

Hydraulic Piston Accumulators

High Pressure

1. DESCRIPTION

1.1. FUNCTION

Fluids are practically incompressible and cannot therefore store pressure energy.

The compressibility of a gas is utilised in hydro-pneumatic accumulators for storing fluids.

HYDAC piston accumulators are based on this principle, using nitrogen as the compressible medium.

The piston accumulator consists of a fluid section and a gas section with the piston acting as a gas-proof screen. The gas section is pre-charged with nitrogen.

The fluid section is connected to the hydraulic circuit so that the piston accumulator draws in fluid when pressure increases and the gas is compressed. When the pressure drops, the compressed gas expands and forces the stored fluid back into the circuit.

HYDAC piston accumulators can be used in a wide variety of applications and are also available in different pressure grades (see following brochures: Hydraulic Piston Accumulators no. E 3.301../.. and Accumulators no. DEF 3.000../..).

The available brochure shows the high pressure versions of the piston accumulator (690/800/1000 bar) with its main dimensions, materials as well as gas and fluid connections.



1.2. CONSTRUCTION

The high pressure piston accumulator consist of:

- a cylinder with very finely machined internal surface.
- end caps on the gas side and the oil side, held in place by threads.
- a floating metal piston.
- a high pressure sealing system.

The piston floats on two guide rings which prevent metal-to-metal contact between the piston and the accumulator wall.

For use with certain aggressive or corrosive fluids, the parts coming into contact with the fluid can also made entirely from corrosionresistant material.

Suitable materials are also available for low temperature applications.

1.3. SEALING SYSTEMS

Precise information about operating conditions is required in order to select the most appropriate sealing system. Important criteria for this selection are, for example:

- design pressure
- effective pressure differential
- switching frequency or cycles
- temperature fluctuations
- operating fluid
- cleanliness of fluid (micron rating of filter)
- maintenance requirements

The high pressure piston is a modified piston type 2 especially designed for high pressure applications up to 1000 bar (Filtration < 20µm absolute).

1.4. MOUNTING

HYDAC piston accumulators operate in any position. Vertical installation is preferable with the gas side uppermost, to prevent contamination from the fluid setting on the piston sealing.

2. TECHNICAL SPECIFICATIONS

2.1. DESIGN PRESSURE

Three pressure ratings are available:
690 bar / 800 bar / 1000 bar

2.2. FLUID- AND TEMPERATURE RESISTANCE OF THE SEALS

NBR/PUR NBR/PUR ¹⁾	-20 to 80 °C	mineral oil, water
FPM/PUR	-15 to 80 °C	mineral oil, fuels

¹⁾ modified PUR for water applications

Please contact our technical sales department to receive more and detailed information regarding fluid- and temperature resistance.

There are also special grades available depending on the application.

2.3. MODEL CODE

(also order example)

SK800 - 20 / 2312 U - 800 ADE - VB - 18 P - 1

Series

Nominal volume in (l)

Material and piston code

Piston design type 2

Piston material

2 = carbon steel

3 = stainless steel

Material of cylinder and end caps

1 = carbon steel

3 = stainless steel

6 = carbon steel (low temperature)

Material of seals incl. piston

2 = NBR

5 = low temperature NBR

6 = FPM

Certificate code

U = PED 97/23/EC

Permissible working pressure (bar)

Fluid connection

Type of connection (see table 1)

Standard or specification of the type of connection (see tables 2)

Size of connection (see tables 3)

Gas side connection or gas valve

Type of connection (see table 1)

Standard or specification of the type of connection (see table 2)

(no letter if type V connection)

Size of connection (see tables 3 and 4)

Piston diameter

08 = 80 mm

10 = 100 mm

15 = 150 mm

18 = 180 mm

Supplementary equipment

M = magnetic flapper indication

UP = ultrasonic measurement system

E.. = special switch (fixed and adjustable)

P = magnetic piston

Safety devices

1 = burst disc (indicate nominal pressure and temperature)

3. DIMENSIONS

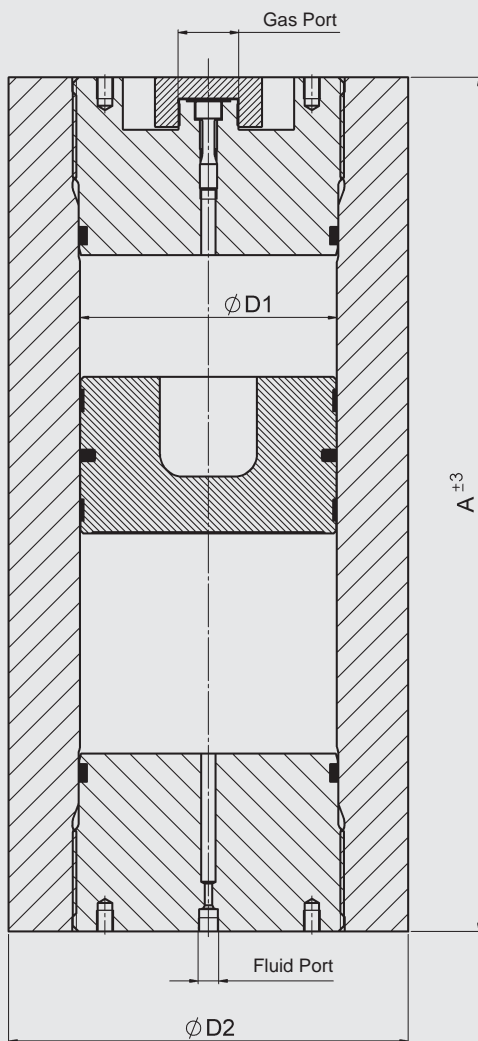


Table 1, Connection type

Code	Description
A	Threaded connection (female)
K	Combination connection
V	Gas valve type

Table 2, Threaded connection: standard or specification

Code	Description
A	Thread to ISO 228 (BSP)
B	Thread to DIN 13 or ISO 965/1 (metric)
C	Thread to ANSI B 1.1 (UN..-2B, seal SAE J 514)
D	Thread to ANSI B1.20.3 (NPTF)
S	Special model, e.g. autoclave connection

Table 3, Threaded model connection sizes

Type	Code, size						
Tab. 2	A	B	C	D	E	F	G
A	G 1/8	G 3/4	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4
B	M10x1	M12x1.5	M14x1.5	M16x1.5	M18x1.5	M22x1.5	M27x2
C	5/16-24 UNF	3/8-24 UNF	7/16-20 UNF	1/2-20 UNF	9/16-18 UNF	3/4-16 UNF	7/8-14 UNF
D	1/16-27 NPTF	1/8-27 NPTF	1/4-18 NPTF	3/8-18 NPTF	1/2-14 NPTF	3/4-14 NPTF	1-11 1/2 NPTF

Table 4, Gas valve models

Code	Description
B	Gas valve end connection M28x1.5/M8
F	Gas valve end connection M42x1.5

3.1. SERIES: SK690

max. allowable working pressure: 690 bar

Volume Litre	Ø D1 mm	Ø D2 *		A mm	Weight *	
		Carbon steel mm	Stainless steel mm		Carbon steel kg	Stainless steel kg
1	80	115	104	480	33	25
10				2270	105	75
5	100	156	130	955	115	70
20				2865	280	145
10	150	235	192	940	230	135
30				2070	450	215
20	180	280	230	1190	420	230
50				2365	750	370

* in accordance to PED 97/23/EC

3.2. SERIES: SK800

max. allowable working pressure: 800 bar

Volume Litre	Ø D1 mm	Ø D2 *		A mm	Weight *	
		Carbon steel mm	Stainless steel mm		Carbon steel kg	Stainless steel kg
1	80	120	110	480	35	30
10				2270	115	90
5	100	170	135	955	220	110
20				2865	350	165
10	150	250	200	940	430	220
30				2070	560	265
20	180	300	234	1190	660	300
50				2365	930	410

* in accordance to PED 97/23/EC

3.3. SERIES: SK1000

max. allowable working pressure: 1000 bar

Volume Litre	Ø D1 mm	Ø D2 *		A mm	Weight *	
		Carbon steel mm	Stainless steel mm		Carbon steel kg	Stainless steel kg
1	80	140	119	480	45	32
10				2270	190	120
5	100	170	142	955	310	130
20				2865	520	200
10	150	290	212	940	600	260
30				2070	780	340
20	180	345	252	1190	900	390
50				2365	1250	540

* in accordance to PED 97/23/EC

4. NOTE

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.