

Technical Data

Design	: Welded shell, non-repairable
Nominal capacity	: 0.075 to 5 Ltrs.
Max. Pressure (PS)	: 40-350 Bar.
Test Pressure (PT)	: 1.43 x PS
Temperature range	: -20°C to +80°C (Standard)
Permissible Pre. Ratio($P_2:P_0$)	: Refer page 4
Max. perm. precharge pressure P_{0-max}	: 130 bar. However limitations due to transport regulations.

Specifications

Material of construction	
Body	: Carbon Steel-Painted or Low Temp Carbon Steel or Stainless Steel.
Diaphragm	: Nitrile(NBR) or Epichlorohydrin(ECO) or Viton (FKM).
Dia. Plug	: Plastic (Standard) or CS or SS.
Connections	
Gas Side	: M28x1.5(M) or Dia 8 or 5/16" UNEF/Vg8.
Fluid Side	: Female Threaded or Combination Thread (M+F) or SAE Ports. Others on request.

Fluid	
Fluid Viscosity range	: 10 to 400 cSt
Recommended viscosity	: 32 cSt
Contamination degree	: Class 21/17/14 acc. to ISO 4406 or better on request.

Description

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.

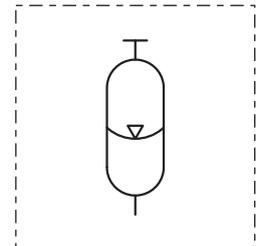
When the system (circuit) pressure P_1 is higher than the gas precharge pressure P_0 , the liquid enters the shell and the diaphragm is compressed reducing the gas volume to V_1 .

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 stored in the accumulator to be utilised whenever needed.



Hydraulic Symbol



Construction

The accumulator, designed & manufactured according to directive 2014/68/EU, 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 plug (in polymer, carbon steel or stainless steel), bonded to the lower part which prevents its extrusion through the hole of the liquid port.

The top and bottom portions of the Accumulator body are welded to contain the diaphragm permanently within.

Gas Charging

Pre-loading and Checking Set type-PCM is used with Version-M Gas Side Connection and type-PC for Version-V. Accumulators with Version-P are non-rechargeable.

Technical specifications subject to change.

Ordering Code

1 2 3 4 5 6 7 8 9 10 11
AMW - 0.75 - P - 210 - C - C2 - 0 - M / PO:10 / O:10ml / -
 ↙ indicate only if applicable ↘

1	Type	Diaphragm Accumulator - Welded design	= AMW
2	Nominal Capacity	0.075 Ltrs. 0.16 Ltrs. 0.32 Ltrs. 0.50 Ltrs. 0.75 Ltrs. 1.00 Ltr. 1.40 Ltr. 2.00 Ltr. 2.80 Ltr. 3.50 Ltr. 5.00 Ltr.	= 0.07 = 0.16 = 0.32 = 0.50 = 0.75 = 1 = 1.4 = 2 = 2.8 = 3.5 = 5
3	Diaphragm Material	Nitrile (NBR) (-20°C to +80°C) Epichlorohydrin (ECO) (-30°C to +110°C) Viton (FKM) (-10°C to +150°C) Without diaphragm	= P = Y = V = 0
4	Max. Working Pressure (Bar) (available sizes)	040 Bar 100 Bar 130 Bar (1.40 2.00) 140 Bar (0.75 1.00) 160 Bar (0.50 1.40) 210 Bar (0.32 0.50 0.75 1.40 2.00 2.80) 250 Bar (0.07 0.16 0.75 1.00 1.40 2.00 2.80 3.50 5.00) 350 Bar (0.75)	= 40 = 100 = 130 = 140 = 160 = 210 = 250 = 350
5	Body Material	Carbon Steel (-20°C to +80°C) - painted Low Temp. CS (-40°C to +80°C) - painted Stainless Steel (-20°C to +80°C) - unpainted	= C = L = X
6	Fluid Side Connection	Female Thread Combination Thread (Male + Female) SAE Connection Others With locking nut (external threading only)	= C.. = E.. = S.. = Z = ...N <div style="border: 1px solid black; padding: 2px; display: inline-block;">Refer page 3</div>
7	Certification	Factory Testing (design as per PED) CE/PED directive 2014/68/EU - marking	= 0 = 8
8	Gas Side Connection	M28x1.5(M) (Rechargeable type) ø8 (Non-rechargeable / sealed type) Plunger design (Rechargeable type)	= M = P = V.. <div style="border: 1px solid black; padding: 2px; display: inline-block;">Refer page 3</div>
9	Precharge Pressure (Bar)	Uncharged condition - Standard xx Bar at 20°C	= - = PO-xx
10	Oil Filling on Gas Side (ml)	Without any oil fill - Standard yy ml	= - = O-yy ml
11	Others	CS Accumulators painted in RAL9005 - std Diaphragm plug in Carbon Steel Diaphragm plug in Stainless Steel Other requirements (to specify)	= - = C = X = Z

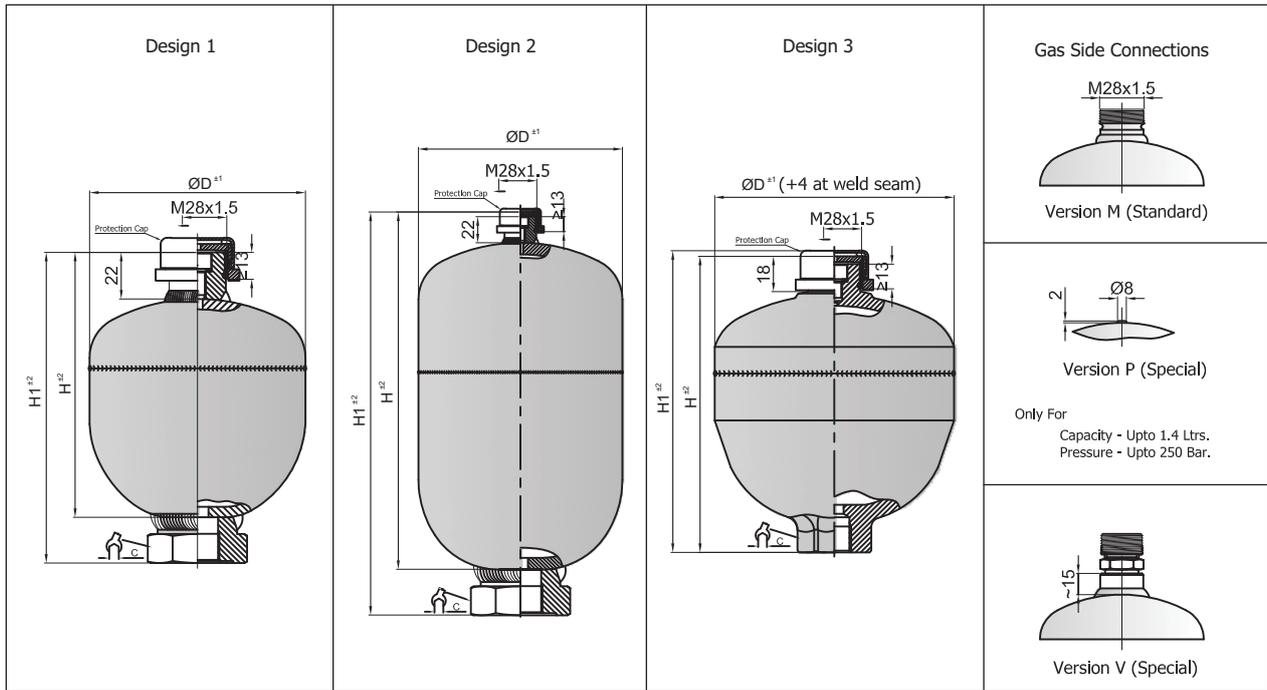
Ordering Code

1 2 3 4 5 6 7 8 9 10 11
AMW - **0.75** - **P** - **210** - **C** - **C2** - **0** - **M** / **P0:10** / **O:10ml** / **-**
 ↑ indicate only if applicable ↓

6	Fluid side Connection	Design 1 & 2 - Female Thread G1/2" (F) with ø29 spot face G1/2" (F) with ø34 spot face G3/4" (F) M18x1.5(F) G3/4" (F) without spot face 1/2" NPT(F) M22x1.5(F) G1/2" (F) without spot face M16x1.5(F) M14x1.5(F)	C = C1 = C2 = C3 = C6 = C7 = C8 = C9 = C11 = C12 = C13
		Design 1 & 2 - Combination Thread M14x1.5(M) with ø5 hole G1"(M) x G1/2"(F) M33x1.5(M) x G1/2"(F) M42x1.5(M) x G3/4"(F) M32x1.5(M) x M22x1.5(F) M33x1.5(M) x M22x1.5(F) M45x1.5(M) x G3/4"(F) G1"(M) with ø20 hole G3/4"(M) x M16x1.5(F) M18x1.5(M) with ø8 hole M18x1.5(M) with OR G3/8"(M) with ø8 hole M27x2(M) x M16x1.5(F) M14x1.5(M) with ø7.5 hole + OR M33x1.5(M) x M18x1.5(F) M16x1.5(M) with ø9 hole + OR M33x2(M) with ø18 hole + OR G1/2"(M) with ø10.5 hole G1/4"(M) with ø5 hole M33x1.5(M) x G1/2"(F) M27x.5(M) with ø10.5 hole M33x1.5(M) x M22x1.5 SAE 13/16-16 UN-2A (M) SAE 3/4-16 UNF-2A (M) SAE 1-1/16-12 UN-2A (M) X SAE 9/16-18 UNF-2B M33x1.5(M) X G3/4"(F)	E = E1 = E2 = E3 = E4 = E5 = E6 = E9 = E10 = E11 = E12 = E13 = E14 = E15 = E16 = E17 = E18 = E19 = E20 = E22 = E23 = E24 = E25 = E26 = E27 = E28 = E29
		Design 1 & 2 - SAE Thread S6, S8, S10, S12 (SAE Port Size)	S = S6 - S12
8	Gas Side Connection	M28x1.5(M) (Rechargeable type) ø8 (Non-rechargeable / sealed type) Plunger design (Rechargeable) .. 5/8" UNF(M) .. 5/8" UNF(M) in Stainless Steel .. 5/16" UNEF(M) / Vg8 .. 5/16" UNEF(M) / Vg8 - Military design .. 1/4" BSP(M) .. 7/8" UNF(M) .. M16x2(M) .. M16x1.5(M) .. Without Gas Valve	= M = P = VV = VX = V1 = VM = V2 = V4 = V5 = V6 = V0

* Before ordering, check for availability

Dimensions



Model	AMW-0.07	AMW-0.16	AMW-0.32	AMW-0.5	AMW-0.5	AMW-0.75	AMW-0.75	AMW-0.75
Capacity (Ltrs)	0.075	0.16	0.32	0.50	0.50	0.75	0.75	0.75
MWP (Bar)	250	250	210	160	210	140	210	250
Height H (mm)	91	99.5	118	127	129.5	138	140	144
Height H1 (mm)	111	119.5	138	149	151.5	160	162	166
Diameter (mm)	$\varnothing 64$	$\varnothing 75$	$\varnothing 92.5$	$\varnothing 103$	$\varnothing 105$	$\varnothing 115.5$	$\varnothing 118$	$\varnothing 121.5$
Weight (kgs)	0.76	0.95	1.42	1.82	2.00	2.22	2.52	3.30
Standard Connection	C1	C1	C1	C2	C2	C2	C2	C2
Design	1	1	1	1	1	1	1	1
Permissible Pre. Ratio	8 : 1	8 : 1	8 : 1	8 : 1	8 : 1	8 : 1	8 : 1	8 : 1
Clamp Part # (pg.6)	-	-	-	-	-	CL0201	CL0202	CT0701

Model	AMW-0.75	AMW-1	AMW-1	AMW-1.4	AMW-1.4	AMW-1.4	AMW-1.4	AMW-2
Capacity (Ltrs)	0.75	1.00	1.00	1.40	1.40	1.40	1.40	2.00
MWP (Bar)	350	140	250	130	160	210	250	130
Height H (mm)	148	152	158	170	172	176	180	223
Height H1 (mm)	170	174	180	192	194	199	202	245
Diameter (mm)	$\varnothing 125.5$	$\varnothing 130$	$\varnothing 136$	$\varnothing 148$	$\varnothing 150$	$\varnothing 155$	$\varnothing 157$	$\varnothing 148$
Weight (kgs)	3.92	2.70	4.20	3.60	3.94	5.20	6.34	4.68
Standard Connection	C2	C2	C2	C2	C2	C2	C2	C3
Design	1	1	1	1	1	1	1	2
Permissible Pre. Ratio	8 : 1	8 : 1	8 : 1	8 : 1	8 : 1	8 : 1	8 : 1	6 : 1
Clamp Part # (pg.6)	CT0701	CT0702	CT0702	CT0700	CT0700	-	-	CT0700

Model	AMW-2	AMW-2	AMW-2.8	AMW-2.8	AMW-3.5	AMW-5		
Capacity (Ltrs)	2.00	2.00	2.80	2.80	3.50	5.00		
MWP (Bar)	210	250	210	250	250	250		
Height H (mm)	229	233	247	251	278	361.5		
Height H1 (mm)	251	255	269	173	300	383.5		
Diameter (mm)	$\varnothing 155$	$\varnothing 159$	$\varnothing 166.5$	$\varnothing 170.5$	$\varnothing 174$	$\varnothing 174$		
Weight (kgs)	6.60	8.72	8.64	10.86	11.44	14.90		
Standard Connection	C3	C3	C3	C3	C3	C3		
Design	2	2	2	2	2	2		
Permissible Pre. Ratio	6 : 1	6 : 1	4 : 1	4 : 1	4 : 1	4 : 1		
Clamp Part # (pg.6)	-	-	CL0300	CL0301	CL0301	CL0301		

Liquid Side Connection Dimensions

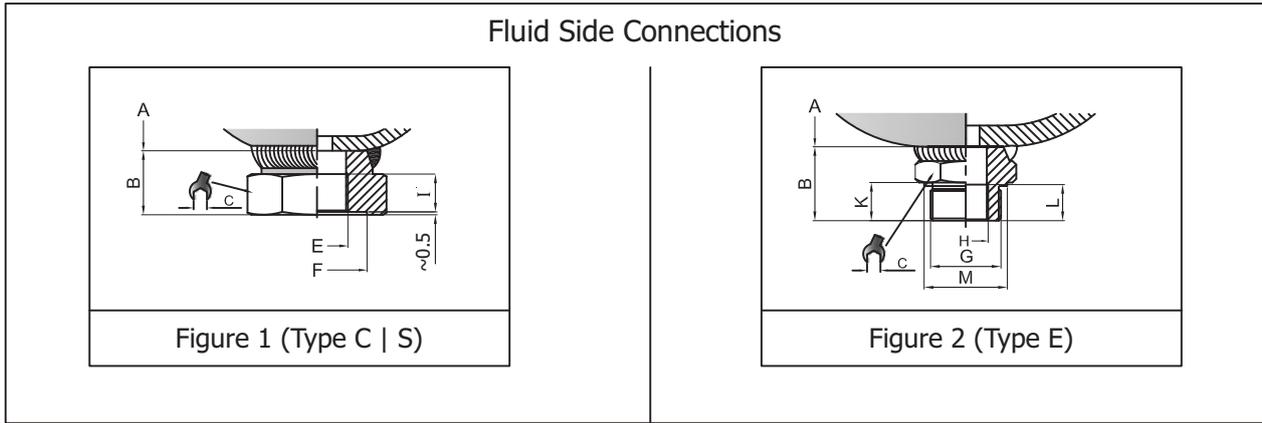


Fig	Type	Thread Code	Thread	B	C (A/F)	E	F (SPOT FACE)	G	H	I	K	L	M	
1	C	C1	G1/2"(F)	20	32	G1/2"	Ø29	-	-	18	-	-	-	
		C2	G1/2"(F)	22	41	G1/2"	Ø34	-	-	16	-	-	-	
		C3	G3/4"(F)	22	41	G3/4"	Ø34	-	-	16	-	-	-	
		C4	G1/2"(F)	for Design 3 Accumulators										
		C5	G3/4"(F)											
		C6	M18x1.5(F)	22	32	M18x1.5	Ø29	-	-	16	-	-	-	
		C7	G3/4"(F)	32	41	G3/4"	W/O	-	-	24	-	-	-	
		C8	1/2" NPT(F)	22	36	1/2" NPT	-	-	-	13.6	-	-	-	
		C9	M22x1.5(F)	22	46	M22x1.5	-	-	-	20	-	-	-	
		C10	-	not in use										
		C11	G1/2"(F)	21	30	G1/2"	W/O	-	-	16	-	-	-	
		C12	M16x1.5(F)	20	32	M16x1.5	-	-	-	18	-	-	-	
		C13	M14x1.5(F)	20	32	M14x1.5	-	-	-	18	-	-	-	
1	S	S6	SAE 9/16-18 UNF(F)	20	32	9/16-18 UNF	-	-	-	12.7	-	-	-	
		S8	SAE 3/4-16 UNF(F)	26	32	3/4-16 UNF	-	-	-	14.3	-	-	-	
		S10	SAE 7/8-14 UNF(F)	26	41	7/8-14 UNF	-	-	-	16.7	-	-	-	
		S12	SAE 1-1/16-12 UN(F)	30	41	1-1/16-12 UN	-	-	-	19	-	-	-	
2	E	E1	M14x1.5(M)	21.5	19	-	-	M14x1.5	Ø5	-	12	-	-	
		E2	G1" X G1/2"	33	41	-	-	G1"	G1/2"	-	18	16	Ø39	
		E3	M33x1.5 X G1/2"	35	41	-	-	M33x1.5	G1/2"	-	18	18	-	
		E4	M42x1.5 X G3/4"	44	55	-	-	M42x1.5	G3/4"	-	25	26	-	
		E5	M32x1.5 X M22x1.5	33	41	-	-	M32x1.5	M22x1.5	-	16	24	-	
		E6	M33x1.5 X M22x1.5	35	41	-	-	M33x1.5	M22x1.5	-	17	24	Ø39	
		E7	M33x1.5 X G1/2"	for Design 3 Accumulators										
		E8	M45x1.5 X G3/4"											
		E9	M45x1.5 X G3/4"	36	55	-	-	M45x1.5	G3/4"	-	20	16	-	
		E10	G1"(M)	38	41	-	-	G1"	Ø20	-	18	-	Ø39.9	
		E11	G3/4" X M16x1.5	35	32	-	-	G3/4"	M16x1.5	-	16	12	Ø32	
		E12	M18x1.5(M)	30	30	-	-	M18x1.5	Ø8	-	14	-	Ø29	
		E13	M18x1.5(M) + OR	31	30	-	-	M18x1.5	Ø11	-	12.5	-	Ø23.8	
		E14	G3/8"(M)	30	24	-	-	G3/8"	Ø8	-	12	-	Ø21.9	
		E15	M27x2 X M16x1.5	35	41	-	-	M27x2	M16x1.5	-	16	18	Ø32	
		E16	M14x1.5(M) + OR	25.5	22	-	-	M14x1.5	Ø7.5	-	11	-	Ø18.8	
		E17	M33x1.5 X M18x1.5	38	41	-	-	M33x1.5	M18x1.5	-	20	14.5	-	
		E18	M16x1.5(M) + OR	30	30	-	-	M16x1.5	Ø9	-	11.5	-	Ø21.8	
		E19	M33x2(M) + OR	38	41	-	-	M33x2	Ø18	-	18.5	-	-	
		E20	G1/2"(M)	32.5	32	-	-	G1/2"	Ø10.5	-	16.5	-	Ø32	
		E21	-	not in use										
		E22	G1/4"(M)	22	19	-	-	G1/4"	Ø5	-	12	-	Ø18	
		E23	M33x1.5 X G1/2"	33	41	-	-	M33x1.5	G1/2"	-	18	24	Ø39	
		E24	M27x2(M)	45	32	-	-	M27x2	Ø10.5	-	18.5	-	Ø31.8	
		E25	M33x1.5 X M22x1.5	38	41	-	-	M33x1.5	M22x1.5	-	20	15.5	-	
		E26	SAE 13/16(M)	57	32	-	-	13/16-16UN	Ø20	-	34.3	-	-	
		E27	SAE 3/4-16(M)	33	30	-	-	3/4-16UNF	Ø29	-	10.9	-	-	
		E28	SAE 1-1/16 x SAE9/16	41	36	-	-	1-1/16-12UN	9/16-18UNF	-	18.3	12.7	Ø32	
		E29	M33x1.5 X G3/4"	33	41	-	-	M33x1.5	G3/4"	-	18	16	Ø39	

All dimensions in mm

Mounting Accessories

General

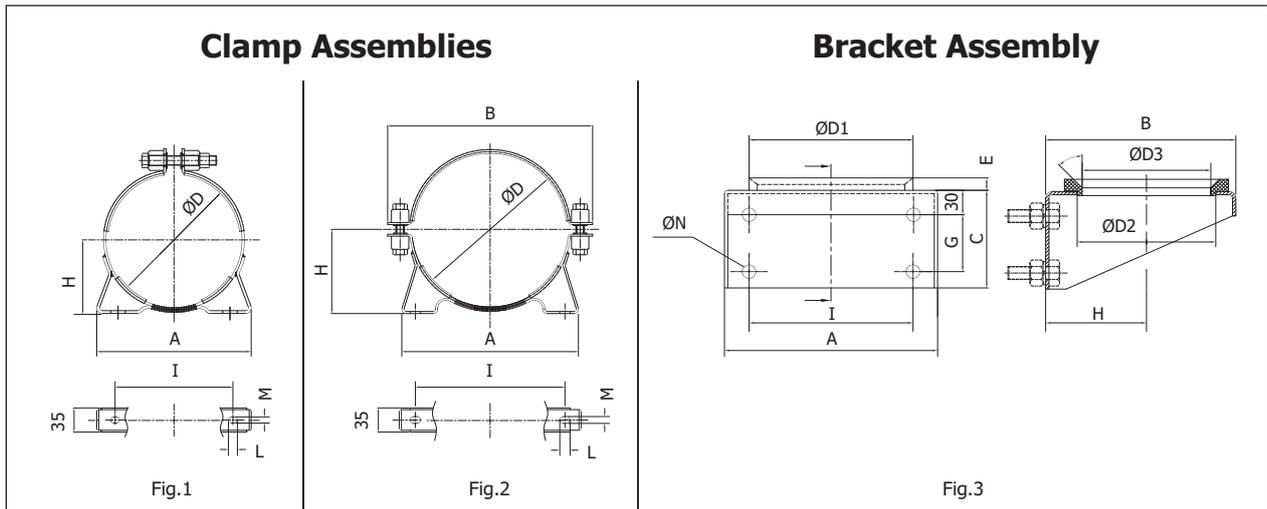
The accumulators should be properly fitted / clamped on the system. Clamping should not cause the shell or the accumulator connection to be stressed due to over tightening. It is necessary, especially with larger capacities / lengths, horizontal mounting or with heavy units, to use fasteners (clamps,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

Part #	Fig.	Weight kg ¹⁾	A	B	C	ØD	ØD1	ØD2	ØD3	E	G	H	I	L	M	ØN
CL0201	1	0.75	138	-	-	114 - 118	-	-	-	-	-	64 - 68	100	13	9	-
CL0202	2	0.85	135	194	-	114 - 125	-	-	-	-	-	68 - 73	100	13	9	-
CT0701	2	0.95	135	185	-	119 - 125	-	-	-	-	-	68 - 73	100	20	10	-
CT0702	2	1.00	180	201	-	130 - 136	-	-	-	-	-	71 - 76	121	20	10	-
CT0700	2	1.15	176	220	-	148 - 150	-	-	-	-	-	84 - 87	141	13	9	-
CL0300	1	0.85	190	-	-	164 - 170	-	-	-	-	-	81 - 95	148	13	9	-
CL0301	2	1.10	185	240	-	163 - 174	-	-	-	-	-	91 - 100	146	13	9	-
BA0300	3	1.80	200	175	90	-	140	119	107	10	40	93	140	-	-	11
BA0400	3	3.60	260	232	120	-	200	169	157	15	70	123	200	-	-	17

¹⁾ = Weight including bolts & nuts

Dimensions in mm

Diaphragm Materials | Checking & Charging

The choice of the elastomer used for the seals depends on the liquid to be used and on the operating temperatures (and at times, storage). In the chart below, each polymer has a designated letter to be used in the ordering code.

Code letter	Polymer	ISO	Temperature range (°C)	Some of the liquids compatible with the polymer
P	Nitrile (Buna-N / Perbunan)	NBR	-20 to +80	Mineral, vegetable, silicon and lubricating oils, industrial water, glycols, non-flammable liquids (HFA-HFB-HFC), aliphatic hydrocarbons, butane, diesel oil, kerosene, fuel oils etc.
Y	Epichlorohydrin	ECO	-30 to +110	Mineral oils and greases, aliphatic hydrocarbons (propane, butane and gasoline), silicone oils and greases, water at room temperature, resistance to ozone, aging and weathering.
V	Viton (Flouroelastomer)	FKM	-10 to +150	Mineral oils, greases, non-flammable fluids of HFD group, silicone oils, animal and vegetable oils, aliphatic hydrocarbons (gasoline, butane, propane, natural gas), aromatics hydrocarbons (benzene, toluene), chlorinated hydrocarbons (Tetrachloroethylene, carbon tetrachloride), fuels (regular, super and containing methanol), excellent resistance to ozone, weathering and ageing.

Checking & Charging

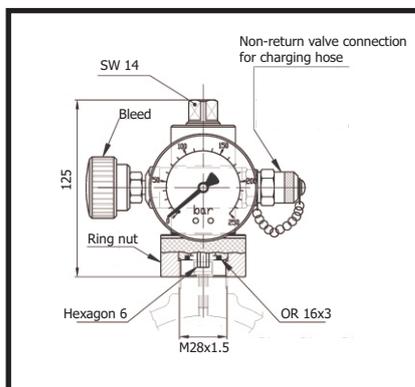
For Accumulators with M design Gas Valve use Pre-Loading & Checking Set type-PCM. For Accumulators with V design Gas Valve PC type with appropriate adaptor is to be used. Accumulators with P design Gas Valve - Non-rechargeable type.

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.**

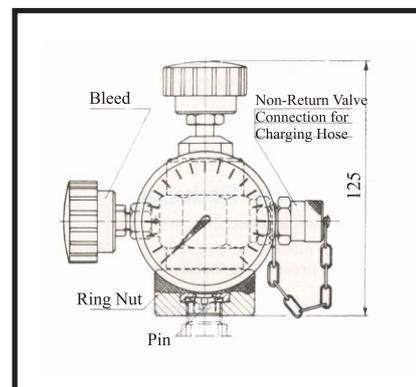
Proceed as follows:

- * 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.
- * Tighten the Charging Valve to 20⁺⁵Nm using torque wrench.

Pre-Loading & Checking Set



Type PCM



Type PC All dimensions in mm

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.

Certification

All hydraulic accumulators are pressure vessels and are subject to the national regulations and directives, valid at the place of installation.

Diaphragm accumulator type AMW are designed and manufactured as per CE/PED in accordance with Directive 2014/68/EU.

As per the provisions of Directive 2014/68/EU all accumulators with $V \leq 1$ ltr and $PS \leq 1000$ bar ($PS = \text{max. working pressure in bar}$) are not allowed to be CE marked [Article 4 Clause 3].

Accumulators of capacity greater than 1 ltr are available with CE marking. When specified every shipping batch is provided with a conformity declaration and use and maintenance instructions.

Safety

All pressure vessels must be protected by means of a pressure relief valve in accordance with Directive 2014/68/EU. Safety Blocks type-B are used for this purpose.

The most important elements of the safety-related equipment are the pressure measuring device (pressure gauge), device for the preventing excess pressure (safety valves), non-return valves and shut-off valves and devices for de-pressurising (bleed valves). These functions can be performed with individual components or integrated in the form of a safety block type-B.

Special Instructions

It is strictly forbidden to:

- weld or solder or carry out any mechanical operations on the accumulator.
- engrave or permanently stamp the surfaces of the accumulator shell and / or carry out other operations that could affect or change the mechanical properties of the accumulator
- use the accumulator as a structural element: it should not be subjected to stresses or loads.
- change the data of the nameplate and / or accumulator without the permission of the manufacturer.
- use a different fluid than those designed for .

Shipment & Storage

The accumulators are supplied with a nitrogen precharge pressure expressly specified by the customer. In cases where no indication has been given, they are supplied without any storage/precharge pressure. The precharge pressure is indicated on the codification data punched / engraved on the body of the accumulator.

For shipment the accumulators are packed either in cartons or in boxes or on pallets. This package is suitable for storage at the warehouse but not for stacking during transportation.

On receipt make sure that the package and accumulators have not undergone damage during transportation. The goods must be handled with care so as to avoid knocking, above all, the gas valve and the codification data.

When stored they are to be kept in a cool and dry indoor environment. The storage temperature should be maintained between $+15^{\circ}\text{C}$ to $+30^{\circ}\text{C}$.

Do not expose to flames or heat. The storage condition may affect the aging of the elastomers.

The shelf life of these accumulators is 3 years. In case not in use for more than 3 months, the accumulators must be depressurized and stored for a maximum of 3 years. Beyond this disposal action must be initiated.

Installation

Before installation, you must perform a visual check to verify that the accumulator has not suffered any damage during shipping / handling. Verify that the requested type matches with what stamped on the nameplate.

We recommend using the accumulator with a suitable safety valve or a security safety block type B. This device provides user and equipment protection against possible damage caused by pressure surges, and also makes the maintenance of the accumulator easier, so facilitating the interception and the discharge.

Provide for a clearance of 200 mm above the gas pre-charge valve to allow access to and control of the pre-charge equipment.

These accumulators may be installed in any position from horizontal to vertical (preferably with the pre-charge valve at the top), and the identification details must be visible.

Proceed to the assembly so that no abnormal force affects the pipes connected directly or indirectly to the accumulator, so we recommend the use of supporting components and also fastening to avoid the transmission of vibrations.

Make sure the fluid is compatible with the elastomer of the diaphragm.

Check that the max. allowed accumulator pressure is equal to or greater than that of the hydraulic circuit and that the temperature during operation is maintained within the range expected.

Make sure the fluid does not contain contaminants and/or abrasive.

Disposal

Before the accumulator is sent for disposal or recycling, it should always be discharged completely of the pre-charge pressure and the gas valve unscrewed. Pre-loading and checking kits are suited for this task.

For permanently sealed design Accumulators (Version-P) the diaphragm is preferably damaged on a test rig or the accumulator is carefully drilled ($\varnothing \geq 6$ mm) on the gas chamber using a suitable clamp . As the gas flowing out can draw metal splinters or particles with it, safety glasses must be worn.

Environmental Protection

Careless disposal of the accumulator and the residual fluid contained therein can cause environmental pollution.

Dispose the Accumulator in accordance with provisions applicable in the country of use.

Fluid residues are to be disposed according to the respective safety data sheets valid for the specific hydraulic fluids.