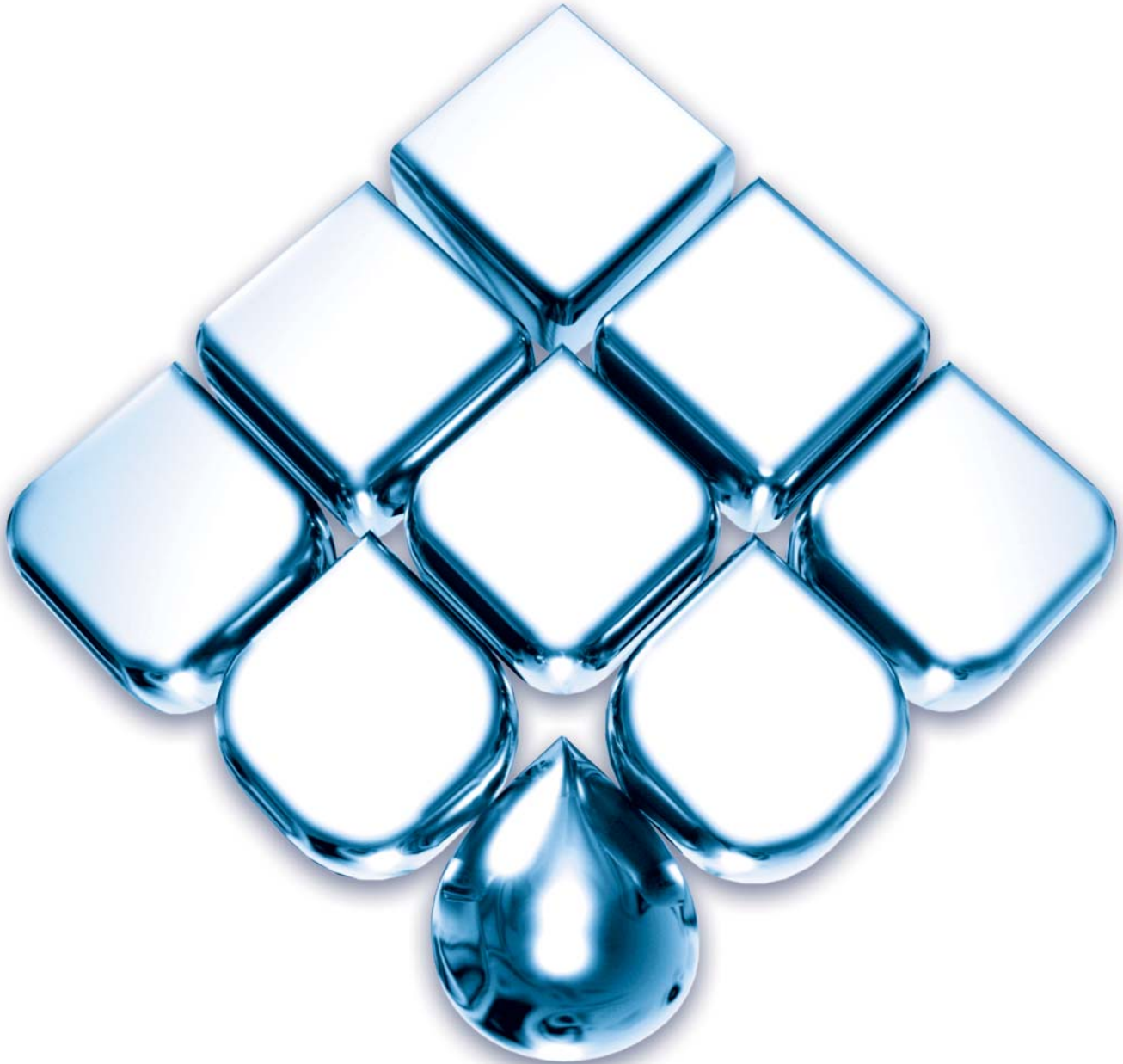


Danfoss
Sea Recovery
REVERSE OSMOSIS DESALINATORS®



High Seas™ Series

Commercial and Industrial Systems

High Seas Series

North Sea, Tasman Sea, and Coral Sea
Providing fresh water - and peace of mind - worldwide



Reliability is the first priority in commercial applications of reverse osmosis desalination. Whether on a commercial fishing vessel, offshore drilling platform, cruise ship, or land-based resort, fresh drinking water is not a luxury, it is a necessity for the successful operation of a commercial venture.

Since its conception in 1981, Sea Recovery Corporation has engineered and manufactured with the highest quality marine grade materials and components to ensure robust desalinators for years of reliable service on land and at sea in the most extreme conditions.

Peace of Mind

Today, Sea Recovery delivers over a thousand reverse osmosis systems throughout the world per year. When expert technical support is needed, our vast worldwide factory-trained sales and service network is readily available to assist our valued customers. All Sea Recovery reverse osmosis systems are covered by a comprehensive one-year warranty; an extended warranty is also available.

The Right Capacity for Every Need

Sea Recovery's standard cataloged "High Seas" R.O. systems are available in fresh water production ranges from 2,800 to 44,000 gallons (10,599 to 166,558 liters) per day from sea water feed sources. Sea Recovery's quick delivery is appreciated by our customers, who refer to us as the "On Time, Every Time Company".

Custom Orders

For special application requirements, Sea Recovery's highly trained staff of engineers and technical marketing personnel are at your disposal and ready to assist you in all your specific desalination needs.

Certifications and Standards

Sea Recovery set the industry standard by becoming the first and only R.O. manufacturer to have their entire R.O. product lines Type Accepted by The American Bureau of Shipping (ABS). The quality and dependability of Sea Recovery's manufacturing techniques, engineering, and customer service continue to be the key to our growth and success. Sea Recovery manufactures equipment to industry standards set forth by industrial institutions including that of ABS, NBBI, ASME, ASTM, AWWA, API, NEC, NEMA, certain military specifications and other rigorous standards and requirements. All Sea Recovery systems have obtained CE approval.

Marine Product Line

Sea Recovery also manufactures its Marine Whisper Series, which covers watermaking capacities from 170 to 1,800 U.S. Gallons (643 to 6,814 liters) per day. The Aqua Whisper and Ultra Whisper reverse osmosis desalinators have the right capacity and configuration suitable for any mega, power, or sailing yachts. To request a Marine Whisper Series brochure, contact Sea Recovery or simply download it from our website, www.searecovery.com.



A System to Meet Every Need!

Sea Recovery's full line of reverse osmosis desalinators produce from 2,800 to 44,000 gallons of pure potable water per day. Regardless of the specific application or use, there is a Sea Recovery watermaker to suit your need.

North Seas Specifications

* Complete Benefits and Features on pages 4 and 5

Model	Per 24 Hours	Per Hour
42m ³ /S2	11,000 gal/ 41,639 lit	458 gal/1,735 lit
76m ³ /S2	20,000 gal/ 75,708 lit	833 gal/3,155 lit
98m ³ /S2	26,000 gal/ 98,420 lit	1,083 gal/4,101 lit
121m ³ /D2	32,000 gal/121,133 lit	1,333 gal/5,047 lit
132m ³ /D2	35,000 gal/132,489 lit	1,458 gal/5,520 lit
144m ³ /D2	38,000 gal/143,845 lit	1,583 gal/5,994 lit
144m ³ /D3	38,000 gal/143,845 lit	1,583 gal/5,994 lit
159m ³ /D3	42,000 gal/158,987 lit	1,750 gal/6,624 lit
167m ³ /D3	44,000 gal/166,558 lit	1,833 gal/6,940 lit

HP (Horse Power), FLA (Full Load Amp) includes Booster Pump, and High Pressure Pump. LRA (Locked Rotor Amp/Starting Current) listed only for High Pressure Pump. Booster Pump and High Pressure Pump are sequentially started.

High Pressure Pump Motor 50 HP with 3 HP Booster Pump Motor

Phase	Hz	VAC	HP	FLA	LRA
Three	50	220	50	136.4	792
Three	50	380	50	78.2	458
Three	50	440	50	68.0	396
Three	60	200	50	148.6	648
Three	60	208	50	144.8	877
Three	60	230	50	131.8	618
Three	60	460	50	65.9	309

Operating Voltage Hz & Phase	Circuit Breaker Size
220 VAC, 50 Hz, Three Phase	150 Amperes
380 VAC, 50 Hz, Three Phase	90 Amperes
440 VAC, 50 Hz, Three Phase	75 Amperes
200 VAC, 60 Hz, Three Phase	160 Amperes
208 VAC, 60 Hz, Three Phase	160 Amperes
230 VAC, 60 Hz, Three Phase	150 Amperes
460 VAC, 60 Hz, Three Phase	75 Amperes

Tasman Seas Specifications

* Complete Benefits and Features on pages 6 and 7

Model	Per 24 Hours	Per Hour
21m ³ /S1	5,500 gal /20,820 lit	229 gal/ 867 lit
38m ³ /S1	10,000 gal/37,854 lit	417 gal/1,577 lit
53m ³ /S1	14,000 gal/52,996 lit	583 gal/2,208 lit
64m ³ /D1	17,000 gal/64,352 lit	708 gal/2,681 lit
72m ³ /D1	19,000 gal/71,923 lit	792 gal/2,997 lit
79m ³ /D1	21,000 gal/79,493 lit	875 gal/3,312 lit
38m ³ /S2	10,000 gal/37,854 lit	417 gal/1,577 lit
64m ³ /S2	17,000 gal/64,352 lit	708 gal/2,681 lit
79m ³ /S2	21,000 gal/79,493 lit	875 gal/3,312 lit

High Pressure Pump Motor 30 HP with 2 HP Booster Pump Motor

Phase	Hz	VAC	HP	FLA	LRA
Three	50	220	30 & 2	62.4	390
Three	50	380	30 & 2	31.2	198
Three	50	415	30 & 2	29.0	180
Three	60	208	30 & 2	63.4	390
Three	60	230	30 & 2	57.8	370
Three	60	460	30 & 2	28.9	185

Operating Voltage Hz & Phase	Circuit Breaker Size
220 VAC, 50 Hz, Three Phase	90 Amperes
380 VAC, 50 Hz, Three Phase	50 Amperes
415 VAC, 50 Hz, Three Phase	50 Amperes
208 VAC, 60 Hz, Three Phase	90 Amperes
230 VAC, 60 Hz, Three Phase	90 Amperes
460 VAC, 60 Hz, Three Phase	50 Amperes

Coral Seas Specifications

* Complete Benefits and Features on pages 8, 9 and 10

Model	Per 24 Hours	Per Hour
2800/3/V	2,800 gal/ 10,599 lit	117 gal/ 442 lit
3600/3/V	3,600 gal/ 13,627 lit	150 gal/ 568 lit
2800/3/H	2,800 gal/ 10,599 lit	117 gal/ 442 lit
3600/3/H	3,600 gal/ 13,627 lit	150 gal/ 568 lit
2800/3/M	2,800 gal/ 10,599 lit	117 gal/ 442 lit
3600/3/M	3,600 gal/ 13,627 lit	150 gal/ 568 lit
4200/4/V	4,200 gal/ 15,899 lit	175 gal/ 662 lit
5200/4/V	5,200 gal/ 19,684 lit	217 gal/ 820 lit
4200/4/H	4,200 gal/ 15,899 lit	175 gal/ 662 lit
5200/4/H	5,200 gal/ 19,684 lit	217 gal/ 820 lit
6200/4/H	6,200 gal/ 23,469 lit	258 gal/ 978 lit
6800/4/H	6,800 gal/ 25,741 lit	283 gal/1,073 lit

3" Models

2,800 - 3600 GPD

Phase	Hz	VAC	HP	FLA	LRA
Single	50	220	5 & 1	32.0	183
Three	50	220	5 & 1	24.3	138
Three	50	380	5 & 1	11.5	80
Single	60	230	5 & 1	26.5	146
Three	60	208	5 & 1	18.1	122
Three	60	230	5 & 1	16.4	110
Three	60	460	5 & 1	8.2	55

4" Models

4,200 - 6,800 GPD

HP	FLA	LRA
n/a	n/a	n/a
10 & 1	36.3	276
10 & 1	20.9	160
n/a	n/a	n/a
10 & 1	32.5	243
10 & 1	29.2	220
10 & 1	14.6	110

Operating Voltage Hz & Phase

220 VAC, 50 Hz, Single Phase	65 Amperes
220 VAC, 50 Hz, Three Phase	50 Amperes
380 VAC, 50 Hz, Three Phase	25 Amperes
230 VAC, 60 Hz, Single Phase	55 Amperes
208 VAC, 60 Hz, Three Phase	35 Amperes
230 VAC, 60 Hz, Three Phase	35 Amperes
460 VAC, 60 Hz, Three Phase	15 Amperes

Circuit Breaker Size

3" Model w/5 HP	4" Model w/10 HP
-na	-na
50 Amperes	70 Amperes
40 Amperes	40 Amperes
-na	-na
65 Amperes	65 Amperes
60 Amperes	60 Amperes
30 Amperes	30 Amperes

Recommended System Electrical Line Feed Circuit Breaker Size:

The recommended Circuit Breaker Size assumes that the R.O. System is equipped with only two electric motors (Booster Pump Motor and High Pressure Pump Motor). If an optional Feed Pump is also used, the Circuit Breaker must be sized appropriately to handle all three motors.

The specifications listed within this brochure, including production rates, product water quality, and energy consumption are based on High Rejection and High Flux Sea Water R.O. Membrane Elements. Brackish water application specifications will be provided upon request.

North Sea Series

Highest Production, Small Footprint, Simple Operation

The rugged and versatile "North Sea" series is the top choice of many oil industry related companies, hotels, and cruise ship operators for their R.O. needs. Quick delivery, continuous duty requirements, years of expected useful service, and Sea Recovery's worldwide sales and service network are just a few reasons these demanding customers chose the North Sea series. These light weight, small footprint desalinators are constructed with epoxy powder-coated frames.

The standard North Sea series are delivered as complete packages ready to install and produce potable water. Optional feed water pumps, special filtration packages, pre and post treatment systems, steel frames, explosion proofing, and microprocessor controls are just a few of the specialized options available to enhance the North Sea series.

Major Features

Feed Water Section

- Installation connection and piping for Marine installations
- Booster pump
- Dual multimedia filters with feed and backflush valving
- Patented Cycron prefiltration and optional Oil Water separation
- Clean/rinse, store/flush valves
- Feed water flow meter and Low Pressure protection
- Low pressure gauges

Pressurization

- Stainless steel high-pressure pump, piping, and valving
- Flow through pulsation dampener
- Low maintenance belt drive system
- Chemical duty motors available as an option
- High-pressure gauges
- High Rejection/High Flux R.O. membrane elements
- High-pressure protection switch
- Corrosion proof fiberglass pressure vessels

Product Water Monitoring and Filtration

- Product water line pressure gauge
- Product water flow meter
- Actuated three-way diversion valve
- Product water Post Filtration skid (refer to page 5 for diagram and description)

Electrical

- NEMA 4X integrity
- Three-way diversion valve with emergency by-pass feature
- System salinity controller
- Thermal protection for each motor
- Alarm connections
- Solid state temperature compensated fail-safe salinity meter
- Simple, easy to use electronic control

Ultraviolet Sterilizer

The optional Ultraviolet Sterilizer is available for all three High Seas systems. The Ultraviolet Sterilizer is the final process where 99.8% of all micro-organisms, including reproducing bacteria and viruses are sterilized. With



Ultraviolet sterilization, you can be assured that you are getting pure, clean water!

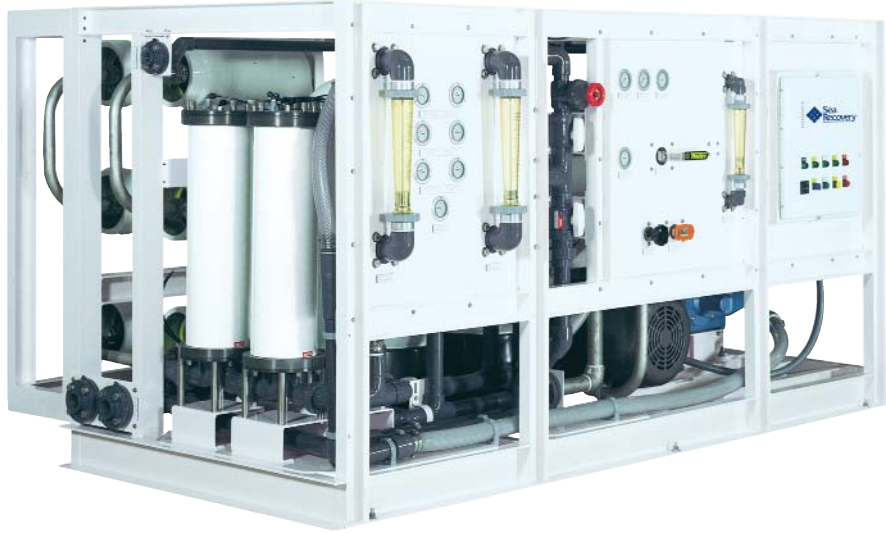
NEW - Optional Radial Axial Pump



Sea Recovery's super duplex, quintuplex, radial axial, high pressure pump is water lubricated, requiring no oil changes and no maintenance for 8,000 hours of operation.

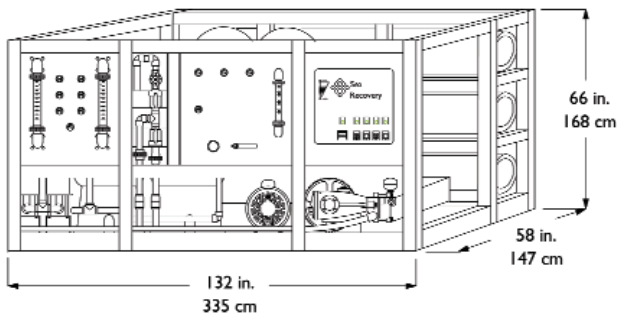
North Sea Series

458 to 1,833 Gallons Per Hour • 1,735 to 6,940 Liters Per Hour
11,000 to 44,000 Gallons Per Day • 41,639 to 166,558 Liters Per Day



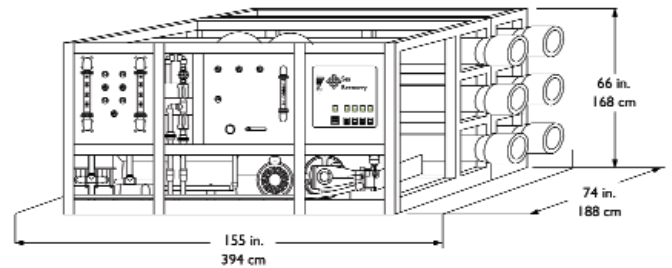
Double Length Membrane Element Vessels

Single Depth Membrane Rack
42m³/S2, 76m³/S2, 98m³/S2



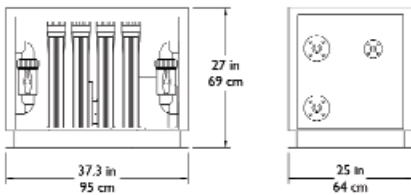
Triple Length Membrane Element Vessels

Double Depth Membrane Rack
144m³/D3, 159m³/D3, 167m³/D3



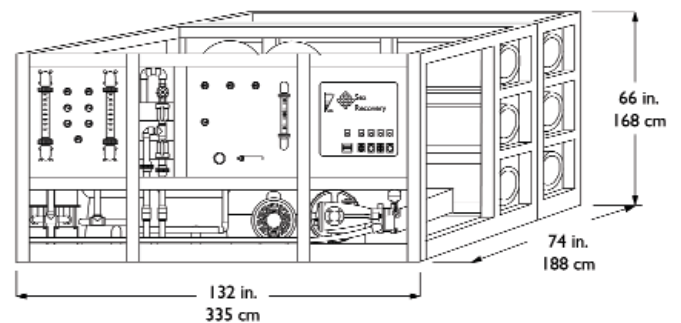
Post Filtration Skid

Sea Recovery "North Sea" Series Post Filtration skid contains the system Booster Pump and activated Charcoal Product Water Filters. The separate skid allows convenient access to the Booster Pump and Post Filters.



Double Length Membrane Element Vessels

Double Depth Membrane Rack
121m³/D2, 132m³/D2, 144m³/D2



Tasman Sea Series

Rugged Design, Mid-Range Production, Quality Throughout

The dependable "Tasman Sea" series ideally suits the mid-range production requirements of reverse osmosis desalination. Small hotels, villas, oil platforms, mid sized commercial vessels, and small cruise ships throughout the world rely on the dependability of Sea Recovery's Tasman Sea series.

The compact yet easily accessible design, and maintainable configuration incorporates exclusive features found in no other desalinator. Some of the major features of the Tasman Sea series include the patented Cycron prefiltration which provides 200

square feet of active filtration area for improved water quality and extended membrane life, solid state salinity controller, multimedia filter, high efficiency booster pump, feed and product flow meters, plus a unique membrane cleaning system for easier maintenance.

Tasman Sea frames are constructed from light-weight epoxy powder-coated aluminum. Steel frames are available as a custom order. The Tasman Sea series are delivered complete, including all onboard interface plumbing, and are ready to produce pure potable water immediately upon installation.

Major Features

Feed Water Section

- Installation connection and Piping for Marine installations
- Booster pump
- Multimedia filter with feed and backflush valving
- Patented Cycron prefiltration and optional Oil Water separation
- Clean/rinse, store/flush valves
- Feed water flow meter and Low Pressure protection
- Low pressure gauges

Pressurization

- Stainless steel high-pressure pump, piping, and valving
- Flow through pulsation dampener
- Low maintenance belt drive system
- Chemical Duty motors available as an option
- High-pressure gauges
- High Rejection/High Flux R.O. Membrane Elements
- High-pressure protection switch
- Corrosion proof fiberglass pressure vessels

Product Water Monitoring and Filtration

- Product water line pressure gauge
- Product water flow meter
- Actuated three-way diversion valve
- Product water Post Filtration

Electrical

- NEMA 4X integrity
- Three-way diversion valve with emergency by-pass feature
- System salinity controller
- Thermal protection for each motor
- Alarm connections
- Solid state temperature compensated fail-safe salinity meter
- Simple, easy to use electronic controls

Hydrocyclone Separator

The Hydrocyclone Separator is a cost and labor saving option, that is available for the Tasman and North Sea systems. This option removes solids from the feed water resulting in longer cartridge pre-filtration life.



NEW - Optional Radial Axial Pump



Sea Recovery's super duplex, quintuplex, radial axial, high pressure pump is water lubricated, requiring no oil changes and no maintenance for 8,000 hours of operation.

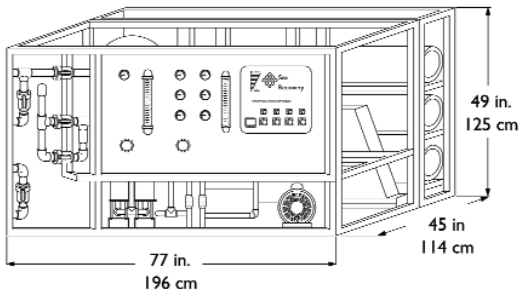
Tasman Sea Series

229 to 875 Gallons Per Hour • 867 to 3,312 Liters Per Hour
5,500 to 21,000 Gallons Per Day • 20,820 to 79,493 Liters Per Day



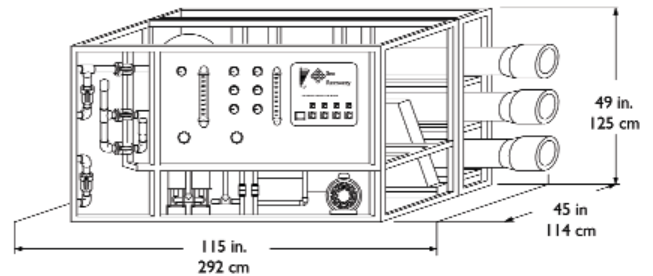
Single Length Membrane Element Vessels

Single Depth Membrane Rack
21m³/S1, 38m³/S1, 53m³/S1



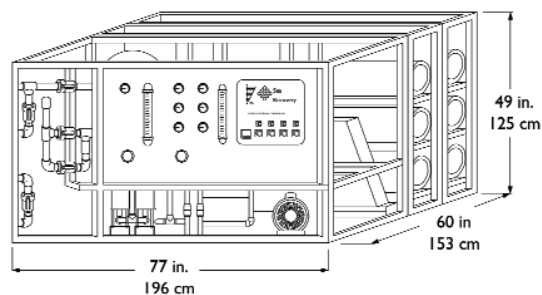
Double Length Membrane Element Vessels

Single Depth Membrane Rack
38m³/S2, 64m³/S2, 79m³/S2



Single Length Membrane Element Vessels

Double Depth Membrane Rack
64m³/D1, 72m³/D1, 79m³/D1



Coral Sea Series

State-of-the-Art, Abundance of Features, Versatile Design

Redesigned for higher capacity, quieter and more efficient operation. This system includes state-of-the-art features that are ideal for mega-yachts, commercial fishing vessels, work boats, oil rigs, charter boats, as well as onshore facilities such as villas, small hotels, and private residences.

The Coral Sea series features a state-of-the-art controller with user-friendly LCD touch screen interface, and optional full remote matching screen. Some of the new features include: stainless steel high-pressure piping, hard plumbed low pressure piping, Chemical Duty motors, new robust prefiltration housings,

dual overpressure protection, brine and product water readings in digital and analog format, and multiple safety systems.

Coral Sea frames are constructed from light-weight epoxy powder-coated aluminum. Steel frames are available as a custom order. The new systems are available in horizontal, vertical, and modular configurations.

The Coral Sea series systems are delivered complete, including all onboard interface plumbing, and are ready to produce pure, potable water immediately upon installation.

Major Features

Feed Water Section

- Installation connection and Piping for Marine installations
- Booster pump
- Full prefiltration system to 5 micron and Oil-Water separation
- Clean/rinse, store/flush valves
- Brine water flow meter and Low Pressure protection
- Low pressure gauges

Pressurization

- Stainless steel high-pressure pump, piping, and valving
- Low maintenance belt drive system
- Chemical Duty motors
- High-pressure gauges
- High Rejection/High Flux R.O. Membrane Elements
- High-pressure protection switch
- Corrosion proof fiberglass pressure vessels

Product Water Monitoring and Filtration

- Digital product water flow meter
- Three-way diversion solenoid valve
- Product water Post Filtration

Style Configurations Available

- Horizontal Frame
- Vertical Frame
- Modular for individual component mounting

Electrical

- NEMA 4x Controller operable from 200V to 460V AC, 50/60Hz, single or three phase
- Touch Screen operation with optional full function Remote Touch Screen

- Digital & Analog readouts for the following:
 - Temperature of Feed and Product Water
 - Product and feed salinity readout meter
 - Low and High pressure
 - Feed and Product water flow reading
 - Adjustable pump starting sequence timing
 - Storage Tank Level monitoring
 - High and Low pressure safety switches
 - Thermal protection for each motor
 - Manual operation override
 - U.S. Standard or Metric Measurements
 - Automatic programmable product water diversion valve
 - Automated and manual Fresh Water Flush with adjustable duration and intervals
 - Semi-automatic backwash and rinse operation
 - High and low tank level switch provisions
 - High and low feedwater temperature warnings and shut-off protection
 - Low product water flow protection
 - System maintenance and calibration modes
 - Alarm connections
 - Thermal Protection for each motor

NEW - Optional Radial Axial Pump



Sea Recovery's super duplex, quintuplex, radial axial, high pressure pump is water lubricated, requiring no oil changes and no maintenance for 8,000 hours of operation.

Coral Sea Series

Horizontal Series

3" Horizontal: 117 to 150 GPH • 442 to 568 LPH
2,800 to 3,600 GPD • 10,599 to 13,627 LPD

4" Horizontal: 175 to 283 GPH • 662 to 1,073 LPH
4,200 to 6,800 GPD • 15,899 to 25,741 LPD

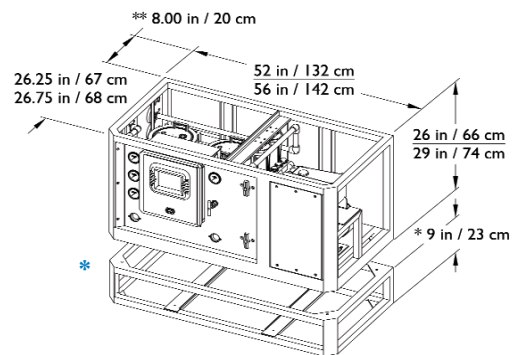


Horizontal with 3" Membrane Vessels (top dimensions in the diagram)

2800/3/H, 3600/3/H

Horizontal with 4" Membrane Vessels (bottom dimensions in the diagram)

4200/4/H, 5200/4/H, 6200/4/H, 6800/4/H



* Bottom membrane rack only available for 2800 to 3600 GPD 3" Horizontal Systems.

Vertical Series

3" Vertical: 117 to 150 GPH • 442 to 568 LPH
2,800 to 3,600 GPD • 10,599 to 13,627 LPD

4" Vertical: 175 to 217 GPH • 662 to 820 LPH
4,200 to 5,200 GPD • 15,899 to 19,684 LPD

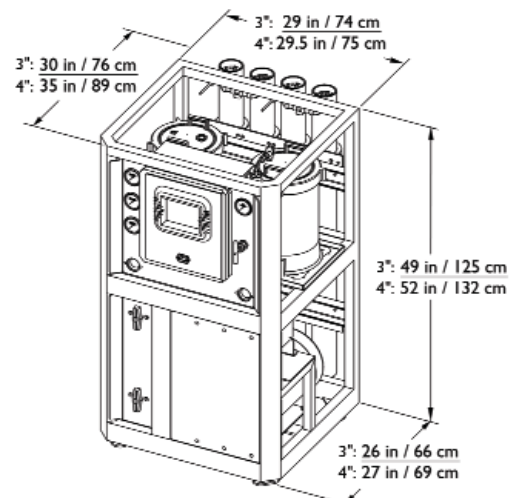


Vertical with 3" Membrane Vessels (top dimensions in the diagram)

2800/3/V, 3600/3/V

Vertical with 4" Membrane Vessels (bottom dimensions in the diagram)

4200/4/V, 5200/4/V



Coral Sea Series

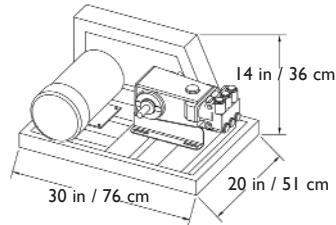
Modular Series



Modular with 3" Membrane Vessels

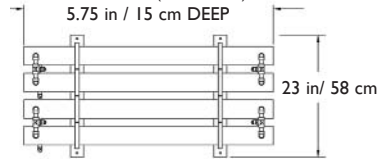
2800/3/M, 3600/3/M

Motor Pump Assembly

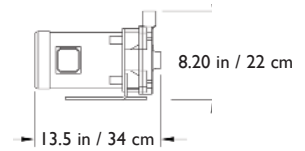


Membrane Vessel Assembly

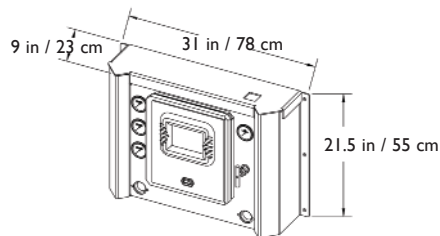
47 in / 119 cm (3,600 GPD)
38 in / 97 cm (2800 GPD)
5.75 in / 15 cm DEEP



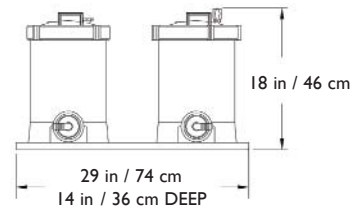
Booster Pump Assembly



Control Panel Assembly



Pre-Filter & OWS Assembly



Unique Coral Sea Accessories

Media Filter



The Coral Sea Multi-Media Filter traps suspended solids larger than 20 microns which greatly prolongs pre-filter element life. This is accomplished through a graduated media filter bed consisting of gravel and sand. Recommended for areas where the feed water has a high concentration of suspended solids or biological growth such as plankton. Inlet and outlet pressure gauges are included. Multi Media Filters are included as standard equipment with the Tasman Sea and North Sea Series.

Remote Control Panel

Plug in the state-of-the-art remote control and operate your Coral Sea or view its performance from the bridge or from other locations on your boat. The Remote Control with user-friendly LCD touch screen interface may be remoted 250 feet from the system, and is available in monochrome or color screen.



High Seas Accessories

Along with standard cataloged optional accessories available for the High Sea Series, Sea Recovery is pleased to quote on any special customer specifications and requirements including: Base Frame configuration, material, and finish; Explosion Proofing; Adverse Weather Applications; Microprocessor Control Features; Pre Filtration; Post Filtration; Pre Treatment; Post

Treatment; Feed Water Pumps; Cleaning Systems; and more. Our Special Applications Engineers will be pleased to address your specific requirements.

Refer to our High Seas List Price Sheet or our website for a full listing of all cataloged optional accessories.

Fresh Water Flush

The fresh water flush greatly prolongs the life of the membranes by rinsing them with fresh water at the touch of a button. When activated, it will remove salt water from the internal parts of the system and flush the membranes with clean fresh water preventing saltwater corrosion of the internal parts and reducing biological fouling of the R.O. membrane. When the system is not being used, a programmable timing feature allows it to automatically flush itself at user defined intervals.



pH Neutralizer

R.O. product water is slightly acidic. The pH Neutralizing Filter restores the product water to a neutral state or level.

*For Tasman Sea and North Sea

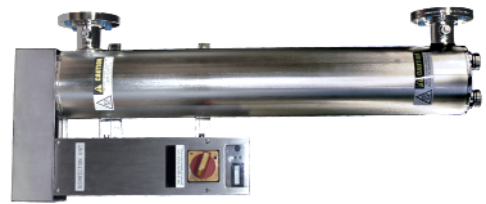


Hydrocyclone Separator

The Hydrocyclone Separator is the first stage of pre-filtration. The Hydrocyclone does not contain any filters or moving parts. The swirling action of the incoming feed water helps to remove large particles. This extends the life of the pre-filters and R.O. membrane elements of your Tasman Sea and North Sea Series.

UV Sterilizer

The Ultraviolet Sterilizer is the final post treatment process where 99.8% of all bacteria and microbiological contaminants are eradicated from your drinking water.



Chemical Injection

The Sea Recovery R.O. systems are designed for optimum performance without the need for chemical additives. Chemical additives may be considered for some land installations and/or brackish water installations. Various Chemical Injection Systems can control the chemistry of the feed water to reduce or to prevent scaling or fouling of the R.O. membrane element. Sea Recovery application engineers will help you to determine if chemical treatment is necessary for your application.



Coagulants help trap suspended solids within the Multi-Media Filter and provide longer life to the Cartridge Pre-filter Elements. Coagulants should only be considered for land applications that take feed water directly from the feed source and not through a land barrier or well.

Biocide Chemicals such as chlorine may be used to disinfect the feed water or product water. This may be considered for land installations if the feed source is extremely polluted.

Sodium Bisulfite injection may be used to neutralize chlorine, if present, in the feed water.

Antiscalant chemicals are available to protect the R.O. Membrane from scale build up. Most Sea Water applications do not require antiscalant. Such chemicals may be required for certain Brackish Water applications.

Authorized Dealer:



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