Product Specification

TurboClean® High Temperature

MICRODYN-NADIR 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	Nominal Solute Rejection or M.W.C.O.	Solute
ACM2	99.5%	NaCl
X-20	99.5%	NaCl
TS80	99.2%	$MgSO_4$
TS40	99.0%	$MgSO_4$
XN45	96.0%	$MgSO_4$
UA60	80.0%	$MgSO_4$
UF5	5,000 Da.	-
UF10	10,000 Da.	-

Maximum Operating Temperature ..... 80°C (176°F)
Maximum Operating Pressure (UF models) ..... 6.9 bar (100 psi)
Maximum Operating Pressure (all other models) ..... 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 [1] ..... 1.0 – 12.0
Chlorine Tolerance (UF models) ..... 200 ppm (sanitization) at pH ≥ 10.5
Chlorine Tolerance (all other models) [2] ..... < 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

1 Refer to temperature and pH limits in *Membrane Cleaning Guide – Food & Dairy: RO & NF Elements (TSG-C-003) and Membrane Cleaning Guide – Food & Dairy: UF & MF Elements (TSG-C-004).*

2 Pretreatment is recommended to remove free chlorine and other oxidizing agents to prevent membrane damage. Oxidizing agents, such as free chlorine, in contact with polyamide membranes may shorten operating life or cause membrane failure. Such oxidation damage is excluded from warranty. Refer to *Membrane Operating Guide (TSG-O-012).*

Design Information

MICRODYN-NADIR has the versatility to customize elements to meet customers' specific needs. Please contact MICRODYN-NADIR for information on customized solutions.

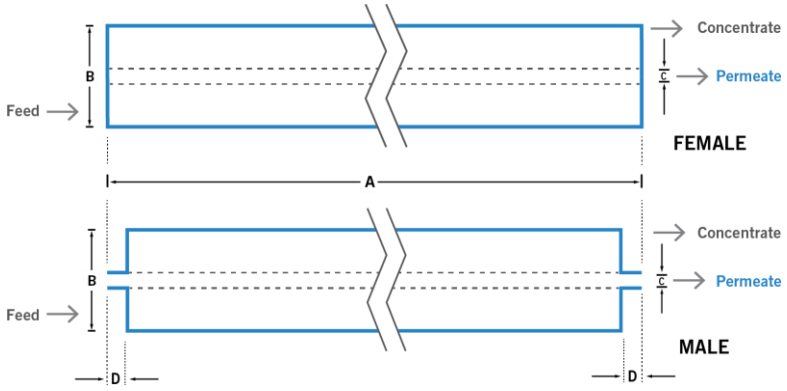
Model	Membrane Area m^2 (ft^2)[b]	Feed Spacer Thickness (mil)[a]
TurboClean® High Temp RO-3838	5.2 (54)	47
TurboClean® High Temp RO-4040	5.6 (60)	47
TurboClean® High Temp RO-8038	26.5 (285)	47
TurboClean® High Temp RO-8040	26.5 (285)	47
TurboClean® High Temp X20-8040	26.5 (285)	47
TurboClean® High Temp TS80-3838	5.2 (54)	47
TurboClean® High Temp TS80-8038	26.5 (285)	47
TurboClean® High Temp TS80-8040	26.5 (285)	47
TurboClean® High Temp TS40-3838	5.2 (54)	47
TurboClean® High Temp TS40-8038	26.5 (285)	47
TurboClean® High Temp TS40-8040	26.5 (285)	47
TurboClean® High Temp XN45-8040	26.5 (285)	47
TurboClean® High Temp UA60-3838	5.2 (54)	47
TurboClean® High Temp UA60-8040	26.5 (285)	47
TurboClean® High Temp UF5-3838-46	5.2 (54)	46
TurboClean® High Temp UF10-8040	26.5 (285)	47

a All models on this sheet have TurboClean® sanitary outer wrap. The 47 mil spacer is a parallel shaped feed spacer; the 46 mil spacer is a diamond shaped feed spacer.

Physical Dimensions

Model	Element Weight kg (lbs)[b]	Dimensions, mm (inches) A	B	C[c]	Permeate Tube[d]
TurboClean® High Temp RO-3838	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® High Temp RO-4040	4 (9)	1,016 (40.0)	99 (3.9)	19.1 (0.75)	Male
TurboClean® High Temp RO-8038	16 (36)	965 (38.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® High Temp RO-8040	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® High Temp X20-8040	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® High Temp TS80-3838	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® High Temp TS80-8038	16 (36)	965 (38.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® High Temp TS80-8040	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® High Temp TS40-3838	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® High Temp TS40-8038	16 (36)	965 (38.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® High Temp TS40-8040	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® High Temp XN45-8040	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® High Temp UA60-3838	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® High Temp UA60-8040	16 (36)	1,016 (40.0)	201 (7.9)	28.6 (1.125)	Female
TurboClean® High Temp UF5-3838-46	4 (9)	965 (38.0)	96 (3.8)	21.2 (0.83)	Female
TurboClean® High Temp UF10-8040	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: MICRODYN-NADIR 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

MICRODYN-NADIR 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 MICRODYN-NADIR to customize a product that satisfies your specific requirements.

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