TurboClean® Test Elements

TRISEP

TurboClean® elements feature a patented sanitary hard-shell design that delivers better system performance due to about 60% less bypass flow than other sanitary elements. Lower bypass flow results in energy savings and/or higher flux rates as more of the feed flows across the membrane surface instead of around the outside of the element. Higher cross-flow velocity also results in the most effective membrane cleaning. TurboClean elements are stronger than net-wrapped sanitary elements and are able to withstand higher pressure drops. And with the tightest OD tolerance and optimal circularity, TurboClean elements are the easiest elements to load and unload.

- Strongest Sanitary Element
- Longer Operating Life
- Better Performance
- Most Effective Cleaning
- Easiest Installation

MEMBRANE CHARACTERISTICS

Membrane	Solute Rejection or Pore Size	Solute	Feed Spacer Thickness (mil)	Membrane Type
TurboClean® 1812-X20-31	99.5%	NaCl	31	Thin-Film Composite (TFC)
TurboClean® 1812-ACM2-31	99.5%	NaCl	31	Thin-Film Composite (TFC)
TurboClean® 1812-TS80-31	99.2%	$MgSO_4$	31	Thin-Film Composite (TFC)
TurboClean® 1812-TS40-31	99.0%	$MgSO_4$	31	Thin-Film Composite (TFC)
TurboClean® 1812-XN45-31	94.0 – 98.0%	$MgSO_4$	31	Thin-Film Composite (TFC)
TurboClean® 1812-XN45-46	94.0 – 98.0%	$MgSO_4$	46	Thin-Film Composite (TFC)
TurboClean® 1812-UA60-31	70.0 – 90.0%	$MgSO_4$	31	Thin-Film Composite (TFC)
TurboClean® 1812-NP030-31	80.0 – 95.0%	Na_2SO_4	31	Polyethersulfone (PES)
TurboClean® 1812-NP010-31	35.0 – 75.0%	Na_2SO_4	31	Polyethersulfone (PES)
TurboClean® 1812-UF5-31	5,000 Da.	-	31	Polyethersulfone (PES)
TurboClean® 1812-UF10-31	10,000 Da.	-	31	Polyethersulfone (PES)
TurboClean® 1812-UH004-31	4,000 Da.	-	31	Hydrophilic Polyethersulfone (PESH)
TurboClean® 1812-UP005-31	5,000 Da.	-	31	Polyethersulfone (PES)
TurboClean® 1812-UP010-31	10,000 Da.	-	31	Polyethersulfone (PES)
TurboClean® 1812-UP020-31	20,000 Da.	-	31	Polyethersulfone (PES)
TurboClean® 1812-UH030-31	30,000 Da.	-	31	Hydrophilic Polyethersulfone (PESH)
TurboClean® 1812-UH050-31	50,000 Da.	-	31	Hydrophilic Polyethersulfone (PESH)
TurboClean® 1812-UE50-31	100,000 Da.	-	31	Polyethersulfone (PES)
TurboClean® 1812-UP150-31	150,000 Da.	-	31	Polyethersulfone (PES)
TurboClean® 1812-UV150-31	150,000 Da.	-	31	Polyvinylidene fluoride (PVDF)
TurboClean® 1812-UC500-31	500,000 Da.	-	31	Regenerated Cellulose (RC)
TurboClean® 1812-UB70-31	0.03 micron	-	31	Polyvinylidene fluoride (PVDF)
TurboClean® 1812-UB50-31	0.03 micron	-	31	Polyethersulfone (PES)
TurboClean® 1812-MP005-31	0.05 micron	-	31	Polyethersulfone (PES)
TurboClean® 1812-MF01-31	0.1 micron	-	31	Polyethersulfone (PES)
TurboClean® 1812-MV020-31	0.2 micron	-	31	Polyvinylidene fluoride (PVDF)

MANN+HUMMEL

DESIGN INFORMATION & OPERATING PARAMETERS

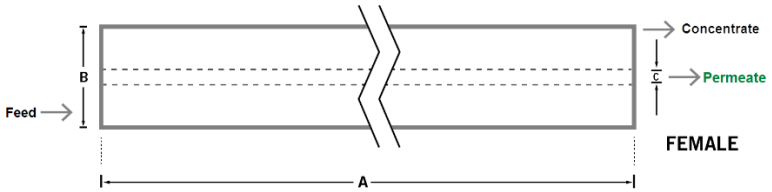
Configuration	Spiral Wound Sanitary Element
Active Membrane Area	31 mil spacer models: 0.23 m^2 (2.5 ft^2) 46 mil spacer models: 0.20 m^2 (2.1 ft^2)
Maximum Applied Pressure	UF/MF models: 10 bar (145 psi) All other models: 41 bar (600 psi)
Maximum Operating Temperature	CA models: 32°C (90°F) All other models: 50°C (122°F)
Nominal Operating pH (CA models)	5.5
Cleaning pH Range[1]	CA models: 2.0 – 7.5; RC models: 1.5 – 11.0; All other models: 1.0 – 12.0
Chlorine Tolerance[2]	Varies by membrane type; < 0.1 ppm for TFC models
Maximum Pressure Drop	1.4 bar (20 psi) per element

1 Refer to temperature and pH limits in our Membrane Cleaning Guides.
2 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 thin-film composite 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

Element Weight kg (lb)[a]	Dim. A mm (inches)	Dim. B mm (inches)	Dim. C mm (inches)	Permeate Tube[b]
1 (2)	305 (12.0)	46.4 (1.825)	15.9 (0.625)	Female

a Shipping weight is dependent on packaging material and quantity shipped. All models on this sheet have TurboClean® sanitary outer wrap and diamond shaped feed spacers.
b Dimension "C" is the Inner Diameter.



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

Storage: TurboClean 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.

Contact

Europe
Germany: +49 611 962 6001
Italy: +39 0721 1796201
info@microdyn-nadir.com

Americas
USA: +1 805 964 8003
sales.mnus@microdyn-nadir.com

Asia
Singapore: +65 6457 7533
China: +86 10 8413 9860
waterchina@mann-hummel.com