Climate
Control

IMI Pneumatex

Aquapresso

Pressure stabilisation for potable water

Pressure stabilisation for potable water

Breakthrough
engineering for
a better world

Aquapresso

Expansion vessels with fixed gas cushion for drinking water systems. The airproof bag, made from a special butyl rubber compound suitable for drinking water, is legendary. In addition to full flow-through, the vessels offer a unique standard of hygiene.

Key features

Airproof butyl bag according to EN 13831

Brilliantly simple, robust design
Operation without auxiliary power.

Wide range of vessel sizes for different system needs
From 8 L to 3000 L

Excellent elasticity
Thanks to the fixed gas cushion.

Technical description

Application:
Potable water heating and pressure-boosting systems, with a maximum chloride content of
125 mg/l (70 °C) / 250 mg/l (45 °C).

Pressure:
Min. admissible pressure, PSmin: 0 bar
Max. admissible pressure, PS: see Articles
Default pressure maintenance (p0): 4 bar

Temperature:
Max admissible temperature, TS: 120 °C
Min admissible temperature, TS_{min}: -10 °C
Max admissible bag temperature, TB: 70 °C
Min admissible bag temperature, TB_{min}: 5 °C

Material:
Steel. Colour beryllium.
All metallic parts in contact with water in stainless steel.

Transportation and storage:
In frostless, dry places.

Standards:
Constructed according to PED 2014/68/EU.
Local drinking water legislations apply.

Function, Equipment, Features

- Airproof butyl bag according to EN 13831 and IMI Pneumatex internal standards. Exchangeable on AG, AGF models.
- Hydrowatch for bag tightness control (ADF, AUF, AGF).
- Flowfresh full flow-through (ADF, AUF, AGF).
- Endoscopic inspection hole (AU, AUF), two flanged openings (AG, AGF) for internal inspections.
- Feet for upright assembly (AG, AGF, AU, AUF).
  Wall bracket for easy assembly (AD, ADF).

green = OK
red = bag damage

Aquapresso in potable hot water systems

By temporarily storing expansion water that would otherwise be lost through the safety valve, the Aquapresso contributes to reduced water usage in potable hot water systems. Correct pressure presets are key for a faultless and reliable operation.

Approvals

Aquapresso is designed for potable water systems. Since there are no uniform standards, always observe local regulations regarding selection, based on which either full or no flow-through models may be deployed.

Calculation

Preset pressure
p0 = pa - 0,3 bar
The preset pressure of the Aquapresso is set to at least 0,3 bar below the initial pressure pa

Initial pressure
pa = p_{FL}
The initial pressure corresponds to the flow presure p_{FL}. It should be kept at a constant level by means of the installation of a pressure regulating valve in the cold water line.

Safety valve
The non-operative pressure pR in the potable water network must not exceed 80% of the safety valve response pressure.

$$psv = \frac{pR}{0,8}$$

Nominal volume
Vhs is the nominal volume of the potable water heater.
e (60 °C, table 1)

$$VN = Vhs \cdot e \cdot \frac{(psv + 0,5)\cdot(p0 + 1,3)}{(p0 + 1)\cdot(psv - p0 - 0,8)}$$

Table 1: e expansion coefficient

t (TAZ, ts_{max}, tr, ts_{min}), °C		20	30	40	50	60	70	80	90	100	105	110
e Water	= 0 °C	0,0016	0,0041	0,0077	0,0119	0,0169	0,0226	0,0288	0,0357	0,0433	0,0472	0,0513

Quick selection

Heating-up from 10°C to 60°C

	p0 **4,0** bar | pa **4,3** bar				p0 **3,0** bar | pa **3,3** bar			
psv [bar]	**6**	**7**	**8**	**10**	**6**	**7**	**8**	**10**
Vhs [liter]	**Nominal volume VN** [liter]							
50	8	8	8	8	8	8	8	8
80	8	8	8	8	8	8	8	8
100	12	8	8	8	8	8	8	8
150	18	12	8	8	8	8	8	8
180	18	12	12	8	8	8	8	8
200	25	12	12	8	12	8	8	**8**
250	25	18	12	12	12	12	8	8
300	35	18	18	12	18	12	12	12
400	50	25	25	18	18	18	12	18
500	50	35	25	25	25	18	18	25
600	80	50	35	25	35	25	18	25
700	80	50	35	35	35	25	25	25
800	80	50	50	35	35	35	25	25
900	140	80	50	35	50	35	35	35
1000	140	80	50	50	50	35	35	35

Example
Vhs = 200 litre
pa = 3,3 bar
psv = 10 bar

Selected:
Aquapresso ADF 8.10 with full flow-through
p0 = 3 bar
Reduce the default pressure preset from 4 bar to 3 bar.

Aquapresso in pressure-boosting systems

In pressure-boosting systems the Aquapresso can stabilise the potable water network and reduce the switching frequency. May be installed at either the low or high pressure sides of the system. Installation of an Aquapresso on the mains is always to be coordinated with local water utilities.

Aquapresso A...F with bypass

For the flow-through Aquapresso models A...F, if the maximum flow q_{max} exceeds the nominal flow qN the device must be installed with a bypass. The bypass is to be dimensioned for the flow difference with a flow speed of 2 m/s. See Application example or instruction.

Calculation

Aquapresso on the suction side
Calculation according to 1988 T5

q_{max} | m³/h	VN | litre	qN Nominal flow
≤ 7	≥ 300	according to Datasheet
< 7 ≤ 15	≥ 500	
> 15	≥ 800	

Aquapresso for water hammering absorption
This topic is very complex and complicated. We recommend to have the calculation done by a specialized engineering office.

Aquapresso on the discharge side
VN calculation according to DIN 1988 T5 for the restriction of the switching frequency

$$VN = 0{,}33 \cdot q_{max} \cdot \frac{pa + 1}{(pa - pe) \cdot s \cdot n}$$

s Switching frequency | 1/h	Pump capacity | kW
20	≤ 4,0
15	≤ 7,5
10	> 7,5

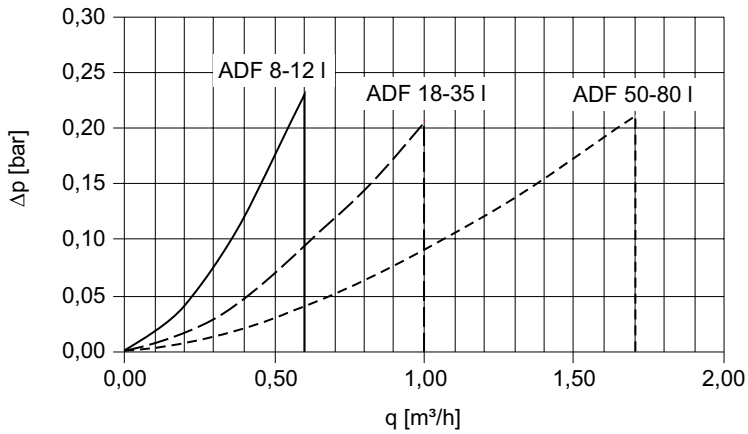
VN calculation by storage volume V between working pressure and turn-off pressure

$$VN = q \cdot \frac{(pe + 1) \cdot (pa + 1)}{(p0 + 1) \cdot (pa - pe}$$

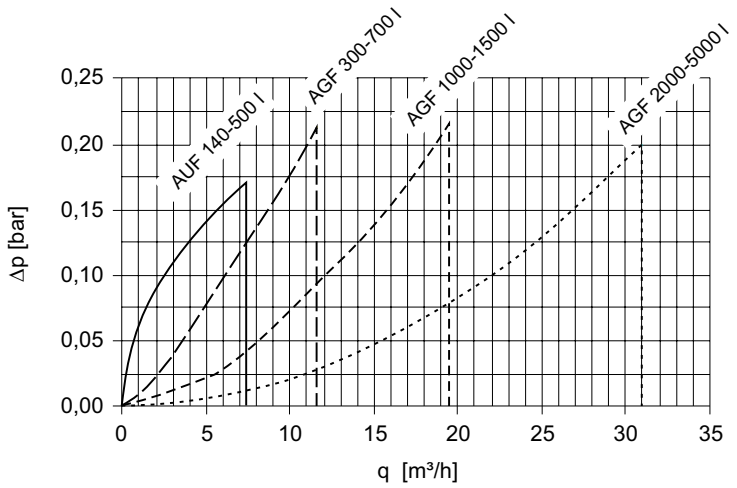
n = Number of pumps
pe = Working pressure
pa = Turn-off pressure
q_{max} = flow pump

Diagrams

Ca. Pressure loss Δp – Aquapresso ADF

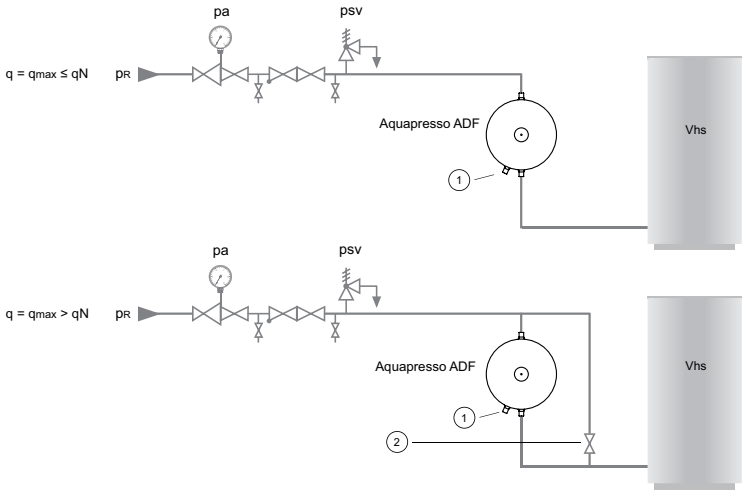


Ca. Pressure loss Δp – Aquapresso AUF, AGF



Application examples

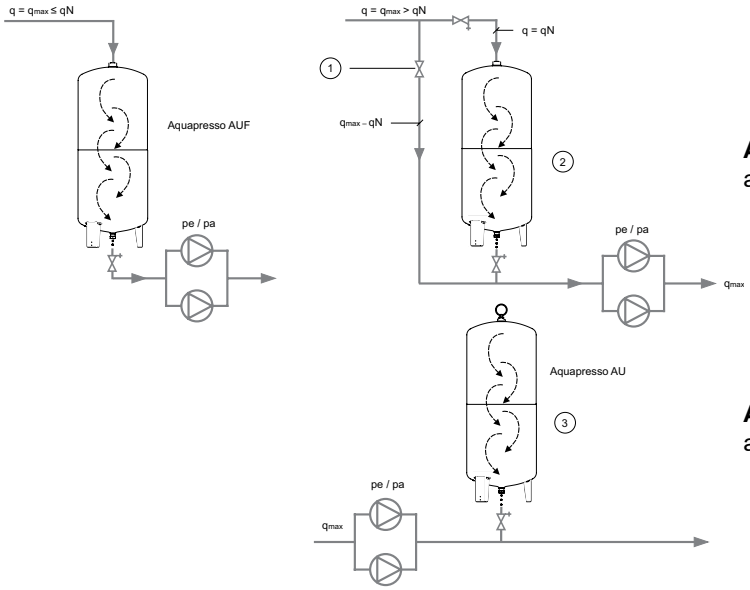
Aquapresso ADF
with flowfresh full flow-through in a potable water heating system
(May require changes to meet local legislation)



Aquapresso ADF
flow through from top or bottom

1. Hydrowatch
2. Bypass open, remove handwheel

Aquapresso AUF/AU
in a pressure-boosting system
(May require changes to meet local legislation)

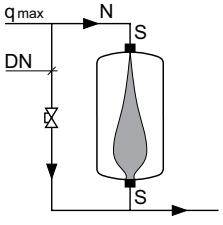


Aquapresso AUF
at the low side; flow-through from top to bottom

Aquapresso AU
at the high pressure side; no flow-through

1. Bypass open, remove handwheel
2. p0 at least 0,5 bar below the minimum supply pressure
3. p0 = 0,9 working pressure of the peak load pump, at least 0,5 bar below the working pressure

Aquapresso A...F
DN bypass with q_{max}

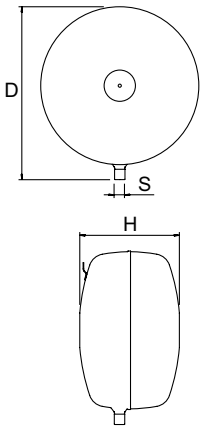


q_{max} | m³/h	0,6	1,0	1,7	3,0	7,3	11,5	15,0	19,5	25,0	31,0	40,0	50,0
	DN Bypass											
ADF 8–12		•	•	•	•	•	•	•	•	•	•	•
ADF 18–35			•	•	•	•	•	•	•	•	•	•
ADF 50–80				15	25	•	•	•	•	•	•	•
AUF 140–500						25	32	•	•	•	•	•
AGF 700							25	32	50	•	•	•
AGF 1000–1500									32	40	65	•
AGF 2000–3000											32	50

Aquapresso with larger flow-through recommended

q ≤ qN no bypass required

Articles

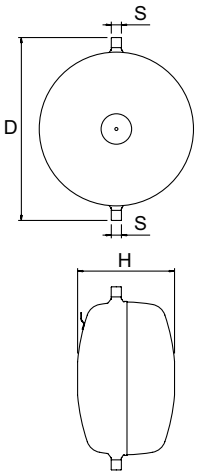


Aquapresso AD

Discus shaped.
Assembly with bottom connection.

Type	VN [l]	D	H**	m [kg]	S	EAN	Article No
10 bar (PS)							
AD 8.10	8	314	166	3,8	R1/2	7640148633772	711 1000
AD 12.10	12	352	201	5,1	R1/2	7640148633789	711 1001
AD 18.10	18	393	224	6,5	R3/4	7640148633796	711 1002
AD 25.10	25	436	251	8,2	R3/4	7640148633802	711 1003
AD 35.10	35	485	280	10,1	R3/4	7640148633819	711 1004
AD 50.10	50	536	317	12,6	R1	7640148633826	711 1005
AD 80.10	80	636	347	16,9	R1	7640148633833	711 1006

VN = Nominal volume
**) Tolerance 0 /+35

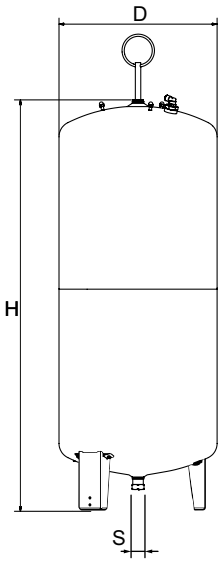


Aquapresso ADF

Discus shaped.
Assembly with top and bottom connection, suitable for flow in either direction.
Flowfresh full flow-through.

Type	VN [l]	D	H**	m [kg]	S	qN [m³/h]	EAN	Article No
10 bar (PS)								
ADF 8.10	8	345	166	4	2x R1/2	0,6	7640148633840	711 2000
ADF 12.10	12	386	201	5,3	2x R1/2	0,6	7640148633857	711 2001
ADF 18.10	18	430	224	6,6	2x R3/4	1,0	7640148633864	711 2002
ADF 25.10	25	472	251	8,5	2x R3/4	1,0	7640148633871	711 2003
ADF 35.10	35	521	280	10,4	2x R3/4	1,0	7640148633888	711 2004
ADF 50.10	50	587	317	13	2x R1	1,7	7640148633895	711 2005
ADF 80.10	80	687	347	17,4	2x R1	1,7	7640148633901	711 2006

VN = Nominal volume
**) Tolerance 0 /+35

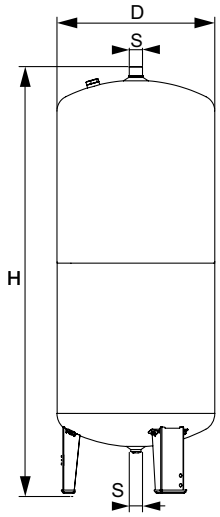


Aquapresso AU

Slim, cylindrical model.

Type	VN [l]	D	H	H***	m [kg]	S	EAN	Article No
10 bar (PS)								
AU 140.10	140	420	1274	1523	33	R1 1/4	7640148633918	711 1007
AU 200.10	200	500	1330	1566	41	R1 1/4	7640148633925	711 1008
AU 300.10	300	560	1451	1694	60	R1 1/4	7640148633932	711 1009
AU 400.10	400	620	1499	1761	70	R1 1/4	7640148633949	711 1010
AU 500.10	500	680	1588	1859	90	R1 1/4	7640148633956	711 1011
AU 600.10	600	740	1596	1872	108	R1 1/4	7640148633963	711 1012

VN = Nominal volume
***) Max. height when vessel is tilted

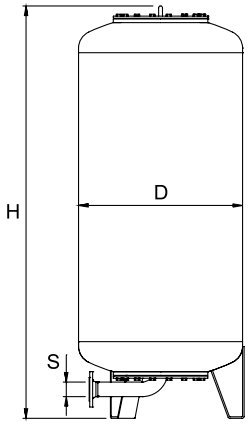


Aquapresso AUF

Slim, cylindrical model.
Flowfresh full flow-through, from top to bottom only.

Type	VN [l]	D	H	H***	m [kg]	S	qN [m³/h]	EAN	Article No
10 bar (PS)									
AUF 140.10	140	420	1274	1562	34	2x R1 1/4	7,3	7640148633970	711 2007
AUF 200.10	200	500	1330	1577	42	2x R1 1/4	7,3	7640148633987	711 2008
AUF 300.10	300	560	1451	1711	61	2x R1 1/4	7,3	7640148633994	711 2009
AUF 400.10	400	620	1499	1773	71	2x R1 1/4	7,3	7640148634007	711 2010
AUF 500.10	500	680	1588	1870	91	2x R1 1/4	7,3	7640148634014	711 2011

VN = Nominal volume
***) Max. height when vessel is tilted

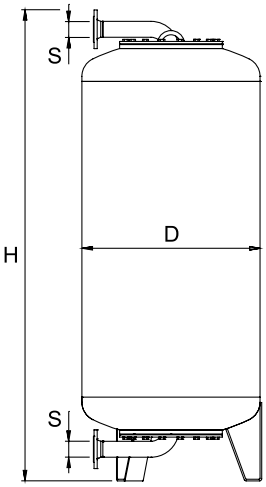


Aquapresso AG

Slim, cylindrical model.

Type	VN [l]	D	H**	H***	m [kg]	S EN 1092-1	EAN	Article No
10 bar (PS)								
AG 700.10	700	750	1901	1936	250	DN 50	7640148634038	711 1013
AG 1000.10	1000	850	2070	2126	340	DN 65	7640148634045	711 1014
AG 1500.10	1500	1016	2253	2328	460	DN 65	7640148634052	711 1015
AG 2000.10	2000	1016	2773	2826	760	DN 80	7640148634069	711 1020
AG 3000.10	3000	1300	2871	2955	920	DN 80	7640148634076	711 1017
16 bar (PS)								
AG 300.16	300	500	1824	1839	180	DN 50	7640148634175	711 3000
AG 500.16	500	650	1879	1906	250	DN 50	7640148634182	711 3001
AG 1000.16	1000	850	2103	2159	390	DN 65	7640148634205	711 3003
AG 1500.16	1500	1016	2256	2331	520	DN 65	7640148634212	711 3004
AG 2000.16	2000	1016	2792	2845	840	DN 80	7640148634229	711 3009
AG 3000.16	3000	1300	2898	2982	1000	DN 80	7640148634236	711 3006

VN = Nominal volume
***) Max. height when vessel is tilted



Aquapresso AGF
Slim, cylindrical model.
Flowfresh full flow-through from top to bottom only.

Type	VN [l]	D	H**	H***	m [kg]	S EN 1092-1	qN [m³/h]	EAN	Article No
10 bar (PS)									
AGF 700.10	700	750	1970	2062	260	2xDN 50	11,5	7640148634106	711 2013
AGF 1000.10	1000	850	2171	2310	355	2xDN 65	19,5	7640148634113	711 2014
AGF 1500.10	1500	1016	2354	2510	475	2xDN 65	19,5	7640148634120	711 2015
AGF 2000.10	2000	1016	2925	3084	775	2xDN 80	31,0	7640148634137	711 2020
AGF 3000.10	3000	1300	3022	3228	935	2xDN 80	31,0	7640148634144	711 2017
16 bar (PS)									
AGF 300.16	300	500	1891	1947	200	2xDN 50	11,5	7640148634267	711 4000
AGF 500.16	500	650	1946	2021	270	2xDN 50	11,5	7640148634274	711 4001
AGF 700.16	700	750	1970	2062	300	2xDN 50	11,5	7640148634281	711 4002
AGF 1000.16	1000	850	2218	2354	410	2xDN 65	19,5	7640148634298	711 4003
AGF 1500.16	1500	1016	2371	2526	540	2xDN 65	19,5	7640148634304	711 4004
AGF 2000.16	2000	1016	2941	3099	860	2xDN 80	31,0	7640148634311	711 4009
AGF 3000.16	3000	1300	3046	3252	1040	2xDN 80	31,0	7640148634328	711 4006

VN = Nominal volume
**) Tolerance 0 /-100.
***) Max. height when vessel is tilted

Technical description – Pre-pressure measuring gauge

Applications:
Heating, solar, drinking water and cooling systems. Deployment in systems according to EN 12828, SWKI HE301-01.

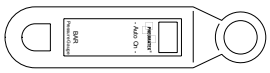
Functions:
Control of the pre-pressure at expansion vessels. Auto on/off. Automatic calibration.

Pressure:
Min. admissible pressure, PSmin: 0 bar
Max. admissible pressure, PS: 10 bar

Temperature:
Max. admissible temperature, TS: 120 °C
Min. admissible temperature, TSmin: -10 °C

Material:
Rugged plastic housing.

Articles



Pre-pressure measuring gauge DME

Type	PS [bar]	m [kg]	EAN	Article No
DME	10	0,3	7640148638593	500 1048