

Cathelco
Seafresh 

Reverse Osmosis Desalinators

Introducing Cathelco Seafresh desalinators

– the refreshingly simple answer to making pure water at sea



Seafresh desalinators give you the freedom to cruise wherever you want without the need to plan your voyages around marina stops. The units are available in sizes to suit sailing and power craft from 30ft in length up to the largest megayachts.

Think of the advantages of having pure, potable water whenever you need it for making drinks, taking showers and cleaning down your yacht so that it has a spotless finish – entirely free from salt marks.

Apart from the convenience of generating your own potable water, a Seafresh desalinator helps to reduce cruising costs by eliminating water charges. And since there is no need to carry large supplies of water there are significant weight savings, reducing your fuel costs and improving the performance of your yacht.

Reliable technology – easy operation

Seafresh desalinators are based on reverse osmosis technology, a well established and reliable method of turning sea water into potable water.

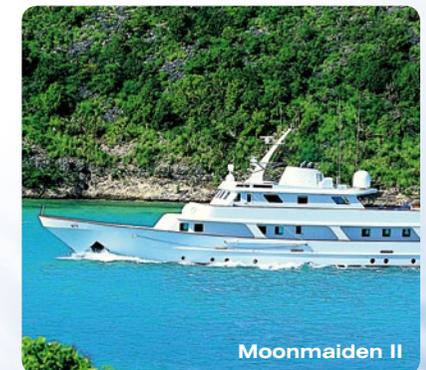
Our award winning designs have been ‘tried and tested’ over a period of more than 30 years, gaining a reputation for durability and ease of operation on more than 1,800 craft around the world. This success combines engineering expertise with the use of high quality components.

Now a division of Cathelco – a world leading name in marine equipment – Seafresh benefits from an international sales and service network putting the advice and experience of fully trained personnel at your disposal for installation and servicing.

Front cover photographs: (from left to right) Oyster 82 and Discovery 55



Cathelco Seafresh – the name you can trust for reliability and performance.



Selecting the desalinator that suits your needs



A number of factors need to be taken into consideration when choosing a desalinator:-

1. The number of people on board?
2. How much water they are likely to use in a day?
3. Will you be using dishwashers, washing machines and showers?
4. Running time of generator/ engine
5. Type of drive – Engine (DC) or Generator (AC)
6. Space availability.

How much water can a person use in a day?

Typically, each person will use at least 10 litres of water and the average is 50 litres per person per day.

If you have a washing machine or dish washer, these count as extra people.

It will also be worth considering how frequently showers are used if you have them on board.

When you have taken all of these factors into account, the following formula can be used to calculate your total requirement:-

$$\frac{\text{Number of persons} \times \text{Litre/person}}{\text{Running Time (Hours)}} = \text{Litre/Hour}$$

Engine/generator running time

This may be as little as two hours in twenty four, limited to battery charging, food preservation, and desalinating so you would need to produce a day's supply of water in two hours. If, of course, you run longer generator hours for air conditioning then a smaller output desalinator will produce a day's supply over a longer period of time.

Machine drive methods

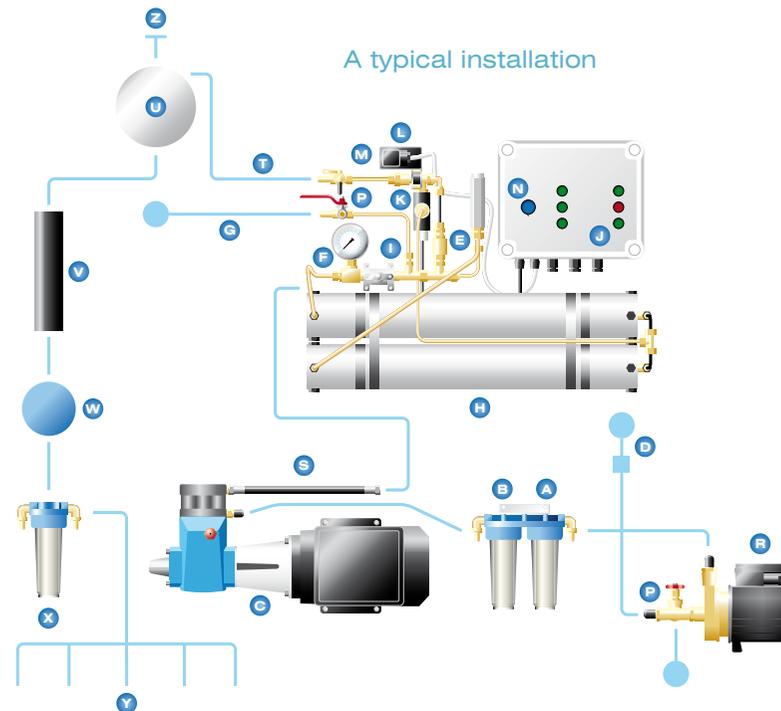
Machines can be driven by various voltages of AC current and DC current, by belt drive from an engine power take off pulley, or be self powered.

The standard H20 and SH20 can be driven by on board AC generators of 4kW and have a run load of around 8 amps at 230V. The LE (Low Energy) model which is available in a limited range of outputs has a run load of around 5 amps. The LE models produce 15% less product water than the standard models. Smaller 'Ocean' models can be powered by AC (LE) or by 24V DC or 12V DC motors.

Component parts

Most machines consist of four component parts which helps the installation particularly in smaller craft. Components suit a large number of cases, however, the components can be mounted in a 'space frame'

sometimes called 'a box without sides'. This type is usually found on larger vessels and it should be remembered when planning an installation that access is required around it for maintenance.



Key

A	50M Pre-filter	G	Salt water discharge (dump)	M	Sampling tap	U	Tank
B	5M Pre-filter	H	R.O. membrane	N	Salinity adjustable control	V	Steriliser
C	High pressure pump/AC motor or engine driven pump	I	Pressure valve	P	Maintenance connection	W	Water pressure unit
D	Inlet seacock and strainer	J	Electrical control box	R	Primer pump	X	Active carbon filter
E	Pressure relief valve	K	Salinity sensor	S	Flexible hose	Y	Taps
F	Pressure gauge	L	Solenoid diverter valve	T	Fresh water outlet	Z	Deck Filler



Seafresh 'Ton' Series

With the capacity to produce 10 to 40 cubic metres of potable water per day, the 'Ton' series is ideally suited to the requirements of the largest super yachts as well as the needs of many types of commercial vessels.

Completely automatic in operation, the system provides potable water for the full range of drinking, washing and cleaning requirements.

The system consists of three or more frames (or cubes) that can fit together in various combinations to suit the space that is available. The most popular configuration is two cubes stacked on top of each other with the membrane frame at the back resulting in a footprint of 1050 (L) x 800 (W) x 1600mm (H).

Pre-Treatment Cube (800 x 800 x 800mm) contains the feed pump and feed pump motor, together with media pre-filter and final 5 micro element pre-filter. It also houses the product softening filter and chlorination unit.

Pump & Control Cube (800 x 800 x 800mm) houses the 'wet' controls for the system and has a display panel showing 'feed flow' and 'product flow' and pressure gauges for all of the major functions to simplify monitoring. This cube also contains the electrical/electronic controls.

Membrane Frame (800 x 1600 x 250mm) Systems up to 20 tonnes have one frame, whilst systems from 25 to 40 tonnes would have two. These consist of pressure vessels containing DOW/ FILMTEC membranes.

Features

- Outputs from 10 to 40 cubic metres per day.
- Suitable for the requirements of the largest superyachts and some commercial vessels.
- Automatic salinity control and 'dump' feature.
- Small footprint – typically 1050 (L) x 800 (W) x 1600mm (H).
- Durable construction – enclosed in aluminium alloy frames.
- Media prefilter and product softening filter.
- Flow meters for monitoring input feed and product water generation.
- Quiet operation – generally 68-70dBa at 1 metre.
- Optional remote control from the bridge.



Ton							
Model	T10	T15	T20	T25	T30	T35	T40
Tons/Day	10	15	20	25	30	35	40
Litres/hour	417	625	833	1,042	1,250	1,458	1,667
Weights Kgs	290	320	350	380	450	480	530
Dimensions							
Length – mm (inch)	800 (32) or 1600 (63)			800 (32) or 1600 (63)			
Height – mm (inch)	1600 (63) or 1050 (42)			1600 (63) or 1300 (52)			
Width – mm (inch)	1050 (42) or 800 (32)			1300 (52) or 800 (32)			

Frames are modular and can be designed in either horizontal or vertical orientation.

Seafresh 'H2O' Series



Ideal for the requirements of medium to large sailing yachts and cruisers, the H2O series comes in either automatic or manual models with the capability to produce outputs from 36 to 276 litres per hour.

The H2O (Automatic) ensures that a supply of fresh, pure water is always available with the minimum of effort. These fully automatic machines incorporate water quality sensing. As the water is produced it is tested electronically and the pure water is passed to the holding tank. Any which does not reach the standard is rejected and passed overboard via automatic divert valves.

The SH2O (Simple) has the same output capacity as the automatic version, but has a manual 'water taste' feature, enabling the user to sample the water and accept or reject it via a manual divert tap.

All Seafresh H2O models are available in 'frames' or can be supplied in component form, enabling items to be distributed around the yacht to make the most efficient use of available space.

The desalinators can be belt driven from a generator or powered by an AC or DC electric motor.

Features

- Outputs from 36 to 276 litres per hour.
- Ideal for medium to large sailing yachts and cruisers.
- Easy to install and simple to operate.
- Choice of automatic and manual models.
- Automatic version with electronic water quality sensing.
- Available in frame or can be supplied in 'space saving' component form.
- Option of remote control operation from bridge.
- Available with additional pre and post treatments
- Full spares and service kit available.



H2O Automatic						
Model	H202	H204	H206	H208	H2012	H2016
Capacity						
Tonne/day	0.870	1.728	2.496	3.360	5.208	6.624
Litre/hour std	36.25	72.00	104.00	140.00	217.00	276.00
Weights (Standard models Kgs)						
Belt Drive from engine	31	37	41	44	50	56
AC Electric Motor	44	50	54	62	64	69
Dimensions (Standard Membrane Panel)						
Width - mm (inch)	610 (24)	610 (24)	610 (24)	610 (24)	1120 (44)	1120 (44)
Height - mm (inch)	330 (13)	406 (16)	406 (16)	406 (16)	406 (16)	406 (16)
Depth - mm (inch)	152 (6)	152 (6)	210 (8)	210 (8)	210 (8)	210 (8)





Seafresh 'Ocean' Series

These ultra-compact desalinators are the answer to watermaking on small to mid-sized sailing yachts where space is at a premium.

Designed for simple, trouble free operation, they have outputs from 36 litres to 140 litres per hour.

To save weight and space, the Ocean models are produced with single stage 05 micron prefilters which means that they should be operated well away from the coast.

In every other respect, they are built to the same high standards as the other models using durable components and high quality reverse osmosis membranes.

In comparison with carrying a full tank of water there are considerable weight savings. The smallest model in the range weighs just 21 kgs, yet can produce 36 litres of water per hour, enabling a reliable supply of water to be available without compromising the speed or performance of your craft.

All of these features mean that smaller yachts and power boats can benefit from the convenience of pure, fresh water wherever they are sailing.

Economical priced and easy to install, the Ocean series will quickly repay their installation costs through savings in water charges and fuel costs.

Features

- Outputs from 36 litres to 140 litres per hour.
- Suitable for small to mid-sized sailing yachts and power craft.
- Economical – outlay quickly repaid in savings in water charges and fuel.
- Lightweight and compact – the smallest model weighs just 21kgs.
- Belt driven from generator or can be powered from AC or DC power supply.
- Low power consumption.
- Supplied as a complete unit with only the prefilter mounted separately.
- Quiet operation.



Ocean Driven by belt from propulsion engine

Model	200D	400D	600D	800D
Litres/hour	36.25	72.00	104.00	140.00
Weights Kgs	21	24	28	32

Ocean Drive by 1.1.Kw AC electric and DC

Model	200A	400A	200DC	400DC
Litres/hour	27.50	55.00	27.50	55.00
Weights Kgs	29	29	36	36

Dimensions – All models

Length – mm (inch)	620 (24)	620 (24)	620 (24)	620 (24)
Height – mm (inch)	320 (12.5)	395 (15.5)	320 (12.5)	395 (15.5)
Width – mm (inch)	280 (11)	280 (11)	280 (11)	280 (11)

Pumps



Feed pumps

The feed pump delivers water to the pre-filters which have elements of 50 microns and 5 microns before it passes to the high pressure pump. A choice of models is available which can be run from AC or DC power supplies.



High pressure pumps

These pumps operate at pressures of up to 800 psi and are designed to force the seawater through the reverse osmosis membranes where salt and other impurities are removed. Built for long lasting reliability, the pumps have triple plungers, a nickel aluminium bronze pump head and an oil bath crankshaft in an alloy crankcase. They are available in close coupled or belt driven types from a variety of input voltages.



Optional extras

Active carbon filters

Removes dissolved gases (including chlorine), tastes and odours to improve the taste of the product water. This unit uses the same housing as the pre-filtration cartridges for compatibility and ease of replacement.



Ultraviolet sterilisers

The unit sterilises the water to be completely free from bacteria, parasites and algae spores. This can be used as a pre-treatment when operating in dirty waters and as a post treatment if the water has been held in storage for long periods of time.



Air trap

Separates air from sea water in sea inlets, ensuring a constant flow to the desalinator pump. This avoids the damaging effects of water starvation on equipment, particularly on craft with high speed hulls running on air/water emulsion.



Fresh water flush

This is used to flush the plant with potable water when it is being used intermittently, keeping the system fresh for up to eight weeks without the need to preserve it. Any contaminants are removed, ensuring the maximum extension of membrane life.





Worldwide support for your Cathelco Seafresh system

Seafresh systems come with the backing of the Cathelco agent/installer network with offices located in marinas and ports throughout Europe, USA, Far East, Australia and New Zealand.

It means that you can cruise almost any where in the world and get the assistance of fully trained technicians to install or service your Seafresh system.

In addition, the UK based Seafresh design team is always available to answer your questions on the most cost effective and space efficient solution to your watermaking requirements.



If you would like a quotation or further information about the range of Cathelco Seafresh desalinators, please contact:-

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Email: seafresh@cathelco.com

Web: www.cathelco.com

If you have a technical enquiry about a new or existing desalinator system, please contact:-

Seafresh Desalinators Ltd
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Fax: +44 (0)1794 830385
Email: seafresh@cathelco.com

Web: www.seafresh.co.uk

Protect your seawater inlets with a Cathelco anti-fouling system

Do you have problems with blockages in your seawater inlets and pipework caused by barnacles and mussels?

Cathelco are the world's largest manufacturer of seawater pipework anti-fouling systems and have supplied their equipment for hundreds of sailing yachts and cruisers.

The systems are designed with compact control panels and miniaturised anodes which can be fitted in the smallest seachests and strainers.



Cathelco have been protecting the inlets on reverse osmosis desalinators for many years. This has no detrimental effect on the performance of the filter membranes or on the quality of the drinking water that is produced.

Economical and easy to install, Cathelco pipework anti-fouling systems provide you with the reassurance that your engine cooling lines and watermaking systems are reliably protected wherever you sail – from one season to the next.