Introduction

While there are some differences from manufacturer to manufacturer in the construction of a spiral wound element, the basic elements are the same. The descriptions cover the construction for the majority of membranes used in the water industry. The elements used for non-water applications differ in some aspects, particularly the feed spacer design and size, and the casing and brine sealing arrangement.

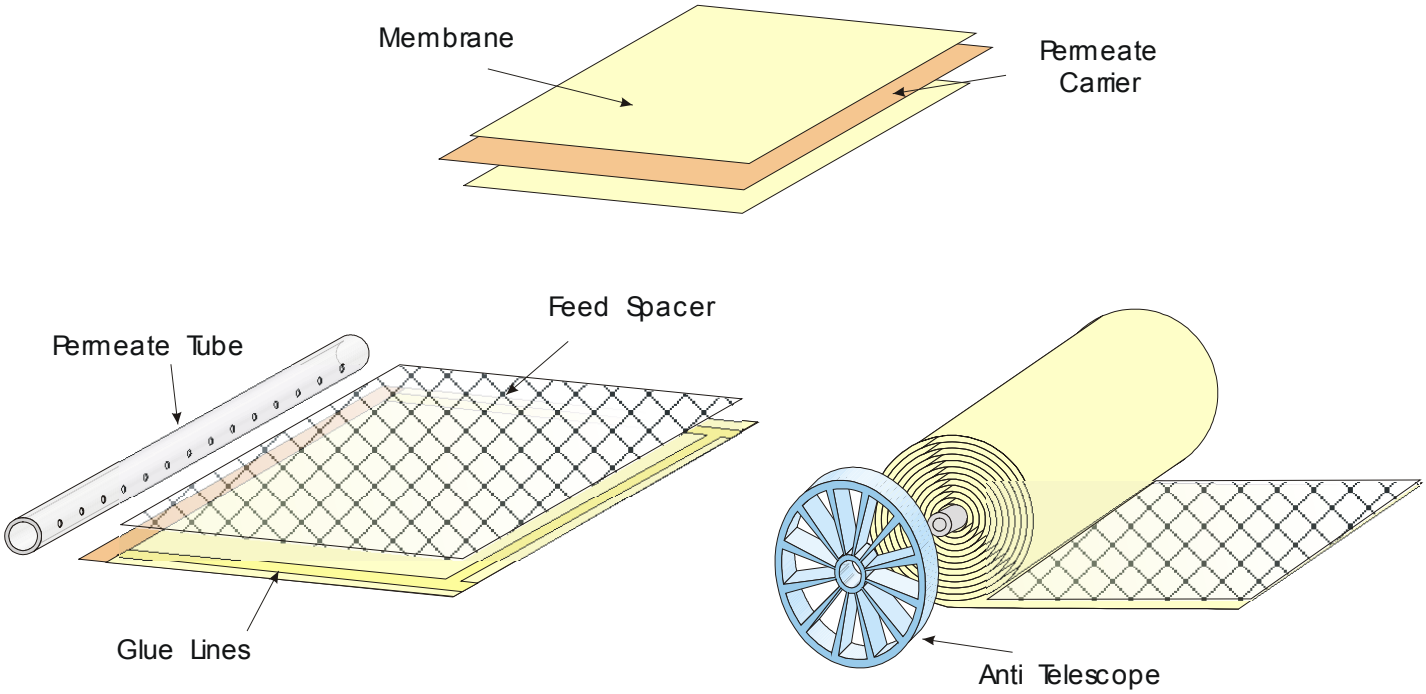


Figure 1

Membrane

The material which prevents salt passage while allowing water to permeate through. Typically made from polyamide, with a polysulphone support layer.

Permeate Carrier

Sandwiched between layers of membrane, carries the permeate around the spiral to the permeate tube.

Permeate Tube

A perforated tube which the membrane leaves are attached to, to collect the permeate. The ends of the permeate connector are profiled to hold interconnectors, which allow the permeate to travel from element to element, and finally to the take off point on the pressure vessel.

Anti Telescope Device

Fitted over the feed and concentrate end of the membrane. Designed to prevent the

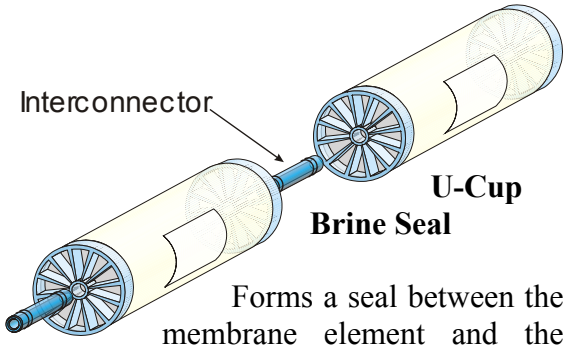
membrane elongating ("telescoping") due to pressure differential from feed to concentrate, this device also holds the brine seal. Some manufacturers construct this device to form a feed baffle to distribute the feed / concentrate flow evenly over the membrane element.

Feed Spacer

Fitted between leafs of the membrane, to form a flow channel for the feed water to pass over. Designed to generate turbulence, thus breaking down boundary layers close to the membrane, reducing scaling and fouling potential.

Casing

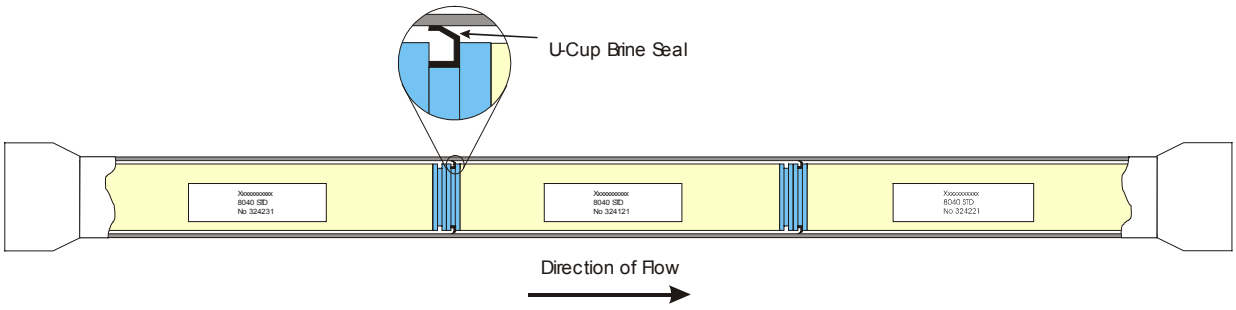
Forms a rigid construction to the membrane element, to maintain shape under pressure, and to prevent membrane damage while handling. Generally constructed from fibre reinforced plastic. The membrane manufacturer, model number, and serial number will be visible through the casing.



Forms a seal between the membrane element and the pressure vessel. The design is such that the pressure of the feed water opens the "u-cup" and forms the seal. This ensures the feed water passes through the element and not around it.

Loading of Membranes

Membranes should be loaded and removed in the same direction as the water flow. Glycerine (a water-soluble lubricant) should be used on the U-Cup seals and o-rings during the installation. When installing membranes, record the membrane serial numbers and the location of each membrane within the vessel.



Interconnector

Used to connect the permeate tube of one membrane to another, or the permeate tube of a membrane to the end plate of the pressure vessel. Generally supplied by the membrane manufacturer with the membrane. A seal is formed between the interconnectors and the permeate carriers by the use of o-rings.

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