



FILMTEC Membranes

FILMTEC Fiberglassed Elements for Light Industrial Systems

FILMTEC™ fiberglassed brackish water elements consistently provide outstanding system performance. Fiberglassed elements are recommended for multiple-element housings containing three or more membrane elements as they are designed to withstand higher pressure drops. BW30 elements are designed for systems requiring the highest possible rejection. BW30LE elements are designed for customers wanting savings from lower energy requirements.

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 (%)
BW30-2540	80766	28 (2.6)	225 (15.5)	800 (3.0)	99.5
BW30-4040	80783	82 (7.6)	225 (15.5)	2200 (8.3)	99.5
BW30LE-4040	80604	82 (7.6)	150 (10.3)	2200 (8.3)	99.0

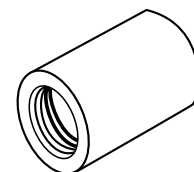
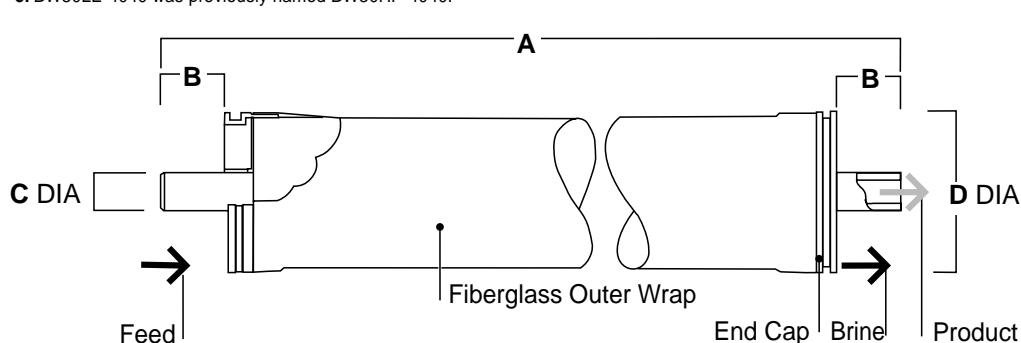
1. Permeate flow and salt rejection based on the following test conditions: 2000 ppm NaCl, 77°F (25°C) and 15% recovery.

2. Permeate flows for individual elements may vary +/-20%.

3. Minimum initial salt rejection is 98.0%.

4. Product specifications may vary slightly as improvements are implemented.

5. BW30LE-4040 was previously named BW30HP-4040.



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.

Product	Maximum Feed Flow Rate, gpm (m ³ /h)	Typical Recovery Rate (%)	Dimensions – Inches (mm)			
			A	B	C	D
BW30-2540	6 (1.4)	15	40.0 (1016)	1.19 (30.2)	0.75 (19)	2.4 (61)
BW30-4040	16 (3.6)	15	40.0 (1016)	1.05 (26.7)	0.75 (19)	3.9 (99)
BW30LE-4040	16 (3.6)	15	40.0 (1016)	1.05 (26.7)	0.75 (19)	3.9 (99)

1. Typical recovery rate shown is for a single element. Recovery rate is calculated by dividing permeate flow rate by feed flow rate.

2. Refer to FilmTec Design Guidelines for multiple-element systems.

3. BW30-2540 elements fit nominal 2.5-inch I.D. pressure vessel. BW30-4040 and BW30LE-4040 elements fit nominal 4-inch I.D. pressure vessel.

1 inch = 25.4 mm

Operating Limits

Membrane TypePolyamide Thin-Film Composite
 Maximum Operating Temperature113°F (45°C)
 Maximum Operating Pressure600 psig (41 bar)
 Maximum Pressure Drop15 psig (1.0 bar)
 pH Range, Continuous Operation^a2–11
 pH Range, Short-Term Cleaning (30 min.)^b1–12
 Maximum Feed Silt Density Index (SDI)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.

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FILMTEC Membranes

For more information about FILMTEC membranes, call the Dow Liquid Separations business:

North America 1-800-447-4369
Latin America (+55) 11-5188-9277
Europe (+32) 3-450-2240
Japan (+81) 3-5460-2100
Australia (+61) 3-9226-3545
<http://www.filmtec.com>

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 "How to

Start Up an RO Membrane System" (Form No. 609-00070) 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 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 50 psi (3.4 bar).
- Avoid permeate-side backpressure at all times.

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Form No. 609-00350-1002XQRP



FILMTEC Membranes

FILMTEC BW30-365 High Rejection Brackish Water RO Element

Features

For years, the FILMTEC™ BW30-365 has been the element of choice for system designers, OEMs and system operators requiring consistently high performance and maximum element life when treating difficult feed waters. This element offers proven performance, high rejection and outstanding robustness and durability across a wide range of feed conditions where unit price is a key driver.

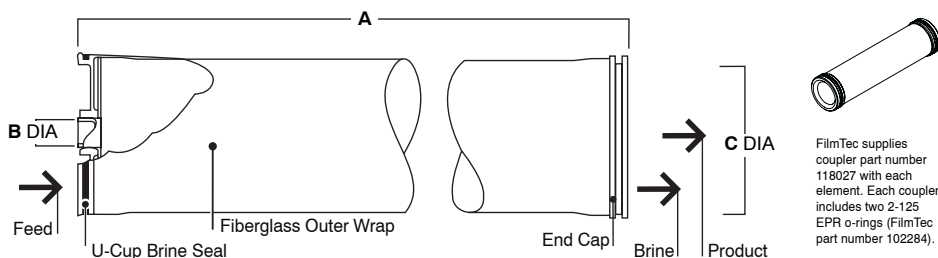
- Features the industry's thickest feed spacer (34 mil) to lessen the impact of fouling.
- May be cleaned over the widest pH range (pH 1-12) for the most effective cleaning.
- The BW30-365 is best suited for systems operating on challenging feed streams, where reliable pretreatment is not an option, or where maximum cleanability delivers value.

Product Specifications

Product	Part number	Active area ft ² (m ²)	Feed spacer thickness (mil)	Permeate flow rate gpd (m ³ /d)	Stabilized salt rejection (%)	Minimum salt rejection (%)
BW30-365	80773	365 (34)	34	9,500 (36)	99.5%	99.0%

1. Permeate flow and salt rejection based on the following standard conditions: 2,000 ppm NaCl, 225 psi (15.3 bar), 77°F (25°C), pH 8 and 15% recovery.
2. Flow rates for individual elements may vary but will be no more than 15% below the value shown.
3. Sales specifications may vary as design revisions take place.
4. Active area guaranteed +/-3%. Active area as stated by FilmTec is not comparable to nominal membrane area often stated by some manufacturers. Measurement method described in Form No. 609-00434.

Figure 1



Dimensions – inches (mm)

Product	A	B	C
BW30-365	40.0 (1,016)	1.125 ID (29)	7.9 (201)

1. Refer to FilmTec Design Guidelines for multiple-element applications and recommended element recovery rates for various feed sources.
2. Element to fit nominal 8.0-inch (203 mm) I.D. pressure vessel.

1 inch = 25.4 mm

Operating Limits

• Membrane Type	Polyamide Thin-Film Composite
• Maximum Operating Temperature ^a	113°F (45°C)
• Maximum Operating Pressure	600 psig (41 bar)
• Maximum Pressure Drop	15 psig (1.0 bar)
• pH Range, Continuous Operation ^a	2 – 11
• pH Range, Short-Term Cleaning (30 min.) ^b	1 – 12
• Maximum Feed Flow	85 gpm (19 m ³ /hr)
• 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. 609-00298) 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 50 psi (3.4 bar).
- Avoid static permeate-side backpressure at all times.

FILMTEC Membranes

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Europe: (+32) 3-450-2240
Pacific (ex. China): +800-7776-7776
China: +10-800-600-0015
<http://www.filmtec.com>

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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FILMTEC BW30-365 High Rejection Brackish Water RO Element

Features

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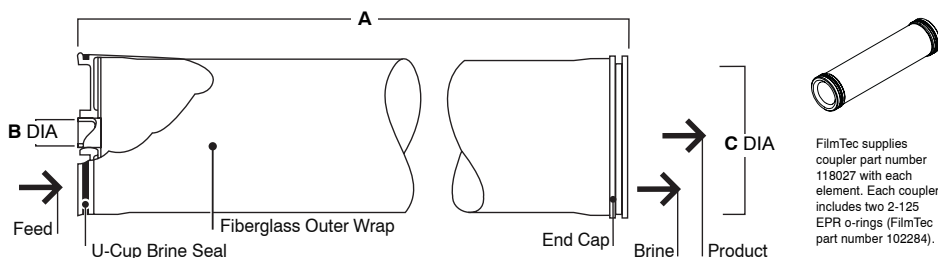
- Features the industry's thickest feed spacer (34 mil) to lessen the impact of fouling.
- May be cleaned over the widest pH range (pH 1-12) for the most effective cleaning.
- The BW30-365 is best suited for systems operating on challenging feed streams, where reliable pretreatment is not an option, or where maximum cleanability delivers value.

Product Specifications

Product	Part number	Active area ft ² (m ²)	Feed spacer thickness (mil)	Permeate flow rate gpd (m ³ /d)	Stabilized salt rejection (%)	Minimum salt rejection (%)
BW30-365	80773	365 (34)	34	9,500 (36)	99.5%	99.0%

1. Permeate flow and salt rejection based on the following standard conditions: 2,000 ppm NaCl, 225 psi (15.3 bar), 77°F (25°C), pH 8 and 15% recovery.
2. Flow rates for individual elements may vary but will be no more than 15% below the value shown.
3. Sales specifications may vary as design revisions take place.
4. Active area guaranteed +/-3%. Active area as stated by FilmTec is not comparable to nominal membrane area often stated by some manufacturers. Measurement method described in Form No. 609-00434.

Figure 1



Product	Dimensions – inches (mm)		
	A	B	C
BW30-365	40.0 (1,016)	1.125 ID (29)	7.9 (201)

1. Refer to FilmTec Design Guidelines for multiple-element applications and recommended element recovery rates for various feed sources.
2. Element to fit nominal 8.0-inch (203 mm) I.D. pressure vessel.

1 inch = 25.4 mm

Operating Limits

• Membrane Type	Polyamide Thin-Film Composite
• Maximum Operating Temperature ^a	113°F (45°C)
• Maximum Operating Pressure	600 psig (41 bar)
• Maximum Pressure Drop	15 psig (1.0 bar)
• pH Range, Continuous Operation ^a	2 – 11
• pH Range, Short-Term Cleaning (30 min.) ^b	1 – 12
• Maximum Feed Flow	85 gpm (19 m ³ /hr)
• 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. 609-00298) 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.
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- 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 50 psi (3.4 bar).
- Avoid static permeate-side backpressure at all times.

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FILMTEC Membranes

FILMTEC Seawater RO Elements for Marine Systems

FILMTEC™ seawater reverse osmosis elements produce the highest quality water for marine systems. Their high permeate flow rates purify enough water to meet the water demands of both sea-based and land-based desalimators. FILMTEC seawater elements are available in a range of sizes from 2.5-inch to 8-inch diameter to meet a wide variety of customer needs.

Product Specifications

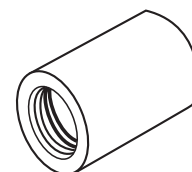
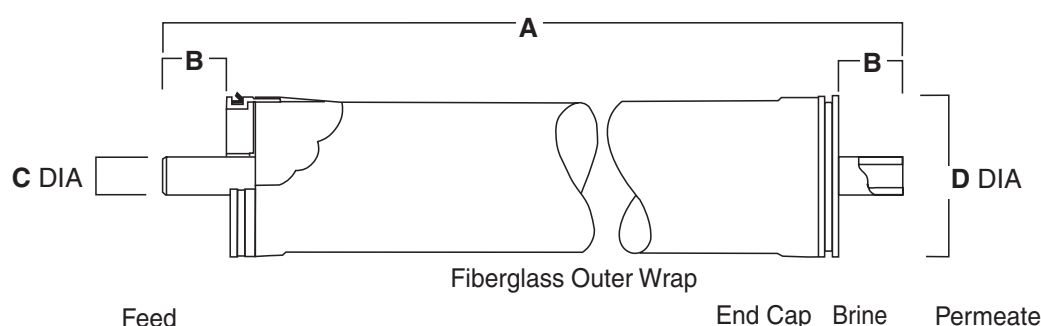
Product	Part Number	Active Area ft ² (m ²)	Applied Pressure psig (bar)	Permeate Flow Rate gpd (m ³ /d)	Stabilized Salt Rejection (%)
SW30-2514	80733	6 (0.6)	800 (55)	100 (0.38)	99.4
SW30-2521	80734	13 (1.2)	800 (55)	200 (0.76)	99.4
SW30-2540	80737	30 (2.8)	800 (55)	540 (2.0)	99.4
SW30-4021	80740	33 (3.1)	800 (55)	600 (2.3)	99.4
SW30-4040	80741	80 (7.4)	800 (55)	1500 (5.7)	99.4

1. Permeate flow and salt rejection based on the following test conditions: 32,000 ppm NaCl, pressure specified above, 77°F (25°C) and recovery as indicated below.

2. Permeate flows for individual elements may vary +/-20%.

3. Minimum initial salt rejection is 99.2%.

4. Product specifications may vary slightly as improvements are implemented.



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.

Product	Maximum Feed Flow Rate, gpm (m³/h)	Typical Recovery Rate (%)	A	Dimensions – Inches (mm)		
				B	C	D
SW30-2514	6 (1.4)	2	14.0 (356)	1.19 (30.2)	0.75 (19)	2.4 (61)
SW30-2521	6 (1.4)	4	21.0 (533)	1.19 (30.2)	0.75 (19)	2.4 (61)
SW30-2540	6 (1.4)	8	40.0 (1016)	1.19 (30.2)	0.75 (19)	2.4 (61)
SW30-4021	16 (3.6)	4	21.0 (533)	1.05 (26.7)	0.75 (19)	3.9 (99)
SW30-4040	16 (3.6)	8	40.0 (1016)	1.05 (26.7)	0.75 (19)	3.9 (99)

5. Typical recovery rate shown is for a single element. Recovery rate is calculated by dividing permeate flow rate by feed flow rate.

1 inch = 25.4 mm

6. Refer to FilmTec Design Guidelines for multiple-element systems.

7. SW30-2514, SW30-2521 and SW30-2540 elements fit nominal 2.5-inch I.D. pressure vessel. SW30-4021 and SW30-4040 elements fit nominal 4-inch I.D. pressure vessel.

Operating Limits

Membrane TypePolyamide Thin-Film Composite
 Maximum Operating Temperature113°F (45°C)
 Maximum Operating Pressure1000 psi (69 bar)
 Maximum Pressure Drop15 psig (1.0 bar)
 pH Range, Continuous Operation^a2–11
 pH Range, Short-Term Cleaning (30 min.)^b1–12
 Maximum Feed Silt Density Index (SDI)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.

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Start Up an RO Membrane System" (Form No. 609-00070) for more information.

Operation Guidelines

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