

**Reverse Osmosis**

**Heat Sanitizable RO Elements**

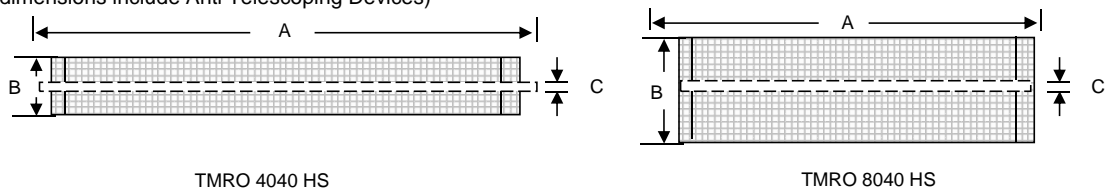
Model	Application	Description	Feed Spacer Thickness in. (mm)	Nominal Membrane Area ft <sup>2</sup> (m <sup>2</sup> )	Dimensions, in. (mm)			Max Pressure Drop per Element psi (bar)
					Length A	Element OD B	Perm Tube ID C	
TMRO 4040 HS	Pharma/Bev DI Water Food	FDA Compliant	0.031 (0.79)	85 (7.9)	40 (1016)	4.0 (101)	0.75 (19)	15 (1.0)
TMRO 8040 HS			0.031 (0.79)	390 (36)	40 (1016)	7.9 (201)	1.125 (28.6)	15 (1.0)

Product Type: Net-wrapped (no tail), Spiral Wound Element with Cross-Linked Fully Aromatic Polyamide Composite Membrane

Materials Specifications:	Feed Spacers and Element Outer-Wrap:	Polypropylene
	All Permeate Tubes, (plus ATDs & ICs):	Polysulfone
	Permeate Carrier:	Proprietary
	Adhesives:	Proprietary

Operating Limits:	Maximum Operating Pressure, psi (bar):	600 (41.0)
	Maximum Sanitizing Temperature, °F (°C) at max 25 p sig:	185 (85)
	Maximum Cleaning Temperature, °F (°C):	122 (50)
	Acceptable pH Range (operating) :	2.5-10.5
	Acceptable pH Range (short-term cleaning) :	1.7-11.5
	Maximum Pressure Drop per Vessel, psi (bar):	60 (4.0)
	(Consult Toray for pressure limits when operating above ambient temperature)	
Maximum Oxidant Tolerance:		
	Free Chlorine	Not Detectable

Dimensions: (dimensions include Anti Telescoping Devices)



Performance:	4" type: 1,975 gpd (7.5 m <sup>3</sup> /d) at 99.5% rejection,	8" type: 9,000 gpd (34 m <sup>3</sup> /d) at 99.5% rejection
Test Conditions:	Feed Water Pressure, psi (bar):	150 (10.3)
	Feed Water Temperature, °F (°C):	77 (25)
	Feed Water Concentration, mg/l as NaCl:	2,000
	Recovery Rate, %:	15
	Feed Water pH:	7

**Notice:**

1. Elements are preserved in sodium meta-bisulfite. Appropriate personal protective equipment should be worn when handling.
2. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
3. All data may change without prior notice, due to technical modifications or production changes.
4. Maximum temperature for continuous operation above pH 10 is 95° F (35° C)
5. High temperature elements will experience a one time flux loss during initial stabilization. The specifications listed are estimations only.
  - Flush system to drain with clean water at low pressure and low permeate flow rate.
  - Recycle water at <45 °C and no more than 45 psi (3bar) while maintaining less than 25 psi trans-membrane pressure.
  - Increase water temperature to 185 °F (85 °C)
  - Take precautions to ensure that the trans-membrane pressure is kept below 25 psi (1.7 bar). Maximum sanitizing dP per element is 2 psi, with a maximum vessel dP of 10 psi
  - Maintain the water temperature for 80 minutes.
  - Allow system to cool to 113 °F (<45 °C)
  - Flush to drain with clean water maintaining a trans-membrane pressure of <25 psi and a maximum feed pressure of 45 psi (3 bar).