FILMTEC™ TW30-4014 Membranes

FILMTEC Small Commercial Elements

Features

FILMTEC™ reverse osmosis (RO) elements offer the highest quality water for small commercial systems purifying less than one gallon per minute (0.2 m^3/d) of RO water.

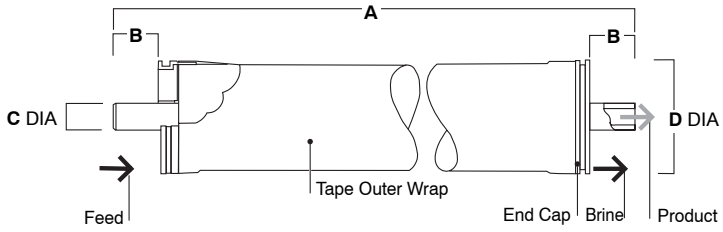
- FILMTEC membranes are available in a variety of sizes to meet a wide range of space requirements.
- FILMTEC XLE extra low energy elements operate at the lowest pressure in the industry, resulting in lower energy costs and enabling system builders to use lower cost components.
- In addition to the highest quality water and the lowest energy costs, FILMTEC membranes also deliver savings by providing the industry's longest lasting and most reliable performance.

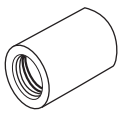
Product Specifications

Product	Part Number	Active Area ft^2 (m^2)	Applied Pressure psig (bar)	Permeate Flow Rate gpd (m^3/d)	Stabilized Salt Rejection (%)
TW30-2026	80635	7 (0.7)	225 (15.5)	220 (0.83)	99.5
TW30-2514	80639	7 (0.7)	225 (15.5)	200 (0.76)	99.5
TW30-2521	80641	13 (1.2)	225 (15.5)	325 (1.23)	99.5
XLE-2521	154530	13 (1.2)	100 (6.9)	365 (1.38)	99.0
TW30-4014	80605	20 (1.9)	225 (15.5)	525 (1.99)	99.5
TW30-4021	80608	36 (3.3)	225 (15.5)	900 (3.41)	99.5
XLE-4021	154540	36 (3.3)	100 (6.9)	1,025 (3.88)	99.0

1. Permeate flow and salt rejection based on the following test conditions: TW30 elements are tested on a 2,000 ppm NaCl feed stream, XLE performance based on a 500 ppm NaCl feed stream, pressure specified above, 77°F (25°C) and the following recovery rates; TW30-2026 – 10%, TW30-2521, XLE-2521, TW30-4021, XLE-4021 – 8%, TW30-2514, TW30-4014 – 5%.
2. Permeate flows for individual elements may vary +/-20%.
3. For the purpose of improvement, specifications may be updated periodically.

Figure 1





FilmTec sells coupler part number 89055 for use in multiple element housings. Each coupler includes two 2-210 EPR o-rings, FilmTec part number 89255. Note: couplers for 0.68 inch (17 mm) permeate tubes are not sold by FilmTec.

Product	Maximum Feed Flow Rate gpm (m^3/h)	Dimensions – Inches (mm) A	B	C	D
TW30-2026[1]	5 (1.1)	26.0 (660)	1.18 (30)	0.68 (17)	1.8 (46)
TW30-2514	6 (1.4)	14.0 (356)	1.19 (30)	0.75 (19)	2.4 (61)
TW30-2521	6 (1.4)	21.0 (533)	1.19 (30)	0.75 (19)	2.4 (61)
XLE-2521	6 (1.4)	21.0 (533)	1.19 (30)	0.75 (19)	2.4 (61)
TW30-4014	14 (3.2)	14.0 (356)	1.05 (27)	0.75 (19)	3.9 (99)
TW30-4021	14 (3.2)	21.0 (533)	1.05 (27)	0.75 (19)	3.9 (99)
XLE-4021	14 (3.2)	21.0 (533)	1.05 (27)	0.75 (19)	3.9 (99)

1. TW30-2026 has double o-rings on each end of the permeate tube. Couplers for 0.68 inch (17 mm) permeate tubes are not sold by FilmTec. 1 inch = 25.4 mm
2. Refer to FilmTec Design Guidelines for multiple-element systems.
3. TW30-2026 elements fit nominal 2.0 inch pressure vessels. TW30-2514, TW30-2521 and XLE-2521 elements fit nominal 2.5 inch I.D. pressure vessels. TW30-4014, TW30-4021, and XLE-4021 elements fit nominal 4 inch I.D. pressure vessels.

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Operating Limits

• Membrane Type	Polyamide Thin-Film Composite
• Maximum Operating Temperature	113°F (45°C)
• Maximum Operating Pressure	600 psig (41 bar)
• Maximum Pressure Drop	13 psig (0.9 bar)
• pH Range, Continuous Operation[a]	2 - 11
• pH Range, Short-Term Cleaning (30 min.)[b]	1 - 13
• Maximum Feed Silt Density Index (SDI)	5
• Free Chlorine Tolerance[c]	<0.1 ppm

[a] Maximum temperature for continuous operation above pH 10 is 95°F (35°C).

[b] Refer to Cleaning Guidelines in specification sheet 609-23010.

[c] Under certain conditions, the presence of free chlorine and other oxidizing agents will cause premature membrane failure. Since oxidation damage is not covered under warranty, FilmTec recommends removing residual free chlorine by pretreatment prior to membrane exposure. Please refer to technical bulletin 609-22010 for more information.

Important Information

Proper start-up of reverse osmosis water treatment systems is essential to prepare the membranes for operating service and to prevent membrane damage due to overfeeding or hydraulic shock. Following the proper start-up sequence also helps ensure that system operating parameters conform to design specifications so that system water quality and productivity goals can be achieved.

Before initiating system start-up procedures, membrane pretreatment, loading of the membrane elements, instrument calibration and other system checks should be completed.

Please refer to the application information literature entitled “Start-Up Sequence” (Form No. 609-02077) for more information.

Operation Guidelines

Avoid any abrupt pressure or cross-flow variations on the spiral elements during start-up, shutdown, cleaning or other sequences to prevent possible membrane damage. During start-up, a gradual change from a standstill to operating state is recommended as follows:

- Feed pressure should be increased gradually over a 30-60 second time frame.
- Cross-flow velocity at set operating point should be achieved gradually over 15-20 seconds.
- Permeate obtained from first hour of operation should be discarded.

General Information

- Keep elements moist at all times after initial wetting.
- If operating limits and guidelines given in this bulletin are not strictly followed, the limited warranty will be null and void.
- To prevent biological growth during prolonged system shutdowns, it is recommended that membrane elements be immersed in a preservative solution.
- The customer is fully responsible for the effects of incompatible chemicals and lubricants on elements.
- Maximum pressure drop across an entire pressure vessel (housing) is 30 psi (2.1 bar).
- Avoid static permeate-side backpressure at all times.

Notice: The use of this product in and of itself does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.

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