



# TurboClean® High Temp NF Elements

MANN+HUMMEL Water & Fluid Solutions offers TurboClean® High Temperature elements for all of our membranes capable of continuous operation at temperature up to 80°C. These elements feature a patented sanitary hard-shell design that delivers better system performance due to about 60% less bypass flow than other sanitary elements. 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	Membrane Type	Stabilized MgSO <sub>4</sub> Rejection (%)	Minimum MgSO <sub>4</sub> Rejection (%)
TS80	Polyamide	99.2%	98.5%
TS40	Polypiperazine	99.0%	98.5%
XN45	Polypiperazine	96.0%	94.0
UA60	Polypiperazine	80.0%	70.0%

## DESIGN INFORMATION

Model	Membrane Area m <sup>2</sup> (ft <sup>2</sup> )	Feed Spacer Thickness (mil) <sup>a</sup>
TurboClean® HT 3838-TS80-47P	5.2 (54)	47
TurboClean® HT 8038-TS80-47P	26.5 (285)	47
TurboClean® HT 8040-TS80-47P	26.5 (285)	47
TurboClean® HT 3838-TS40-47P	5.2 (54)	47
TurboClean® HT 4040-TS40-47P	5.6 (60)	47
TurboClean® HT 8038-TS40-47P	26.5 (285)	47
TurboClean® HT 8040-TS40-47P	26.5 (285)	47
TurboClean® HT 3838-XN45-47P	5.2 (54)	47
TurboClean® HT 4040-XN45-47P	5.6 (60)	47
TurboClean® HT 8040-XN45-47P	26.5 (285)	47
TurboClean® HT 3838-UA60-47P	5.2 (54)	47
TurboClean® HT 8040-UA60-47P	26.5 (285)	47

<sup>a</sup> All models on this sheet have TurboClean sanitary outer wrap and parallel feed spacers. All 4040 and 8040 models on this sheet include anti-telescoping devices (ATDs) attached to the ends of the element and one interconnector.

## OPERATING PARAMETERS

Maximum Operating Temperature	80°C (176°F)
Maximum Operating Pressure	32.2 bar (470 psi) at 60°C (140°F) 27.6 bar (400 psi) at 70°C (158°F) 24.1 bar (350 psi) at 80°C (176°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	1.4 bar (20 psi) per element; 6 bar (80 psi) per housing
Maximum Pressure Drop at 70°C	0.3 bar (5 psi) per element; 1.4 bar (20 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).

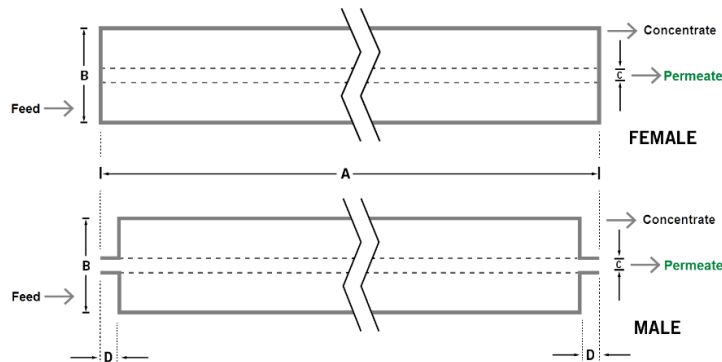
PHYSICAL DIMENSIONS

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>
TurboClean® HT 3838-TS80-47P	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® HT 8038-TS80-47P	16 (36)	965 (38.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® HT 8040-TS80-47P	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® HT 3838-TS40-47P	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® HT 4040-TS40-47P	4 (9)	1,016 (40.0)	99 (3.9)	19.1 (0.75)	Male
TurboClean® HT 8038-TS40-47P	16 (36)	965 (38.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® HT 8040-TS40-47P	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® HT 3838-XN45-47P	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® HT 4040-XN45-47P	4 (9)	1,016 (40.0)	99 (3.9)	19.1 (0.75)	Male
TurboClean® HT 8040-XN45-47P	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® HT 3838-UA60-47P	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® HT 8040-UA60-47P	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female

b Shipping weight is dependent on packaging material and quantity shipped.

c Diameters for Dimension "C" are as follows. For Female elements, "C" is the Inner Diameter. For Male elements, "C" is the Outer Diameter.

d 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:** 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).

**Regulatory:** All models on this sheet use FDA (CFR Title 21) compliant materials, comply with EU regulation (EC) No. 1935/2004 and No. 10/2011, and have Halal and Kosher certifications. All 38 inch long models conform to USDA 3A sanitary standard 45-03.

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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