



Operation & maintenance

Membrane expansion vessels

Type Reflex

reflex+
experts No.

M20

Basics

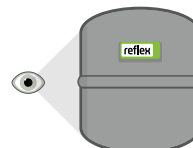
Function

Operation & Maintenance

1

Visual inspection

- Check the vessel for damage, corrosion, etc. In the event of damage, repair or replace and determine the possible cause.
- Compare the suitability of the vessel with the on-site use.

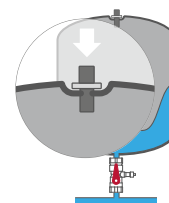


2

Membrane test

Press the gas filling valve briefly. If water is leaking:

- For vessels with a non-replaceable diaphragm, the pressure expansion vessel must be replaced.
- For vessels with a replaceable membrane, change it or contact Reflex Service for further information.



3

Gas pre-pressure setting

Disconnect the Reflex vessel from the system by closing the cap valve and empty it on the water side (observe the system pressure).

Measure the pre-pressure p_0 at the gas filling valve and, if necessary, adjust it to the required minimum operating pressure of the system.

$$p_0 [\text{bar}] = p_{st} + 0.2 \text{ bar} + p_{vap}^* + \Delta p_p^{**}$$

* Evaporation pressure p_{vap} only relevant for hot water systems $>100^\circ\text{C}$

** Is relevant for follow-up pressure maintenance (expansion vessel on the pressure side of the pump), e.g. in solar thermal systems

- If the pre-pressure is too high, gas should be vented at the gas filling valve.
- If the pre-pressure is too low, nitrogen must be refilled from a pressurised gas cylinder.
- New adjusted or corrected pre-pressure p_0 must be noted on the type plate.



4

Function test in operation

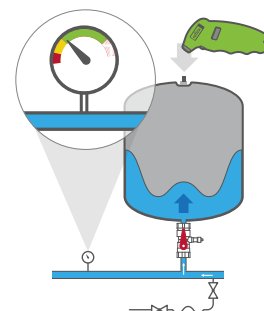
- Close the emptying on the cap valve, carefully open the cap valve.
- Observe the system pressure and do not allow it to fall below p_0 .
- Fill the system to the filling pressure p_{fill} corresponding to the system temperature.

$$p_{fill} [\text{bar}] \geq p_0 + 0.3 \text{ bar (at filling temperature } 10^\circ\text{C}^*)$$

Attention: When filling from drinking water networks, it is essential to observe the regulations according to EN1717 and regional regulations and requirements e.g. DIN 1988-100/200 and VDI 2035 for Germany.

* Calculation p_{fill} temperature-dependent possible in Reflex Solutions Pro.

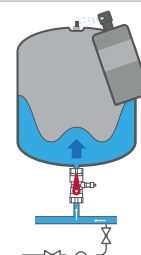
- Gas pressure check during operation:
Gas pressure must now be equal to system pressure (vessel in function)



5

Leak test of gas filling valve

Remove optional filling and measuring aids from the gas filling valve and use leak detection spray to check whether the gas filling valve closes tightly again after use. Finally, screw the valve cap, which also seals, back onto the gas filling valve.



The Reflex
membrane
expansion vessel
is now ready for
operation again.

Films on the function of this and other products can be found at:



www.reflex-winkelmann.com/en/services/documents-and-videos



**reflex**

Thinking solutions.

Operation & maintenance

Membrane expansion vessels

Type Refix

reflex+
experts No.

M21

Basics

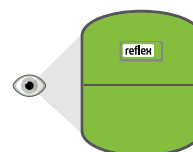
Function

Operation & Maintenance

1

Visual inspection

- Check the vessel for damage, corrosion, etc. In the event of damage, repair or replace and determine the possible cause.
- Compare the suitability of the vessel with the on-site use.

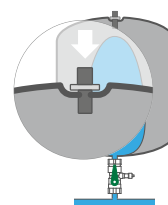


2

Membrane test

Press the gas filling valve briefly. If water is leaking:

- For vessels with a non-replaceable diaphragm, the pressure expansion vessel must be replaced.
- For vessels with a replaceable membrane, change it or contact Reflex Service for further information.



3

Gas pre-pressure setting

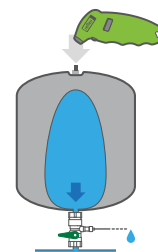
Disconnect the Reflex vessel from the system by closing the cap valve (Flowjet) and empty it on the water side.

Measure the pre-pressure p_0 at the gas filling valve and, if necessary, adjust it to the required minimum operating pressure of the system.

$$p_0 [\text{bar}] = p_{\text{ini}} - 0.2 \text{ bar}^*$$

- If the pre-pressure is too high, gas should be vented at the gas filling valve.
- If the pre-pressure is too low, nitrogen must be refilled from a pressurised gas cylinder.
- New adjusted or corrected pre-pressure p_0 must be noted on the type plate.

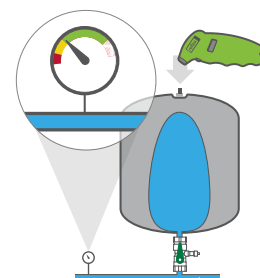
* for large distances (pressure loss) to the pressure reducer, increase the difference to p_{ini} up to 1 bar. Take height difference into account if necessary.



4

Function test in operation

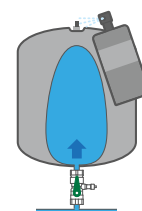
- Close the emptying on the cap valve (Flowjet), carefully open the cap valve (Flowjet).
- Gas pressure check during operation:
The gas pressure must now be equal to the water pressure (compare with the pressure gauge on the pressure reducer), then the expansion vessel is in operation.
- When the drinking warm water storage tank is heated, the pressure at the vessel may rise to approx. 0.5 bar below the safety valve response pressure.



5

Leak test of gas filling valve

Remove optional filling and measuring aids from the gas filling valve and use leak detection spray to check whether the gas filling valve closes tightly again after use. Finally, screw the valve cap, which also seals, back onto the gas filling valve.



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Further information on the topic of pressures: → Expert card B10