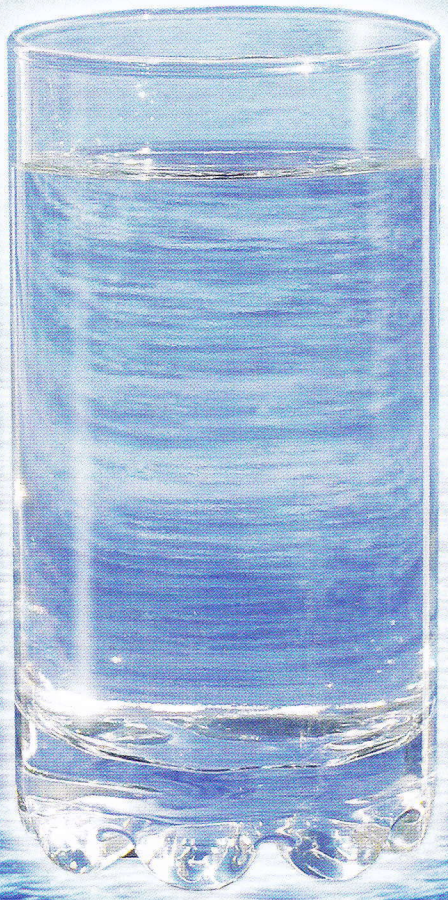
Fresh water...
...oceans of it.



CITOR

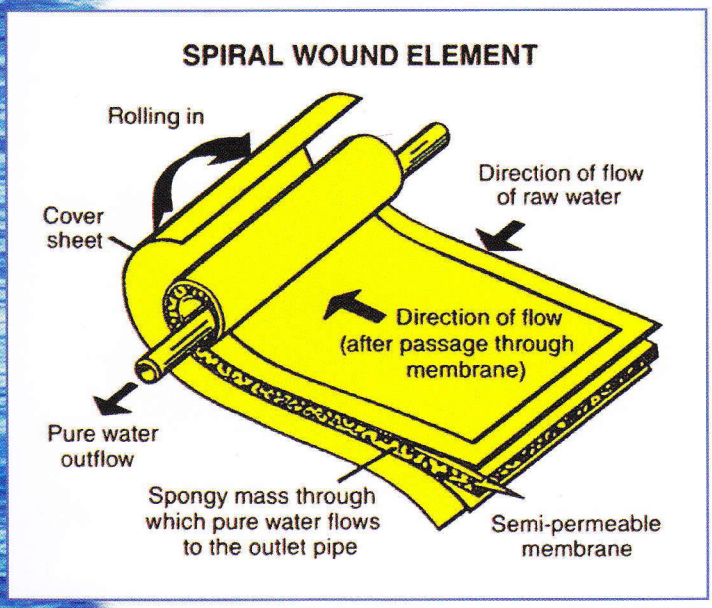
High-quality, state of the art, reverse-osmosis desalination units that produce fresh drinking water, conforming to World Health Organisation Standards from sea water, brackish water, well water, etc.

Islands • Resorts • Oil Rigs • Industry • Mining • Charter • Fishing • Pleasure Vessels

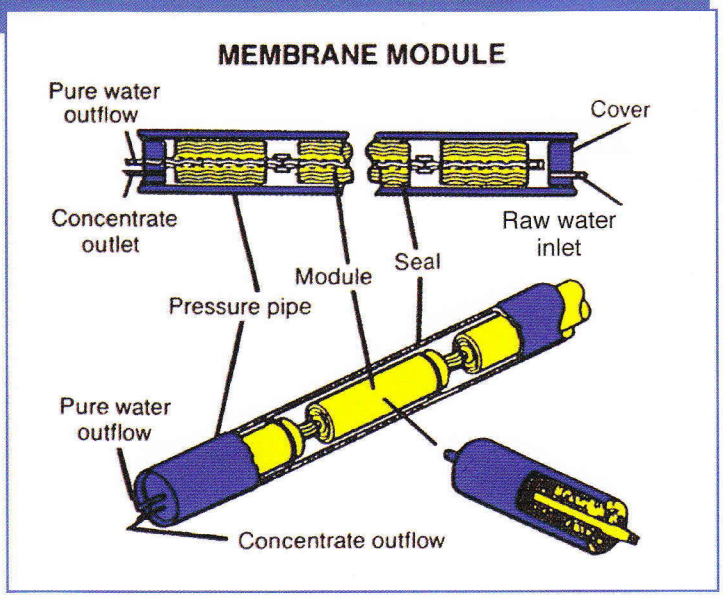
Osmosis - a natural process

Osmosis is a natural process discovered more than 200 years ago and is common in many plant and animal membranes.

Osmosis can be defined as the spontaneous flow of a liquid from a dilute solution to a highly concentrated solution through a semi- permeable membrane which allows the passage of solvent but not that of dissolved substances. In the case of aqueous solutions, water flows from one side of the membrane to the other until



a differential pressure is built up which prevents a further flow of water. The pressure which has been reached is equal to the osmotic pressure of the concentrated solution.



Osmosis is a reversible process. If the concentrated solution is subjected to an external pressure which is higher than the osmotic pressure, the water flows in the opposite direction. This represents reverse osmosis. In this way, pure water can be expelled from an aqueous solution by mechanical work.

Reverse Osmosis.

Large areas of synthetic sheet membrane are wrapped in a spiral and inserted in a pressure housing - this is called a membrane module.

Water is pumped into the module of a fixed rate and pressure. A percentage of the volume passes through the membrane and is collected as fresh water - the remaining water flowing over the membrane surface, carries the excess salts, and impurities to waste. This action prevents the membrane surface from fouling.

New Remote control Model 5 TSA

for Automatic Operation with Digital Display

This Unit is designed for Operation from a remote small Control Box on the Bridge. It can also be operated on the Desalinator itself for Maintenance purposes.

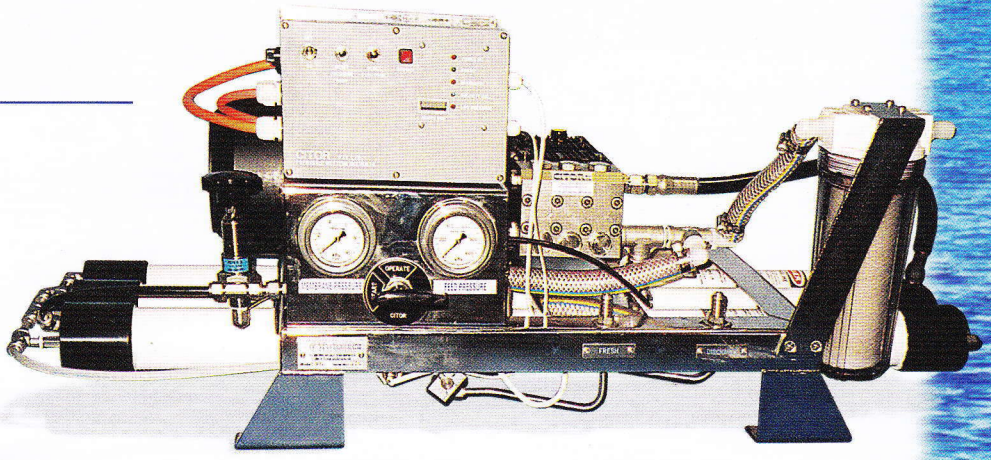
- Once switched on - Feed Pump starts & builds up pressure. After fifteen (15) seconds, the main Pump starts & the motorised Pressure Regulating Valve starts to close - taking approx. eight (8) seconds. Once Membrane pressure has built up to the Preset level - Fresh Water will be produced.
- If the water Quality is good - it is diverted to the Vessel's Storage Tank. Volume & Quality of the Fresh Water appears on the digital display - in Litres / Hour & Salinity in ppm T.D.S.

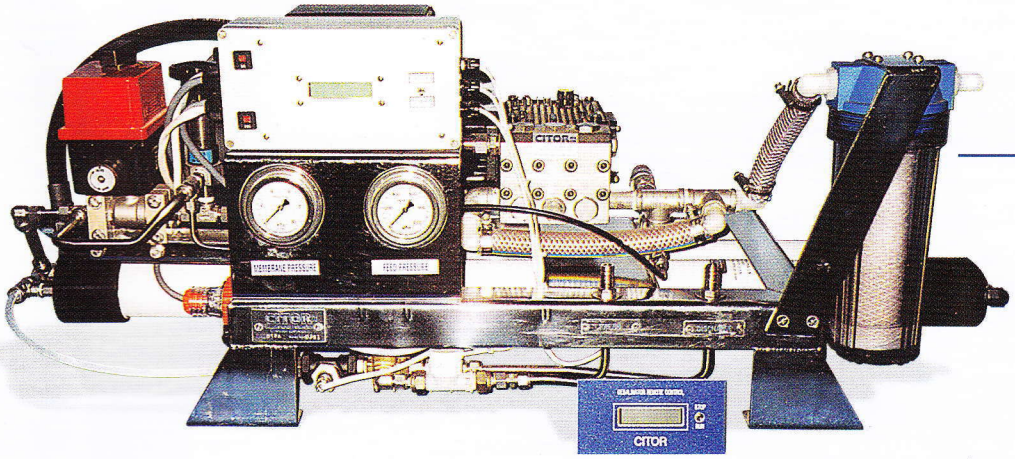
When the Operator decides to stop the Desalinator - the following will occur:

- Motorised Valve will open (over approx. 8 seconds) - & depressurise the Membrane Modules slowly. Feed Pump and Main Pump will then stop.
- Solenoid Valve on the Vessel's pressurised Fresh Water supply (piped into the Feed Pump Inlet) will open & allow Fresh Water through the entire Desalinator system. This is timed to take two (2) minutes & will use fifteen (15) litres of Fresh Water.
- Solenoid Valve will then close & the Desalinator is shut down - ready for Start Up as required, Status of all Functions is displayed.
- In the event of a Low Feed Pressure Cut Out, the Desalinator will stop safely ~ this will be displayed until the fault has been rectified.
- Restart as previous.

Model 5 TS

- 5 000 litres/day
- Compact Unit
- Low power Usage
- Single or 3 phase





Model 5 TSA

- 5 000 litres/day
- Remote Display
- Remote Control
- Automatic Operation

Model 18 TS

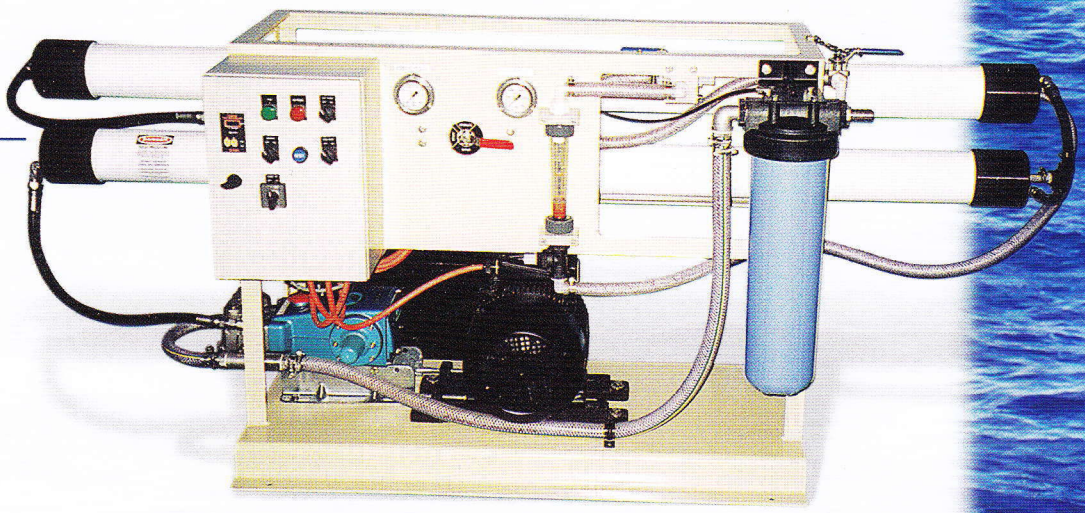
18 000 litres/day

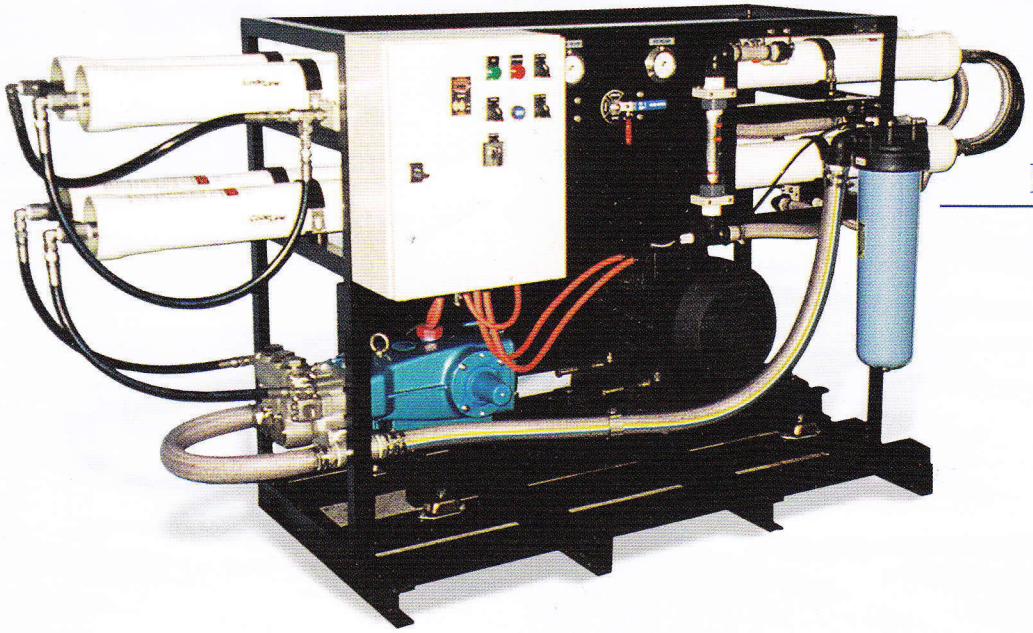
High Volume

Self Contained

Suitable for:

- Larger Vessels
- Island Resorts





Model 30 TS

30 000 litres/day

Very High Volume

Self Contained

Suitable for:

- Larger Vessels
- Island Resorts

CITOR Seawater Desalinator Specifications

All Citor Units are designed to be easy to operate and maintain, reliable & safe.

Model	2TS	3.6TS	5TS (A)	10TS	18TS	30TS
Production Rate* Litres / Day	2 000	3 600	5 000	10 000	18 000	30 000
Electric Power (kw)	1.8 or 2.2			5.5		11
	Single or 3 Phase			3 Phase		
Dimensions						
Length (mm)	1200			1500	2750	
Width (mm)	400			650		800
Height (mm)	470			1000		1200
Approx weight (kg)	52	55	58	270	300	550
Electrical safety	Built in	Built in	Built in	Built in	Built in	Built in
Mechanical safety	Built in	Built in	Built in	Built in	Built in	Built in
Low pressure cut-out.	Yes	Yes	Yes	Yes	Yes	Yes
Electric Motors	TEFC	TEFC	TEFC	TEFC	TEFC	TEFC
Frames construction	Electropolished 316 Stainless Steel			Powder-coated Aluminium		

All metal parts in contact with seawater are made from 316 stainless steel ✓

All pressure gauges 316 stainless steel, liquid filled ✓

Salinity Monitor with automatic dump valve ✓

Preset pressure regulating valve ✓

Engineer and Operator friendly ✓

Larger capacity units available: 55m^3, 110m^3, 220m^3 Specifications: Subject to change without notice.

*Based on seawater feed salinity of 35 000 ppm total dissolved salts and at 25^{0}C.

Kits are available

The 2TS, 3.6TS and 5TS models are available in economical kits to suit vesselswhere space is limited. Clutch versions for engine drive.

Agents Stamp

Cover Inset Photos: MV Sheer Delight courtesy of Mark Ellis Marine, Beachcomber Is. courtesy of Beachcomber Island Resort, Fiji

CITOR

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