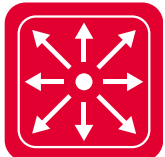




**'reflex'**  
Diaphragm expansion vessels for heating,  
solar and cooling water applications



# 'reflex'

## The professional way to keep up the pressure

Proven in the past and looking to the future:

'reflex,' the versatile diaphragm expansion vessel for closed-loop heating, solar, and cooling water circuits, works on the principle of static pressure maintenance using a nitrogen cushion. The gas space and water space are separated by a diaphragm.

'reflex' offers a sound design, and reliable operation without the need for auxiliary energy. The reflex 'control' and reflex 'servitec' make-up and degassing systems are useful ways to increase system automation.

All 'reflex' models feature a high-quality coating in either standard red or white depending on the model and size.



### 'reflex F': perfect for any boiler

The 'reflex F' is white and flat, making it extremely adaptable for use with wall-mounted boilers. Special models with an individual vessel geometry are also available.

8 – 24 l                      3 bar/120 °C\*



### 'reflex N, NG and G': vessels for heating and cooling circuits

These expansion vessels are renowned for their versatility: they are suitable for use in individual homes as well as complexes for living space and industrial applications. Vessels with a nominal volume of up to 1,000 liters are supplied with either an exchangeable (type G) or fixed (type N, NG) diaphragm; nominal volumes above this are only available with an exchangeable diaphragm.

8 – 10,000 l                  3/6/10/16 bar/120 °C\*



### 'reflex S': vessels for solar, heating, and cooling circuits

'reflex S' has been specially designed for use in solar heating systems with a high proportion of antifreeze. Available in red and white, it is of course also ideal for use in both heating and cooling systems.

2 – 600 l                      10 bar/120 °C\*

(\* vessel 120 °C, diaphragm 70 °C)



# The right expansion vessel for every application

## 'reflex F'

- ▶ For direct installation in the boiler
- ▶ As an extension vessel outside the boiler



## Contents

|          |   |
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## 'reflex N, NG' and 'reflex S'

- ▶ Two products from a range offering outstanding expansion



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## Reflex water make-up and degassing systems – the logical 'reflex' add-on

- ▶ Controlled water make-up
- ▶ Pressure indicator
- ▶ Central system degassing



 **reflex 'servitec'**  
Degassing  
and water make-up



 **reflex 'control'**  
Water make-up  
systems



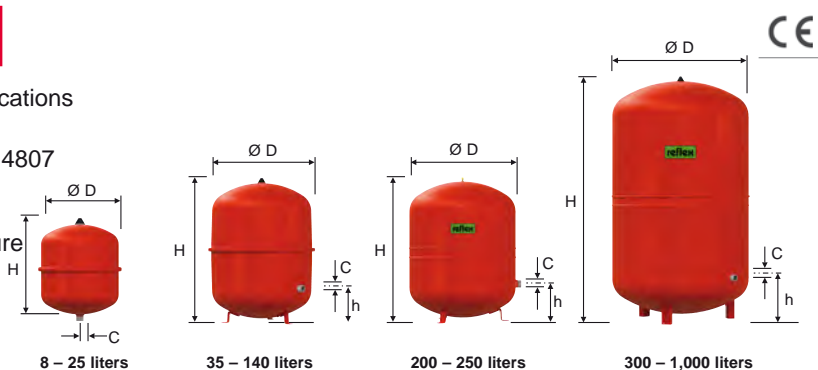
"Why did I choose 'reflex'? It has it all: variety, quality, and a presence within this specialist trade!"

# 'reflex'

## Technical data

### 'reflex N + NG'

- ▶ For heating and cooling water applications
- ▶ Threaded connections
- ▶ Diaphragm in accordance with DIN 4807 part 3, max. operating temperature 70 °C
- ▶ Approval in accordance with pressure equipment directive 97/23/EC
- ▶ Colour: red or white; durable powder coating
- ▶ Pre-set pressure 1.5 bar



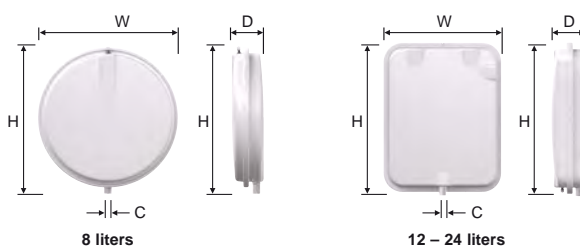
| Type                  | Article-No. |         | Weight<br>kg | Ø D<br>mm | H<br>mm | h<br>mm | C   |
|-----------------------|-------------|---------|--------------|-----------|---------|---------|-----|
|                       | red         | white   |              |           |         |         |     |
| <b>6 bar / 120 °C</b> |             |         |              |           |         |         |     |
| NG 8                  | 7230100     | 7230107 | 1.7          | 206       | 285     | ---     | R ¾ |
| NG 12                 | 7240100     | 7240107 | 2.3          | 280       | 275     | ---     | R ¾ |
| NG 18                 | 7250100     | 7250107 | 2.8          | 280       | 345     | ---     | R ¾ |
| NG 25                 | 7260100     | 7260107 | 3.5          | 280       | 465     | ---     | R ¾ |
| NG 35                 | 7270100     | 7270107 | 5.7          | 354       | 460     | 130     | R ¾ |
| NG 50                 | 7001000     | 7001100 | 7.5          | 409       | 493     | 175     | R ¾ |
| NG 80                 | 7001200     | 7001300 | 9.9          | 480       | 565     | 175     | R 1 |
| NG 100                | 7001400     | 7001500 | 11.2         | 480       | 670     | 175     | R 1 |
| NG 140                | 7001600     | 7001700 | 14.5         | 480       | 912     | 175     | R 1 |

| Type                  | Article-No. |       | Weight<br>kg | Ø D<br>mm | H<br>mm | h<br>mm | C   |
|-----------------------|-------------|-------|--------------|-----------|---------|---------|-----|
|                       | red         | white |              |           |         |         |     |
| <b>6 bar / 120 °C</b> |             |       |              |           |         |         |     |
| N 200                 | 7213300     | ---   | 36.7         | 634       | 760     | 205     | R 1 |
| N 250                 | 7214300     | ---   | 45.0         | 634       | 890     | 205     | R 1 |
| N 300                 | 7215300     | ---   | 52.0         | 634       | 1060    | 235     | R 1 |
| N 400                 | 7218000     | ---   | 65.0         | 740       | 1070    | 245     | R 1 |
| N 500                 | 7218300     | ---   | 79.0         | 740       | 1290    | 245     | R 1 |
| N 600                 | 7218400     | ---   | 85.0         | 740       | 1530    | 245     | R 1 |
| N 800                 | 7218500     | ---   | 103.0        | 740       | 1995    | 245     | R 1 |
| N 1000                | 7218600     | ---   | 120.0        | 740       | 2410    | 245     | R 1 |

↑ V<sub>n</sub> Nominal volume [Litres]

### 'reflex F'

- ▶ Flat vessel for heating and cooling water applications, especially suited for installation within the boiler
- ▶ Diaphragm in accordance with DIN 4807 part 3, max. operating temperature 70 °C
- ▶ Vessels ≥ 18 liters supplied with wall-hung clip
- ▶ Approval in accordance with pressure equipment directive 97/23/EC
- ▶ Colour: white; durable powder coating

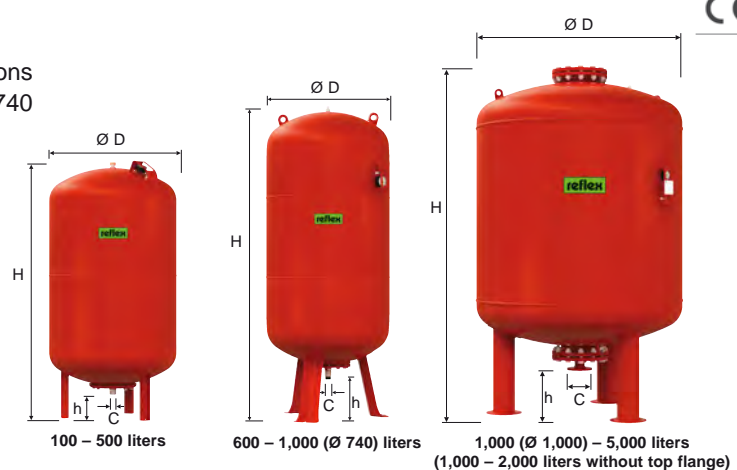


| Type                | Article-No. | Weight<br>kg | H<br>mm | W<br>mm | D<br>mm | C   | Pre-set pressure<br>bar |
|---------------------|-------------|--------------|---------|---------|---------|-----|-------------------------|
|                     |             |              |         |         |         |     |                         |
| <b>3 bar/120 °C</b> |             |              |         |         |         |     |                         |
| F 8                 | 9600011     | 6.5          | 389     | 389     | 88      | G ⅝ | 0.75                    |
| F 12                | 9600030     | 8.5          | 444     | 350     | 108     | G ½ | 1.0                     |
| F 15                | 9600040     | 9.0          | 444     | 350     | 134     | G ¾ |                         |
| F 18                | 9600000     | 9.5          | 444     | 350     | 158     | G ¾ |                         |
| F 24                | 9600010     | 9.8          | 444     | 350     | 180     | G ¾ |                         |

↑ V<sub>n</sub> Nominal volume/liters

## 'reflex G'

- ▶ For heating and cooling water applications
- ▶ Threaded connections up to 1,000 l Ø 740
- ▶ Flange connections  
PN 6 at 6 bar, PN 16 at 10 bar
- ▶ Bladder in accordance with  
DIN 4807 part 3, max. operating  
temperature 70 °C
- ▶ Approval in accordance with pressure  
equipment directive 97/23/EC
- ▶ Inspection port
- ▶ Pressure gauge in nitrogen space
- ▶ Colour: red; durable powder coating
- ▶ Pre-set pressure 3.5 bar



| Type                 | Article-No. | Weight<br>kg | Ø D<br>mm | H<br>mm | h<br>mm | C           |
|----------------------|-------------|--------------|-----------|---------|---------|-------------|
| <b>6 bar/120 °C</b>  |             |              |           |         |         |             |
| G 400                | 7521605     | 51.0         | 740       | 1,253   | 146     | G 1         |
| G 500                | 7521705     | 59.0         | 740       | 1,473   | 146     | G 1         |
| G 600                | 7522605     | 74.0         | 740       | 1,718   | 146     | G 1         |
| G 800                | 7523610     | 102.0        | 740       | 2,183   | 146     | G 1         |
| G 1000 Ø 740         | 7546605     | 158.0        | 740       | 2,593   | 146     | G 1         |
| G 1000 Ø 1,000       | 7524605     | 248.0        | 1,000     | 1,975   | 305     | DN 65/PN 6  |
| G 1500               | 7526605     | 297.0        | 1,200     | 1,975   | 305     | DN 65/PN 6  |
| G 2000               | 7527605     | 370.0        | 1,200     | 2,430   | 305     | DN 65/PN 6  |
| G 3000               | 7544605     | 640.0        | 1,500     | 2,480   | 335     | DN 65/PN 6  |
| G 4000               | 7529605     | 828.0        | 1,500     | 3,055   | 335     | DN 65/PN 6  |
| G 5000               | 7530605     | 905.0        | 1,500     | 3,590   | 335     | DN 65/PN 6  |
| <b>10 bar/120 °C</b> |             |              |           |         |         |             |
| G 100                | 7518000     | 16.5         | 480       | 856     | 152     | G 1         |
| G 200                | 7518100     | 36.5         | 634       | 972     | 144     | G 1¼        |
| G 300                | 7518200     | 41.6         | 634       | 1,267   | 144     | G 1¼        |
| G 400                | 7521005     | 59.0         | 740       | 1,245   | 133     | G 1¼        |
| G 500                | 7521006     | 65.1         | 740       | 1,475   | 133     | G 1¼        |
| G 600                | 7522006     | 128.0        | 740       | 1,859   | 263     | G 1½        |
| G 800                | 7523005     | 176.0        | 740       | 2,324   | 263     | G 1½        |
| G 1000 Ø 740         | 7546005     | 214.0        | 740       | 2,604   | 263     | G 1½        |
| G 1000 Ø 1,000       | 7524005     | 355.0        | 1,000     | 2,000   | 290     | DN 65/PN 16 |
| G 1500               | 7526005     | 410.0        | 1,200     | 2,000   | 290     | DN 65/PN 16 |
| G 2000               | 7527005     | 505.0        | 1,200     | 2,450   | 290     | DN 65/PN 16 |
| G 3000               | 7544005     | 870.0        | 1,500     | 2,580   | 320     | DN 65/PN 16 |
| G 4000               | 7529005     | 1,120.0      | 1,500     | 3,070   | 320     | DN 65/PN 16 |
| G 5000               | 7530005     | 1,330.0      | 1,500     | 3,610   | 320     | DN 65/PN 16 |

↑  $V_n$  Nominal volume/liters

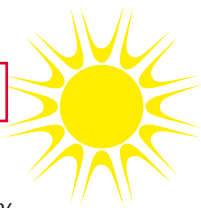
## 'reflex G' – special versions available on request

- ▶ Special vessel > 5,000 liters
- ▶ Special vessel > 10 bar
- ▶ Individual approval from a notified body in accordance  
with pressure equipment directive 97/23/EC

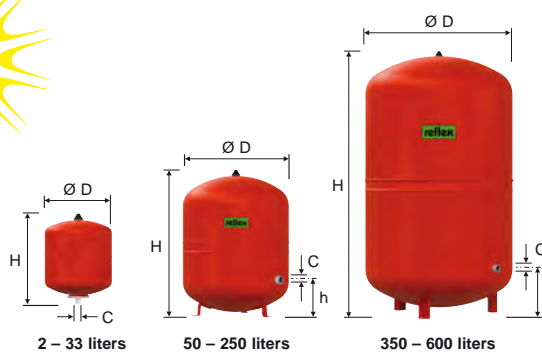
# 'reflex'

## Technical data

### 'reflex S'



- ▶ For solar, heating, and cooling water applications
- ▶ For antifreeze additive of up to 50 %
- ▶ Threaded connections
- ▶ Diaphragm in accordance with DIN 4807 part 3, max. operating temperature 70 °C
- ▶ 33 liters with wall-hung clip
- ▶ Approval in accordance with pressure equipment directive 97/23/EC
- ▶ Colour: red or white; durable powder coating

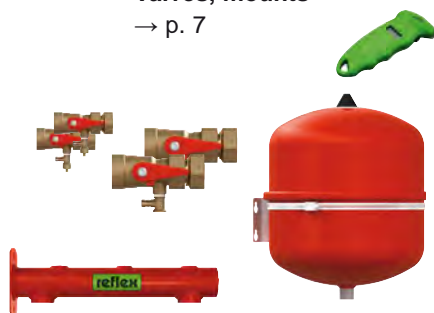


CE

| Type  | Article-No. |         | Weight<br>kg | Ø D<br>mm | H<br>mm | h<br>mm | C     | Pre-set pressure<br>bar |
|-------|-------------|---------|--------------|-----------|---------|---------|-------|-------------------------|
|       | red         | white   |              |           |         |         |       |                         |
| S 2   | 9707700     | ---     | 1.1          | 132       | 260     | ---     | G 3/4 | 0.5                     |
| S 8   | 9703900     | 9702600 | 2.5          | 206       | 325     | ---     | G 3/4 | 1.5                     |
| S 12  | 9704000     | 9702700 | 3.5          | 280       | 300     | ---     | G 3/4 |                         |
| S 18  | 9704100     | 9702800 | 4.5          | 280       | 380     | ---     | G 3/4 |                         |
| S 25  | 9704200     | 9702900 | 5.5          | 280       | 500     | ---     | G 3/4 |                         |
| S 33  | 9706200     | 9706300 | 6.3          | 354       | 450     | ---     | G 3/4 |                         |
| S 50  | 7209500     | ---     | 13.2         | 409       | 469     | 168     | R 3/4 | 3.0                     |
| S 80  | 7210300     | ---     | 18.4         | 480       | 538     | 166     | R 1   |                         |
| S 100 | 7210500     | ---     | 22.7         | 480       | 644     | 166     | R 1   |                         |
| S 140 | 7211500     | ---     | 29.0         | 480       | 886     | 166     | R 1   |                         |
| S 200 | 7213400     | ---     | 40.0         | 634       | 760     | 205     | R 1   |                         |
| S 250 | 7214400     | ---     | 48.0         | 634       | 890     | 205     | R 1   |                         |
| S 300 | 7215400     | ---     | 54.0         | 634       | 1,060   | 235     | R 1   |                         |
| S 400 | 7219000     | ---     | 78.0         | 740       | 1,070   | 245     | R 1   |                         |
| S 500 | 7219100     | ---     | 80.0         | 740       | 1,290   | 245     | R 1   |                         |
| S 600 | 7219200     | ---     | 103.0        | 740       | 1,530   | 245     | R 1   |                         |

↑ V<sub>n</sub> Nominal volume/liters

Valves, mounts  
→ p. 7



Water make-up, degassing  
→ p. 8, 9

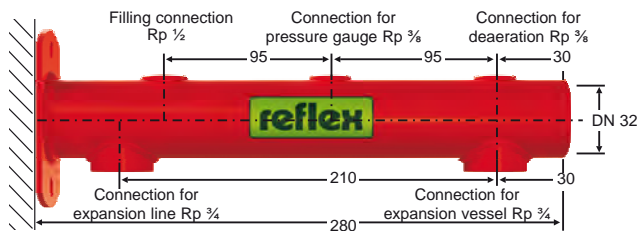


## reflex 'Wall hung holder' for 'reflex' 8 – 25 liters

'reflex' models up to 25 liters do not have their own feet. We recommend using a mount with these models. There are two versions available:

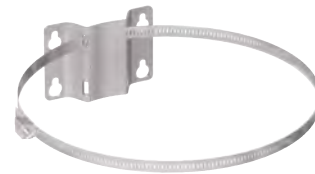
- ▶ Bracket with multiple connections, for 'reflex' 8 – 25 liters with a top vessel connection

**Article-No.: 7612000**



- ▶ Bracket with tightening strap for 'reflex' 8 – 25 liters, vertical assembly, top or bottom vessel connection

**Article-No.: 7611000**



## Protected shut-off

**DIN EN 12828:** It must be possible to drain the water space in expansion vessels. All expansion vessels must be arranged such that they can be shut off from the heating system.

The dimensions of the lockshield valves can generally be selected in accordance with the nominal width of the vessel connection. You can find guideline values for acceptable heat output on page 11.

### ▶ reflex 'SU R 3/4' lockshield valve

- Protected shut-off used when disassembling expansion vessels
- Draining function
- In accordance with DIN EN 12828
- PN 10/120 °C

### ▶ reflex 'SU R 1' and 'AG' connection assembly

- For super-fast assembly and maintenance of diaphragm expansion vessels
- Incl. protected shut-off and elbow connector with screw connection
- With G 1/2 draining tap and hose nozzle in accordance with DIN EN 12828
- PN 16/120 °C
- Ideal for use with 'reflex G' 100 – 1000 Ø 740



AG



SU R 1

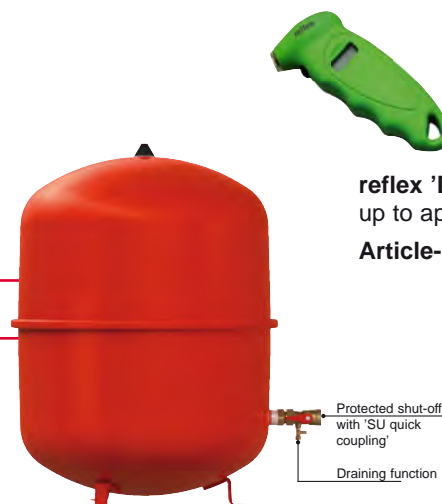


SU R 3/4

| Type     | Article-No. | Version             |
|----------|-------------|---------------------|
| SU R 3/4 | 7613000     | Lockshield valve    |
| SU R 1   | 7613100     |                     |
| AG 1     | 9119204     | Connection assembly |
| AG 1 1/4 | 9119205     |                     |
| AG 1 1/2 | 9119206     |                     |

## reflex 'Digital pressure gauge'

**DIN EN 12828:** Expansion vessels must be serviced once a year. This must include checking the gas pre-set pressure  $p_0$  with a valve when drained and making any necessary corrections.



reflex 'Digital pressure gauge'  
up to approx. 9 bar

**Article-No.: 9119198**

# reflex 'control' water make-up systems

## The logical way to enhance your 'reflex'

reflex 'control' Water make-up systems... and more online, on DVD, and in an extra brochure

www.reflex.de

'reflex' is synonymous with simple construction and reliable, robust functionality. However, operating faults may still occur if, for example, the heating system is not made up with enough water at the right time. This means that the water seal required for operation is not present.

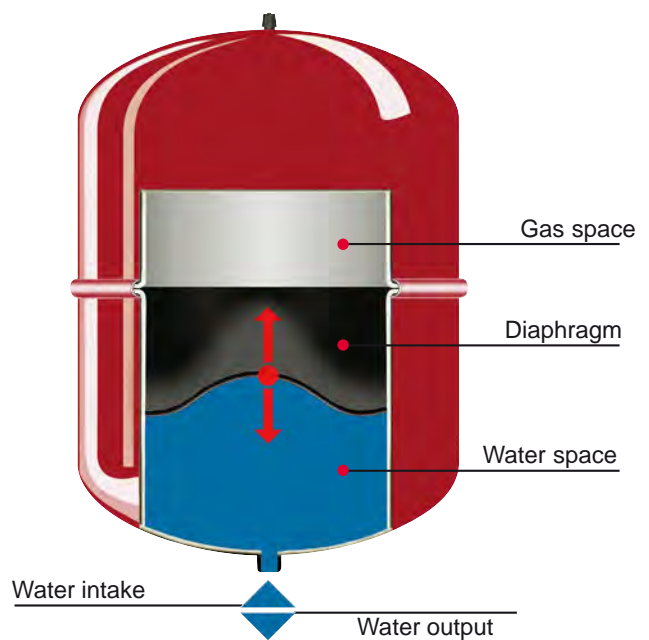
This is where reflex 'control' make-up stations have shown themselves to be a logical addition to the 'reflex.' By monitoring and displaying the pressure and offering controlled water make-up, they ensure that the 'reflex' always has the required water seal.

With reflex 'magcontrol' or 'control P': everything runs at its best

- ▶ 'magcontrol' or, if the water make-up pressure is insufficient, 'control P' monitors the diaphragm expansion vessel (DEV) pressure and makes up the water as required
- ▶ The expansion vessel constantly has the amount of water it needs

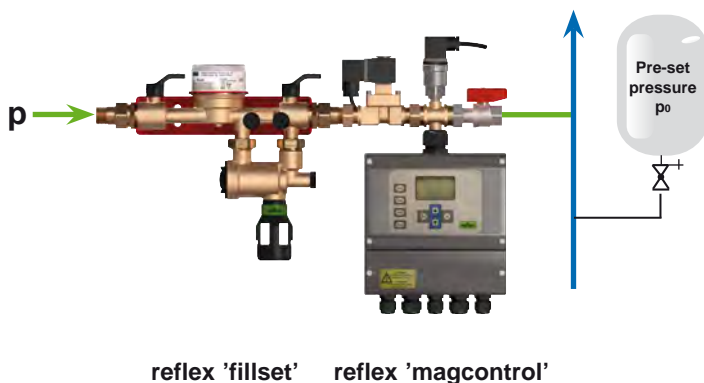
### The result:

- ▶ Optimum system pressure
- ▶ The diaphragm can move freely to allow water to be both drawn in and fed out
- ▶ No risk of air problems
- ▶ Controlled make-up volumes
- ▶ 'control P' and 'magcontrol' with reflex 'fillset' meet the requirements of the new DIN EN 1717



8

reflex 'magcontrol'  
Make-up station with no pump



reflex 'fillset' reflex 'magcontrol'

Minimum flow pressure

$$p \geq p_0 + 1.3 \text{ bar}$$

reflex 'control P'  
Make-up station with pump



reflex 'control P'

Article-No.: 7688500

Article-No.  
reflex 'magcontrol' 6812100  
reflex 'fillset' 6811100



# reflex 'servitec' degassing systems

## The add-on to ensure optimum operation

reflex 'servitec' degassing systems... and more online, on DVD, and in an extra brochure

www.reflex.de

The issue of air problems in heating and cooling circuits is something known to every expert in the field through experience. It is something that affects over 50% of all systems, according to a study by Dresden University of Technology. reflex 'servitec' automatically ensures central degassing right through to the highest, most remote corner, monitors the 'reflex' expansion vessel, and makes up the water as required.

reflex 'servitec' – your true 'savings' system: No expensive installation and maintenance of multiple decentralized mechanical air separators, no costly post-ventilation; instead, operations management is automatic and optimized.

### 'reflex' + 'servitec' the alternative pressure-maintaining station with outstanding service

For systems featuring diaphragm expansion vessels (e.g. 'reflex N'), a combination featuring reflex 'servitec' is a cost-effective alternative to conventional pressure-maintaining stations with water make-up and degassing.

'reflex' + 'servitec' ensures:

Constantly elastic pressure despite degassed circuit water

+

The benefits of the outstanding 'servitec' service

- ▶ Central deaeration and degassing of the circuit water
- ▶ Controlled water make-up with simultaneous degassing
- ▶ Pressure display and control
- ▶ Data transfer via floating contact and RS-485 interface

reflex 'servitec' is also ideal for retrofitting in problematic systems.

reflex 'servitec 25'  
reflex 'servitec 35'  
reflex 'servitec 60'  
reflex 'servitec 60/gl'

Article-No.  
6830700  
6820100  
6820200  
6820300



reflex 'servitec'  
for systems > 2 m<sup>3</sup>

'reflex G'



reflex 'servitec 25'  
for systems ≤ 2 m<sup>3</sup>



# 'reflex' Selection

Heating systems

**90°C** Flow temperature

**70°C** Return flow temperature

Planning, calculation, fitting... and more  
online, on DVD, and in an extra brochure

www.reflex.de

| $p_{sv}$ Safety valve on the heat generator             | → $p_{sv}$ bar | 2.5    |        |       | $V_n$        |     |     | 3.0 |     |  |  |
|---|----------------|--------|--------|-------|--------------|-----|-----|-----|-----|--|--|
| $p_0$ Gas pre-set pressure in expansion vessel          | → $p_0$ bar    | 0.5    | 1.0    | 1.5   | Liters       | 0.5 | 1.0 | 1.5 | 1.8 |  |  |
| $V_A$ Max. water content in system                      | $V_A$ Liters   | 65     | 30     | ---   | <b>8</b>     | 85  | 50  | 19  | --- |  |  |
| $p_F$ Minimum filling pressure of cold, degassed system | $p_F$ bar      | 1.0    | 1.6    | ---   | <b>12</b>    | 1.1 | 1.6 | 2.2 | --- |  |  |
|   | $V_A$ Liters   | 100    | 45     | ---   | <b>15</b>    | 120 | 75  | 29  | --- |  |  |
|   | $p_F$ bar      | 1.0    | 1.6    | ---   | <b>18</b>    | 1.1 | 1.6 | 2.2 | --- |  |  |
|   | $V_A$ Liters   | 130    | 55     | ---   | <b>25</b>    | 160 | 95  | 36  | --- |  |  |
|   | $p_F$ bar      | 1.0    | 1.6    | ---   | <b>33</b>    | 1.1 | 1.6 | 2.2 | --- |  |  |
|   | $V_A$ Liters   | 170    | 85     | ---   | <b>35</b>    | 200 | 130 | 60  | 17  |  |  |
|   | $p_F$ bar      | 0.9    | 1.5    | ---   | <b>50</b>    | 1.0 | 1.5 | 2.1 | 2.4 |  |  |
|   | $V_A$ Liters   | 270    | 150    | 33    | <b>80</b>    | 0.9 | 1.4 | 1.9 | 2.2 |  |  |
|   | $p_F$ bar      | 0.9    | 1.4    | 1.9   | <b>100</b>   | 0.8 | 1.4 | 1.9 | 2.2 |  |  |
|   | $V_A$ Liters   | 380    | 220    | 70    | <b>140</b>   | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   | <b>200</b>   | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 400    | 240    | 80    | <b>250</b>   | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   | <b>300</b>   | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 610    | 380    | 130   | <b>400</b>   | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   | <b>500</b>   | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 980    | 610    | 210   | <b>600</b>   | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   | <b>800</b>   | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 1,230  | 760    | 260   | <b>1,000</b> | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   | <b>1,500</b> | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 1,720  | 1,070  | 360   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 2,450  | 1,530  | 520   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 3,060  | 1,910  | 650   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 3,680  | 2,290  | 780   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 4,900  | 3,050  | 1,040 |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 6,130  | 3,820  | 1,300 |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 7,350  | 4,580  | 1,560 |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 9,800  | 6,110  | 2,080 |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 11,310 | 7,630  | 2,600 |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $V_A$ Liters   | 18,380 | 11,450 | 3,900 |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |
|   | $p_F$ bar      | 0.8    | 1.3    | 1.8   |              | 0.8 | 1.3 | 1.8 | 2.1 |  |  |

## Standard circuit

▶ Recommendation for safety valves:

$$p_{sv} \geq p_0 + 1.5 \text{ bar}$$

▶ Pre-set pressure calculation  $t \leq 100$  °C:

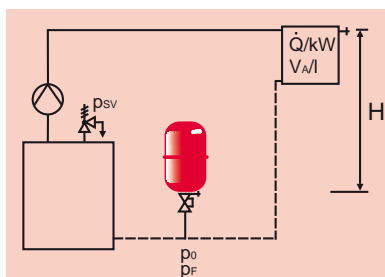
$$p_0 \geq p_0 \frac{H [m]}{10} + 0.2 \text{ bar}$$

### Reflex – recommendation

$$p_0 \geq 1 \text{ bar}$$

▶ Filling pressure calculation using the optimized Reflex formula:

$$p_F \geq p_0 + 0.3 \text{ bar}$$



▶ Approximate water content:

Radiators

$$V_A = \dot{Q} [kW] \times 13.5 \text{ l/kW}$$

Flat radiators

$$V_A = \dot{Q} [kW] \times 8.5 \text{ l/kW}$$

## Example

$$p_{sv} = 5 \text{ bar}$$

$$H = 23 \text{ m}$$

$$\dot{Q} = 600 \text{ kW, radiators, 90/70°C}$$

### Calculation:

$$\rightarrow V_A = 600 \text{ kW} \times 13.5 \text{ l/kW} = 8,100 \text{ l}$$

$$\rightarrow p_0 = \left( \frac{23}{10} + 0.2 \text{ bar} \right) = 2.5 \text{ bar}$$

### From the table:

$$\text{Where } p_{sv} = 5 \text{ bar, } p_0 = 2.5 \text{ bar, } V_A = 8,100 \text{ l}$$

$$\rightarrow V_n = 1,000 \text{ l (for } V_A \text{ max. 8,910 l)}$$

Selected:  
Version 1 – 'reflex G'



1 x 'reflex G 1000', 6 bar → p. 5

- Exchangeable bladder

- Threaded connection

1 x 'AG 1' connection assembly → p. 7

## Expansion lines

| Expansion line               | DN 20<br>¾" | DN 25<br>1" | DN 32<br>1¼" | DN 40<br>1½" | DN 50<br>2" | DN 65  | DN 80  | DN 100 |
|------------------------------|-------------|-------------|--------------|--------------|-------------|--------|--------|--------|
| Q/kW<br>Length ≤ 10 m        | 350         | 2,100       | 3,600        | 4,800        | 7,500       | 14,000 | 19,000 | 29,000 |
| Q/kW<br>Length > 10 m ≤ 30 m | 350         | 1,400       | 2,500        | 3,200        | 5,000       | 9,500  | 13,000 | 20,000 |

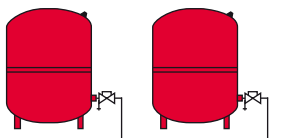
## Protected shut-offs

We recommend the following for standard systems:  
 DEV with threaded connections R ¾ and R 1  
 → reflex 'SU Lockshield valve'  
 with DEV dimensions  
 DEV with flange connections  
 → with expansion line dimensions

| p <sub>sv</sub> bar   | 3.5    |        |       |       | V <sub>n</sub><br>Liters | 4.0    |        |       |       | V <sub>n</sub><br>Liters | 5.0    |        |        |       |
|-----------------------|--------|--------|-------|-------|--------------------------|--------|--------|-------|-------|--------------------------|--------|--------|--------|-------|
|                       | 1.5    | 1.8    | 2.0   | 2.5   |                          | 1.5    | 2.0    | 2.5   | 3.0   |                          | 1.5    | 2.0    | 2.5    | 3.0   |
| p <sub>0</sub> bar    |        |        |       |       | 8                        |        |        |       |       | 8                        |        |        |        |       |
| V <sub>A</sub> Liters | 39     | 22     | 11    | ---   | 8                        | 55     | 30     | 5     | ---   | 8                        | 55     | 37     | 16     | ---   |
| p <sub>F</sub> bar    | 2.3    | 2.6    | 2.8   | ---   | 8                        | 2.3    | 2.9    | 3.4   | ---   | 8                        | 3.0    | 3.5    | 4.1    | ---   |
| V <sub>A</sub> Liters | 60     | 34     | 17    | ---   | 12                       | 80     | 45     | 7     | ---   | 12                       | 85     | 55     | 24     | ---   |
| p <sub>F</sub> bar    | 2.3    | 2.6    | 2.8   | ---   | 12                       | 2.3    | 2.9    | 3.4   | ---   | 12                       | 3.0    | 3.5    | 4.1    | ---   |
| V <sub>A</sub> Liters | 75     | 42     | 21    | ---   | 15                       | 100    | 55     | 9     | ---   | 15                       | 110    | 70     | 30     | ---   |
| p <sub>F</sub> bar    | 2.3    | 2.6    | 2.8   | ---   | 15                       | 2.3    | 2.9    | 3.4   | ---   | 15                       | 3.0    | 3.5    | 4.1    | ---   |
| V <sub>A</sub> Liters | 100    | 65     | 42    | ---   | 18                       | 140    | 85     | 28    | ---   | 18                       | 140    | 100    | 55     | 8     |
| p <sub>F</sub> bar    | 2.1    | 2.5    | 2.7   | ---   | 18                       | 2.2    | 2.7    | 3.3   | ---   | 18                       | 3.0    | 3.4    | 3.9    | 4.4   |
| V <sub>A</sub> Liters | 180    | 130    | 90    | 3     | 25                       | 230    | 150    | 70    | ---   | 25                       | 230    | 170    | 110    | 43    |
| p <sub>F</sub> bar    | 2.0    | 2.3    | 2.5   | 3.0   | 25                       | 2.1    | 2.6    | 3.1   | ---   | 25                       | 2.7    | 3.2    | 3.7    | 4.2   |
| V <sub>A</sub> Liters | 260    | 190    | 150   | 31    | 33                       | 330    | 220    | 120   | 19    | 33                       | 340    | 250    | 170    | 85    |
| p <sub>F</sub> bar    | 1.9    | 2.2    | 2.4   | 2.9   | 33                       | 2.1    | 2.5    | 3.0   | 3.4   | 33                       | 2.6    | 3.1    | 3.6    | 4.0   |
| V <sub>A</sub> Liters | 280    | 210    | 160   | 38    | 35                       | 350    | 240    | 130   | 25    | 35                       | 360    | 270    | 180    | 95    |
| p <sub>F</sub> bar    | 1.9    | 2.2    | 2.4   | 2.9   | 35                       | 2.0    | 2.5    | 2.9   | 3.4   | 35                       | 2.5    | 3.1    | 3.5    | 4.0   |
| V <sub>A</sub> Liters | 440    | 340    | 270   | 90    | 50                       | 540    | 380    | 230   | 70    | 50                       | 550    | 420    | 300    | 170   |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 50                       | 1.9    | 2.4    | 2.8   | 3.3   | 50                       | 2.5    | 3.0    | 3.4    | 3.9   |
| V <sub>A</sub> Liters | 540    | 590    | 470   | 160   | 80                       | 870    | 650    | 410   | 140   | 80                       | 890    | 710    | 530    | 320   |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 80                       | 1.9    | 2.3    | 2.8   | 3.3   | 80                       | 2.4    | 2.9    | 3.4    | 3.8   |
| V <sub>A</sub> Liters | 740    | 740    | 590   | 200   | 100                      | 1,090  | 820    | 530   | 180   | 100                      | 1,110  | 890    | 670    | 420   |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 100                      | 1.9    | 2.3    | 2.8   | 3.3   | 100                      | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 920    | 1,030  | 830   | 280   | 140                      | 1,520  | 1,140  | 750   | 250   | 140                      | 1,560  | 1,250  | 940    | 620   |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 140                      | 1.9    | 2.3    | 2.8   | 3.3   | 140                      | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 1,840  | 1,470  | 1,190 | 400   | 200                      | 2,180  | 1,630  | 1,070 | 360   | 200                      | 2,230  | 1,780  | 1,340  | 890   |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 200                      | 1.9    | 2.3    | 2.8   | 3.3   | 200                      | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 2,300  | 1,840  | 1,490 | 500   | 250                      | 2,720  | 2,040  | 1,340 | 450   | 250                      | 2,780  | 2,230  | 1,670  | 1,110 |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 250                      | 1.9    | 2.3    | 2.8   | 3.3   | 250                      | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 3,220  | 2,210  | 1,780 | 600   | 300                      | 3,270  | 2,450  | 1,600 | 540   | 300                      | 3,340  | 2,670  | 2,000  | 1,330 |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 300                      | 1.9    | 2.3    | 2.8   | 3.3   | 300                      | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 3,680  | 2,940  | 2,380 | 800   | 400                      | 4,360  | 3,270  | 2,140 | 720   | 400                      | 4,460  | 3,560  | 2,670  | 1,780 |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 400                      | 1.9    | 2.3    | 2.8   | 3.3   | 400                      | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 4,590  | 3,680  | 2,970 | 1,000 | 500                      | 5,450  | 4,080  | 2,670 | 900   | 500                      | 5,570  | 4,460  | 3,340  | 2,220 |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 500                      | 1.9    | 2.3    | 2.8   | 3.3   | 500                      | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 5,510  | 4,410  | 3,570 | 1,200 | 600                      | 6,530  | 4,900  | 3,210 | 1,080 | 600                      | 6,680  | 5,350  | 4,010  | 2,660 |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 600                      | 1.9    | 2.3    | 2.8   | 3.3   | 600                      | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 7,350  | 5,880  | 4,760 | 1,600 | 800                      | 8,710  | 6,530  | 4,270 | 1,440 | 800                      | 8,910  | 7,130  | 5,350  | 3,550 |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 800                      | 1.9    | 2.3    | 2.8   | 3.3   | 800                      | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 9,190  | 7,350  | 5,950 | 2,000 | 1,000                    | 10,890 | 8,170  | 5,340 | 1,800 | 1,000                    | 11,140 | 8,910  | 6,680  | 4,440 |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 1,000                    | 1.9    | 2.3    | 2.8   | 3.3   | 1,000                    | 2.4    | 2.9    | 3.3    | 3.8   |
| V <sub>A</sub> Liters | 13,780 | 11,030 | 8,920 | 3,010 | 1,500                    | 16,340 | 12,250 | 8,020 | 2,690 | 1,500                    | 16,710 | 13,370 | 10,020 | 6,660 |
| p <sub>F</sub> bar    | 1.8    | 2.1    | 2.3   | 2.8   | 1,500                    | 1.9    | 2.3    | 2.8   | 3.3   | 1,500                    | 2.4    | 2.9    | 3.3    | 3.8   |

### Version 2 – Battery circuit with 2x 'reflex N' – the cost-effective alternative

- 2x 'reflex N 500,' 6 bar → p. 4
- Fixed diaphragm
- Threaded connections
- Battery circuit set up on site
- 2x 'SU R1' cap ball valves → p. 7



It is possible to connect numerous 'reflex N' units to batteries. This is generally a cost-effective alternative to using larger vessels.



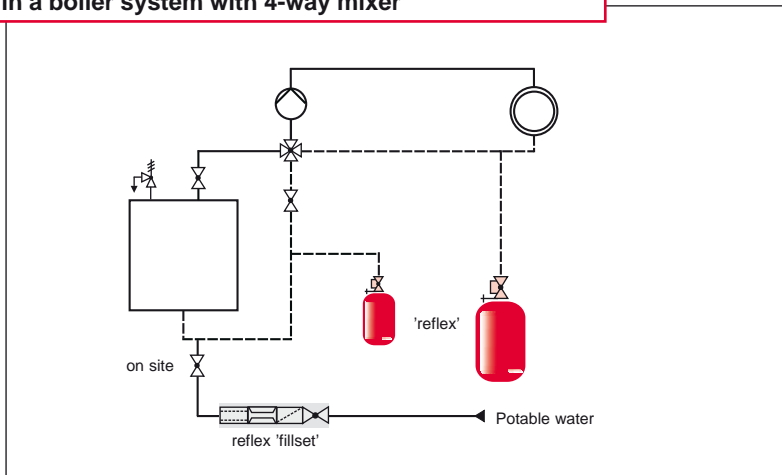
# 'reflex'

## Sample installations

### Notes for the installer – hydraulic integration

- ▶ In accordance with DIN EN 12828:  
**every heat generator must be connected to one or more expansion vessels by at least one expansion line.**
- ▶ You should select the appropriate circuit as follows:  
**Diaphragm expansion vessel in boiler return – circulating pump in boiler flow line**
  - Direct connection between DEV and heat generator
  - Low temperature load on diaphragm
  - DEV on the suction side of the circulation pump to minimize the risk of a vacuum forming
- ▶ **Please consult your specialist adviser in the event of any deviations!**

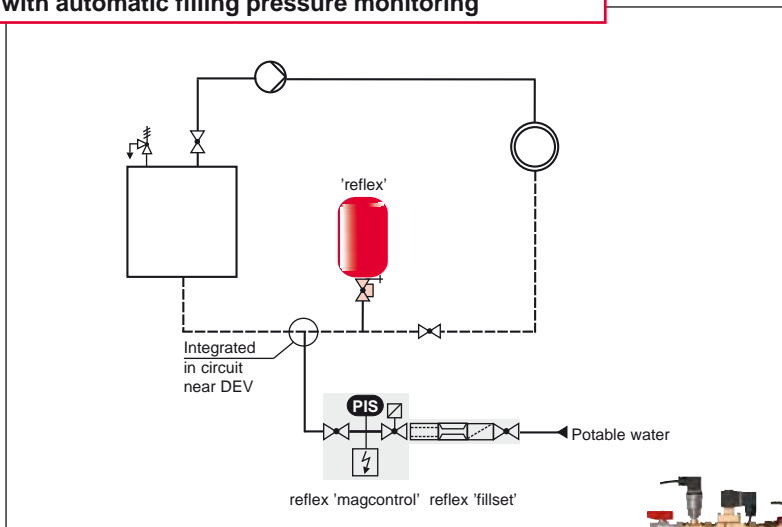
### 'reflex' in a boiler system with 4-way mixer



### Notes for the installer

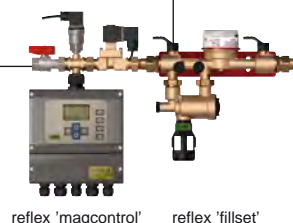
- ▶ The boiler and system each have an expansion vessel. This ensures that no vacuum can form in the system circuit, even with fully sealing mixers.
- ▶ reflex 'fillset' is a pre-packaged valve assembly providing a direct connection to potable water systems for making up and filling the system.  
→ Page 8

### 'reflex' with automatic filling pressure monitoring



### Notes for the installer

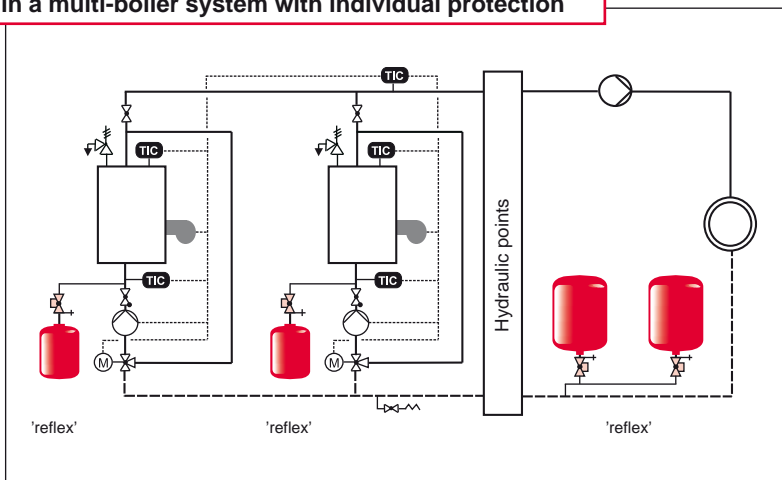
- ▶ A reflex 'magcontrol' make-up station provides optimum functional support for your 'reflex.' It ensures your expansion vessel always contains water, which minimizes vacuum formation and the ensuing air problems at high points.
- ▶ reflex 'fillset' with system separator and water meter is easy to connect upstream to provide a direct connection to the potable water system.  
→ Page 8  
→ Brochure for reflex 'control' make-up stations



## Notes for the installer – multi-boiler systems

- ▶ In accordance with DIN EN 12828:  
**every heat generator must be connected to one or more expansion vessels by at least one expansion line.**
- ▶ Which circuit should you choose?  
You can have individual protection for each boiler through an expansion vessel, or opt for a common boiler and system protection option. When using shut-offs via boiler sequential circuits, you must ensure that the boiler in question is connected to at least one expansion vessel. It is always best to consult the boiler manufacturer.

### 'reflex N' – battery circuit in a multi-boiler system with individual protection

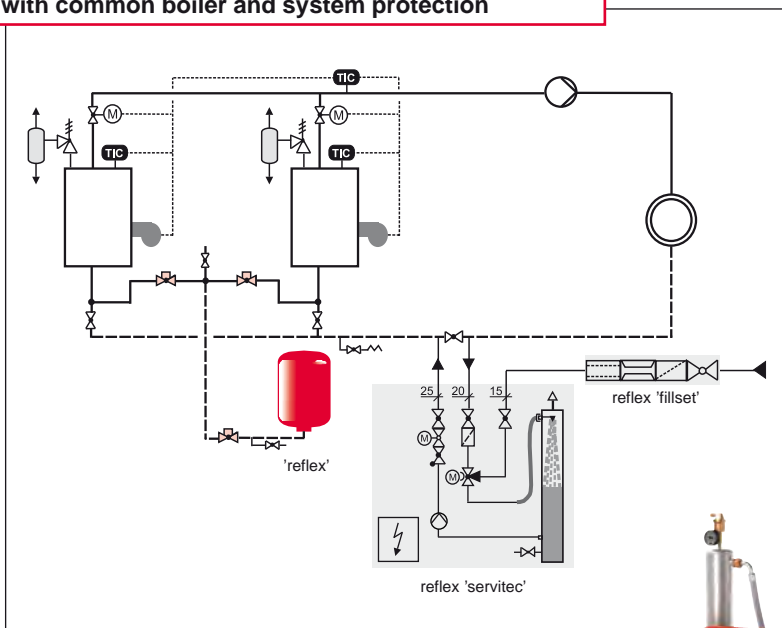


#### Notes for the installer

- ▶ Connecting numerous 'reflex N' 6 or 10 bar vessels to a battery circuit is usually a more cost-effective alternative to using larger 'reflex G' vessels.
- ▶ The burner is used to shut off the corresponding boiler circulating pump and close the motorized valve (M) via the temperature control (TIC). This enables the boiler to remain connected to the 'reflex.' It is the most frequently used circuit for boilers with a minimum return flow temperature, preventing boiler circulation when the burner is switched off.

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### 'reflex' in a multi-boiler system with common boiler and system protection



#### Notes for the installer

- ▶ When the burner is switched off, the corresponding actuator (M) is closed via the temperature control (TIC) while preventing unwanted circulation in the shut-off boiler. In addition, the boiler expansion line above the center of the boiler prevents gravity circulation. This option is ideally suited to systems without a minimum boiler return flow temperature (e.g. condensing systems).
  - ▶ Our reflex 'servitec' vacuum spray-tube degassing unit guarantees effective system service:
    - Displays and monitors pressure
    - Provides automatic making up and filling
    - Centrally degasses and bleeds the contained, filling, and make-up water
- P. 9  
→ reflex 'servitec' brochure

The circuits must be adjusted to suit local conditions.



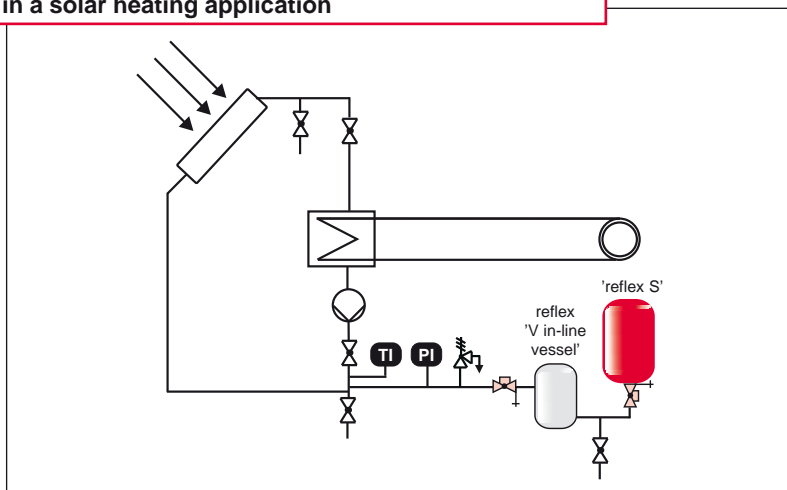
reflex 'servitec'  
vacuum spray-tube degassing unit



# 'reflex'

## Sample installations

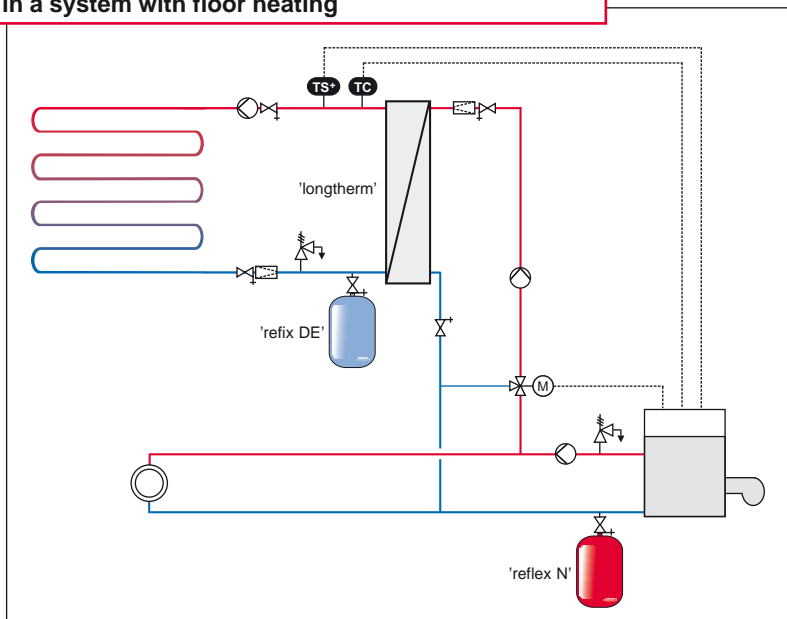
### 'reflex S' in a solar heating application



#### Notes for the installer

- ▶ Because of the low temperature load, the circulating pump and 'reflex S' are located in the collector return. This means that the expansion vessel must be installed on the pressure side of the circulating pump. **The circulating pump pressure must therefore be considered when calculating the pre-set pressure  $p_0$ .**
- ▶ There is no need to install the reflex 'V in-line vessel' where the maximum possible temperature load for the expansion vessel is 70 °C.

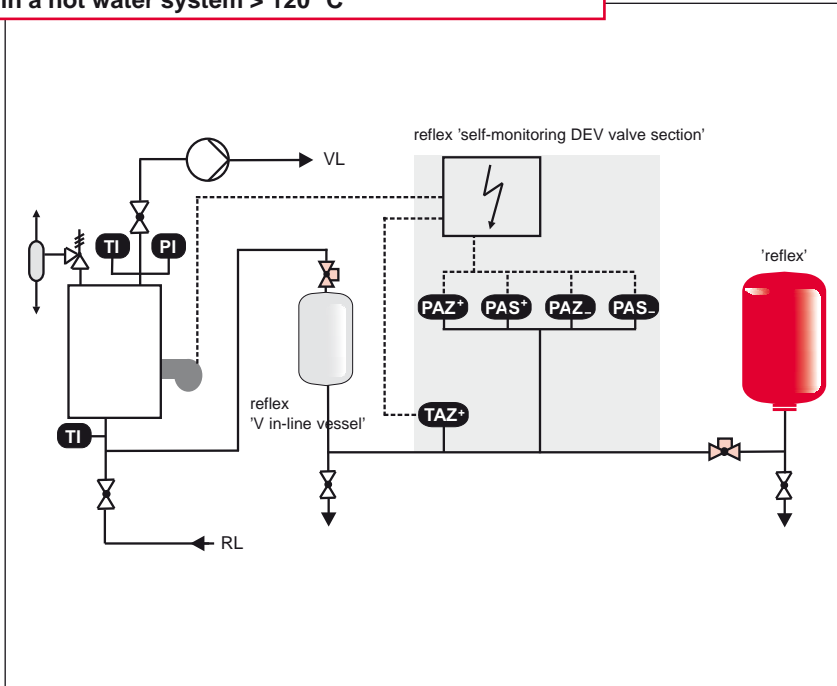
### 'reflex DE' in a system with floor heating



#### Notes for the installer

- ▶ If the floor heating circuit does not use **oxygen-tight** plastic tubing, there is a risk of corrosion.
- ▶ Even so, the safest option is to implement system separation between the boiler and floor circuit, e.g. with a reflex 'longtherm' plate heat exchanger. We recommend using the 'reflex DE' with special corrosion protection to prevent corrosion of the expansion vessel.  
→ 'reflex' brochure

## 'reflex' DEV in a hot water system > 120 °C



### Notes for the installer

- ▶ TRD 402, 18.6: The **actual operating temperature** can be used as the calculation temperature for expansion vessels and collection vessels.
- ▶ TRD 604 sheet. 2, 1.3.: There is no need to install a water level limiter with a DEV if a minimum pressure limiter is activated for the DEV when the water level drops below minimum.
- ▶ We recommend:
  - reflex 'V In-line vessel' > 120 °C with reflex 'self-monitoring DEV valve section,' each with a max/min pressure limiter **PAZ+** / **PAZ-** and monitor **PAS+** / **PAS-** plus a safety temperature limiter **TAZ+** to be installed on site.

# 'reflex'

## Functionality, operation

Assembly, operating, and maintenance instructions... and more online, on DVD, and in an extra brochure

www.reflex.de

### Excerpts from the assembly, operating, and maintenance instructions

Expansion vessels must be configured at start-up and be subjected to annual maintenance. This must include checking the gas pre-set pressure and system filling pressure and making adjustments to suit local conditions/planning specifications.

In order to perform maintenance on expansion vessels, DIN EN 12828 stipulates that: **there must be no lockshield valve between the expansion vessel and heat generator. The only possible option in this case is a lockshield valve protected against inadvertent closure for inspection purposes.**

We recommend the following to provide protected shut-off for 'reflex' for configuring the pre-set pressure:

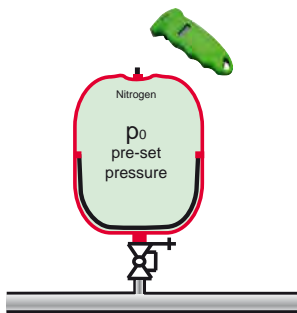
- reflex 'SU' and 'AG' lockshield valves → page 7
- reflex 'Digital pressure gauge' → page 7

The factory setting for the gas pre-set pressure is listed under the technical data for the individual 'reflex' models. For more detailed information, please refer to the assembly and operating instructions accompanying each vessel.



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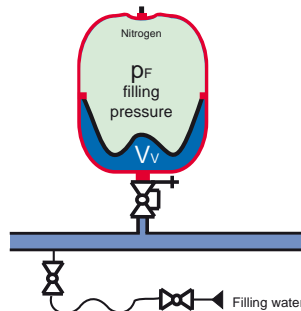
#### 1 Configure pre-set pressure



The **gas pre-set pressure**  $p_0$  must be adjusted to suit local conditions and entered on the name plate.

**Pre-set pressure**  
 $p_0 \geq$  static pressure  
 + 0.2 bar  
 + evaporation pressure  
 (where  $t > 100 \text{ }^\circ\text{C}$ )  
 $p_0 \geq 1$  bar (recommended)

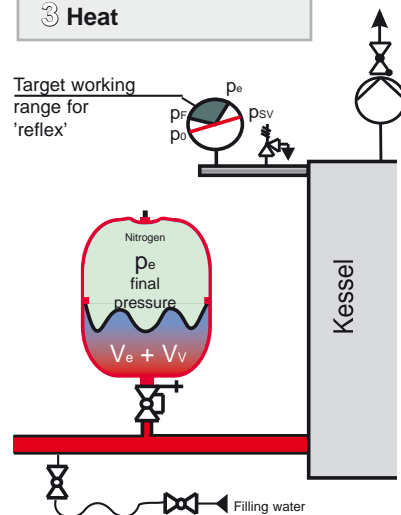
#### 2 Fill



The **water seal**  $V_v$  is introduced cold when filling the system and is controlled via **filling pressure**  $p_F$  at the system pressure gauge on the water side after the system has been bled and degassed from cold.

**Filling pressure**  
 $p_F \geq p_0 + 0.3$  bar

#### 3 Heat



The system is thermally degassed once the max. flow temperature is reached. The circulating pumps must be switched off and the system bled. Water is then made up to **final pressure**  $p_e$ .

**Final pressure**  
 $p_e \leq p_{sv} - 0.5$  bar, for  $p_{sv} \leq 5$  bar  
 $p_e \leq 0.9 \times p_{sv}$ , for  $p_{sv} > 5$  bar

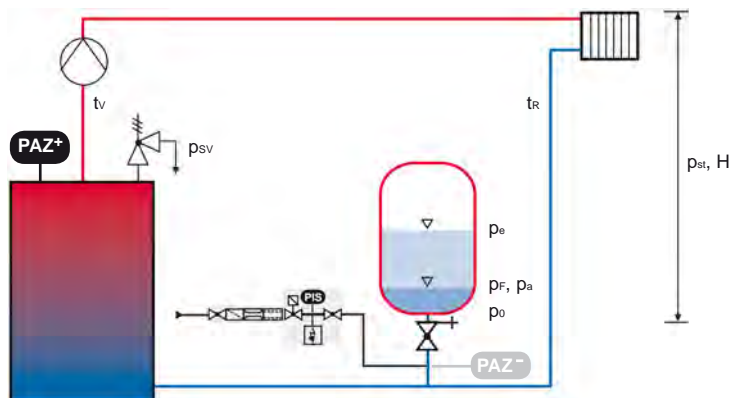


Planning, calculation, fitting... and more online, on DVD, and in an extra brochure

www.reflex.de

Excerpts from the Reflex brochure on planning, calculation, and fitting

Definitions in accordance with DIN EN 12828 and following DIN 4807 T1/T2 using a heating system as an example



**Most frequently used circuit:**

- ▶ Circulating pump in flow line
- ▶ Expansion vessel in return

= Maintenance of suction pressure

## Pressures and volumes using a DEV as an example

Pressures are given as overpressures and relate to the DEV connection or the pressure gauge on pressure-maintaining stations. The circuit is as per the sketch above.

**$p_{sv}$  Safety valve actuation pressure**

The permissible operating pressure may not be exceeded at any point within the system.

**PAZ<sup>+</sup>** = DB<sub>max</sub> pressure limiter

Closing pressure difference in accordance with TRD 721 =  $A_{sv}$

0.2 bar

DB<sub>max</sub> required in accordance with DIN EN 12828, where a boiler's individual output is > 300 kW

**$p_e$  Final pressure**

Pressure in the system at maximum temperature

**Normal pressure range**

= Pressure maintenance setpoint between  $p_a$  and  $p_e$

**$p_F$  Filling pressure**

Pressure in the system at filling temperature

Setpoint area pressure maintenance = normal pressure level

$V_e$  Expansion volume

**$p_a$  Initial pressure**

Pressure in the system at minimum temperature

**Water seal  $V_v$**  to cover system-related water losses

**$p_o$  Minimum operating pressure**

Minimum pressure to avoid  
- vacuum formation  
- evaporation  
- cavitation

= Pre-set pressure for DEV

**PAZ<sup>-</sup>** = DB<sub>min</sub> Minimum pressure limiter

$\geq 0.3$  bar

$V_v$  Water seal

$\geq 0.2$  bar +  $p_o$

DB<sub>min</sub> in accordance with DIN EN 12828; an automatic water make-up system is recommended to ensure  $p_o$  in hot water systems, along with an optional minimum pressure limiter.

**$p_{st}$  Static pressure**

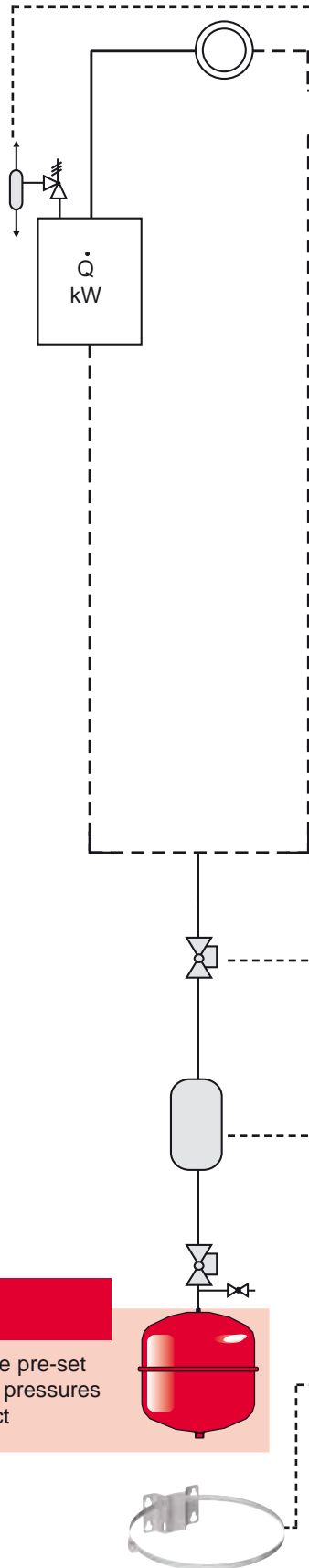
Pressure of liquid column in accordance with static height (H)



# 'reflex'

## Checklist, expansion lines

### Checklist



#### reflex 'T expansion trap'

Selection in accordance with DIN EN 12828  
→ **reflex accessories** brochure

#### reflex 'EB dirt collector'

Ideal for older systems  
→ **reflex accessories** brochure

#### reflex 'fillset'

Connection assembly providing access to potable water systems with water meter and system separator  
→ **reflex 'control'** brochure

#### reflex 'magcontrol'

Filling pressure monitoring with automatic water make-up  
→ **reflex 'control'** brochure

#### reflex 'control P'

Make-up station with pump  
→ **reflex 'control'** brochure

#### reflex 'servitec'

Degassing of circuit and make-up water  
→ **reflex 'servitec'** brochure

#### Protected shut-offs

For 'reflex'  
→ Pages 7 and 11

#### reflex 'V in-line vessel'

Expansion vessel protection, only required where return flow temperatures  $t_R$  exceed 70 °C  
→ **reflex accessories** brochure

#### 'reflex'

Ensure the pre-set and filling pressures are correct

#### reflex 'wall mount'

for 'reflex' 8 – 25 liters  
→ page 7

This item is featured in this brochure.  
 This item is featured in the specified brochures.

## Order information, tender specifications

## Order information

|  | Article-No. | Quantity | Order instructions                            |
|--|-------------|----------|---|
| <b>Diaphragm expansion vessels</b>       |             |          |   |
| 'reflex N' ..... liters                  | .....       |          | Choice of red or white up to 80 liters        |
| 'reflex G' ..... liters                  | .....       |          |   |
| 'reflex S' ..... Liters                  | .....       |          | Choice of red or white up to 33 liters        |
| 'reflex F' ..... Liters                  | .....       |          |   |
| <b>Accessories</b>                       |             |          |   |
| <b>reflex 'wall mount' 8 – 25 liters</b> |             |          |   |
| Bracket with multiple connections        | 7612000     |          |   |
| Bracket with tightening strap            | 7611000     |          |   |
| <b>Protected shut-offs</b>               |             |          |   |
| <b>reflex 'SU quick coupling'</b>        |             |          |   |
| SU R ¾                                   | 7613000     |          |   |
| SU R 1                                   | 7613100     |          |   |
| <b>reflex 'AG connection assembly'</b>   |             |          |   |
| AG 1                                     | 9119204     |          |   |
| AG 1¼                                    | 9119205     |          |   |
| AG 1½                                    | 9119206     |          |   |
| <b>reflex 'digital pressure gauge'</b>   | 9119198     |          |   |
| <b>reflex 'T expansion trap'</b>         |             |          |   |
| ..... Liters                             | .....       |          |   |
| <b>reflex 'EB dirt collector'</b>        |             |          |   |
| ..... liters                             | .....       |          |   |
| <b>reflex 'V in-line vessel'</b>         |             |          |   |
| ..... Liters                             | .....       |          | For return flow temperatures > 70 °C          |
| <b>Water make-up and degassing</b>       |             |          |   |
| <b>reflex 'fillset'</b>                  |             |          |   |
| With standard water meter                | 6811105     |          |   |
| With contact water meter                 | 6811205     |          |   |
| <b>reflex 'fillcontrol'</b>              | 6811500     |          |   |
| <b>reflex 'magcontrol'</b>               | 6812100     |          |   |
| <b>reflex 'control P'</b>                | 7688500     |          |   |
| <b>reflex 'servitec 25'</b>              | 6830700     |          | System water content ..... m <sup>3</sup>     |
| <b>reflex 'servitec 35'</b>              | 6829000     |          | Proportion of glycol in water mixture ..... % |
| <b>reflex 'servitec 60'</b>              | 6829100     |          | Pressure maintenance final pressure ..... bar |
| <b>reflex 'servitec 60/gl'</b>           | 6829700     |          | Heat generator SV response pressure ..... bar |
| <b>'servitec' start-up</b>               | 7945600     |          |   |

Tender specifications... and more  
online and on DVD!

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**Reflex –**

**We want the environment to benefit from our progress**

Real progress is only achieved when man takes care of natural resources. Therefore, we favour materials and production technology which offer maximum environmental compatibility. Taking care of and assuming responsibility for the environment has been and will always be one of the principles of Reflex.



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