INDUSTRIAS
IBAIONDO, S.A.

PRODUCT GUIDE 2014

Hydropneumatic tanks

Expansion vessels

Buffer storage tanks
Compressed air tanks

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HYDROPNEUMATIC TANKS

EXPANSION VESSELS

BUFFER STORAGE TANKS AND COMPRESSED AIR TANKS

Lloyd's Register

EC Certificate of Conformity

In accordance with the requirements of the Pressure Equipment Directive 97/23/EC

This is to certify that the Quality Management System of:

Industrias Ibaiondo, S.A.
Plentzia Bidea, 3
48100 Mungía (Vizcaya)
Spain

has been assessed against the requirements of Annex III, Module D of the Pressure Equipment Directive 97/23/EC, and conforms to the requirements for the products shown below:

Manufacture of hydro-pneumatic tanks with replaceable bladder, replaceable & fixed bladder, expansion tanks and hydro pneumatic hammer shock absorbers.

Approval is subject to the continued maintenance of the quality system in accordance with the requirements of the above Directive and Regulations, and continuing to comply with the EC Design and/or EC Type Examination Certificate(s) as listed on the attached schedule.

Authorisation is hereby given to use the LRV Notified Body Identification Number in accordance with the requirements of the specified Directive and Regulations in relation to the products as identified above.

Certificate No:	0038/PED/MAD/0127
Original Approval:	22 March 2002
Current Certificate:	18 March 2014
Certificate Expiry:	21 March 2017

LRV Notified Body Number 0038

Lloyd's Register Verification Limited
A member of the Lloyd's Register group
Lloyd's Register
José Rivero
18 March 2014
Madrid Office

José Rivero on behalf of Lloyd's Register Verification

CERTIFICATE

TÜV NORD

Management system as per
EN ISO 9001 : 2008

In accordance with TÜV NORD CERT procedures, it is hereby certified that

Industrias Ibaiondo S.A.
Plentzia Bidea 3
48100 Mungia-Bizkaia
Spain

applies a management system in line with the above standard for the following scope

Design Production and Supply of Pressure Vessels, Replaceable Bladder Hydropneumatic Tanks, Replaceable & Fixed Bladder Expansion Tanks, Hydropneumatic Hammer Shock Absorbers

Certificate Registration No. 44 100 130599
Audit Report No. 3511 8542

Valid until 2015-03-24

G. Bräutigam
Certification Body
at TÜV NORD CERT GmbH

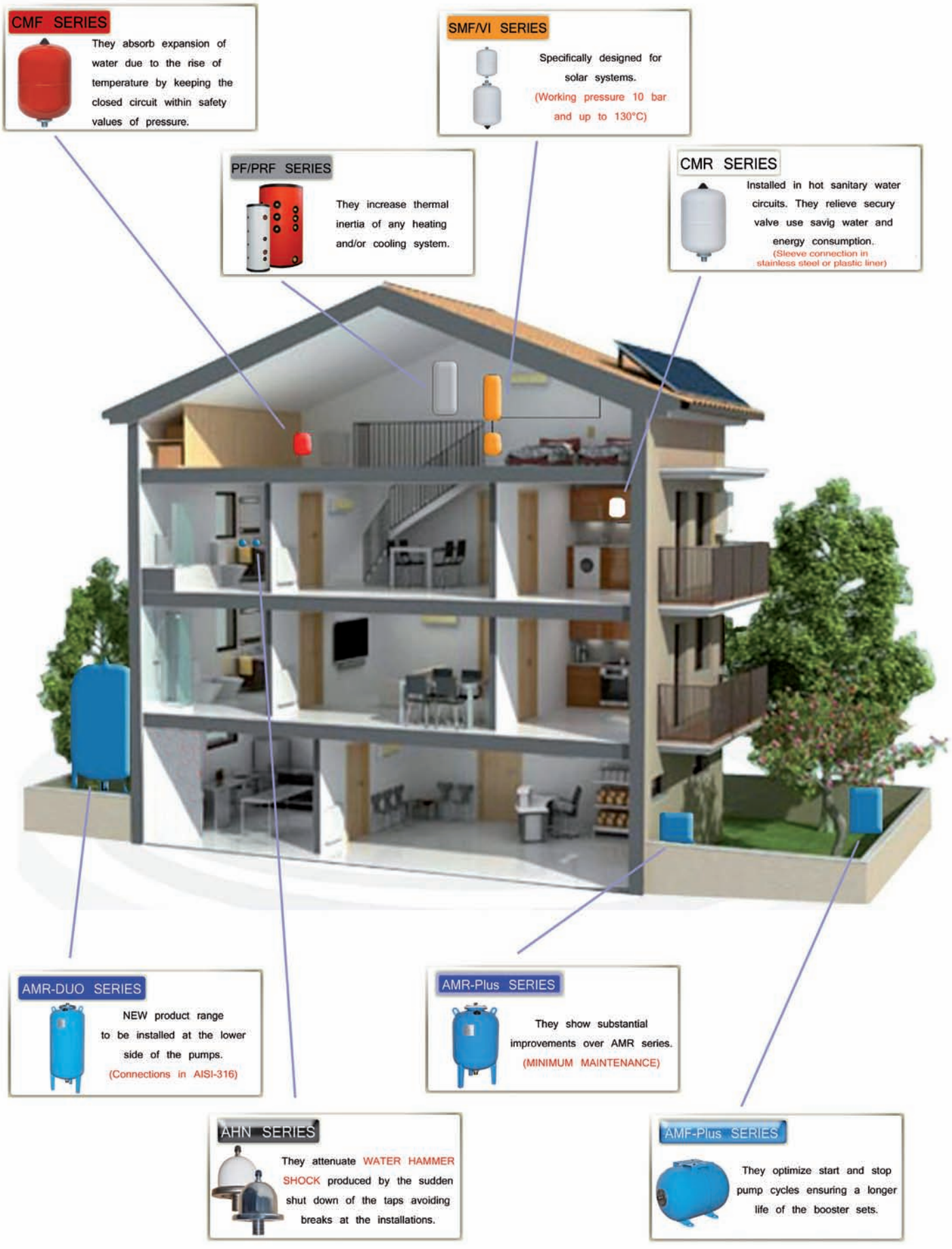
Essen, 2013-05-02

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.

TÜV NORD CERT GmbH Langemarckstrasse 20 45141 Essen www.tuev-nord-cert.com

IAF

TGA-ZM-07-06-00


CMF SERIES
They absorb expansion of water due to the rise of temperature by keeping the closed circuit within safety values of pressure.
SMF/VI SERIES
Specifically designed for solar systems.
(Working pressure 10 bar and up to 130°C)
PF/PRF SERIES
They increase thermal inertia of any heating and/or cooling system.
CMR SERIES
Installed in hot sanitary water circuits. They relieve secury valve use savig water and energy consumption.
(Sleeve connection in stainless steel or plastic liner)
AMR-DUO SERIES
NEW product range to be installed at the lower side of the pumps.
(Connections in AISI-316)
AMR-Plus SERIES
They show substantial improvements over AMR series.
(MINIMUM MAINTENANCE)
AHN SERIES
They attenuate WATER HAMMER SHOCK produced by the sudden shut down of the taps avoiding breaks at the installations.
AMF-Plus SERIES
They optimize start and stop pump cycles ensuring a longer life of the booster sets.

www.ibaiondo.com

HYDROPNEUMATIC TANKS FOR BOOSTER SYSTEMS AND WATER HAMMER ABSORBERS




EXPANSION VESSELS FOR HEATING, SHW AND SOLAR SYSTEMS




BUFFER TANKS FOR SOLAR, COOLING AND COMPRESSED AIR SYSTEMS




IBAIONDO IN THE WORLD

EUROPE	AMERICA	AFRICA	OCEANIA	ASIA
Germany	Argentina	Algeria	Australia	Saudi Arabia
Andorra	Chile	Egypt		United Arab
Belgium	Ecuador	Mali		Emirates
Bulgaria	Peru	Morocco		Bahrein
Cyprus	Puerto Rico	Mauritania		China
Denmark	Uruguay	Tunisia		South Korea
Spain	Venezuela			Hong Kong
Finland	Mexico			India
France				Iran
Greece				Kuwait
Holland				The Lebanon
Hungary				Qatar
United Kingdom				Singapur
Ireland				Sri Lanka
Italy				Thailand
Norway				Jordan
Poland				
Portugal				
Romania				
Sweden				
Switzerland				

HYDROPNEUMATIC TANKS

INTRODUCTION

Hydropneumatic tanks are designed to be used in potable water supply installations as a part of the pressure booster set in order to ensure the adequate water supplies to buildings, houses, etc. Apart from keeping a pressurized water stock, the hydropneumatic tanks allow a longer life of the pumping unit due to the reduction of the starting and stopping operations involving a significant energy saving.

Hydropneumatic tanks are manufactured by Industrias Ibaiondo, S.A, according to the safety standards of the European 97/23/EC Directive required for pressure units, guaranteeing the use of high quality materials and the proven experience of a highly skilled staff.

The most important technical features of the hydropneumatic tanks and any other information related to manufacturing is shown on the identification label attached to the product. This label must not be changed or removed in any case.

Every tank is also supplied with the operating instructions manual and the EC conformity certificate.

DESCRIPTION

Steel tanks manufactured according to the European 97/23/EC Directive regulations for pressure units. They are made with two embedded roots and a curved metal plate joined together by welding flanges and suitable to withstand loosely design working pressure. The tightness and resistance of the tanks are tested at 1.5 times higher than the maximum working pressure.

The hydropneumatic tanks have inside a synthetic rubber bladder manufactured according to the physical-chemical features and to the legal requirements for sanitary water gathered in the DIN 4807 Norm. Bladders isolate permanently water from air/ nitrogen and they are designed to be almost entirely filled with water and to fit the shape of the tanks (maximum volumetric expansion), so that they ensure minimum elongation and prevent the material wear. This differential factor along with the thickness and composition of the manufacturing material guarantee the minimum loss of the tank precharge pressure.

The threaded (DIN-259) or flanged (En 1,092-1) water connections are properly protected from corrosion.

The bladder water tanks are provided with a valve for the pressure regulation of the air/nitrogen chamber.

The outer coating consists of a minimum of 40 microns thick oven cured paint applied on the phosphated steel.

OPERATION

The drinking water collected directly from the water system, also from the pressure tanks series AMR-DUO, DG or DX is driven to the storage water tank by the pumping set.

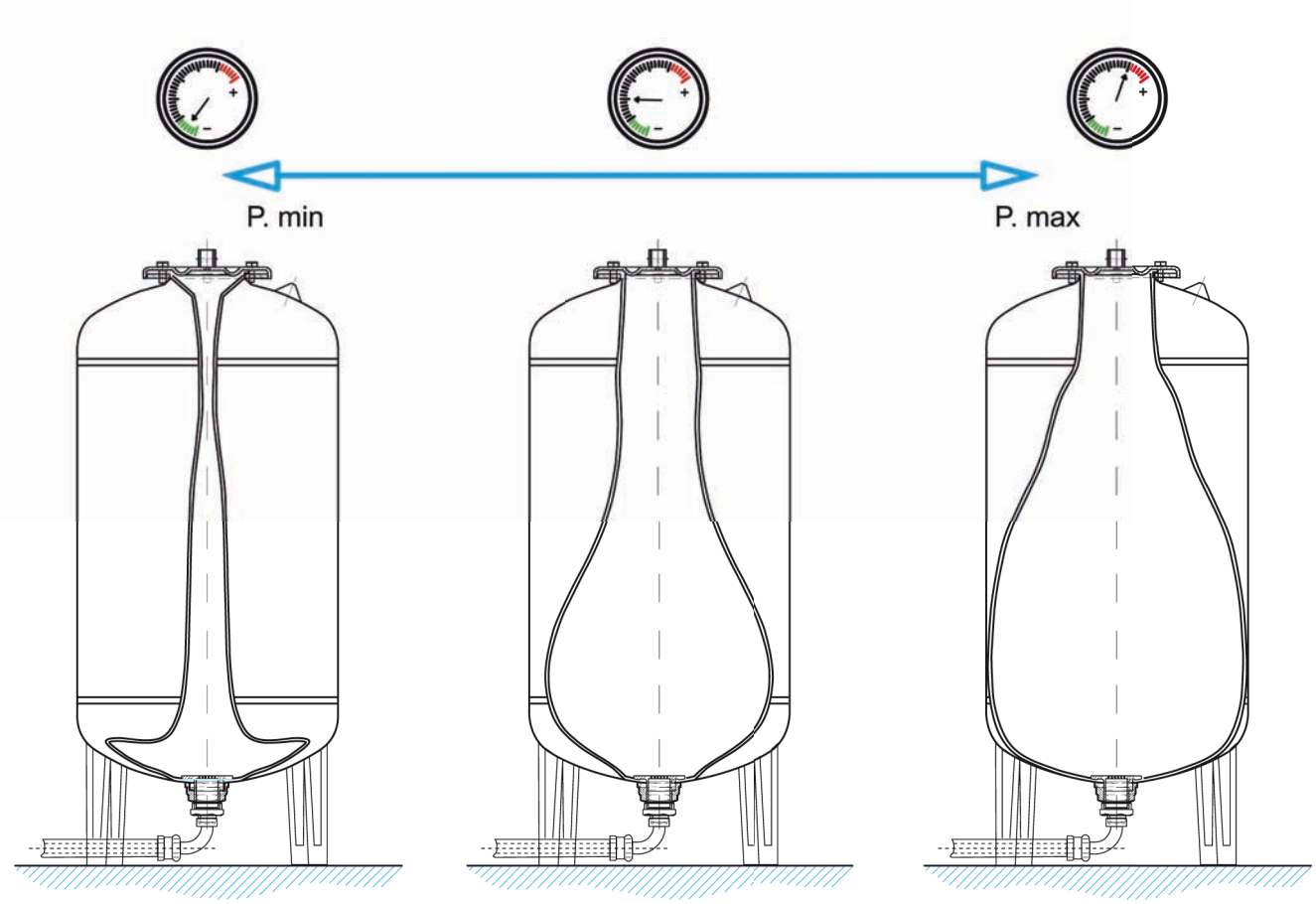
As the water enters the hydropneumatic tank, it is stored inside the bladder which separates tightly the water chamber from air/nitrogen chamber. This water inflow, causes a reduction of the initial volume of the enclosed air/ nitrogen in the tank which involves a pressure increase.

When desired maximum pressure has been reached (stop pressure of the pump), the pressure switch, cuts power and the flow of water between the pump and the tank is stopped at this time.

The stored energy of the enclosed air/ nitrogen inside the tank will lead the water inside the membrane to the consumption sites according to user needs.

As the water flows and the bladder empties, the air/nitrogen pressure decreases till reaching the minimum set pressure (starting pressure of the pump). At that moment, the water feed flows again from the pumping set to the hydropneumatic tank.

This cycle runs automatically as long as the minimum and maximum pressures are reached.



HYDROPNEUMATIC TANK VOLUME CALCULATION

In order to obtain the volume of the hydropneumatic tank, it is necessary to know the following parameters:

Q: Average flow of the pump in liters / minute.
Zmax: Maximum pump-starting frequency allowed per hour.
Pp: Pump stop pressure (Absolute)
Pa: Pump start pressure (Absolute)
Pc: Precharge pressure (Absolute)
It is suggested Pc=Pa - 0.2

$$\Delta P = Pp - Pa$$

The volume of the tank will be calculated according to:

$$V = 16{,}5 * \frac{Q}{Z_{max}} * \frac{Pp * Pa}{\Delta P * Pc}$$

HYDROPNEUMATIC TANK USEFUL VOLUME CALCULATION

The volume of available water ΔV into the hydropneumatic tank between stop and start pump pressure can be calculated as follows:

$$\Delta V = V * \frac{Pp - Pa}{Pp}$$

Example: We have an overpressure installation equipped with a 300 lts/min flow pump (5 lts/sec) and pressure switches working with the following values:

Pump starting pressure Pa = 3 Bar

Pump stopping pressure Pp = 6 Bar

Maximum pump - starting frequency allowed per hour Zmax = 12

$$V = 16{,}5 \quad \frac{300}{12} \cdot \frac{7 \cdot 4}{(7 - 4) \cdot 3{,}8} = 1.013 \text{ lts.}$$

The useful water volume:

$$\Delta V = 1.013 \quad \frac{(7 - 4)}{7} = 434 \text{ lts.}$$

SELECTION CHART OF HYDROPNEUMATIC TANK DEPENDING ON USEFUL WATER VOLUME

Capacity	Switch minimum pressure Bar												
	1	1	1	1,5	1,5	2	2	2,5	2,5	3	4	5	7
	Switch minimum pressure Bar												
	2	2,5	3	2,5	3	2,5	4	4	5	6	8	10	15
5	1,66	2,14	2,5	1,43	1,87	0,71	2	1,5	2,08	2,14	2,22	2,27	2,66
8	2,66	3,42	4	2,28	3	1,13	3,2	2,4	3,33	3,42	3,55	3,63	4,26
15	4,99	6,43	7,5	4,29	5,62	2,13	6	4,5	6,25	6,42	6,66	6,81	7,5
20	6,66	8,56	10	5,72	7,5	2,84	8	6	8,34	8,56	8,88	9,08	10,66
25	8,325	10,7	12,5	7,15	9,37	3,55	10	7,5	10,42	10,7	11,1	11,35	13,32
50	16,65	21,4	25	14,3	18,75	7,1	20	15	20,85	21,4	22,2	22,7	26,65
80	26,64	34,24	40	22,88	30	11,36	32	24	33,36	34,24	35,52	36,32	42,64
100	33,33	42,8	50	28,6	37,5	14,2	40	30	41,7	42,8	44,4	45,4	53,3
150	49,95	34,2	75	42,9	56,25	21,3	60	45	62,55	64,2	66,6	68,1	79,95
200	66,6	85,6	100	57,2	75	28,4	80	60	83,4	85,6	88,8	90,8	106,6
300	99,9	128,4	150	85,8	112,5	42,6	120	90	125,1	128,4	133,2	136,2	159,9
500	166,5	214	250	143	187,5	71	200	150	208,5	214	222	227	266,5
700	233,1	299,6	350	200,2	262,5	99,4	280	210	291,9	299,6	310,8	317,8	373,1
900	299,7	385,2	450	257,4	337,5	127,8	360	270	375,3	285,2	399,6	408,6	479,7
1.000	333	428	500	286	375	142	400	300	417	428	444	454	533
1.400	466,2	599,2	700	400,4	525	198,8	560	420	583,8	599,2	621,6	635,6	746,2
2.000	666	856	1.000	572	750	284	800	600	834	856	888	908	1.066
3.000	999	1.284	1.500	858	1.125	426	1.200	900	1.251	1.284	1.332	1.362	1.599

NOTE: In order to calculate pressure tanks without bladder or water hammer arrestors consult factory.

INSTALLATION & ASSEMBLY

Before proceeding to the assembly, it is necessary to ensure that the volume of the hydropneumatic tank has been correctly calculated by the authorized technical staff, taking into account the booster set features.

Hydropneumatic tank must be mounted by a professional installer bearing in mind the instructions provided with the product and the label.

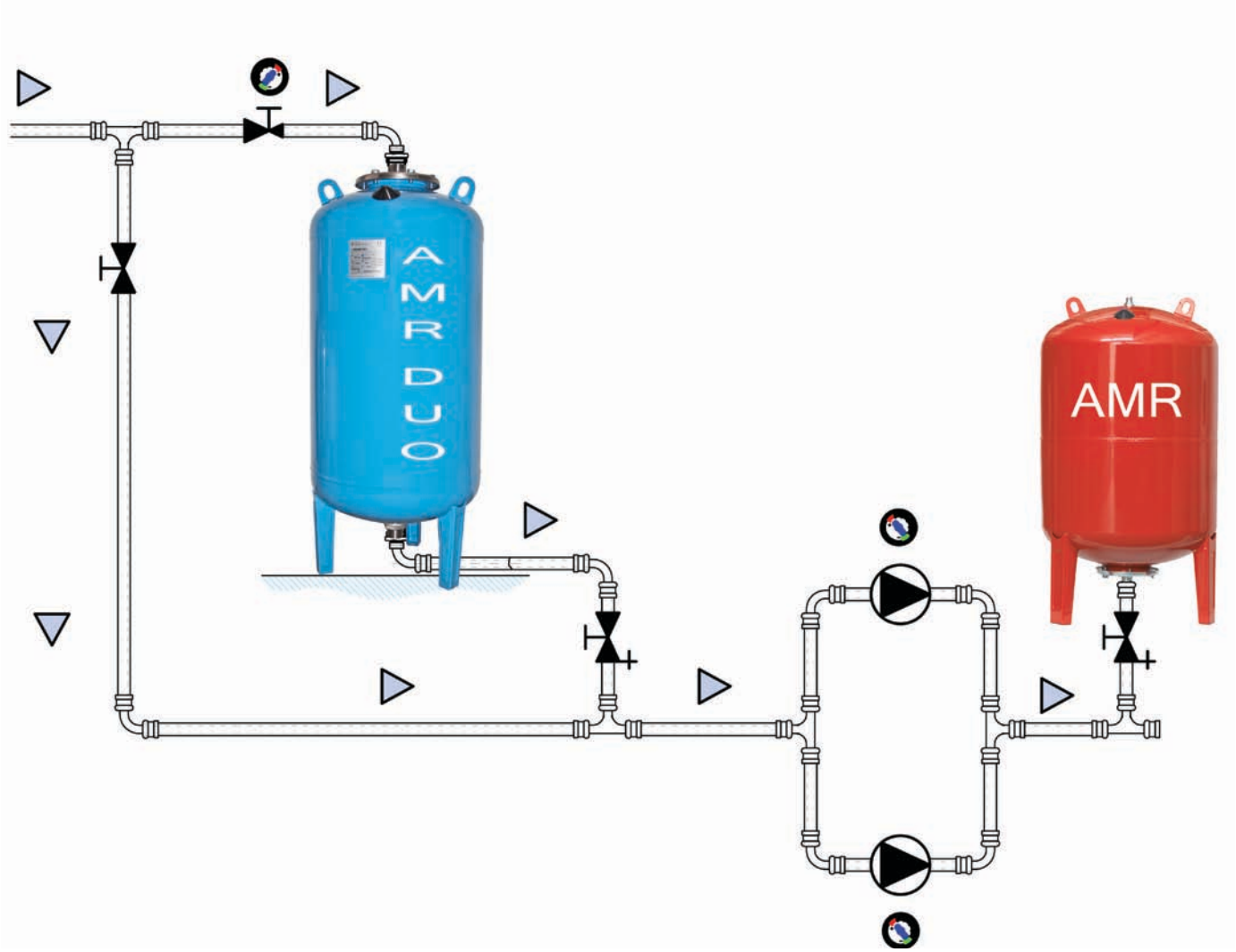
Hydropneumatic tank needs to be installed in a weather protected place which disposes of the necessary access dimensions in order to facilitate tank inspection. Air valve, connection sleeve and label must be easy to check.

In the case of hydropneumatic tanks without feet or bracket, fastening system will be designed to be able to hold the tank weight completely full of water.

Safety valve and manometer must be compulsorily installed.

Safety valve will be calibrated according to the maximum system pressure and never higher to the maximum allowable pressure of the tank.

Hydropneumatic tanks, depending on the model selected, will be connected straight to the pipe line at the lower side of the pump or directly on the pipe line at the pump impulsion.



COMMISSIONING

Hydropneumatic bladder tanks are supplied from the factory with a pre-charge pressure indicated on the label added on product. However, in order to guarantee the right performance of the system, this value must be adjusted taking into account the characteristics of the installation:

In the case of hydropneumatic tanks placed at the impulsion (High side) of the booster system, pre-charge value will be as follows:

Pre-charge (Bar) = Pump start pressure – 0,2 Bar

In the case of the hydropneumatic tanks placed at the aspiration (Lower side) of the booster system, pre-charge value will be as follows:

Pre-charge (Bar) = Pump start pressure – 0,3 Bar

If the pre-charge value is higher than the precharge pressure to which it has been supplied from the factory, previously to the air recharging operation, it will be necessary to introduce water through the inlet/outlet connection of the tank until cover the bottom coupling. Not to proceed in this way, could result in damage to the membrane as consequence of its extrusion. Once first step is done, we will isolate the hydropneumatic tank of the driving through closing the valve provided for this purpose. From this moment, air recharging will be made through the inflating valve of the tank, until pre-charge pressure is reached.

Once pressure is adjusted, tank will be connected to the installation. Once the tank is connected, it works automatically

MAINTENANCE

Maintenance must be carried out exclusively by authorized staff.

At least once a year, pre-charge pressure of the air/nitrogen side needs to be checked to confirm that it is between the right values indicated in previous points. Temperature contrasts should be similar. For that, it will be necessary to close the valve which communicates the tank with the installation and then empty the water of the tank. In case of the pre-charge and measured pressure varies around 20%, it needs to be adjust to the original value, pre-charge pressure, following the instructions pointed in previous points.

DISASSEMBLY

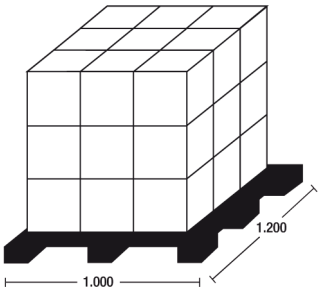
In no case the tank will be disassembly without depressurizing and emptying the system.

In case that working pressure is higher than 3 bar, precautions must be taken to prevent the extrusion of the membrane.

PALLETIZING

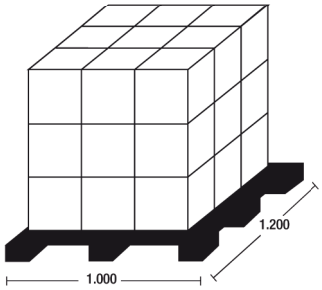
AMR / AMF / HMF SERIES (no feet)

Model	Code / Reference	Units / Pallet
5 AMR / 5 AMF	01005013 / 01005014 / 06100510	200 pcs.
8 AMR / 8 AMF	01008021 / 06100810	144 pcs.
15 AMR / 12 AMF	01015021 / 06101210	84 pcs.
20 AMR / 20 AMF	01020021 / 06102010	72 pcs.
24 AMR - E / 25 AMF	01025061 / 01025051 / 06102510	54 pcs.
35 AMR / 35 AMF	01035021 / 06103510	30 pcs.
50 AMR / 50 AMF	01050021 / 06105010	30 pcs.
1 HMF	06002621	300 pcs.
2 HMF / 5 HMF	06002631 / 06005631	200 pcs.
8 HMF	06008631	144 pcs.
15 HMF	06015631	84 pcs.
25 HMF	06025631	54 pcs.



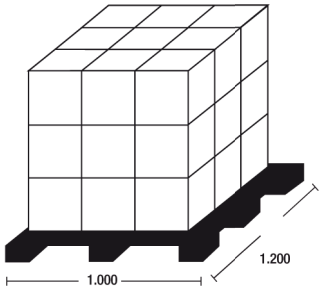
AMR / AMF SERIES (horizontals)

Model	Code / Reference	Units / Pallet
20 AMR-S / 20 AMF-S	01020281/ 06102012	70 pcs.
50 AMR-S / 50 AMF-S	01050281 / 06105012	30 pcs.
80 AMR-S	03080261	16 pcs.
100 AMR-S	03100211	12 pcs.



AMR / AMF / AMR-PLUS / AMR-DUO SERIES (verticals)

Model	Code / Reference	Units / Pallet
35 AMR-P / 35 AMF-P	01035241 / 06103511	30 pcs.
50 AMR-P / 50 AMF-P	01050241 / 06105011	30 pcs.
80 AMR-P	03080241	16 pcs.
80 AMR-PLUS	01080115	9 pcs.
100 AMR-P / 100 AMR-P-A	03100031 / 03100041	12 pcs.
150 AMR-B90 (M/F)	03150801	8 pcs.
200 AMR-B90 (M/F)	03200801	6 pcs.
300 AMR-B160 (M/F)	03300801	6 pcs.
500 AMR-B160 (M/F)	03500801	3 pcs.
100 AMR-16 Bar / 100 AMR-PLUS	05100031 / 01100115	9 pcs.
150 AMR-PLUS / 150 AMR-DUO	03150031 / 08015010	8 pcs.
220 AMR-PLUS / 220 AMR-DUO	03220031 / 08022010	6 pcs.



PRODUCT RANGE

AMF series tanks are manufactured to guarantee a long life of the pressure booster sets.
- Volume: 2 -50 liters. Models: no feet / with feet / horizontal with bracket.
- Non-replaceable butyl membrane (bladder) according to DIN 4807.
- Stainless steel water connection (1").
- Maximum pressure: 8-10 bar.
- Min / Max temperature: -10 ºC + 100ºC.
- Pre-charge pressure: 3 bar (nitrogen).
- External finish: epoxy powder coating, suitable for outdoor (blue color RAL 5012).
- Designed and manufactured according to 97/23/EC Directive.

AMR-PLUS series tanks incorporate improvements comparing with conventional AMR series. All improvements are leaded to increase the correct performance and to reduce maintenance.
- Volume: 80-1000 liters. Models: vertical / horizontal
- Replaceable bladder, suitable for potable water, specially designed in dimensions and thickness to get adapted without stretching to the total volume of the tank (DIN 4807).
- 1 ½" brass threaded connection.
- 1" threaded upper cup with special coating against corrosion.
- Min / Max temperature: -10°C +70°C.
- Maximum pressure: 10 bar.
- Pre-charge pressure: 3 bar (nitrogen).
- External finish: epoxy powder coating (blue color RAL 5012), suitable for outdoor.
- Designed and manufactured according to 97/23/EC Directive.

AMR-DUO series tanks are designed to be installed at the lower side of pressure booster systems as alternative solution to the conventional open tanks in order to guarantee the sanitary conditions of the system.
- Volume: 150-1000 liters. Models: vertical
- They are provided with two water connections of 1 1/2" in stainless steel (AISI 316-L): upper side (water inlet) and lower side (water outlet) to ensure the full flowthrough.
- Replaceable bladder suitable for potable water (DIN 4807).
- Min / Max temperature: -10°C +100°C.
- Pre-charge pressure: 3 bar (nitrogen).
- External finish: epoxy powder coating (blue color), suitable for outdoor.
- Designed and manufactured according to 97/23/EC Directive.

AMR series tanks with:
- Volume: 5-8000 liters. Models: no feet / with feet / vertical / horizontal /high pressure / big tanks
- Replaceable membrane (bladder) according to DIN 4807 for potable water.
- Min / Max temperature: -10 ºC + 100ºC.
- Maximun pressure: 10 bar.
- Pre-charge pressure: 1,5 bar.
- 100 AMR-P-A to 700 AMR-B 160: upper threaded coupling connection (¾" GM ½" GH).
- 1.000 AMR to 8000 AMR in 6,10 and 16 bar with inspection hole on the top, manometer and drain valve. 2" – 2 ½" connections (painted or stainless steel): top attachment with stainless steel threaded connection
- External finish: epoxy powder coating (red color).
- Designed and manufactured according to 97/23/EC Directive.

PRODUCT RANGE

HMF series tanks are used as complement of hydrocarbons booster sets (diesel oil pumps) and the membrane is specifically designed for this use.

- Volume: 1-25 liters. No feet models.
- Fixed membrane, according to DIN 4807, suitable to contain hydrocarbons.
- Maximum pressure: 3- 8 -10 bar.
- Min / Max temperature: - 10 ºC + 100 ºC.
- Pre-charge pressure: 1,5 bar.
- External finish: epoxy powder coating (red color).
- Designed and manufactured according to 97/23/EC Directive.

AMR - SS series are manufactured in stainless steel (AISI 304).

- Volume: 20-1000 liters. Models: no feet / with feet / with bracket
- Replaceable membrane (bladder) according to DIN 4807 for potable water.
- Threaded water connection in stainless steel (AISI 304).
- Min / Max temperature: -10ºC + 100ºC.
- Maximum pressure: 10 bar.
- Pre-charge pressure: 1,5 bar.
- Designed and manufactured according to 97/23/EC Directive.

DX stainless series and DG galvanized series without membrane are installed in combination of an injector equipment.

- Volume: 100-7000 liters. Vertical models. Horizontal models consult in factory.
- DX series are manufactured in stainless steel (AISI 304 or AISI 316) without bladder.
- DG series are manufactured in hot galvanized steel without bladder.
- Set of connectors (female thread).
- Min / Max temperature: -10ºC +100ºC.
- Maximum pressure: 8 - 10 bar.
- Designed and manufactured according to 97/23/EC Directive.

AHN series (water hammer shock absorbers) are installed in all water pipes to reduce into permissible values overpressure and underpressure waves expanded through the pipes, because of suddenly closing valves or pumps stop/start maneuvers.

- Volume: 0,16 - 60000 liters. Models: Horizontal / Vertical.
- Replaceable membrane (bladder) according to Din 4807 for potable water.
- Threaded or flanged water connection depending on the model.
- Min / Max temperature: - 10 ºC +100ºC.
- Maximum pressure: 10-16-20-25-30-40 bar.
- External water level indicator, isolating and drainage valve depending on the model.
  Optional magnetic level.
- Designed and manufactured according to 97/23/EC Directive.

The installation of a water hammer shock absorber increase the life of the installations, reduce its costs and guarantees its protection.

NOTE: Water shock arrestors designed for waste water are also available.

AMF SERIES

Hydropneumatic tanks for any type of booster sets

- Non-replaceable butyl membrane (Bladder)
- Min. / Max. temperature: -10ºC + 100ºC
- Pre-charge: 3 bar nitrogen
- Cover and sleeve in stainless steel
- External finish: Epoxy powder coating, suitable for outdoor (blue color RAL 5012)

Models without feet 8 - 10 Bar

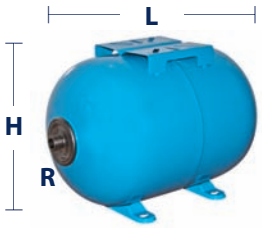
Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
0,8	06100210	2 AMF	2	10	110	245	1 "
2	06100510	5 AMF	5	10	200	250	1 "
2,5	06100810	8 AMF	8	10	200	340	1 "
3,2	06101210	12 AMF	12	10	270	310	1 "
4	06102010	20 AMF	20	10	270	415	1 “
5,6	06102510	25 AMF	25	8	320	430	1 “
7	06103510	35 AMF	35	10	360	475	1 “
10	06105010	50 AMF	50	10	360	620	1 “

Models with feet 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
10	06103511	35 AMF-P	35	10	360	615	1 "
12	06105011	50 AMF-P	50	10	360	750	1 "

Horizontal models 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions			R Water connection
					Ø D (mm)	H (mm)	L (mm)	
6	06102012	20 AMF-S	20	10	270	300	420	1 "
12	06105012	50 AMF-S	50	10	360	390	620	1 "



AMR - PLUS SERIES

Hidropneumatic tanks for booster sets (High side)

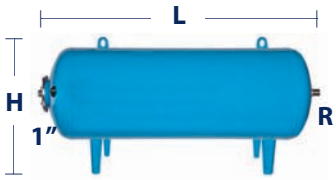
- Replaceable bladder (potable water)
- Brass threaded connection
- 1" upper cap and sleeve with especial coating against corrosion
- Min. / Max. temperature: -10°C + 100°C
- Pre-charge: 3 bar nitrogen
- External finish: epoxy powder coating (blue color RAL 5012), suitable for outdoor

Vertical models 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions Ø D (mm)	Dimensions H (mm)	R Water connection
16	01080115	80 AMR-PLUS	80	10	485	690	1 1/2"
33	01100115	100 AMR-PLUS	100	10	485	805	1 1/2"
38	03150031	150 AMR-PLUS	150	10	485	1155	1 1/2"
49	03220031	220 AMR-PLUS	200	10	485	1400	1 1/2"
60	03350031	350 AMR-PLUS	300	10	485	1965	1 1/2"
90	03500031	500 AMR-PLUS	500	10	600	2065	1 1/2"
158	03700031	700 AMR-PLUS	700	10	700	2145	1 1/2"
224	03900311	900 AMR-PLUS	900	10	800	2155	1 1/2"
274	03910033	1000 AMR-PLUS	1000	10	800	2375	1 1/2"

Horizontal models 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions Ø D (mm)	Dimensions H (mm)	Dimensions L (mm)	R Water connection
40	03150211	150 AMR-PLUS-H	150	10	485	655	1070	1 1/2"
49	03220211	220 AMR-PLUS-H	200	10	485	655	1320	1 1/2"
60	03350211	350 AMR-PLUS-H	300	10	485	655	1810	1 1/2"
90	03500211	500 AMR-PLUS-H	500	10	600	780	1930	1 1/2"
158	03700211	700 AMR-PLUS-H	700	10	700	880	2100	1 1/2"
224	03900321	900 AMR-PLUS-H	900	10	800	1000	2070	1 1/2"
274	03910021	1000 AMR-PLUS-H	1000	10	800	1000	2375	1 1/2"



AMR - DUO SERIES

Hydropneumatic tanks for booster sets (Lower side)

- Replaceable bladder (potable water)
- Stainless steel threaded connections (AISI 316) (Upper and bottom)
- Min. / Max. temperature: -10°C + 100°C
- Pre-charge: 3 bar nitrogen
- External finish: epoxy powder coating (blue color RAL 5012), suitable for outdoor

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions Ø D (mm)	Dimensions H (mm)	R Water connection
38	08015010	150 AMR-DUO	150	10	485	1155	2 x 1 1/2"
49	08022010	220 AMR-DUO	200	10	485	1400	2 x 1 1/2"
60	08035010	350 AMR-DUO	300	10	485	1965	2 x 1 1/2"
90	08050010	500 AMR-DUO	500	10	600	2065	2 x 1 1/2"
158	08070010	700 AMR-DUO	700	10	700	2145	2 x 1 1/2"
224	08090010	900 AMR-DUO	900	10	800	2155	2 x 1 1/2"
274	08010010	1000 AMR-DUO	1000	10	800	2375	2 x 1 1/2"

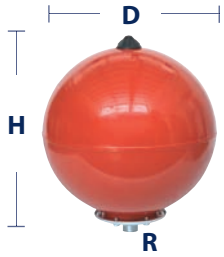
AMR SERIES

Hydropneumatic tanks for booster sets

- Replaceable bladder (potable water)
- Galvanized threaded connection
- Min. / Max. temperature: -10°C + 100°C
- Pre-charge: 1.5 bar
- External finish: epoxy powder coating (red color)

Models without feet 8 - 10 - 16 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
2	01005013	5 AMR	5	10	200	245	3/4"
2	01005014	5 AMR	5	10	200	245	1 "
2,5	01008021	8 AMR	8	10	200	350	1 "
4	01015021	15 AMR	15	10	270	320	1 "
4,5	01020021	20 AMR	20	10	270	425	1"
9	01035021	35 AMR	35	10	360	485	1 "
10	01050021	50 AMR	50	10	360	620	1"
13	01050251	50 AMR	50	16	360	620	1 "
4,5	01025051	24 AMR-E	24	8	350	390	3/4 "
4,5	01025061	24 AMR-E	24	8	350	390	1"

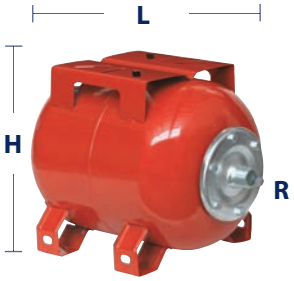


Models with feet 8 -10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
10	01035241	35 AMR-P	35	10	360	615	1 "
12	01050241	50 AMR-P	50	10	360	750	1 "
16	03080241	80 AMR-P	80	10	450	750	1 "
18	03100031	100 AMR-P	100	10	450	850	1 "
18	03100041	100 AMR-P-A	100	10	450	875	1 1/4"
25	03150801	150 AMR-B90 (M/F)	150	10	485	1060	1 1/4"
42	03200801	200 AMR-B90 (M/F)	200	10	550	1135	1 1/4"
55	03300801	300 AMR-B160 (M/F)	300	10	650	1180	1 1/4"
71	03500801	500 AMR-B160 (M/F)	500	10	750	1450	1 1/2"
78	03700501	700 AMR-B160 (M/F)	700	8	750	1750	1 1/2"

Horizontal models with support 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions			R Water connection
					Ø D (mm)	L (mm	H (mm)	
6	01020281	20 AMR-S	20	10	270	420	295	1 "
12	01050281	50 AMR-S	50	10	360	620	390	1 "
16	03080261	80 AMR-S	80	10	450	625	480	1 "
18	03100211	100 AMR-S	100	10	450	750	480	1 "



AMR SERIES

Hydropneumatic tanks for booster sets, heating & cooling systems

- Replaceable bladder (potable water)
- Upper inspection hole
- Min. / Max. temperature: -10°C + 100°C
- Pre-charge: 1.5 bar
- External finish: epoxy powder coating (red color)

Vertical large models 6 - 10 -16 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
260	01100031	1000 AMR	1000	6	850	2225	2"
340	01140031	1400 AMR	1400	6	1000	2210	2"
545	01200031	2000 AMR	2000	6	1200	2255	2 1/2"
650	01300031	2800 AMR	2800	6	1200	3005	2 1/2"
830	01400031	4000 AMR	4000	6	1400	3110	2 1/2"
985	01500031	5400 AMR	5400	6	1500	3700	2 1/2"
1090	01600031	6200 AMR	6200	6	1500	4200	2 1/2"
1310	01800031	8000 AMR	8000	6	1500	5045	2 1/2"

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
294	03910031	1000 AMR	1000	10	850	2225	2"
387	03914031	1400 AMR	1400	10	1000	2210	2"
685	03920031	2000 AMR	2000	10	1200	2255	2 1/2"
840	03930031	2800 AMR	2800	10	1200	3005	2 1/2"
1105	03940031	4000 AMR	4000	10	1400	3110	2 1/2"
1430	03950031	5400 AMR	5400	10	1500	3700	2 1/2"
1595	03960031	6200 AMR	6200	10	1500	4200	2 1/2"
1940	03980031	8000 AMR	8000	10	1500	5045	2 1/2"

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
605	05910031	1000 AMR	1000	16	850	2225	2"
666	05914031	1400 AMR	1400	16	1000	2210	2"
910	05200031	2000 AMR	2000	16	1200	2255	2 1/2"
1160	05300031	2800 AMR	2800	16	1200	3005	2 1/2"
1535	05400031	4000 AMR	4000	16	1400	3110	2 1/2"
1980	05550031	5400 AMR	5400	16	1500	3700	2 1/2"
2225	05600031	6200 AMR	6200	16	1500	4200	2 1/2"
2735	05800031	8000 AMR	8000	16	1500	5045	2 1/2"

Optional: Threaded connection stainless steel (AISI 316)
Flange connection DN 65 PN16
Manhole

Other capacities or vertical models, consult factory.

AMR SERIES

Hydropneumatic tanks for booster sets

- Replaceable bladder (potable water)
- Brass or stainless steel (AISI 316) threaded connection
- Min. / Max. temperature: -10°C + 100°C
- Pre-charge: 1.5 bar
- External finish: epoxy powder coating (red color)

Vertical models 16 - 20 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
33	05100031	100 AMR	100	16	485	805	1 1/2"
55	05150031	150 AMR	150	16	485	1155	1 1/2"
62	05220031	220 AMR	200	16	485	1400	1 1/2"
79	05350031	350 AMR	300	16	485	1965	1 1/2"
165	05500031	500 AMR	500	16	600	2065	1 1/2"
233	05700031	700 AMR	700	16	700	2145	1 1/2"
341	05900311	900 AMR	900	16	800	2155	1 1/2"
500	05910031	1000 AMR	1000	16	850	2225	2"
625	05914031	1400 AMR	1400	16	1000	2210	2"
70	03150401	150 AMR	150	20	485	1155	1 1/2"
90	03220401	220 AMR	200	20	485	1400	1 1/2"
153	03350401	350 AMR	300	20	485	1965	1 1/2"
234	03500401	500 AMR	500	20	600	2065	1 1/2"
328	03700401	700 AMR	700	20	700	2145	1 1/2"
605	03910401	1000 AMR	1000	20	850	2225	2"
666	03914401	1400 AMR	1400	20	1000	2210	2"

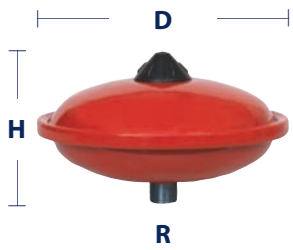
HMF SERIES

Hidrocarbons hydropneumatic tanks

- Fixed membrane, suitable for hydrocarbons
- Min. / Max. temperature: -10°C + 100°C
- Pre-charge: 1.5 bar
- External finish: epoxy powder coating (red color)

Models without feet 3 - 8 - 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
1	06002621	1 HMF	1	3	226	82	3/4"
1,5	06002631	2 HMF	2	3	230	130	3/4"
2	06005631	5 HMF	5	10	200	250	3/4"
2,5	06008631	8 HMF	8	10	200	340	3/4"
3,2	06015631	15 HMF	15	10	270	320	3/4"
4,2	06025631	25 HMF	25	8	320	430	3/4"



AMR-SS SERIES

Hydropneumatics tanks AISI 304 for booster sets

- Replaceable bladder (potable water)
- Min. / Max. temperature: -10°C + 100°C
- Pre-charge: 1.5 bar
- Pressure tanks manufactured in stainless steel

Models without feet 8 - 10 Bar

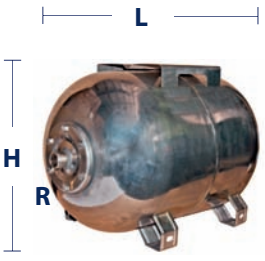
Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
4,5	01020160	20 AMR polished	20	10	270	425	1"
4,5	01025140	24 AMR-E polished	24	8	350	410	1"
4,5	01025120	24 AMR-E blasted	24	8	350	410	1"
10	01050160	50 AMR polished	50	10	360	620	1"

Models with feet 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
12	01050240	50 AMR-P polished	50	10	360	750	1"
18	03100220	100 AMR-P polished	100	10	450	850	1"

Horizontal models with support 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions			R Water connection
					Ø D (mm)	L (mm)	H (mm)	
6	01020290	20 AMR-S polished	20	10	270	420	300	1"
12	01050290	50 AMR-S polished	50	10	360	620	385	1"
18	03100320	100 AMR-S polished	100	10	450	740	480	1"



DG SERIES

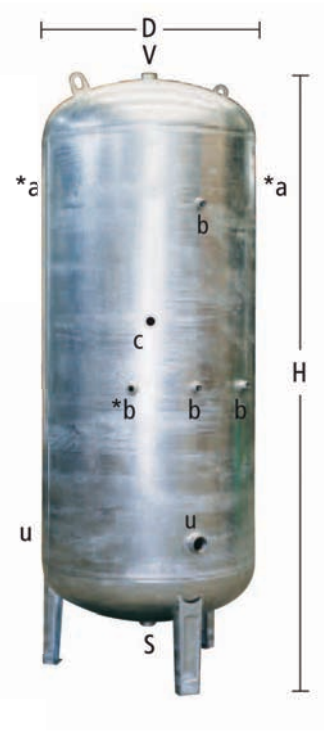
Galvanized water pressure tanks

- Pressure tanks without membrane
- Min. / Max. Temperature: -10°C + 60°C
- Manufactured in hot galvanized steel

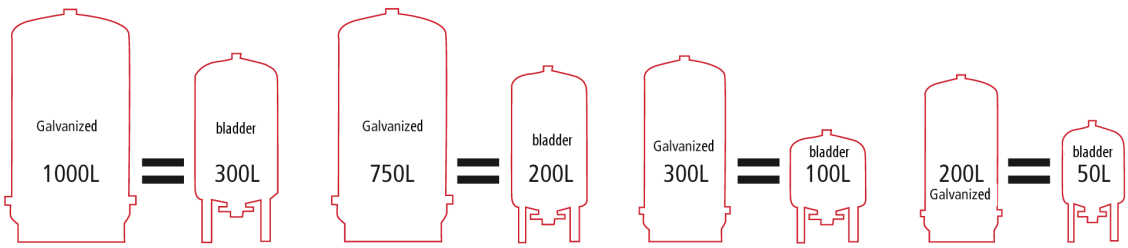
Vertical models 8 Bar

Weight Kg.	Code	Model Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water Connection			
				Ø D (mm)	H (mm)	a - u	v - s	b	c
77	10050008	500 DG	8	650	1860	1 1/2"	1 1/2"	1/2"	1 1/4"
119	10075008	750 DG	8	750	2080	1 1/2"	1 1/2"	1/2"	1 1/4"
195	10100008	1000 DG	8	800	2350	1 1/2"	1 1/2"	1/2"	1 1/4"

Weight Kg.	Code	Model Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water Connection			
				Ø D (mm)	H (mm)	a - u	v - s	b	c
250	10125101	1250 DG	8	900	2380	2"	1 1/2"	1/2"	1 1/2"
264	10150101	1500 DG	8	950	2465	2"	1 1/2"	1/2"	1 1/2"
368	10200101	2000 DG	8	1100	2490	2"	1 1/2"	1/2"	1 1/2"
413	10250101	2500 DG	8	1100	3045	2 1/2"	1 1/2"	1/2"	1 1/2"
550	10300101	3000 DG	8	1200	3200	2 1/2"	2"	1/2"	1 1/2"
690	10400101	4000 DG	8	1400	3140	4"	2"	1/2"	1 1/2"
898	10500101	5000 DG	8	1400	3790	4"	2"	1/2"	1 1/2"
1450	10700101	7000 DG	8	1500	4500	4"	2"	1/2"	1 1/2"



(*) For tanks from 1.000 liters



DG SERIES

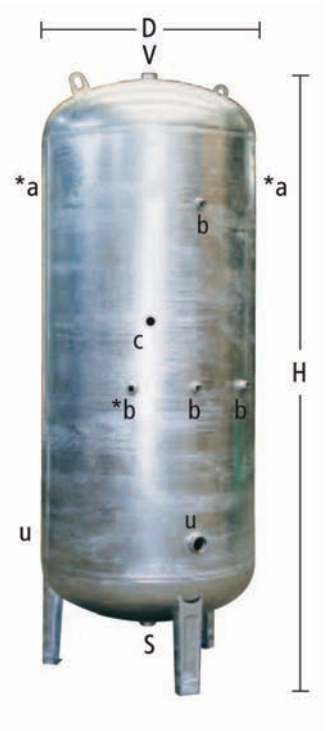
Galvanized water pressure tanks

- Pressure tanks without membrane
- Min. / Max. Temperature: -10°C + 60°C
- Manufactured in hot galvanized steel

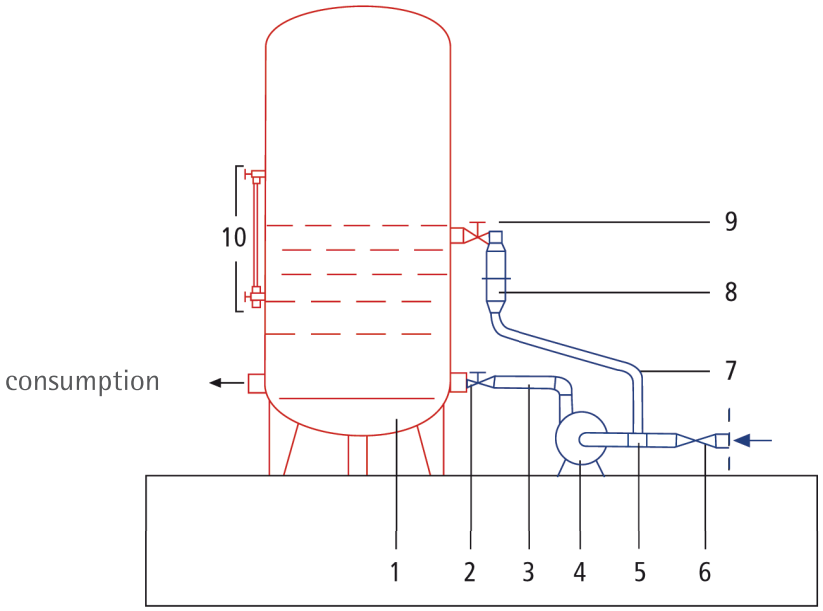
Vertical models 10 Bar

Weight Kg.	Code	Model Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water Connection			
				Ø D (mm)	H (mm)	a - u	v - s	b	c
22	10010010	100 DG	10	400	1040	1 1/2"	1 1/2"	1/2"	1 1/4"
36	10020010	200 DG	10	550	1150	1 1/2"	1 1/2"	1/2"	1 1/4"
48	10030010	300 DG	10	550	1615	1 1/2"	1 1/2"	1/2"	1 1/4"
85	10050010	500 DG	10	650	1860	1 1/2"	1 1/2"	1/2"	1 1/4"
158	10075010	750 DG	10	750	2080	1 1/2"	1 1/2"	1/2"	1 1/4"
227	10100010	1000 DG	10	800	2350	1 1/2"	1 1/2"	1/2"	1 1/4"

Weight Kg.	Code	Model Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water Connection			
				Ø D (mm)	H (mm)	a - u	v - s	b	c
302	10125301	1250 DG	10	900	2380	2"	1 1/2"	1/2"	1 1/2"
343	10150301	1500 DG	10	950	2465	2"	1 1/2"	1/2"	1 1/2"
490	10200301	2000 DG	10	1100	2490	2"	1 1/2"	1/2"	1 1/2"
555	10250301	2500 DG	10	1100	3045	2 1/2"	1 1/2"	1/2"	1 1/2"
640	10300301	3000 DG	10	1200	3200	2 1/2"	2"	1/2"	1 1/2"
870	10400301	4000 DG	10	1400	3140	4"	2"	1/2"	1 1/2"
1.030	10500301	5000 DG	10	1400	3790	4"	2"	1/2"	1 1/2"
1.770	10700301	7000 DG	10	1500	4500	4"	2"	1/2"	1 1/2"



(*) For tanks from 1.000 liters



1. Storage tank
2. Discharge Valve
3. Flexible tube
4. Motor- driven pump
5. Hose
6. Check valve
7. Flexible tube
8. Air supply
9. Release valve
10. Level Indicator tube

DX SERIES

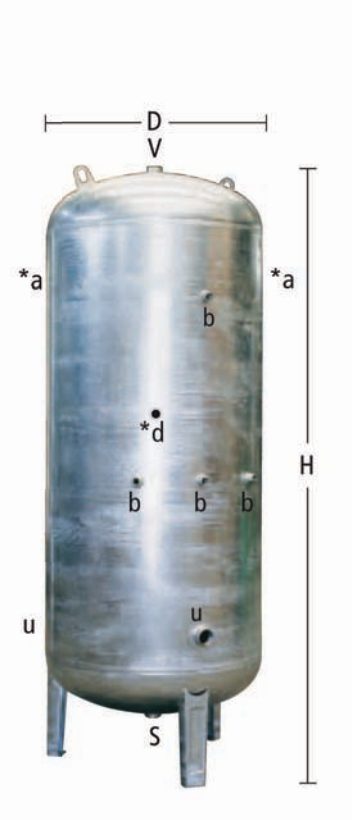
Stainless steel water pressure tanks

- Pressure tanks without membrane
- Min. / Max. Temperature: -10°C + 100°C
- Pressure tanks manufactured in stainless steel (AISI 304)
- Optional (AISI 316)

Vertical models 10 Bar (Industrial finish)

Weight Kg.	Code	Model Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water Connection		
				Ø D (mm)	H (mm)	a - u	v - s	b
32	17010330	100 DX	10	400	1100	1 1/2"	1 1/4"	1/2"
46	17020330	200 DX	10	500	1340	1 1/2"	1 1/4"	1/2"
71	17030330	300 DX	10	550	1535	1 1/2"	1 1/2"	1/2"
82	17040330	400 DX	10	550	1935	1 1/2"	1 1/2"	1/2"
105	17050330	500 DX	10	650	1810	1 1/2"	1 1/2"	1/2"
141	17060330	600 DX	10	650	2110	1 1/2"	1 1/2"	1/2"
190	17075330	750 DX	10	750	2005	1 1/2"	1 1/2"	1/2"
270	17100330	1000 DX	10	800	2310	1 1/2"	1 1/2"	1/2"

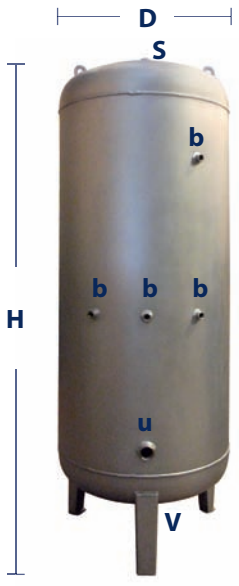
Weight Kg.	Code	Model Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water Connection		
				Ø D (mm)	H (mm)	a - u	v - s-d	b
343	17150330	1500 DX	10	950	2535	2"	1 1/2"	1/2"
490	17200330	2000 DX	10	1200	2245	2"	1 1/2"	1/2"
870	17400330	4000 DX	10	1400	3080	2 1/2"	1 1/2"	1/2"
1.090	17500330	5000 DX	10	1400	3755	2 1/2"	1 1/2"	1/2"
1.810	17700330	7000 DX	10	1500	4455	3"	1 1/2"	1/2"



(*) For tanks from 1.000 liters

Vertical models 10 Bar (Blasted finish)

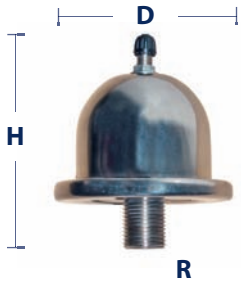
Weight Kg.	Code	Model Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water Connection		
				Ø D (mm)	H (mm)	a - u	v - s	b
32	17010330 G	100 DX	10	400	1100	1 1/2"	1 1/4"	1/2"
46	17020330 G	200 DX	10	500	1340	1 1/2"	1 1/4"	1/2"
71	17030330 G	300 DX	10	550	1535	1 1/2"	1 1/2"	1/2"
82	17040330 G	400 DX	10	550	1935	1 1/2"	1 1/2"	1/2"
105	17050330 G	500 DX	10	650	1810	1 1/2"	1 1/2"	1/2"
141	17060330 G	600 DX	10	650	2110	1 1/2"	1 1/2"	1/2"
190	17075330 G	750 DX	10	750	2005	1 1/2"	1 1/2"	1/2"
270	17100330 G	1000 DX	10	800	2310	1 1/2"	1 1/2"	1/2"



AHN SERIES
Water hammer shock absorbers

Miniflex model 16 Bar

- Fixed membrane, suitable for potable water
- Min. / Max. temperature: -10°C + 100°C
- Pre-charge: 3.5 bar
- Manufactured in stainless steel (AISI 304)



Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
0,5	07000691	V-160	0,16	16	85	105	1/2"

Models without feet 20 - 25 - 30 Bar

- Replaceable bladder, suitable for potable water
- Min. / Max. temperature: -10°C + 100°C
- Pre-charge: 3.5 bar
- External finish: epoxy powder coating (red color)

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Water connection R/DN
					Ø D (mm)	H (mm)	
14,5	07025200	25 AHN	25	20	270	550	3"
29,5	07050200	50 AHN	50	20	360	675	3"
82	07100200	100 AHN	100	20	320	1790	DN 100
223	07200200	200 AHN	200	20	400	1950	DN 100
313	07350200	350 AHN	350	20	500	2140	DN 100

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Water connection R/DN
					Ø D (mm)	H (mm)	
43	07050250	50 AHN	50	25	360	675	3"
204	07100250	100 AHN	100	25	320	1790	DN 100
274	07200250	200 AHN	200	25	400	1950	DN 100
371	07350250	350 AHN	350	25	500	2140	DN 100

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Water connection R/DN
					Ø D (mm)	H (mm)	
80	07050300	50 AHN	50	30	360	675	3"
204	07100300	100 AHN	100	30	320	1790	DN 100
291	07200300	200 AHN	200	30	400	1950	DN 100
394	07350300	350 AHN	350	30	500	2140	DN 100

AHN SERIES

Water hammer shock absorbers

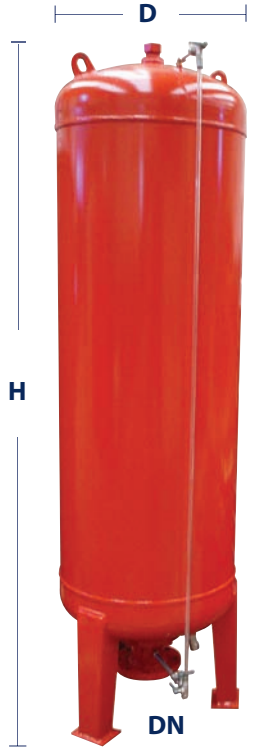
- Replaceable bladder, suitable for potable water
- Min. / Max. temperature: -10°C + 100°C
- Water level indicator set (external),purge and isolating valve
- Optional: Magnetic level indicator
- External finish: epoxy powder coating (red color)

Vertical models 10 - 16 - 20 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions Ø D (mm)	Dimensions H (mm)	Water connection DN
80	07150105-8	150 AHN-P	150	10	485	1320	DN 100
115	07220105-8	220 AHN-P	220	10	485	1570	DN 100
155	07350105-8	350 AHN-P	350	10	485	2075	DN 100
216	07500105-8	500 AHN-P	500	10	600	2155	DN 100
228	07700105-8	700 AHN-P	700	10	700	2350	DN 100

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions Ø D (mm)	Dimensions H (mm)	Water connection DN
87	07150165-8	150 AHN-P	150	16	485	1320	DN 100
136	07220165-8	220 AHN-P	220	16	485	1570	DN 100
210	07350165-8	350 AHN-P	350	16	485	2075	DN 100
268	07500165-8	500 AHN-P	500	16	600	2155	DN 100
287	07700165-8	700 AHN-P	700	16	700	2350	DN 100

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions Ø D (mm)	Dimensions H (mm)	Water connection DN
124	07150205-8	150 AHN-P	150	20	485	1320	DN 100
158	07220205-8	220 AHN-P	220	20	485	1570	DN 100
242	07350205-8	350 AHN-P	350	20	485	2075	DN 100
324	07500205-8	500 AHN-P	500	20	600	2155	DN 100
361	07700205-8	700 AHN-P	700	20	700	2350	DN 100

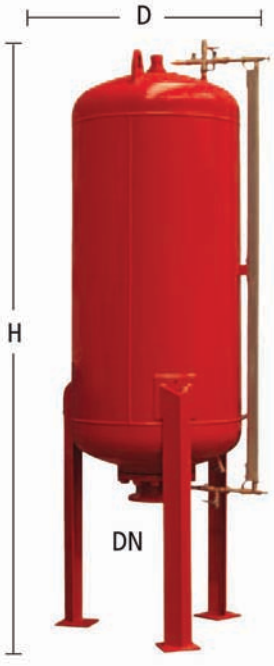


Vertical models 25 - 30 - 40 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions Ø D (mm)	Dimensions H (mm)	Water connection DN
120	07100251-8	100 AHN-P	100	25	320	2170	DN 100
179	07200251-8	200 AHN-P	200	25	400	2350	DN 100
270	07350251-8	350 AHN-P	350	25	500	2540	DN 100
360	07500251-8	500 AHN-P	500	25	600	2550	DN 100
429	07750251-8	750 AHN-P	750	25	700	2850	DN 150

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions Ø D (mm)	Dimensions H (mm)	Water connection DN
133	07100301-8	100 AHN-P	100	30	320	2170	DN 100
198	07200301-8	200 AHN-P	200	30	400	2350	DN 100
297	07350301-8	350 AHN-P	350	30	500	2540	DN 100
428	07500301-8	500 AHN-P	500	30	600	2550	DN 100
464	07750301-8	750 AHN-P	750	30	700	2850	DN 150

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions Ø D (mm)	Dimensions H (mm)	Water connection DN
144	07100401-8	100 AHN-P	100	40	320	2170	DN 100
239	07200401-8	200 AHN-P	200	40	400	2350	DN 100
380	07350401-8	350 AHN-P	350	40	500	2540	DN 100
530	07500401-8	500 AHN-P	500	40	600	2550	DN 100
592	07750401-8	750 AHN-P	750	40	700	2850	DN 150

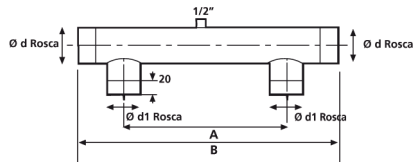


NOTE: For larger volumes, consult factory.

ACCESORIES AND SPARE PARTS

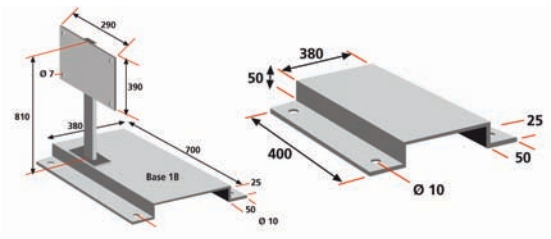
For better identification consult factory

Collectors (galvanized)



Code	Ø d R	Ø d1 R	A mm	B mm
19022002	1 1/2"	1 1/4"	440	640
19022102	2"	1 1/2"	440	640

Supports (galvanized)

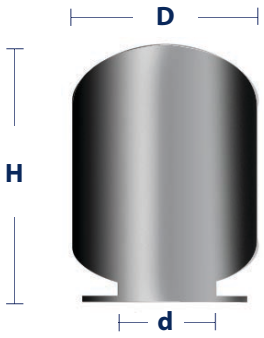


19000101 19000001

Code	Model
19000001	PUMP SEAT - 0
19000101	PUMP SEAT - 1B
19011002	ELECTRIC BOARD SUPPORT

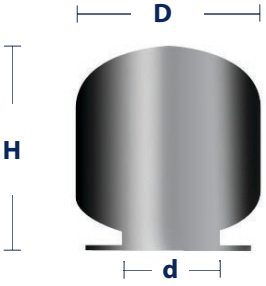
AMR / AMR - SS Membranes

Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700841	1539	5 - 8 AMR/E	150	190	50
66700806	1546	15 - 20 - 24 AMR-E	210	250	84
66700808	1206	24 AMR-E-E	180	310	87
66700843	200x335	35 AMR	200	335	84
66700854	200x505	50 AMR - P/S	200	505	84
66700809	1359	80 AMR-P/S	250	550	87
66700816	1358	100 AMR-P/S	250	680	87



HMR Membranes

Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700804	1539 N	5 HMR - E	150	190	50
66700858	25 NBR	15-24 HMR - E	180	310	87



ACCESORIES AND SPARE PARTS

For better identification consult factory

AMR / AMR-PLUS / AMR-DUO Membranes

Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700817	1535	100 AMR - P - A	250	680	87
66700818	1438	150 - 200 AMR - B90	400	800	84
66700122	1404	300 AMR - B160	400	810	120
66700213	1547	500/700 AMR - B160	520	1372	127

Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700012	993	100 AMR - 16 / 80 - 100 AMR - PLUS	300	600	120
66700202	1361	150 AMR - PLUS / DUO	306	905	120
66700203	983	220 AMR - PLUS / DUO	306	1100	120
66700206	982	350 - 500 AMR - PLUS / DUO	336	1720	135
66700209	1052	700 - 900 AMR - PLUS / DUO	425	1900	120
66700212	600x1900	1000 - 1400 AMR	600	1900	240

AHN Membranes

Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700854	1435	25 AHN	230	450	84
66700809	1359	50 AHN	250	550	87
66700206	982	100 220 - 350 AHN	336	1720	135
66700209	1052	500 - 700 AHN	425	1900	120

NOTE: For other volumes, consult factory.

Valves

Code	Model	Capacity (Lt)
69150306	AMR	5 - 900
69150310	AHN / AMR > 16 bar	100 - 1400
69150309	AMR Special	80 - 100
69130308	AMR - INOX	20 - 100

ACCESORIES AND SPARE PARTS

For better identification consult factory

Lower flanges for water inlet 8 - 10 - 16 Bar

Code	Model	Capacity (Lt)	Diameter Ø	Max Pressure (Bar)	Water Connection R
96700201	AMR-E / AMR / HMR-E	5 - 8	100	10	1"
96700101					3/4"
96700102	AMR-E/HMR	24	150	8	3/4"
96700202	AMR-E				1"
96700204	AMR / AMR-S / AMR-P	15 - 100	150	10	1"
96700204	AMR	50	150	16	1"
96700806	AMR-P-A	100	150	10	1 1/4"
96700806	AMR-B90	150-200	150	10	1 1/4"
96700803	AMR-B160	300	235	10	1 1/4"
96700808	AMR-B160	500-700	235	8 -10	1 1/2"
96700402	SS	20-24-50-100	150	10	1"

Top flanges for accesories

Code	Model	Capacity	Diameter Ø	Max Pressure (Bar)	Water Connection R
96700203	AMR FLANGE + CUP	150-1000	235	10	1"
68400206		100		16	
96700222	AMR - PLUS FLANGE + CUP	80-1000	235	10	1"
68400206					
68350202	AMR / AMR-H	150 - 900	230	16-20	1"
96700427	AMR	1000 - 1400	370	10-16-20	1"

Bladder fastening

Code	Model	Capacity	Max Pressure (Bar)	Water Connection R
Coupling 61530107	AMR-P-A AMR B90 / B160	100 - 700	10	3/4"
Nut 69000134				
Cap 68400407				

Water inlet coupling 10 - 16 - 20 Bar

Code	Model	Capacity	Max Pressure (Bar)	Water Connection R
Coupling 66530140	AHN AMR / AMR-H / AMR - PLUS	80 - 1000	10 - 16 - 20	1 1/2"
Nut 69000138				
Coupling 91100202	AMR / AMR-H	1000 - 1400	10 - 16 - 20	2"
Locknut 69000141				
Nut seat 60450101				
Coupling 91100207	SS (AISI 316)	100 - 1000	10-16	1 1/2"
Nut 69000138				

NOTES

EXPANSION VESSELS

INTRODUCTION

Expansion vessels are designed to be used in atmospheric closed circuits with non corrosive water in order to absorb water dilatations produced by the temperature variations of the heating fluid. They are, therefore, designed to compensate the water volume increases, avoiding the system pressure to overpass the nominal pressure of its components.

Expansion vessels are manufactured by Industrias Ibaiondo, S.A, according to the especial safety requirements established by the 97/23/EC Directive for pressure systems, employing high quality materials, procedures and qualified and authorized staff.

DESCRIPTION

Steel tanks manufactured according to the European 97/23/EC Directive regulations for pressure units. They are made with two embedded roots and a curved metal plate joined together by welding flanges and suitable to withstand loosely design working pressure. The tightness and resistance of the tanks are tested at 1.5 times higher than the maximum working pressure.

Expansion vessels have inside a synthetic rubber bladder manufactured according to the physical and mechanical features of the European Norm. Bladders or membranes holding in permanent isolation the water from the air, are calculated to be filled of water until fitting the geometric shape of the expansion vessel guaranteeing a minimum elongation and avoiding material wear. This factor, joined to material thickness and composition which they are made of, ensure a minimum loss of the precharge pressure of the expansion vessel.

Vessels are provided with a duly protected valve for the right pressure regulation of the air side.

External coating consists in the application over the steel, previously phosphated, of a minimum of 40 microns of oven cured paint.

OPERATION

Expansion vessels are essential elements in heating system to keep the installation pressure and TO absorb the water volume increase produced as consequence of temperature variations. So that, they avoid the system pressure to overpass the nominal pressure of its components and the potential dangerous risks.

Between membrane and metallic part of the vessel there is an air chamber submitted initially to the precharge pressure.

When water temperature inside the circuit increases, the expansion of the heating fluid pushes the membrane, gets into the vessel and the air mass is compressed. When water temperature decreases, the air chamber forces water to return into the system.

This allows the system to keep the pressure, involving energy saving and avoiding pressure circuit to overpass allowable limits

Note: Oxygen inlet into the closed heating or cooling circuit must be minimized with a correct design of the installation and a correct maintenance.

EXPANSION VESSEL VOLUME CALCULATION

CMF Series

V_t (Lts): Total water volume in the circuit (boilers, pipes, radiators, etc.).

e : Expansion coefficient for maximum temperature of the system.

V_{res} (Lts): Reserve volume = 0,02 * V_t

F_p : Pressure factor = $1 - \dfrac{(P_0 + 1)}{(P_{max} + 1)}$

$$V_N \geq \frac{[(V_t * e) + V_{res}]}{F_p}$$

P_o(Bar) : Precharge pressure of the vessel = (H(m) / 10) + 0,2 bar.

H(m): Length between the expansion vessel and the highest point of the installation.

P_{vs} (Bar): Tared pressure of the safety valve.

P_{max} (Bar): Maximum pressure of the system = P_{vs} – 0,5 bar (when $P_{vs} \leq$ 5 bar)
= P_{vs} * 0,9 bar (when P_{vs} > 5 bar)

SMR / SMF Series

V_t (Lts): Total water volume in the solar circuit (collectors, pipes, puffer tanks, etc.).

e : Expansion coefficient for maximum temperature of the system.

V_{res} (Lts): Reserve volume = 0,02 * V_t

V_{vap} (Lts): Evaporation volume= solar collector volume (Lts.) + collector connection pipes volume (Lts.)

F_p : Pressure factor = $1 - \dfrac{(P_0 + 1)}{(P_{max} + 1)}$

$$V_N \geq \frac{[(V_t * e) + V_{res} + V_{vap}]}{F_p}$$

P_o(Bar) : Precharge pressure of the vessel = (H(m) / 10) + 0,2 bar.

H(m): Length between the expansion vessel and the highest point of the installation.

P_{vs} (Bar): Tared pressure of the safety valve.

P_{max} (Bar): Maximum pressure of the system = P_{vs} – 0,5 bar (when $P_{vs} \leq$ 5 bar)
= P_{vs} * 0,9 bar (when P_{vs} > 5 bar)

CMR Series

V_t (Lts): Hot Sanitary Water total volume.

e : Expansion coefficient for maximum temperature of the system.

F_p : Pressure factor = $1 - \dfrac{(P_0 + 1)}{(P_{max} + 1)}$

$$V_N \geq \frac{[(V_t * e)}{F_p}$$

P_o(Bar) : Precharge pressure of the vessel = P_1 - 0,3

P_1(Bar) : Precharge pressure of the vessel (Keep steady with a pressure reducer).

P_{vs} (Bar): Tared pressure of the safety valve.

P_{max} (Bar): Maximum pressure of the system = P_{vs} – 0,5 bar (when $P_{vs} \leq$5 bar)
= P_{vs} * 0,9 bar (when P_{vs} > 5 bar)

Water expansion coefficient depending on the maximum temperature of the system

Temperature (ºC)	e (glicol 0%)	e (glicol 20%)	e (glicol 40%)
10	0.0004	0.0064	0.0128
20	0.0018	0.0082	0.0146
30	0.0044	0.0108	0.0172
40	0.0078	0.0143	0.0207
50	0.0121	0.0185	0.0249
60	0.0171	0.0235	0.0299
70	0.0227	0.0292	0.0356
80	0.0290	0.0354	0.0418
90	0.0359	0.0423	0.0487
100	0.0434	0.0499	0.0563

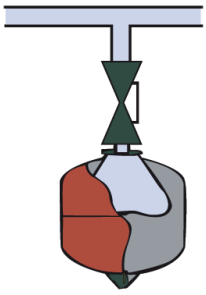
INSTALLATION AND ASSEMBLY

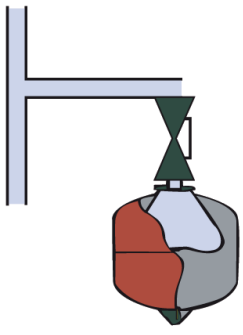
Before proceeding to the assembly, it is necessary to ensure that the right volume of the expansion vessel has been calculated and verified by technical authorized staff, taking into account the system features.

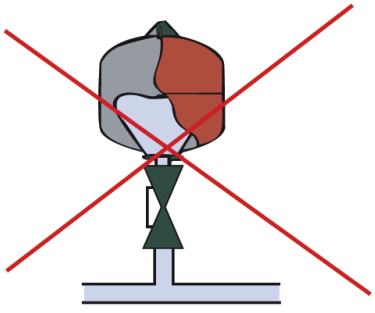
Expansion vessel will be placed in an indoor with the right measures for an easy access in order to facilitate inspection of the air valve, connection sleeve and labels.

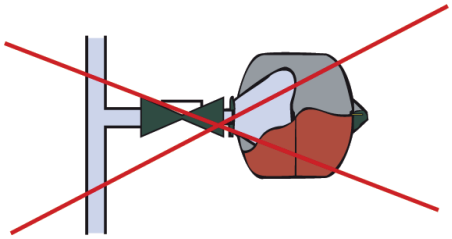
It will never be placed a valve which closure the performance of the expansion vessel.

Expansion vessels without feet are installed straight to the water pipeline or preferably through a bracket designed for this purpose (see page 48) and always with the water inlet sleeve in the upper side in order to avoid air bags. The system must be designed to endure vessel weight completely filled.









It is recommended to place CMF expansion vessel in the return PIPE line as close as possible to the boiler and preferably on the suction side of the pump. In case of SMF/SMR series, it is recommended to be placed in the return pipe of the solar system as far as possible from the solar collectors. In the case of CMR series, they must be placed in the cold water inlet, setting them between safety valve and SHW accumulator.

It is recommended to install an isolating valve to avoid emptying the circuit during maintenance or vessels replacement (see page 48).

It will never be placed a valve which closure the performance of the expansion vessel.

Safety valve and manometer must be installed. Safety valve will be installed in the boiler or on the round duct as close as possible of it and above its highest level. It will be tared according to the maximum pressure of the installation and never higher than maximum pressure of the expansion vessel.

Height difference between manometer and the expansion vessel must be the minimum possible.

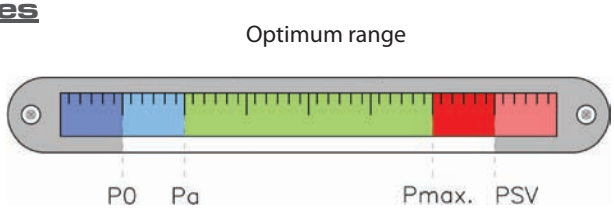
It is recommended to install drainage valves and/or air separators to avoid the accumulation of air.

Prevent straight radiations over the expansion vessel to protect the membrane from high temperatures. If it is foreseen the return temperature overpass 70 °C (heating) or 100°C (solar), it is recommended to install an intermediate vessel (VI series).

In order to avoid corrosion caused by electrolysis is necessary to protect conveniently (use of dielectric joints and materials).

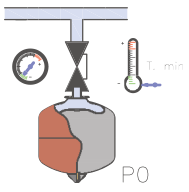
COMMISSIONING

CMF y SMF/SMR Series



1. **Setting of the inflating pressure**: The expansion vessels are delivered from the factory with an inflating indicated on the label. However, this value should be adjusted according to the characteristics of the installation.

$$P0\ (bar) = (H\ (m)/10) + 0{,}2\ bar$$



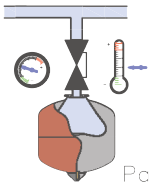
H = Height between the expansion vessel and the highest point of the installation.

This formula is used when the vessel is installed on the lower side of the recirculating pump. If it is installed on the high side, the value of the precharge pressure (Po) must be increased with the pressure of the pump. The coefficient of evaporation is not taken into account.

Do not exceed the maximum pressure shown on the label of the product under any case.

2. **Water filling of the system (Initial pressure)**: The expansion vessel should always contain a minimum volume of water. Fill slowly the circuit with cold water draining the circuit through the provided points. The filling pressure at the height of the expansion vessel should exceed 0.3 bar the precharge pressure (Po) vessel.

$$Pa\ (bar) = P0\ (bar) + 0{,}3\ bar$$



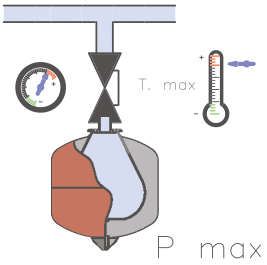
3. **Refilling water of the installation (maximum pressure):**

- Run the installation at the maximum working temperature allowed, draining the air regularly.

- Turn off the pump and purge.

- Refill the circuit with water till reaching the maximum pressure(P_{max}).

If $P_{VS} \leq 5$ bar: P_{max} (bar) $\leq P_{VS} - 0,5$
If $P_{VS} > 5$ bar: P_{max} (bar) $\leq P_{VS} * 0,9$



CMR Series

Precharge pressure adjustment: CMR expansion vessels are delivered with an precharge pressure from factory of 3 bar. However, this value must be adjusted depending on the installation characteristics

P0 (bar) = P1- 0,3 bar

P1 = Pressure mains input.

It is recommended to keep steady the supply pressure of the network installing a pressure reducer.

Under any circumstances overpass the maximum pressure indicated on the label of the product.

AMR-C-A Series

Consult factory.

MAINTENANCE

At least once a year, expansion vessel shall be checked through the inflating valve that the pressure of the air chamber is kept in the right values (precharge pressure) with caution of doing it contrasting the values at a similar temperature and with the vessel empty of water. In case of a deviation higher than +/- 20%, adjust to its original value.

To avoid expansion vessels corrosion it is appropriated to purge the circuit periodically. The possible entry of outside air shall be minimized through periodically maintenance operations

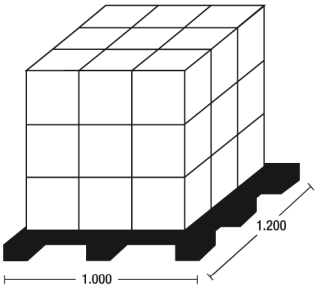
DISSASEMBLY

In no case the expansion vessel will be dismantled without previous depressurizing, emptying and at water temperature less than 35°C.

PALLETIZING

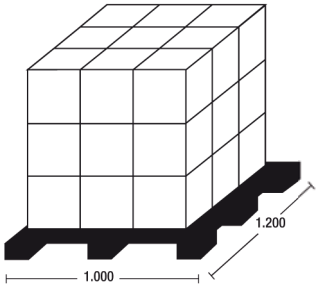
CMF / VI SERIES

Model	Reference	Units / Pallet
5 CMF / 5 VI	02005343 / 02005103	200 pcs.
8 CMF / 8 VI	02008343 / 02008103	144 pcs.
12 CMF / 12 VI	02012343 / 02012103	84 pcs.
18 CMF / 18 VI	02018343 / 02018103	70 pcs.
25 CMF / 24 VI	02025343 / 02025103	54 pcs.
35 CMF / 35 VI	02035343 / 02035103	30 pcs.



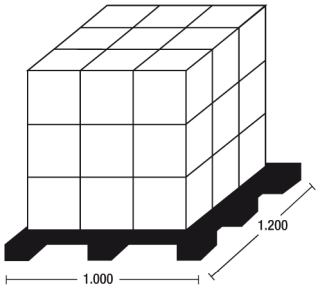
CMF / VI SERIES

Model	Reference	Units / Pallet
35 CMF-P	02035345	30 pcs.
50 CMF / 50 VI	02050343 / 02050103	30 pcs.
80 CMF	04080351	16 pcs.
100 CMF	04100351	16 pcs.
140 CMF / 100 VI	04140351 / 02100103	12 pcs.
200 CMF / 200 VI	04200351 / 02200103	6 pcs.
250 CMF	04250351	6 pcs.
300 CMF / 300 VI	04300351 / 02300103	6 pcs.
400 CMF	04400351	6 pcs.



CMR / SMF / SMR SERIES

Model	Reference	Units / Pallet
5 CMR / 5 SMF	01005012 / 02005070	200 pcs.
8 CMR / 8 SMF	01008012 / 02008070	144 pcs.
11 CMR / 12 SMF	01011012 / 02012070	84 pcs.
18 CMR / 18 SMF	01018012 / 02018070	70 pcs.
24 CMR / 24 SMF	01025082 / 02024070	54 pcs.



35 CMR / 35 SMR	01035249 / 01035070	30 pcs.
50 CMR / 50 SMR	01050249 / 01050070	30 pcs.
80 CMR / 80 SMR	03080239 / 03080070	16 pcs.
100 CMR / 100 SMR	03100039 / 03100070	12 pcs.
150 CMR	03150039	8 pcs.
220 CMR / 220 SMR	03220039 / 03200070	6 pcs.

PRODUCT RANGE

CMF series vessels are designed to be used in atmospheric closed circuits with non-corrosive water in heating and cooling system.

- Volume: 5-1000 liters. Models: no feet / with feet.
- Non Replaceable Fixed bladder, according to DIN 4807 (non potable).
- Models between 5 and 35 liters are installed straight to the pype (manufactured without feet). (¾")
- Models between 35 and 400 liters are installed on the floor. (manufactured with feet and sleeve on the top). (¾" – 1")
- Models between 500 and 1.000 Liters are also installed on the floor. (with feet and sleeve at the bottom of the tank).
- Min. / Max. temperature: -10º + 100 ºC.
- Max pressure: 4-5-6 bar.
- Pre-charge pressure 1,5 bar.
- Epoxy powder coating (red color).
- Designed and manufactured according to 97/23/EC Directive.

AMR-C-A AMR-B-A & AMR-AUX series are designed to be used in atmospheric closed circuits with non corrosive water heating systems. It complements itself with and electronic equipment, one compressor and all the necessary elements to check the pressure and water inside the vessel.

- Volume: 200-5000 liters. Models: with compressor /with pump/ auxiliary tanks.
  AMR-C-A: 10 Bar / Compressor unit: 6 Bar (Standard) – 10 Bar.
  AMR-B-A: 6Bar / Pump unit: 6 Bar.
- Replaceable membrane according to DIN 4807.
- Expansion vessel with an automatic pressure system (no maintenance required). Guarantees steady pressure. Electronic control chart.
- It can be used with antifreeze up to 50%.
- Water connection, flexible stainless tube.
- Optional: automatic filled water.
- Min. / Max. temperature: -10º C + 100ºC.
- Epoxy powder coating (red color).
- Designed and manufactured according to 97/23/EC Directive.

PC/PR series are manufactured as necessary components for boilers in heating systems.

- Volume: 5-12 liters. Models: circular / rectangular.
- Non Replaceable Fixed bladder, according to DIN 4807.
- Max. temperature: + 100º C.
- Maximum pressure: 3 Bar.
- Precharge pressure: 1 Bar.
- Epoxi powder coating (red color).
- Designed and manufacturated according to 97/23/EC Directive.

PRODUCT RANGE

CMR series vessels are designed to be used in open circuits in hot sanitary water installations SHW.

- Volume: 0,16-700 liters. Models: no feet / with feet.
- Membrane according to DIN 4807, suitable to contain sanitary water.
- Models from 2 to 24 liters have fixed bladder and stainless steel water connection AISI 304. Installed directly to the tube (manufactured without feet).(½" – ¾")
- Models from 35 to 100 liters have replaceable bladder with stainless steel flange (AISI 304).
- Models from 150 to 700 liters have replaceable bladder and stainless steel water connection AISI 316. (manufactured with feet and sleeve at the bottom of the tank).
- Min / Max Temperature: - 10ºC + 100ºC.
- Maximum pressure: 8-10 bar.
- Epoxy powder coating (white color).
- Designed and manufactured according to 97/23/EC Directive.

SMF/SMR series models are designed to be used in atmospheric closed circuits with non-corrosive water solar systems. It is recommended to place the expansion vessel in the return pipe of the solar installation, as far as possible from the collectors.

- Volume: 2-700 liters. Models: no feet / with feet.
- Membrane according to DIN 4807 suitable for solar energy, not potable.
- Models from 2 to 24 liters have fixed membrane, non-replaceable. They are installed directly to the tube (manufactured without feet).(¾")
- Models from 35 to 700 liters have replaceable bladder. They are installed on the floor (manufactured with feet and sleeve at the bottom of the tank).(1"-1 ½")
- It allows to reach a temperature peaks of 130ºC (during an hour).
- Suitable for the use of antifreeze.
- Min. / Max. temperature: – 10ºC + 100ºC.
- Maximum pressure: 10 bar.
- Pre-charge pressure: 2,5 bar.
- Epoxy powder coating (white color).
- Designed and manufactured according to 97/23/EC Directive.

VI series models are intermediate vessels designed to be used in closed atmospheric circuits with non-corrosive water in heating and solar system installations.

- Volume: 5-300 liters. Models: no feet / with feet.
- It is recommended to install when return temperature of the heating system overpass 70ºC, solar system 100ºC or below 0ºC in cooling sytems.
- It is installed directly to the tube, between the collector and the expansion vessel.
- Its function is to avoid the membrane aging, consequence of the high and low temperatures.
- Intermmediate vessels without membrane.
- Inlet and outlet water connection of ¾", 1" or 1 ½" depending on the model.
- Epoxy powder coating (white color).
- Designed and manufactured according to 97/23/EC Directive.

CMF SERIES

Heating and cooling systems expansion vessels in closed circuits

- Fixed bladder, non-replaceable according to DIN 4807-3 (non potable)
- Galvanized water connection (5-35 CMF)
- Min. / Max. temperature: -10ºC + 100ºC
- Pre-charge: 1,5 bar
- Epoxy powder coating (red color)

Models without feet 5 Bar (Non-replaceable bladder)

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
2	02005343	5 CMF	5	5	200	250	3/4 "
2,5	02008343	8 CMF	8	5	200	340	3/4 "
3,2	02012343	12 CMF	12	5	270	310	3/4 "
4	02018343	18 CMF	18	5	270	415	3/4 "
4,5	02025343	25 CMF	25	5	320	430	3/4“
7	02035343	35 CMF	35	5	360	475	3/4“

Models with feet 4 - 6 Bar (Non-replaceable bladder)

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
7	02035345	35 CMF	35	4	360	480	3/4 "
7,5	02050343	50 CMF	50	4	360	630	3/4 "
16	04080351	80 CMF	80	6	485	570	1 "
18	04100351	100 CMF	100	6	485	650	1 "
24	04140351	140 CMF	140	6	485	935	1 “
36	04200351	200 CMF	200	6	600	860	1 “
44	04250351	250 CMF	250	6	600	1095	1”
49	04300351	300 CMF	300	6	600	1240	1 “
56	04400351	400 CMF	400	6	600	1480	1 “

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
63	04500351	500 CMF	500	6	750	1445	1 "
77	04600351	600 CMF	600	6	750	1700	1 "
95	04800351	800 CMF	800	6	750	2155	1 “
118	04101351	1000 CMF	1000	6	750	2555	1 “

AMR-C-A SERIES

Expansion vessels with compressor for heating and cooling systems (closed circuits)

Standard models 10 bar

- Closed expansion vessel with external pressure generation unit to guarantee a steady pressure in the system
- Replaceable bladder according to DIN 4807-3
- Maximum service pressure: 10 bar
- Min. / Max. temperature: -10º C + 100º C
- Suitable to use antifreeze up to 50 %
- Compressor unit standard (6 bar)
- Load cell
- Pressure and volume display
- Voltage three phase 220 / 380 V
- Water connection: flexible stainless steel tube
- Epoxy powder coating (red color)
- Optional: Auto filling

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Kg.	H (mm)	
93	04022422	220 AMR-C-A	200	10	485	1465	1“
104	04035422	350 AMR-C-A	300	10	485	2020	1“
134	04050422	500 AMR-C-A	500	10	600	2160	1 "
202	04075422	700 AMR-C-A	700	10	700	2310	1 "

Large models 10 bar

- Closed expansion vessel with external pressure generation guarantee a steady pressure
- Replaceable bladder according to DIN 4807-3
- Maximum service pressure: 10 bar
- Min. / Max. temperature: -10º C + 100º C
- Suitable to use antifreeze up to 50 %
- Compressor unit
- Load cell
- Pressure and volume display
- Voltage three phase 220 / 380 V
- Water connection: flexible stainless steel tube
- Epoxy powder coating (red color)
- Optional: Auto filling

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R/DN Water connection
					Ø D (mm)	H (mm)	
324	04100421	1000 AMR-C-A	1000	10	850	2310	1“
417	04140421	1400 AMR-C-A	1400	10	1000	2270	1“
593	04200421	2000 AMR-C-A	2000	10	1200	2695	DN65
790	04300421	3000 AMR-C-A	3000	10	1200	3695	DN65
1.282	04500421	5000 AMR-C-A	5000	10	1500	3910	DN65

YOU MUST INDICATE THE GEOMETRIC HEIGHT FOR PROGRAMMING THE CONTROL UNIT.
MORE THAN 60 METERS, CONSULT FACTORY

AMR-B-A SERIES

Expansion vessels with pump unit for heating and cooling systems (close circuits)

- Opened expansion vessel with external pressure generation unit to guarantee a steady pressure in the system
- Replaceable bladder according to DIN 4807-3
- Maximum service pressure: 6 bar
- Min. / Max. temperature: -10º C + 100º C
- Suitable to use antifreeze up to 50 %
- Pump unit
- Load cell
- Pressure and volume display
- Voltage three phase 220 / 380 V
- Water connection: flexible stainless steel tube
- Epoxy powder coating (white color)
- Optional: Auto filling

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
88	04022428	220 AMR-B-A	200	6	485	1465	1"
98	04035428	350 AMR-B-A	300	6	485	2020	1"
128	04050428	500 AMR-B-A	500	6	600	2160	1"
200	04070428	700 AMR-B-A	700	6	700	2310	1"

SERIE AMR-AUX

Auxiliary expansion vessel for heating and cooling systems (close circuits)

- Auxiliary expansion vessels to install with automatic expansion tanks AMR-C-A and AMR-B-A as secondary vessel in heating and cooling close circuits
- Replaceable bladder according to DIN 4807-3
- Maximum service pressure: 10 bar
- Min. / Max. temperature: -10º C + 100º C
- Suitable to use antifreeze up to 50 %
- Water connection: flexible stainless steel tube
- Epoxy powder coating (red color)

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
49	04022420	220 AMR-AUX	200	10	485	1465	1"
60	04035420	350 AMR-AUX	300	10	485	2020	1"
90	04050420	500 AMR-AUX	500	10	600	2160	1"
158	04075420	700 AMR-AUX	700	10	700	2310	1"

CMR SERIES

Expansion vessels for hot sanitary water installations

- Expansion vessels for hot sanitary water in opened circuits
- Fixed membrane (non-replaceable) and replaceable, depending on the model
- Membrane according to DIN 4807 suitable to contain sanitary water
- Special connection (plastic line or stainless steel fitting)
- Min. / Max. temperature: -10ºC + 100ºC
- Pre-charge: 3 bar
- Epoxy powder coating (white color)

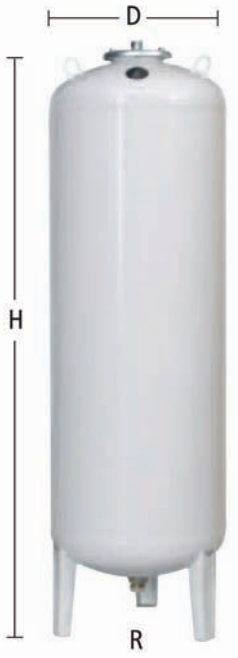
Models without feet 8 - 10 Bar (Non-replaceable bladder)

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
0,5	07000692	V-160 CMR	0,16	10	85	105	1/2"
0,8	01002012	2 CMR	2	10	110	245	3/4"
2	01005012	5 CMR	5	10	200	250	3/4"
2,5	01008012	8 CMR	8	10	200	340	3/4"
3,2	01011012	11 CMR	11	10	270	310	3/4"
4	01018012	18 CMR	18	10	270	415	3/4"
4,5	01025082	24 CMR	24	8	320	430	3/4"

Models with feet 10 Bar (Replaceable bladder)

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
10	01035249	35 CMR	35	10	360	615	1"
12	01050249	50 CMR	50	10	360	750	1"
16	03080239	80 CMR	80	10	450	750	1 "
18	03100039	100 CMR	100	10	450	850	1 "

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
38	03150039	150 CMR	150	10	485	1155	1 1/2"
49	03220039	220 CMR	200	10	485	1400	1 1/2"
60	03350039	350 CMR	300	10	485	1965	1 1/2"
90	03500039	500 CMR	500	10	600	2065	1 1/2"
158	03700039	700 CMR	700	10	700	2145	1 1/2"



SMF / SMR SERIES

Solar expansion vessels

- Expansion vessels for solar energy systems in closed circuits
- Fixed membrane, non-replaceable and replaceable depending on the model
- Membrane according to DIN 4807-3 special for solar energy (non potable)
- Galvanized or brass water connection
- It allows to reach peaks of 130 ºC (during an hour)
- Suitable to use antifreezes (up to 50%)
- Pre-charge: 2,5 bar
- Min. / Max. temperature: -10ºC + 100ºC
- Epoxy powder coating (white color)

Models without feet 8 - 10 Bar (Non-replaceable bladder)

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
0,8	02002070	2 SMF	2	10	110	245	3/4"
2	02005070	5 SMF	5	10	200	250	3/4"
2,5	02008070	8 SMF	8	10	200	340	3/4"
3,2	02012070	12 SMF	12	10	270	310	3/4"
4	02018070	18 SMF	18	10	270	415	3/4"
4,5	02024070	24 SMF	24	8	320	430	3/4"

Models with feet 10 Bar (Replaceable bladder)

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
10	01035070	35 SMR-P	35	10	360	615	1"
12	01050070	50 SMR-P	50	10	360	750	1"
16	03080070	80 SMR-P	80	10	450	750	1"
18	03100070	100 SMR-P	100	10	450	850	1"

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
49	03200070	220 SMR	200	10	485	1400	1 1/2"
60	03300070	350 SMR	300	10	485	1965	1 1/2"
90	03500070	500 SMR	500	10	600	2065	1 1/2"
158	03700070	700 SMR	700	10	700	2145	1 1/2"

PC/PR SERIES

Expansion vessels for boilers

- Fixed membrane, non-replaceable , according to DIN 4807
- Temperature: -10º C + 100º C
- Pre-charge: 1 Bar

Circular models

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
----	02004531	5 PCS-T	5	3	387	60	3/8"
----	02005511	6 PCS	6	3	387	65	3/8"
----	02007491	7 PCS	7	3	387	70	M-12
----	02008511	8 PCS	8	3	387	85	1/2"
----	02010601	10 PCS	10	3	387	106	1/2"

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
----	02006551	6 PCA	6	3	325	100	3/4"
----	02008506	8 PCA	8	3	325	130	1/2"
----	02010504	10 PCA	10	3	325	160	1/2"
----	02012505	12 PCA	12	3	325	175	3/4"

NOTE: Supplied on request. Minimum order of 100 pieces.

Rectangular models

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions			R Water connection
					A (mm)	B (mm)	H (mm)	
----	02007563	7 PR	7	3	500	210	105	3/8"
----	02007583	7,5 PR	7,5	3	500	210	115	3/4"
----	02010585	8 PRM	8	3	440	250	95	3/8"
----	02010563	10 PR	10	3	500	210	150	3/8"
----	02012563	12 PR	12	3	500	210	170	3/8"

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions			R Water connection
					A (mm)	B (mm)	H (mm)	
----	02010589	8 PRS-T	8	3	510	350	70	M-12
----	02010592	10 PRS-T	10	3	510	350	90	1/2"
----	02012591	12 PRS	12	3	435	345	110	1/2"

NOTE: Supplied on request. Minimum order of 100 pieces.

VI SERIES

Intermediate vessels (no bladder)

- Intermediate tanks for heating, cooling and solar systems (closed circuits).
- When the return temperature of the heating system exceed 70ºC, in solar energy system 100ºC and below 0ºC in cooling systems is recomended to instal intermediate vessels
- They are used to avoid the quick deterioration of the expansion vessel bladder due to the high or very low temperature
- Intermediate vessel without membrane
- Inlet and outlet water connection

Models without feet 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
2	02005103	5 VI	5	10	200	250	2 x 3/4"
2,5	02008103	8 VI	8	10	200	340	2 x 3/4"
3,2	02012103	12 VI	12	10	270	310	2 x 3/4"
4	02018103	18 VI	18	10	270	415	2 x 3/4"
4,5	02025103	24 VI	24	10	320	430	2 x 3/4"

Models with feet 10 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		R Water connection
					Ø D (mm)	H (mm)	
7	02035103	35 VI-P	35	10	360	615	2 x 1"
12	02050103	50 VI-P	50	10	360	750	2 x 1"
18	02100103	100 VI-P	100	10	450	850	2 x 1"
39	02200103	200 VI-P	200	10	550	1135	2 x 1 1/2"
52	02300103	300 VI-P	300	10	650	1180	2 x 1 1/2"

To obtain the volume of the intermediate vessel VI, it is necessary to know the following parameters:

e = Water expansion coefficient (glycol % if necessary) at the highest temperature of the system.

V_{system} = Water volume of the installation.

$V_{colectors}$ = Water volume of the solar collectors

An approximate way to obtain the volume of the intermediate vessel VI is the following:

Heating:

$VI = V_{Intermediate} = e * V_{system}$

Solar Energy:

Without evaporation:

$VI = V_{Intermediate} = e * V_{system}$

With evaporation:

$VI = V_{Intermediate} = e*(V_{system}+V_{collectors})$

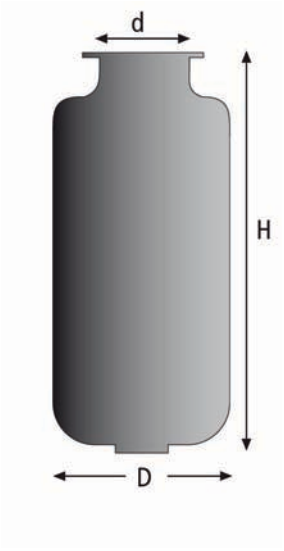
ACCESORIES & SPARE PARTS

For better identification, consult factory

CMR bladders

Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700843	200 x 335	35 CMR	200	335	84
66700854	200 x 505	50 CMR	200	505	84
66700809	1359	80 CMR	250	550	87
66700816	1358	100 CMR	250	680	87

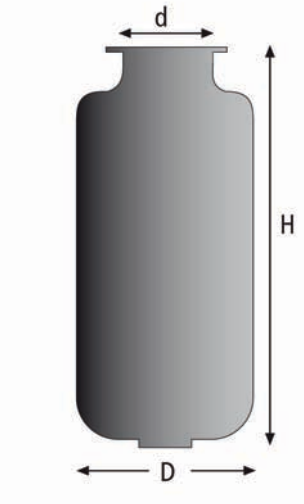
Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700202	1361	150 CMR	306	905	120
66700203	983	220 CMR	306	1100	120
66700206	982	350 - 500 CMR	306	1720	135
66700209	1052	700 CMR	425	1900	120



SMR bladders

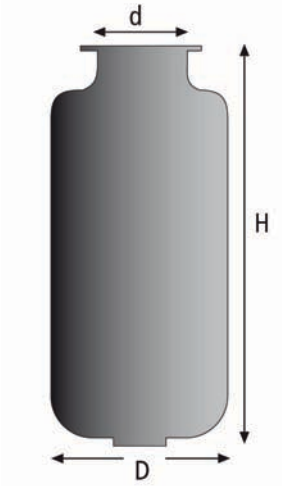
Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700848	1435 E	35 SMR-P	230	450	84
66700812	1359 E	50 SMR-P	250	550	87
66700811	280 x 500	80 SMR-P	240	630	80
66700815	1358 E	100 SMR-P	250	680	87

Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700203	983	220 SMR	306	1100	120
66700206	982	350 - 500 SMR	336	1720	135
66700209	1052	700 SMR	425	1900	120



AMR - C - A bladders

Code	Ref.	Model	Dimensions		
			D (mm)	H (mm)	d (mm)
66700203	983	220 AMR-C-A / B	306	1100	120
66700206	982	350 AMR-C-A / B	336	1720	135
66700209	1052	500 - 700 AMR-C-A / B	425	1900	120
66700212	600x1900	1.000 AMR-C-A	600	1900	240
66700214	PU	1400 AMR-C-A	1000	2060	250
66700026	PU	2000 AMR-C-A	1200	2200	90
66700027	PU	3000 AMR-C-A	1200	3200	90
66700028	PU	5000 AMR-C-A	1500	3400	90



ACCESORIES & SPARE PARTS

For a better identification, consult factory

Expansion vessels supports. Isolating valve

Code	Model
19050010	Support
19050012	Support + Isolating valve
69150112	Isolating valve
19011050	Medium support 5-18 l. (CMF)
19011051	Big support 25 l. (CMF)

Not suitable for CMR

Water inlet flanges

Code	Model	Capacity (Lt)	Diameter Ø (mm)	Max Pressure (Bar)	Water Connection Ø
96700204	SMR	35-100	150	10	1"
68400206 plug	SMR	200 - 700	235	10	1"
96700203 cover					
96700402	SS CMR	35 - 100	150	10	1"
96700403	SS CMR	150 - 700	235	10	1"

Water inlet couplings

Code	Model	Capacity (Lt)	Max Pressure (Bar)	Water Connection Ø
69000138 nut	SMR	200 - 700	10	$1^1/_2$"
66530140 sleeve				
91100207 sleeve	SS CMR	150 - 700	10	$1^1/_2$"
69000138 nut				

Valves

Normal

Code	Model	Capacity (Lt)
69150306	SMR CMR	5 - 700
69150310	CMF	500 - 1000

Special

Code	Model	Capacity (Lt)
69150309	SMR CMR	80 -100

SMR / CMR

CMF

SPECIAL

BUFFER STORAGE TANKS & COMPRESSED AIR TANKS

PRODUCT RANGE

The **AR-A** buffer storage tanks are designed to store cooling water to supply air conditioning and heat pump systems respectively. The aim is to ensure a steady temperature reducing the starting and stopping operations of the cooling or boiling systems when there are rapid temperature variations.

There is no any anti-corrosion internal treatment (No internal coating) bear in mind the AR series tanks are used in closed circuit without any adding air.

The **AR-A** are manufactured by Industrias Ibaiondo S.A. according to the required procedures and certified staff and in strict compliance with the 97/23/EC Directive.

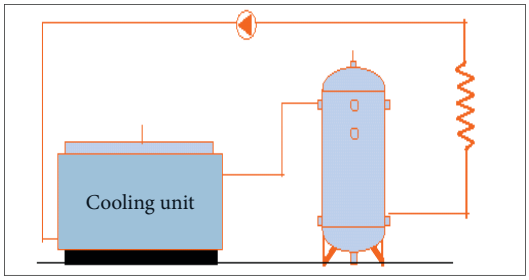
Outside thermal insulation consisting of polyurethane rigid foam direct injection (CFC free), with a minimum thickness of 50 mm in tanks up to 1.500 Liters and polyethylene linner of 19 mm thickness from 2.000 Liters up to 5.000 Liters.

Standard external finish with aluminium lining from 30 Liters up to 1500 Liters and detachable grey PVC jacket from 2.000 liters up to 5.000 Liters and top cover.

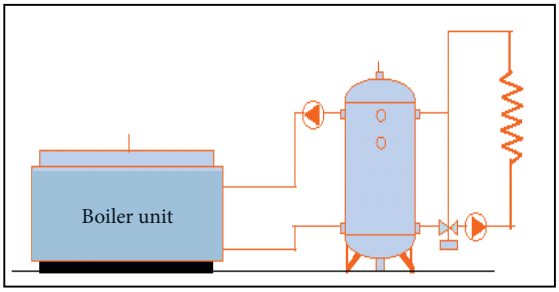
All sleeves are protected with trims and caps.

The inlet fittings arrangement and design favors the hot water stratification and a correct energetic efficiency

- Temperature: +60ºC.
- Maximum pressure: 6 Bar.
- Designed and manufactured according to Directive 97/23/EC (art 3.3).



Buffer - Cooling system



Buffer-boiler system

AR - A SERIES

Cold water tanks (cooling systems and heating pumps)

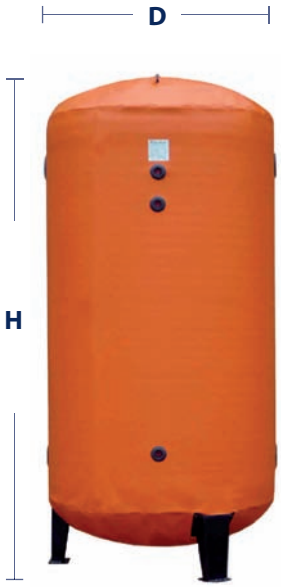
Tanks with polyurethane rigid foam and aluminium lining 6 Bar

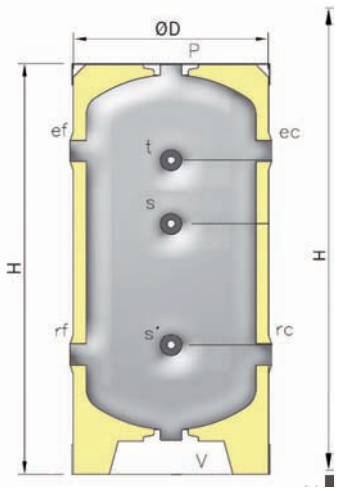
Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Connection		
					Ø D (mm)	H (mm)	e - r	t - s	p - v
10	30003061	30 AR-A	30	6	310	600	1"	1/2"	1/2"
14	30005061	50 AR-A	50	6	410	560	1"	1/2"	1/2"
36	30010061	100 AR-A	100	6	460	970	1 1/4"	1/2"	1 1/4"
42	30020061	200 AR-A	200	6	650	1090	1 1/2"	1/2"	1 1/4"
58	30030061	300 AR-A	300	6	650	1555	2"	1/2"	1 1/4"
97	30050061	500 AR-A	500	6	700	1915	3"	1/2"	1 1/4"
128	30075061	750 AR-A	750	6	910	1945	3"	1/2"	1 1/4"
188	30100061	1000 AR-A	1000	6	950	2130	3"	1/2"	1 1/4"
440	30150061	1500 AR-A	1500	6	1160	2280	3"	1/2"	1 1/4"

Tanks with polyethylene lining and PVC jacket 6 Bar

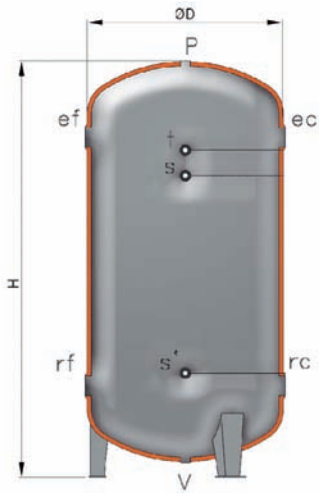
Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Connection		
					Ø D (mm)	H (mm)	e - r	t - s	p - v
500	30200061	2000 AR-A	2000	6	1150	2450	3"	1/2"	1 1/4"
750	30300061	3000 AR-A	3000	6	1340	2485	4"	1/2"	1 1/4"
970	30400061	4000 AR-A	4000	6	1440	3080	4"	1/2"	1 1/4"
1.090	30500061	5000 AR-A	5000	6	1640	2950	4"	1/2"	1 1/4"

NOTE: Optionally available with outdoor coating.





30 - 1500 AR-A



2000 - 5000 AR-A

PRODUCT RANGE

PF/PFR Buffer tanks are specifically designed for the production and storage of heating hot water in centralized storage solar systems when large scale storage of heating water is required.

PF/PFR Buffer tanks are connected to the heating system to store hot water produced from the solar panels in primary circuit. Due to the lack of inner protection, they can never be used in hot sanitary and drinking supply systems.

PF/ PFR Buffer tanks are widely used in current solar systems due to the high performance and the reduction of the space required for their installation. The use with a sanitary water tanks avoids legionella.

PFR version incorporates carbon steel fixed heat exchanger of high capacity.

There is no any anti-corrosion internal treatment (No internal coating) bear in mind the PF/PFR series buffer tanks are used in closed circuit without any adding air.

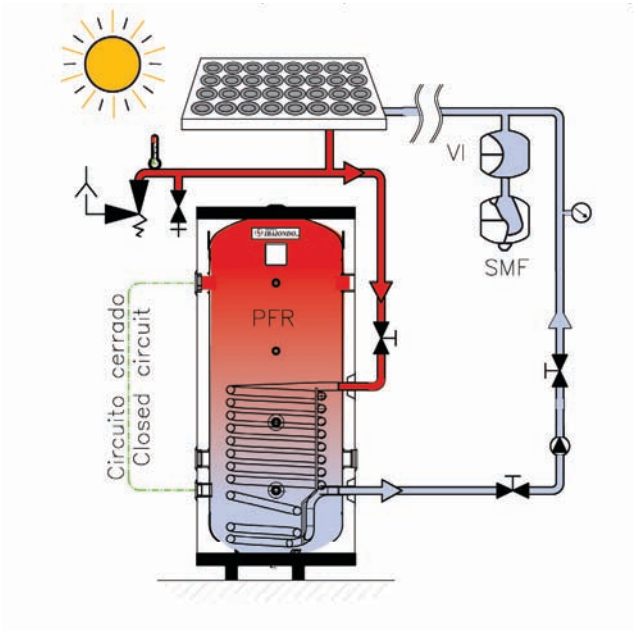
Outside thermal insulation consisting of polyurethane rigid foam direct injection (CFC free), with a minimum thickness of 50 mm in tanks up to 1.500 Liters and flexible polyurethane 80 mm thickness from 2.000 Liters up to 5.000 Liters.

Standard external finish with detachable grey PVC jacket and top cover.

All sleeves are protected with trims and caps.

The inlet fittings arrangement and design favors the hot water stratification and a correct energetic efficiency

- Temperature: +100ºC.
- Maximum pressure: 6 Bar.
- Designed and manufactured according to directive 97/23/EC (art 3.3).



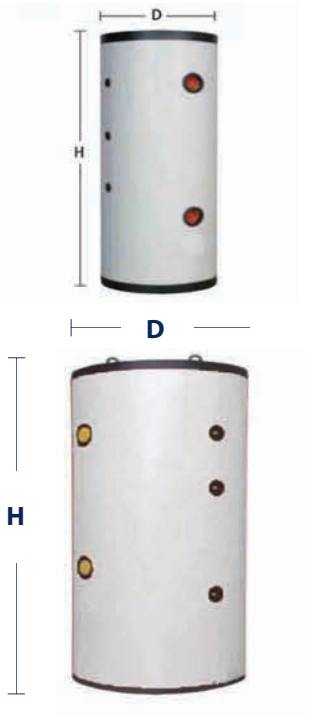
PF / PFR SERIES

Solar buffer tanks

Buffer storage tanks PF 6 Bar

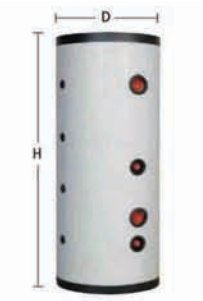
Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Connection		
					Ø D (mm)	H (mm)	e - r	t - s	p - v
36	16110061	100 PF	100	6	460	970	1 ¼"	1/2"	1 1/4"
42	16120061	200 PF	200	6	650	1090	1 ½"	1/2"	1 1/4"
58	16130061	300 PF	300	6	650	1055	2"	1/2"	1 1/4"
97	16150061	500 PF	500	6	700	1915	3"	1/2"	1 1/4"
128	16175061	750 PF	750	6	910	1945	3"	1/2"	1 1/4"
188	16100061	1000 PF	1000	6	950	2100	3"	1/2"	1 1/4"
440	16115061	1500 PF	1500	6	1160	2300	3"	1/2"	1 1/4"

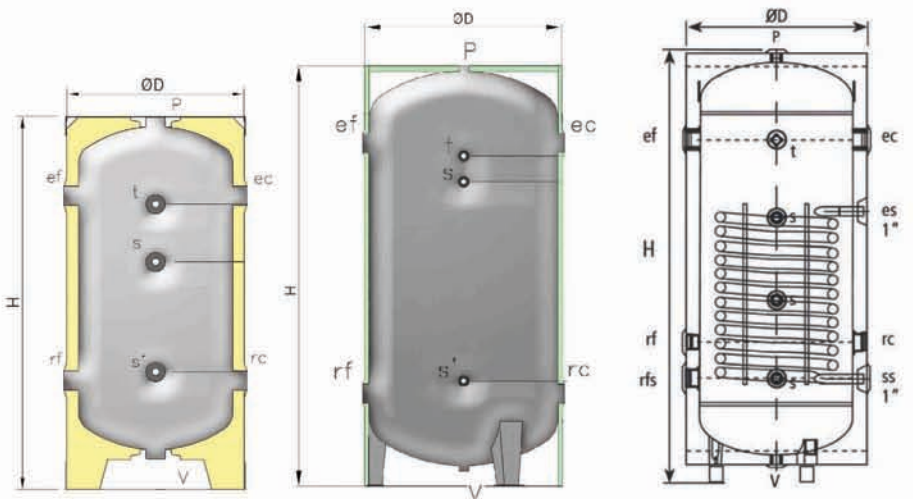
Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Connection		
					Ø D (mm)	H (mm)	e - r	t - s	p - v
500	16200061	2000 PF	2000	6	1260	2500	3"	1/2"	1 1/4"
750	16300061	3000 PF	3000	6	1460	2540	4"	1/2"	1 1/4"
970	16400061	4000 PF	4000	6	1560	3150	4"	1/2"	1 1/4"
1.090	16500061	5000 PF	5000	6	1760	3015	4"	1/2"	1 1/4"



Buffer tanks with heat exchanger PFR 6 Bar

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Exchanger Surface m2
					Ø D (mm)	H (mm)	
63	16130062	300 PFR	300	6	650	1550	1,4
107	16150062	500 PFR	500	6	700	1900	2
143	16175062	750 PFR	750	6	950	1810	3
208	16100062	1000 PFR	1000	6	950	2260	3
480	16150068	1500 PFR	1500	6	1160	2500	3,2
600	16200068	2000 PFR	2000	6	1360	2375	4





100 / 1500 - PF 2000 / 5000 PF PFR

PRODUCT RANGE

ACES-ACET series are specifically designed for double use, the production and storage of hot water (heating) and hot sanitary water in combined systems.

ACET series, commonly known as "tank in tank", are made of two tanks, one inside the other. The carbon steel buffer (External tank) must be connected with the heating system (primary circuit). Due to the lack of inner protection, they can never be connect in hot sanitary and drinking supply systems directly. The inside replaceable sanitary tank (SHW) is made of stainless steel AISI 316 L.

ACES series are made of an external tank which joins inside one coil. The carbon steel buffer (External tank) must be connected with the heating system (primary circuit). Due to the lack of inner protection, they can never be connect in hot sanitary and drinking supply systems directly. The inside replaceable corrugate stainless steel coil is made (SHW) of stainless steel AISI 316 L.

ACET-ACES series offer the possibility of adding one or two fixed heat exchangers, giving the possibility to connect them to boilers or solar systems

Guarantee: 5 years

ACET series (ACET-0, ACET-1, ACET-2):

Buffer tank (External tank):

- Black steel according to directive 97/23/EC.
- No internal treatment.
- Upper flange DN 400.
- Max. Pressure / temperature max (Buffer): 6 bar / 100ºC.
- Max. Pressure / temperature max (Exchanger): 10 bar / 100ºC.

Stainless Steel tank characteristics, SHW:

- Stainless steel replaceable tank (AISI 316L).
- Max. Pressure/ temperature max: 10 bar / 95ºC.

ACET-1 & ACET-2: Incorporates one or two carbon steel fixed heat exchanger.

ACES series (ACES-0, ACES-1, ACET-2):

Buffer tank (External tank):

- Black steel according to directive 97/23/EC.
- No internal treatment.
- Upper flange DN 400.
- Max. Pressure / temperature (Buffer): 6 bar / 100ºC.
- Max. Pressure / temperature (Exchanger): 10 bar / 100ºC

Stainless steel Coil characteristics, SHW:

- Stainless steel replaceable coil (AISI 316 L).
- Max. Pressure / temperature max: 10 bar / 95ºC.
- Every model is supplied with a detachable flexible polyurethane foam (100 mm thinckness) and grey detachable PVC finish jacket.

ACES-1 & ACES-2: Incorporates one or two carbon steel fixed heat exchanger

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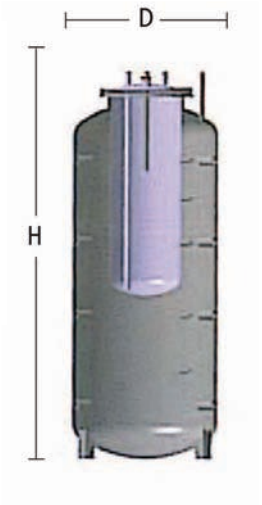
ACET SERIES

Hot sanitary water buffer

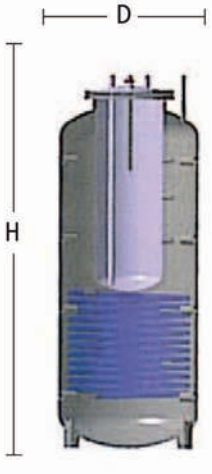
Buffer tanks without exchanger ACET - 0

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Capacity (Lt)	Dimensions		Lower Exchanger Surface (m^2)	Upper Exchanger Surface (m^2)
						Ø D (mm)	H (mm)		
155	16950005	500 ACET-0	500	6 - 10	150	700	1950	--	--
235	16975005	750 ACET-0	750	6 - 10	150	950	1850	--	--
295	16910005	1000 ACET-0	1000	6 - 10	200	950	2320	--	--
455	16912505	1250 ACET-0	1250	6 - 10	200	1160	2050	--	--
460	16915005	1500 ACET-0	1500	6 - 10	250	1160	2375	--	--



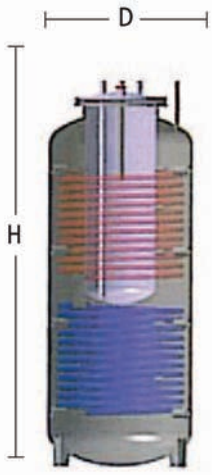
Buffer tanks with one exchanger ACET - 1

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Capacity (Lt)	Dimensions		Lower Exchanger Surface (m^2)	Upper Exchanger Surface (m^2)
						Ø D (mm)	H (mm)		
205	16950006	500 ACET-1	500	6 - 10	150	700	1950	2	--
290	16975006	750 ACET-1	750	6 - 10	150	950	1850	2,5	--
345	16910006	1000 ACET-1	1000	6 - 10	200	950	2320	3,2	--
505	16912506	1250 ACET-1	1250	6 - 10	200	1160	2050	3,2	--
510	16915006	1500 ACET-1	1500	6 - 10	250	1160	2375	4,3	--



Buffer tanks with two exchanger ACET - 2

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Capacity (Lt)	Dimensions		Lower Exchanger Surface (m^2)	Upper Exchanger Surface (m^2)
						Ø D (mm)	H (mm)		
240	16950007	500 ACET-2	500	6 - 10	150	700	1950	2	1,3
325	16975007	750 ACET-2	750	6 - 10	150	950	1850	2,5	1,4
375	16910007	1000 ACET-2	1000	6 - 10	200	950	2320	3,2	2
540	16912507	1250 ACET-2	1250	6 - 10	200	1160	2050	3,2	2,1
545	16915007	1500 ACET-2	1500	6 - 10	250	1160	2375	4,3	2,1

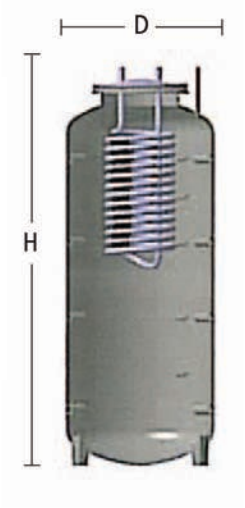


ACES SERIES

BUFFER ACS (Hot sanitary and solar systems)

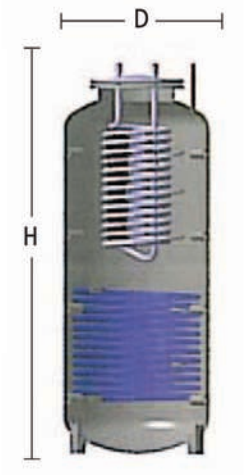
Buffer tanks without exchanger ACES - 0

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		HSW Exchanger Surface (m^2)	Lower Exchanger Surface (m^2)	Upper Exchanger Surface (m^2)
					Ø D (mm)	H (mm)			
155	16950000	500 ACES-0	500	6	700	1950	3,8	--	--
236	16975000	750 ACES-0	750	6	950	1850	3,8	--	--
295	16910000	1000 ACES-0	1000	6	950	2320	5	--	--
395	16912500	1250 ACES-0	1250	6	1160	2050	5	--	--
425	16915000	1500 ACES-0	1500	6	1160	2375	8,3	--	--



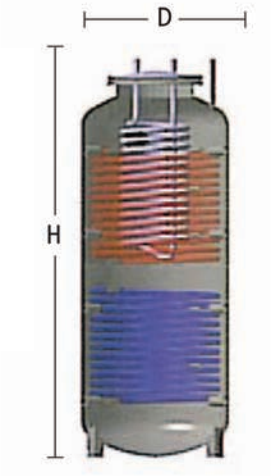
Buffer tanks with one exchanger ACES - 1

Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		HSW Exchanger Surface (m^2)	Lower Exchanger Surface (m^2)	Upper Exchanger Surface (m^2)
					Ø D (mm)	H (mm)			
205	16950001	500 ACES-1	500	6	700	1950	3,8	2	--
290	16975001	750 ACES-1	750	6	950	1850	3,8	2,5	--
345	16910001	1000 ACES-1	1000	6	950	2320	5	3,2	--
445	16912501	1250 ACES-1	1250	6	1160	2050	5	3,2	--
475	16915001	1500 ACES-1	1500	6	1160	2375	8,3	4,3	--



Buffer tanks with two exchanger ACES - 2

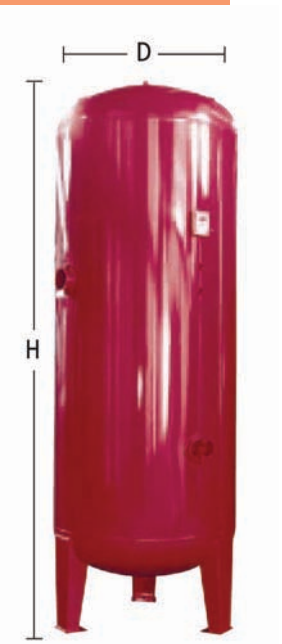
Weight Kg.	Code	Model	Capacity (Lt)	Max Pressure (Bar)	Dimensions		HSW Exchanger Surface (m^2)	Lower Exchanger Surface (m^2)	Upper Exchanger Surface (m^2)
					Ø D (mm)	H (mm)			
240	16950002	500 ACES-2	500	6	700	1950	3,8	2	1,3
325	16975002	750 ACES-2	750	6	950	1850	3,8	2,5	1,4
380	16910002	1000 ACES-2	1000	6	950	2320	5	3,2	2
480	16912502	1250 ACES-2	1250	6	1160	2050	5	3,2	2,1
505	16915002	1500 ACES-2	1500	6	1160	2375	8,3	4,3	2,1



SERIE DC
Compressed air tanks

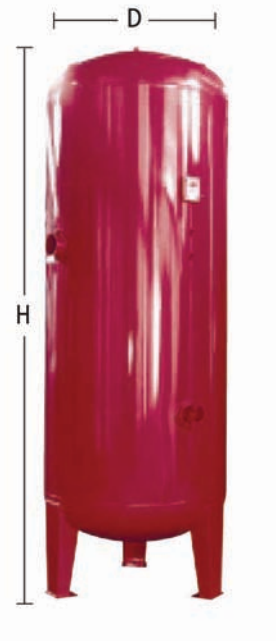
- Tank made of steel S-275-JR
- Designed for the storage and distribution of compressed air
- External finish: red primer coating
- Designed and manufactured according to 97/23/EC or 87/404/EC

Vertical Tanks 10 Bar



Weight Kg.	Code	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Connection		
				Ø D (mm)	H (mm)	a - u	v - s	m - p
72	09300300	300 IC1	10	500	1890	2 1/2" - 2"	1" - 1/2"	1/4"
130	09500301	500 IC2	10	650	1835	2 1/2" - 2"	1" - 1/2"	1/4"
196	09900301	900 IC2	10	800	2175	3" - 2 1/2"	1" - 1/2"	1/4"
294	09910301	1000 IC2	10	800	2380	3" - 2 1/2"	1" - 1/2"	1/4"
452	09915301	1500 DC	10	900	2585	3" - 2 1/2"	2" - 1/2"	1/2"
569	09920301	2000 DC	10	1100	2590	3" - 2 1/2"	2" - 1/2"	1/2"
689	09930301	3000 DC	10	1200	3125	3" - 2 1/2"	2" - 1/2"	1/2"
973	09940301	4000 DC	10	1400	3080	3"	2" - 1/2"	1/2"
1.264	09950301	5000 DC	10	1400	3755	3"	2" - 1/2"	1/2"
1.766	09970301	7000 DC	10	1500	4335	3"	2" - 1/2"	1/2" - 3/4"

Vertical Tanks 15 Bar



Weight Kg.	Code	Capacity (Lt)	Max Pressure (Bar)	Dimensions		Connection		
				Ø D (mm)	H (mm)	a - u	v - s	m - p
97	09300500	300 IC2	15	500	1890	2 1/2" - 2"	1" - 1/2"	1/4"
172	09500501	500 IC2	15	650	1835	2 1/2" - 2"	1" - 1/2"	1/4"
500	09910501	1000 DC	15	800	2380	3" - 2 1/2"	1" - 1/2"	1/4"
759	09915501	1500 DC	15	900	2585	3" - 2 1/2"	2" - 1/2"	1/2"
817	09920501	2000 DC	15	1100	2590	3" - 2 1/2"	2" - 1/2"	1/2"
997	09930501	3000 DC	15	1200	3125	3" - 2 1/2"	2" - 1/2"	1/2"
1.505	09940501	4000 DC	15	1400	3080	3"	2" - 1/2"	1/2"
2.010	09950501	5000 DC	15	1400	3755	3"	2" - 1/2"	1/2"
2.768	09970501	7000 DC	15	1500	4335	3"	2" - 1/2"	1/2" - 3/4"

SPARE PARTS

Covers

Code	Model	Accessories
68400501	100 AR-A / PF	460 Cover
68400307	200-300 AR-A / PF / PFR	650 Cover
68400308	500 AR-A / PF / PFR	700 Cover
68400511	750 AR-A / PF	910 Cover
68400309	750-1000 AR-A / PF / PFR	950 Cover
68400506	1500 AR-A / PF / PFR	1160 Cover
68400507	2000 AR-A / PF / PFR	1360 Cover
68400508	3000 AR-A / PF	1660 Cover
68400509	4000-5000 AR-A / PF	1960 Cover

Embellisher

Code	Model	Accessories	Connection
66360700	AR-A / PF / PFR	Embellisher	$^1/_2$“
66360701	AR-A / PF / PFR	Embellisher	$1^1/_2$“
66360702	AR-A / PF / PFR	Embellisher	2”
66360703	AR-A / PF / PFR	Embellisher	3”
66360713	AR-A / PF / PFR	Embellisher	Ø 120
66360711	AR-A / PF / PFR	Embellisher	Ø 180
66360706	AR-A / PF	Embellisher	$1^1/_4$“

ACCESORIES & SPARE PARTS

Orange PVC jacket with zipper

Code	Model	Accessories
61362011	1500 AR-A / PF / PFR	Orange jacket
61362012	2000 AR-A / PF / PFR	Orange jacket
61362014	3000 AR-A / PF / PFR	Orange jacket
61362016	4000 AR-A / PF / PFR	Orange jacket
61362017	5000 AR-A / PF / PFR	Orange jacket

Grey PVC jacket with zipper

Code	Model	Accessories
61362055	100 PF	Grey jacket
61362040	200 PF	Grey jacket
61362041	300 PF / PFR	Grey jacket
61362043	500 PF / PFR	Grey jacket
61362059	750 PF / PFR	Grey jacket
61362060	1000 PF / PFR	Grey jacket

Outside grey jacket

Code	Model	Accessories
61362023	1500 AR - A / PF / PFR	Outside jacket
61362024	2000 AR - A / PF / PFR	Outside jacket
61362025	3000 AR - A / PF / PFR	Outside jacket
61362026	4000 AR - A / PF / PFR	Outside jacket
61362027	5000 AR - A / PF / PFR	Outside jacket

Grey jacket (flexible foam)

Code	Model	Dimensions
61362036	2000 PF	Ø 1260 X 2500
61362037	3000 PF	Ø 1460 X 2540
61362038	4000 PF	Ø 1560 X 3130
61362035	5000 PF	Ø 1760 X 3000

Orange jacket for polyethylene insulation

Code	Model	Accessories
61362031	2000 AR - A	ADJUSTABLE
61362032	3000 AR - A	ADJUSTABLE
61362033	4000 AR - A	ADJUSTABLE
61362034	5000 AR - A	ADJUSTABLE

GENERAL SALES CONDITIONS (2 years guarantee)

1.-INTRODUCTION

The current Sales Conditions will be applied to every offer and sale of products in which IBAIONDO takes part as vendor. The conditions suggested by the Purchaser in the order or in any other document will be only included in the contract when they had been clearly accepted in writing by IBAIONDO.

2.- CATALOGUES

All the data, measurements, technical details, photographs and so on provided in our catalogues and website, are only for guidance and they are liable to modifications without notice. The reference of this information will have to be expressly shown in the offer or contract to be binding.

3.- OFFERS

Save any specifi cation in the offers, their validity is for 30 days from the date of issue. Without prejudice to the aforementioned, Industrias IBAIONDO can cancel his offers at any time before having received the approval of the purchaser. The current valid VAT will be applied to every price.

4.- ORDERS

The orders will be preferably placed by fax, e-mail or through our website. They will have to mention exactly the code reference number of the requested product and the delivery address. IBAIONDO will not assume the responsibility for the possible faulty identification of the orders.

It is compulsory to receive the Order Confirmation Sheet (RC-458) duly signed by the Client to deal with the manufacture of the products made on request. Ibaiondo reserves the right to accept any order within a period of 30 days from its reception.

5.- DELIVERY

The agreed delivery date means the scheduled date of goods shipment from IBAIONDO. The delivery time will always be approximate. Ibaiondo is entitled to make partial deliveries. If there is not any delivery date agreement, it will be carried out according to the manufacturing capacity of IBAIONDO.

If there was a delay of more than three months from the scheduled delivery time, the Purchaser is entitled to cancel the order in writing by early warning to IBAIONDO with no possibility of compensation in damages by way of delay or NON DELIVERY.

6.- SIGNIFICANCE OF THE SUPPLYING

The following matters are responsibility of IBAIONDO:

- The offered product and the technical documentation legally required or the documents decided by both parts.

The following matters are responsibility of the purchaser:

- The transport of the goods, unless it was indicated in the offer otherwise.
- The installation and Starting unless it was indicated in the offer otherwise.
- Cranes and necessary means for unloading the supplied merchandise.
- Free access of the truck which carries the product to the Installation place.
- Installation Civil Works
- In general, everything which is not expressly and particularly included in the offer.

7.- TRANSPORT AND TRANSFER OF THE RISK

Unless something else had been agreed, it is understood that the sale is carried out EX-WORKS terms from IBAIONDO Warehouse.

The risk of loss or damage of the material as well as the risks related to the storage and use of the goods, are transferred to the Purchaser at the delivery time.

The goods are carried accordingly at Addressee's own risk regardless of the transport terms: Carriage paid or fr eight forward. The Buyer must make sure of the delivery approval and the right conditions of the products before assuming the delivery and unloading of the merchandise.

In case of being a loss, breaking or damage of some of the products, the Purchaser will have to request to the carrier the examination of the merchandise and to have that minuted. If the items show a noticeable fault of quantity or quality at a glance, the Purchaser will have to notify it to IBAIONDO in writing within a period of FIVE days from the delivery date. If the damages are not visually obvious, the provided on the paragraph of GUARANTEE will be applied.

8.- SAFETY

IBAIONDO products, with regards to the manufacturing and design, fulfil all the safety requirements for pressure vessels specified in the Guidelines: 97/23/CE 0 -87/404/CE.

9.- GUARANTEE

All IBAIONDO products will be replaced or repaired free of charge in case of manufacturing faults within the guarantee period arranged in the offer, or failing him, in the catalogues in force. The following cases are not under guarantee: The bad or wrong use of a product, the inappropriate handling, when the maximum pressure or temperature have been exceeded or in general when any of the starting, use or maintenance instruction included in the provided documents, had not been respected.

IBAIONDO is not responsible for the direct or indirect damages caused by fault or defect of their products and of any other claim resulted from these reasons unless the law provides compulsory the contrary.

When the requested instructions had been followed, IBAIONDO will opt for repairing the fault and defect of the products for delivering new items free of charge. IBAIONDO will also be empowered to pay the total value of the faulty products or the lacks of them to the Purchaser. The faulty items will be sent back at the request of IBAIONDO before carrying out the delivery of the new product.

10.- AFTER SALES SERVICE

The Purchaser must cooperate with the Technical adviser department of IBAIONDO for the right defi nition of the failure in order to analyse previously the necessity of a technical supervision in situ before displacing the maintenance engineers.

The maintenance costs caused by the supervision of products under guarantee or the starting confi rmed by contract will be on Purchaser´s own account on the assumption that the technicians had already been displaced with no possibility to perform their duties due to reasons attributed to the Purchaser

11.- PAYMENT

The fi xed terms of payment will not be interrupted in case the starting or the shipment of the products should not carry out within the scheduled delivery time, due to reasons not attributed to IBAIONDO. In this case, the invoices and bank giros will be consequently issued from the notification date of availability of the products ready for shipment. The maintenance and storage costs caused from the notifi ation date will also be on Customer´ s own account. The non-payment when the bills or invoices become mature implies the immediate interruption of the supplies and services.

12.- DOMINIUM RESERVE

IBAIONDO reserves the right of property of the supplied products till the wholly price had been paid by the Purchaser. IBAIONDO will have the right to recover the possession of the products even entering the property or the building where they were located.

INDUSTRIAS
IBAIONDO, S.A.

PRODUCT GUIDE

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