

Aquapresso



Pressure stabilisation for potable water
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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, TSmin: -10 °C
Max admissible bag temperature, TB: 70 °C
Min admissible bag temperature, TBmin: 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

$$p_0 = p_a - 0,3 \text{ bar}$$

The preset pressure of the Aquapresso is set to at least 0,3 bar below the initial pressure p_a .

Initial pressure

$$p_a = p_{FL}$$

The initial pressure corresponds to the flow pressure 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 p_R in the potable water network must not exceed 80% of the safety valve response pressure.

$$p_{sv} = \frac{p_R}{0,8}$$

Nominal volume

V_{hs} is the nominal volume of the potable water heater. e (60 °C, table 1)

$$VN = V_{hs} \cdot e \cdot \frac{(p_{sv} + 0,5) \cdot (p_0 + 1,3)}{(p_0 + 1) \cdot (p_{sv} - p_0 - 0,8)}$$

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

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

Example

$V_{hs} = 200$ litre
 $p_a = 3,3$ bar
 $p_{sv} = 10$ bar

Selected:

Aquapresso ADF 8.10 with full flow-through

$p_0 = 3$ 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 q_N 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} m ³ /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

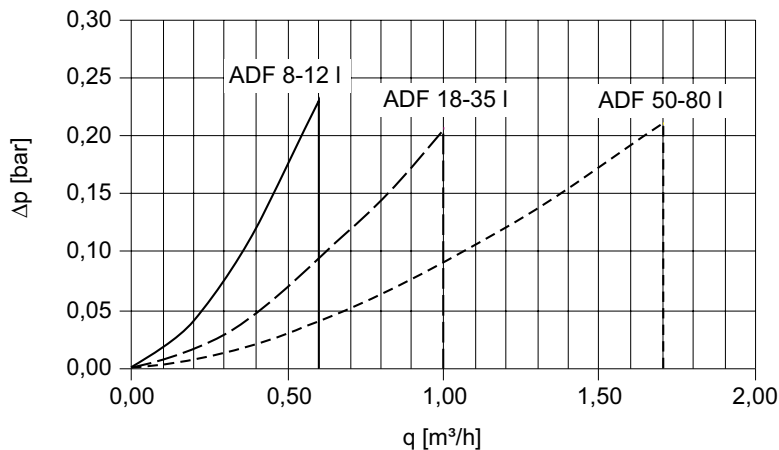
pe = Working pressure

pa = Turn-off pressure

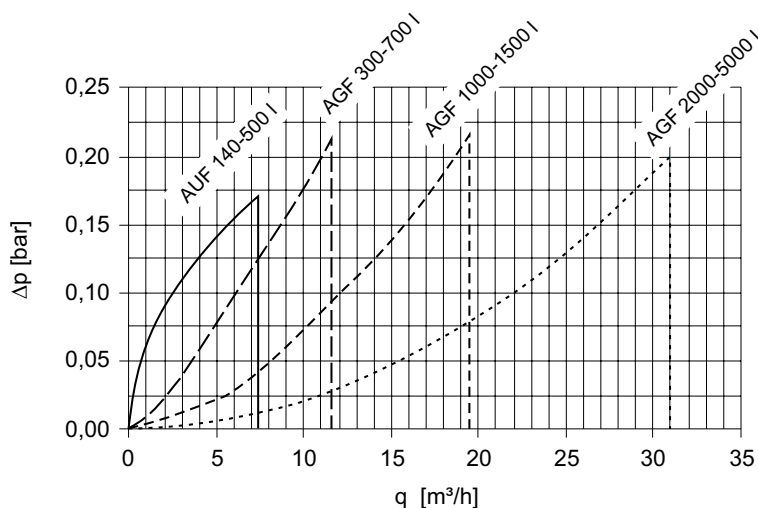
q_{max} = flow pump

Diagrams

Ca. Pressure loss Δp – Aquapresso ADF



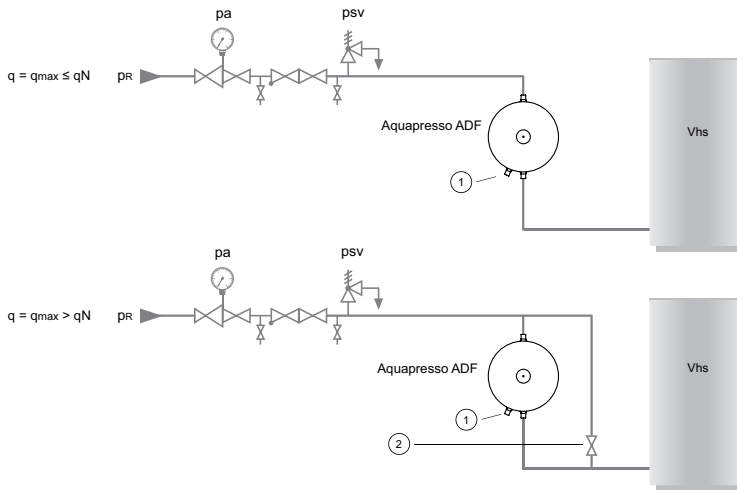
Ca. Pressure loss Δp – Aquapresso AUF, AGF



Application examples

Aquapresso ADF

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

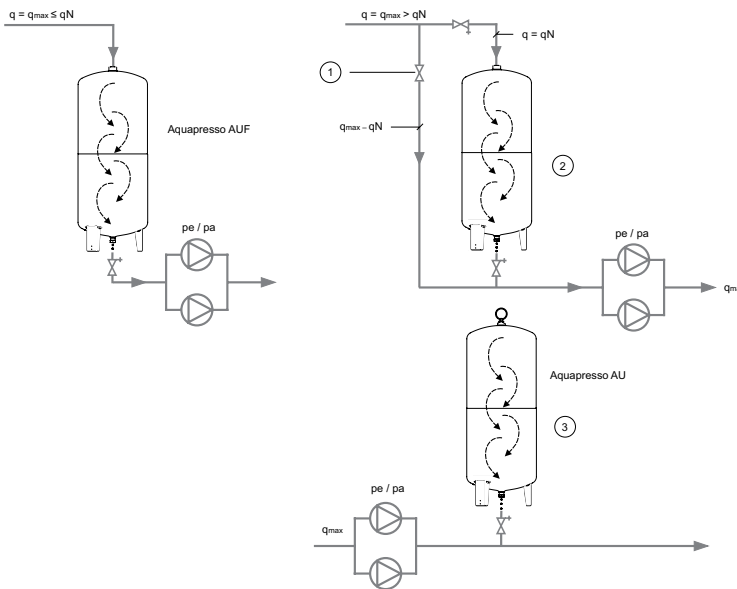


Aquapresso ADF
flow through from top or bottom

1. Hydrowatch
2. Bypass open, remove handwheel

Aquapresso AUF/AU

in a pressure-boosting system
(May require changes to meet local legislation)



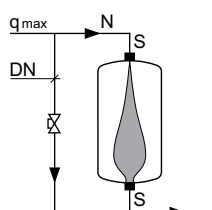
Aquapresso AUF
at the low side; flow-through from top to bottom

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

1. Bypass open, remove handwheel
2. p_0 at least 0,5 bar below the minimum supply pressure
3. $p_0 = 0,9$ working pressure of the peak load pump, at least 0,5 bar below the working pressure

Aquapresso A...F

DN bypass with q_{max}

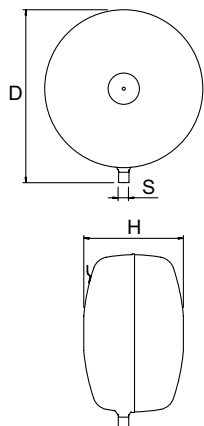


| q_{max} m^3/h | 0,6 | 1,0 | 1,7 | 3,0 | 7,3 | 11,5 | 15,0 | 19,5 | 25,0 | 31,0 | 40,0 | 50,0 |
|---------------------|-----------|-----|-----|-----|-----|------|------|------|------|------|------|------|
| | DN Bypass | | | | | | | | | | | |
| ADF 8-12 | ■ | • | • | • | • | • | • | • | • | • | • | • |
| 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

$q \leq q_N$ no bypass required

Articles

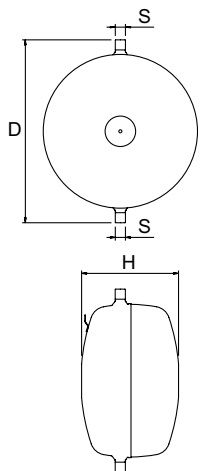

Aquapresso AD

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

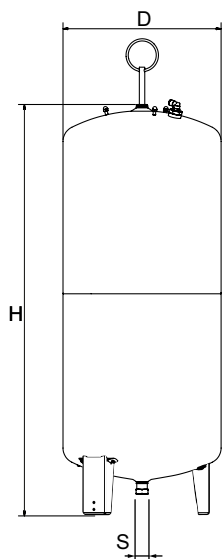

Aquapresso ADF

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

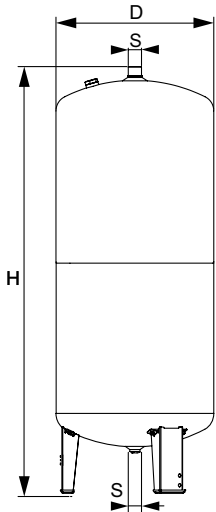

Aquapresso AU

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

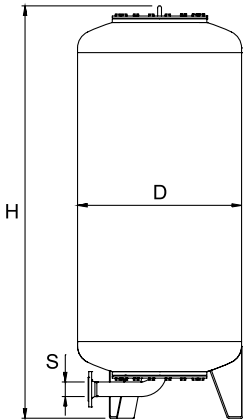
Slim, cylindrical model.

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



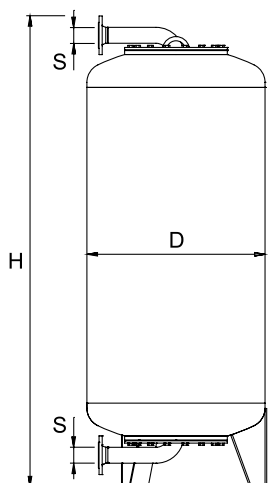
Aquapresso AG

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 [m ³ /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:**

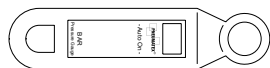
Heating, solar, drinking water and cooling systems. Deployment in systems according to EN 12828, SWKI HE301-01.

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 |

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