

TurboClean® Food & Dairy

TS40 NF Series



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	TS40
Membrane Type	Polypiperazine
Nominal M.W.C.O. (Da)	200 – 300
Stabilized MgSO₄ Rejection (%)^a	99.0

a Typical NaCl rejection: 40%

DESIGN INFORMATION

Model	Part Number	Membrane Area m ² (ft ²)	Feed Spacer Thickness (mil) ^b
TurboClean® NF 3838-TS40-31	162050388	6.5 (70)	31
TurboClean® NF 3838-TS40-46	169080388	4.9 (53)	46
TurboClean® NF 3840-TS40-31	162050384	6.5 (70)	31
TurboClean® NF 3840-TS40-47P	192080384	4.9 (53)	47
TurboClean® NF 6338-TS40-47P	168031638	16.3 (175)	47
TurboClean® NF 8038-TS40-31	163020838	33.0 (355)	31
TurboClean® NF 8038-TS40-46	169011838	26.9 (290)	46
TurboClean® NF 8038-TS40-65	166040838	21.0 (225)	65

b All models on this sheet have TurboClean sanitary outer wrap. Models ending in "P" have parallel feed spacers; all other models have diamond shaped feed spacers.

OPERATING PARAMETERS

Maximum Operating Pressure	55 bar (800 psi)
Maximum Operating Temperature	50°C (122°F)
Cleaning pH Range¹	1.0 – 12.0
Chlorine Tolerance²	< 0.1 ppm
Maximum Pressure Drop	1.4 bar (20 psi) per element; 6 bar (80 psi) per housing
Hydrogen Peroxide Usage Limit³	20 ppm continuous; 1,000 ppm for short-term cleaning

1 Refer to temperature and pH limits in Membrane Cleaning Guide – Food & Dairy: RO & NF Elements (TSG-C-003).

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 polyamide membranes may result in shortened operating life or membrane failure. Such oxidation damage is excluded from warranty. Refer to our Membrane Operating Guide (TSG-O-012).

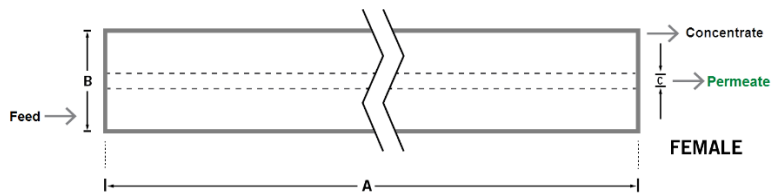
3 Hydrogen peroxide short term cleaning at 1,000 ppm performed at 25°C (77°F) max. Refer to hydrogen peroxide limits in Membrane Cleaning Guide – Hydrogen Peroxide/Peracetic Acid Mixtures (TSG-C-006).

PHYSICAL DIMENSIONS

Model	Element Weight kg (lb) ^c	Dim. A mm (inches)	Dim. B mm (inches)	Dim. C ^d mm (inches)	Permeate Tube
TurboClean® NF 3838-TS40-31	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® NF 3838-TS40-46	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® NF 3840-TS40-31	4 (9)	984 (38.75)	96 (3.8)	21.2 (0.83)	Female
TurboClean® NF 3840-TS40-47P	4 (9)	984 (38.75)	96 (3.8)	21.2 (0.83)	Female
TurboClean® NF 6338-TS40-47P	11 (24)	965 (38.0)	160 (6.3)	28.9 (1.138)	Female
TurboClean® NF 8038-TS40-31	16 (36)	965 (38.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® NF 8038-TS40-46	16 (36)	965 (38.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® NF 8038-TS40-65	16 (36)	965 (38.0)	201 (7.9)	28.6 (1.125)	Female

^c Shipping weight is dependent on packaging material and quantity shipped.

^d 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 Membrane Cleaning Guide – Food & Dairy: RO & NF Elements (TSG-C-003).
- 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 conform to USDA 3A sanitary standard 45-03, 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.

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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