ITALIAN FAMILY COMPANY

Membrane osmosi inversa e Ultra Filtrazione

EUROTROL®
WATER TREATMENT COMPONENTS

TORAY
CSM®

Membrane CSM 2 ½”

MEMBRANE LOW PRESSURE LPM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE2514-TL	RE2514-TL	-	Conforme	
MCRE2514-TLF	RE2514-TLF	-	Conforme	
MCRE2521-BLN	RE2521-BLN	-	Conforme	
MCRE2521-BLF	RE2521-BLF	-	Conforme	
MCRE2540-BLN	RE2540-BLN	-	Conforme	
MCRE2540-BLF	RE2540-BLF	-	Conforme	
MCRE2540-BLR	RE2540-BLR	-	Conforme	

MEMBRANE BRACKISH WATER BWM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE2521-BE	RE2521-BE	-	Conforme	
MCRE2540-BE	RE2540-BE	-	Conforme	

MEMBRANE FOULING RESISTANT FRM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE2540-FEN	RE2540-FEn	-	Conforme	

MEMBRANE SEA WATER SWM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE2521-SHF	RE2521-SHF	-	Conforme	
MCRE2540-SHN	RE2540-SHN	-	Conforme	
MCRE2540-SHF	RE2540-SHF	-	Conforme	

MEMBRANE NANOFILTRATION NFM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCNE2540-90	NE2540-90	-	Conforme	

Membrane CSM 2 ½”

Cod. MCRE2514-TL

RE2514-TL

RO element for brackish water

CSM

SPECIFICATIONS:

General Features

Permeate flow rate:	250 GPD (0.94 m³/day)
Stabilized salt rejection:	97.5%
Effective membrane area:	7 ft² (0.65 m²)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **1,500 mg/L NaCl solution at 150 psig (1.0 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary but will be no more than 15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E	Part Number	
						Inter-connector	Brine Seal
RE2514-TL	14.0 inch (356 mm)	2.4 inch (61 mm)	0.75 inch (19.1 mm)	1.18 inch (30 mm)	1.18 inch (30 mm)	DD004 (*)	DC005 (*)

(*) vedi scheda 05-03-99-IT

1. Each membrane element comes with one brine seal, one interconnector (coupler) and four o-rings.

RE2514-TL

RO element for brackish water

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APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m³/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user's responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2514-TLF

RE2514-TLF

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RO element for brackish water

SPECIFICATIONS:

General Features

Permeate flow rate:	250 GPD (0.94 m³/day)
Stabilized salt rejection:	96.5%
Effective membrane area:	7 ft² (0.65 m²)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

   - **500 mg/L NaCl solution at 100 psig (0.7 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary but will be no more than 15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E	Part Number	
						Inter-connector	Brine Seal
RE2514-TLF	14.0 inch (356 mm)	2.4 inch (61 mm)	0.75 inch (19.1 mm)	1.18 inch (30 mm)	1.18 inch (30 mm)	DD004 (*)	DC005 (*)

(*) vedi scheda 05-03-99-IT

1. Each membrane element comes with one brine seal, one interconnector (coupler) and four o-rings.

RE2514-TLF

RO element for brackish water

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APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m^3/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user's responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2521-BLN

RE2521- BLN

Low pressure grade RO element for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	400 GPD (1.5 m^3/day)
Nominal salt rejection:	99.2%
Effective membrane area:	12 ft^2 (1.1 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **8% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

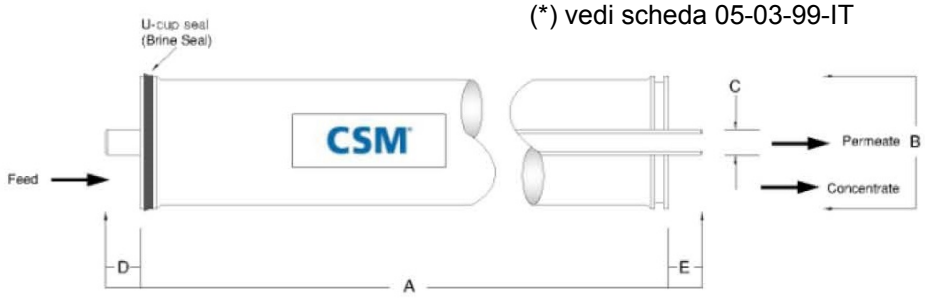
2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary +25 / -25%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE2521-BLN	21.0 inch (533.4 mm)	2.4 inch (60.8 mm)	0.75 inch (19.1 mm)	1.1 inch (28.0 mm)	DD004 (*)	DC005 (*)

(*) vedi scheda 05-03-99-IT



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2521 elements fit nominal 2.5 inch (63.5 mm) I.D. pressure vessels.

Membrane CSM 2 ½”

RE2521- BLN

Low pressure grade RO element for brackish water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m^3/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2521-BLF

RE2521- BLF

Ultra-low pressure grade RO element for low TDS water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	400 GPD (1.5 m^3/day)
Nominal salt rejection:	99.0%
Effective membrane area:	12 ft^2 (1.1 m^2)

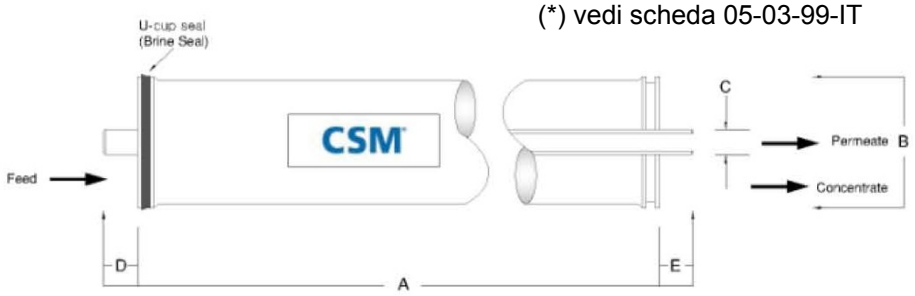
1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **500 mg/L NaCl solution at 100 psig (0.69 MPa) applied pressure**
   - **8% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary +25 / -25%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE2521-BLF	21.0 inch (533.4 mm)	2.4 inch (60.8 mm)	0.75 inch (19.1 mm)	1.1 inch (28.0 mm)	DD004 (*)	DC005 (*)

(*) vedi scheda 05-03-99-IT



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2521 elements fit nominal 2.5 inch (63.5 mm) I.D. pressure vessels.

Membrane CSM 2 ½”

RE2521- BLF

Ultra-low pressure grade RO element for low TDS water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m^3/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2540-BLN

RE2540-BLN

Low pressure grade RO element for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	930 GPD (3.5 m^3/day)
Nominal salt rejection:	99.2%
Effective membrane area:	27 ft^2 (2.5 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

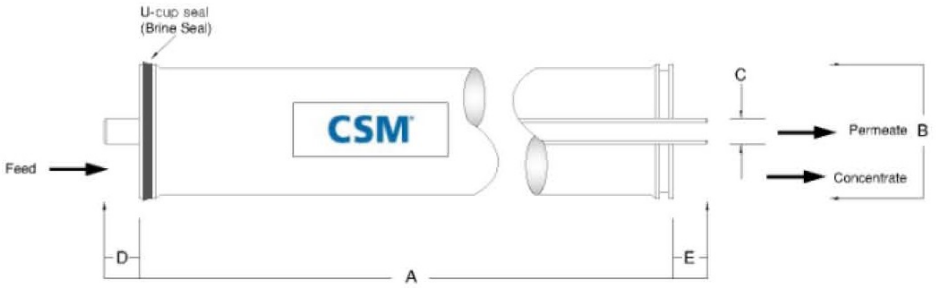
   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary +25 / -25%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE2540-BLN	40.0 inch (1,016 mm)	2.4 inch (60.8 mm)	0.75 inch (19.1 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01047



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2540 elements fit nominal 2.5 inch (63.5 mm) I.D. pressure vessels.

Membrane CSM 2 ½”

RE2540-BLN

Low pressure grade RO element for brackish water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m^3/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2540-BLF

RE2540-BLF

Ultra-low pressure grade RO element for low TDS water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	930 GPD (3.5 m³/day)
Nominal salt rejection:	99.2%
Effective membrane area:	27 ft² (2.5 m²)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

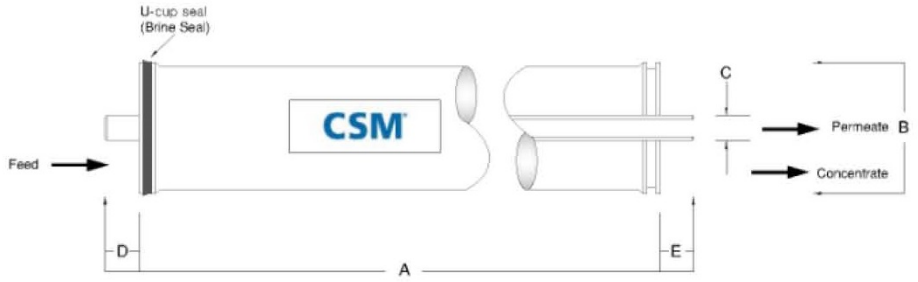
   - **500 mg/L NaCl solution at 100 psig (0.69 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary +25 / -25%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE2540-BLF	40.0 inch (1,016 mm)	2.4 inch (60.8 mm)	0.75 inch (19.1 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01047



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2540 elements fit nominal 2.5 inch (63.5 mm) I.D. pressure vessels.

RE2540-BLF

Ultra-low pressure grade RO element for low TDS water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m³/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2540-BLR

RE2540-BLR

CSM®

Low pressure grade RO element with high salt rejection for brackish water

SPECIFICATIONS:

General Features

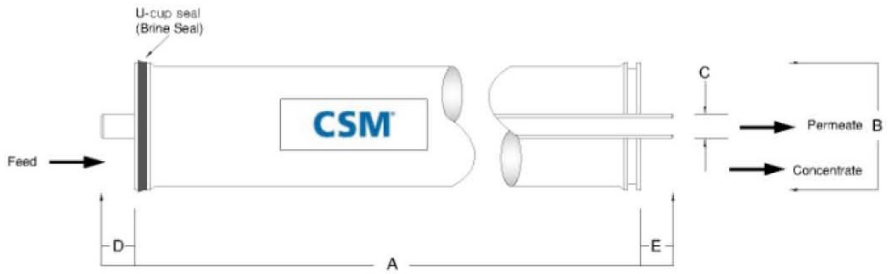
Permeate flow rate:	740 GPD (2.8 m^3/day)
Nominal salt rejection:	99.6%
Effective membrane area:	27 ft^2 (2.5 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary but will be no more than -15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE2540-BLR	40.0 inch (1,016 mm)	2.4 inch (60.8 mm)	0.75 inch (19.1 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01047



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2540 elements fit nominal 2.5 inch (63.5 mm) I.D. pressure vessels.

Membrane CSM 2 ½”

RE2540-BLR

CSM®

Low pressure grade RO element with high salt rejection for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m^3/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2521-BE

RE2521- BE

High productivity RO element with extended area for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	400 GPD (1.5 m³/day)
Nominal salt rejection:	99.5%
Effective membrane area:	12 ft² (1.1 m²)

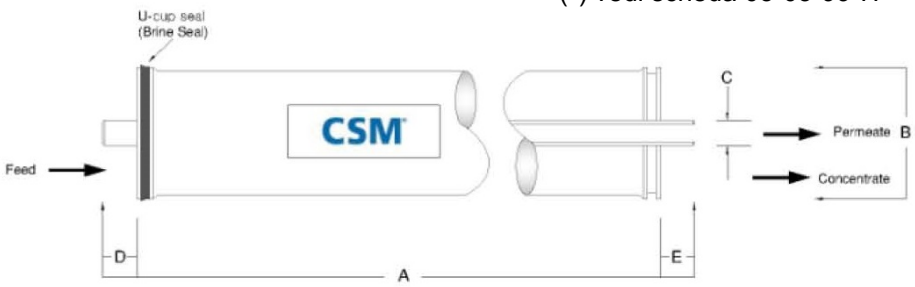
1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   5
   - **2,000 mg/L NaCl solution at 225 psig (1.55 MPa) applied pressure**
   - **8% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary +25 / -25%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE2521-BE	21.0 inch (533.4 mm)	2.4 inch (60.8 mm)	0.75 inch (19.1 mm)	1.1 inch (28.0 mm)	DD004 (*)	DC005 (*)

(*) vedi scheda 05-03-99-IT



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2521 elements fit nominal 2.5 inch (63.5 mm) I.D. pressure vessels.

RE2521- BE

CSM®

High productivity RO element with extended area for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m³/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2540-BE

RE2540-BE

High productivity RO element with extended area for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	1,000 GPD (3.8 m^3/day)
Nominal salt rejection:	99.5%
Effective membrane area:	27 ft^2 (2.5 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

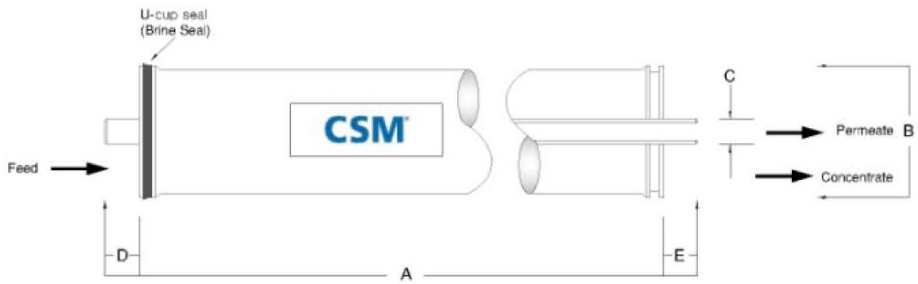
   - **2,000 mg/L NaCl solution at 225 psig (1.55 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary +25 / -25%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE2540-BE	40.0 inch (1,016 mm)	2.4 inch (60.8 mm)	0.75 inch (19.1 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01047



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2540 elements fit nominal 2.5 inch (63.5 mm) I.D. pressure vessels.

RE2540-BE

CSM®

High productivity RO element with extended area for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m³/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2540-FEN

RE2540-FEⁿ

CSM®

Enhanced fouling resistant RO element for brackish water and wastewater reuse

SPECIFICATIONS:

General Features

Permeate flow rate:	1,000 GPD (3.8 m^3/day)
Nominal salt rejection:	99.5%
Effective membrane area:	27 ft^2 (2.5 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

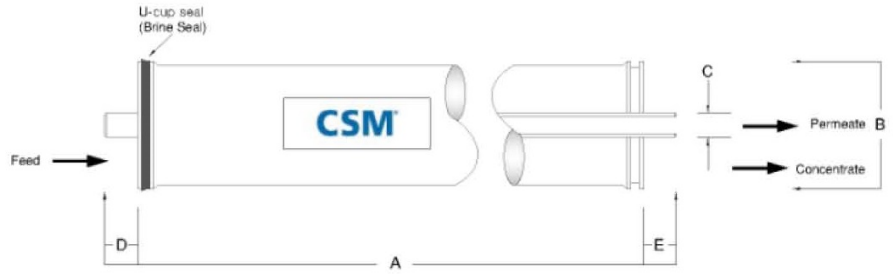
   - **2,000 mg/L NaCl solution at 225 psig (1.55 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary +25 / -25%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE2540-FEn	40.0 inch (1,016 mm)	2.4 inch (60.8 mm)	0.75 inch (19.1 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01047



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2540 elements fit nominal 2.5 inch (63.5 mm) I.D. pressure vessels.

Membrane CSM 2 ½”

RE2540-FE^{n}

CSM®

Enhanced fouling resistant RO element for brackish water and wastewater reuse

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m³/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2521-SHF

RE2521-SHF

CSM

High productivity RO element for seawater and high salinity well water

SPECIFICATIONS:

General Features

Permeate flow rate:	300 GPD (1.14 m³/day)
Nominal salt rejection:	99.7%
Effective membrane area:	12 ft² (1.1 m²)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **32,000 mg/L NaCl solution at 800 psig (5.5 MPa) applied pressure**
   - **8% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.6%.
3. Permeate flow rate for each element may vary but will be no more than 20%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E	Part Number	
						Inter-connector	Brine Seal
RE2521-SHF	21.0 inch (534 mm)	2.5 inch (64 mm)	0.75 inch (19.1 mm)	1.1 inch (28 mm)	1.1 inch (28 mm)	DD004 (*)	DC005 (*)

(*) vedi scheda 05-03-99-IT

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2521 elements fit nominal 2.5 inch (64 mm) I.D. pressure vessels.

Membrane CSM 2 ½”

RE2521-SHF

CSM®

High rejection RO element for seawater and high salinity well water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	1,200 psi (8.27 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m^3/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2540-SHN

RE2540-SHN

CSM

High Rejection RO element for seawater and high salinity well water

SPECIFICATIONS:

General Features

Permeate flow rate:	500 GPD (1.9 m³/day)
Stabilized salt rejection:	99.75%
Effective membrane area:	24 ft² (2.2 m²)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

   - **32,000 mg/L NaCl solution at 800 psig (5.5 MPa) applied pressure**
   - **8% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.6%.
3. Permeate flow rate for each element may vary but will be no more than 15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E
RE2540-SHN	40.0 inch (1,016 mm)	2.5 inch (64 mm)	0.75 inch (19.1 mm)	1.61 inch (41 mm)	1.61 inch (41 mm)

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2540 elements fit nominal 2.5 inch (64 mm) I.D. pressure vessels.

RE2540-SHN

CSM

High rejection RO element for seawater and high salinity well water

APPLICATION DATA:

Operating Limits	Max. Pressure Drop / Element	15 psi (0.1 MPa)
	Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	Max. Operating Pressure	1,200 psi (8.27 MPa)
	Max. Feed Flow Rate	6 gpm (1.36 m³/hr)
	Min. Concentrate Flow Rate	1 gpm (0.23 m³/hr)
	Max. Operating Temperature	113 °F (45 °C)
	Operating pH Range	2.0–11.0
	CIP pH Range	1.0–13.0
	Max. Turbidity	1.0 NTU
	Max. SDI (15 min)	5.0
	Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	Wastewater Conventional (SDI < 5)	8–12 gfd
	Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	Seawater, Open Intake (SDI < 5)	7–10 gfd
	Seawater, Beach Well (SDI < 3)	8–12 gfd
	Surface Water (SDI < 5)	12–16 gfd
	Surface Water (SDI < 3)	13–17 gfd
	Well water (SDI < 3)	13–17 gfd
	RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	Langlier Saturation Index (LSI)	<+1.5
	Stiff and Davis Saturation Index (SDSI)	<+0.5
	$CaSO_4$	230% saturation
	$SrSO_4$	800% saturation
	$BaSO_4$	6,000% saturation
	SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 2 ½”

Cod. MCRE2540-SHF

RE2540-SHF

CSM

High productivity RO element for seawater and high salinity well water

SPECIFICATIONS:

General Features

Permeate flow rate:	600 GPD (2.3 m³/day)
Stabilized salt rejection:	99.7%
Effective membrane area:	24 ft² (2.2 m²)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **32,000 mg/L NaCl solution at 800 psig (5.5 MPa) applied pressure**
   - **8% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.6%.
3. Permeate flow rate for each element may vary but will be no more than 15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E
RE2540-SHF	40.0 inch (1,016 mm)	2.5 inch (64 mm)	0.75 inch (19.1 mm)	1.61 inch (41 mm)	1.61 inch (41 mm)

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE2540 elements fit nominal 2.5 inch (64 mm) I.D. pressure vessels.

RE2540-SHF

CSM®

High productivity RO element for seawater and high salinity well water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	1,200 psi (8.27 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m³/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Cod. MCNE2540-90

NE2540-90

CSM

Normal grade NF element with high monovalent ion rejection

SPECIFICATIONS:

General Features

Permeate flow rate[1]:	500 GPD (1.9 m^3/day)
Monovalent ion rejection (NaCl)[1]:	85.0 – 95.0%
Divalent ion rejection ($CaCl_2$)[2]:	90.0 – 95.0%
Effective membrane area:	27 ft^2 (2.5 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following monovalent test conditions:

   - **2,000 mg/L NaCl solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. The stated product performance is based on data taken after 30 minutes of operation at the following divalent test conditions:

   - **500 mg/L $CaCl_2$ solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

3. $MgSO_4$ rejection is 97.0%. (Test conditions are equivalent with NaCl)
4. Permeate flow rate for each element may vary but will be no more than 15%.
5. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E
NE2540-90	40.0 inch (1,016 mm)	2.5 inch (64 mm)	0.75 inch (19.1 mm)	1.61 inch (41 mm)	1.61 inch (41 mm)

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All NE2540 elements fit nominal 2.5 inch (64 mm) I.D. pressure vessels.

NE2540-90

CSM®

Normal grade NF element with high monovalent ion rejection

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	6 gpm (1.36 m³/hr)
	· Min. Concentrate Flow Rate	1 gpm (0.23 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane TORAY CSM 4”

MEMBRANE LOW PRESSURE LPM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE4021-BLN	RE4021-BLN	-	Conforme	
MCRE4021-BLF	RE4021-BLF	-	Conforme	
MCRE4040-BLN	RE4040-BLN	Standard 61	Conforme	
MCRE4040-BLF	RE4040-BLF	Standard 61	Conforme	
MCRE4040-BLR	RE4040-BLR	Standard 61	Conforme	
MTMG10D	TMG10D	-	Conforme	

MEMBRANE BRACKISH WATER BWM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE4021-BE	RE4021-BE	-	Conforme	
MCRE4040-BE	RE4040-BE	-	Conforme	
MTM710D	TM710D	-	Conforme	

MEMBRANE CHLORINE RESISTANT CRM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE4040-CE (*)	RE4040-CE	-	Conforme	

MEMBRANE FOULING RESISTANT FRM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE4040-FEN	RE4040-FEn	-	Conforme	
MCRE4040-FLR	RE4040-FLR	-	Conforme	
MTML10D	TML10D	-	Conforme	

MEMBRANE SEA WATER SWM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE4021-SHN	RE4021-SHN	-	Conforme	
MTM810C	TM810C	-	Conforme	
MTM810V	TM810V	-	Conforme	

MEMBRANE NANOFILTRATION NFM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCNE4040-90	NE4040-90	-	Conforme	
MCNE4040-70 (*)	NE4040-70	-	Conforme	
MCNE4040-40 (*)	NE4040-40	-	Conforme	

(*) materiale a richiesta non disponibile in stock.

Membrane CSM 4”

Cod. MCRE4021-BLN

RE4021-BLN

Low pressure grade RO element for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	1,200 GPD (4.5 m^3/day)
Nominal salt rejection:	99.2%
Effective membrane area:	35 ft^2 (3.3 m^2)

The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

- **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
- **8% recovery**
- **77 °F (25 °C)**
- **pH 6.5–7.0**

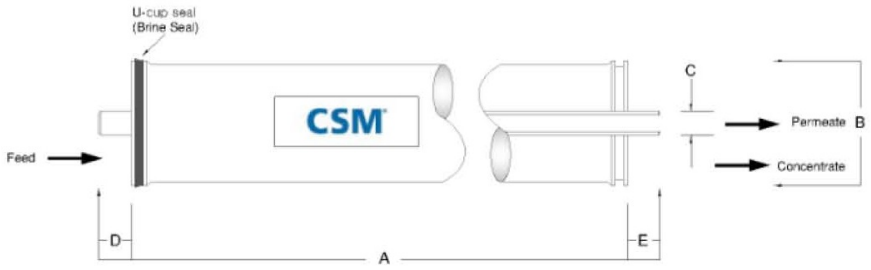
1. Minimum salt rejection is 99.0%.
2. Permeate flow rate for each element may vary +25 /-25%.
3. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE4021-BLN	21.0 inch (533.4 mm)	3.9 inch (99 mm)	0.75 inch (19.1 mm)	1.1 inch (28.0 mm)	DD004 (*)	DD003 (*)

(*) vedi scheda 05-03-99-IT



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4021 elements fit nominal 4.0 inch (101.6 mm) I.D. pressure vessels.

RE4021-BLN

CSM®

Low pressure grade RO element for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	13 gpm (2.95 m^3/hr)
	· Min. Concentrate Flow Rate	3 gpm (0.68 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 4”

Cod. MCRE4021-BLF

RE4021-BLF

Ultra-low pressure grade RO element for low TDS water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	1,200 GPD (4.5 m^3/day)
Nominal salt rejection:	99.2%
Effective membrane area:	35 ft^2 (3.3 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

   - **500 mg/L NaCl solution at 100 psig (0.69 MPa) applied pressure**
   - **8% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

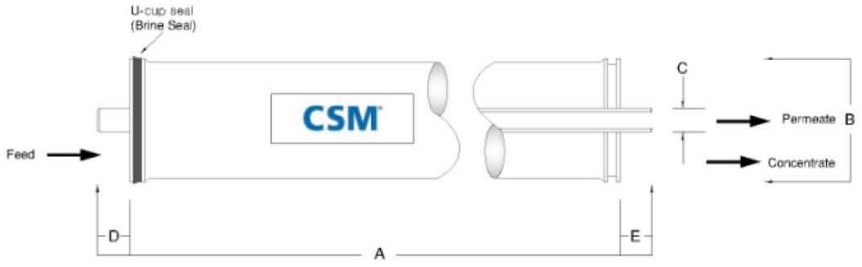
2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary +25 /-25%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE4021-BLF	21.0 inch (533.4 mm)	3.9 inch (99 mm)	0.75 inch (19.1 mm)	1.1 inch (28.0 mm)	DD004 (*)	DD003 (*)

(*) vedi scheda 05-03-99-IT



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4021 elements fit nominal 4.0 inch (101.6 mm) I.D. pressure vessels.

RE4021-BLF

Ultra-low pressure grade RO element for low TDS water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	13 gpm (2.95 m^3/hr)
	· Min. Concentrate Flow Rate	3 gpm (0.68 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 4”

Cod. MCRE4040-BLN

RE4040-BLN

Low pressure grade RO element for brackish water

CSM®

SPECIFICATIONS:

General Features

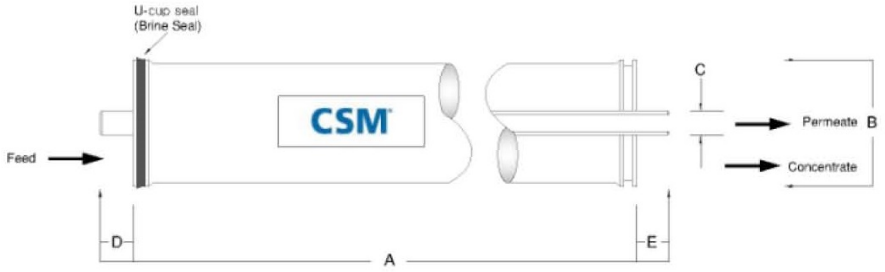
Permeate flow rate:	2,600 GPD (9.8 m^3/day)
Nominal salt rejection:	99.4%
Effective membrane area:	85 ft^2 (7.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.3%.
3. Permeate flow rate for each element may vary +25 /-15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE4040-BLN	40.0 inch (1,016 mm)	3.9 inch (99 mm)	0.75 inch (19 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01046



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4040 elements fit nominal 4.0 inch (101.6 mm) I.D. pressure vessels.

RE4040-BLN

CSM®

Low pressure grade RO element for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	18 gpm (4.09 m^3/hr)
	· Min. Concentrate Flow Rate	4 gpm (0.91 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 4”

Cod. MCRE4040-BLF

RE4040-BLF

Ultra-low pressure grade RO element for low TDS water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	2,500 GPD (9.5 m^3/day)
Nominal salt rejection:	99.2%
Effective membrane area:	85 ft^2 (7.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

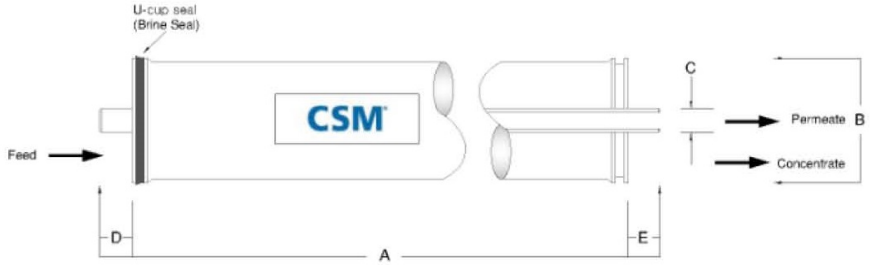
   - **500 mg/L NaCl solution at 100 psig (0.69 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.0%.
3. Permeate flow rate for each element may vary +25 /-15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE4040-BLF	40.0 inch (1,016 mm)	3.9 inch (99 mm)	0.75 inch (19 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01046



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4040 elements fit nominal 4.0 inch (101.6 mm) I.D. pressure vessels.

RE4040-BLF

Ultra-low pressure grade RO element for low TDS water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	18 gpm (4.09 m^3/hr)
	· Min. Concentrate Flow Rate	4 gpm (0.91 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 4”

Cod. MCRE4040-BLR

RE4040-BLR

CSM®

Low pressure grade RO element with high salt rejection for brackish water

SPECIFICATIONS:

General Features

Permeate flow rate:	2,100 GPD (7.9 m^3/day)
Nominal salt rejection:	99.6%
Effective membrane area:	85 ft^2 (7.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

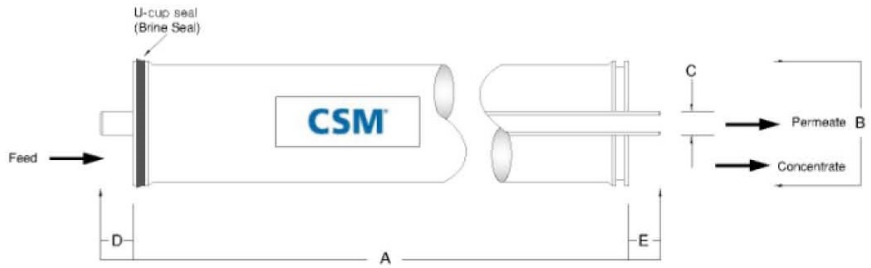
   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.5%.
3. Permeate flow rate for each element may vary but will be no more than -5%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D/E	Part Number	
					Inter-connector	Brine Seal
RE4040-BLR	40.0 inch (1,016 mm)	3.9 inch (99 mm)	0.75 inch (19 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01046



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4040 elements fit nominal 4.0 inch (101.6 mm) I.D. pressure vessels.

RE4040-BLR

CSM®

Low pressure grade RO element with extended area for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	18 gpm (4.09 m^3/hr)
	· Min. Concentrate Flow Rate	4 gpm (0.91 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane TORAY 4”

Codice MTMG10D

'TORAY'
Innovation by Chemistry

Ultra low pressure BWRO, enhanced chemical tolerance

TMG(D)

Type	Diameter Inch	Membrane Area $ft^2(m^2)$	Salt Rejection %	Product Flow Rate $gpd(m^3/d)$	Feed Spacer Thickness mil
TMG10D	4”	87(8)	99.7	2,850(10.8)	34

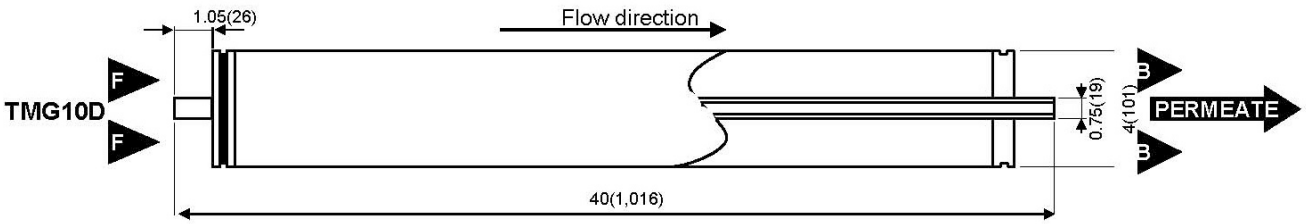
1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	150 psi(1.03MPa) 77° F(25°C) 2000 mg/l Nacl 15% 7
3. Minimum Salt Rejection		99.5%
4. Minimum Product Flow Rate		2,400gpd(9.1m^3/d)

Dimensions

All dimensions shown in Inches (millimeter).

F Feed Water

B Concentrated Brine



Membrane TORAY 4”

Operating Limits

Maximum Operating Pressure	365psi (2.5 MPa)
Maximum Feed Water Temperature	113° F (45°C)
Maximum Feed Water SDI15	5
Feed Water Chlorine Concentration *See below 3 of Operating Information	< 0.1ppm
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-13
Maximum Pressure Drop per Element	15psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50psi (0.34 MPa)

Operating Information

1. For the recommended design range, please consult the latest Toray technical bulletin, design guide lines, computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.
2. All elements are wet tested, treated with a 1% by weight percent sodium bisulfite storage solution, and then vacuum packed in oxygen barrier bags, or treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during short term storage, shipment, or system shutdown, it is recommended that Toray elements be immersed in a protective solution containing 500 - 1,000 ppm of sodium bisulfite (food grade) dissolved in permeate.
3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. Since oxidation damage is not covered under warranty, it is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.
4. Permeate from the first hour of operation shall be discarded.
5. The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
2. All data may change without prior notice, due to technical modifications or production changes.

Membrane CSM 4”

Cod. MCRE4021-BE

RE4021-BE

High productivity RO element with extended area for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	1,200 GPD (4.5 m^3/day)
Nominal salt rejection:	99.5%
Effective membrane area:	35 ft^2 (3.3 m^2)

The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

- **2,000 mg/L NaCl solution at 225 psig (1.55 MPa) applied pressure**
- **8% recovery**
- **77 °F (25 °C)**
- **pH 6.5–7.0**

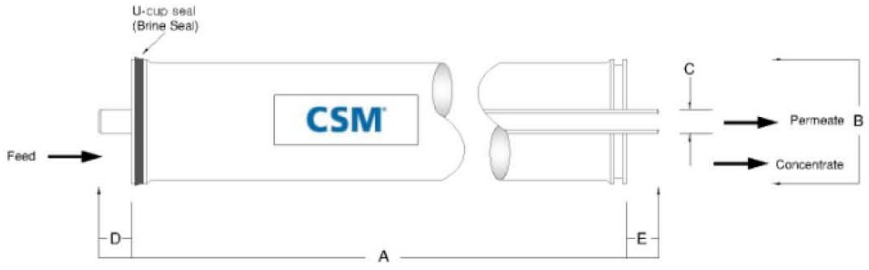
1. Minimum salt rejection is 99.0%.
2. Permeate flow rate for each element may vary +25 /-25%.
3. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE4021-BE	21.0 inch (533.4 mm)	3.9 inch (99 mm)	0.75 inch (19.1 mm)	1.1 inch (28.0 mm)	DD004 (*)	DD003 (*)

(*) vedi scheda 05-03-99-IT



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4021 elements fit nominal 4.0 inch (101.6 mm) I.D. pressure vessels.

RE4021-BE

CSM®

High productivity RO element with extended area for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	13 gpm (2.95 m^3/hr)
	· Min. Concentrate Flow Rate	3 gpm (0.68 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 4”

Cod. MCRE4040-BE

RE4040-BE

High productivity RO element with extended area for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	2,400 GPD (9.1 m^3/day)
Nominal salt rejection:	99.7%
Effective membrane area:	85 ft^2 (7.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

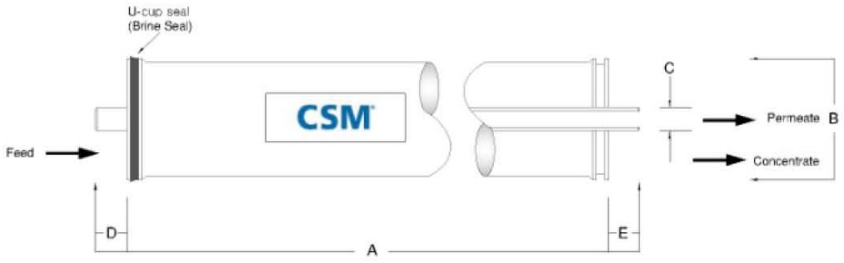
   - **2,000 mg/L NaCl solution at 225 psig (1.55 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary +25 /-15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D / E	Part Number	
					Inter-connector	Brine Seal
RE4040-BE	40.0 inch (1,016 mm)	3.9 inch (99 mm)	0.75 inch (19 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01046



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4040 elements fit nominal 4.0 inch (101.6 mm) I.D. pressure vessels.

RE4040-BE

CSM®

High productivity RO element with extended area for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	18 gpm (4.09 m^3/hr)
	· Min. Concentrate Flow Rate	4 gpm (0.91 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane TORAY 4”

Codice MTM710D

'TORAY'
Innovation by Chemistry

High rejection BWRO, enhanced chemical tolerance

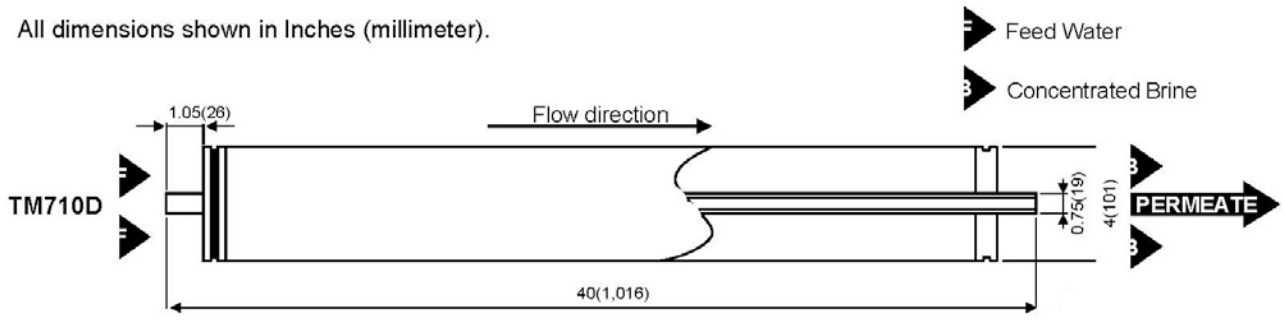
TM700D

Type	Diameter Inch	Membrane Area ft²(m²)	Salt Rejection %	Product Flow Rate gpd(m³ / d)	Feed Spacer Thickness mil
TM710D	4”	87(8)	99.8	2,600(9.8)	31

1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	225 psi(1.55MPa) 77° F(25℃) 2,000 mg/l Nacl 15% 7
3. Minimum Salt Rejection		99.65%
4. Minimum Product Flow Rate		2,150gpd(8.2m³/d)

Dimensions

All dimensions shown in Inches (millimeter).



Membrane TORAY 4”

Operating Limits

Maximum Operating Pressure		600psi (4.1 MPa)
Maximum Feed Water Temperature		113° F (45℃)
Maximum Feed Water SDI15		5
Feed Water Chlorine Concentration	*See below 3 of Operating Information	<0.1ppm
Feed Water pH Range, Continuous Operation		2-11
Feed Water pH Range, Chemical Cleaning		1-13
Maximum Pressure Drop per Element		15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel		50 psi (0.34 MPa)

Operating Information

1. For the recommended design range, please consult the latest Toray technical bulletin, design guide lines, computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.
2. All elements are wet tested, treated with a 1% by weight percent sodium bisulfite storage solution, and then vacuum packed in oxygen barrier bags, or treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during short term storage, shipment, or system shutdown, it is recommended that Toray elements be immersed in a protective solution containing 500 - 1,000 ppm of sodium bisulfite (food grade) dissolved in permeate.
3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.
4. Permeate from the first hour of operation shall be discarded.
5. The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
2. All data may change without prior notice, due to technical modifications or production changes.

Cod. MCRE4040-CE

RE4040-CE

CSM

Innovative chlorine resistant RO element for prolonged membrane lifetime

SPECIFICATIONS:

General Features

Permeate flow rate:	1,900 GPD (7.2 m^3/day)
Nominal salt rejection:	99.5%
Effective membrane area:	85ft^2 (7.9m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **2,000 mg/L NaCl solution at 225 psig (1.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.0%
3. Permeate flow rate for each element may vary but will be no more than 10%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E
RE4040-CE	40.0 inch (1,016 mm)	4.0 inch (102 mm)	0.75 inch (19.1 mm)	1.06 inch (27 mm)	1.06 inch (27 mm)

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4040 elements fit nominal 4.0 inch (102 mm) I.D. pressure vessels.

RE4040-CE

CSM

Innovative chlorine resistant RO element for prolonged membrane lifetime

APPLICATION DATA:

Operating Limits	Max. Pressure Drop / Element	15 psi (0.1 MPa)
	Max. Pressure Drop / 240" Vessel	60 psi (0.41 Mpa)
	Max. Operating Pressure	600 psi (4.14 MPa)
	Max. Feed Flow Rate	18 gpm (4.09 m^3/hr)
	Min. Concentrate Flow Rate	4 gpm (0.91 m^3/hr)
	Max. Operating Temperature	113 °F (45 °C)
	Operating pH Range	2.0–11.0
	CIP pH Range	1.0–13.0
	Max. Turbidity	1.0 NTU
	Max. SDI (15 min)	5.0
	Free Chlorine Tolerance	5,000 ppm·hr
Design Guidelines for Various Water Sources	Wastewater Conventional (SDI < 5)	8–12 gfd
	Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	Seawater, Open Intake (SDI < 5)	7–10 gfd
	Seawater, Beach Well (SDI < 3)	8–12 gfd
	Surface Water (SDI < 5)	12–16 gfd
	Surface Water (SDI < 3)	13–17 gfd
	Well water (SDI < 3)	13–17 gfd
	RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	Langlier Saturation Index (LSI)	<+1.5
	Stiff and Davis Saturation Index (SDSI)	<+0.5
	$CaSO_4$	230% saturation
	$SrSO_4$	800% saturation
	$BaSO_4$	6,000% saturation
	SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user's responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 4”

Cod. MCRE4040-FEN

RE4040-FEn

CSM®

Enhanced fouling resistant RO element for brackish water and wastewater reuse

SPECIFICATIONS:

General Features

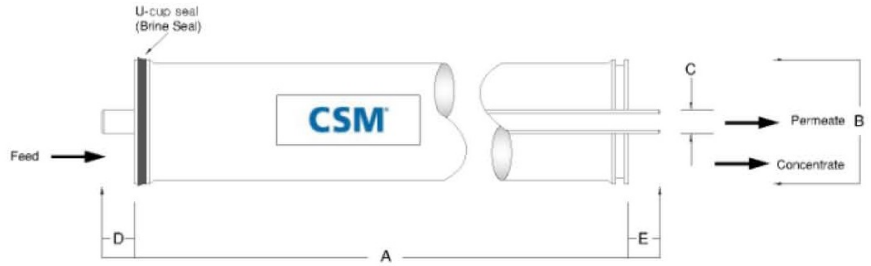
Permeate flow rate:	2,400 GPD (9.1 m^3/day)
Nominal salt rejection:	99.7%
Effective membrane area:	85 ft^2 (7.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **2,000 mg/L NaCl solution at 225 psig (1.55 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary +25 /-15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D/E	Part Number	
					Inter-connector	Brine Seal
RE4040-FEn	40.0 inch (1,016 mm)	3.9 inch (99 mm)	0.75 inch (19 mm)	1.05 inch (26.7 mm)	SWA01050	SWA01046



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4040 elements fit nominal 4.0 inch (101.6 mm) I.D. pressure vessels.

RE4040-FE^n

CSM®

Enhanced fouling resistant RO element for brackish water and wastewater reuse

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	18 gpm (4.09 m³/hr)
	· Min. Concentrate Flow Rate	4 gpm (0.91 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 4”

Cod. MCRE4040-FLR

RE4040-FLR

CSM®

Fouling resistant RO element with low pressure for brackish water and wastewater reuse

SPECIFICATIONS:

General Features

Permeate flow rate:	2,100 GPD (7.9 m^3/day)
Nominal salt rejection:	99.6%
Effective membrane area:	85 ft^2 (7.9 m^2)

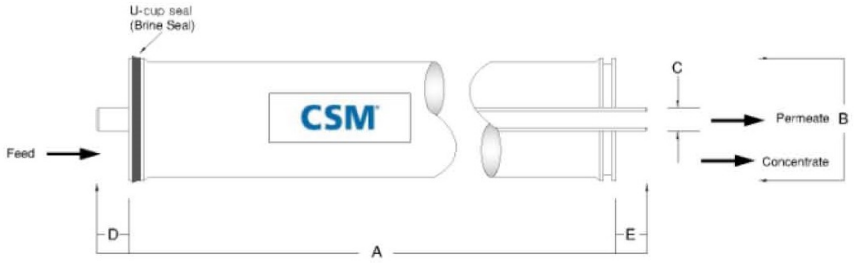
1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.5%.
3. Permeate flow rate for each element may vary but will be no more than -5%
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D/E	Part Number	
					Inter-connector	Brine Seal
RE4040-FLR	40.0 inch (1,016 mm)	3.9 inch (99 mm)	0.75 inch (19 mm)	1.05 inch (26.7 mm)	DD004 (*)	DD003 (*)

(*) vedi scheda 05-03-99-IT



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4040 elements fit nominal 4.0 inch (101.6 mm) I.D. pressure vessels.

RE4040-FLR

CSM®

Fouling resistant RO element with low pressure for brackish water and wastewater reuse

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	18 gpm (4.09 m^3/hr)
	· Min. Concentrate Flow Rate	4 gpm (0.91 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane TORAY 4”

Codice MTML10D

TORAY

Low fouling and high tolerance RO

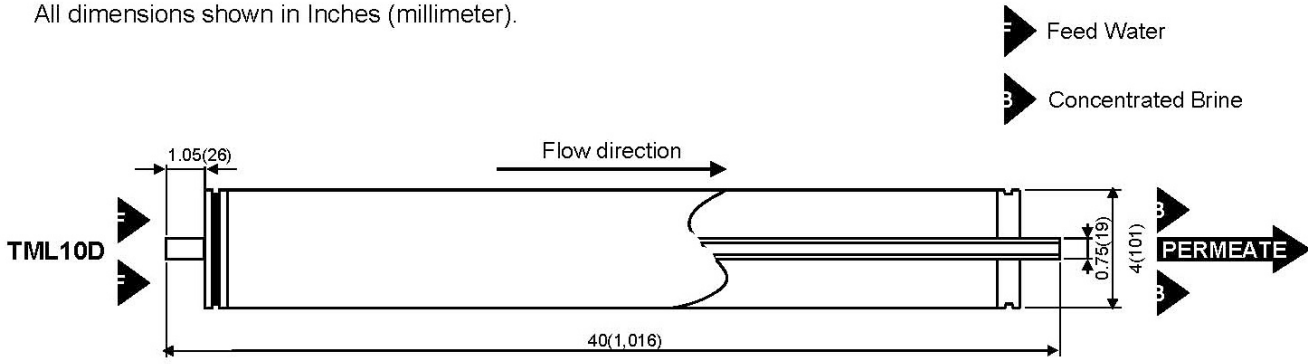
TML(D)

Type	Diameter Inch	Membrane Area $ft^2(m^2)$	Salt Rejection %	Product Flow Rate $gpd(m^3/d)$	Feed Spacer Thickness mil
TML10D	4”	73(7)	99.8	1,900(7.2)	34

1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	225 psi(1.55 MPa) 77 ° F(25 ℃) 2,000 mg/l NaCl 15 % 7
3. Minimum Salt Rejection		99.65 %
4. Minimum Product Flow Rate		1,500 gpd(5.8 m^3/d)

Dimensions

All dimensions shown in Inches (millimeter).



Membrane TORAY 4”

Operating Limits

Maximum Operating Pressure	600psi (4.1 MPa)
Maximum Feed Water Temperature	113° F (45°C)
Maximum Feed Water SDI_{15}	5
Feed Water Chlorine Concentration	<0.1ppm
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-13
Maximum Pressure Drop per Element	15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50 psi (0.34 MPa)

Operating Information

1. For the recommended design range, please consult the latest Toray technical bulletin, design guide lines, computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.
2. All elements are wet tested, treated with a 1% by weight percent sodium bisulfite storage solution, and then vacuum packed in oxygen barrier bags, or treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during short term storage, shipment, or system shutdown, it is recommended that Toray elements be immersed in a protective solution containing 500 - 1,000 ppm of sodium bisulfite (food grade) dissolved in permeate.
3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.
4. Permeate from the first hour of operation shall be discarded.
5. The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

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2. All data may change without prior notice, due to technical modifications or production changes.

Membrane CSM 4”

Cod. MCRE4021-SHN

RE4021-SHN

CSM

High Rejection RO element for seawater and high salinity well water

SPECIFICATIONS:

General Features

Permeate flow rate:	600 GPD (2.3 m^3/day)
Nominal salt rejection:	99.75%
Effective membrane area:	35 ft^2 (3.3 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following divalent test conditions:

   - **32,000 mg/L NaCl solution at 800 psig (5.5 MPa) applied pressure**
   - **8% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.6%
3. Permeate flow rate for each element may vary but will be no more than 15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	D	E
RE4021-SHN	21.0 inch (534 mm)	4.0 inch (102 mm)	0.75 inch (19.1 mm)	1.55 inch (39.5 mm	1.55 inch (39.5 mm

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE4021 elements fit nominal 4.0 inch (102 mm) I.D. pressure vessels.

RE4021-SHN

CSM®

High Rejection RO element for seawater and high salinity well water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	1,200 psi (8.27 MPa)
	· Max. Feed Flow Rate	13 gpm (2.95 m^3/hr)
	· Min. Concentrate Flow Rate	3 gpm (0.68 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane TORAY 4”

Codice MTM810C

TORAY
Innovation by Chemistry

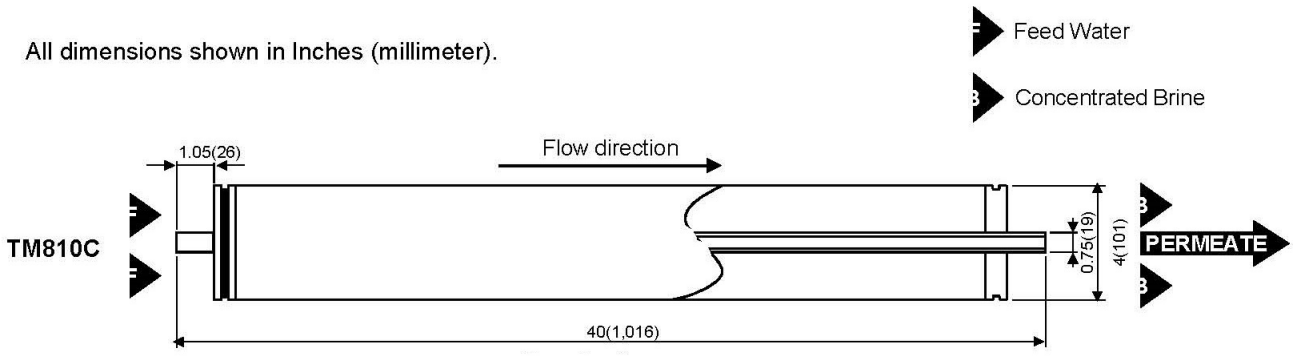
Standard SWRO
TM800C

Type	Diameter Inch	Membrane Area ft²(m²)	Salt Rejection %	Product Flow Rate gpd(m³ / d)	Feed Spacer Thickness mil
TM810C	4”	73(7)	99.75	1,200(4.5)	31

1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	800 psi(5.52MPa) 77° F(25℃) 32,000 mg/l Nacl 8% 7
3. Minimum Salt Rejection		99.5%
4. Minimum Product Flow Rate		1,000gpd(3.8m³/d)
5. Boron Rejection (typical value)		93% at pH 8 (5mg/l Boron added to Feed water)

Dimensions

All dimensions shown in Inches (millimeter).



Membrane TORAY 4”

Operating Limits

Maximum Operating Pressure	1200psi (8.3 MPa)
Maximum Feed Water Temperature	113° F (45℃)
Maximum Feed Water SDI_{15}	5
Feed Water Chlorine Concentration	Not detectable
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-12
Maximum Pressure Drop per Element	15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50 psi (0.34 MPa)

Operating Information

1.For the recommended design range, please consult the latest Toray technical bulletin, design guidelines,computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.

2. All elements are wet tested, treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during system shutdown, it is recommended to perform 30-60 minutes flushing of Toray elements with seawater once in every two days.

3.The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.

4. Permeate from the first hour of operation shall be discarded.

5.The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.

2. All data may change without prior notice, due to technical modifications or production changes.

Membrane TORAY 4”

Codice MTM810V

TORAY
Innovation by Chemistry

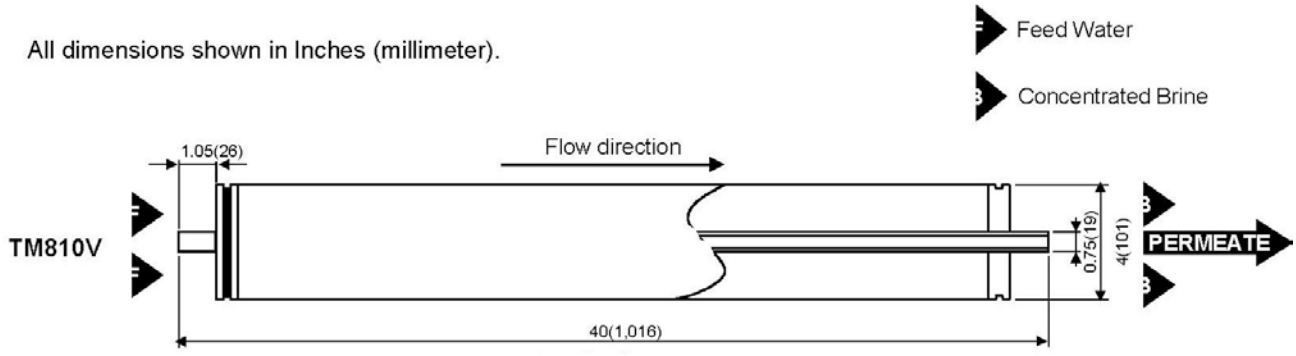
Low energy SWRO
TM800V

Type	Diameter Inch	Membrane Area ft²(m²)	Salt Rejection %	Product Flow Rate gpd(m³ / d)	Feed Spacer Thickness mil
TM810V	4”	87(8)	99.8	1,900(7.2)	28

1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	800 psi(5.52MPa) 77° F(25℃) 32,000 mg/l Nacl 8% 7
3. Minimum Salt Rejection		99.5%
4. Minimum Product Flow Rate		1,550gpd(5.9m³/d)
5. Boron Rejection (typical value)		92% at pH 8 (5mg/l Boron added to Feed water)

Dimensions

All dimensions shown in Inches (millimeter).



Membrane TORAY 4”

Operating Limits

Maximum Operating Pressure	1200psi (8.3 MPa)
Maximum Feed Water Temperature	113° F (45°C)
Maximum Feed Water SDI_{15}	5
Feed Water Chlorine Concentration	Not detectable
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-12
Maximum Pressure Drop per Element	15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50 psi (0.34 MPa)

Operating Information

1. For the recommended design range, please consult the latest Toray technical bulletin, design guidelines,computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.
2. All elements are wet tested, treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during system shutdown, it is recommended to perform 30-60 minutes flushing of Toray elements with seawater once in every two days.
3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.
4. Permeate from the first hour of operation shall be discarded.
5. The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
2. All data may change without prior notice, due to technical modifications or production changes.

Membrane CSM 4”

Cod. MCNE4040-90

NE4040-90

CSM®

Normal grade NF element with high monovalent ion rejection

SPECIFICATIONS:

General Features

Permeate flow rate :	1,700 GPD (6.4 m^3/day)
Monovalent ion rejection (NaCl)[1]:	85.0 – 97.0%
Divalent ion rejection ($CaCl_2$)[2]:	90.0 – 97.0%
Effective membrane area :	85 ft^2 (7.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following monovalent test conditions:

   - **2,000 mg/L NaCl solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. The stated product performance is based on data taken after 30 minutes of operation at the following divalent test conditions:

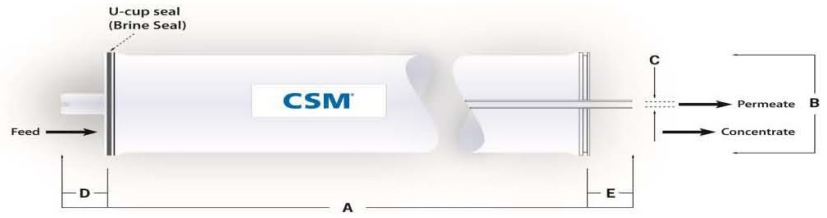
   - **500 mg/L $CaCl_2$ solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

3. $MgSO_4$ rejection is 97.0%. (Test conditions are equivalent with NaCl)
4. Permeate flow rate for each element may vary but will be no more than 15%.
5. Elements can be supplied as dry or wet-type. Wet-tested elements are soaked in a preservative solution (1.0% food grade SBS) and vacuum sealed in a poly bag. All elements are individually boxed.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E	Part Number	
						Inter-connector	Brine Seal
NE4040-70	40.0 inch (1,016 mm)	4.0 inch (102 mm)	0.75 inch (19.1 mm)	1.05 inch (26.7 mm)	1.05 inch (26.7 mm)	40000305	40000306



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All NE4040 elements fit nominal 4.0 inch (102 mm) I.D. pressure vessels.

NE4040-90

CSM®

Normal grade NF element with high monovalent ion rejection

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	18 gpm (4.09 m^3/hr)
	· Min. Concentrate Flow Rate	4 gpm (0.91 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Wet elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 4”

Cod. MCNE4040-70

NE4040-70

CSM®

Normal grade NF element with high monovalent ion rejection

SPECIFICATIONS:

General Features

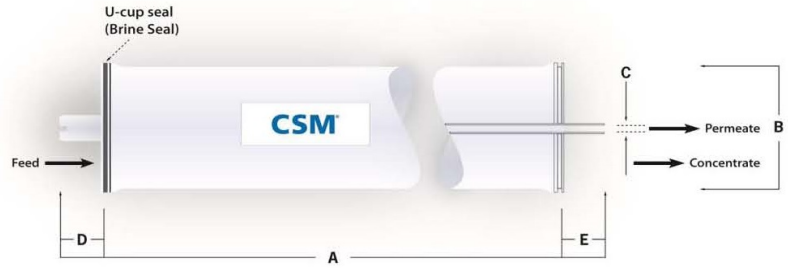
Permeate flow rate[1]:	1,500 GPD (5.7 m^3/day)
Monovalent ion rejection (NaCl)[1]:	40.0 – 70.0%
Divalent ion rejection ($CaCl_2$)[2]:	45.0 – 70.0%
Effective membrane area:	85 ft^2 (7.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following monovalent test conditions:
   - **2,000 mg/L NaCl solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. The stated product performance is based on data taken after 30 minutes of operation at the following divalent test conditions:
   - **500 mg/L $CaCl_2$ solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
3. $MgSO_4$ rejection is 97.0%. (Test conditions are equivalent with NaCl)
4. Permeate flow rate for each element may vary but will be no more than 15%.
5. Elements are supplied as dry-type. Dry elements are sealed in a poly bag and individually boxed.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E	Part Number	
						Inter-connector	Brine Seal
NE4040-70	40.0 inch (1,016 mm)	4.0 inch (102 mm)	0.75 inch (19.1 mm)	1.05 inch (26.7 mm)	1.05 inch (26.7 mm)	40000305	40000306



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All NE4040 elements fit nominal 4.0 inch (102 mm) I.D. pressure vessels.

NE4040-70

CSM®

Normal grade NF element with medium monovalent ion rejection

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	18 gpm (4.09 m^3/hr)
	· Min. Concentrate Flow Rate	4 gpm (0.91 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 4”

Cod. MCNE4040-40

NE4040-40
High productivity NF element

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	2,100 GPD (7.9 m^3/day)
Monovalent ion rejection (NaCl):	20 – 40%
Effective membrane area:	85 ft^2 (7.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

   - **2,000 mg/L NaCl solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

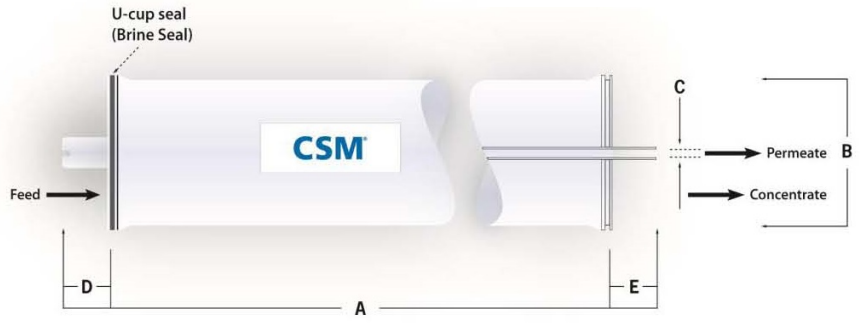
2. Permeate flow rate for each element may vary but will be no more than 20%.
3. Elements are supplied as dry-type. Dry elements are sealed in a poly bag and individually boxed.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions

Model Name	A	B	C	D	E	Part Number	
						Inter-connector	Brine Seal
NE4040-40	40.0 inch (1,016 mm)	4.0 inch (102 mm)	0.75 inch (19.1 mm)	1.05 inch (26.7 mm)	1.05 inch (26.7 mm)	DD004 (*)	DD003 (*)

(*) vedi scheda 05-03-99-IT



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All NE4040 elements fit nominal 4.0 inch (102 mm) I.D. pressure vessels.

NE4040-40

High productivity NF element

CSM

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	18 gpm (4.09 m³/hr)
	· Min. Concentrate Flow Rate	4 gpm (0.91 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane TORAY CSM 8”

MEMBRANE LOW PRESSURE LPM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE8040-BLN	RE8040-BLN	Standard 61	Conforme	
MCRE8040-BLN440	RE8040-BLN440	-	Conforme	
MCRE8040-BLR	RE8040-BLR	Standard 61	Conforme	
MCRE8040-BLR440	RE8040-BLR440	-	Conforme	
MCRE8040-BLF	RE8040-BLF	Standard 61	Conforme	
MCRE8040-BLF440	RE8040-BLF440	-	Conforme	
MTMH20A-400C	TMH20A-400C	-	Conforme	
MTMG20D-400	TMG20D-400	-	Conforme	

MEMBRANE BRACKISH WATER BWM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE8040-BN	RE8040-BN	Standard 61	Conforme	
MCRE8040-BE	RE8040-BE	Standard 61	Conforme	
MCRE8040-BE440	RE8040-BE440	Standard 61	Conforme	
MCRE8040-BR	RE8040-BR	-	Conforme	
MCRE8040-BR400 (**)	RE8040-BR400	-	Conforme	
MTM720D-400	TM720D-400	-	Conforme	

MEMBRANE FOULING RESISTANT FRM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCRE8040-FEN34	RE8040-FEn34	-	Conforme	
MCRE8040-FEN	RE8040-FEn	Standard 61	Conforme	
MCRE8040-FEN440 (*)	RE8040-FEn440	Standard 61	Conforme	
MCRE8040-FL (*)	RE8040-FL	-	Conforme	
MCRE8040-FLR (**)	RE8040-FLR	-	Conforme	
MCRE8040-FLR34	RE8040-FLR34	-	Conforme	
MTML20D-400	TML20D-400	-	Conforme	

MEMBRANE SEA WATER SWM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MTM820M-400	TM820M-400	-	Conforme	
MTM820M-440	TM820M-440	-	Conforme	
MTM820V-400	TM820V-400	-	Conforme	

MEMBRANE NANOFILTRATION NFM				
CODICE	**MODELLO**	**NSF/ANSI**	**DM174-2004**	
MCNE8040-90	NE8040-90	Standard 61	Conforme	
MCNE8040-70 (*)	NE8040-70	Standard 61	Conforme	
MCNE8040-40 (*)	NE8040-40	Standard 61	Conforme	

(*) materiale a richiesta non disponibile in stock.

(**) disponibile fino ad esaurimento scorte.

Membrane CSM 8”

Cod. MCRE8040-BLN

RE8040-BLN

Low pressure grade RO element for brackish water

CSM®

SPECIFICATIONS:

General Features

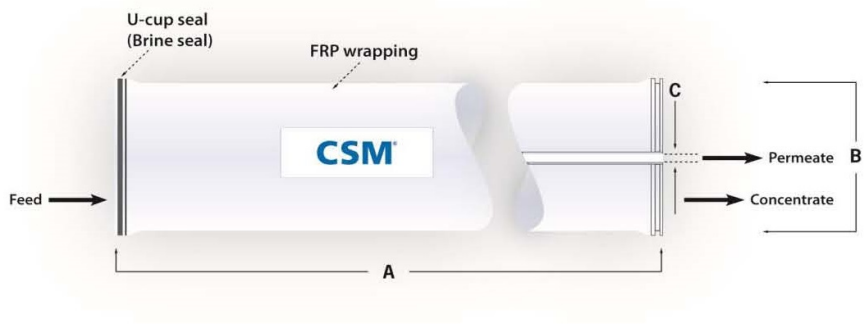
Permeate flow rate:	12,000 GPD (45.4 m^3/day)
Nominal salt rejection:	99.5%
Effective membrane area:	400 ft^2 (37.2 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary +25 / -15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-BLN	40.0 inch (1,016 mm)	7.9 inch (200 mm)	1.12 inch (28.5 mm)	15 kg	SWA01049	SWA01043



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (203.2 mm) I.D. pressure vessels.

RE8040-BLN

Low pressure grade RO element for brackish water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m³/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-BLN440

RE8040-BLN440

Low pressure grade RO element for brackish water

CSM®

SPECIFICATIONS:

General Features

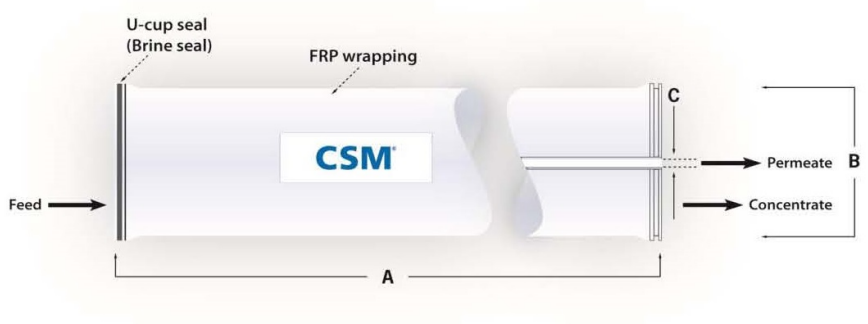
Permeate flow rate:	13,000 GPD (49.2 m^3/day)
Nominal salt rejection:	99.5%
Effective membrane area:	440 ft^2 (40.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary +25 / -15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-BLN440	40.0 inch (1,016 mm)	7.9 inch (200 mm)	1.12 inch (28.5 mm)	15 kg	SWA01049	SWA01043



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (203.2 mm) I.D. pressure vessels.

RE8040-BLN440

Low pressure grade RO element for brackish water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-BLR

RE8040-BLR

Low pressure grade RO element for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	10,000 GPD (37.9 m^3/day)
Nominal salt rejection:	99.6%
Effective membrane area:	400 ft^2 (37.2 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

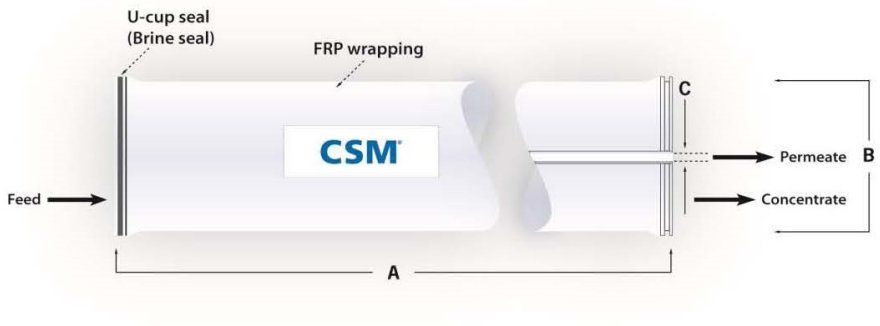
   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.5%.
3. Permeate flow rate for each element may vary but will be no more than -5%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-BLR	40.0 inch (1,016 mm)	7.9 inch (200 mm)	1.12 inch (28.5 mm)	15 kg	SWA01049	SWA01043



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (203.2 mm) I.D. pressure vessels.

RE8040-BLR

Low pressure grade RO element for brackish water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-BLR440

RE8040-BLR440

Low pressure grade RO element for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	11,000 GPD (41.6 m^3/day)
Nominal salt rejection:	99.6%
Effective membrane area:	440 ft^2 (40.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

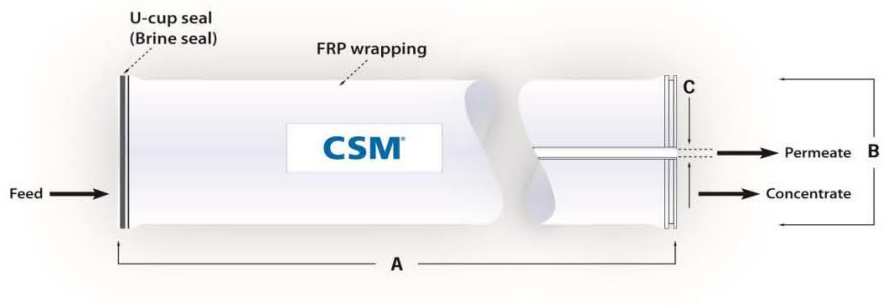
   - **1,500 mg/L NaCl solution at 150 psig (1.03 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.5%.
3. Permeate flow rate for each element may vary but will be no more than -5%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-BLR440	40.0 inch (1,016 mm)	7.9 inch (200 mm)	1.12 inch (28.5 mm)	15 kg	SWA01049	SWA01043



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (203.2 mm) I.D. pressure vessels.

RE8040-BLR440

Low pressure grade RO element for brackish water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m³/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-BLF

RE8040-BLF

CSM®

Ultra-low pressure grade RO element for low TDS water

SPECIFICATIONS:

General Features

Permeate flow rate:	11,500 GPD (43.5 m^3/day)
Nominal salt rejection:	99.2%
Effective membrane area:	400 ft^2 (37.2 m^2)

The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

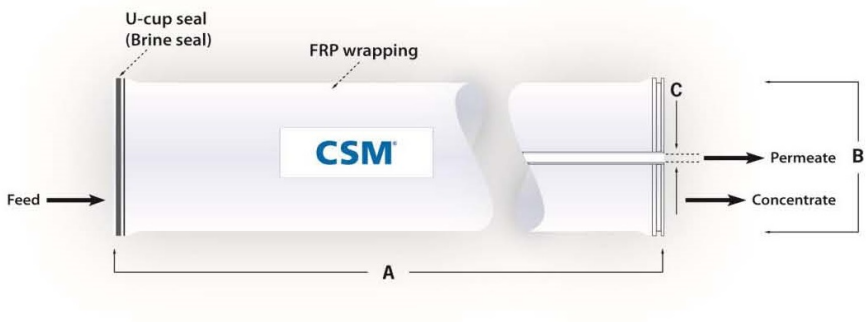
- **500 mg/L NaCl solution at 100 psig (0.69 MPa) applied pressure**
- **15% recovery**
- **77 °F (25 °C)**
- **pH 6.5–7.0**

1. Minimum salt rejection is 99.0%.
2. Permeate flow rate for each element may vary +25 / -15%.
3. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-BLF	40.0 inch (1,016 mm)	7.9 inch (200 mm)	1.12 inch (28.5 mm)	15 kg	SWA01049	SWA01043



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (203.2 mm) I.D. pressure vessels.

RE8040-BLF

Ultra-low pressure grade RO element for low TDS water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-BLF440

RE8040-BLF440

Ultra-low pressure grade RO element for low TDS water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	12,650 GPD (47.9 m^3/day)
Nominal salt rejection:	99.2%
Effective membrane area:	440 ft^2 (40.9 m^2)

The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

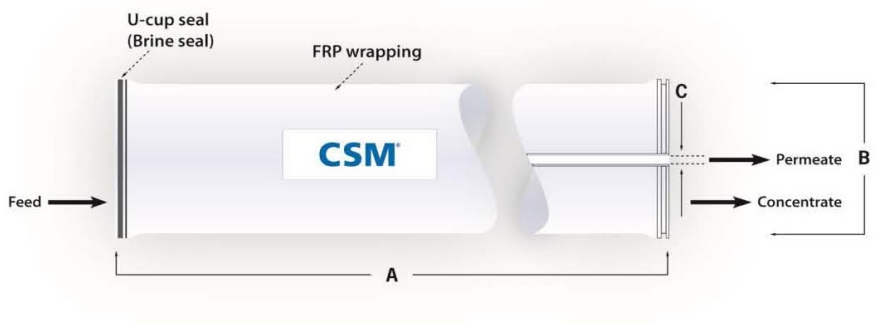
- **500 mg/L NaCl solution at 100 psig (0.69 MPa) applied pressure**
- **15% recovery**
- **77 °F (25 °C)**
- **pH 6.5–7.0**

1. Minimum salt rejection is 99.0%.
2. Permeate flow rate for each element may vary +25 / -15%.
3. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-BLF440	40.0 inch (1,016 mm)	7.9 inch (200 mm)	1.12 inch (28.5 mm)	15 kg	SWA01049	SWA01043



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (203.2 mm) I.D. pressure vessels.

RE8040-BLF440

Ultra-low pressure grade RO element for low TDS water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m³/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane TORAY 8”

Codice MTMH20A-400C

'TORAY'
Innovation by Chemistry

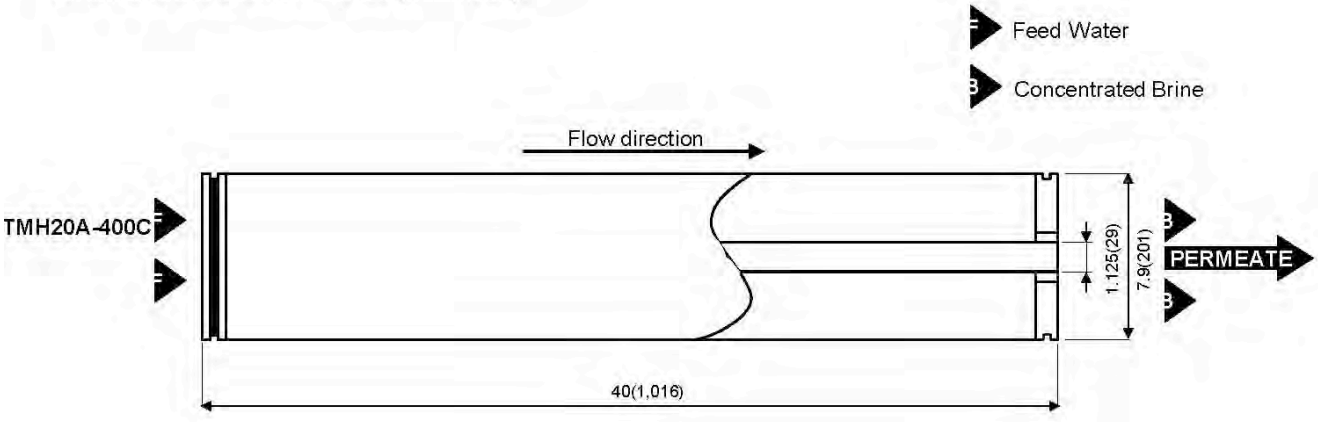
Ultra low pressure BWRO
TMHA (C)

Type	Diameter Inch	Membrane Area $ft^2(m^2)$	Salt Rejection %	Product Flow Rate $gpd(m^3/d)$	Feed Spacer Thickness mil
TMH20A-400C	8”	400(37)	99.3	11,000(41.6)	34

1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	100 psi(0.69MPa) 77° F(25°C) 500 mg/l Nacl 15% 7
3. Minimum Salt Rejection		99.0%
4. Minimum Product Flow Rate		8,800gpd(33.3m^3/d)

Dimensions

All dimensions shown in Inches (millimeter).



Membrane TORAY 8”

Operating Limits

Maximum Operating Pressure	365psi (2.5 MPa)
Maximum Feed Water Temperature	113° F (45℃)
Maximum Feed Water SDI_{15}	5
Feed Water Chlorine Concentration	Not Detactable
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-12
Maximum Pressure Drop per Element	15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50 psi (0.34 MPa)

Operating Information

1. For the recommended design range, please consult the latest Toray technical bulletin, design guide lines, computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.
2. All elements are wet tested, treated with a 1% by weight percent sodium bisulfite storage solution, and then vacuum packed in oxygen barrier bags, or treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during short term storage, shipment, or system shutdown, it is recommended that Toray elements be immersed in a protective solution containing 500 - 1,000 ppm of sodium bisulfite (food grade) dissolved in permeate.
3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.
4. Permeate from the first hour of operation shall be discarded.
5. The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
2. All data may change without prior notice, due to technical modifications or production changes.

Membrane TORAY 8”

Codice MTMG20D-400

'TORAY'
Innovation by Chemistry

Ultra low pressure BWRO, enhanced chemical tolerance

TMG(D)

Type	Diameter Inch	Membrane Area $ft^2(m^2)$	Salt Rejection %	Product Flow Rate $gpd(m^3/d)$	Feed Spacer Thickness mil
TMG20D-400	8”	400(37)	99.7	12,100(45.8)	34

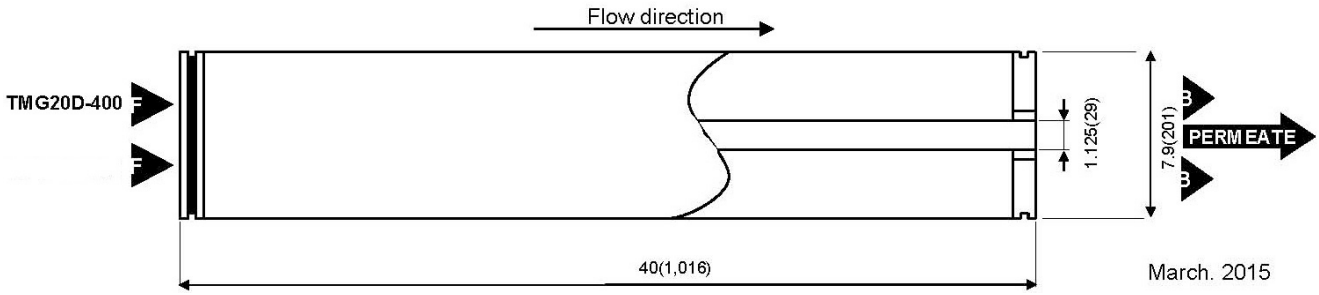
1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	150 psi(1.03MPa) 77° F(25°C) 2000 mg/l Nacl 15% 7
3. Minimum Salt Rejection		99.5%
4. Minimum Product Flow Rate		10,300gpd(39.0m^3/d)

Dimensions

All dimensions shown in Inches (millimeter).

F Feed Water

B Concentrated Brine



March. 2015

Membrane TORAY 8”

Operating Limits

Maximum Operating Pressure	365psi (2.5 MPa)
Maximum Feed Water Temperature	113° F (45°C)
Maximum Feed Water SDI15	5
Feed Water Chlorine Concentration *See below 3 of Operating Information	< 0.1ppm
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-13
Maximum Pressure Drop per Element	15psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50psi (0.34 MPa)

Operating Information

1. For the recommended design range, please consult the latest Toray technical bulletin, design guide lines, computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.
2. All elements are wet tested, treated with a 1% by weight percent sodium bisulfite storage solution, and then vacuum packed in oxygen barrier bags, or treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during short term storage, shipment, or system shutdown, it is recommended that Toray elements be immersed in a protective solution containing 500 - 1,000 ppm of sodium bisulfite (food grade) dissolved in permeate.
3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. Since oxidation damage is not covered under warranty, it is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.
4. Permeate from the first hour of operation shall be discarded.
5. The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
2. All data may change without prior notice, due to technical modifications or production changes.

Membrane CSM 8”

Cod. MCRE8040-BN

RE8040-BN

CSM®

Low pressure grade RO element with thick feed spacer for brackish water

SPECIFICATIONS:

General Features

Permeate flow rate:	9,500 GPD (36.0 m^3/day)
Nominal salt rejection:	99.7%
Effective membrane area:	365 ft^2 (33.9 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **2,000 mg/L NaCl solution at 225 psig (1.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary but will be no more than 10%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions **A =** 40.0 inch (1,016 mm) **B =** 8.0 inch (201 mm) **C =** 1.12 inch (28 mm)

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

RE8040-BN

CSM®

Low pressure grade RO element with thick feed spacer for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-BE

RE8040-BE

High productivity RO element with extended area for brackish water

CSM®

SPECIFICATIONS:

General Features

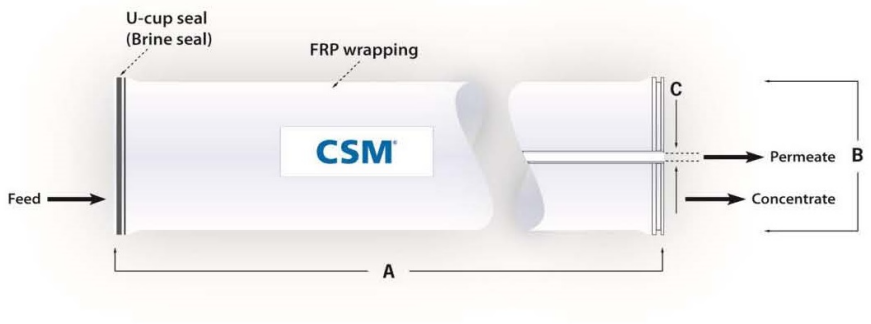
Permeate flow rate:	11,000 GPD (41.6 m^3/day)
Nominal salt rejection:	99.7%
Effective membrane area:	400 ft^2 (37.2 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **2,000 mg/L NaCl solution at 225 psig (1.55 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.5%.
3. Permeate flow rate for each element may vary +25 / -15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-BE	40.0 inch (1,016 mm)	7.9 inch (200 mm)	1.12 inch (28.5 mm)	15 kg	SWA01049	SWA01043



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (203.2 mm) I.D. pressure vessels.

RE8040-BE

CSM®

High productivity RO element with extended area for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-BE440

RE8040-BE440

High productivity RO element with extended area for brackish water

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	12,000 GPD (45.4 m^3/day)
Nominal salt rejection:	99.7%
Effective membrane area:	440 ft^2 (40.9 m^2)

The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

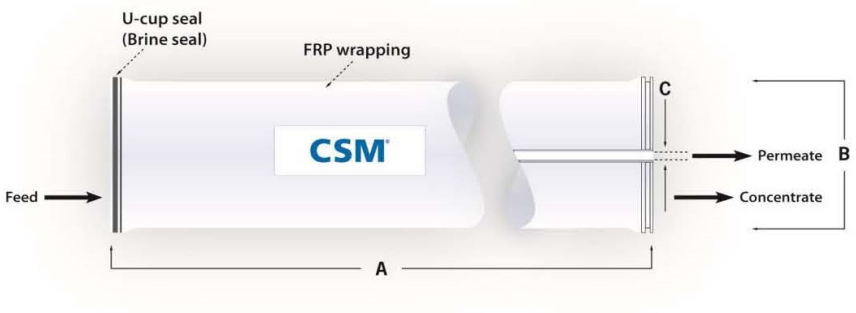
- **2,000 mg/L NaCl solution at 225 psig (1.55 MPa) applied pressure**
- **15% recovery**
- **77 °F (25 °C)**
- **pH 6.5–7.0**

1. Minimum salt rejection is 99.5%.
2. Permeate flow rate for each element may vary +25 / -15%.
3. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-BE440	40.0 inch (1,016 mm)	7.9 inch (200 mm)	1.12 inch (28.5 mm)	15 kg	SWA01049	SWA01043



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (203.2 mm) I.D. pressure vessels.

RE8040-BE440

High productivity RO element with extended area for brackish water

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-BR

RE8040-BR

CSM®

High Rejection RO element with thick feed spacer for brackish water

SPECIFICATIONS:

General Features

Permeate flow rate:	6,000 GPD (22.7 m^3/day)
Nominal salt rejection:	99.75%
Effective membrane area:	380 ft^2 (35.3 m^2)

The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

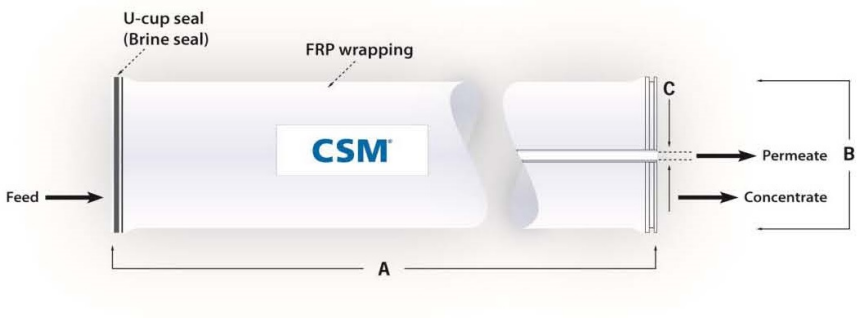
- **2,000 mg/L NaCl solution at 225 psig (1.55 MPa) applied pressure**
- **15% recovery**
- **77 °F (25 °C)**
- **pH 6.5–7.0**

1. Minimum salt rejection is 99.5%.
2. Permeate flow rate for each element may vary +25 / -15%.
3. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-BR	40.0 inch (1,016 mm)	7.9inch (200 mm)	1.12 inch (28.5 mm)	15 kg	SWA01049	SWA01043



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (203.2 mm) I.D. pressure vessels.

RE8040-BR

CSM®

High Rejection RO element with thick feed spacer for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.05 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-BR400

RE8040-BR400

CSM®

Normal grade RO element with thick feed spacer for brackish water

SPECIFICATIONS:

General Features

Permeate flow rate:	6,600 GPD (24.9 m³/day)
Nominal salt rejection:	99.75%
Effective membrane area:	400 ft² (37.2 m²)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **2,000 mg/L NaCl solution at 225 psig (1.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary but will be no more than 10%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions **A** = 40.0 inch (1,016 mm) **B** = 8.0 inch (201 mm) **C** = 1.12 inch (28 mm)

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

RE8040-BR400

CSM®

Normal grade RO element with thick feed spacer for brackish water

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m³/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane TORAY 8”

Codice MTM720D-400

TORAY
Innovation by Chemistry

High rejection BWRO, enhanced chemical tolerance

TM700D

Type	Diameter Inch	Membrane Area ft²(m²)	Salt Rejection %	Product Flow Rate gpd(m³ / d)	Feed Spacer Thickness mil
TM720D-400	8”	400(37)	99.8	11,000(41.6)	34

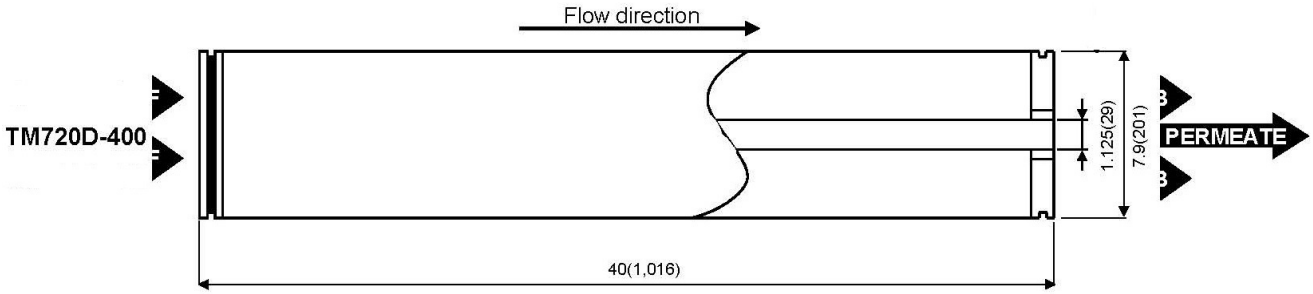
1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	225 psi(1.55MPa) 77° F(25℃) 2,000 mg/l Nacl 15% 7
3. Minimum Salt Rejection		99.65%
4. Minimum Product Flow Rate		8,900gpd(33.6m³/d)

Dimensions

All dimensions shown in Inches (millimeter).

F Feed Water

B Concentrated Brine



Membrane TORAY 8”

Operating Limits

Maximum Operating Pressure		600psi (4.1 MPa)
Maximum Feed Water Temperature		113° F (45℃)
Maximum Feed Water SDI_{15}		5
Feed Water Chlorine Concentration	*See below 3 of Operating Information	<0.1ppm
Feed Water pH Range, Continuous Operation		2-11
Feed Water pH Range, Chemical Cleaning		1-13
Maximum Pressure Drop per Element		15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel		50 psi (0.34 MPa)

Operating Information

1. For the recommended design range, please consult the latest Toray technical bulletin, design guide lines, computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.
2. All elements are wet tested, treated with a 1% by weight percent sodium bisulfite storage solution, and then vacuum packed in oxygen barrier bags, or treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during short term storage, shipment, or system shutdown, it is recommended that Toray elements be immersed in a protective solution containing 500 - 1,000 ppm of sodium bisulfite (food grade) dissolved in permeate.
3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.
4. Permeate from the first hour of operation shall be discarded.
5. The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
2. All data may change without prior notice, due to technical modifications or production changes.

Membrane CSM 8”

Cod. MCRE8040-FEN34

RE8040-FEn34

CSM

Enhanced fouling resistant RO element for brackish water and wastewater reuse

SPECIFICATIONS:

General Features

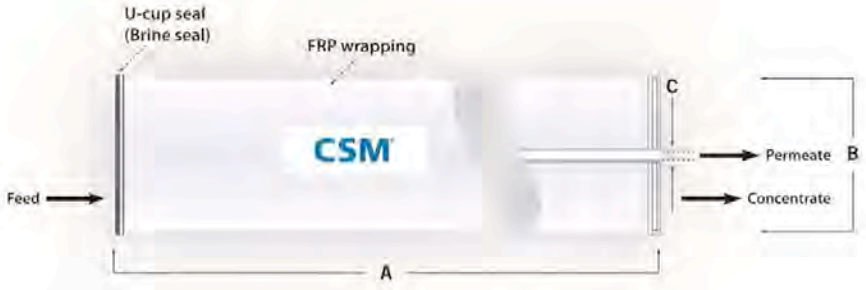
Permeate flow rate:	10,500 GPD (39.7 m³/day)
Nominal salt rejection:	99.7%
Effective membrane area:	400 ft² (37.2 m²)
Feed spacer thickness:	34mil

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **2,000 mg/L NaCl solution at 225 psig (1.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary but will be no more than 15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-FEn34	40.0 inch (1,016 mm)	8.0inch (201 mm)	1.12 inch (28 mm)	15 kg	40000308	40000309



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

RE8040-FE^{n}34

CSM

Enhanced fouling resistant RO element for brackish water and wastewater reuse

APPLICATION DATA:

Operating Limits	Max. Pressure Drop / Element	15 psi (0.1 MPa)
	Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	Max. Operating Pressure	600 psi (4.14 MPa)
	Max. Feed Flow Rate	75 gpm (17.0 m³/hr)
	Min. Concentrate Flow Rate	16 gpm (3.6 m³/hr)
	Max. Operating Temperature	113 °F (45 °C)
	Operating pH Range	2.0–11.0
	CIP pH Range	1.0–13.0
	Max. Turbidity	1.0 NTU
	Max. SDI (15 min)	5.0
	Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	Wastewater Conventional (SDI < 5)	8–12 gfd
	Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	Seawater, Open Intake (SDI < 5)	7–10 gfd
	Seawater, Beach Well (SDI < 3)	8–12 gfd
	Surface Water (SDI < 5)	12–16 gfd
	Surface Water (SDI < 3)	13–17 gfd
	Well water (SDI < 3)	13–17 gfd
	RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	Langlier Saturation Index (LSI)	<+1.5
	Stiff and Davis Saturation Index (SDSI)	<+0.5
	$CaSO_4$	230% saturation
	$SrSO_4$	800% saturation
	$BaSO_4$	6,000% saturation
	SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-FEN

RE8040-FEⁿ

CSM

Enhanced fouling resistant RO element for brackish water and wastewater reuse

SPECIFICATIONS:

General Features

Permeate flow rate:	10,500 GPD (39.7 m³/day)
Nominal salt rejection:	99.7%
Effective membrane area:	400 ft² (37.2 m²)
Feed spacer thickness:	32 mil

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **2,000 mg/L NaCl solution at 225 psig (1.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary but will be no more than 15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-FEn	40.0 inch (1,016 mm)	8.0inch (201 mm)	1.12 inch (28 mm)	15 kg	40000308	40000309

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

RE8040-FE^{n}

CSM

Enhanced fouling resistant RO element for brackish water and wastewater reuse

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m³/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Cod. MCRE8040-FEN440

RE8040-FEⁿ440

CSM

Enhanced fouling resistant RO element for brackish water and wastewater reuse

SPECIFICATIONS:

General Features

Permeate flow rate:	11,500 GPD (43.5 m³/day)
Nominal salt rejection:	99.7%
Effective membrane area:	440 ft² (40.9 m²)
Feed spacer thickness:	28mil

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

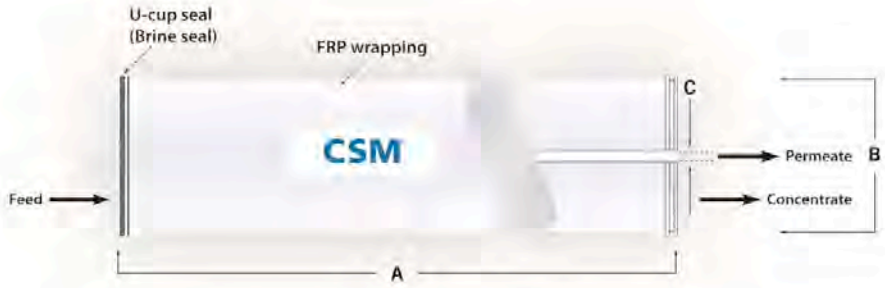
   - **2,000 mg/L NaCl solution at 225 psig (1.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary but will be no more than 15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-FEn440	40.0 inch (1,016 mm)	8.0inch (201 mm)	1.12 inch (28 mm)	15 kg	40000308	40000309



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

RE8040-FE^{n}440

CSM

Enhanced fouling resistant RO element for brackish water and wastewater reuse

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m³/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m³/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-FL

RE8040-FL

CSM

Fouling resistant RO element with low pressure for brackish water and wastewater reuse

SPECIFICATIONS:

General Features

Permeate flow rate:	11,000 GPD (41.6 m^3/day)
Nominal salt rejection:	99.0%
Effective membrane area:	400 ft^2 (37.2 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **1,500 mg/L NaCl solution at 150 psig (1.0 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 98.5%.
3. Permeate flow rate for each element may vary but will be no more than 10%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions **A** = 40.0 inch (1,016 mm) **B** = 8.0 inch (201 mm) **C** = 1.12 inch (28 mm)

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

RE8040-FL

CSM®

Fouling resistant RO element with low pressure for brackish water and wastewater reuse

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-FLR

RE8040-FLR

CSM®

Fouling resistant RO element with low pressure for brackish water and wastewater reuse

SPECIFICATIONS:

General Features

Permeate flow rate:	9,000 GPD (34.0 m^3/day)
Nominal salt rejection:	99.6%
Effective membrane area:	400 ft^2 (37.2 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:
   - **1,500 mg/L NaCl solution at 150 psig (1.0 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. Minimum salt rejection is 99.5%.
3. Permeate flow rate for each element may vary but will be no more than 10%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions **A** = 40.0 inch (1,016 mm) **B** = 8.0 inch (201 mm) **C** = 1.12 inch (28 mm)

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

RE8040-FLR

CSM®

Fouling resistant RO element with low pressure for brackish water and wastewater reuse

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCRE8040-FLR34

RE8040-FLR34

CSM®

Fouling resistant RO element with low pressure for brackish water and wastewater reuse

SPECIFICATIONS:

General Features

Permeate flow rate:	10,000 GPD (37.8 m^3/day)
Nominal salt rejection:	99.6%
Effective membrane area:	400 ft^2 (37.2 m^2)
Feed spacer thickness:	34mil

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

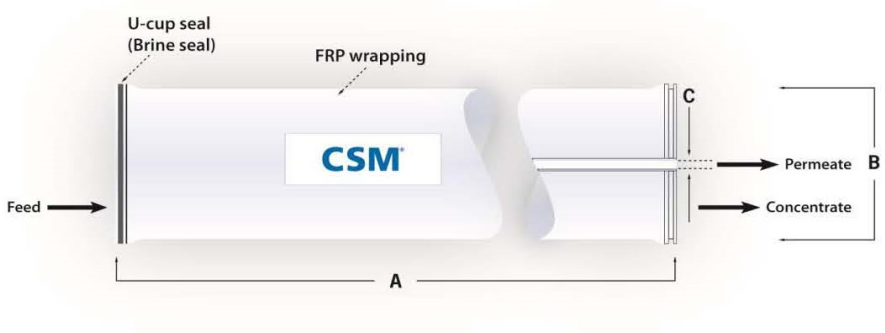
   - **1,500 mg/L NaCl solution at 150 psig (1.0 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. Minimum salt rejection is 99.4%.
3. Permeate flow rate for each element may vary but will be no more than 15%.
4. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
RE8040-FLR34	40.0 inch (1,016 mm)	8.0inch (201 mm)	1.12 inch (28 mm)	15 kg	40000308	40000309



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All RE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

RE8040-FLR34

CSM®

Fouling resistant RO element with low pressure for brackish water and wastewater reuse

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane TORAY 8”

Codice MTML20D-400

TORAY

Low fouling and high tolerance RO

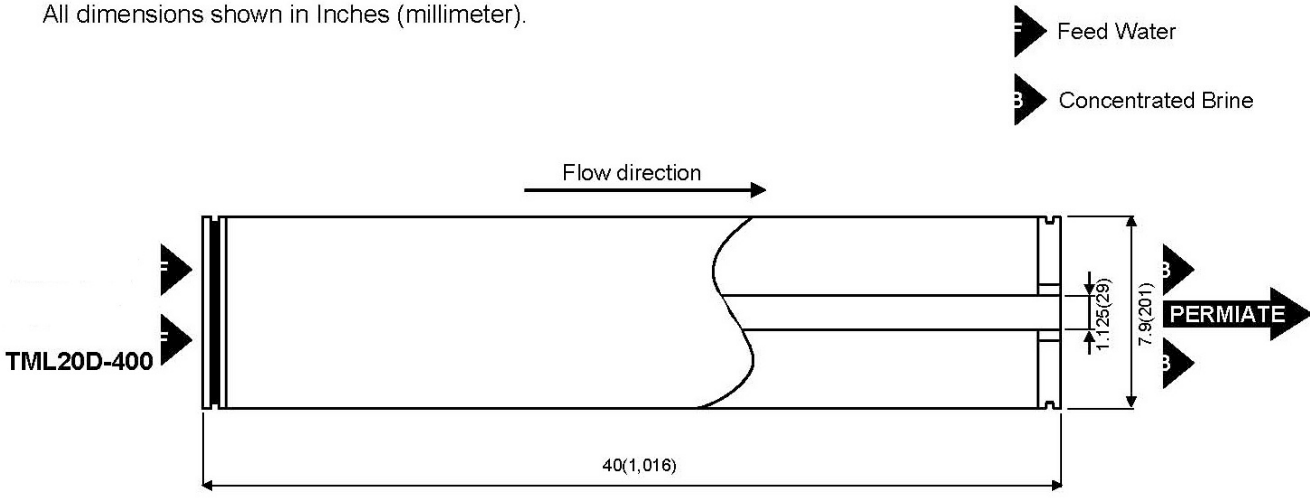
TML(D)

Type	Diameter Inch	Membrane Area ft²(m²)	Salt Rejection %	Product Flow Rate gpd(m³/d)	Feed Spacer Thickness mil
TML20D-400	8”	400(37)	99.8	10,500(39.7)	34

1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	225 psi(1.55 MPa) 77 ° F(25 ℃) 2,000 mg/l NaCl 15 % 7
3. Minimum Salt Rejection		99.65 %
4. Minimum Product Flow Rate		8,400 gpd(31.8 m³/d)

Dimensions

All dimensions shown in Inches (millimeter).



Membrane TORAY 8”

Operating Limits

Maximum Operating Pressure	600psi (4.1 MPa)
Maximum Feed Water Temperature	113° F (45°C)
Maximum Feed Water SDI_{15}	5
Feed Water Chlorine Concentration	<0.1ppm
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-13
Maximum Pressure Drop per Element	15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50 psi (0.34 MPa)

Operating Information

1. For the recommended design range, please consult the latest Toray technical bulletin, design guide lines, computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.
2. All elements are wet tested, treated with a 1% by weight percent sodium bisulfite storage solution, and then vacuum packed in oxygen barrier bags, or treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during short term storage, shipment, or system shutdown, it is recommended that Toray elements be immersed in a protective solution containing 500 - 1,000 ppm of sodium bisulfite (food grade) dissolved in permeate.
3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.
4. Permeate from the first hour of operation shall be discarded.
5. The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
2. All data may change without prior notice, due to technical modifications or production changes.

Membrane TORAY 8”

Codice MTM820M-400

'TORAY'
Innovation by Chemistry

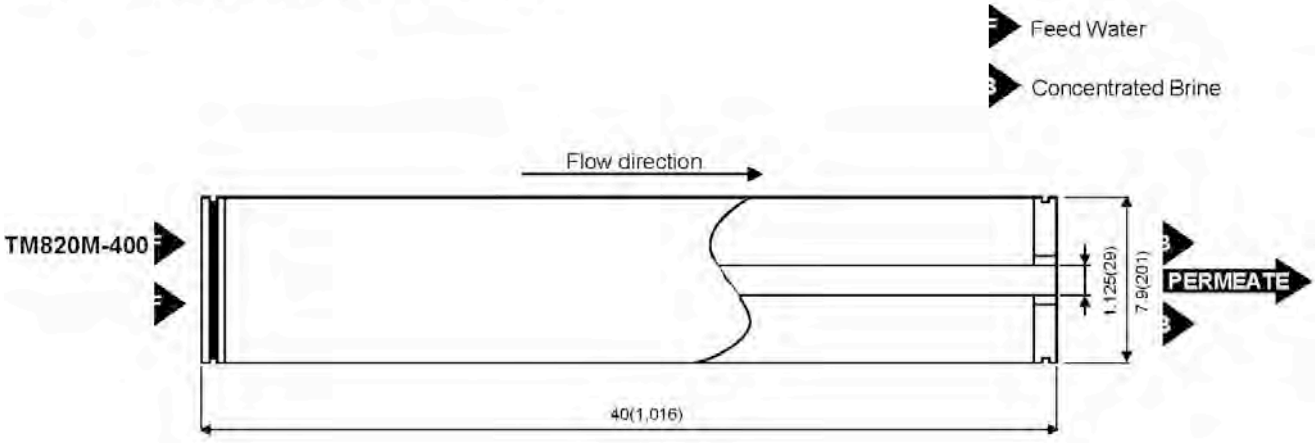
Standard SWRO
TM800M

Type	Diameter Inch	Membrane Area ft²(m²)	Salt Rejection %	Product Flow Rate gpd(m³ / d)	Feed Spacer Thickness mil
TM820M-400	8"	400(37)	99.8	7,000(26.5)	34

1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	800 psi(5.52MPa) 77° F(25°C) 32,000 mg/l Nacl 8% 7
3. Minimum Salt Rejection		99.5%
4. Minimum Product Flow Rate		5,600gpd(21.2m³/d)
5. Boron Rejection (typical value)		95% at pH 8 (5mg/l Boron added to Feed water)

Dimensions

All dimensions shown in Inches (millimeter).



Membrane TORAY 8”

Operating Limits

Maximum Operating Pressure	1200psi (8.3 MPa)
Maximum Feed Water Temperature	113° F (45℃)
Maximum Feed Water SDI_{15}	5
Feed Water Chlorine Concentration	Not detectable
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-12
Maximum Pressure Drop per Element	15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50 psi (0.34 MPa)

Operating Information

1.For the recommended design range, please consult the latest Toray technical bulletin, design guidelines,computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.

2. All elements are wet tested, treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during system shutdown, it is recommended to perform 30-60 minutes flushing of Toray elements with seawater once in every two days.

3.The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.

4. Permeate from the first hour of operation shall be discarded.

5.The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.

2. All data may change without prior notice, due to technical modifications or production changes.

Membrane TORAY 8”

Codice MTM820M-440

TORAY
Innovation by Chemistry

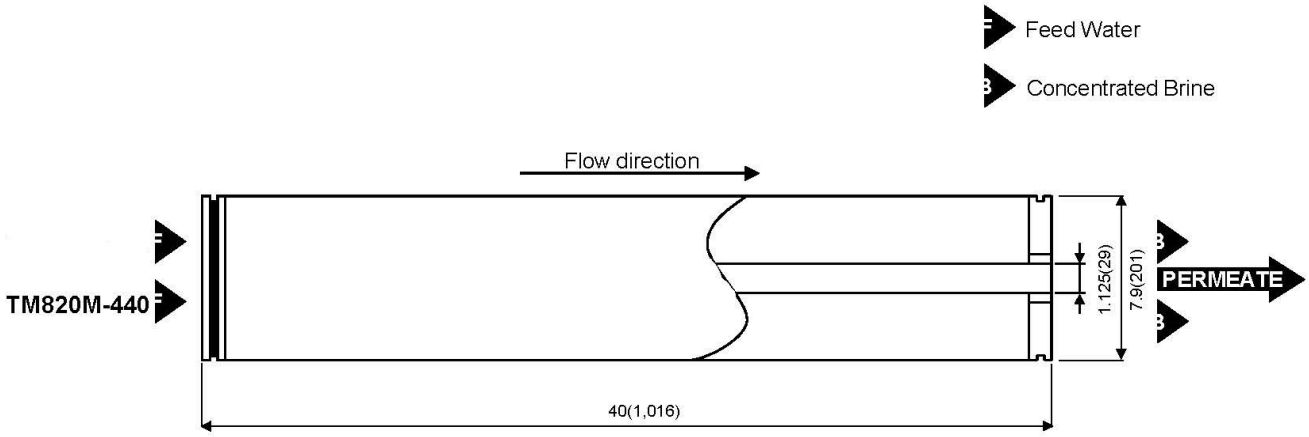
Standard SWRO
TM800M

Type	Diameter Inch	Membrane Area ft²(m²)	Salt Rejection %	Product Flow Rate gpd(m³ / d)	Feed Spacer Thickness mil
TM820M-440	8”	440(41)	99.8	7,700(29.2)	28

1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	800 psi(5.52MPa) 77° F(25°C) 32,000 mg/l Nacl 8% 7
3. Minimum Salt Rejection		99.5%
4. Minimum Product Flow Rate		6,200gpd(23.5m³/d)
5. Boron Rejection (typical value)		95% at pH 8 (5mg/l Boron added to Feed water)

Dimensions

All dimensions shown in Inches (millimeter).



Membrane TORAY 8”

Operating Limits

Maximum Operating Pressure	1200psi (8.3 MPa)
Maximum Feed Water Temperature	113° F (45℃)
Maximum Feed Water SDI_{15}	5
Feed Water Chlorine Concentration	Not detectable
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-12
Maximum Pressure Drop per Element	15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50 psi (0.34 MPa)

Operating Information

1.For the recommended design range, please consult the latest Toray technical bulletin, design guidelines,computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.

2. All elements are wet tested, treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during system shutdown, it is recommended to perform 30-60 minutes flushing of Toray elements with seawater once in every two days.

3.The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.

4. Permeate from the first hour of operation shall be discarded.

5.The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.

2. All data may change without prior notice, due to technical modifications or production changes.

Membrane TORAY 8”

Codice MTM820V-400

'TORAY'
Innovation by Chemistry

Low energy SWRO
TM800V

Type	Diameter Inch	Membrane Area ft²(m²)	Salt Rejection %	Product Flow Rate gpd(m³ / d)	Feed Spacer Thickness mil
TM820V-400	8"	400(37)	99.8	9,000(34.1)	34

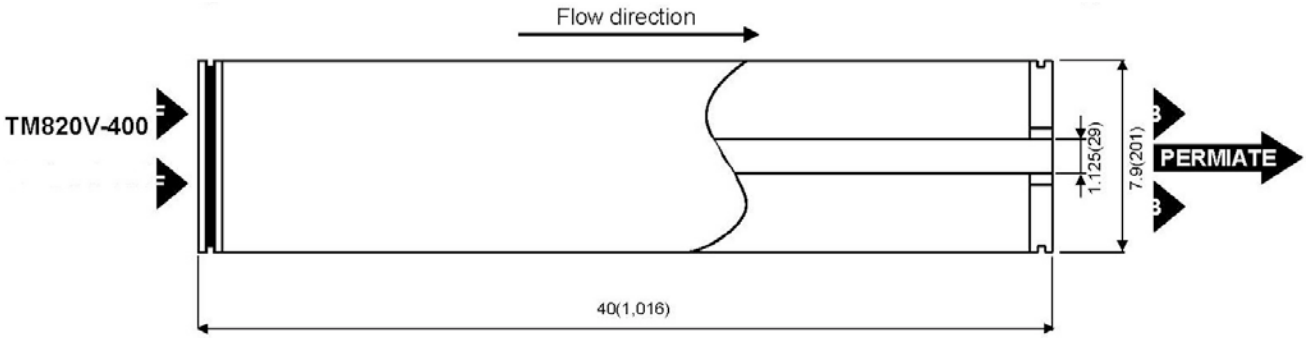
1. Membrane Type		Cross Linked Fully Aromatic Polyamide Composite
2. Test Conditions	Feed Water Pressure Feed Water Temperature Feed Water Concentration Recovery Rate Feed Water pH	800 psi(5.52MPa) 77° F(25°C) 32,000 mg/l Nacl 8% 7
3. Minimum Salt Rejection		99.5%
4. Minimum Product Flow Rate		7,500gpd(28.4m³/d)
5. Boron Rejection (typical value)		92% at pH 8 (5mg/l Boron added to Feed water)

Dimensions

All dimensions shown in Inches (millimeter).

F Feed Water

B Concentrated Brine



Membrane TORAY 8”

Operating Limits

Maximum Operating Pressure	1200psi (8.3 MPa)
Maximum Feed Water Temperature	113° F (45℃)
Maximum Feed Water SDI_{15}	5
Feed Water Chlorine Concentration	Not detectable
Feed Water pH Range, Continuous Operation	2-11
Feed Water pH Range, Chemical Cleaning	1-12
Maximum Pressure Drop per Element	15 psi (0.10 MPa)
Maximum Pressure Drop per Vessel	50 psi (0.34 MPa)

Operating Information

1.For the recommended design range, please consult the latest Toray technical bulletin, design guidelines,computer design program, and/ or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.

2. All elements are wet tested, treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during system shutdown, it is recommended to perform 30-60 minutes flushing of Toray elements with seawater once in every two days.

3.The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which acts as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. It is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system.

4. Permeate from the first hour of operation shall be discarded.

5.The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.

Notice

1. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
2. All data may change without prior notice, due to technical modifications or production changes.

Membrane CSM 8”

Cod. MCNE8040-90

NE8040-90

Normal grade NF element with high monovalent ion rejection

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate[1]:	8,000 GPD (30.3 m^3/day)
Monovalent ion rejection (NaCl)[1]:	85.0 – 97.0%
Divalent ion rejection ($CaCl_2$)[2]:	90.0 – 97.0%
Effective membrane area:	400 ft^2 (37.2 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following monovalent test conditions:
   - **2,000 mg/L NaCl solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. The stated product performance is based on data taken after 30 minutes of operation at the following divalent test conditions:
   - **500 mg/L $CaCl_2$ solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
3. $MgSO_4$ rejection is 97.0%. (Test conditions are equivalent with NaCl)
4. Permeate flow rate for each element may vary but will be no more than 15%.
5. Elements can be supplied as dry or wet-type. Wet-tested elements are soaked in a preservative solution (1.0% food grade SBS) and vacuum sealed in a poly bag. All elements are individually boxed.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
NE8040-90	40.0 inch (1,016 mm)	8.0inch (201 mm)	1.12 inch (28 mm)	15 kg	40000308	40000309

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All NE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

NE8040-90

CSM®

Normal grade NF element with high monovalent ion rejection

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Wet elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCNE8040-70

NE8040-70

Normal grade NF element with high monovalent ion rejection

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate[1]:	7,000 GPD (26.5 m^3/day)
Monovalent ion rejection (NaCl)[1]:	40.0 – 70.0%
Divalent ion rejection ($CaCl_2$)[2]:	45.0 – 70.0%
Effective membrane area:	400 ft^2 (37.2 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following monovalent test conditions:
   - **2,000 mg/L NaCl solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
2. The stated product performance is based on data taken after 30 minutes of operation at the following divalent test conditions:
   - **500 mg/L $CaCl_2$ solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**
3. $MgSO_4$ rejection is 97.0%. (Test conditions are equivalent with NaCl)
4. Permeate flow rate for each element may vary but will be no more than 20%.
5. Elements are supplied as dry-type. Dry elements are sealed in a poly bag and individually boxed.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
NE8040-70	40.0 inch (1,016 mm)	8.0inch (201 mm)	1.12 inch (28 mm)	15 kg	40000308	40000309

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All NE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

NE8040-70

CSM®

Normal grade NF element with high monovalent ion rejection

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM 8”

Cod. MCNE8040-40

NE8040-40
High productivity NF element

CSM®

SPECIFICATIONS:

General Features

Permeate flow rate:	10,000 GPD (37.9 m^3/day)
Nominal salt rejection:	20 – 40%
Effective membrane area:	400 ft^2 (37.2 m^2)

1. The stated product performance is based on data taken after 30 minutes of operation at the following test conditions:

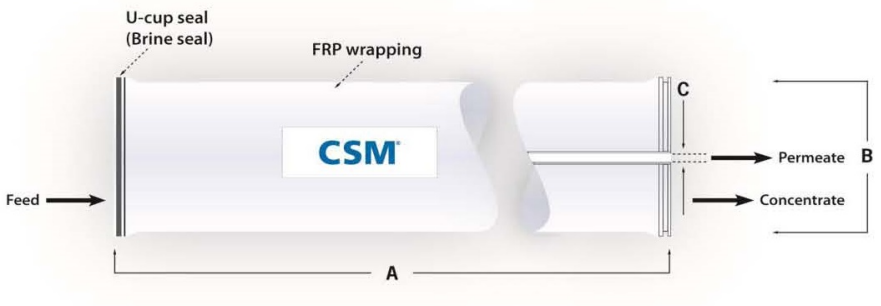
   - **2,000 mg/L NaCl solution at 75 psig (0.5 MPa) applied pressure**
   - **15% recovery**
   - **77 °F (25 °C)**
   - **pH 6.5–7.0**

2. $MgSO_4$ rejection is 97.0% (Test conditions are equivalent with NaCl)
3. Permeate flow rate for each element may vary but will be no more than 20%.
4. Elements are supplied as dry-type. Dry elements are sealed in a poly bag and individually boxed.

Membrane type:	Thin-Film Composite
Membrane material:	Polyamide (PA)
Element configuration:	Spiral-Wound, FRP Wrapping

Dimensions and Weight

Model Name	A	B	C	Weight	Part Number	
					Inter-connector	Brine Seal
NE8040-40	40.0 inch (1,016 mm)	8.0inch (201 mm)	1.12 inch (28 mm)	15 kg	40000308	40000309



1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
2. All NE8040 elements fit nominal 8.0 inch (201 mm) I.D. pressure vessels.

NE8040-40

High productivity NF element

CSM®

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
	· Max. Pressure Drop / 240” Vessel	60 psi (0.41 Mpa)
	· Max. Operating Pressure	600 psi (4.14 MPa)
	· Max. Feed Flow Rate	75 gpm (17.0 m^3/hr)
	· Min. Concentrate Flow Rate	16 gpm (3.6 m^3/hr)
	· Max. Operating Temperature	113 °F (45 °C)
	· Operating pH Range	2.0–11.0
	· CIP pH Range	1.0–13.0
	· Max. Turbidity	1.0 NTU
	· Max. SDI (15 min)	5.0
	· Max. Chlorine Concentration	< 0.1 mg/L
Design Guidelines for Various Water Sources	· Wastewater Conventional (SDI < 5)	8–12 gfd
	· Wastewater Pretreated by UF/MF (SDI < 3)	10–14 gfd
	· Seawater, Open Intake (SDI < 5)	7–10 gfd
	· Seawater, Beach Well (SDI < 3)	8–12 gfd
	· Surface Water (SDI < 5)	12–16 gfd
	· Surface Water (SDI < 3)	13–17 gfd
	· Well water (SDI < 3)	13–17 gfd
	· RO permeate (SDI < 1)	21–30 gfd
Saturation Limits (Using Antiscalants)†	· Langlier Saturation Index (LSI)	<+1.5
	· Stiff and Davis Saturation Index (SDSI)	<+0.5
	· $CaSO_4$	230% saturation
	· $SrSO_4$	800% saturation
	· $BaSO_4$	6,000% saturation
	· SiO_2	100% saturation

†The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user’s responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

Membrane CSM Brine Seal e Interconnector

- Ogni membrana è fornita con un brine seal e un interconnector (eccetto le membrane 2,5” in cui l’interconnector non è compreso).

BRINE SEAL				
CODICE	**DESCRIZIONE**	**MATERIALE**	**PER MEMBRANE**	
DC005	EPDM BRINE SEAL 2.5" CSM	EPDM	2,5”	
DD003	EPDM BRINE SEAL 4" CSM	EPDM	4”	
EA798	EPDM BRINE SEAL 8" CSM	EPDM	8”	

INTERCONNECTOR					
CODICE	**DESCRIZIONE**	**MATERIALE**	**COLORE**	**PER MEMBRANE**	
DD004	ABS FEMALE INTERCONNECTOR CSM 2.5" & 4" WITH O-RING	ABS	BIANCO	2,5” – 4”	
EA797	ABS MALE INTERCONNECTOR 1.5" CSM WITH O-RING	ABS	BIANCO	8”	
EA799	ABS MALE INTERCONNECTOR 1.125" CSM WITH O-RING -BW TYPE	ABS	NERO	8”	
EA800	NORYL MALE INTERCONNECTOR 1.125" CSM WITH O-RING - SW TIPE	NORYL	NERO	8”	

Permascale EUT 110

- Ideale per prevenire le incrostazioni e i depositi di ferro sulle membrane degli impianti ad osmosi inversa;
- Utilizzabile sia per impianti industriali che per impianti per acqua potabile;
- Particolarmente adatto per impianti di grosse dimensioni con portate di permeato maggiori di 100 m^3/giorno.
- Perfettamente compatibile con tutti i tipi di membrane;
- Estremamente efficace sulle diverse tipologie di acqua, minimizza lo sporcamento e riduce la frequenza degli interventi di pulizia delle membrane;
- Sostituisce totalmente o parzialmente l'acidificazione;
- La forma liquida ne semplifica l'utilizzo.

Caratteristiche	
Formulazione	fosfonati speciali
pH	7,8 ± 0,5
Aspetto	liquido giallo chiaro
Densità a 20°C	1,30 ± 0,05 g/ml
Controllo	tenore in fosfonati
Solubilità in acqua	completa

CODICE	
EA100	

Modalità di impiego

Iniezione per mezzo di una pompa dosatrice del prodotto puro (direttamente dal suo imballo) o diluito, con dosaggio in funzione della concentrazione dei sali incrostanti e del ferro (indicativamente può variare da 2 a 10 cm^3/m^3 di acqua di alimento).

Norme di utilizzo e confezionamento

Manipolazione: si rimanda alla scheda di sicurezza. Adottare le principali precauzioni d'uso legate alla manipolazione dei prodotti chimici.

Imballo: taniche da 25 kg.

Conservazione: negli imballi originali ben chiusi, in un locale fresco al riparo dal freddo intenso e dal calore eccessivo.

Permascale EUT 120

- Ideale per prevenire le incrostazioni e i depositi di ferro sulle membrane degli impianti ad osmosi inversa;
- Particolarmente adatto per impianti di piccole dimensioni con portate di permeato minori di 100 m^3/giorno.
- Perfettamente compatibile con tutti i tipi di membrane;
- Estremamente efficace sulle diverse tipologie di acqua, minimizza lo sporcamento e riduce la frequenza degli interventi di pulizia delle membrane;
- Sostituisce totalmente o parzialmente l'acidificazione;
- La forma liquida ne semplifica l'utilizzo.

Caratteristiche	
Formulazione	fosfonati speciali
pH	7,5 ± 0,5
Aspetto	liquido giallo chiaro
Densità a 20°C	1,30 ± 0,02 g/ml
Controllo	tenore in fosfonati
Solubilità in acqua	completa

CODICE	
EA101	

Modalità di impiego

Iniezione per mezzo di una pompa dosatrice del prodotto puro (direttamente dal suo imballo) o diluito, con dosaggio in funzione della concentrazione dei sali incrostanti e del ferro (indicativamente può variare da 3 a 13 cm^3/m^3 di acqua di alimento).

Norme di utilizzo e confezionamento

Manipolazione: si rimanda alla scheda di sicurezza. Adottare le principali precauzioni d'uso legate alla manipolazione dei prodotti chimici.

Imballo: taniche da 25 kg.

Conservazione: negli imballi originali ben chiusi, in un locale fresco al riparo dal freddo intenso e dal calore eccessivo.

PermaTreat PC-391T

- PermaTreat PC-391T è un inibitore di incrostazioni ad alta efficacia raccomandato per trattare sistemi di Osmosi Inversa che producono meno di 545 m^3/giorno (100 GPM) di permeato. E' una versione meno concentrata del PermaTreat PC-191T, che offre i benefici e i vantaggi di poter essere alimentato tal quale in sistemi RO di piccola capacità;
- PermaTreat PC-391T è efficace verso Carbonato di Calcio, Solfato di Calcio, Solfato di Bario, Solfato di Stronzio e Ferro.
- Imballo: taniche da 25 kg.

Caratteristiche fisiche e chimiche	
Colore	Limpido, giallo
Forma	Liquido
Odore	Di lieve odore ammoniacale
Densità a 25°C	1,10
pH (non diluito)	10,8
Solubilità in acqua	Completa

CODICE	
EA102 (*)	

(*) materiale a richiesta non disponibile in stock.

Materiali compatibili

Tubazioni in acciaio inox 304 e CPVC, Polietilene, Polipropilene, Plasite 4300 e Plasite 7122.
Tutte le membrane basate su Poliammide, comprese le membrane TFC (Thin Film Composite), anche usato direttamente tal quale.

Materiali non compatibili

Neoprene, Hypalon elastomero, Buna-N e EPDM. P.S. per tutti questi materiali, gli o-ring sono accettabili per applicazioni statiche. Se il raccordo è aperto, l'o-ring deve essere sostituito.
Bronzo, Poliuretano e Viton.

Dosaggio e alimentazione

PermaTreat PC-391T deve essere alimentato in continuo. Il punto di alimentazione deve essere prossimo alle membrane e deve essere assicurata una buona miscelazione con l'acqua di alimento prima dell'ingresso nel sistema di RO.

Il dosaggio di PermaTreat PC-391T dipende dalla chimica dell'acqua di alimento, dal tipo di membrane, dai parametri operativi (es. temperatura, pressione e concentrazione della salamoia). Questi fattori influenzano la tendenza del sistema a formare diversi tipi di incrostazione che possono depositarsi sulle membrane.

Per maggiori informazioni in merito al dosaggio e all'alimentazione,
Vi consigliamo di contattare il nostro Ufficio tecnico.

CONSEGUENZE DI UN SOVRADOSAGGIO
Un sovradosaggio di PermaTreat PC-391T determina un maggior costo.

CONSEGUENZE DI UN DOSAGGIO INSUFFICIENTE
Un dosaggio insufficiente di PermaTreat PC-391T determina l'inibizione della membrana. Questo porterà a membrane RO sporche e a una riduzione delle prestazioni del sistema e/o alla sostituzione prematura delle membrane. Nelle unità RO, solitamente si vede che gli elementi coda hanno le più alte concentrazioni di scarto (4 : 1 per un recupero nel sistema del 75%).

Per maggiori informazioni in merito al dosaggio e all'alimentazione,
Vi consigliamo di contattare il nostro Ufficio tecnico.

DATI SULL'AMBIENTE E SULLA TOSSICITA'
Fare riferimento alla scheda di dati di sicurezza per tutte le informazioni a disposizione in merito alla tossicità per i mammiferi e per gli animali acquatici.

		ppm / ppm di prodotto
BOD_5	(Biological Oxygen Demand, 5 giorni)	Non disponibile
COD	(Chemical Oxygen Demand)	Non disponibile
TOC	(Total Organic Carbon)	Non disponibile

SICUREZZA E MANIPOLAZIONE
Prima di utilizzare il PermaTreat PC-391T, far riferimento alla scheda di dati di sicurezza per i dispositivi di protezione individuale (DPI) e per gli effetti sulla salute.

IMMAGAZZINAMENTO
Il PermaTreat PC-391T ha un limite di stoccaggio consigliato di un anno. La massima temperatura di stoccaggio è di 38°C. Per ulteriori dati far riferimento alla scheda di dati di sicurezza.

NOTE
Per emergenze mediche e di trasporto, consultare la scheda di dati di sicurezza.

PermaTreat PC-191T

- PermaTreat PC-191T è un inibitore di incrostazioni di alta efficacia i cui costituenti attivi sono stati sviluppati per trattare i sistemi di Osmosi Inversa.
- PermaTreat PC-191T ha dimostrato un'eccellente efficacia verso tutti i depositi minerali di carbonato di calcio, solfato di calcio, solfato di bario, solfato di stronzio, fluoruro di calcio, silice e ferro;
- **Per sistemi RO con portata di alimentazione inferiori a 545 m^3/giorno (100 GPM), si consiglia di utilizzare il PermaTreat PC-391T (avente nostro codice EA102);**
- PermaTreat PC-191T è raccomandato per livelli di Silice nella "brine" concentrata meno di 185 mg/l a 25°C e pH = 7,5;
- Imballo: taniche da 25 kg.

Caratteristiche fisiche e chimiche	
Colore	Limpido, giallo
Forma	Liquido
Odore	Di lieve odore ammoniacale
Densità a 25°C	1,36
pH (non diluito)	10,5
Solubilità in acqua	Completa

CODICE	
EA103 (*)	

(*) materiale a richiesta non disponibile in stock.

Materiali compatibili
Tubazioni in acciaio inox 304 e CPVC, Polietilene, Polipropilene, Plasite 4300 e Plasite 7122.
Tutte le membrane basate su Poliammide, comprese le membrane TFC (Thin Film Composite), anche usato direttamente tal quale.

Materiali non compatibili
Neoprene, Hypalon elastomero, Buna-N e EPDM. P.S. per tutti questi materiali, gli o-ring sono accettabili per applicazioni statiche. Se il raccordo è aperto, l'o-ring deve essere sostituito.
Bronzo, Poliuretano e Viton.

Dosaggio e alimentazione

PermaTreat PC-191T deve essere alimentato in continuo. Il punto di alimentazione deve essere prossimo alle membrane e deve essere assicurata una buona miscelazione con l'acqua di alimento prima dell'ingresso nel sistema di RO.

Il dosaggio di PermaTreat PC-191T dipende dalla chimica dell'acqua di alimento, dal tipo di membrane, dai parametri operativi (es. temperatura, pressione e concentrazione della salamoia). Questi fattori influenzano la tendenza del sistema a formare diversi tipi di incrostazione che possono depositarsi sulle membrane.

Per maggiori informazioni in merito al dosaggio e all'alimentazione,
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Per maggiori informazioni in merito al dosaggio e all'alimentazione,
Vi consigliamo di contattare il nostro Ufficio tecnico.

DATI SULL'AMBIENTE E SULLA TOSSICITA'
Fare riferimento alla scheda di dati di sicurezza per tutte le informazioni a disposizione in merito alla tossicità per i mammiferi e per gli animali acquatici.

		ppm / ppm di prodotto
BOD_5	(Biological Oxygen Demand, 5 giorni)	Non disponibile
COD	(Chemical Oxygen Demand)	Non disponibile
TOC	(Total Organic Carbon)	Non disponibile

SICUREZZA E MANIPOLAZIONE
Prima di utilizzare il PermaTreat PC-191T, far riferimento alla scheda di dati di sicurezza per i dispositivi di protezione individuale (DPI) e per gli effetti sulla salute.

IMMAGAZZINAMENTO
Il PermaTreat PC-191T ha un limite di stoccaggio consigliato di un anno. La massima temperatura di stoccaggio è di 38°C. Per ulteriori dati far riferimento alla scheda di dati di sicurezza.

NOTE
Per emergenze mediche e di trasporto, consultare la scheda di dati di sicurezza.

Membrane di Ultra Filtrazione TORAY serie HFU (tipo N) in PVDF

- Materiale delle membrane = PVDF (Polivinilidenfluoruro);
- Materiale del modulo = PVC e/o ABS;
- Materiale sigillante fibre cave = resina epossidica o resina uretanica;
- Peso molecolare Cut Off nominale = 150.000;
- Range del pH di lavaggio 0 ÷ 12;
- Massima temperatura di lavaggio 40°C;
- Massima concentrazione di NaClO di lavaggio come Cl_2 = 3.000 mg/litro (10≤pH≤12);
- Esposizione massima di NaClO (tempo di contatto) come Cl_2 = 1.000.000 mg/litri ora;
- Tempo massimo di contatto con acidi = 1.000 ore (pH≥0).

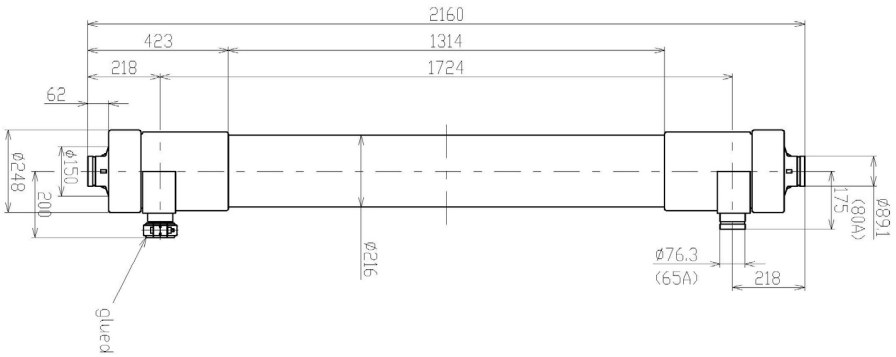
CONDIZIONI OPERATIVE	
Metodo di filtrazione	Outside to inside, dead end
Massima pressione di ingresso	300 kPa (43,5 psi)
Massima pressione trans-membrana	300 kPa (43,5 psi)
Tipica pressione trans-membrana di esercizio	< 200 kPa (<29,0 psi)
Range della temperature di esercizio	0÷40°C
Range del pH di esercizio	1÷10

CODICE	**MODELLO**	**AREA SUPERFICIE MEMBRANA (SUPERFICIE ESTERNA)**	**DIAMETRO**	**LUNGHEZZA**	**PESO (PIENO DI ACQUA)**	**PESO (DRENATO)**	
		m^2 (ft^2)	**mm**	**mm**	**kg**	**kg**	
MTHFU-2020N (*)	HFU-2020N	72 (775)	216	2160	110	67	
MTHFU-1020N (*)	HFU-1020N	29 (312)	216	1120	60	40	
MTHFU-1010N (*)	HFU-1010N	7 (75)	114	1078	15	9	
MTHFU-2008N (*)	HFU-2008N	11,5 (124)	89	2000	18	11	

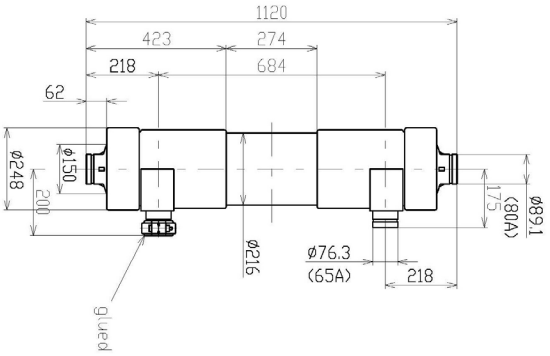
(*) materiale a richiesta non disponibile in stock.

Membrane di Ultra Filtrazione TORAY serie HFU (tipo N) in PVDF

HFU-2020N

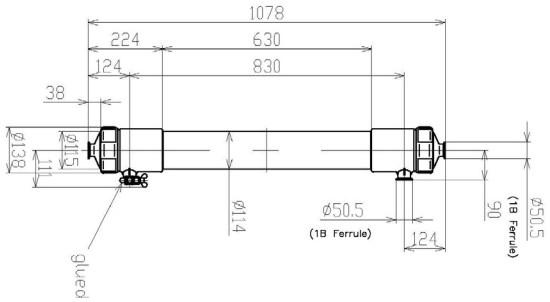


HFU-1020N



Dimensioni in mm

HFU-1010N



HFU-2008N