



Filters . Accumulators

### Definition and Operation

A hydro-pneumatic accumulator is a device used specifically for storage of liquid under pressure. As liquids, for all practical purposes, are incompressible, this objective is achieved by utilizing the compressibility of gases.

A flexible rubber separator i.e., diaphragm is fitted into the accumulator shell.

An inert gas - nitrogen - is filled into the diaphragm through a pressure valve to a pressure  $P_0$ . The diaphragm expands, filling the entire volume  $V_0$  of the accumulator shell.

When the system (circuit) pressure  $P_1$  is higher than the gas precharge pressure  $P_0$ , the liquid enters the shell and the diaphragm is compressed reducing the gas volume to  $V_1$ .

Should the liquid pressure rise to  $P_2$ , the volume of gas reduces to  $V_2$  with an attendant rise in pressure, thus balancing the liquid pressure.

A potential energy is now created in the accumulator to be utilised whenever needed.

### Construction

The accumulator, designed & manufactured according to directive 97/23/EC, consists of a pressure vessel on which the gas connection is located at the top part, while the fluid connection is in the lower part.

The body contains a flexible rubber diaphragm separating hydraulic fluid and nitrogen. The diaphragm incorporates a button (in carbon steel, in stainless steel or in polymer), bonded to the lower part which prevents its extrusion through the hole of the liquid port.

These Accumulators have the body in welded steel and therefore the diaphragm is not replaceable.

**Gas Charging** : Done with help of Pre-loading and Checking Set type-PCM.

### EPE PROCESS FILTERS & ACCUMULATORS PVT LTD

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## Welded Diaphragm Accumulators Type-AMW



### Technical Features

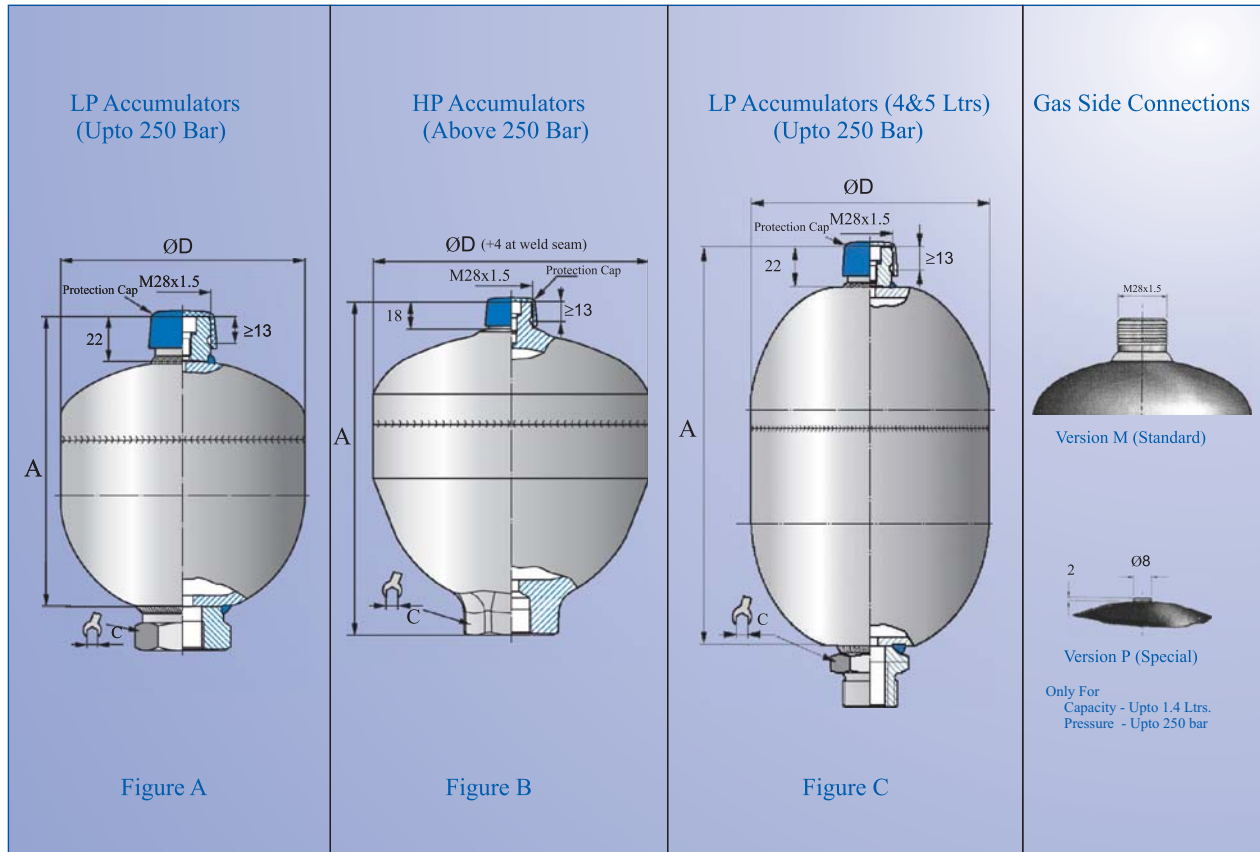
Design	:	Welded Shell, Non-repairable
Max.working pressure	:	40-350 Bar.
Test Pressure	:	1.43 times Max.working pressure
Temperature range	:	-10°C to +80°C
Allowable pre.Ratio (P2/P0):	:	8:1 (4:1 for AMW -2.8)
Nomianl Capacity	:	0.075 to 5 Ltrs.
Material of Construction	:	
Body	:	Carbon Steel-Welded
Diaphragm	:	Nitrile/Epichloridrin(ECO)
Connections-Gas Side	:	M28x1,5 (M) OR Dia 8
Fluid Side	:	Female Threaded-1/2", 3/4" OR With external and internal threads

### Identification Code

Accumulator type	Nominal Capacity (Liters)	Diaphragm Material	Max. Working Pressure (Bar)	Body Material	Fluid Side Connection	Test Certification	Gas Side Connection
AMW = Diaphragm Accumulator - Welded design	0.075 0.16 0.32 0.5 0.75 1.0 1.4 2.0 2.8 3.5 4.0 5.0	P = Nitrile (NBR) Y = Epichlorodrin (ECO)	40 100 140 160 210 250 350	C = Carbon Steel - Painted X = Stainless Steel	C. = BSP Thread (Internal/Female) E. = Combination (Male-Female) Thread ..1-8= Connection (as per table)	0 = Factory Testing 8 = CE/PED	M = M28x1.5 (Standard) P = Ø8(Special)



Note : Technical specifications are subject to change.



## Dimensions

Model	AMW -0.07	AMW -0.16	AMW -0.32	AMW -0.32	AMW -0.5	AMW -0.75	AMW -0.75	AMW -0.75	AMW -0.75	AMW -1.0
Capacity (ltrs)	0.075	0.16	0.32	0.32	0.5	0.75	0.75	0.75	0.75	1.0
MWP (bar)	250	250	210	250	160	160	210	250	350	250
Weight (kgs)	0.62	1.0	1.4	1.7	1.6	2.6	2.6	3.7	4.6	3.5
Figure	A	A	A	A	A	A	A	A	B	A
Height A	91	99.5	118	120	127	143.5	144	144	169	158
Diameter D	Ø64	Ø75	Ø92.5	Ø95	Ø103	Ø121	Ø121.5	Ø121.5	Ø132.5	Ø136
Standard Conn	E1	C1	C1	C1	C2	E2	C2	C2	C4	C2

Model	AMW -1.4	AMW -1.4	AMW -1.4	AMW -2.0	AMW -2.0	AMW -2.0	AMW -2.8	AMW -3.5	AMW -4.0	AMW -5.0
Capacity (ltrs)	1.4	1.4	1.4	2.0	2.0	2.0	2.8	3.5	4	5
MWP (bar)	140	250	350	100	250	350	210	250	250	250
Weight (kgs)	4.2	6.0	7.5	3.5	7.5	11.5	11.5	17.5	18.3	24.2
Figure	A	A	B	A	A	B	A	A	C	C
Height A	169	176	200	218	229	220	247	278	303	362
Diameter D	Ø147	Ø155	Ø160	Ø144.3	Ø155	Ø180	Ø166.5	Ø174	Ø174	Ø174
Standard Conn	E6	C2	C4	E3	C3	C5	C5	C5	C3	C3

## Checking & Charging

Pre-Loading & Checking Set type-PCM (refer Image on page 3) is to be used for checking / charging of welded Diaphragm Accumulators. When charging, the nitrogen bottles must be capable of delivering pressure higher than the desired accumulator gas pressure. Use dry industrial nitrogen. **NEVER USE OXYGEN OR AIR.**

Proceed as follows: (Refer image on page 3)

- \* Fit the suitable pre-charging equipment to the gas valve;
- \* Connect it to the nitrogen cylinder with the charging hose;
- \* Slowly introduce nitrogen into the accumulator until reaching a pressure slightly above the required level;
- \* Close the valve of nitrogen cylinder and disconnect the charging hose from the equipment;
- \* Wait for the gas temperature stabilization;
- \* Set the pressure by venting off the excess of gas.

**A PRESSURE REDUCING VALVE MUST BE INSTALLED BETWEEN THE NITROGEN GAS CYLINDER AND THE ACCUMULATOR WHEN THE GAS CYLINDER PRESSURE IS HIGHER THAN MAX PERMISSIBLE PRESSURE OF ACCUMULATOR.**

## Fluid Side Connections

### LP Accumulators (Upto 250 Bar Pressure)

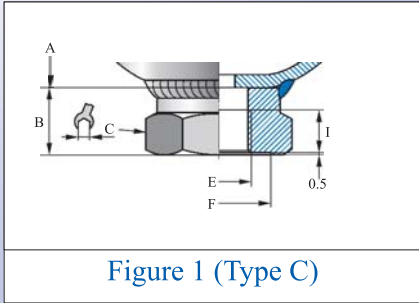


Figure 1 (Type C)

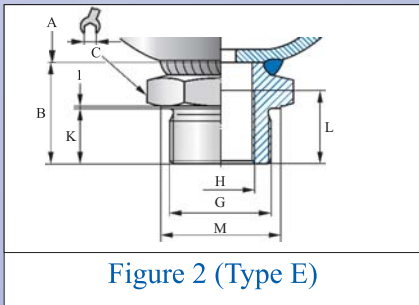


Figure 2 (Type E)

### HP Accumulators (Above 250 Bar Pressure)

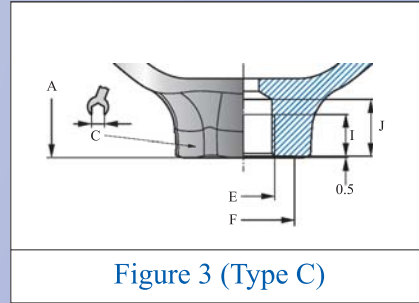


Figure 3 (Type C)

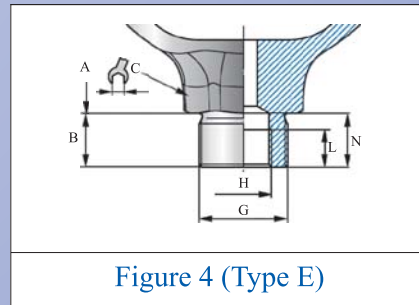
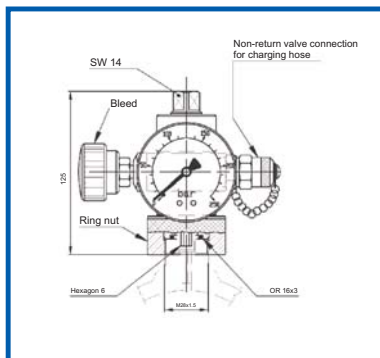


Figure 4 (Type E)

## Liquid Side Connection Dimensions

Fig	From	Thread Code	Thread	B	C (A/F)	E	F	G	H	I	J	K	L	M	N
1	C	C1	G ½" (F)	20	32	G ½	Ø29	-	-	14	-	-	-	-	-
		C2	G ½" (F)	22	41	G ½	Ø34	-	-	14	-	-	-	-	-
		C3	G ¾" (F)	-	41	G ¾	Ø34	-	-	-	-	-	-	-	-
2	E	E1	M14x1.5(M)	21.5	19	-	-	M14x1.5	Ø5	-	-	12	-	-	-
		E2	G1"xG½"	33	41	-	-	G1	G ½	-	-	18	14	Ø39	-
		E3	M33xG ½"	33	41	-	-	M33x1.5	G ½	-	-	18	24	Ø39	-
		E4	M42xG ¾"	44	55	-	-	M42x1.5	G ¾	-	-	25	26	-	-
		E5	M32xM22	33	41	-	-	M32x1.5	M22x1.5	-	-	-	24	-	-
		E6	M33xM22	33	41	-	-	M33x1.5	M22x1.5	-	-	18	24	Ø39	-
3	C	C4	G ½" (F)	-	41	G ½	Ø34	-	-	14	20	-	-	-	-
		C5	G ¾" (F)	-	46	G ¾	Ø34	-	-	16	23.5	-	-	-	-
4	E	E7	M33xG ½"	20	41	-	-	M33x1.5	G ½	-	-	-	14	-	20
		E8	M45xG ¾"	20	55	-	-	M45x1.5	G ¾	-	-	-	16	-	25.5

## Pre-Loading & Checking Set, Type-PCM



Installation



Kit

## General

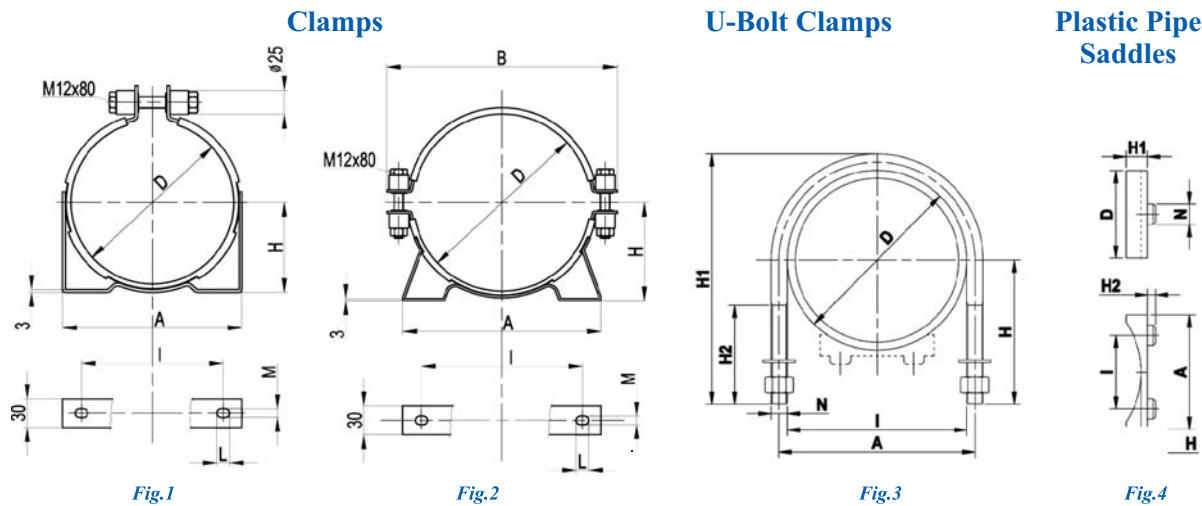
The accumulators should be properly fitted / clamped on the system. Clamping should not cause the shell or the accumulator connection to be stressed due to over tightening. It is necessary, especially with larger capacities / lengths, horizontal mounting or with heavy units, to use fasteners (clamps, brackets etc) that support the accumulator and prevent dangerous vibrations.

To achieve a high degree of efficiency, the accumulator should be fitted as close as possible to the installation it serves. The space necessary for charging & gauging kit is atleast 150mm above the gas fill valve.

## Position

It is suggested that the accumulators are installed vertically with gas side on top. The manufacturers name plate stating the initial pressure must be visible. Moreover access to the vent screw, if any, must be kept unobstructed.

The mounting must be such that, should a rupture occur on the pipe system at the liquid connection, or should the gas fill valve break, the accumulator cannot be pulled from its mounting by the forces involved. No welding or other mechanical process must be carried out on the accumulator shell for the purpose of attaching fasteners.

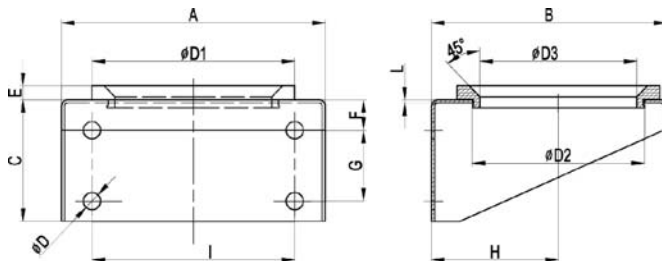


## Dimensions & Order codes

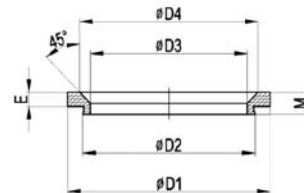
Order Code	Fig.	Weight (kgs)	A	B	D	H	I	L	M
10155	1	0.65	125	-	89-93	53-55	90	13	9
10157	2	0.85	135	194	114-122	66-70	100	13	9
10250	2	1.1	185	251	167-176	95-100	146	13	9
10410	2	1.35	256	298	215-227	120-126	216	20	10

Order Code	Fig.	Weight (kgs)	A	D	H	H1	H2	I	N
11468	3	0.12	123	115	84	149	35	115	M8
11475	4	-	75	70	8	17	10	40	15
11469	3	1.74	178	168	118	211	45	168	M10
11476	4	-	140	75	8	26	10	90	25
11470	3	2.75	236	220	157	282	60	220	M16
11477	4	-	140	75	8	26	10	90	25

## Bracket with Ring



## Support Ring



## Dimensions & Order codes

Order Code		Weight (kgs)	A	B	C	ØD	ØD1	ØD2	ØD3	ØD4	E	F	G	H	I	L	M
Bracket with ring	Support Ring																
10263	-	1.5	200	175	90	11	140	120	90	-	10	30	40	96	140	3	-
10363	-	3.6	260	232	120	17	200	170	150	-	15	30	70	125	200	4	-
-	10266	0.13	-	-	-	-	140	120	90	112	10	-	-	-	-	-	18
-	10345	0.22	-	-	-	-	200	170	150	175	15	-	-	-	-	-	23