

# 411-HF(PA)

## Brackish Water Desalination FRP Membrane Element Reverse Osmosis, High Rejection

### ELEMENT SPECIFICATIONS

Model	Flow GPD	Flow (m3/d)	Active Area		Rejection		Part Number
			ft2	m2	Average	Minimum	
411-HF(PA)	2,400	9.1	90	8.4	99.5%	99.0%	1153192

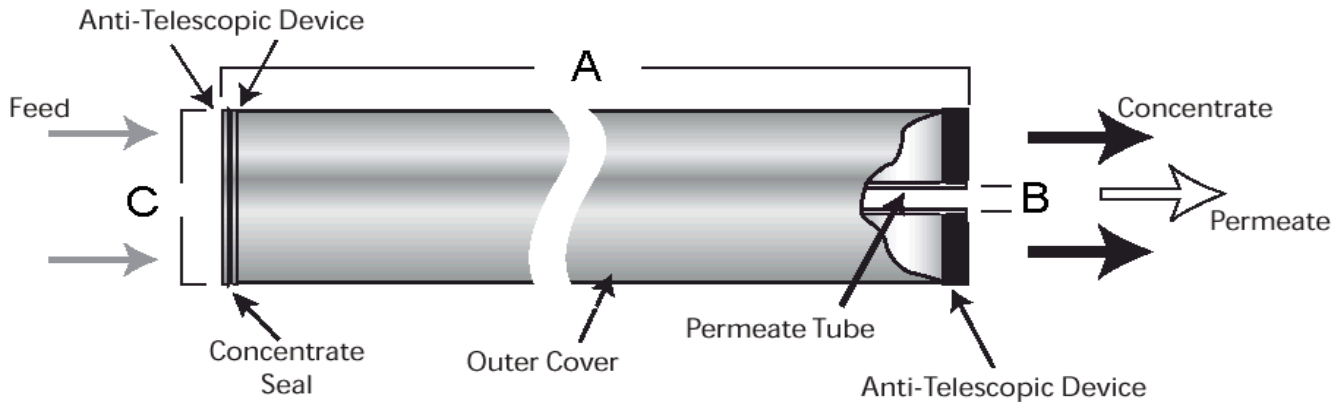
Specifications are based on a 2000 mg/L NaCl solution at 225 psig operating pressure (1551kPa), 77deg.F.(25deg.C), 10% recovery, pH 7.5. Individual flux may vary +25%/ -20%. Average salt rejection after a minimum of 24 hours in continuous operation.

### OPERATING AND DESIGN PARAMETERS

**Membrane:** Thin-Film Membrane (TFM®)  
**Typical Operating Pressure:** 200psig (1396.8 kPa)  
**Maximum Pressure:** 600psig (4190 kPa)  
**Maximum Pressure Drop:** 10 psig (69 kPa) per element  
 50 psig (345 kPa) per vessel  
**Chlorine Tolerance:** 1,000 ppm-hrs, Dechlorination recommended  
**Typical Operating Flux:** 10 - 20 GFD (15-35 L.H-1.M-2)

**Optimum rejection pH:** 7.0 - 7.5  
**Operating pH range:** 4.0 - 11.0  
**Cleaning pH range:** 2.0 - 11.5  
**Maximum Temperature:** 122°F (50°C)  
**Feed NTU:** <1  
**Feed SDI:** <3

### ELEMENT DIMENSIONS AND WEIGHT



Model	A inches (mm)	B inches (mm)	C* inches (mm)	Weight lbs (kg)
411-HF(PA)	40.125 (1019)	0.775 (20)	3.94 (100)	11 (5)

\* The element diameter (dimension C) is designed for optimum performance in Osmonics pressure vessels. Other pressure vessel dimension and tolerance may result in excessive bypass and

**Notes:**

The Langelier Saturation Index (LSI) of the concentrate must be negative to minimize the possibility of calcium scale formation on the membrane surface.

At start-up the first two hours of permeate should be discarded because of element preservative.

**Storage conditions** should be less than: <100F, dry, in original carton and not in direct sunlight.



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