
Betriebstemperaturbereich:	-150°C / +300°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L
Faltenbals:	AISI 316L
Gasanschluss:	5/8" UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	auf Anfrage

Achtung: Volumen, Temperatur und Druck auf Anfrage

ASP Type

Carbon steel or stainless steel body

Smorzatore di pulsazioni con soffietto in PTFE

Caratteristiche tecniche

Pressione di esercizio:	max. 35 bar
Precarica gas (solo azoto):	in funzione della pressione di esercizio e della temperatura
Temperatura di esercizio:	-20°C / +140°C
Montaggio:	orizzontale o verticale con valvola rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L
Soffietto:	PTFE
Valvola attacco gas:	5/8" UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Note: volumi a richiesta

Pulsation damper with PTFE bellows

Technical data

Operating pressure:	max. 35 bar
Gas filling (nitrogen only):	according to the operating pressure and temperature
Operating temperature:	-20°C / +140°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L
Bellows:	PTFE
Gas connection valve:	5/8" UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Attention: volume on request

Amortisseur de pulsations avec souflette PTFE

Caractéristiques techniques

Pression de service:	max. 35 bar
Gonflage (uniquement azote):	selon pression et temperature de service
Temperature de service:	-20°C / +140°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier au carbone forgé acier inoxydable AISI 316L
Souflette:	PTFE
Valve de gonflage:	5/8" UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Attention: volume sur demande

Pulsationsdämpfer mit PTFE-Faltenbalg

Technische Angaben

Betriebsdruck:	max. 35 bar
Gasfüllung: (Ausschließlich Stickstoff)	je nach Betriebsdruck und Temperatur
Betriebstemperaturbereich:	-20°C / +140°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L
Faltenbals:	PTFE
Gasanschluss:	5/8" UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	auf Anfrage

Achtung: Volumen auf Anfrage

Carbon, stainless or duplex steel body

Smorzatore di pulsazioni con membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max 1000 bar
Precarica gas (solo azoto):	max 90% P. min. di esercizio
Rapporto pressione ammessa:	max ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla membrana)
Montaggio:	orizzontale o verticale con valvola rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L acciaio duplex F51
Membrana:	secondo fluido
Valvola attacco gas:	5/8" UNF versione 1
Collaudo:	a richiesta
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)

Note: volumi 0.05, 0.1, 0.35, 0.5 - pressioni a richiesta

Pulsation damper with exchangeable diaphragm

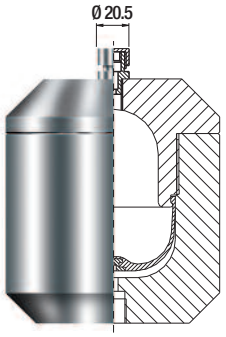
Technical data

Operating pressure:	max 1000 bar
Gas filling (nitrogen only):	max 90% of min. operating pressure
Admissible pressure ratio:	max ≤ 6/1
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the diaphragm)
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L duplex steel F51
Diaphragm:	according to fluid
Gas connection valve:	5/8" UNF version 1
Test:	on request
Painting:	anti-rust primer (only carbon steel)

Attention: volumes 0.05, 0.1, 0.35, 0.5 - pressure on request



Amortisseur de pulsations avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max 1000 bar
Gonflage (uniquement azote):	max 90% de la pression de service inférieure
Rapport de pression admissible:	max ≤ 6/1
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier au carbone forgé acier inoxydable AISI 316L duplex acier F51
Membrane:	selon fluide
Valve de gonflage:	5/8" UNF exécution 1
Réception:	sur demande
Protection:	primer anti-rouille (seulement acier aù carbone forgé)

Attention: volume 0.05, 0.1, 0.35, 0.5 - pression sur demande

Pulsationsdämpfer mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 1000 bar
Gasfüllung: (Ausschließlich Stickstoff)	max 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Membrane zugelassenen Temperaturen)
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L Duplex Stahl F51
Membran:	nach Medium
Gasanschluss:	5/8" UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

Achtung: Volumen 0.05, 0.1, 0.35, 0.5 - Druck auf Anfrage

LAP Type

Carbon, stainless or duplex steel body

Smorzatore di pulsazioni con sacca sostituibile per alte pressioni

Caratteristiche tecniche

Pressione di esercizio:	max. 1000 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 6/1
Temperatura di esercizio:	-40°C / +150°C
Montaggio:	orizzontale o verticale con valvola rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L acciaio duplex F51
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Collaudo:	a richiesta

Note: volumi 0.75, 1.5, 2.5, 3, 4, 5, 10, 12 - pressioni a richiesta

Pulsation damper with exchangeable bladder for high pressure

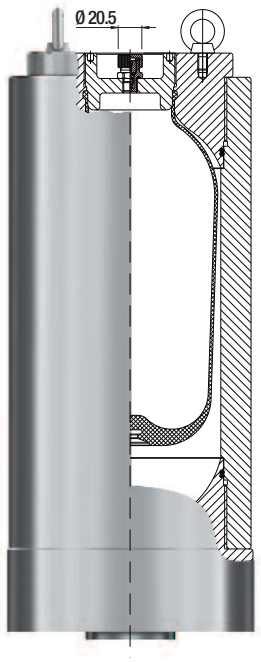
Technical data

Operating pressure:	max. 1000 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 6/1
Operating temperature:	-40°C / +150°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L duplex steel F51
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Test:	on request

Attention: volumes 0.75, 1.5, 2.5, 3, 4, 5, 10, 12 - pressure on request



Amortisseur de pulsations avec vessie remplaçable pour pressions très élévées

Caractéristiques techniques

Pression de service:	max. 1000 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 6/1
Temperature de service:	-40°C / +150°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier aù carbone forgé acier inoxidable AISI 316L duplex acier F51
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande

Attention: volume 0.75, 1.5, 2.5, 3, 4, 5, 10, 12 - pression sur demande

Pulsationsdämpfer mit auswechselbarer Blase für hohe Druckstufen

Technische Angaben

Betriebsdruck:	max. 1000 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 6/1
Betriebstemperaturbereich:	-40°C / +150°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L Duplex Stahl F51
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage

Achtung: Volumen 0.75, 1.5, 2.5, 3, 4, 5, 10, 12 - Druck auf Anfrage

Carbon steel or stainless steel body

Accumulatori a sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 30/50 bar
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Rapporto pressione ammessa:	max. ≤ 2/1
Temperatura di esercizio:	-15°C / +80°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	max. 30/50 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 2/1
Operating temperature:	-15°C / +80°C (Compatible with the temperatures admitted for the bladder)
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

		Stainless steel	Carbon steel					
Tipo	**Volume***	**Pressione**		**Attacco lato liquido**	**Valvola gas**	**A**	**ØB**	**Peso**
Type	**Volume***	**Pressure**		**P.F.C.**	**Gas valve**			**Weight**
	lt	max bar		E	Tappo Plug Bouton Zapfen	mm		kg
BA 100	100	30	50	4" ANSI 150	5/8" UNF	1227	407	72
BA 150	150	30	50	4" ANSI 150	5/8" UNF	1527	407	88
BA 200	200	30	50	4" ANSI 150	5/8" UNF	1955	407	140
BA 300	300	30	50	4" ANSI 150	5/8" UNF	2855	407	180
BA 500	500	30	50	4" ANSI 150	5/8" UNF	1756	610	240
BA 600	600	30	50	4" ANSI 150	5/8" UNF	2260	610	320
BA 5000	5000	30	50	8" ANSI 150	5/8" UNF	3844	1520	620
BA 5500	5500	30	50	8" ANSI 150	5/8" UNF	5446	1316	700
BA 10000	10000	30	50	8" ANSI 150	5/8" UNF	4740	1800	3500
BA 12500	12500	30	50	8" ANSI 150	5/8" UNF	5750	1800	4000
BA 15000	15000	30	50	8" ANSI 150	5/8" UNF	6760	1800	4550
Type	**Volume***	**Pression**		**Connection fluide**	**Valve pour Gaz**			**Poids**
Typ	**Volumen***	**Druck**		**Medium Anschluss**	**Gasventil**	**A**	**ØB**	**Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen

Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	**Sacca**	**Tipo**	**Sacca**	**Tipo**	**Sacca**	Stainless steel	Carbon steel
Type	**Bladder**	**Type**	**Bladder**	**Type**	**Bladder**	**Valvola gas**	
	❶		❶		❶	**Gas valve**	
						❷	
BA 100	MEMBA100*	BA 500	MEMBA500*	BA 10000	MEMBA500*	VALPRE58X	VALPRE580NV2
BA 150	MEMBA150*	BA 600	MEMBA600*	BA 12500	MEMBA600*	VALPRE58X	VALPRE580NV2
BA 200	MEMBA200*	BA 5000	MEMBA5000*	BA 15000	MEMBA5000*	VALPRE58X	VALPRE580NV2
BA 300	MEMBA300*	BA 5500	MEMBA5500*			VALPRE58X	VALPRE580NV2
Type	**Vessie**	**Type**	**Vessie**	**Type**	**Vessie**	**Valve de gonflage**	
Typ	**Blase**	**Typ**	**Blase**	**Typ**	**Blase**	**Gasventil**	

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	max. 30/50 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 2/1
Temperature de service:	-15°C / +80°C (Compatible avec les températures admis pour la vessie)
Montage:	indifférente horizontal ou vertical avecraccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier au carbone forgé acier inoxydable AISI 316L
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	max. 30/50 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 2/1
Betriebstemperaturbereich:	-15°C / +80°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

SAType

Carbon steel or stainless steel body

Accumulatori a sacca sostituibile

Caratteristiche tecniche

Pressione di esercizio:	14 bar (altre pressioni a richiesta)
Precarica gas (solo azoto):	max. 90% P min. di esercizio
Temperatura di esercizio:	-40°C / +150°C (compatibilmente con le temperature ammesse dalla sacca)
Montaggio:	verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L
Sacca:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta

Accumulator with exchangeable bladder

Technical data

Operating pressure:	14 bar (otherpressures on request)
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Operating temperature:	-40°C / +150°C (Compatible with the temperatures admitted for the bladder)
Mounting:	vertical with gas valve upwards

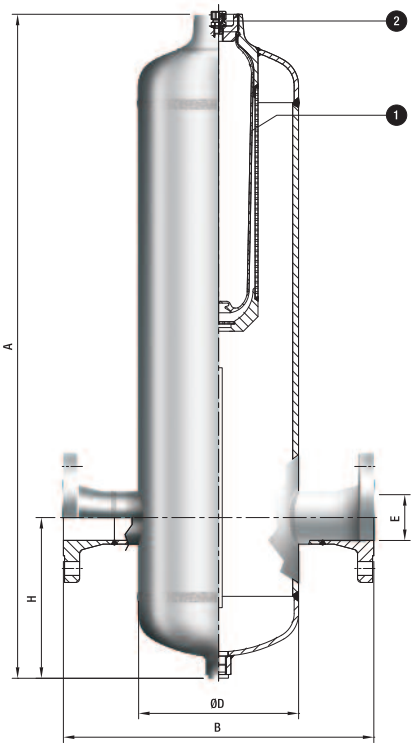
Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L
Bladder:	according to fluid
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Volume gas	Pressione	Attacco lato liquido	Valvola gas	A	B	ØD	H	Peso
Type	Volume*	Gas volume	Pressure	P.F.C.	Gas valve					Weight
	lt		max bar	E				mm		kg
SA 15	15	1,5	16	2.1/2" ANSI 150	5/8" UNF	601	425	219	220	37
SA 25	25	2,5	16	2.1/2" ANSI 150	5/8" UNF	909	425	219	220	51
SA 100	100	10	16	4" ANSI 150	5/8" UNF	1018	650	406	350	115
SA 200	200	20	16	4" ANSI 150	5/8" UNF	1350	870	480	350	190
SA 400	400	35	16	5" ANSI 150	5/8" UNF	2050	870	559	400	360
Type	Volume*	Volume gaz	Pression	Connection fluide	Valve pour Gaz					Poids
Typ	Volumen*	Gasvolumen	Druck	Medium Anschluss	Gasventil	A	B	ØD	H	Gewicht

* Volume nominale - Nominal volume - Nominal Volumen



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Sacca	Valvola gas
Type	Bladder	Gas valve
	❶	❷
SA 15	MEMLA1,5	VALPRE58X
SA 25	MEMLA2,5	VALPRE58X
SA 100	MEMLA10	VALPRE58X
SA 200	MEMSI20	VALPRE58X
SA 400	MEMSI35	VALPRE58X
Type	Vessie	Valve de gonflage
Typ	Blase	Gasventil

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec vessie remplaçable

Caractéristiques techniques

Pression de service:	14 bar (autres pressions sur demande)
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Temperature de service:	-40°C / +150°C (Compatible avec les températures admis pour la vessie)
Montage:	vertical avecraccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier au carbone forgé acier inoxydable AISI 316L
Vessie:	selon fluide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande

Druckspeicher mit auswechselbarer Blase

Technische Angaben

Betriebsdruck:	14 bar (Weitere Drücke auf Aufrage)
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Betriebstemperaturbereich:	-40°C / +150°C (kompatibel mit den für die Blase zugelassenen Temperaturen)
Montage:	Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L
Blase:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage

Bombole senza saldatura

Caratteristiche costruttive standard

Costruzione corpo: acciaio inox AISI 316L
acciaio duplex F51
Valvola attacco gas: 5/8"UNF versione 1

Certificazioni

- PED - EN 13445 - ASME VIII Div.1 - AD 2000
- ASME VIII Div.1 ASME Stamp - National Board
- GOST
- SELO

Note: altri volumi a richiesta

Non-welded design bottles

Standard construction characteristics

Material of body: stainless steel AISI 316L
duplex steel F51
Gas connection valve: 5/8"UNF version 1

Certifications

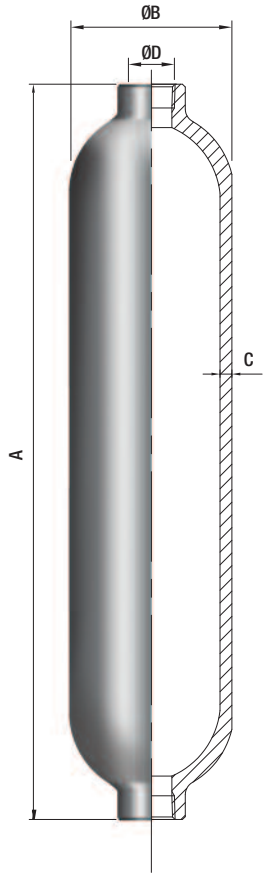
- PED - EN 13445 - ASME VIII Div.1 - AD 2000
- ASME VIII Div.1 ASME Stamp - National Board
- GOST
- SELO

Attention: other volumes on request

Dimensioni / Dimensions / Abmessungen

		Stainless steel	Carbon steel					
Tipo	**Volume***	**Pressione**		**A**	**B**	**C**	**ØD**	**Peso**
Type	**Volume***	**Pressure**						**Weight**
	lt	max bar			mm			kg
BAD 10.0	10.0	145	270	740	168	10.83	2" Gas	157.92
		30	-			3.5		17.13
BAD 15.0	15.0	103	195	645	219	8.18	2" Gas	36.44
		165	310			12.7		55.38
		30	-			3.5		20.27
BAD 20.0	20.0	103	195	800	219	8.18	2" Gas	43.13
		165	310			12.7		65.54
		30	-			3.5		23.72
BAD 25.0	25.0	103	195	970	219	8.18	2" Gas	50.46
		165	310			12.7		76.68
		30	-			3.5		30.81
BAD 35.0	35.0	103	195	1320	219	8.18	2" Gas	65.56
		165	310			12.7		99.62
		30	-			3.5		41.29
BAD 55.0	55.0	103	195	1837	219	8.18	2" Gas	87.86
		165	310			12.7		133.50
		30	-			3.5		55.13
BAD 75.0	75.0	103	195	2520	219	8.18	2" Gas	117.31
		165	310			12.7		178.27
Type	**Volume***	**Pression**						**Poids**
Typ	**Volumen***	**Druck**		**A**	**B**	**C**	**ØD**	**Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen



Bouteilles sans soudure

Caractéristiques constructives standard

Corps: acier inoxydable AISI 316L
duplex acier F51
Valve de gonflage: 5/8"UNF exécution 1

Cértifications

- PED - EN 13445 - ASME VIII Div.1 - AD 2000
- ASME VIII Div.1 ASME Stamp - National Board
- GOST
- SELO

Attention: autres volume sur demande

Druckflaschen ohne Schweißnähte

Standard Konstruktionsmerkmale

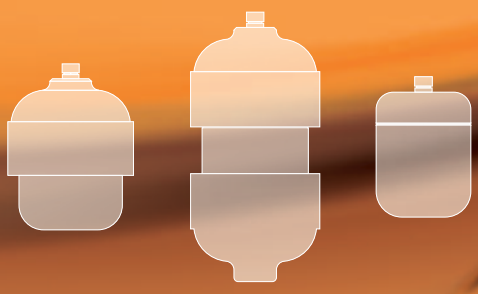
Gehäuse: Edelstahl AISI 316L
Duplex Stahl F51
Gasanschluss: 5/8" UNF Variante 1

Abnahmen

- PED - EN 13445 - ASME VIII Div.1 - AD 2000
- ASME VIII Div.1 ASME Stamp - National Board
- GOST
- SELO

Achtung: weitere Volumen auf Anfrage

Plastic Types



APV Type

Accumulatore a membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 10 bar
Precarica gas (solo azoto):	max. 90% P min.di esercizio
Rapporto pressione ammessa:	max. ≤ 4/1
Temperatura di esercizio:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	PVC, PVC-C, PP o PVDF
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 10 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 4/1
Operating temperature:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

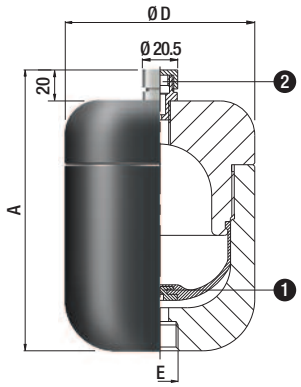
Material of body:	PVC, PVC-C, PP or PVDF
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØB	ØD	Peso**
Type	Volume*	Pressure	P.F.C.	Gas valve				Weight**
	cm^3	max bar	E	Tappo Plug Bouton Zapfen		mm		kg
APV 0.025	20	10	3/8" GAS	M28x1,5 • 5/8"UNF	116	-	70	0,5
APV 0.05	50	10	3/8" GAS	M28x1,5 • 5/8"UNF	121	-	80	0,65
APV 0.1	100	10	3/8" GAS	M28x1,5 • 5/8"UNF	140	-	90	0,9
APV 0.35	350	10	3/8" GAS	M28x1,5 • 5/8"UNF	165	-	110	1,5
Type	Volume*	Pression	Connection fluide	Valve pour Gaz				Poids**
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	ØD	Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen

** Peso riferito a PVC - Weight based on PVC - Poids sur la base de PVC - Bezogen auf PVC



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	Diaphragm	Gas valve	Gasket kit
	1	2	
APV 0.025	MEML005*	VALPRE58X	-
APV 0.05	MEML005*	VALPRE58X	-
APV 0.1	MEML01*	VALPRE58X	-
APV 0.35	MEML035*NV1	VALPRE58X	-
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 10 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 4/1
Temperature de service:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	PVC, PVC-C, PP ou PVDF
Membrane:	selon liquide
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 10 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 4/1
Betriebstemperaturbereich:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	PVC, PVC-C, PP oder PVDF
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage

Accumulatore a membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 10 bar
Precarica gas (solo azoto):	max. 90% P min.di esercizio
Rapporto pressione ammessa:	max. ≤ 4/1
Temperatura di esercizio:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	PVC, PVC-C, PP o PVDF
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 10 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 4/1
Operating temperature:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

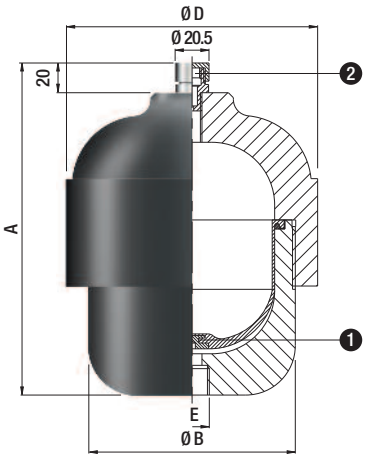
Material of body:	PVC, PVC-C, PP or PVDF
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØB	ØD	Peso**
Type	Volume*	Pressure	P.F.C.	Gas valve				Weight**
	cm^3	max bar	E	Tappo Plug Bouton Zapfen		mm		kg
APV 0.5	500	10	1/2" GAS	M28x1,5 • 5/8"UNF	185	105	135	1,8
APV 0.75	750	10	1/2" GAS	M28x1,5 • 5/8"UNF	203	125	155	2,4
Type	Volume*	Pression	Connection fluide	Valve pour Gaz				Poids**
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	ØD	Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen

** Peso riferito a PVC - Weight based on PVC - Poids sur la base de PVC - Bezogen auf PVC



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	Diaphragm	Gas valve	Gasket kit
	❶	❷	
APV 0.5	MEMLAV05*NV1	VALPRE58X	-
APV 0.75	MEMLAV075*	VALPRE58X	-
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 10 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 4/1
Temperature de service:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	PVC, PVC-C, PP ou PVDF
Membrane:	selon liquide
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 10 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 4/1
Betriebstemperaturbereich:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	PVC, PVC-C, PP oder PVDF
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage

APV Type

Accumulatore a membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 10 bar
Precarica gas (solo azoto):	max. 90% P min.di esercizio
Rapporto pressione ammessa:	max. ≤ 4/1
Temperatura di esercizio:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	PVC, PVC-C, PP o PVDF
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 10 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 4/1
Operating temperature:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

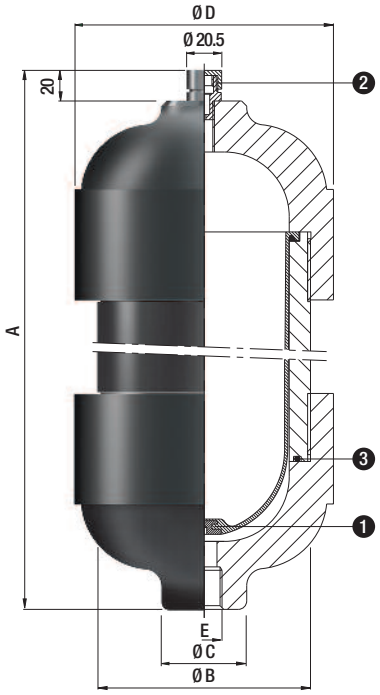
Material of body:	PVC, PVC-C, PP or PVDF
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØB	ØC	ØD	Peso**
Type	Volume*	Pressure	P.F.C.	Gas valve					Weight**
	cm^3	max bar	E	Tappo Plug Bouton Zapfen		mm			kg
APV 1.5	1500	10	1/2" GAS	M28x1,5 • 5/8"UNF	329	125	52,5	155	3,7
APV 3	3000	10	3/4" GAS	M28x1,5 • 5/8"UNF	484	125	52,5	155	4,7
APV 4	4000	10	1"1/4 GAS	M28x1,5 • 5/8"UNF	360	195	80	230	9,5
APV 5	5000	10	1"1/4 GAS	M28x1,5 • 5/8"UNF	428	195	80	230	10,9
Type	Volume*	Pression	Connection fluide	Valve pour Gaz					Poids**
Typ	Volumen*	Druck	Medium Anschluss	Gasventil	A	ØB	ØC	ØD	Gewicht**

* Volume nominale - Nominal volume - Nominal Volumen

** Peso riferito a PVC - Weight based on PVC - Poids sur la base de PVC - Bezogen auf PVC



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	Diaphragm	Gas valve	Gasket kit
	1	2	3
APV 1.5	MEMLAV1.5*	VALPRE58X	OR4412*
APV 3	MEMLAV2.5*	VALPRE58X	OR4412*
APV 4	MEMLAV4*	VALPRE58X	OR4625*
APV 5	MEMLAV5*	VALPRE58X	OR4625*
Type	Membrane	Valve de gonflage	Etanchéité
Typ	Membran	Gasventil	Dichtungen

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 10 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 4/1
Temperature de service:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	PVC, PVC-C, PP ou PVDF
Membrane:	selon liquide
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande

Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 10 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 4/1
Betriebstemperaturbereich:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	PVC, PVC-C, PP oder PVDF
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage

Accumulatore a membrana sostituibile

Caratteristiche tecniche

Pressione di esercizio:	max. 10 bar
Precarica gas (solo azoto):	max. 90% P min.di esercizio
Rapporto pressione ammessa:	max. ≤ 4/1
Temperatura di esercizio:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montaggio:	orizzontale o verticale con valvola gas rivolta verso l'alto

Caratteristiche costruttive standard

Costruzione corpo:	PVC, PVC-C, PP o PVDF
Membrana:	secondo fluido
Valvola attacco gas:	5/8"UNF versione 1
Collaudo:	a richiesta

Accumulator with exchangeable diaphragm

Technical data

Operating pressure:	max. 10 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Admissible pressure ratio:	max. ≤ 4/1
Operating temperature:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Mounting:	horizontal or vertical with gas valve upwards

Standard construction characteristics

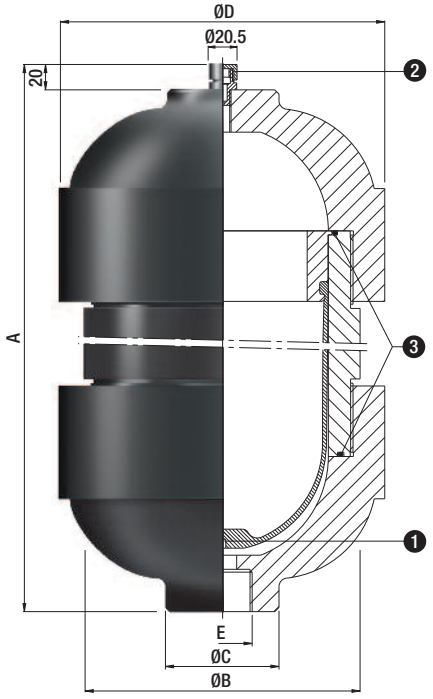
Material of body:	PVC, PVC-C, PP or PVDF
Diaphragm:	according to fluid
Gas connection valve:	5/8"UNF version 1
Test:	on request

Dimensioni / Dimensions / Abmessungen

Tipo	Volume*	Pressione	Attacco lato liquido	Valvola gas	A	ØB	ØC	ØD	Peso**
Type	**Volume***	**Pressure**	**P.F.C.**	**Gas valve**					**Weight****
	cm^3	max bar	E	Tappo Plug Bouton Zapfen		mm			kg
APV 10	10000	10	1"1/4 GAS	M28x1,5 • 5/8"UNF	730	195	80	230	16,7
APV 12	12000	10	1"1/4 GAS	M28x1,5 • 5/8"UNF	830	195	80	230	19,3
Type	**Volume***	**Pression**	**Connection fluide**	**Valve pour Gaz**					**Poids****
Typ	**Volumen***	**Druck**	**Medium Anschluss**	**Gasventil**	**A**	**ØB**	**ØC**	**ØD**	**Gewicht****

* Volume nominale - Nominal volume - Nominal Volumen

** Peso riferito a PVC - Weight based on PVC - Poids sur la base de PVC - Bezogen auf PVC



Codice ricambi / Spare parts code / Code pièces de rechange / Ersatzteil Schlüssel

Tipo	Membrana	Valvola gas	Serie guarnizioni
Type	**Diaphragm**	**Gas valve**	**Gasket kit**
	❶	❷	❸
APV 10	MEMLAV10*	VALPRE58X	2 OR4625*
APV 12	MEMLAV10*	VALPRE58X	2 OR4625*
Type	**Membrane**	**Valve de gonflage**	**Etanchéité**
Typ	**Membran**	**Gasventil**	**Dichtungen**

* Secondo fluido - According to fluid - Selon fluide - Nach Medium

Accumulateur avec membrane remplaçable

Caractéristiques techniques

Pression de service:	max. 10 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Rapport de pression admissible:	max. ≤ 4/1
Temperature de service:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	PVC, PVC-C, PP ou PVDF
Membrane:	selon liquide
Valve de gonflage:	5/8"UNF exécution 1
Réception:	sur demande

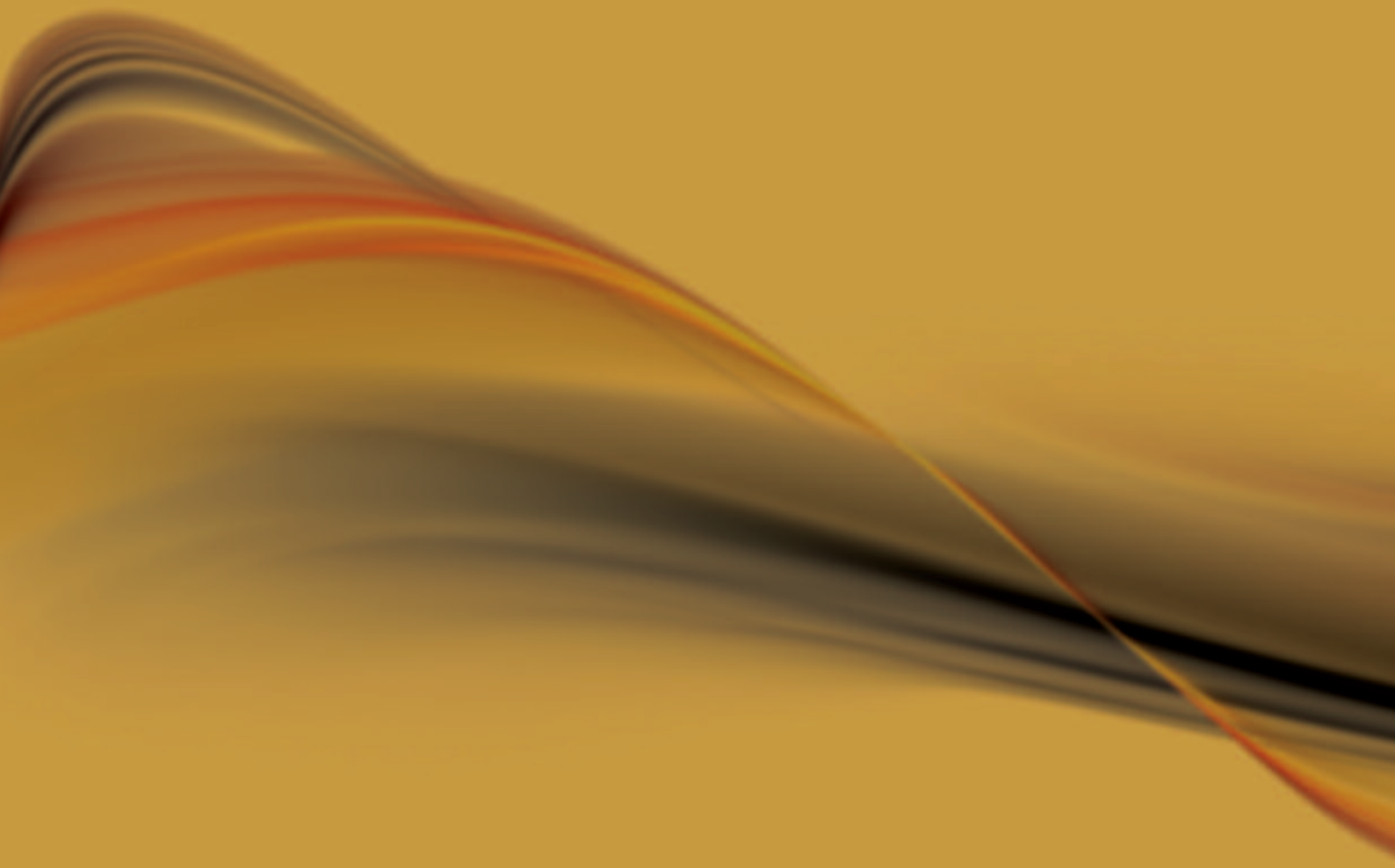
Druckspeicher mit auswechselbarer Membran

Technische Angaben

Betriebsdruck:	max. 10 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Zugelassenes Druckverh:	max. ≤ 4/1
Betriebstemperaturbereich:	PVC: -10°C / +30°C PVDF, PP, PVC-C: -10°C / +40°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	PVC, PVC-C, PP oder PVDF
Membran:	nach Medium
Gasanschluss:	5/8"UNF Variante 1
Abnahme:	Auf Anfrage



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Piston Types

62

PAM

PAM250 Type

Carbon steel or stainless steel body

Accumulatori a pistone

Caratteristiche tecniche

Pressione di esercizio:	max. 250 bar
Precarica gas (solo azoto):	max 90% P. min. di esercizio
Temperatura di esercizio:	-40°C / +100°C
Montaggio:	in ogni posizione

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L
Guarnizioni:	NBR + poliammide
Valvola attacco gas:	5/8" UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta
Costruzione standard:	velocità pistone 0,5 m/s
Costruzione su richiesta:	- velocità pistone 3 m/s - completo di asta uscente e indicatore posizione pistone

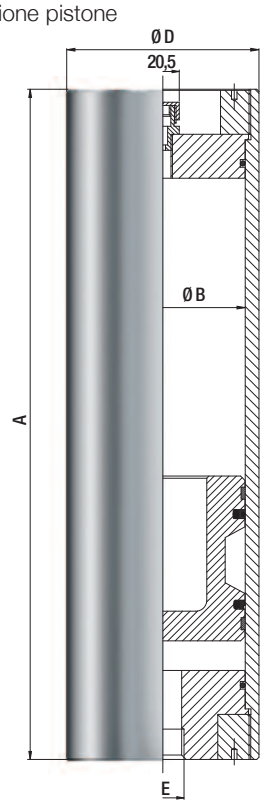
Piston accumulator

Technical data

Operating pressure:	max. 250 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Operating temperature:	-40°C / +100°C
Mounting:	any position

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L
Gasket:	NBR + polyamide
Gas connection valve:	5/8"UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request
Standard design:	piston speed 0,5 m/s
Special design on request:	- piston speed 3 m/s - complete with exit rod and piston position indicator



Accumulateur a piston

Caractéristiques techniques

Pression de service:	max. 250 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Temperature de service:	-40°C / +100°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier au carbone forgé acier inoxydable AISI 316L
Etainchéité:	NBR + polyamide
Valve de gonflage:	5/8"UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande
Projet standard:	velocité piston 0,5 m/s
Projet special sur demande:	- velocité piston 3 m/s - et sortant tige et indicateur de position de piston

Kolbenspeicher

Technische Angaben

Betriebsdruck:	max. 250 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Betriebstemperaturbereich:	-40°C / +100°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L
Dichtungen:	NBR + Polyamide
Gasanschluss:	5/8"UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage
Standard Auslegung:	Kolben geschwindigkeit: 0,5 m/s
Sonder Auslegung auf Anfrage:	- Kolben geschwindigkeit: 3 m/s - ausgehender Stab und Kolbenpositionsanzeige

PAM250 Type

Carbon steel or stainless steel body

Dimensioni / Dimensions / Abmessungen

Tipo Type	Volume	Pressione Pressure	Attacco lato liquido P.F.C.	Valvola gas Gas valve	A	ØB	ØD Stainless steel	ØD Carbon steel	Peso Weight
	cm^3	max bar	E			mm			kg
PAM 0,4	400	250	3/ 4" GAS	5/8" UNF	230	80	100	95	6
PAM 0,5	500	250	3/ 4" GAS	5/8" UNF	250	80	100	95	6,3
PAM 0,75	750	250	3/ 4" GAS	5/8" UNF	300	80	100	95	7,1
PAM 1	1000	250	3/ 4" GAS	5/8" UNF	349	80	100	95	7,9
PAM 2	2000	250	3/ 4" GAS	5/8" UNF	548	80	100	95	11,1
PAM 3	3000	250	3/ 4" GAS	5/8" UNF	747	80	100	95	14,4
PAM 4	4000	250	3/ 4" GAS	5/8" UNF	946	80	100	95	17,6
PAM 2	2000	250	1" GAS	5/8" UNF	426	100	125	120	14,7
PAM 3	3000	250	1" GAS	5/8" UNF	554	100	125	120	18,2
PAM 4	4000	250	1" GAS	5/8" UNF	682	100	125	120	21,6
PAM 6	6000	250	1" GAS	5/8" UNF	938	100	125	120	28,6
PAM 8	8000	250	1" GAS	5/8" UNF	1194	100	125	120	35,5
PAM 10	10000	250	1" GAS	5/8" UNF	1450	100	125	120	42,5
PAM 4	4000	250	1" 1/ 2 GAS	5/8" UNF	490	140	175	165	31,4
PAM 6	6000	250	1" 1/ 2 GAS	5/8" UNF	620	140	175	165	37,6
PAM 7	7000	250	1" 1/ 2 GAS	5/8" UNF	685	140	175	165	40,6
PAM 8	8000	250	1" 1/ 2 GAS	5/8" UNF	750	140	175	165	43,7
PAM 10	10000	250	1" 1/ 2 GAS	5/8" UNF	880	140	175	165	49,8
PAM 12	12000	250	1" 1/ 2 GAS	5/8" UNF	1010	140	175	165	55,9
PAM 15	15000	250	1" 1/ 2 GAS	5/8" UNF	1205	140	175	165	65,1
PAM 20	20000	250	1" 1/ 2 GAS	5/8" UNF	1530	140	175	165	80,3
PAM 5	5000	250	1" 1/ 2 GAS	5/8" UNF	499	160	200	185	38,4
PAM 10	10000	250	1" 1/ 2 GAS	5/8" UNF	748	160	200	185	51,6
PAM 15	15000	250	1" 1/ 2 GAS	5/8" UNF	997	160	200	185	64,8
PAM 20	20000	250	1" 1/ 2 GAS	5/8" UNF	1246	160	200	185	78,1
PAM 25	25000	250	1" 1/ 2 GAS	5/8" UNF	1495	160	200	185	91,3
PAM 30	30000	250	1" 1/ 2 GAS	5/8" UNF	1744	160	200	185	104,6
PAM 8	8000	250	2" GAS	5/8" UNF	536	200	245	230	60,7
PAM 10	10000	250	2" GAS	5/8" UNF	599	200	245	230	65,7
PAM 15	15000	250	2" GAS	5/8" UNF	759	200	245	230	78,4
PAM 20	20000	250	2" GAS	5/8" UNF	918	200	245	230	91
PAM 25	25000	250	2" GAS	5/8" UNF	1078	200	245	230	103,8
PAM 30	30000	250	2" GAS	5/8" UNF	1237	200	245	230	116,4
PAM 45	45000	250	2" GAS	5/8" UNF	1716	200	245	230	154,5
PAM 50	50000	250	2" GAS	5/8" UNF	1875	200	245	230	167,1
PAM 10	10000	250	2" GAS	5/8" UNF	504	250	305	285	86,9
PAM 20	20000	250	2" GAS	5/8" UNF	708	250	305	285	110,5
PAM 30	30000	250	2" GAS	5/8" UNF	912	250	305	285	134
PAM 40	40000	250	2" GAS	5/8" UNF	1116	250	305	285	157,6
PAM 50	50000	250	2" GAS	5/8" UNF	1320	250	305	285	181,1
PAM 60	60000	250	2" GAS	5/8" UNF	1524	250	305	285	204,7
PAM 70	70000	250	2" GAS	5/8" UNF	1728	250	305	285	228,2
PAM 80	80000	250	2" GAS	5/8" UNF	1932	250	305	285	251,8
Type		**Pression**	**Connection fluide**	**Valve pour Gaz**					**Poids**
Typ	**Volume**	**Druck**	**Medium Anschluss**	**Gasventil**	**A**	**ØB**	**ØD**		**Gewicht**

Codice ricambi / Spare parts code
Code pièces de rechange / Ersatzteil Schlüssel

Serie guarnizioni Gasket kit	Valvola gas Gas valve Stainless steel	Valvola gas Gas valve Carbon steel
ANEPAM80 GRPAM80	VALPRE58X	VALPRE580
ANEPAM100 GRPAM100	VALPRE58X	VALPRE580
ANEPAM140 GRPAM140	VALPRE58X	VALPRE580
ANEPAM160 GRPAM160	VALPRE58X	VALPRE580
ANEPAM200 GRPAM200	VALPRE58X	VALPRE580
ANEPAM250 GRPAM250	VALPRE58X	VALPRE58X
Etanchéité **Dichtungen**	**Valve de gonflage** **Gasventil**	

PAM350Type

Carbon steel or stainless steel body

Accumulatori a pistone

Caratteristiche tecniche

Pressione di esercizio:	max. 350 bar
Precarica gas (solo azoto):	max 90% P. min. di esercizio
Temperatura di esercizio:	-40°C / +100°C
Montaggio:	in ogni posizione

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L
Guarnizioni:	NBR + poliamide
Valvola attacco gas:	5/8" UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta
Costruzione standard:	velocità pistone 0,5 m/s
Costruzione su richiesta:	- velocità pistone 3 m/s - completo di asta uscente e indicatore posizione pistone

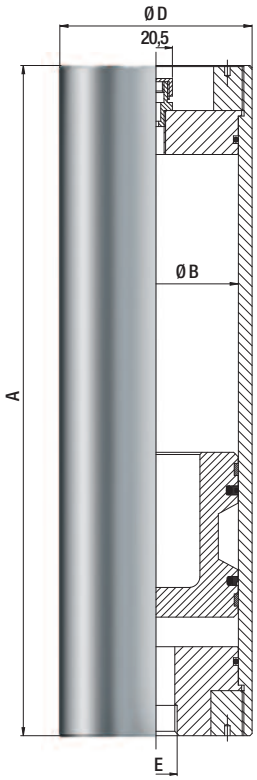
Piston accumulator

Technical data

Operating pressure:	max. 350 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Operating temperature:	-40°C / +100°C
Mounting:	any position

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L
Gasket:	NBR + polyamide
Gas connection valve:	5/8”UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request
Standard design:	piston speed 0,5 m/s
Special design on request:	- piston speed 3 m/s - complete with exit rod and piston position indicator



Accumulateur a piston

Caractéristiques techniques

Pression de service:	max. 350 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Temperature de service:	-40°C / +100°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier au carbone forgé acier inoxydable AISI 316L
Etainchéité:	NBR + polyamide
Valve de gonflage:	5/8”UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande
Projet standard:	velocité piston 0,5 m/s
Projet special sur demande:	- velocité piston 3 m/s - et sortant tige et indicateur de position de piston

Kolbenspeicher

Technische Angaben

Betriebsdruck:	max. 350 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Betriebstemperaturbereich:	-40°C / +100°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L
Dichtungen:	NBR + Polyamide
Gasanschluss:	5/8”UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage
Standard Auslegung:	Kolben geschwindigkeit: 0,5 m/s
Sonder Auslegung auf Anfrage:	- Kolben geschwindigkeit: 3 m/s - ausgehender Stab und Kolbenpositionsanzeige

PAM350 Type

Carbon steel or stainless steel body

Dimensioni / Dimensions / Abmessungen

Tipo Type	Volume	Pressione Pressure	Attacco lato liquido P.F.C.	Valvola gas Gas valve	A	ØB	ØD Stainless steel	ØD Carbon steel	Peso Weight
	cm^3	max bar	E			mm			kg
PAM 0,4	400	350	3/ 4" GAS	5/8" UNF	270	80	110	100	9,4
PAM 0,5	500	350	3/ 4" GAS	5/8" UNF	290	80	110	100	9,8
PAM 0,75	750	350	3/ 4" GAS	5/8" UNF	340	80	110	100	10,9
PAM 1	1000	350	3/ 4" GAS	5/8" UNF	389	80	110	100	12
PAM 2	2000	350	3/ 4" GAS	5/8" UNF	588	80	110	100	16,4
PAM 3	3000	350	3/ 4" GAS	5/8" UNF	787	80	110	100	20,8
PAM 4	4000	350	3/ 4" GAS	5/8" UNF	986	80	110	100	25,3
PAM 2	2000	350	1" GAS	5/8" UNF	466	100	130	125	21
PAM 3	3000	350	1" GAS	5/8" UNF	594	100	130	125	25,4
PAM 4	4000	350	1" GAS	5/8" UNF	720	100	130	125	29,8
PAM 6	6000	350	1" GAS	5/8" UNF	978	100	130	125	38,8
PAM 8	8000	350	1" GAS	5/8" UNF	1234	100	130	125	47,6
PAM 10	10000	350	1" GAS	5/8" UNF	1490	100	130	125	56,5
PAM 4	4000	350	1" 1/ 2 GAS	5/8" UNF	530	140	185	170	42,2
PAM 6	6000	350	1" 1/ 2 GAS	5/8" UNF	660	140	185	170	49,6
PAM 7	7000	350	1" 1/ 2 GAS	5/8" UNF	725	140	185	170	53,4
PAM 8	8000	350	1" 1/ 2 GAS	5/8" UNF	790	140	185	170	57,1
PAM 10	10000	350	1" 1/ 2 GAS	5/8" UNF	920	140	185	170	64,6
PAM 12	12000	350	1" 1/ 2 GAS	5/8" UNF	1050	140	185	170	72
PAM 15	15000	350	1" 1/ 2 GAS	5/8" UNF	1245	140	185	170	83,2
PAM 20	20000	350	1" 1/ 2 GAS	5/8" UNF	1570	140	185	170	101,8
PAM 5	5000	350	1" 1/ 2 GAS	5/8" UNF	539	160	210	195	55,7
PAM 10	10000	350	1" 1/ 2 GAS	5/8" UNF	788	160	210	195	74,8
PAM 15	15000	350	1" 1/ 2 GAS	5/8" UNF	1037	160	210	195	93,8
PAM 20	20000	350	1" 1/ 2 GAS	5/8" UNF	1286	160	210	195	112,9
PAM 25	25000	350	1" 1/ 2 GAS	5/8" UNF	1534	160	210	195	131,9
PAM 30	30000	350	1" 1/ 2 GAS	5/8" UNF	1784	160	210	195	151,1
PAM 8	8000	350	2" GAS	5/8" UNF	576	200	260	240	85,2
PAM 10	10000	350	2" GAS	5/8" UNF	639	200	260	240	92
PAM 15	15000	350	2" GAS	5/8" UNF	799	200	260	240	109,4
PAM 20	20000	350	2" GAS	5/8" UNF	958	200	260	240	126,6
PAM 25	25000	350	2" GAS	5/8" UNF	1118	200	260	240	144
PAM 30	30000	350	2" GAS	5/8" UNF	1277	200	260	240	161,2
PAM 45	45000	350	2" GAS	5/8" UNF	1756	200	260	240	213,2
PAM 50	50000	350	2" GAS	5/8" UNF	1915	200	260	240	230,5
PAM 10	10000	350	2" GAS	5/8" UNF	544	250	330	300	125,6
PAM 20	20000	350	2" GAS	5/8" UNF	748	250	330	300	160,2
PAM 30	30000	350	2" GAS	5/8" UNF	952	250	330	300	194,7
PAM 40	40000	350	2" GAS	5/8" UNF	1156	250	330	300	229,3
PAM 50	50000	350	2" GAS	5/8" UNF	1360	250	330	300	263,9
PAM 60	60000	350	2" GAS	5/8" UNF	1564	250	330	300	298,5
PAM 70	70000	350	2" GAS	5/8" UNF	1768	250	330	300	333,1
PAM 80	80000	350	2" GAS	5/8" UNF	1972	250	330	300	367,7
Type		Pression	Connection fluide	Valve pour Gaz					Poids
Typ	Volume	Druck	Medium Anschluss	Gasventil	A	ØB	ØD		Gewicht

Codice ricambi / Spare parts code
Code pièces de rechange / Ersatzteil Schlüssel

Serie guarnizioni Gasket kit	Valvola gas Gas valve Stainless steel	Valvola gas Gas valve Carbon steel
ANEPAM80 GRPAM80	VALPRE58X	VALPRE580
ANEPAM100 GRPAM100	VALPRE58X	VALPRE580
ANEPAM140 GRPAM140	VALPRE58X	VALPRE580
ANEPAM160 GRPAM160	VALPRE58X	VALPRE580
ANEPAM200 GRPAM200	VALPRE58X	VALPRE580
ANEPAM250 GRPAM250	VALPRE58X	VALPRE580
Etanchéité Dichtungen	Valve de gonflage Gasventil	

PAM415Type

Carbon steel or stainless steel body

Accumulatori a pistone

Caratteristiche tecniche

Pressione di esercizio:	max. 415 bar
Precarica gas (solo azoto):	max 90% P. min. di esercizio
Temperatura di esercizio:	-40°C / +100°C
Montaggio:	in ogni posizione

Caratteristiche costruttive standard

Costruzione corpo:	acciaio al carbonio acciaio inox AISI 316L
Guarnizioni:	NBR + poliamide
Valvola attacco gas:	5/8" UNF versione 1
Verniciatura:	fondo antiruggine (solo per acciaio al carbonio)
Collaudo:	a richiesta
Costruzione standard:	velocità pistone 0,5 m/s
Costruzione su richiesta:	- velocità pistone 3 m/s - completo di asta uscente e indicatore posizione pistone

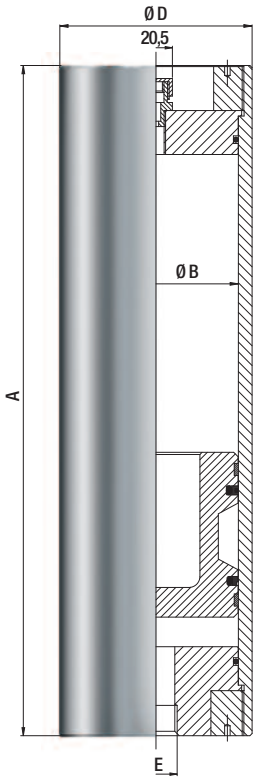
Piston accumulator

Technical data

Operating pressure:	max. 415 bar
Gas filling (nitrogen only):	max. 90% of min. operating pressure
Operating temperature:	-40°C / +100°C
Mounting:	any position

Standard construction characteristics

Material of body:	carbon steel stainless steel AISI 316L
Gasket:	NBR + polyamide
Gas connection valve:	5/8”UNF version 1
Painting:	anti-rust primer (only carbon steel)
Test:	on request
Standard design:	piston speed 0,5 m/s
Special design on request:	- piston speed 3 m/s - complete with exit rod and piston position indicator



Accumulateur a piston

Caractéristiques techniques

Pression de service:	max. 415 bar
Gonflage (uniquement azote):	max. 90% de la pression de service inférieure
Temperature de service:	-40°C / +100°C
Montage:	indifférente horizontal ou vertical avec raccordement gaz vers dessus

Caractéristiques constructives standard

Corps:	acier au carbone forgé acier inoxydable AISI 316L
Etainchéité:	NBR + polyamide
Valve de gonflage:	5/8”UNF exécution 1
Protection:	primer anti-rouille (seulement acier aù carbone forgé)
Réception:	sur demande
Projet standard:	velocité piston 0,5 m/s
Projet special sur demande:	- velocité piston 3 m/s - et sortant tige et indicateur de position de piston

Kolbenspeicher

Technische Angaben

Betriebsdruck:	max. 415 bar
Gasfüllung: (Ausschließlich Stickstoff)	max. 90% vom min. Betriebsdruck
Betriebstemperaturbereich:	-40°C / +100°C
Montage:	beliebig Waagrecht oder Senkrecht mit Gasventil nach oben

Standard Konstruktionsmerkmale

Gehäuse:	Schmiedestahl Edelstahl AISI 316L
Dichtungen:	NBR + Polyamide
Gasanschluss:	5/8”UNF Variante 1
Lackierung:	Rostschutz (nur Schmiedestahl)
Abnahme:	Auf Anfrage
Standard Auslegung:	Kolben geschwindigkeit: 0,5 m/s
Sonder Auslegung auf Anfrage:	- Kolben geschwindigkeit: 3 m/s - ausgehender Stab und Kolbenpositionsanzeige

PAM415Type

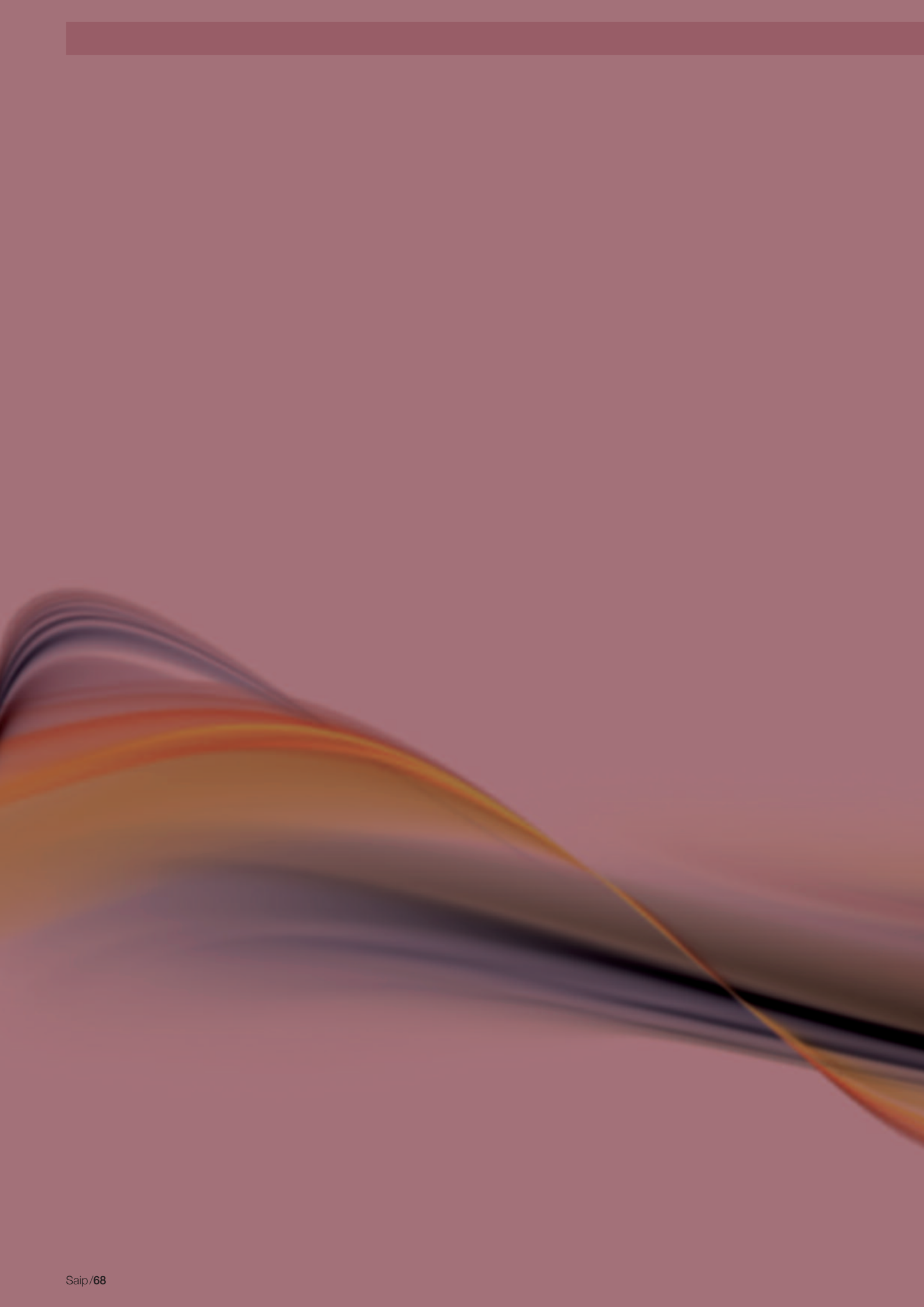
Carbon steel or stainless steel body

Dimensioni / Dimensions / Abmessungen

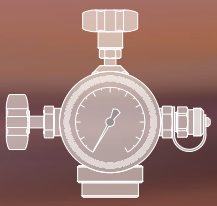
Tipo Type	Volume	Pressione Pressure	Attacco lato liquido P.F.C.	Valvola gas Gas valve	A	ØB	ØD Stainless steel	ØD Carbon steel	Peso Weight
	cm^3	max bar	E			mm			kg
PAM 0,4	400	415	3/ 4" GAS	5/8" UNF	270	80	120	100	9,4
PAM 0,5	500	415	3/ 4" GAS	5/8" UNF	290	80	120	100	9,8
PAM 0,75	750	415	3/ 4" GAS	5/8" UNF	340	80	120	100	10,9
PAM 1	1000	415	3/ 4" GAS	5/8" UNF	389	80	120	100	12
PAM 2	2000	415	3/ 4" GAS	5/8" UNF	588	80	120	100	16,4
PAM 3	3000	415	3/ 4" GAS	5/8" UNF	787	80	120	100	20,8
PAM 4	4000	415	3/ 4" GAS	5/8" UNF	986	80	120	100	25,3
PAM 2	2000	415	1" GAS	5/8" UNF	466	100	140	125	21
PAM 3	3000	415	1" GAS	5/8" UNF	594	100	140	125	25,4
PAM 4	4000	415	1" GAS	5/8" UNF	720	100	140	125	29,8
PAM 6	6000	415	1" GAS	5/8" UNF	978	100	140	125	38,8
PAM 8	8000	415	1" GAS	5/8" UNF	1234	100	140	125	47,6
PAM 10	10000	415	1" GAS	5/8" UNF	1490	100	140	125	56,5
PAM 4	4000	415	1" 1/ 2 GAS	5/8" UNF	530	140	190	175	46,3
PAM 6	6000	415	1" 1/ 2 GAS	5/8" UNF	660	140	190	175	55,2
PAM 7	7000	415	1" 1/ 2 GAS	5/8" UNF	725	140	190	175	59,6
PAM 8	8000	415	1" 1/ 2 GAS	5/8" UNF	790	140	190	175	64
PAM 10	10000	415	1" 1/ 2 GAS	5/8" UNF	920	140	190	175	72,8
PAM 12	12000	415	1" 1/ 2 GAS	5/8" UNF	1050	140	190	175	81,7
PAM 15	15000	415	1" 1/ 2 GAS	5/8" UNF	1245	140	190	175	94,9
PAM 20	20000	415	1" 1/ 2 GAS	5/8" UNF	1570	140	190	175	117
PAM 5	5000	415	1" 1/ 2 GAS	5/8" UNF	539	160	220	200	60,3
PAM 10	10000	415	1" 1/ 2 GAS	5/8" UNF	788	160	220	200	82,4
PAM 15	15000	415	1" 1/ 2 GAS	5/8" UNF	1037	160	220	200	104,5
PAM 20	20000	415	1" 1/ 2 GAS	5/8" UNF	1286	160	220	200	126,6
PAM 25	25000	415	1" 1/ 2 GAS	5/8" UNF	1534	160	220	200	148,6
PAM 30	30000	415	1" 1/ 2 GAS	5/8" UNF	1784	160	220	200	170,8
PAM 8	8000	415	2" GAS	5/8" UNF	576	200	280	250	97,1
PAM 10	10000	415	2" GAS	5/8" UNF	639	200	280	250	105,9
PAM 15	15000	415	2" GAS	5/8" UNF	799	200	280	250	128,1
PAM 20	20000	415	2" GAS	5/8" UNF	958	200	280	250	150,1
PAM 25	25000	415	2" GAS	5/8" UNF	1118	200	280	250	172,3
PAM 30	30000	415	2" GAS	5/8" UNF	1277	200	280	250	194,4
PAM 45	45000	415	2" GAS	5/8" UNF	1756	200	280	250	260,8
PAM 50	50000	415	2" GAS	5/8" UNF	1915	200	280	250	282,9
		415							
PAM 10	10000		2" GAS	5/8" UNF	544	250	340	310	138,5
PAM 20	20000	415	2" GAS	5/8" UNF	748	250	340	310	180,8
PAM 30	30000	415	2" GAS	5/8" UNF	952	250	340	310	223
PAM 40	40000	415	2" GAS	5/8" UNF	1156	250	340	310	265,3
PAM 50	50000	415	2" GAS	5/8" UNF	1360	250	340	310	307,5
PAM 60	60000	415	2" GAS	5/8" UNF	1564	250	340	310	349,8
PAM 70	70000	415	2" GAS	5/8" UNF	1768	250	340	310	392,1
PAM 80	80000	415	2" GAS	5/8" UNF	1972	250	340	310	434,3
Type		**Pression**	**Connection fluide**	**Valve pour Gaz**					**Poids**
Typ	**Volume**	**Druck**	**Medium Anschluss**	**Gasventil**	**A**	**ØB**	**ØD**		**Gewicht**

Codice ricambi / Spare parts code
Code pièces de rechange / Ersatzteil Schlüssel

Serie guarnizioni Gasket kit	Valvola gas Gas valve Stainless steel	Valvola gas Gas valve Carbon steel
ANEPAM80 GRPAM80	VALPRE58X	VALPRE580
ANEPAM100 GRPAM100	VALPRE58X	VALPRE580
ANEPAM140 GRPAM140	VALPRE58X	VALPRE580
ANEPAM160 GRPAM160	VALPRE58X	VALPRE580
ANEPAM200 GRPAM200	VALPRE58X	VALPRE580
ANEPAM250 GRPAM250	VALPRE58X	VALPRE580
Etanchéité **Dichtungen**	**Valve de gonflage** **Gasventil**	



Accessories



Apparecchiatura di precarica e controllo

Generalità
Si utilizza per la verifica periodica degli accumulatori e per il gonfiaggio degli stessi, dopo la sostituzione della sacca o per il variare della precarica.
Per il gonfiaggio è necessario allacciarsi a bombole contenenti azoto industriale secco a pressione superiore al valore della precarica richiesto, munite di riduttore di pressione (obbligatorio, per ragioni di sicurezza, nel gonfiaggio di accumulatori con PS < 210 bar).
L'uso del riduttore facilita l'immissione lenta e graduale dell'azoto nella sacca evitando così la possibilità di danneggiamento della stessa.

Costruzione
La **versione standard** è composta da:
- Un blocchetto per il rilevamento della pressione dotato di ghiera per l'attacco alla valvola gas dell'accumulatore, di manometro, di sfiato e di valvola di ritegno con attacco rapido al tubo di gonfiaggio
- Un tubo di gonfiaggio lungo 3 metri per alte pressioni, con raccordo per l'attacco alle bombole azoto
- Un nipplo per l'attacco del tubo di gonfiaggio al riduttore di pressione
- Un set di guarnizioni di ricambio
- Una valigetta

Su richiesta viene fornito con:
- Riduzioni per attacchi speciali della valvola gas dell'accumulatore
- Tubo di gonfiaggio con lunghezza di 6 metri

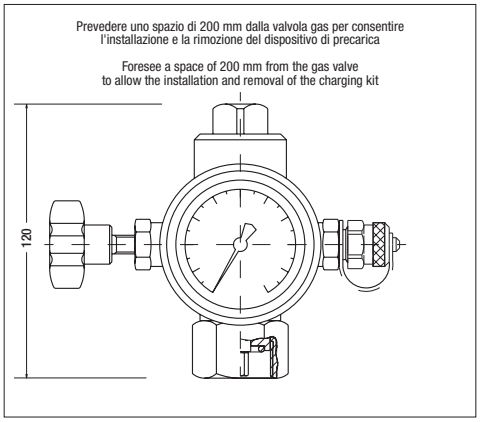
Caratteristiche tecniche
Pressione massima: 350 bar

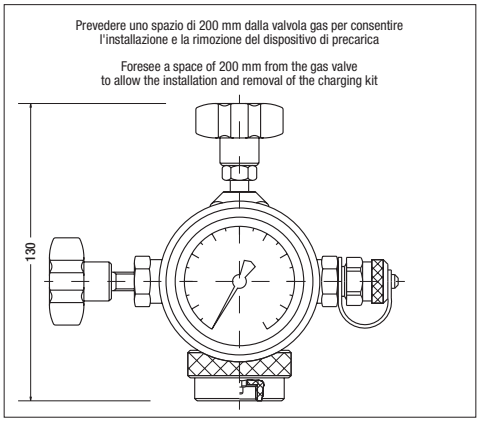
Attacco accumulatore:
- 5/8" UNF (standard)
- 7/8" UNF (a richiesta)
- Ø7,7 · 1/32"- Vg8 (a richiesta)
- 1/4" ISO 228 (a richiesta)

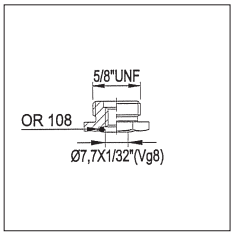
Attacco bombola: vedi pag 77

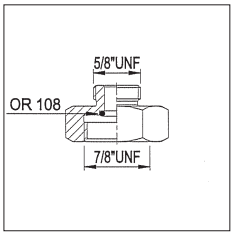
Manometro:
- Ø 63 attacco 1/4 gas
- Fondo scala 250 (standard)
- Altri valori a richiesta

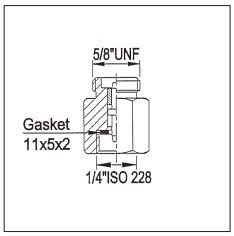
Peso: 1,8 kg (valigetta compresa)

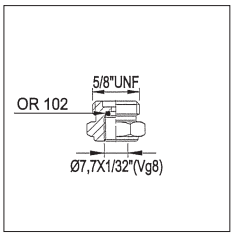












Riduzioni per attacchi speciali valvole gas
Reduction for special gas valve

Pre-loading and checking set

General
It is used for the periodic check of accumulator pre-charge and for the inflation of accumulators themselves after the replacement of the bladder or it is used for the change of pre-vharge values.
For the inflation is necessary a conection to the bottle filled with industrial dry nitrogen with a pressure higher than the precharge value required, provided with pressure reducer (mandatory, for safety reasons, during the inflation of accumulators with PS < 210 bar).
Furthermore the use of a pressure reducer make easier the slow and graduated inflow of nitrogen on the bladder avoiding in this way the possibility of demaging of the bladder itself.

Costruzione
Standard version includes:
- Valve body complete with ring nut connection to accumulator gas valve, pressure gauge, bleed and return snap-in hose connection
- 3 m charging hose for high pressure series complete with bottle connections
- One connection nipple to pressure reducer
- Set of spare gaskets
- Case

On request:
- Adapter for special accumulator gas valves
- Charging hose with lenght of 6 m

Technical features
Max working pressure: 350 bar

Accumulator connection:
- 5/8" UNF (standard)
- 7/8" UNF (on request)
- Ø7,7 · 1/32"- Vg8 (on request)
- 1/4" ISO 228 (on request)

Bottle connection: see page 77

Pressure gauge
- Ø 63 connection 1/4 gas
- End scale 250 (standard)
- Other values on request

Weight: 1,8 kg (case included)

Raccordo tubo di gonfiaggio - riduttore di pressione

L'uso dell'apparecchiatura di precarica per il gonfiaggio degli accumulutatori serie "basse pressioni" richiede, per ragioni di sicurezza, un riduttore di pressione montato sulla bombola di azoto, tarato a una pressione uguale o inferiore alla pressione massima di esercizio PS stampigliata sul corpo dell'accumulatore. Il nipplo di raccordo tra il tubo di gonfiaggio e il riduttore è rappresentato a lato e viene fornito di serie con l'apparecchiatura di precarica.

Raccordo tubo gonfiaggio - bombola di azoto

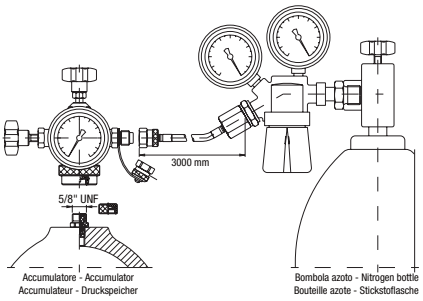
Per accumulatori serie "alta pressione" e, in generale, per tutti i modelli con Ps≥210 bar, ci si può collegare alla bombola di azoto tramite l'apposito raccordo senza l'uso di pressione. Il raccordo adatto va scelto in funzione del paese di origine della bombola di azoto, come indicato nella tabella.
Il numero della colonna contrassegnata dalla X indica la figura del raccordo valido per quel paese e coincide col numero usato per indicare l'attacco bombola nel codice di designazione.
Ciascun raccordo ha un suo codice (indicato fra parentesi) da usare per l'ordinazione di ricambi e non nella designazione dell'apparecchiatura di precarica.

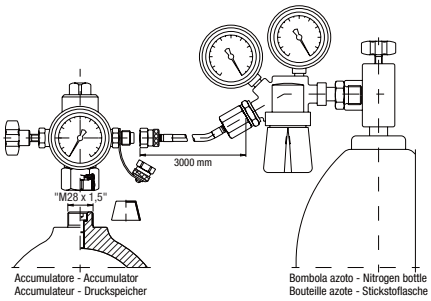
Connection charging hose - pressure reducer

The use of pre-loading set tor the inflation of accumulators "low pressure" series requires, for safety reasons, the use of presure reducer mounted on the nitrogen bottle calibrated at the pressure equal or lower than the max working pressure PS marked on the accumulator body.
The connection nipple between charging hose and reducer it is showed by the side of the page and it is normally supplied with the pre-loading set.

Connection charging hose - additional bottle

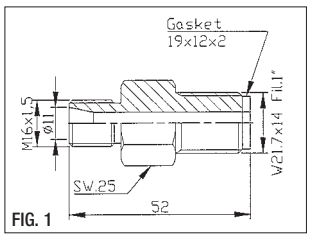
For "high pressure" accumulators an. in general, for all types with PS ≥210 bar, it is possible to connect the nitrogen bottle through the proper nipple without the use of pressure reducer.
The proper nipple has to be chosen according to the origin country of nitrogen bottle, as showed on the table below.
The number of the column indicated with X stabds for the fig. of the nipple valid for such country and coincide with the number used for the indication of bottle connection in the designation code. Each nipple has an own code (indicated on) to be used for the spare parts order and not on the designation of the pre-loading set.

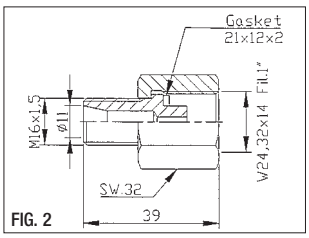


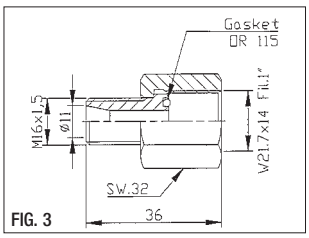


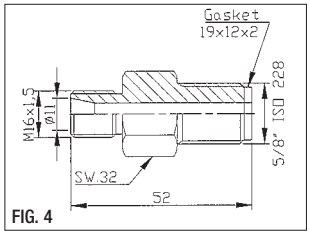
PAESE / COUNTRY	N° FIG.											
	1	2	3	4	5	6	7	8	9	10	11	12	13
ARGENTINA				X									
AUSTRALIA				X									
AUSTRIA		X											
BELGIUM		X											
BRAZIL													X
CANADA							X						
CHINA											X		
CZECH REPUBLIC		X											
DENMARK		X											
EGYPT			X										
FINLAND		X											
FRANCE			X										
GERMANY		X											
GREAT BRITAIN				X									
GREECE				X									
HUNGARY			X										
INDIA				X									
INDONESIA				X									
ITALY	X												
JAPAN									X				
KOREA												X	
LIBIA			X										
MEXICO			X										
MOROCCO			X										
NETHERLANDS		X											
NEW ZEALAND			X										
NIGERIA				X									
NORWAY		X											
PAKISTAN				X									
PHILIPPINES				X									
POLAND		X											
PORTUGAL				X									
ROMANIA			X										
RUSSIA								X					
SAUDI ARABIA			X										
SINGAPORE				X									
SLOVENIA			X										
SOUTH AFRICA						X							
SOUTH AMERICA					X								
SPAIN			X										
SWEDEN		X											
SWITZERLAND		X											
TAIWAN										X			
TUNISIA			X										
TURKEY				X									
USA							X						
UAE			X										
VENEZUELA								X					

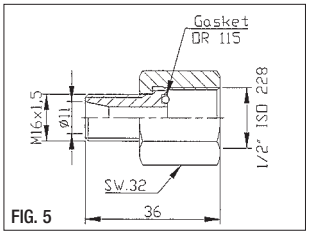
Salvo modifiche / Changes excepted

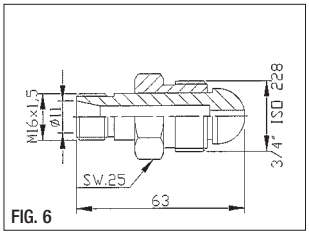


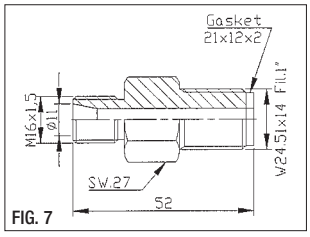


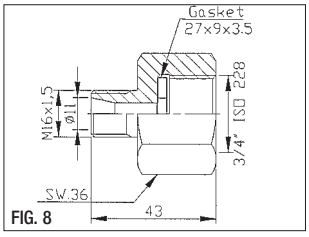


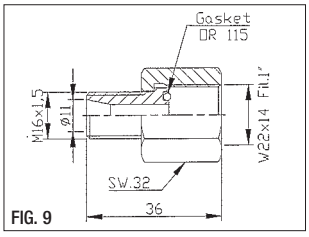


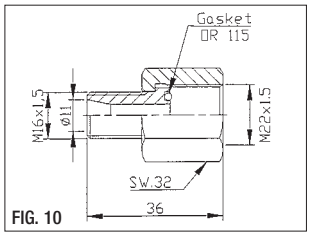


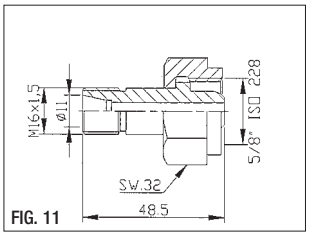


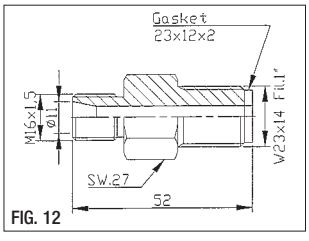


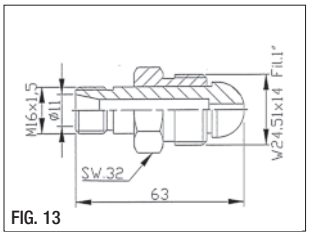












REDC

Unità di controllo elettronico per la regolazione della pressione di precarica in funzione della pressione di esercizio della pompa

Lo smorzatore di pulsazioni con controllo elettronico riduce considerevolmente i costi di installazione e di utilizzo.

Gli smorzatori di pulsazioni sono spesso impiegati per migliorare le condizioni d'utilizzo di pompe a stantuffo e a membrana (pompe dosatrici).
Lo smorzatore di pulsazioni è sostanzialmente un accumulatore idropneumatico con la funzione di ridurre le variazioni di pressione (pulsazioni) che si creano durante il ciclo d'una pompa.
Quando queste variazioni di pressione sono costanti è possibile calcolare il volume dello smorzatore di pulsazioni e la necessaria pressione di precarica dell'azoto onde ridurre le pulsazioni ad un'accettabile valore di riposo.
In realtà, il sistema non lavora sempre in queste condizioni ottimali, poiché durante il processo possono verificarsi dei cambiamenti come ad esempio una variazione della portata, della pressione d'esercizio, della temperatura o della viscosità del fluido.
Quando le variazioni sono frequenti, l'effetto di smorzamento di un accumulatore con precarico fisso della pressione viene eliminato.

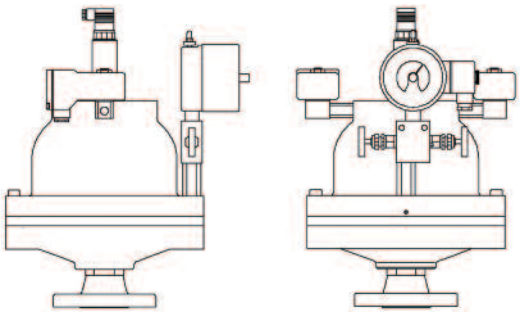
Con il sistema di controllo elettronico della SAIP, tipo REDC, è possible controllare e modificare in tempo reale la pressione di precarica dello smorzatore di pulsazioni in funzione della pressione d'esercizio.
Il sistema di controllo elettronico REDC della SAIP è un'alternativa economica e funzionale per le soluzioni più attuali: esiste la possibilità di montare più smorzatori di pulsazione in linea per coprire la gamma completa di pressione, oppure di caricare o di scaricare ogni volta lo smorzatore manualmente in base alla pressione d'esercizio.
Queste variazioni d'utilizzo fanno aumentare considerevolmente i costi di montaggio.
Nel nostro caso lo smorzatore di pulsazioni sarà caricato o scaricato automaticamente e quindi le sue prestazioni saranno sempre ottimali.

Electronic control unit for regulation of precharge pressure according to working pressure of the pump

Pulsation damper with electronical control lowers installation and operation cost considerably

Pulsation dampers are often used to obtain optimum conditions from piston and diaphragm pumps (dosing pumps).
The pulsation damper is basically a hydropneumatic accumulator, with the task to reduce the pressure variations (pulsations), created during the cycle of the pump.
When these pressure variations are constant, it is possible to calculate the volume of the pulsation damper and the necessary precharge pressure of the nitrogen, in order to reduce the pulsations to an acceptable rest pulsation.
As a fact the systems not always work in these optimum conditions, because there may be variations which often occur during processing like changing flow rate, change of working pressure, temperature and viscosity of the liquid.
When the variations are frequent the damping effect of an accumulator with fixed precharge pressure will be eliminated.

With the electronically control unit of SAIP, type REDC, it is possible to check and change in real time the precharge pressure of the pulsation damper, according to the working pressure.
The electronically control unit of SAIP, type REDC, is a functional and economical alternative for the existing solutions: there is the possibility to install more pulsation dampers on the line, covering the complete pressure range, or to charge or discharge the damper by hand every time according to the working pressure. These variations bring a considerable increase in installation and operating costs.
In our case the pulsation damper will be charged or discharged automatically and thus the pulsation damper will have always an optimum performance.



Modalità operativa del sistema di controllo REDC

Per consentire il controllo elettronico dello smorzatore di pulsazioni, due trasduttori di pressione sono collegati al sistema (uno sul lato gas dello smorzatore e l'altro sulle tubazioni in pressione). Un minicomputer, montato sul quadro di distribuzione elabora i segnali in entrata dei trasduttori di pressione e controlla la situazione di precarica dello smorzatore a pulsazioni che sarà automaticamente caricato o scaricato con azoto, in funzione della pressione d'esercizio, attraverso delle valvole.
Il minicomputer è in grado di monitorare lo smorzatore di pulsazioni ed attivare gli allarmi, come ad esempio in fase di raggiungimento di pressione minima o massima, oppure nel caso di rottura della membrana, ecc.
Il sistema REDC può anche essere impiegato in aree pericolose (Ex).

Operating mode of the REDC control unit

To permit the electronically control of the pulsation damper two pressure transmitters are installed in the system (one on the gas-side of the damper and one on the pressure piping).
A minicomputer, installed in the switch cupboard elaborates the incoming signals of the pressure transmitters and controls the precharge situation of the pulsation damper, which will be automatically loaded or unloaded with nitrogen, according to the working pressure, through on-off valves.
The minicomputer also can survey the pulsation damper and activate alarms such as the reaching of a minimum or maximum pressure, diaphragm rupture etc.
The REDC can also be equipped for use in hazardous areas (Ex).

Unité de contrôle électronique pour le réglage de la pression de gonflage en fonction de la pression de service de la pompe

L'amortisseur de pulsations à contrôle électronique réduit considérablement les coûts d'installation et d'utilisation.

Les amortisseurs de pulsations sont généralement utilisés pour améliorer les conditions d'utilisation des pompes à piston et à membrane (pompes doseuses).
L'amortisseur de pulsations est essentiellement un accumulateur hydropneumatique qui a pour fonction de réduire les variations de pression (pulsations) qui sont créées pendant le cycle de la pompe.
Quand ces variations de pression sont constantes, il est possible de calculer le volume de l'amortisseur de pulsations et la pression de gonflage à l'azote nécessaire pour réduire les pulsations à une valeur de repos acceptable.
En effet, le système ne fonctionne pas toujours dans des conditions optimales car des variations du débit, de la pression de service, de la température ou de la viscosité du fluide peuvent se produire pendant le processus.
Quand les variations sont fréquentes, l'effet amortissant d'un accumulateur à précharge fixe de la pression est éliminé.

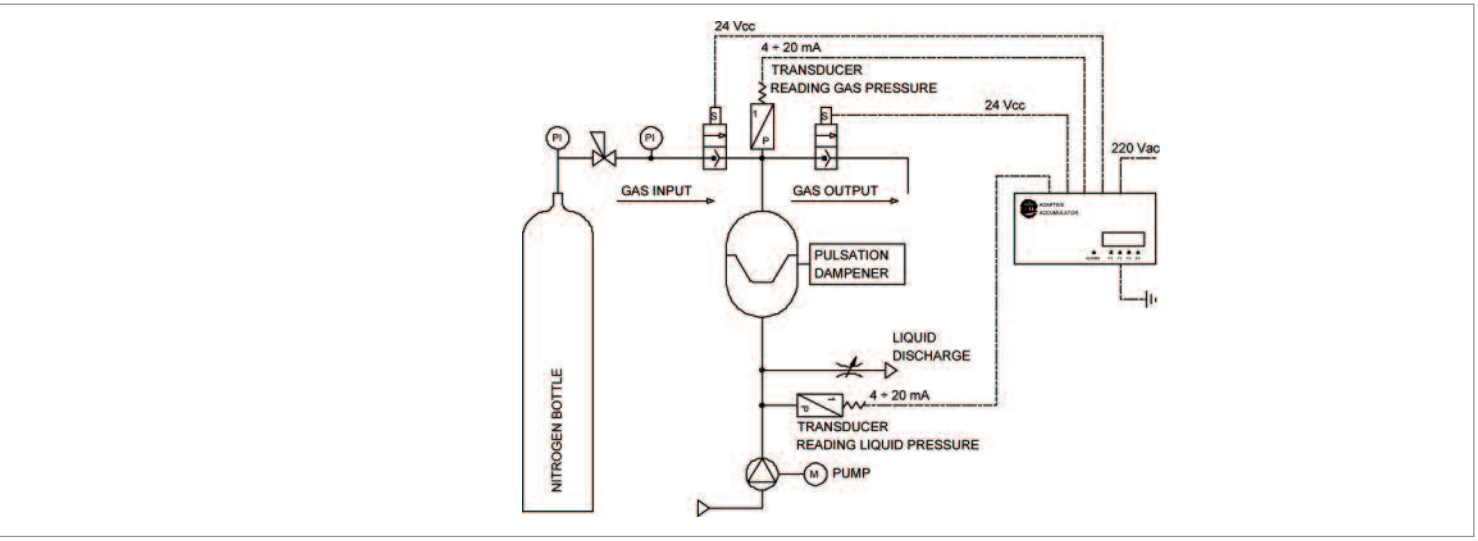
Le système de contrôle électronique SAIP, type REDC, permet de contrôler et de modifier en temps réel la pression de gonflage de l'amortisseur de pulsations en fonction de la pression de service.
Le système de contrôle électronique SAIP, type REDC, est une alternative économique et fonctionnelle aux solutions actuelles:
il est possible de monter plusieurs amortisseurs de pulsations en ligne pour couvrir toute la gamme de pression ou de charger ou décharger l'amortisseur manuellement, chaque fois, en fonction de la pression de service.
Ces variations comportent une augmentation considérable des coûts de montage et d'utilisation.
Dans notre cas, l'amortisseur de pulsations sera chargé ou déchargé automatiquement pour garantir des performances optimales.

Elektronische Regeleinheit für Überwachung des Vorspanndruckes je nach Betriebsdruck der Pumpe

Der Pulsationsdämpfer mit Elektronischer Steuerung senkt Bau-und Betriebskosten deutlich

Pulsationsdämpfer werden häufig eingesetzt, um die Funktion von Verdrängerpumpen (Dosierpumpen) zu optimieren.
Der Pulsationsdämpfer ist grundsätzlich ein Druckspeicher, mit der Aufgabe die Druckvarianten (Pulsationen) die beim Arbeitsablauf der Pumpe entstehen, zu reduzieren. Wenn diese Druckvarianten konstant sind, ist es möglich das Volumen des Pulsationsdämpfers und denr notwendigen Vorspanndruck des Gases zu berechnen, damit die Pulsationen zu einer akzeptablen Restpulsation reduziert werden. In der Wirklichkeit arbeiten die Systeme nicht immer unter diesen optimalen Voraussetzungen, weil es öfters häufige Variationen im Prozess gibt, wie Fördermenge, Arbeitsdruck, Temperatur und Viskosität des Mediums. Wenn die Druckvarianten häufig sind wird der Dämpfungseffekt eines Speichers mit konstantem Vorspanndruck eliminiert.

Mit der elektronischen Steuerung von SAIP, Typ REDC, hat man die Möglichkeit, in Realzeit den Vorspanndruck des Dämpfers zu kontrollieren und zu regeln, je nach dem Betriebsdruck der Prozessleitung.
Die elektronische Steuerung SAIP, Typ REDC, ist eine funktionelle und wirtschaftliche Alternative zu den bestehenden Lösungen:
Es besteht die Möglichkeit mehrere Pulsationsdämpfer in der Prozessleitung einzubauen, die den ganzen Druckbereich abdecken, bzw. den Pulsationsdämpfer, dem jeweiligen Druck entsprechend, manuell be-oder entladen zu können. Diese Varianten haben aber wesentlich höhere Installations-bzw. Betriebskosten zur Folge. Der Pulsationsdämpfer wird automatisch geladen oder entspannt und ist dadurch immer im optimalen Arbeitsbereich.



Mode opérationnel du système de contrôle REDC

Deux transducteurs de pression sont reliés au système (un du côté du gaz de l'amortisseur et l'autre sur les tuyaux en pression) pour permettre le contrôle électronique de l'amortisseur de pulsations. Un mini ordinateur installé sur le tableau de distribution élabore les signaux des transducteurs de pression et contrôle la précharge de l'amortisseur à pulsations qui est automatiquement chargé ou déchargé d'azote à travers les valves, en fonction de la pression de service. Le mini ordinateur est en mesure de contrôler l'amortisseur de pulsations et d'activer les alarmes quand il atteint la pression minimale ou maximale, ou en cas de rupture de la membrane etc.
Le système REDC peut être aussi utilisé dans les zones dangereuses (Ex).

Arbeitsweise der Steuerung REDC

Um die elektronische Ansteuerung des Pulsationsdämpfers zu ermöglichen, werden im System Druckaufnehmer installiert (auf dem Dämpfer gasseitig und in der Prozessleitung). Ein im Schaltschrank eingebauter Kleinrechner verarbeitet die eingehenden Signale der beiden Druckaufnehmer und regelt den Ladezustand des Pulsationsdämpfers, der je nach Druckverlauf automatisch entspannt oder gefüllt wird über on-off Ventile. Der Kleinrechner ist auch in der Lage, den Druckspeicher zu überwachen und Alarme zu aktivieren, z.B. das Erreichen eines Maximal-bzw. Minimaldruckes, Angabe von Membranbruch usw.
Der REDC kann auch für Einsatz im Ex-Bereich geliefert werden.

Fasteners

Collari / Collars / Anneaux / Schellen

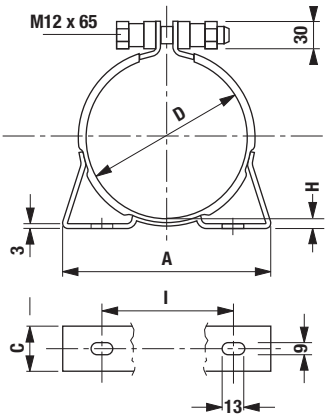


FIG. I

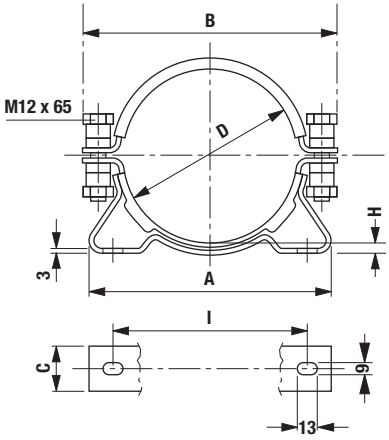


FIG.II

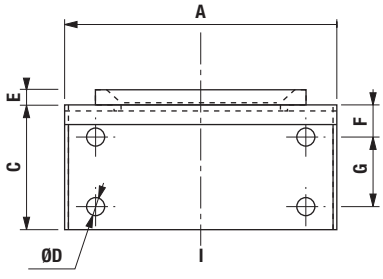
Dimensioni / Dimensions / Abmessungen

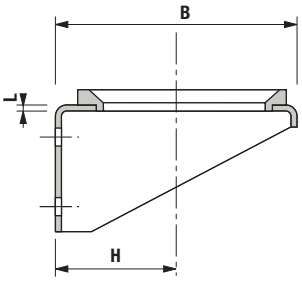
Rif.	A	B	C	D	H	I	L	M	Peso	Fig.	Per accumulatore Ø
Part no.									Weight		For accumulator Ø
				mm					kg		
CF 95	112		30	89 ÷ 95	9	90	13	9	0,65	I	90 / 94*
CF 120	131	178	30	114 ÷ 122	11	100	13	9	0,85	II	114 / 120
CF 175	182	237	30	168 ÷ 176	12	146	13	9	1,1	II	168 / 174
CF 220	250	290	30	215 ÷ 227	16	215	18	11	1,35	II	220
Réf.									Poids		Pour accumulateur Ø
Teil Nr.	A	B	C	D	H	I	L	M	Gewicht	Fig.	Fur Druckspeicher Ø

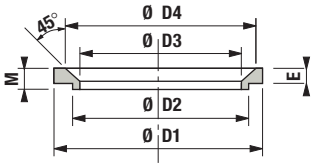
* Per L/LAV 0,35
* Pour L/LAV 0,35

*For L/LAV 0,35
*Fuer L/LAV 0,35

Mensole con anello / Brackets with ring / Console avec anneau / Konsolen mit Ring



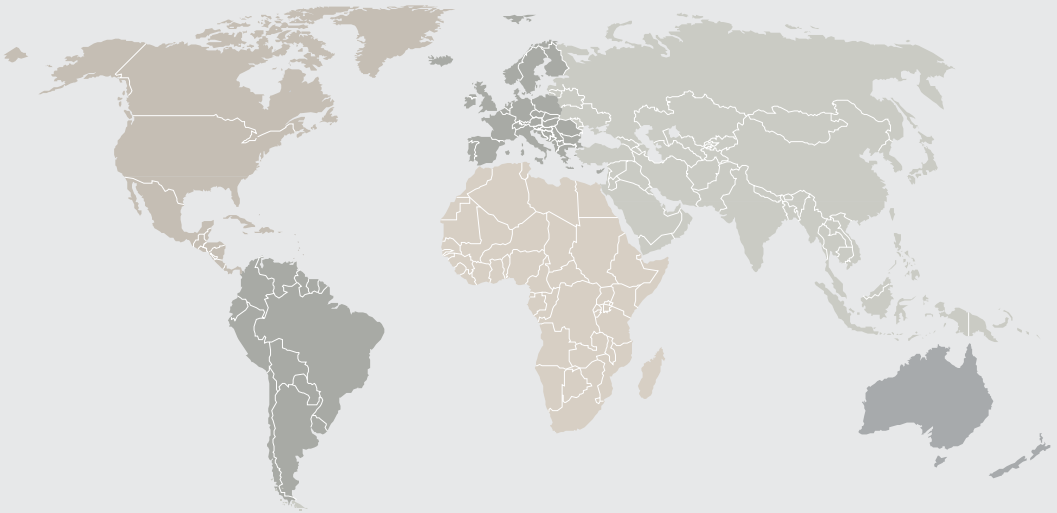




Dimensioni / Dimensions / Abmessungen

Rif. mensola	Rif. anello	A	B	C	D	D_1	D_2	D_3	D_4	E	F	G	H	I	L	M	Peso
Part no. bracket	Part no. ring																Weight
									mm								kg
M 175	A 175	200	177	90	10	140	120	91	114	10	30	40	95	140	3	18	1,6
M 260	A 260	260	232	120	17	200	170	150	176	15	30	70	128	200	4	22	3,8
Réf. Console	Réf. anneau																Poids
Teil Nr. Konsole	Teil Nr. Ring	A	B	C	D	D_1	D_2	D_3	D_4	E	F	G	H	I	L	M	Gewicht

Saip nel mondo
Saip worldwide



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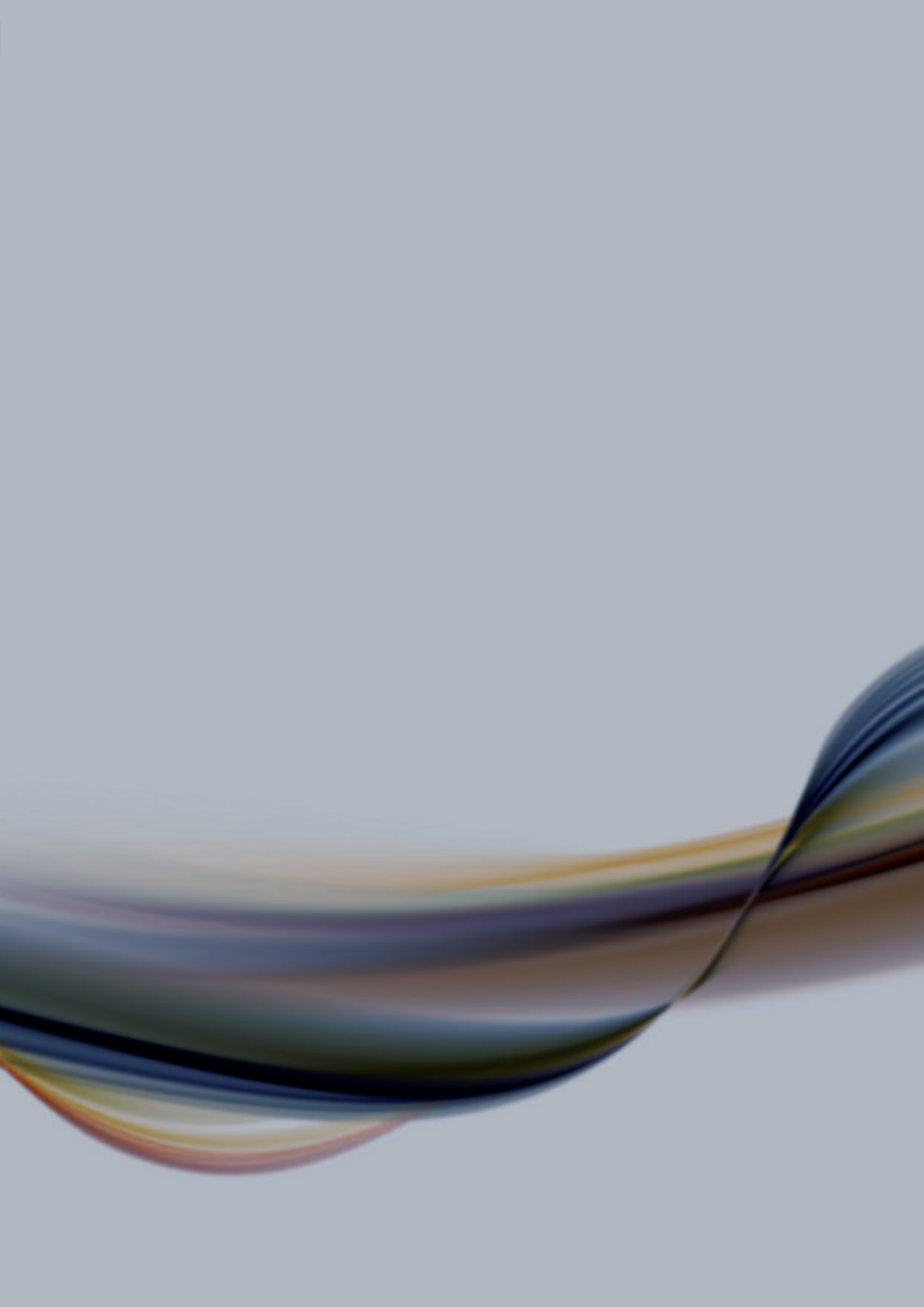

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