

# RO MEMBRANES VRO-400-28

High Rejection, good Productivity - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)	
			Minimum	Nominal
MBROYR301661	37.2	40 (10500)	99.0	99.5

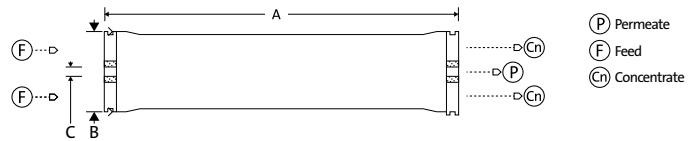
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Permeate tube length inches (mm)
		A	B	C		
MBROYR301661	17.0 (75)	40 (1016)	7.89 (200)	1.5 (38,1)	16,4 (36)	-

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

2000 ppm NaCl solution, 15.5 bar, 25°C, pH 8.0,  
 Permeate Recovery 15%.



### Operating Limits\*

Maximum Applied Pressure: 41.4 bar (600 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 1.0 bar (15 psi)



**Veolia RO membranes** are designed to be operated with **Hydrex™ additives** to get optimum performance and extended life of the membranes.

**Hydrex™ inhibitors** are employed during routine operation for :

- Inhibition of mineral scales and metal deposits
- Prevention of biofouling
- Prevention of membrane oxidation

**Hydrex™ cleaners** are employed during periodical cleaning of the RO units (CIP) to recover the performances of the membranes.

The complete **Hydrex™ program** will be determined by our engineers depending on water quality and system design.

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Notice: Minimum permeate flow for individual elements 15 % below listed flow. All membrane elements are supplied with a brine seal and o-rings. Elements are vacuum sealed in a polyethylene bag containing less than 1.0% sodium metabisulphite and 10% propylene glycol solution and then packaged in a cardboard box.

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# RO MEMBRANES VRO-2540

High Productivity - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)	
			Minimum	Nominal
MBROYL307131	2.6	3.8 (1000)	99.0	99.5

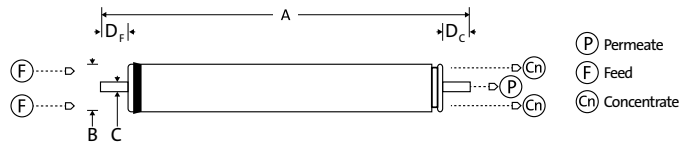
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Core Tube Extension inches (mm)
		A	B	C		
MBROYL307131	1.4 (6)	40 (1016)	2.4 (61)	0.75 (19.1)	1.8 (4)	1.2 (30.5)

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

2000 ppm NaCl solution, 15.5 bar, 25°C, pH 6.5 - 7.0,  
 Permeate Recovery 15%.



### Operating Limits\*

Maximum Applied Pressure: 20.7 bar (300 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 1.0 bar (15 psi)



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# RO MEMBRANES VRO-HR4040

Low Energy, Excellent Productivity - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)	
			Minimum	Nominal
MBROYN307128	8.7	10.2 (2900)	99.3	99.5

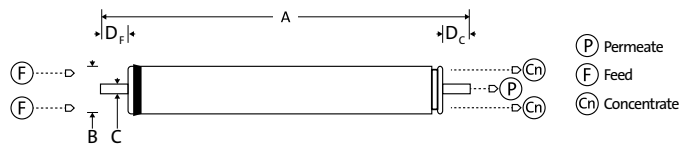
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Core Tube Extension inches (mm)
		A	B	C		
MBROYN307128	3.6 (16)	40 (1016)	3.95 (100.3)	0.75 (19.1)	3.6 (8)	1.05 (26.7)

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

2000 ppm NaCl solution, 15 bar, 25°C, pH 8.0,  
 Permeate Recovery 15%.



### Operating Limits\*

Maximum Applied Pressure: 20.7 bar (300 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 1.0 bar (15 psi)



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# RO MEMBRANES VRO-HRSE440-28

Low Energy, Very High Rejection - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)	
			Minimum	Nominal
MBROYR307123	40.9	47.9 (12650)	99.0	99.3

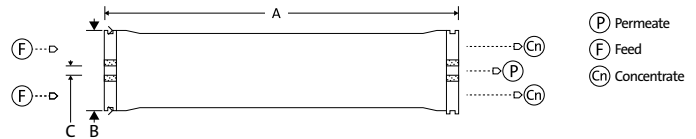
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Permeate tube length inches (mm)
		A	B	C		
MBROYR307123	17.0 (75)	40 (1016)	7.89 (200)	1.125 (28,6)	16,4 (36)	-

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

2000 ppm NaCl solution, 10.3 bar, 25°C, pH 8.0,  
 Permeate Recovery 15%.



### Operating Limits\*

Maximum Applied Pressure: 41.4 bar (600 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 1.0 bar (15 psi)



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# RO MEMBRANES VRO-HWS390FF

## Heat Sanitizable Full-Fit Elements

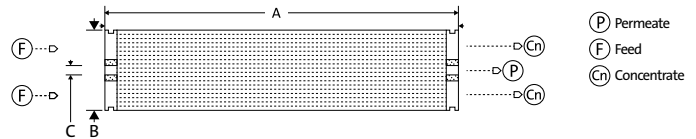
Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)	
			Minimum	Nominal
MBROYN307125	36	34 (9000)	99.0	99.5

Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Permeate tube length inches (mm)
		A	B	C		
MBROYN307125	-	40 (1016)	7.9 (200)	1.125 (28,6)	15 (33)	-

**Type** Sanitizable Spiral Wound  
**Configuration:** Full-Fit (Mesh wrap)  
**Membrane Polymer:** Composite Polyamide  
**ATD & Core Tube Material:** Polysulphone

### Test Conditions

2000 ppm NaCl solution, 10.3 bar, 25°C, pH 6.5 - 7.0,  
 Permeate Recovery 15%.



### Operating Limits\*

**Maximum Applied Pressure:** 41.4 bar (600 psig)  
**Maximum Free Chlorine Concentration:** < 0.1 ppm  
**Maximum Operating Temperature:** 45°C  
**Feedwater pH Range:** 2.0 - 11.0  
**Cleaning pH Range:** 1.0 - 12.0  
**Maximum Feedwater Turbidity:** 1.0 NTU  
**Maximum Feedwater Fouling Index (SDI):** 5.0  
**Maximum Sanitizing Temperature:** 85°C  
**Maximum Sanitizing Pressure:** 1.7 bar (25 psi)  
**Temperature pH 10:** 35°C



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# RO MEMBRANES VRO-HWS4040FF

## Heat Sanitizable Full-Fit Elements

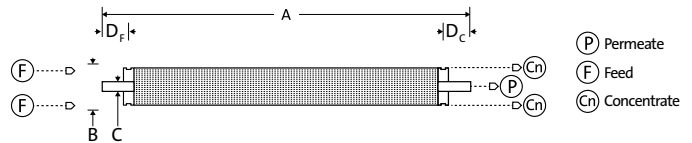
Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)	
			Minimum	Nominal
MBROYN307124	8.4	7.2 (1900)	-	99.5

Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Core Tube Extension inches (mm)
		A	B	C		
MBROYN307124	-	40 (1016)	3.98 (101)	0.75 (19.1)	3.2 (7)	1.05 (26.7)

**Type** Sanitizable Spiral Wound  
**Configuration:** Full-Fit (Mesh wrap)  
**Membrane Polymer:** Composite Polyamide  
**ATD & Core Tube Material:** Polysulphone

### Test Conditions

2000 ppm NaCl solution, 10.3 bar, 25°C, pH 6.5 - 7.0,  
 Permeate Recovery 15%.



### Operating Limits\*

Maximum Applied Pressure: 41.4 bar (600 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 12.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Sanitizing Temperature: 85°C  
 Maximum Sanitizing Pressure: 1.7 bar (25 psi)  
 Temperature pH 10: 35°C



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# RO MEMBRANES VRO-SE4040

Extra Low Energy, Excellent Productivity - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)	
			Minimum	Nominal
MBROYN307130	8.7	10.2 (2700)	-	99.0

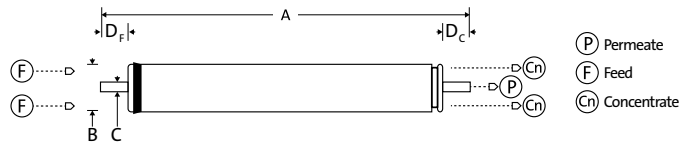
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Core Tube Extension inches (mm)
		A	B	C		
MBROYN307130	3.6 (16)	40 (1016)	3.95 (100.3)	0.75 (19.1)	3.6 (8)	1.05 (26.7)

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

2000 ppm NaCl solution, 8.6 bar, 25°C, pH 8.0,  
 Permeate Recovery 15%.



### Operating Limits\*

Maximum Applied Pressure: 20.7 bar (300 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 1.0 bar (15 psi)



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# RO MEMBRANES VRO-XSE400-28

High Rejection, High Productivity - Sea Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)		Boron Rejection (%)
			Minimum	Nominal	Stabilized
MBROYR307133	371	34 (9000)	99.6	99.8	91.5

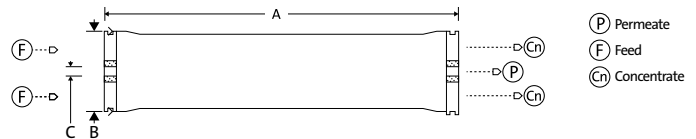
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Permeate tube length inches (mm)
		A	B	C		
MBROYR307133	17.0 (75)	40 (1016)	7.89 (200)	1.125 (28,6)	16,4 (36)	-

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

32000 ppm NaCl solution, Boron Concentration 5 ppm,  
 56 bar, 25°C, pH 8.0, Permeate Recovery 8%.



### Operating Limits\*

Maximum Applied Pressure: 82.7 bar (1200 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 1.0 bar (15 psi)



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# RO MEMBRANES VRO-XSE2521

Extra Low Energy, Excellent Productivity - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Stabilized Salt Rejection (%)
MBROYL307126	1.1	1.4 (365)	99.0

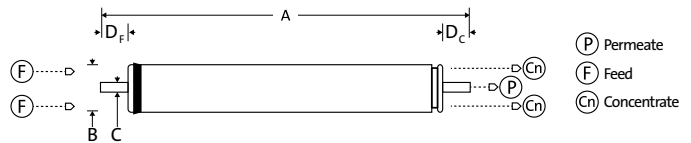
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Core Tube Extension inches (mm)
		A	B	C		
MBROYL307126	1.4 (6)	21.0 (533.4)	2.4 (61)	0.75 (19.1)	0.9 (2)	1.2 (30.5)

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

500 ppm NaCl solution, 6.9 bar, 25°C, pH 6.5 - 7.0,  
 Permeate Recovery 8%.



### Operating Limits\*

Maximum Applied Pressure: 20.7 bar (300 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 0.9 bar (13 psi)



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# RO MEMBRANES VRO-XSE2540

Extra Low Energy, Excellent Productivity - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Stabilized Salt Rejection (%)
MBROYL307127	2.6	3.2 (850)	99.0

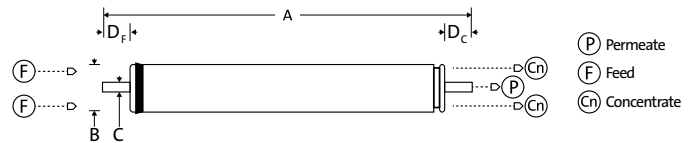
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Core Tube Extension inches (mm)
		A	B	C		
MBROYL307127	1.4 (6)	40.0 (1016)	2.4 (61)	0.75 (19.1)	1.8 (4)	1.2 (30.5)

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

500 ppm NaCl solution, 6.9 bar, 25°C, pH 6.5 - 7.0,  
 Permeate Recovery 15%.



### Operating Limits\*

Maximum Applied Pressure: 20.7 bar (300 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 0.9 bar (13 psi)



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# RO MEMBRANES VRO-XSE4021

Extra Low Energy, Excellent Productivity - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Stabilized Salt Rejection (%)
MBROYN307129	3.29	3.88 (1025)	99.0

Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Core Tube Extension inches (mm)
		A	B	C		
MBROYN307129	3.2 (14)	21.0 (533.4)	3.95 (100.3)	0.75 (19.1)	1.8 (4)	1.2 (30.5)

### Type

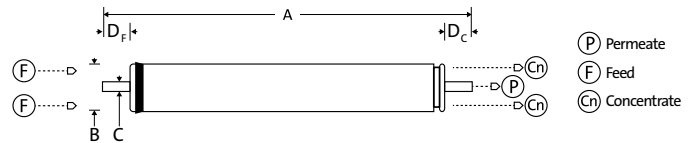
**Configuration:** Spiral Wound  
**Membrane Polymer:** Composite Polyamide  
**Brine Spacer Material:** Polypropylene

### Test Conditions

500 ppm NaCl solution, 6.9 bar, 25°C, pH 6.5 - 7.0,  
 Permeate Recovery 8%.

### Operating Limits\*

**Maximum Applied Pressure:** 20.7 bar (300 psig)  
**Maximum Free Chlorine Concentration:** < 0.1 ppm  
**Maximum Operating Temperature:** 45°C  
**Feedwater pH Range:** 2.0 - 11.0  
**Cleaning pH Range:** 1.0 - 13.0  
**Maximum Feedwater Turbidity:** 1.0 NTU  
**Maximum Feedwater Fouling Index (SDI):** 5.0  
**Maximum Element Recovery:** 19%  
**Maximum Pressure Drop Per Element:** 0.9 bar (13 psi)



**Veolia RO membranes** are designed to be operated with **Hydrex™ additives** to get optimum performance and extended life of the membranes.

**Hydrex™ inhibitors** are employed during routine operation for :

- Inhibition of mineral scales and metal deposits
- Prevention of biofouling
- Prevention of membrane oxidation

**Hydrex™ cleaners** are employed during periodical cleaning of the RO units (CIP) to recover the performances of the membranes.

The complete **Hydrex™ program** will be determined by our engineers depending on water quality and system design.

\* Operating limits are for information only, actual operating conditions should be optimised to ensure best performance and membrane life.

**Notice:** Minimum permeate flow for individual elements 15 % below listed flow. All membrane elements are supplied with a brine seal and o-rings. Elements are vacuum sealed in a polyethylene bag containing less than 1.0% sodium metabisulphite and 10% propylene glycol solution and then packaged in a cardboard box.

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# RO MEMBRANES VRO-XSE440-28

Extra Low Energy, High Rejection - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)	
			Minimum	Nominal
MBROYR307122	40.9	53 (14000)	97.0	99.0

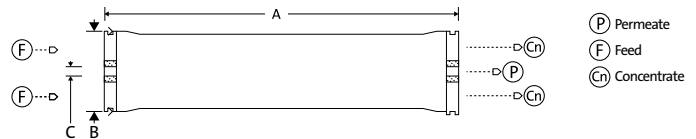
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Permeate tube length inches (mm)
		A	B	C		
MBROYR307122	17.0 (75)	40 (1016)	7.89 (200)	1.5 (38,1)	16,4 (36)	-

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

2000 ppm NaCl solution, 8.6 bar, 25°C, pH 8.0,  
 Permeate Recovery 15%.



### Operating Limits\*

Maximum Applied Pressure: 41.4 bar (600 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 1.0 bar (15 psi)



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**Hydrex™ inhibitors** are employed during routine operation for :

- Inhibition of mineral scales and metal deposits
- Prevention of biofouling
- Prevention of membrane oxidation

**Hydrex™ cleaners** are employed during periodical cleaning of the RO units (CIP) to recover the performances of the membranes.

The complete **Hydrex™ program** will be determined by our engineers depending on water quality and system design.

\* Operating limits are for information only, actual operating conditions should be optimised to ensure best performance and membrane life.

Notice: Minimum permeate flow for individual elements 15 % below listed flow. All membrane elements are supplied with a brine seal and o-rings. Elements are vacuum sealed in a polyethylene bag containing less than 1.0% sodium metabisulphite and 10% propylene glycol solution and then packaged in a cardboard box.

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# RO MEMBRANES VRO-HRSE400-28

Low Energy, Very High Rejection - Brackish Water Element

Part Number	Nominal Area m <sup>2</sup>	Permeate Flow Rate m <sup>3</sup> /d (usgpd)	Salt Rejection (%)	
			Minimum	Nominal
MBROYR307862	37	44 (11500)	99.0	99.3

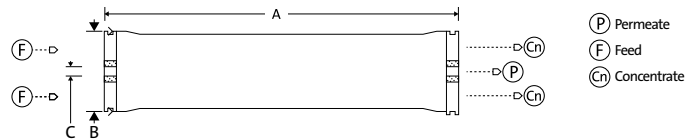
Part Number	Maximum Feed Flow m <sup>3</sup> /hr (usgpm)	Dimensions inches (mm)			Weight. kg (lbs)	Permeate tube length inches (mm)
		A	B	C		
MBROYR307862	17.0 (75)	40 (1016)	7.89 (200)	1.125 (28,6)	16,4 (36)	-

### Type

Configuration: Spiral Wound  
 Membrane Polymer: Composite Polyamide  
 Brine Spacer Material: Polypropylene

### Test Conditions

2000 ppm NaCl solution, 10.3 bar, 25°C, pH 8.0,  
 Permeate Recovery 15%.



### Operating Limits\*

Maximum Applied Pressure: 41.4 bar (600 psig)  
 Maximum Free Chlorine Concentration: < 0.1 ppm  
 Maximum Operating Temperature: 45°C  
 Feedwater pH Range: 2.0 - 11.0  
 Cleaning pH Range: 1.0 - 13.0  
 Maximum Feedwater Turbidity: 1.0 NTU  
 Maximum Feedwater Fouling Index (SDI): 5.0  
 Maximum Element Recovery: 19%  
 Maximum Pressure Drop Per Element: 1.0 bar (15 psi)



**Veolia RO membranes** are designed to be operated with **Hydrex™ additives** to get optimum performance and extended life of the membranes.

**Hydrex™ inhibitors** are employed during routine operation for :

- Inhibition of mineral scales and metal deposits
- Prevention of biofouling
- Prevention of membrane oxidation

**Hydrex™ cleaners** are employed during periodical cleaning of the RO units (CIP) to recover the performances of the membranes.

The complete **Hydrex™ program** will be determined by our engineers depending on water quality and system design.

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