RE8040-SH

Ultra-high rejection RO membrane element for sea water and high salinity well water

Product Specifications

Permeate Flow rate : 4,500 GPD (17.0 m^3/day)

Stabilized Salt Rejection : 99.75 %

Effective Membrane Area : 370 ft^2 (34.4 m^2)

1. The stated performance is initial data taken after 30 minutes of operation based on the following conditions; 32,000 mg/L NaCl solution at 800 psig (5.5 MPa) applied pressure, 8 % recovery, 77 °F (25 °C) and pH 6.5~7.0.
2. Minimum salt rejection is 99.6%.
3. Boron rejection is 92.0 % at pH 8.0 and 5 mg/L boron feed with the test condition as above note 1.
4. Permeate Flow rate for individual elements may vary but will be no more than 15 below the value shown.
5. Effective membrane area may vary within 5 %.
6. All elements are vacuum sealed in a polyethylene bag containing 1.0 % SBS (Sodium bisulfite) solution and packaged individually in a cardboard box.

Product Description

Membrane Type : Thin-film Composite

Membrane Material : PA (Polyamide)

Membrane Surface Charge : Negative

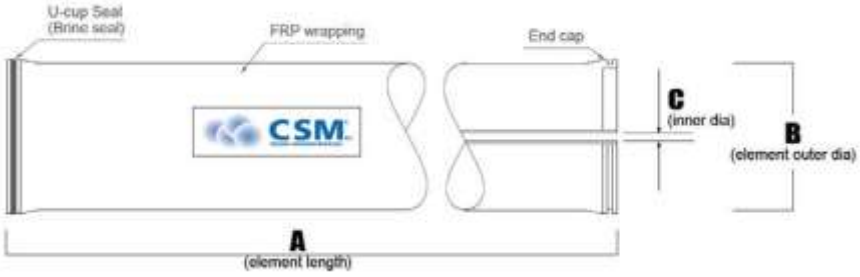
Element Configuration : Spiral-Wound, FRP wrapping

Product Dimensions

A = 40 inch (1,016 mm)

B = 8.0 inch (203 mm)

C = 1.12 inch (28 mm)



1. One interconnector (coupler) would be supplied for each membrane element.
2. CSM membrane elements fit nominal 2.5-inch (64 mm) I.D. pressure vessel.
3. Other feature may vary as design revisions take place.

Features

- CSM SH showing ultra-high salt rejection can be used in seawater desalination under more severe condition such as higher salinity than 35000 mg/L, higher feed water temperature than 25 °C and higher recovery ratio than 40 %. However, the element is more suitable for replacing old elements in existing systems due to its lower permeate flow.
- CSM SH element has a high chemical durability which prevents declining of its performance after CIP.

Conditions for Handling CSM in general

⌘ Customers must keep the element boxes dry at room temperature to prevent them from freezing and damages from heat. If the polyethylene bag is broken, a new protective solution has to be added to the RO membrane element and the element has to be repackaged air-tight to prevent from biological growth. ⌘ Keep elements moist at all times after initial wetting ⌘ Permeate water obtained from first hour of operation should be discarded in order to flush the protective solution in the elements. ⌘ CSM elements should be immersed in a protective solution during storage, shipping or system shutdowns to prevent biological growth and freeze damage. The standard storage solution contains one (1) weight percent sodium bisulfite or sodium metabisulfite (food grade). For short term storage of one week, one (1) weight percent sodium metabisulfite solution is adequate for inhibiting biological growth. ⌘ The customer is fully responsible for the effects of incompatible chemicals on elements. Their use will void the element limited warranty.

Application Data

Operating Limits

- **Max. Pressure drop / Element** 15 psi (0.1 MPa) ⌘ **Max. Pressure drop / 240" vessel** 60 psi (0.41 Mpa)
- **Max. Operating pressure** 1,200 psi (8.27 MPa)
- **Max. Feed flow rate** 66 gpm (15.0 m^3/hr)
- **Min. Concentrate flow rate** 16 gpm (3.6 m^3/hr)
- **Max. Operating temperature** 113 ^oF (45 ^oC)
- **Operating pH range** 3.0 ~ 10.0
- **CIP pH range** 2.0 ~ 11.0
- **Max. Turbidity** 1.0 NTU
- **Max. SDI (15 min)** 5.0
- **Chlorine concentration** < 0.1 mg/L

Design Guideline for Various Water Source

- **Waste water (SDI < 5)** 8 ~ 12 gfd ⌘ **Waste water pretreated by UF (SDI < 3)** 10 ~ 14 gfd
- **Seawater, open intake (SDI < 5)** 7 ~ 10 gfd
- **High salinity well water (SDI < 3)** 8 ~ 12 gfd
- **Surface water (SDI < 5)** 12 ~ 16 gfd
- **Surface water (SDI < 3)** 13 ~ 17 gfd
- **Well water (SDI < 3)** 13 ~ 17 gfd
- **RO/UF permeate (SDI < 1)** 21 ~ 30 gfd

Saturation Limits for Salts

- **$CaSO_4$** 230 % saturation ⌘ **$SrSO_4$** 800 % saturation ⌘ **$BaSO_4$** 6,000 % saturation
- **SiO_2** 100 % saturation

Above values are saturation limit at the tail end of the membrane elements for each sparingly soluble salts with proper scale inhibitor.

$CaCO_3$ Scaling potential limits as LSI or SDSI

- **Without scale inhibitor** < -0.2 ⌘ **LSI (SDSI) with SHMP** < +0.5 ⌘ **LSI (SDSI) with special inhibitor**[1] < +1.5 ⌘ **SDSI with any inhibitor** < +0.5

1. Special inhibitor means one of approved organic inhibitors. It should be approved from real plant for more than three years.