UNISOL Heat Sanitizable NF Elements

Heat Sanitizable NF Spiral Wound Elements

UHS NF Series

Description

UNISOL UHS NF Series membrane elements is specially designed to maximize the benefits of hot water sanitization for industries replying on chemical free sanitization for product quality and industry compliance standard.
It is applied for food & Beverage, Biopharmaceutical, Electronics and chemical etc.

Specification

Membrane	NFDL	
Material	Polypiperazine	
Outer wrap	Net wrap	
Permeate Flow[1] [2] GPD (m^3/d)	UHS NF 8040M	6080 (23)
	UHS NF 8040C	4760 (18)
Salt Rejection(1)	> 96%	

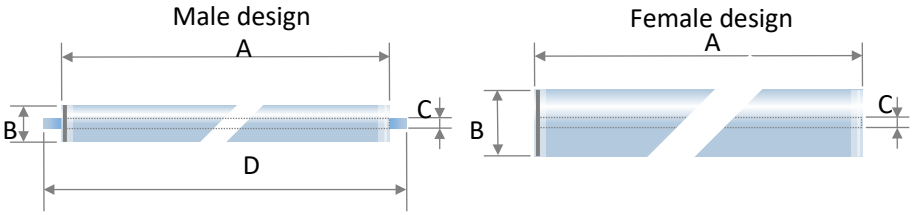
Limits

Max Operating Pressure:	82 bar (1200psi)
Max Pressure Drop:	1 bar (14.5 psi) for individual element
Max Operating Temperature:	50 °C (122 °F)
Max. Sanitization Temperature	90 °C (194 °F)
pH Range:	2 – 11
Chlorine Concentration	500 ppmh

Area

Model	UHS NF 8040M	UHS NF 8040C
Article number	91112316	/
ft2 (m2)	343 (32)	268 (25)

Dimensions



mm (inch)	A[1]	⌀B[2]	⌀C[3]	D
UHS NF 8040M	1016 (40)	200.5 (7.9)	28.9 (1.138)	1016 (40)
UHS NF 8040C	1016 (40)	200.5 (7.9)	28.9 (1.138)	1016 (40)

[1] Tolerance: ±0.5mm
[2] Tolerance: -2~0mm
[3] 8040 tolerance: -0.2~0mm

(1) Test condition: 2000ppm $MgSO_4$ solution, 110psi (7.6bar), 77 ℉ (25 ℃), pH 8;
(2) Permeate flow for individual elements may vary ± 20%
(3) For the purpose of improvement, specifications may be updated periodically
(4) Performance shown are after heat sanitization.

Handling

Operation. Stated operational conditions are valid and the rules for installation, cleaning, water and preservation have to be adhered. UNISOL approved cleaning detergent, anti-foam, polymers, other chemicals and filter-aids lubricants can be applied only. For further questions, do not hesitate to contact our service engineer.

Lubricants. During installation, use only water or glycerin to lubricate seals. The use of petroleum or vegetable-based oils or solvents may damage the element and void any warranty.

Preservation and Storage. Plan ahead to use new membranes. The element should be stored in a sealed bag, at 4 – 30 °C (39 – 86 °F). Storage solutions should be made with: 1 % w/w sodium metabisulfite.

Cleaning. UNISOL modules may be put into production after having gone through the first cleaning prescribed by UNISOL on product packing notes or given differently by UNISOL.

Heat sanitization

Water for Heat Sanitization. Suitable quality water must be used during all pre-conditioning steps. This water is chlorine-free, non-scaling/fouling water. RO permeate is preferred, but pre-filtered feed water may be used.

Procedure. As the following:

1. Flush to drain with suitable quality water (for ~30 min) at low pressure and low permeate flow rate.
2. Recycle warm water until the system warms up (45°C or less) at very low pressure (< 25 psig (1.7 bar), trans-membrane pressure with a maximum feed pressure of 45 psi (3 bar)). Maximum pressure drop through a single element is 1.5 psi (0.1 bar).
3. Introduce hot water to the system to increase temperature to 80°C (176°F). Ramp temperature up at a rate no faster than 1-2 °C /min (max 4°C /min).
4. Keep trans-membrane pressure below 25 psi (1.7 bar) when warm or hot water
1. (45°C or higher) is being fed to the membranes.
5. Maintain temperature for 60 - 90 minutes.
6. Allow system to cool to 45°C or below. Ramp temperature down at a rate no faster than 1-2 °C /min (max 4°C /min).
7. Flush to drain with suitable water quality (for ~30 min) at very low pressure (< 25psi (1.7 bar), trans-membrane pressure with maximum feed pressure of 45 psi (3 bar)).

Factors effect flow rate lost from high temperature sanitization:

1. Rate of temperature increase and decrease
2. Presence of other species could decrease or increase the temperature at the surface of the membrane.
3. Feed flow rate and heat transfer rate to the membrane surface.
4. The thickness and geometry of the feed spacer.