



# TRISEP® UPR

## Ultra-High Pressure

## Industrial Membrane Elements

The TRISEP® UPR series has a maximum operating pressure of 120 bar (1,740 psi) and is versatile enough to be used in a wide variety of industrial and wastewater purification applications. These elements use the highest rejection membrane for challenging applications such as leachate, minimum-liquid discharge, and high salt concentrations. TRISEP membrane is available in numerous strong and durable spiral-wound element designs that may be customized to meet customer requirements.

### MEMBRANE CHARACTERISTICS

Membrane	Membrane Type	Stabilized Solute Rejection (%)	Solute
RO	Polyamide RO	99.5%	NaCl
TS80	Polyamide NF	99.2%	MgSO <sub>4</sub>
TS40	Polypiperazine NF	99.0%	MgSO <sub>4</sub>
XN45	Polypiperazine NF	96.0%	MgSO <sub>4</sub>
UA60	Polypiperazine NF	80.0%	MgSO <sub>4</sub>

### DESIGN INFORMATION

Model	Membrane Area m <sup>2</sup> (ft <sup>2</sup> )	Feed Spacer Thickness (mil) <sup>a</sup>
TRISEP® UPR 4040-RO-31-FG	7.4 (80)	31
TRISEP® UPR 8040-RO-31-FG	34.4 (370)	31
TRISEP® UPR 8040-RO-46-FG	27.0 (290)	46
TRISEP® UPR 8040-TS80-31-FG	34.4 (370)	31
TRISEP® UPR 8040-TS40-31-FG	34.4 (370)	31
TRISEP® UPR 8040-XN45-31-FG	34.4 (370)	31
TRISEP® UPR 8040-UA60-31-FG	34.4 (370)	31

<sup>a</sup> All models on this sheet have a fiberglass outer wrap and diamond-shaped feed spacers. All models on this sheet include anti-telescoping devices (ATDs) attached to the ends of the element, one brine seal, and one interconnector.

### OPERATING PARAMETERS

Maximum Operating Pressure	120 bar (1,740 psi)
Maximum Operating Temperature	45°C (113°F)
Cleaning pH Range <sup>1</sup>	1.0 - 12.0
Chlorine Tolerance <sup>2</sup>	< 0.1 ppm
Maximum Pressure Drop at 30°C	1 bar (15 psi) per element; 4 bar (60 psi) per housing

<sup>1</sup> Refer to temperature and pH limits in our Membrane Cleaning Guides.

<sup>2</sup> Pretreatment is recommended for the removal of free chlorine and other oxidizing agents to prevent damage to membranes. Oxidizing agents, such as free chlorine, in contact with polyamide membranes may result in shortened operating life or membrane failure. Such oxidation damage is excluded from warranty. Refer to Membrane Operating Guide - Recommendations for Water Purification (TSG-O-012).

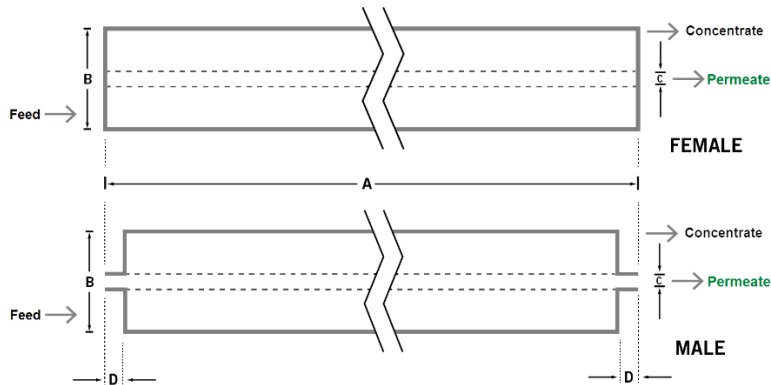
PHYSICAL DIMENSIONS

Model	Element Weight kg (lb) <sup>b</sup>	Dim. A mm (inches)	Dim. B mm (inches)	Dim. C <sup>c</sup> mm (inches)	Permeate Tube <sup>d</sup>
TRISEP® UPR 4040-RO-31-FG	4 (9)	1,016 (40.0)	99 (3.9)	19.1 (0.75)	Male
TRISEP® UPR 8040-RO-31-FG	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TRISEP® UPR 8040-RO-46-FG	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TRISEP® UPR 8040-TS80-31-FG	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TRISEP® UPR 8040-TS40-31-FG	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TRISEP® UPR 8040-XN45-31-FG	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TRISEP® UPR 8040-UA60-31-FG	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female

<sup>b</sup> Shipping weight is dependent on packaging material and quantity shipped.

<sup>c</sup> Diameters for Dimension “C” are as follows. For Female elements, “C” is the Inner Diameter. For Male elements, “C” is the Outer Diameter.

<sup>d</sup> Male elements have a protruding permeate tube, indicated as “D” in the diagram. Dimension “D” is 25.4 mm (1.0 in).



IMPORTANT INFORMATION

**Start-up:** MANN+HUMMEL Water & Fluid Solutions recommends flushing elements for 30 minutes at low pressure and discarding permeate during the flush prior to operation. For a more detailed start-up procedure, please see Element Start-Up Guide – System Start-Up (TSG-O-005).

**Cleaning:** TRISEP® membrane elements must be cleaned periodically to ensure proper operation and to prevent membrane damage. Please see our Membrane Cleaning Guides.

**Storage:** TRISEP membrane elements must be stored appropriately to ensure proper operation and to prevent membrane damage. Please see Element Storage Guides (TSG-O-009 & TSG-O-010).

CUSTOMIZABLE SPECIALTY ELEMENTS

MANN+HUMMEL Water & Fluid Solutions offers a full range of membranes and element designs for challenging water and process applications. Technologies include low-fouling RO, submerged UF, continuous high temperature, ultra-high pressure, unique sanitary designs and more. Contact us to customize a product that satisfies your specific requirements.

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