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2.0 x 12 INCH NANOFILTRATION ELEMENTS

MODEL TR60-2012

Membrane Type	Crosslinked Aromatic Polyamide, Negative Charge
Element Configuration	Spiral Wound, Tape Wrap

Performance Specification

	TR60-2012 Normal Flux	
Salt Rejection avg.[1,2]	**55%**	
Product Flow Rate[1,2]	**390 l/d**	**103 gpd**

Notes:

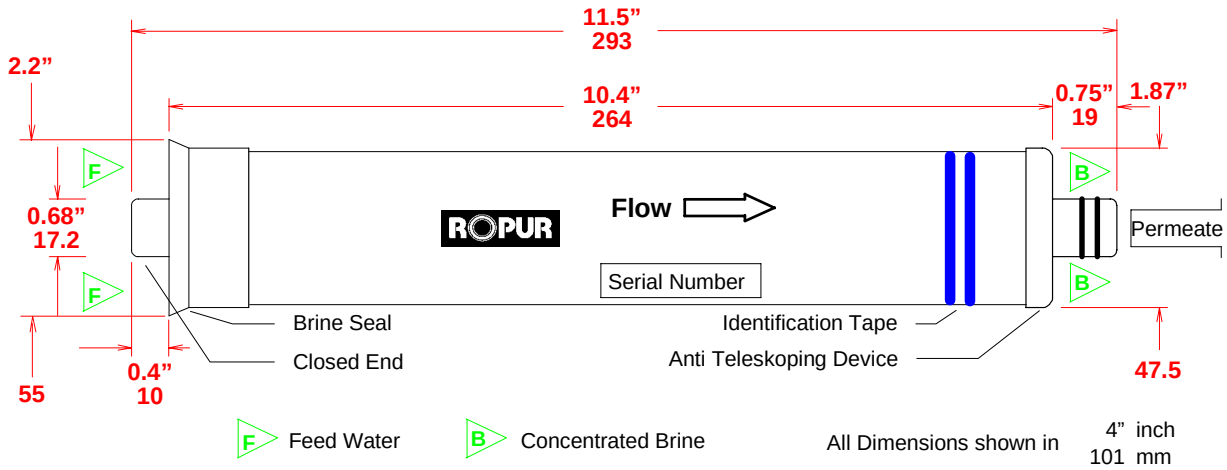
1 Test Conditions

Temperature	25	°C
Feed Solution, Concentration	500	ppm NaCl
Feed Pressure	4.5	bar
Brine : Permeate ratio	5 : 1	
Feed pH	6.5 - 7.5	

2 Average value for 100 elements after 1 hour operation
Product Flow Rate +/- 15%
Salt Rejection minimum 45 %

3 Minimum Performance data are for any single element

Dimensions:



Design Conditions

Recommended [1]

Operating Pressure [2,3]	**< 15.0 kg/cm²**	(216 psi)
Operating Temperature [4]	**< 35 °C**	(95 °F)
Feedwater Turbidity (SDI_{15}) [2,5]	**< 5**	
Feedwater Chlorine Concentration [11]	**< 1 ppm**	
pH Range, Continuous Operation [6]	**3 - 11**	
pH Range, Chemical Cleaning [7]	**2 - 11**	
Feed Flow Rate per Vessel	**< 650 l/h**	(3 gpm)
Brine Flow Rate per Vessel [9]	**> 250 l/h**	(1 gpm)
Brine/Permeate Flow Ratio [8,]	**5 : 1**	
Pressure Drop (per Element) [10]	**0.5 kg/cm²**	(7 psi)
Pressure Drop (per Vessel) [10]	**1.0 kg/cm²**	(14 psi)

Notes:

1 The recommended design range means safe operational and design conditions under not so much fouling and scaling. If the TR-series elements are operated outside of the recommended design range, the effective membrane life may be reduced.

2 High flux operation (operation under high permeate flow rate per single element) on feedwater turbidity greater than 3 or 4 SDI_{15} generally results in frequent cleaning requirements. Operating pressure should be selected to maintain the flux rate, or permeate flow rate per single element.

3 Maximum 20 kg/cm² (288 psi)

4 Maximum 35 °C (95 °F)

5 SDI_{15} = Silt Density Index measured according to ASTM D4189

6 Both feed and brine water must meet this range.

7 Cleaning and sterilization must meet the recommendations in the Technical Bulletin.

8 Flow ratio of brine to permeate for each single element

9 This figure may be reduced when there is low possibility of fouling and scaling

10 Element(s) must be cleaned when pressure drop increases to 1.5 times of the initial value.

11 < 1'000 ppm·h at < 0.1 ppm Cl_2 in absence of heavy metals in the water. Heavy metals may act as catalyst and increase the oxidizing potential of chlorine.