ZILMET®
DEI FRATELLI BENETTOLO

Replacement of Interchangeable Membrane

Replacement of Expansion Vessel Membrane
100+ Capacity

1. Firstly, before disconnecting the vessel, bear in mind that you must isolate the vessel from the system and that there may be a need to capture water drained from the vessel. Once you are satisfied with your arrangements, disconnect the vessel.

2. If not already de-pressurised, use the shrader valve on the top dome of the vessel to release all air pressure, this may take some time. However, if there is a significant rupture in the membrane, it wont!

3. This step may release trapped water that has found it's way onto the air side of the vessel and can get very messy, so do please be prepared. Once all the pressurised air is released, unscrew the bolts on the lower flange, and set these and the flange (inner & outer) to one side.

4. On the top water outlet connection there is a plastic plate, remove it and unscrew the half inch lock nut from the protruding ½" male thread (this may free spin so you may need to grip the ½" thread somehow taking care not to damage the thread itself.

5. Retain the nut and push the protruding thread down into the body of the vessel.

6. Potentially this is another messy step, so please be prepared. Pull the membrane out of the bottom flange hole and recover the top flange from inside the membrane.

7. Take a moment to thoroughly clean the vessels interior to ensure nothing in there can damage the new membrane.

8. Drop a length of sturdy string down through the now empty ½" hole in the top dome of the vessel and make sure it goes all the way down and out though the bottom hole of the vessel body where the flange was.

9. Drop the string through the top hole of the new membrane, ensure it goes all the way through and out the bottom of the membrane.

10. Tie the string to the top flange in such a way that when you can cut it and leave no trace of string behind in the assembled vessel when everything is replaced.

11. Draw the top flange into the new membrane, taking up the slack on the string as you go and being careful not to cut the new membrane.

12. Gently push the new membrane and flange into the empty body of the vessel,

Replacement of Expansion Vessel Membrane
< 100 Litres Capacity

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2. If not already de-pressurised, use the shrader valve on the top dome of the vessel to release all air pressure (this may take some time. However, if there is a significant rupture in the membrane, it wont!

3. This step may release trapped water that has found its way onto the air side of the vessel and can get very messy, so do please be prepared. Once all the pressurised air is released, unscrew the bolts of the lower flange, and set these and the flange (Inner & Outer) to one side.

4. Reach inside the vessel and unhook the membrane from the support in the upper half of the vessel body.

5. Potentially this is another messy step, so please be prepared. Pull the membrane out of the bottom flange hole.

6. Take a moment to thoroughly clean the vessels interior to ensure that there's nothing in there which can damage the new membrane.

7. Gently push the new membrane into the empty body of the vessel, and re-attach the hoop of the membrane onto the top support inside the vessel body.

8. Carefully arrange the bottom of the membrane so it fits snugly over the flanged section of the vessel body, and re-secure the flanges using the bolts, tightening them evenly and gradually until they are fully tightened.

9. Re-pressurise the vessel and test after 24 hours interval to ensure the membrane is fully airtight.

10. Re-connect the vessel to the system.

Installation & Maintenance Guide

The UK Water Supply Industry Recommendations for Pressure testing state:-

"When testing rigid pipe systems all the outlets in the installation should be sealed and all float operated valves should be capped off or isolated. The water pressure should then be increased, by pumping, until the internal water pressure at the lowest point of the installation is 50% above the normal operating pressure. This pressure should be maintained for one hour without further pumping".

Where the expansion vessel is concerned, there may be times when this testing procedure will take the system pressure to something in excess of the maximum working pressure. At times like this there is the potential to burst the membrane. This is due to the tremendous strain that the membrane is subjected to in these conditions, which is caused ultimately by a greatly increased "acceptance factor".

The acceptance factor in this case is essentially the percentage of the overall vessel volume which is filled.

In order to successfully pressure test the system without endangering the membrane, it is necessary to increase the pre charge of the vessel temporarily to a magnitude that prevents the acceptance factor exceeding 40% while the maximum working pressure is exceeded.

The method of calculating the increased pre charge required is:-

Where,

P_i = Initial charge pressure (Absolute) - This should equal the value of the static system pressure minus 0.2 Bar.

P_f = Maximum operating pressure (Absolute) of the Safety Relief Valve, taking into account any differences in height between the vessel and the safety relief valve.

$(P_i / P_f) \times 100$ = acceptance factor

If acceptance factor exceeds 40% then increase P_i until this is not so.

P_i = final value of pre charge required before system pressure test.

For example if the normal operating pressure of a system is 9 Bar, then the expected test pressure for the system is 13.5 Bar.

Because this exceeds the maximum working pressure, the pre charge should be temporarily increased to something like 5.4 Bar or more if possible. In this way, the integrity of the vessel is still tested properly without undue risk to the membrane.

Replacement Flanges

Part Code	Description	Material
1910010000	Bottom Flange for 8 - 100 Litre 1" G Thread	St Steel AISI 304
1910010001	Bottom Flange for 8 - 100 Litre 3/4" G Thread	St Steel AISI 304
1910010002	Top & Bottom Flange for 100 Litre 1" G Thread	St Steel AISI 304
1910030002	Top & Bottom Flange for 200 - 300 Litre 1 ½" G Thread	St Steel AISI 304 Painted (Blue)
1910050002	Top & Bottom Flange for 500 - 1000 Litre 1 ½"G Thread	St Steel AISI 304 Painted (Blue)

Replacement Membranes

Part Code	Description	Material
1800002403	Rubber Membrane 12, 19, 24 Litres	EPDM
260100020	Rubber Membrane 24 Litres	Butyl
260100021	Rubber Membrane 50 Litres	Butyl
260100001	Rubber Membrane 60, 80 Litres	Butyl
260100022	Rubber Membrane 60, 80 Litres	EPDM
260100002	Rubber Membrane 100 Litres	Butyl
260100013	Rubber Membrane 100 Litres (one outlet special version)*	Butyl
260100003	Rubber Membrane 200 Litres	Butyl
260100004	Rubber Membrane 300 Litres	Butyl
260100005	Rubber Membrane 500 Litres	Butyl
260100006	Rubber Membrane 750, 1000 Litres	Butyl

*Do not attempt to fit this membrane into a 2 outlet Vessel

Notes