

AMS NanoPro™ Base Elements

Base Stable Nanofiltration Spiral Wound Elements

Description	The AMS NanoPro™ B-series membranes are developed for long-term performance with high and stable fluxes in a very base environment, featuring high pressure and temperature compatibility. AMS NanoPro™ B-series elements are used for alkali purification and components concentration in high-pH streams. Typical solutions include: <ul style="list-style-type: none"> • 20% NaOH • 10% KOH 				
Characteristics	Membrane	Cut-off Rate (Da)	Water Flux ^[1]	MgSO ₄ Rejection ^[1]	Glucose Rejection ^[2]
	B-4021	100	21 LMH	98%	98%
	B-4022	200	30 LMH	96%	96%
	B-4024	400	50 LMH	92%	90%
Limits	Max Operating Pressure		40 bar (580psi)		
	Max Pressure Drop		1 bar (14.5 psi) for individual element		
	Max. Operating Temperature		50 °C (104 °F)		
	Max. Cleaning Temperature		50 °C (104 °F)		
	Operating pH range		3-14		
	Cleaning pH range		2-14		
	Recirculation Flow		1812: 4.0 – 8.0 liter/min (1.0 – 2.1 gal/min) 2540: 7.5 – 17 liter/min (2.0 – 4.4 gal/min) 4040: 22 – 42 liter/min (5.8 – 11.1 gal/min) 8040: 90 – 167 liter/min (23 – 42.7 gal/min)		
	Pressurization/ Depressurization rate		< 0.7 bar/second (10psi/second)		
	Heating & cool down rate		< 5 °C /minute (41 °F/minute)		
Area m² (ft²)	Size	1812	2540	4040	8040
	31mil (B)	0.19 (2)	1.6 (17)	6.1 (66)	28 (300)
	46mil (C)	/	/	4.7 (51)	23 (250)

^[1] Test condition:

- a. 2000ppm MgSO₄ solution, 225psi (15.5bar), 86°F (30°C), pH7.0;
- b. Permeate flow for individual elements may vary ± 20%;

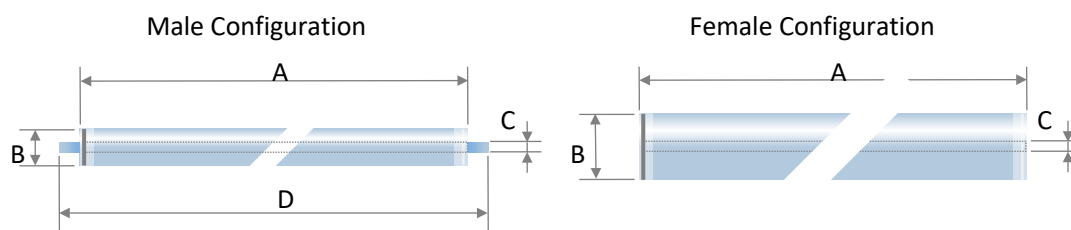
^[2] Test condition: 5% Glucose solution, 225psi (15.5bar), 86°F (30°C), pH7.0;

^[3] For the purpose of improvement, specifications may be updated periodically

^[4] Consult UNISOL Membrane Technology when intend to operate at elevated pressure, temperature, concentrations.

^[5] Stabilized salt rejection is generally achieved within 24 – 48 hours of continuous use, depending upon feed water characteristics and operating conditions.

Dimensions



Size mm(inch)	A ^[1]	∅B ^[2]	∅C ^[3]	D	Permeate tube
1812	305 (12)	46 (1.8)	16 (0.629)	/	Female
2540	965 (38)	62 (2.4)	19 (0.748)	1016 (40)	Male
4040	965 (38)	99 (3.9)	19 (0.748)	1016 (40)	Male
8040	1016 (40)	200.5 (7.9)	28.9 (1.138)	/	Female

^[1] Tolerance: ±0.5 mm

^[2] Tolerance: -2~0 mm

^[3] 1812 tolerance: ±0.1 mm. 2540/4040-M tolerance: 0~+0.1mm. 8040 tolerance: -0.2~0mm

Handling

Chemical Exposure. Do not expose the membrane to chlorine or other oxidants. Sodium metabisulfite (without catalysts such as cobalt) is the preferred chemical to eliminate free chlorine or other oxidizers in the feed.

* **NB:** Please do not use tap water while testing or cleaning the module since the residue chlorine contained in the tap water could negatively affect the membrane performance.

Recommended Cleaning Materials. Depending on the nature of the feed material, a choice can be made among the following cleaning agents:

- Sodium hydroxide at pH 10 – 12, temperature ≤40 °C (104°F);
- Hydrochloric acid at pH 1 – 2, temperature ≤40 °C (104°F);
- Nitric acid at pH 1 – 2, temperature ≤40 °C (104°F);
- Na-EDTA of 0.2 – 1.0 % w/w at pH 10.5 – 11, temperature ≤35°C (91°F);
- Anionic surfactant (e.g. sodium dodecyl sulfate) of 0.5 % at pH10.5 – 11, temperature ≤35 °C (91 °F).

Only demineralized (RO) water must be used for cleaning. **Please flush the module by permeate after processing.** Consult UNISOL Membrane Technology regarding the use of other cleaning materials.

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 not be allowed to dry: store it in a sealed bag, at 4 – 30°C (39 – 86°F). Storage solutions should be made with: 1.5 % w/w sodium metabisulfite. Please refer to “UNISOL Membrane Element Storage and Handling Instructions.”

Annex

Nomenclature: AMS–B-4021–8040–B

AMS	B-4021	8040	B
Design/Application	Membrane	Diameter & Length	Feed spacer
AMS	B-4021	1812	B: 31mil /0.78mm (diamond)
AMS Membrane series	B-4022	2540	C: 46mil /1.1mm (diamond)
	B-4024	4040	M: 34mil /0.86mm (diamond)
		8040	