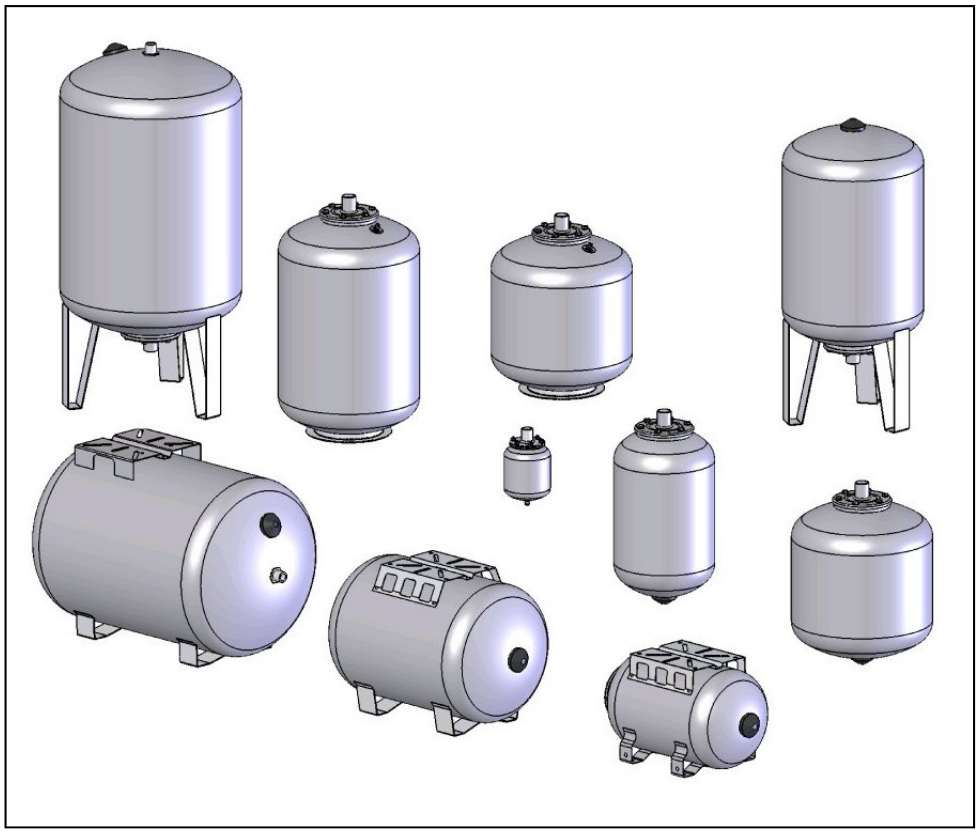
BABY STAR EXPANSION TANKS

Use and maintenance



Indice

1. GENERAL

1.1 Lifting systems

This product was designed for use in water lifting systems using submersed and surface electric pumps. Its function is to absorb and conserve the potential energy of a pressurized liquid. Stored energy from liquid under pressure is transferred to the water system when required and becomes serviceable once again. The interchangeable diaphragm expansion tanks can also be used against water hammering.

1.2 Heating systems

This product has been designed for use in central heating and hot water production systems. Its function is to absorb the water expansion volume consequent to the system heating up.

2. WARNINGS

- This product is designed to hold water up to +110 °C.
- Never exceed the maximum working pressure and temperature of the expansion tank; install appropriate controls for this purpose.
- During installation prepare adequate systems for drainage to limit damages caused by leakage from the tank.
- Prepare adequate drainage and venting systems during installation.
- The project did not take into consideration external stress such as: traffic, wind and earthquakes. The installer should account for these during installation.
- Always install the appliance in conformity to current legislation. This product must be installed and regularly inspected by qualified personnel only.
- The manufacturer shall not be held liable for any personal or material damage caused by the product if installed and/or used improperly or anyhow diversely from manufacturer's specifications.
- Exceeding temperature and pressure limits specified by the manufacturer will give cause to cancel any guarantee covering the product as well as any manufacturer's liability.
- Check compatibility with fluids other than water.
- The appliance must be installed in a safe place with access for authorized personnel only.

- The appliance must be protected by appropriate earthing systems or isolated from the system by a dielectric joint.

3. INSTALLATION

Read these instructions carefully before installing the product.

1. Make sure the product purchased is in good condition. If the product is damaged do not start on installation but take it back to the seller for immediate replacement.
2. The product must be installed in the position (vertical or horizontal) specified in the technical specifications (see installation diagram).
3. While the system is cold measure the static pressure with a gauge, at the point where the tank has to be installed.
4. Set the tank pre-load pressure to a pressure of 0.2 bar below the minimum pressure of the pressure switch (e.g. pressure switch calibrated at 2.5-3.5 bar, pre-load 2.3 bar).
5. The appliance must be supplied with efficient and sufficient safety and control facilities, in particular the safety valve must be connected to the appliance and be free from interference and must be gauged to the quantity of fluid to be discharged. The safety valve should also be designed to ensure that the pressure does not permanently exceed the maximum tolerated pressure (a temporary pressure peak, limited to 10% of the maximum tolerated pressure, is allowed).
6. Make sure the cap of the valve is fitted tightly after pre-loading and there is no leakage.

4. MAINTENANCE

Disconnect all electrical equipment before starting on any maintenance jobs and check the installation pressure and temperature. We recommend having the entire installation inspected by a professional installer at least once a year. The pre-load pressure should be checked and eventually corrected during this inspection.

4.1 Diaphragm replacing

Work to the procedure given below to replace the diaphragm.

For Baby Star, with capacity less than 100,00 Lt, and Baby Osmo .

1. Empty the expansion tank

2. Remove the pre-charging with the air-ventil (see figure 1 or 2)
3. Loosen the screws fastening the flange (see figure 1 or 2)
4. Remove the flange (see figure 1 or 2)
5. Extract the diaphragm and replace it

Baby Star

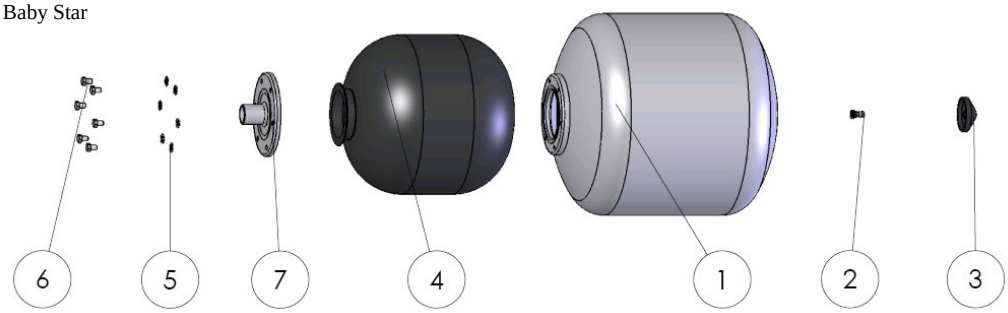


Figure 1

Baby Osmo

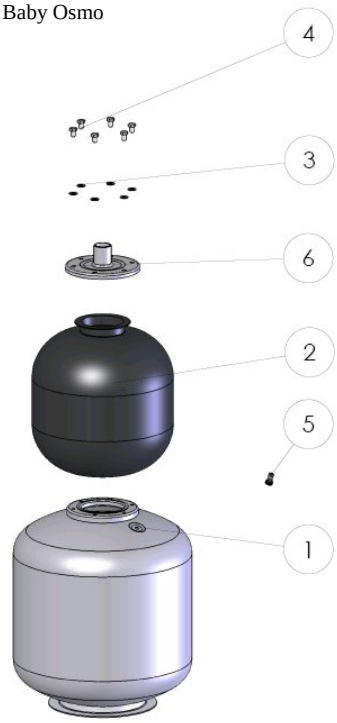


Figure 2

BS [1]	BO [2]	PART N.°	DESCRIPTION	Q [3]
1	1		Shell tank	1
2	5		Air ventil	1
3	-		Air ventil cover [4]	1
4	2		Diaphragm	1
5	3		Washer for M8	6
6	4		Screw M8	6
7	6		Flange	1

[1] numeration for Baby Star components

[2] numeration for Baby Osmo components

[3] component quantity

[4] in some configuration can not to be there

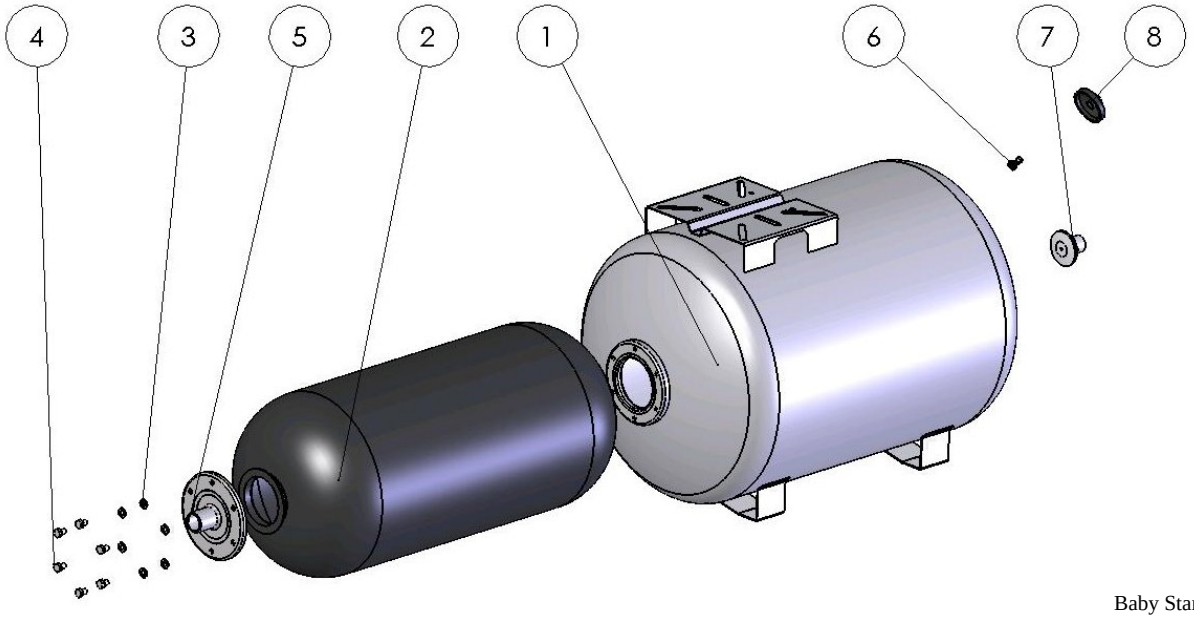
For Baby Star, with capacity more than 100,00 Lt.

1. Empty the expansion tank
2. Remove the pre-charging with the air-ventil (see figure 3)
3. Loosen the screws fastening the flange (see figure 3)
4. Remove the flange (see figure 3)
5. Remove the couplig connection diaphragm (see figure 3)

6. Extract the diaphragm and replace it

For insert the new diaphragm use this steps:

7. Insert the couplig connection diaphragm in the new diaphragm (see figure 4)
8. Insert a thread bar (M8) in the coupling connection diaphragm (see figure 5)
9. pull the bar and close the coupling connection diaphragm (see figure 6)
10. Screw down the nut on the coupling connection diaphragm (see figure 7)



Baby Star

Figure 3

BS [1]	PART N.°	DESCRIPTION	Q [2]
1		Shell tank	1
2		Diapgragm	1
3		Washer for M8	6
4		Screw M8	6
5		Flange	1
6		Air ventil	1
7		coupling connection diaphragm	1
8		Air ventil cover	1

[1] numeration for Baby Star components

[2] component quantity

Figure 4

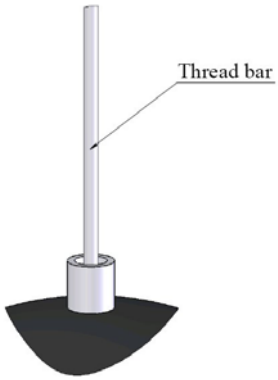


Figure 5

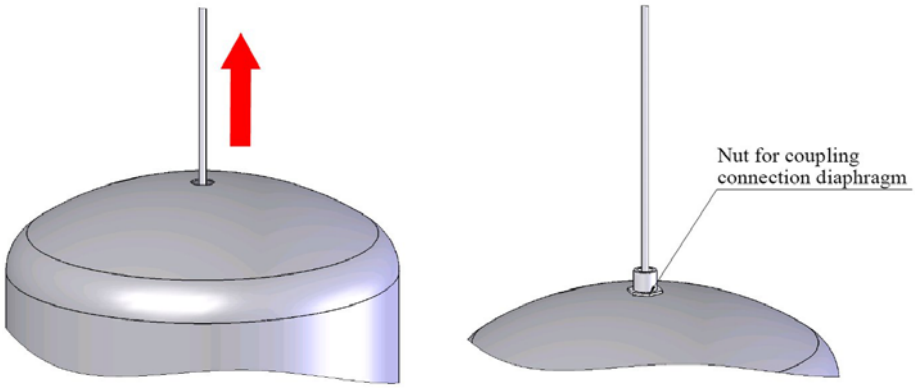


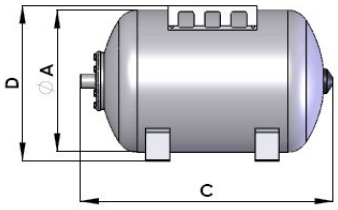
Figure 6

Figure 7

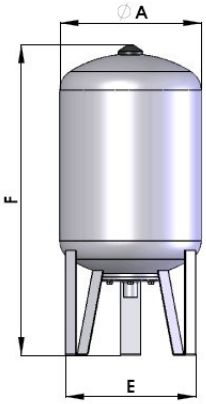
5. TECHNICAL CHARACTERISTICS

Baby Star

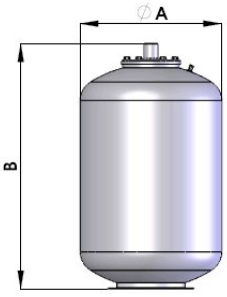
Type	P.E.D. Homologation Cat.	Dimensions mm. A B C D E F	Weight Kg.	Inlet Ø	Capacity Lt.	Dia-phragm	Max Pres. BAR	Prec Pres. BAR
ALPHA 02/1	1	114 200	0.8	¾”	1.5	BUTYL	14	2
ALPHA 05/1	1	250 240	2.2	1”	5	BUTYL	14	2
ALPHA 08/1	1	250 265	2.4	1”	8	BUTYL	14	2
ALPHA 12/1	1	250 370	3.1	1”	12	BUTYL	14	2
ALPHA 20/1	1	250 500	4.4	1”	20	BUTYL	10	2
ALPHA 20/2	2	250 500	4.4	1”	20	BUTYL	13	2
ALPHA 20/2 HP	2	250 500	6,0	1”	20	BUTYL	25	2
ALPHA 20/1 HOR	1	250 500 270	5.0	1”	20	BUTYL	10	2
ALPHA 20/2 HOR	2	250 500 270	5.0	1”	20	BUTYL	13	2
ALPHA 35/1	1	350 480	7.2	1”	35	BUTYL	5.7	2
ALPHA 35/2	2	350 480	7.2	1”	35	BUTYL	14	2
ALPHA 50/1 VR	1	350 370 770	10,3	1”	50	BUTYL	4	2
ALPHA 50/2 VR	2	350 370 770	10.3	1”	50	BUTYL	11	2
ALPHA 50/1 VR-TW	1	350 610	10.0	1”	50	BUTYL	4	2
ALPHA 50/2 VR-TW	2	350 610	10.0	1”	50	BUTYL	11	2
ALPHA 50/1 HOR	1	350 640 395	10.3	1”	50	BUTYL	4	2
ALPHA 50/2 HOR	2	350 640 395	10.3	1”	50	BUTYL	11	2
ALPHA 100/2 VR	2	450 465 910	16.5	1”	100	EPDM	9	2
ALPHA 100/2 HOR	2	450 780 500	17.0	1”	100	EPDM	9	2
ALPHA 150/2 VR	EXPORT	500 920	26.0	1”	150	EPDM	6	2
ALPHA 150/2 HOR	EXPORT	500 793 545	26.0	1”	150	EPDM	6	2
ALPHA 200/2 VR	EXPORT	550 1150	36.0	1”1/2	200	EPDM	6	2
ALPHA 200/2 HOR	EXPORT	550 930 595	36.0	1”1/2	200	EPDM	6	2
ALPHA 300/2 VR	EXPORT	650 1150	45.0	1”1/2	300	EPDM	6	2
ALPHA 300/2 HOR	EXPORT	650 1340 695	45.0	1”1/2	300	EPDM	6	2
ALPHA 500/2 VR	EXPORT	750 1440	72,0	1”1/2	500	EPDM	6	2
ALPHA 500/2 HOR	EXPORT	750 1340 795	72,0	1”1/2	500	EPDM	6	2



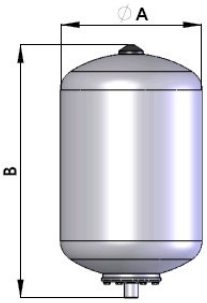
Alpha … HOR



Alpha … VR



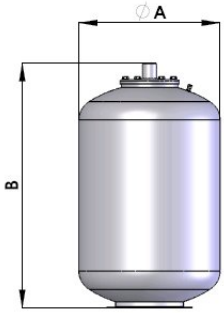
Alpha … TW



Alpha …

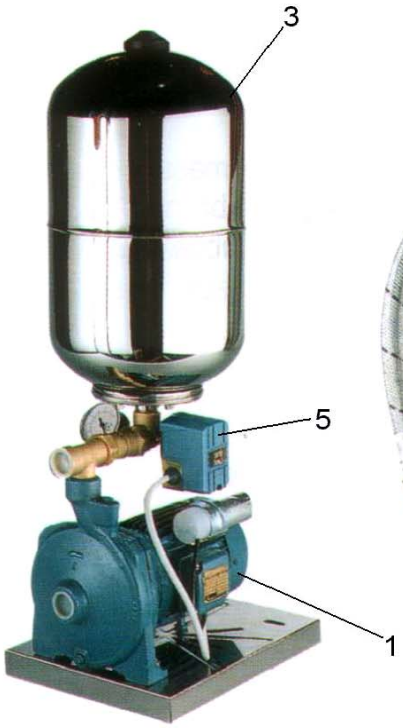
Baby Osmo

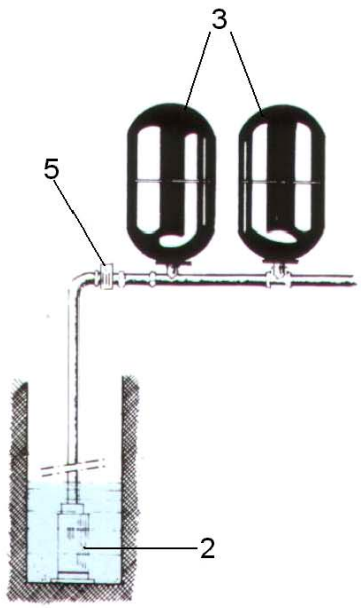
Type	Dimensions mm. A	B	Inlet Ø	Max Pres. BAR	Prec. Pres. BAR	Weight Kg.	Capacity Lt.	Diaphragm
ALPHA 2/1 TW ¼”	114	185	¼”	14	0,2	0,915	1,5	BUTYL
ALPHA 5/1 TW ¼”	250	235	¼”	14	0,2	2.3	5	BUTYL
ALPHA 8/1 TW ¼”	250	265	¼”	14	0,2	2.5	8	BUTYL
ALPHA 12/1 TW ¼”	250	340	¼”	14	0,2	3.2	12	BUTYL
ALPHA 20/1 TW ¼”	250	470	¼”	10	0,2	4.0	20	BUTYL
ALPHA 35/1 TW 1”	350	440	1”	5.7	0,2	7.5	35	BUTYL
ALPHA 35/2 TW 1”	350	440	1”	14	0,2	7.5	35	BUTYL
ALPHA 50/1 TW 1”	350	610	1”	4.0	0,2	10.0	50	BUTYL
ALPHA 50/2 TW 1”	350	610	1”	11	0,2	10.0	50	BUTYL



6. EXAMPLE OF INSTALLATION

6.1 Lifting systems

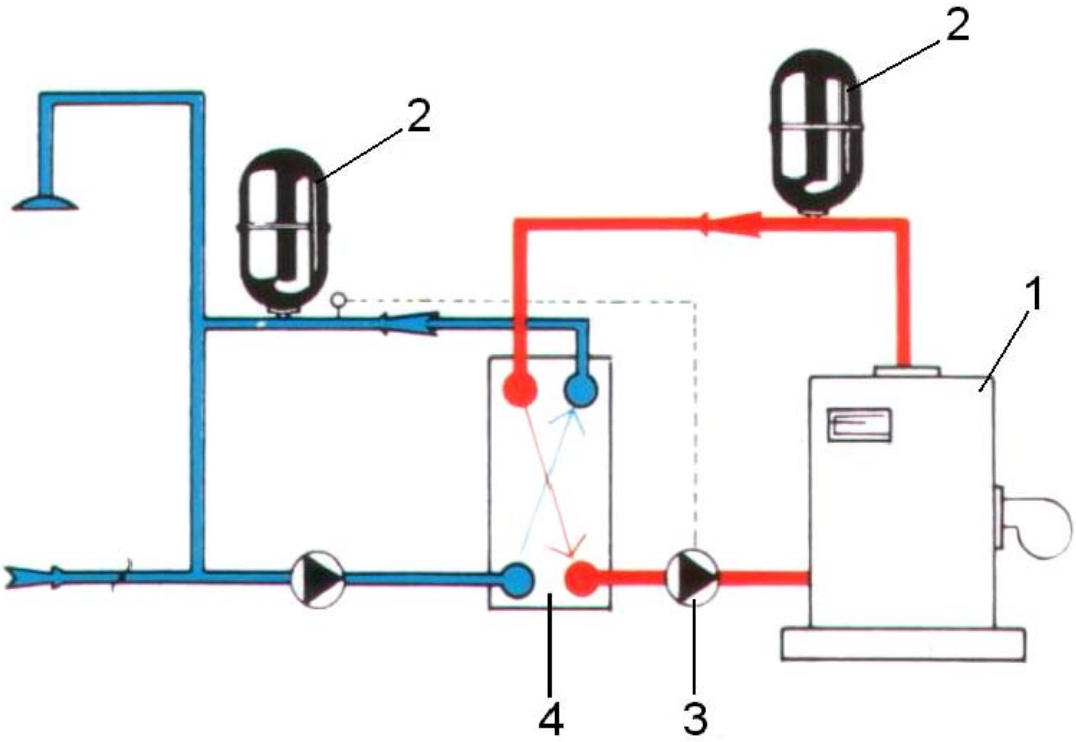




Key:

1. SURFACE ELECTRIC PUMP
2. SUBMERSED ELECTRIC PUMP
3. VERTICAL CYLINDRICAL EXPANSION PUMP
4. HORIZONTAL CYLINDRICAL ELECTRIC PUMP
5. PRESSURE SWITCH AND GAUGE

6.2 Heating systems



Key:

1. HEAT GENERATOR
2. EXPANSION TANK
3. ELECTRIC PUMP
4. HEAT EXCHANGER

7. TABLES FOR SELECT THE APPROPRIATE EXPANSION TANK

This tables are valid only for Baby Star model used in lifting sistems

CHOICE OF EXPANSION TANK ACCORDING TO PRESSURE-PUMP FLOW-IGNITION TIMES

Minimum and Maximum Pressures - pressure switch calibration in bar	*Maximum pump ignition in one hour*	***PUMP FLOW** litres/min*										
		10	**15**	**20**	**30**	**50**	**75**	**100**	**150**	**200**	**300**	
1,5 - 3,0	**12**	Alpha 35	Alpha 50	Alpha 100	Alpha 100	Alpha 200	Alpha 300	Alpha 300				
	15	Alpha 35	Alpha 50	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300				
	20	Alpha 20	Alpha 35	Alpha 50	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300			
1,5 - 3,5	**12**	Alpha 35	Alpha 50	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300				
	15	Alpha 20	Alpha 35	Alpha 50	Alpha 100	Alpha 100	Alpha 200	Alpha 300				
	20	Alpha 20	Alpha 20	Alpha 35	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300	Alpha 300		
2,0 - 3,5	**12**	Alpha 50	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300					
	15	Alpha 35	Alpha 50	Alpha 50	Alpha 100	Alpha 150	Alpha 300	Alpha 300				
	20	Alpha 20	Alpha 35	Alpha 50	Alpha 100	Alpha 100	Alpha 200	Alpha 300				
2,5 - 3,5	**12**	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300						
	15	Alpha 50	Alpha 100	Alpha 100	Alpha 150	Alpha 300	Alpha 300					
	20	Alpha 35	Alpha 50	Alpha 100	Alpha 100	Alpha 200	Alpha 300					
2,5 - 4,0	**12**	Alpha 50	Alpha 100	Alpha 100	Alpha 150	Alpha 200	Alpha 300					
	15	Alpha 35	Alpha 50	Alpha 100	Alpha 100	Alpha 200	Alpha 300	Alpha 300				
	20	Alpha 20	Alpha 50	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300				
3,0 - 5,0	**12**	Alpha 50	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300					
	15	Alpha 35	Alpha 50	Alpha 100	Alpha 100	Alpha 150	Alpha 300	Alpha 300				
	20	Alpha 20	Alpha 35	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300	Alpha 300			
3,0 - 6,0	**12**	Alpha 35	Alpha 50	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300				
	15	Alpha 20	Alpha 35	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300				
	20	Alpha 20	Alpha 20	Alpha 35	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300			
4,0 - 8,0	**12**	Alpha 20	Alpha 20	Alpha 35	Alpha 50	Alpha 100	Alpha 150	Alpha 200	Alpha 300	Alpha 300		
	15	Alpha 20	Alpha 20	Alpha 20	Alpha 50	Alpha 100	Alpha 100	Alpha 150	Alpha 200	Alpha 300		
	20	Alpha 12	Alpha 20	Alpha 20	Alpha 35	Alpha 50	Alpha 100	Alpha 100	Alpha 150	Alpha 200	Alpha 300	

CHOICE OF ANTI-HAMMERING EXPANSION TANK (pre-load pressure = 3.5

Pipe diame- (inches)	*Flow rate (m3/h)*	***Max. working pressure (bar)*** **tolerated pressure**										
		5	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1/2"	0,9	0,0457	0,02	0,012	0,0084	0,0064	0,0052	0,0043	0,0037	0,0033	0,0029	0,0026
3/4"	1,5	0,0568	0,0248	0,0149	0,0104	0,008	0,0064	0,0054	0,0046	0,0041	0,0036	0,0033
1"	3	0,1271	0,0557	0,0335	0,0234	0,0179	0,0144	0,0121	0,0104	0,0092	0,0082	0,0074
1"1/4	5	0,2261	0,099	0,0596	0,0417	0,0318	0,0257	0,0215	0,0185	0,0163	0,0146	0,0132
1"1/2	7	0,3077	0,1348	0,0811	0,0568	0,0433	0,035	0,0293	0,0253	0,0222	0,0199	0,018
2"	12	0,5087	0,2229	0,1342	0,0939	0,0717	0,0578	0,0485	0,0418	0,0368	0,0329	0,0298
2"1/4	15	0,627	0,2747	0,1653	0,1157	0,0883	0,0713	0,0597	0,0515	0,0453	0,0405	0,0367
2"1/2	19	0,8162	0,3576	0,2153	0,1507	0,115	0,0928	0,0778	0,0671	0,059	0,0528	0,0479
3"	27	1,1447	0,5015	0,3019	0,2113	0,1613	0,1302	0,1091	0,0941	0,0828	0,0741	0,0671
3"1/2	37	1,5793	0,692	0,4166	0,2916	0,2226	0,1796	0,1506	0,1298	0,1142	0,1022	0,0926
4"	48	2,0191	0,8847	0,5326	0,3728	0,2846	0,2296	0,1925	0,166	0,1461	0,1307	0,1184

Min- tank capacity per unit of length (litres/metre)

Water
TECHNOLOGIES

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