DESSALATOR®
WATERMAKERS - DESSALINISATEURS

FREEDOM DC

D60 & D100

INSTALLATION AND OPERATING MANUAL

CLASSIC & AUTO



60 / 100 L/h
Nominal output

12 or 24 VDC
Power supply

Classic & Auto
Version

Installation • Operation • Maintenance

ENGLISH EDITION

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READING GUIDE

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FREEDOM DC / D60 & D100 / CLASSIC & AUTO / 12 AND 24 VDC

1

1 OVERVIEW
How the system works

This manual covers the installation, operation and maintenance of FREEDOM DC D60 and D100 watermakers, in Classic and Auto versions, powered by 12 or 24 VDC.

Understanding reverse osmosis

Seawater is pressurised and fed into the membranes, which act as “molecular sieves”, allowing only fresh water molecules to pass through.

Most dissolved solids cannot pass through the membranes. They are discharged with the reject water.

Reverse osmosis is designed to reject 99% of impurities back to the sea.

Producing fresh water

The drinking water produced by your reverse osmosis system is suitable for consumption. If stored in your tanks, it may be treated as necessary with commercially available products, following the manufacturer's dosage instructions.

We offer a remineralisation cartridge for prolonged consumption of the product water.

The water flow path

Inlet seacock → **5-micron prefilter** → **High-pressure pump** → **Membranes** → **Fresh water output and reject water**

Filtering and pressurising

Seawater is drawn in through the inlet seacock and then passes through the 5-micron prefilter. The high-pressure pump then pressurises the filtered water in the membrane housing (operating pressure within the green zone on the pressure gauge).

Separating

Pressurised water passes through the openings in the membrane surface, leaving behind salt and bacteria. These are discharged to sea with the remaining solution, which also flushes the membranes.

Checking and diverting

The product water passes through a sensor that measures its salt content. If the water is sufficiently desalinated, the 3-way valve switches automatically to direct fresh water to the tanks. If the salinity sensor detects excessive salt content (conductivity above 1,000 µS), the valve diverts the product water to the sea.

Performance: Product water flow is monitored by a flowmeter on the control panel. Fresh water output ratings are specified at a water temperature of 25°C. Output decreases by 2.5 to 5% for each degree Celsius drop in temperature.

25 °C
Reference temperature

2.5 to 5 %
less output for each degree drop in temperature

2 SAFETY
Essential precautions

ELECTRICAL SAFETY
Never work on live equipment! Disconnect the power supply to the entire installation.

Before switching on

Check that the valves are open.

Suitable feed water

Use of this system in muddy or polluted water, at river mouths or in brackish water is strongly discouraged. Avoiding these conditions helps prevent prefilter fouling and membrane damage.

FLUSHING
All flushing procedures must be carried out with the motor/pump assembly stopped. Pressurised fresh water is particularly harmful to the membranes.

Protecting the membranes

Do not expose the membranes to temperatures below 0°C or above 60°C. After first use, they must remain immersed. See the operating conditions in section 6 and maintenance in section 7.

Identifying your version

Electrical connections for the 12 V and 24 V motors are shown separately in section 4.5. Remote control functions depend on the pressure regulation system: see sections 5.5 to 5.7.

3.1 3 COMPONENT IDENTIFICATION

Seawater inlet and prefiltration

Seacock

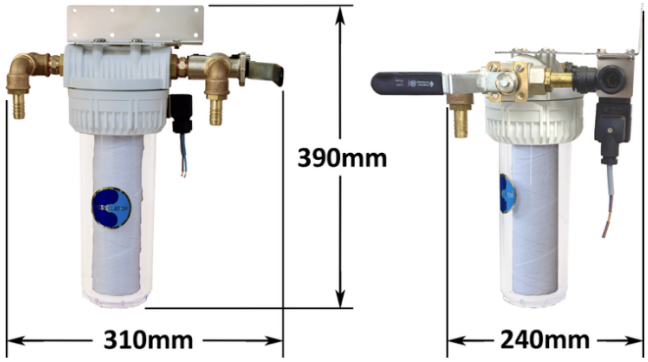


Install as low as possible in the boat to prevent air being drawn in.

On a motorboat, install towards the stern; on a sailing boat, install centrally near the keel. The slots in the intake strainer must face towards the bow so that seawater is scooped in while underway.

The seacock strainer prevents large particles from entering the system.

Cartridge prefilter



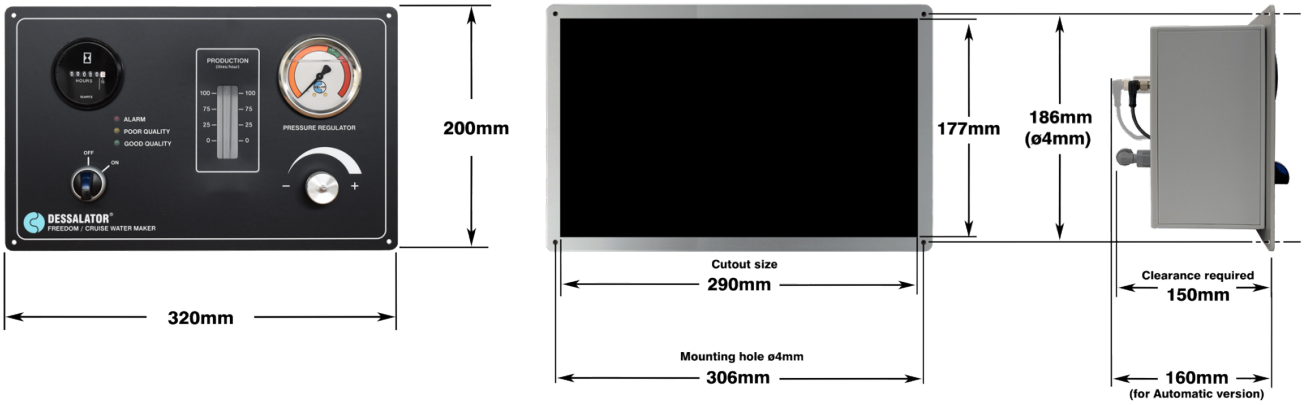
Dimensions and clearance for opening the filter bowl

Location: Install as close as possible to the seacock and, if possible, below the waterline for better output. If this is not possible, fit an optional feed pump. The prefilter traps solid particles in seawater down to 5 microns before they enter the motor/pump assembly.

Equipment: Supplied with a spanner for tightening and loosening the filter bowl. Fitted with a solenoid valve for automatic flushing and a 3-way valve.

3.2 3 COMPONENT IDENTIFICATION
Control panel and motors

Control panel



Measurement and monitoring

A high-pressure gauge.

A flowmeter.

An operating hours counter.

Adjustment and control

A pressure adjustment knob.

An on/off switch.

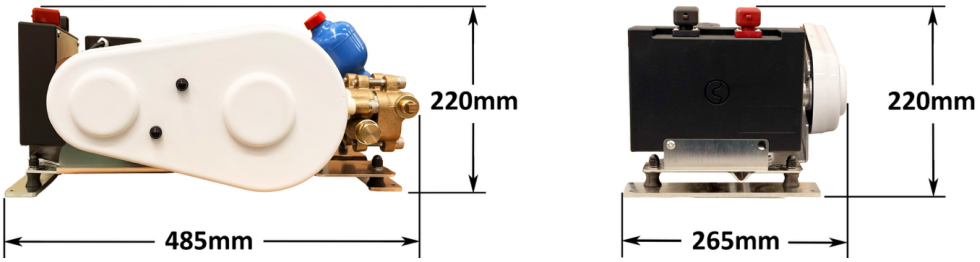
Three status indicators.

Motor/pump assembly

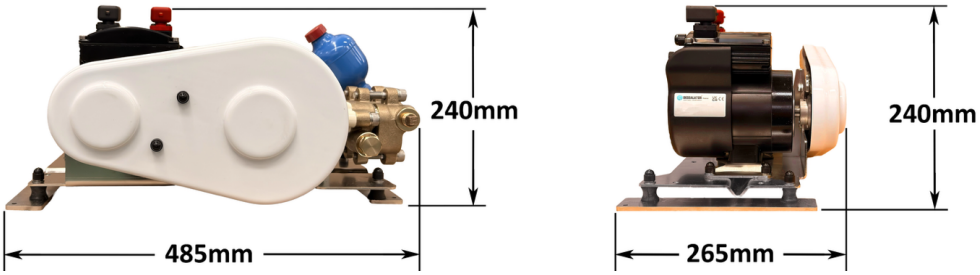
Preferably install below the waterline for optimum output.

The assembly includes a 12 or 24 Volt motor. Install in a well-ventilated space. A fuse holder is supplied.

12 V MOTOR



24 V MOTOR

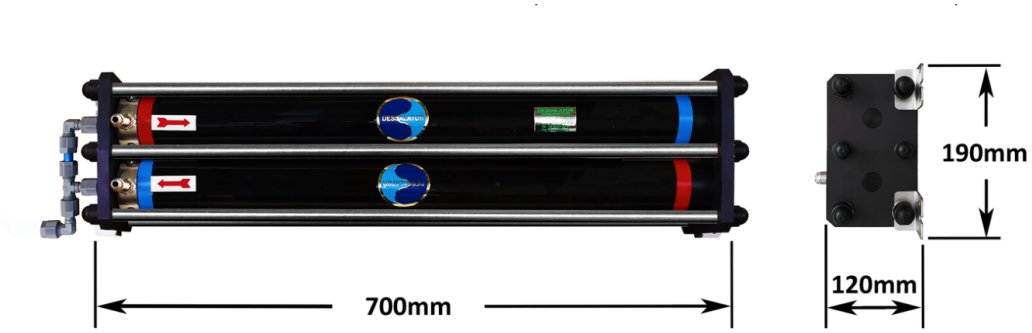


NOTE

If the motor assembly cannot be installed below the waterline, an optional feed pump is recommended.

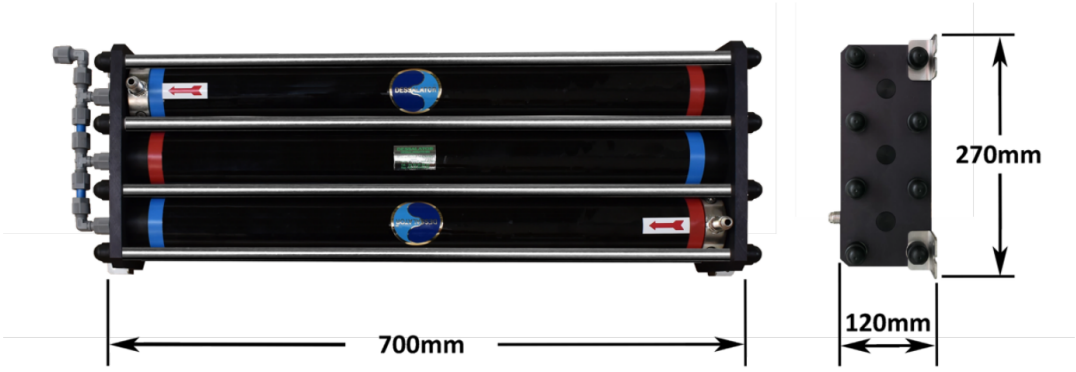
3.3 3 COMPONENT IDENTIFICATION
Membranes and hoses

D60 · 2 MEMBRANES



The compact D60 membrane assembly contains 2 seawater membranes.

D100 · 3 MEMBRANES



The compact D100 membrane assembly contains 3 seawater membranes.

Hoses supplied by Dessalator®

High pressure: High-pressure hose connects the pump to the membranes and the membranes to the control panel. An 8-metre hose is supplied and must be cut into two sections. Determine each section's length according to the distance between the components.

Supplied fittings: 4 special DESSALATOR® high-pressure hose fittings* (see the fitting assembly procedure in Appendix A1).

Swivel fitting: * Including one 90° elbow for the back of the control panel, which can be oriented through 360°.

Fresh water output: A 6-metre product water hose connects the membrane assembly outlet to the control panel.

4.1 4 INSTALLATION

Preparation and seacock

Items required for installation

Fasteners and consumables

Assorted screws (Parker self-tapping screws and others).

Assorted stainless steel hose clamps, Ø 8–16 mm and Ø 12–22 mm.

Assorted electrical cable ties.

PTFE tape.

Loctite 542 liquid or 577 paste.

Protection, hoses and tools

Polyurethane sealant, Sicaflex or equivalent.

Corrugated protective conduit for electrical cables and high-pressure hoses.

Tricoclair reinforced flexible hose with 10 mm and 12 mm internal diameters and a 3 mm wall thickness.

Power cables: 35 to 50 mm² for 12 V; 35 mm² for 24 V, depending on cable length.

Assorted tools (drill, saws, Ø 21 mm hole saw, etc.).

Seawater inlet seacock

Location: Fit the strainer as low as possible below the waterline to prevent air being drawn in. Keep it away from the boat's discharge outlets.

Drilling: Drill through the hull with a Ø 21 mm hole saw.

Orientation: The slots in the strainer must face towards the bow so that seawater is scooped in while underway.

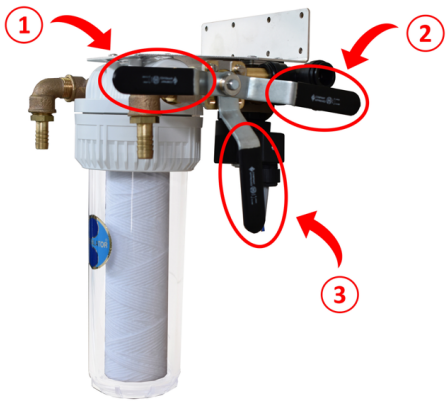
Sealing and protection: Seal the hull joint thoroughly with polyurethane sealant or Sicaflex. Remember to coat the submerged section with suitable underwater paint.

Access: Keep the seacock accessible for maintenance.

Fittings: Seal the seacock/strainer and seacock/hose-tail joints with Loctite 577.

4.2 4 INSTALLATION

Cartridge prefilter



1 Seawater position — desalination mode.

2 Fresh water position — manual flushing or preservation; see section 7.2.

3 Closed position — filter cartridge replacement; see section 7.4.

Installation and connections

Location: The prefilter must also be installed below the waterline for better output. It must be easy to access.

Mounting: The mounting bracket is reversible, allowing the installation height to be adjusted.

Hoses: Use Tricoclair hose with a Ø 12 mm internal diameter for the entire seawater circuit and the pressurised flushing circuit.

Clamps: Fit 2 stainless steel hose clamps to every connection.

Clearance: Leave at least 3 cm below the filter housing so that the bowl can be removed. A spanner is supplied for tightening and loosening the bowl.

Fresh water flushing: Connect the flushing inlet to the pressurised circuit supplied by the boat's fresh water pump.

Solenoid valve: A solenoid valve behind the prefilter provides automatic flushing.

Valve position: Set the valve handle to the seawater position (see the 3 positions of the 3-way valve above).

For manual flushing, set the handle to the fresh water position (see the 3 valve positions above) and follow the instructions in section 7.2.

To replace the filter cartridge, follow the procedure in section 7.4.

During this procedure, take care not to lose the bowl O-ring. Fill the circuit with fresh water for 30 seconds to 1 minute, then return the handle to the seawater position (see the 3 valve positions above).

4.3 4 INSTALLATION
Water connections

Hoses: Use Tricoclair hose with a Ø 12 mm internal diameter for the seawater circuit and pressurised flushing.

Clamps: Fit two stainless steel hose clamps to each connection, with the screw housings on opposite sides.

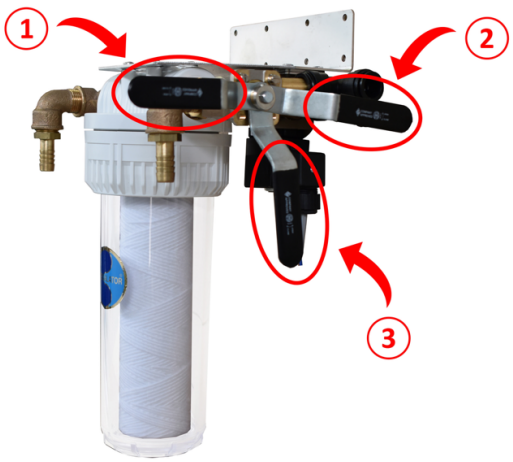
Fresh water inlet: Connect the pressurised fresh water supply from the boat's fresh water pump outlet to the 3-way valve.

Connection point: This supply may be taken from a connection under a galley sink or washbasin, or from the pressurised cold water piping.

Handle position: The valve handle must be aligned with the filter.

> **INSTALLATION TIP**
> Where hoses pass through bulkheads or may contact sharp edges, protect them against wear and chafing by running them through a sleeve or a larger-diameter hose.

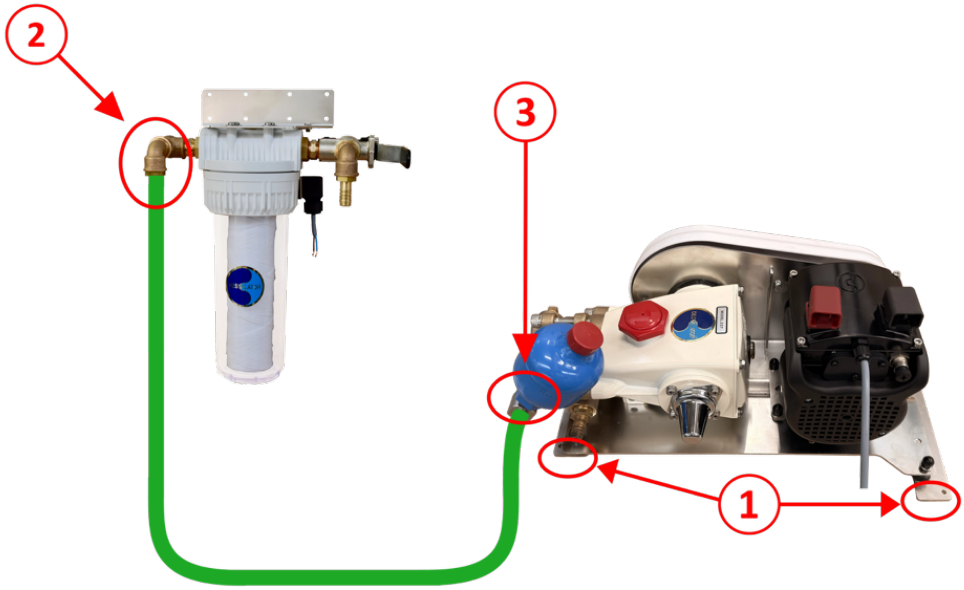
Identifying the three valve positions



Position	Use
1 Seawater	Desalination mode
2 Fresh water	Manual flushing or preservation – section 7.2
3 Closed	Filter cartridge replacement – section 7.4

See section 7.2, page 25, for manual flushing and detailed valve illustrations.

4.4 4 INSTALLATION
Motor/pump assembly



Seawater circuit · from the prefilter to the pump suction inlet

1 Stainless steel feet for mounting the motor assembly.

2 Prefilter outlet.

3 Pump suction inlet.

Green connection: Tricoclair hose with a Ø 12 mm internal diameter for the water circuit.

Location: For optimum output, install the high-pressure motor/pump assembly as low as possible in the boat, horizontally and protected from water splashes.

Mounting: Secure using the 2 stainless steel feet under the 2 motors, leaving a few centimetres of clearance around the assembly. **(Item 1.)**

Ventilation: Provide sufficient ventilation for the motors.

Connection: Connect the prefilter outlet to the pump suction inlet using Tricoclair hose with a Ø 12 mm internal diameter and 2 stainless steel hose clamps at each connection. **(Items 2 and 3.)**

High pressure: Connect the pump's high-pressure head to the membrane inlet (red marker) using high-pressure hose cut to length. Follow the fitting assembly instructions in Appendix A1 carefully.

Sealing: Apply a little liquid Loctite or threadlocker to the male and female cones before connecting.

4.5 4 INSTALLATION
Electrical supply

WARNING
Never work on live equipment! Disconnect the power supply to the entire installation.

Motor power supply

Observe the correct polarity when connecting the 12 or 24 Volt motor (see the wiring diagrams on page 13).

Fit the supplied 12 Volt or 24 Volt fuse holder, as appropriate for the supply voltage.

Cable sizes by supply voltage

12 V MOTOR	24 V MOTOR
Use cable with an adequate cross-sectional area: 35 to 50 mm² for 12 Volts.	Use cable with an adequate cross-sectional area: 35 mm² for 24 Volts.

Control cable and permanent power supply

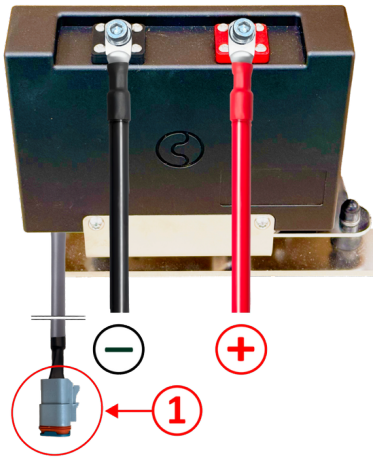
Control cable: The watermaker's control cable is 5 metres long and has a keyed connector (see section 4.7, cable no. 5).

Control panel supply: The control panel must always have a DC power supply.

CONNECTION GUIDE
Connections for each motor version are shown on the next page. Observe the correct polarity and fit the supplied fuse holder.

4.5 4 INSTALLATION
12 V and 24 V connections

12 V motor



1 Electrical connector.

+ Connect the positive battery cable.

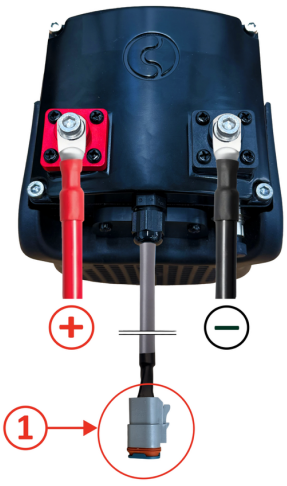
– Connect the negative battery cable.

Connector detail · item 1



ELECTRICAL PROTECTION
Remember to fit the fuse holder.

24 V motor



1 Electrical connector.

+ Connect the positive battery cable.

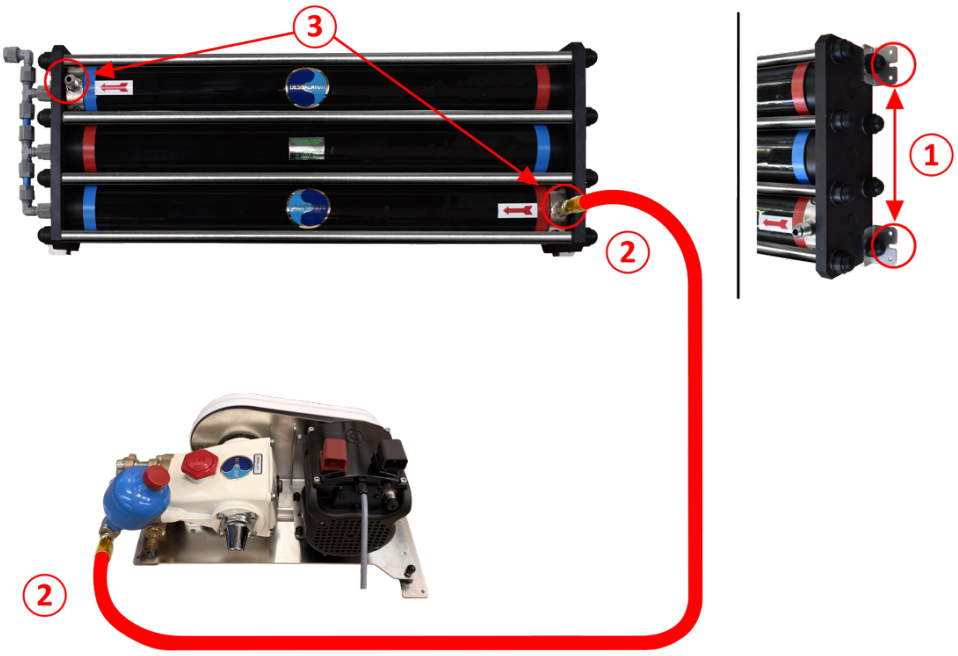
– Connect the negative battery cable.

Connector detail · item 1



ELECTRICAL PROTECTION
Remember to fit the fuse holder.

4.6 4 INSTALLATION
Membrane assembly



Mounting points, high-pressure connection and swivel fitting

1 Stainless steel feet for mounting the membrane assembly.

2 Connection from the high-pressure pump to the membrane assembly inlet (red side).

3 Membrane end caps (optional 90° elbow fitting for membrane end caps).

Black high-pressure water hose (supplied).

Installation and connections

Location: Preferably install the membrane assembly horizontally, either flat or on its side.

Position: Vertical installation may result in reduced output over time.

Mounting: Secure the stainless steel brackets using Parker self-tapping screws. **(Item 1.)**

High-pressure connection: Protect the hose between the high-pressure pump outlet and the membrane inlet with a sleeve, as it vibrates. Securing it directly or allowing it to contact other objects may cause leaks. (Item 2.)

Fittings: Assemble the high-pressure fittings in accordance with their instructions (see Appendix A1).

Threadlocker: Apply a little Loctite-type threadlocker to both the male and female cones before tightening.

Option: A 90° high-pressure elbow fitting is available for the membrane inlet and outlet. **(Item 3.)**

4.7 4 INSTALLATION Control panel

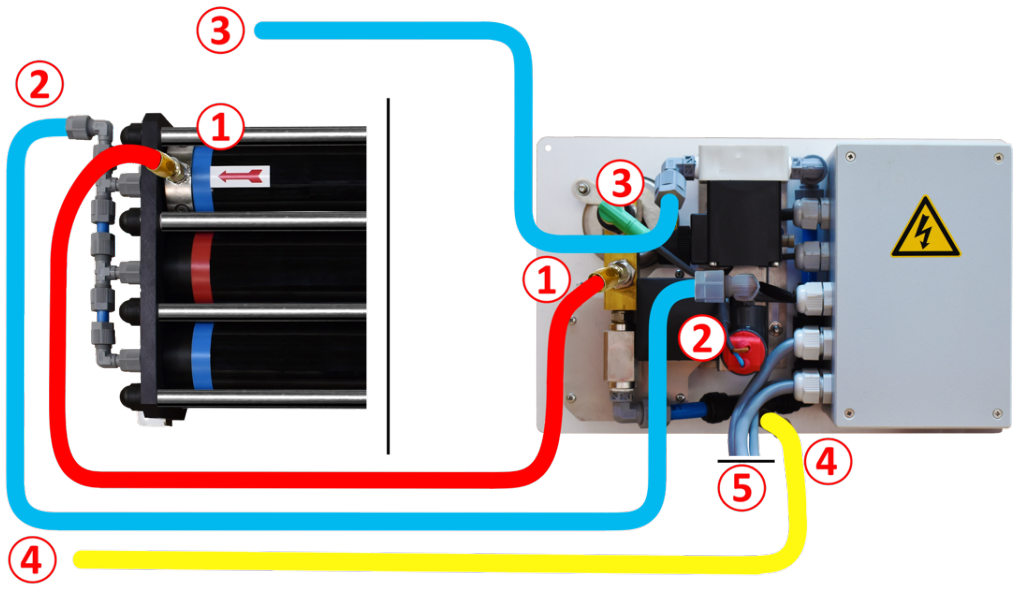
Mounting the panel

Mount the control panel on a vertical surface.

Leave access behind the panel to facilitate connections. Choose a position where the indicators can be seen easily.

Suggested locations

Examples: below or beside lockers, beneath chart table or saloon seats, or on the forward panel of an aft berth.



Control panel connections · items 1 to 5

1 Hose connecting the high-pressure membrane outlet (blue side) to the high-pressure regulation manifold behind the control panel. (Black high-pressure hose supplied.)

2 Hose connecting the membrane water outlet to the control panel sensor inlet. (Ø 10 mm outside-diameter hose supplied.)

3 Hose connecting the panel's drinking water outlet to the tanks, the distribution manifold, the fresh water pump inlet or a tee, provided there is no non-return valve at the tank outlet. (Ø 10 mm internal-diameter hose, preferably Tricoclair, not supplied.)

4 Hose for the control panel reject water outlet. Preferably connect to a dedicated outlet, or to an existing galley sink, washbasin or cockpit drain. In that case, remember to open the drain seacocks during operation. (Ø 12 mm internal-diameter hose not supplied.)

5 A 12 V or 24 V power cable with a keyed connector from the 12 V or 24 V motor.

See section 4.5, page 13.

5.1 5 COMMISSIONING
Before starting

PRE-START CHECK
Before switching on, check that the valves are open.

Purging and filling the circuit

Before first use, after changing the filter, after the boat has been ashore or after a long period of inactivity, purge the circuit with fresh water using the 3-way valve on the prefilter (see section 7.2).

Run this operation for 1 minute with the watermaker stopped and the pressure regulator open (turned anticlockwise).

Once the circuit is completely filled, return the valve to the seawater position (see section 7.2).

Maintaining the power supply

Take account of battery capacity (in amperes) and the operating time.

For 12 or 24 V operation lasting more than 5 minutes, it is advisable to run the boat's engine.

AFTER A PERIOD OF INACTIVITY
If the watermaker will remain unused for more than 1 month, preserve the membranes for storage (maximum 6 months) or flush them at least monthly. Before restarting the system, it is also advisable to flush it for 2 minutes (see section 7.2).

5.2 5 COMMISSIONING
Starting in manual mode



The sequence below corresponds to the red items 1 to 5 in the illustrations. Increase the pressure gradually, following the pressure gauge indications.

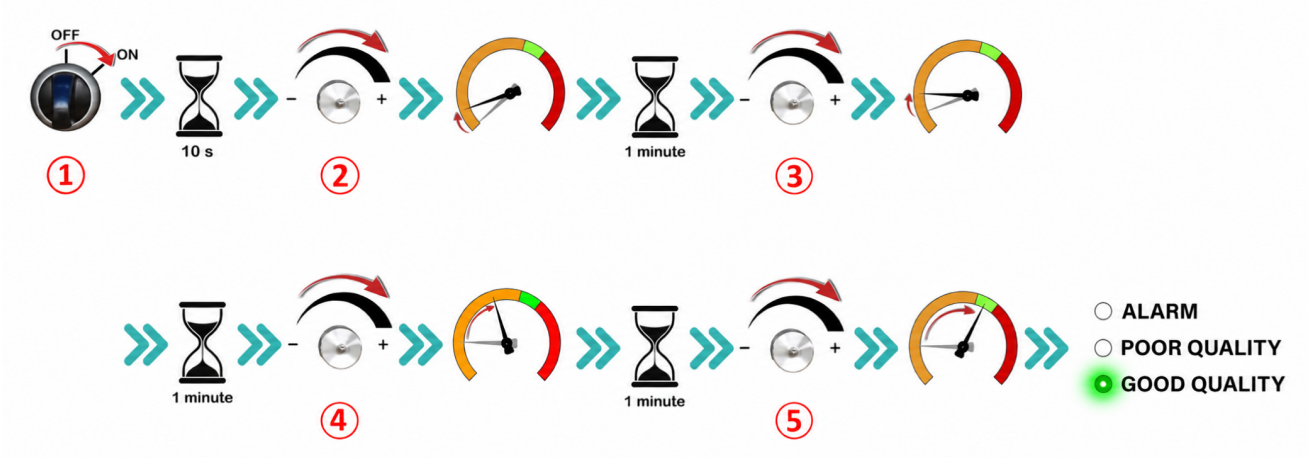
1 Ensure that the watermaker seacock is open and the prefilter selector valve is in the seawater position. Check that the regulator is at its minimum (−) position, fully anticlockwise. Set the switch to ON.

2 Wait a few seconds until the yellow LED flashes. Using the regulator knob, increase the pressure slightly until the gauge needle reaches the 8 o'clock position. Hold this setting for approximately one minute.

3 Then increase the pressure to the 9 o'clock position on the gauge using the regulator knob. Hold this setting for approximately one minute.

4 Increase the pressure again to the 11 o'clock position on the gauge using the regulator knob. Hold this setting for approximately one minute.

5 You can now increase the pressure until the gauge needle reaches the green zone. When the water quality LED turns green, your watermaker is producing fresh water.



Items 1 to 5 · gradual pressure increase and water quality indication

NOTE
Fresh water output depends on seawater temperature and salinity.

5.3 5 COMMISSIONING
Automatic mode and stopping

Starting in automatic mode

The AUTOMATIC range has a motorised pressure regulator knob. Simply set the switch to ON: the regulator automatically raises the pressure into the orange zone, then gradually adjusts it into the green zone on the pressure gauge.

This procedure takes approximately 3 minutes.

Once this procedure is complete, the watermaker checks the water quality and then begins producing fresh water.



Automatic start-up sequence

FRESH WATER PRODUCTION
Fresh water output depends on seawater temperature and salinity.

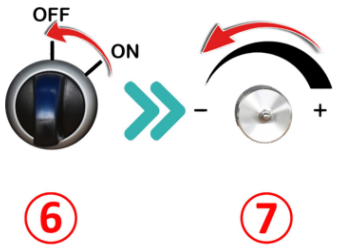
Stopping without flushing

There is no need to flush the membranes if the watermaker is used regularly.

(At least once every 3 weeks.)

6 Set the switch to OFF. The watermaker stops.

7 Turn the pressure regulator knob anticlockwise to its minimum (−) position.



Stopping without flushing

Maintenance according to the length of shutdown

After more than 3 weeks without use, it is preferable to flush the membranes (see the manual flushing procedure in section 7.2).

Repeat this flush every 3 weeks while the watermaker remains unused.

5.4 5 COMMISSIONING
Stopping with automatic flushing

Stopping with flushing

Flush the watermaker if it will remain unused for more than 3 weeks.



Automatic flushing and shutdown sequence · items 6 to 8

6 After using the watermaker, do not switch it off. Begin turning the pressure regulator knob anticlockwise towards its minimum (−) position to initiate automatic flushing.

7 The gauge pressure will fall. Continue turning the knob to its minimum (−) position. The watermaker will then start the flushing procedure. The green and yellow LEDs on the control panel light up to indicate that flushing has started. This lasts 30 seconds. Once flushing is complete, the green and yellow LEDs go out; only the flashing blue LED on the switch remains on.

8 You can now switch off the watermaker by setting the switch to OFF. Always wait until flushing is complete before switching off.

5.5 5 COMMISSIONING

Optional Micro Remote Control

The Dessalator® Micro Remote Control allows you to restart, stop and flush your watermaker and monitor its status (only with Automatic and Navigator versions).

The 3 indicators on the Micro Remote Control have the same functions as the 3 indicators on the watermaker itself.

The Mini Remote Control is intuitive to use. This quick guide therefore covers only the basic functions for the user's reference.



Identifying the indicators and button



1 RED INDICATOR – ALARM
2 YELLOW INDICATOR – POOR WATER QUALITY
3 GREEN INDICATOR – GOOD WATER QUALITY
4 BLUE INDICATOR – STATUS
5 ON/OFF BUTTON

IF AN ALARM OCCURS

Following an alarm, the machine must be restarted from its control panel

(not from the Micro Remote Control).

5.6 5 COMMISSIONING
Starting with the Micro Remote Control

After the initial start-up from the control panel, Automatic and Navigator versions can be stopped, restarted or flushed using the Micro Remote Control. On other versions, the Micro Remote Control can be used to monitor system status or stop the watermaker.

Starting from standby

1 Press ON/OFF for approximately 2 seconds

Keep the button pressed. The BLUE LED in the button begins to flash and the buzzer confirms the operation with 2 beeps.



2 Release the button

When you release the button, the watermaker starts.



Monitoring production

The RED, YELLOW and GREEN LEDs show the same indications as those on the watermaker control panel.

YELLOW LED · pressure indication

The YELLOW LED's flashing rate indicates the water pressure in the system: faster flashing means higher pressure.



GREEN LED · good water quality

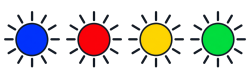
Once the product water is of good quality, the GREEN LED lights up.



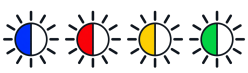
OPERATING TIP

To extend membrane life, increase the water pressure inside the system slowly. If you intend to start the watermaker frequently using the Micro Remote Control, we strongly recommend a machine with automatic pressure regulation, such as the Automatic or Navigator series.

Indicator legend



On



Flashing



Off

5.7 5 COMMISSIONING
Stopping with the Micro Remote Control

Stopping without automatic flushing

1 Press ON/OFF for approximately 2 seconds

To stop your watermaker normally, keep the button pressed for approximately 2 seconds.



2 Release the button

When you release the button, the watermaker stops and enters STANDBY mode.



Stopping with automatic flushing

REMOTE FLUSHING WITH THE MICRO REMOTE CONTROL
Automatic flushing can be started remotely using the Micro Remote Control only on Automatic and NAVIGATOR models.

1 Press ON/OFF for approximately 5 seconds

To stop the watermaker and complete the process with an automatic flushing cycle, keep the button pressed for approximately 5 seconds.



2 Release the button at the signal

Keep the button pressed until the YELLOW and GREEN LEDs light up and the buzzer emits a long beep. When you release the button, the watermaker stops and the automatic flushing cycle starts.

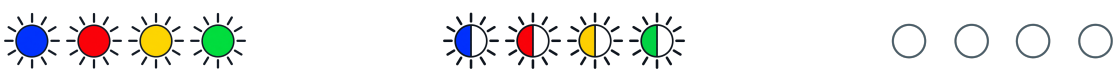


3 Flushing ends and standby begins

The automatic flushing cycle finishes before the system enters STANDBY mode.



Indicator legend



On Flashing Off

6 OPERATION
Operating conditions

Output and service life

Reverse osmosis membranes are the most sensitive components in your system and require careful maintenance. Follow these instructions to avoid damage and invalidating the warranty. Watermaker output ratings are based on a seawater temperature of 25°C and depend on salinity in your operating area. Each degree below this temperature reduces output by 2.5 to 5%.

Extreme temperatures

Do not expose the membranes to temperatures below 0°C. Overpressure caused by expansion during freezing can tear the membranes and prevent salt rejection.

Do not expose the membranes to temperatures above 60°C either, as this may prevent salt rejection.

Storage and use

After first use, keep the membranes immersed in liquid: treated seawater, a fresh water and preservative solution, or temporarily fresh water (see preservation methods in section 7.4).

Seawater quality and salinity affect membrane output.

WATER QUALITY
Use of this system in muddy or polluted water, at river mouths or in brackish water is strongly discouraged. Avoiding these conditions helps prevent prefilter fouling and membrane damage.

7.1 7 MAINTENANCE

Membranes and HP pump

Membrane maintenance

A 10 to 15% reduction in output over time is normal.

If output is no longer satisfactory, consider replacing the membranes.

Your watermaker's output stabilises during the first 24 or 48 hours of operation. Drinking water output depends on seawater salinity, temperature and membrane operating pressure.

Membrane service life depends on correct operation and maintenance.

Flushing frequency

There is no need to flush the membranes after every use. Excessively frequent flushing can cause premature membrane deterioration.

There are two ways to flush the system: manually or automatically.

Both methods use water from the boat's tanks.

Flush the watermaker before any period of inactivity lasting more than a few days.

REMINDER
All flushing procedures must be carried out with the motor/pump assembly stopped. Pressurised fresh water is particularly harmful to the membranes.

FROST PROTECTION
If freezing is possible, drain the flowmeter on the control panel, disconnect the blue product water hose and blow or inject air into it while intermittently pressing the small button on the solenoid valve behind the control panel. Also protect the membranes from the cold with blankets or insulation.

High-pressure pump

Oil and level: The high-pressure pump is half-filled with oil, up to the mark on the sight glass. The pump uses 15W40 or 20W40 multigrade oil.

Filling: Do not exceed the level shown on the sight glass. This oil does not need to be changed over time.

7.2 7 MAINTENANCE
Manual flushing

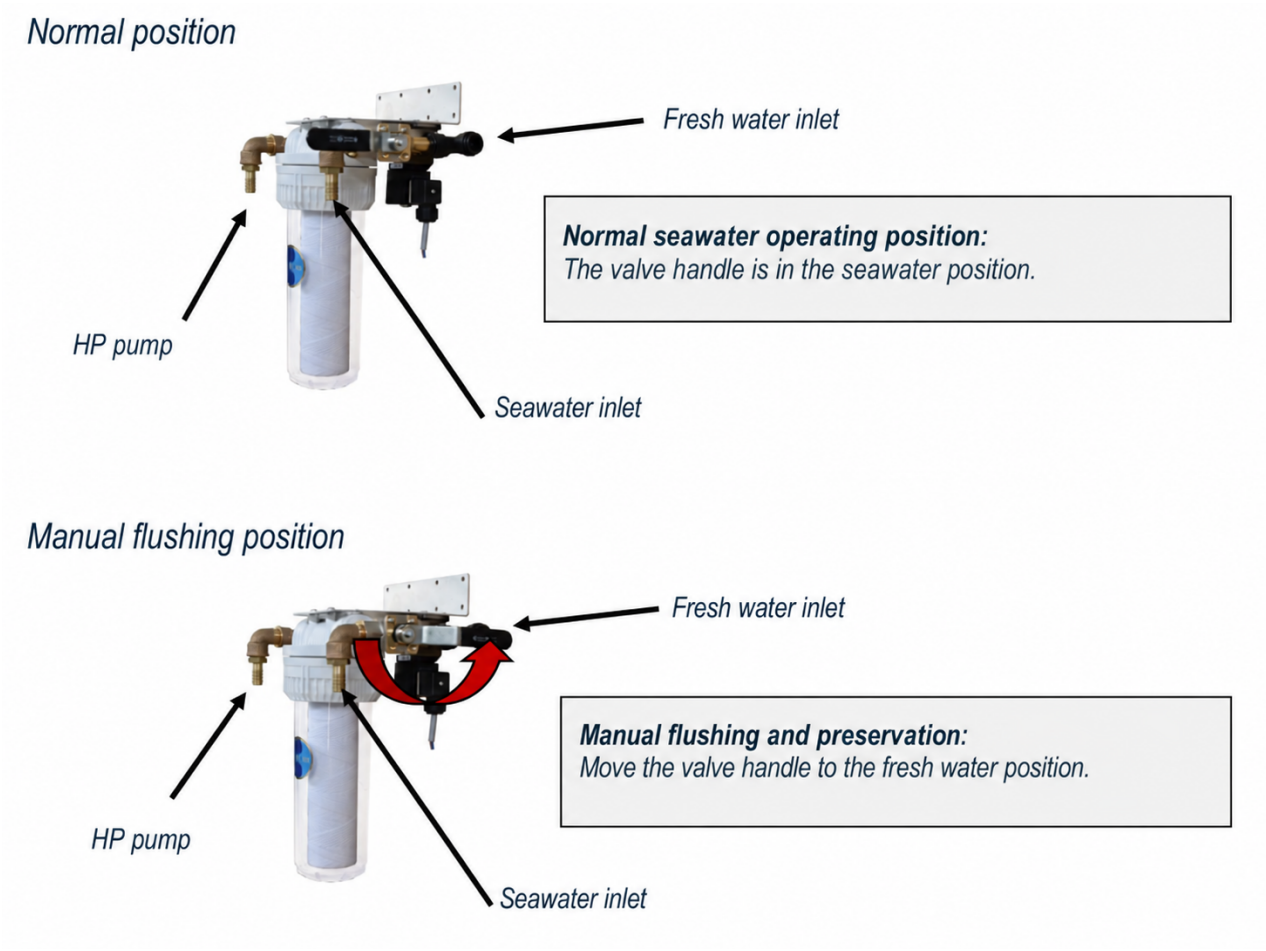
A valve beside the prefilter is connected to the boat's fresh water circuit. Turning it automatically starts the boat's fresh water pump and sends fresh water from the tank through the watermaker.

1 Do not switch the watermaker ON; leave it OFF.

2 Turn the pressure regulator fully anticlockwise.

3 Open the fresh water inlet valve beside the prefilter for 2 minutes. The boat's pump starts and fresh water flows through the watermaker.

Your DESSALATOR® has automatic flushing. If you choose manual flushing, use the positions shown below.



Valve positions for operation and manual flushing

Seawater position: desalination mode. Fresh water position: manual flushing or preservation. Closed position: filter cartridge replacement (see section 7.4).

Automatic flushing: see section 5.4, page 19.

7.3

7 MAINTENANCE

Membrane preservation

When to preserve the membranes

Regular monthly flushing is usually sufficient to maintain the membranes. If the watermaker is unused and monthly flushing is not possible, preservation is required. The preservative protects for no more than 6 months. Never repeat preservation more than twice a year, and always flush with fresh water between the two treatments.

DOSAGE PRECAUTIONS
Excessive preservative concentration can corrode the membrane end caps. We recommend the ST2 preservation cartridge and our specified preservative dose for your machine. Failure to follow these recommendations, or using other preservatives, invalidates all warranty coverage.

Choosing a preservation method

ST2 cartridge	Easy method using the reusable ST2 preservation cartridge: We have developed a cartridge that makes preservation much easier. Instructions are given in section 7.4.
Manual method	Manual method without the ST2 cartridge: With the watermaker stopped, flush thoroughly with fresh water for 10 minutes using the 3-way valve on the prefilter. Pour the entire sachet of preservative into a bucket containing 8 litres of water. Disconnect the seawater inlet hose and place it in the bucket. Start the watermaker without increasing the pressure and run it until the bucket is empty. When the bucket is empty and the operation is complete, reconnect the hose.
Garden sprayer	Garden sprayer method: Pour the sachet of preservative into a bucket containing 8 litres of fresh water and mix. Fill the sprayer with this solution and pressurise it to 3 or 4 bar. Then inject the preservative into the membrane inlet (red marker side).

BEFORE USING THE WATERMAKER AGAIN
Before using the watermaker again, flush briefly with fresh water using the 3-way valve on the prefilter to remove the preservative.

7.4 7 MAINTENANCE

ST2 preservation cartridge

BEFORE YOU BEGIN
Watermaker stopped. The ST2 cartridge is reusable.

Preparing the cartridge and prefilter

1 Set the 3-way valve to the flushing position (see section 7.2). The control panel pressure regulator knob must be fully open, turned anticlockwise.

2 After 5 minutes, turn the 3-way valve to the closed position to shut off all water supply.

3 Close the seawater inlet seacock.

4 Open the preservation cartridge, taking care not to lose the O-ring.

5 Remove the upper grid.



Removing the 5-micron cartridge

Preparing the ST2 cartridge

6 Place the foam at the bottom of the filter.

7 Pour the powder into the cartridge.

8 Refit the upper grid and close the cartridge.

9 Check that the seal is correctly seated.

10 Remove the 5-micron filter from the prefilter.

11 Replace the filter with the preservation cartridge.

Steps 12 to 14 and recommissioning continue on the next page.

7.4 7 MAINTENANCE

Preservation and recommissioning

12 Close the prefilter bowl, ensuring that the O-ring at the top of the bowl is correctly seated.

13 Turn the 3-way valve to the fresh water position. The bowl fills with water and the preservative powder dissolves. Leave a small amount of preservative powder on the foam pad, then return the valve to the closed position.

14 Three hours after preservation, you must flush the membranes for 5 minutes to remove excess preservative. Turn the 3-way valve to the fresh water position, let the water flow for 5 minutes, then return the valve to the closed position.



Fitting the ST2 cartridge

PRESERVATION PERIOD
Preservation lasts a maximum of 6 months. After this period, repeat the entire procedure in this manual.

Before the next start-up

1 IMPORTANT: Before the next start-up, flush the watermaker thoroughly with fresh water. To do this, turn the 3-way valve to the fresh water position for 15 minutes.

2 Then turn the 3-way valve to the closed position to shut off all water supply.

3 Finally, remove the preservation cartridge and fit a new 5-micron filter.

Note: The ST2 cartridge is reusable.

8 PARTS AND ACCESSORIES

Spare parts

DESSALATOR® equipment is reliable and has a long service life, so costly overhauls are generally unnecessary. However, accidental damage is always possible (running without water, accidental overpressure, impact, etc.).

The following spare parts and maintenance items are available:

Maintenance parts
10-inch, 5-micron filter
Drive belt
Circuit board
Membrane end cap
High-pressure pump seals and valves
High-pressure hose, sold by the metre

Available accessories
Mini Remote Control
Micro Remote Control
Complete ST2 preservation cartridge
Preservative sachet
Remineralisation cartridge
Remineralisation sachet
High-pressure hose fitting
High-pressure elbow fitting

9.1 9 TROUBLESHOOTING
Diagnosis and solutions

OBSERVED PROBLEM	CHECKS AND REMEDIES
Leak at the pressure regulator behind the control panel	**CAUSES** Loose regulator packing gland **SOLUTIONS** Tighten the packing gland with a 17 mm open-ended spanner.
Noisy HP pump	**CAUSES** Restricted water supply or air ingress. Incorrect operating pressure. **SOLUTIONS** Check the hose diameter, clamp tightness and filter cleanliness. Operate within the green zone.
Oil leak from the HP pump	**CAUSES** Worn seals on the connecting rods **SOLUTIONS** Replace the seals.
Insufficient water output	**CAUSES** Water too cold. Dirty prefilter. Inadequate power supply. Voltage drop along the power cable. **SOLUTIONS** Replace the prefilter. Recharge the batteries. Check the connections. Fit a cable with a larger cross-sectional area.
Water leaks beneath the high-pressure head	**CAUSES** Worn seals **SOLUTIONS** Replace the piston seals.
No pressure	**CAUSES** Insufficient water **SOLUTIONS** Open the seacock. Check that the hoses are not kinked.

9.2 9 TROUBLESHOOTING
Indicator guide

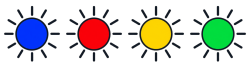
Operation

RED · YELLOW · GREEN	DESCRIPTION AND ACTION
	**System test at start-up** If these indicators remain on, open the regulator (−) to reduce the pressure.
	**Pumps running • Waiting for production pressure** Turn the pressure regulator slowly clockwise (+) until the gauge needle reaches the green zone.
	**Production pressure OK • Waiting for good water quality** Please wait: once the water quality is acceptable, the machine automatically starts producing water.
	**Water production** Water quality is good: drinking water is being produced.
	**Automatic flushing** Please wait: flushing lasts 30 seconds.

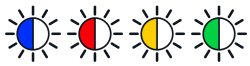
Alerts and alarms

RED · YELLOW · GREEN	DESCRIPTION AND ACTION
	**Insufficient pressure** The pressure is too low.
	**Alarm 1-1 • Timeout: pressure too low** Did the pump start first? Check the seawater inlet seacock and prefilter. Restart and try again.
	**Alarm 1-2 • Pressure sensor power supply fault** If the machine enters an alarm state after start-up, the pressure sensor may be faulty or the system voltage may be too low.
	**Alarm 2-1 • Pressure too high** Switch off the watermaker, open the regulator fully (−), then restart the machine.

Indicator legend



On



Flashing

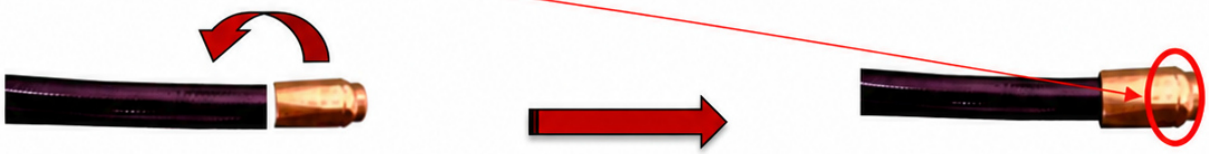


Off

Indicator order: red • yellow • green

A1 APPENDIX A1
Assembling high-pressure fittings

1. Screw the brass fitting anticlockwise onto the high-pressure hose, all the way to the vertical mark on the outside of the fitting.



2. Insert the brass plug into the stainless steel nut and tighten firmly.



3. Apply a little grease to the tip of the stainless steel cone. Insert it straight into the brass fitting and screw it in. Stop as soon as the stainless steel thread is no longer visible inside the brass fitting, leaving approximately 7 mm between the nut and the brass fitting.



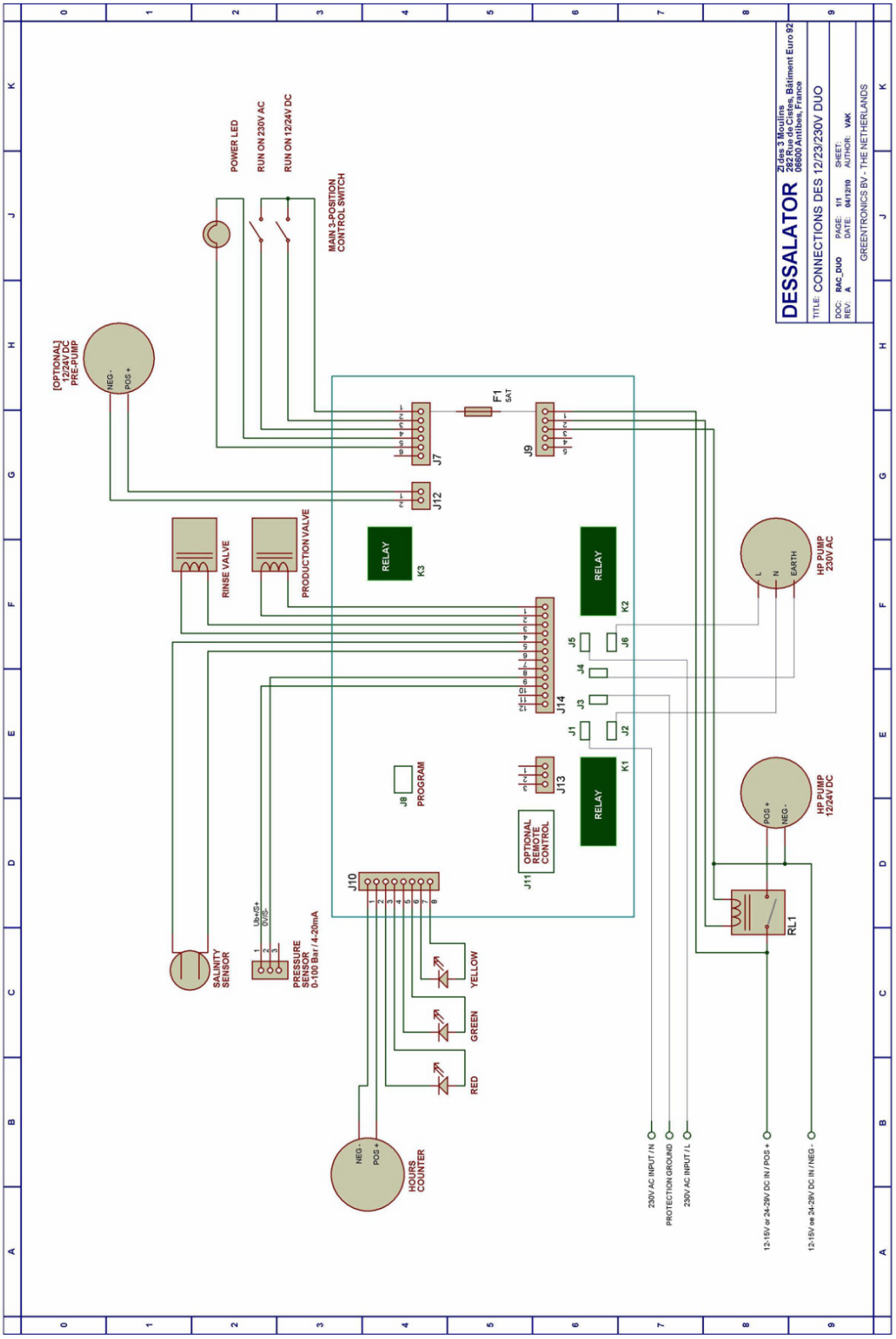
4. Unscrew the nut from the conical adaptor. The fitting is ready for the hose connecting the pump to the membrane. Protect the hose against vibration with a sleeve made from another hose.



5. **IMPORTANT:** Check that the fitting has not blocked the hose:
   - Blow through the hose; or
   - Insert a screwdriver to check that the passage is clear.

WHEN REASSEMBLING
Remember to apply Loctite or threadlocker to the male and female cones when reassembling.

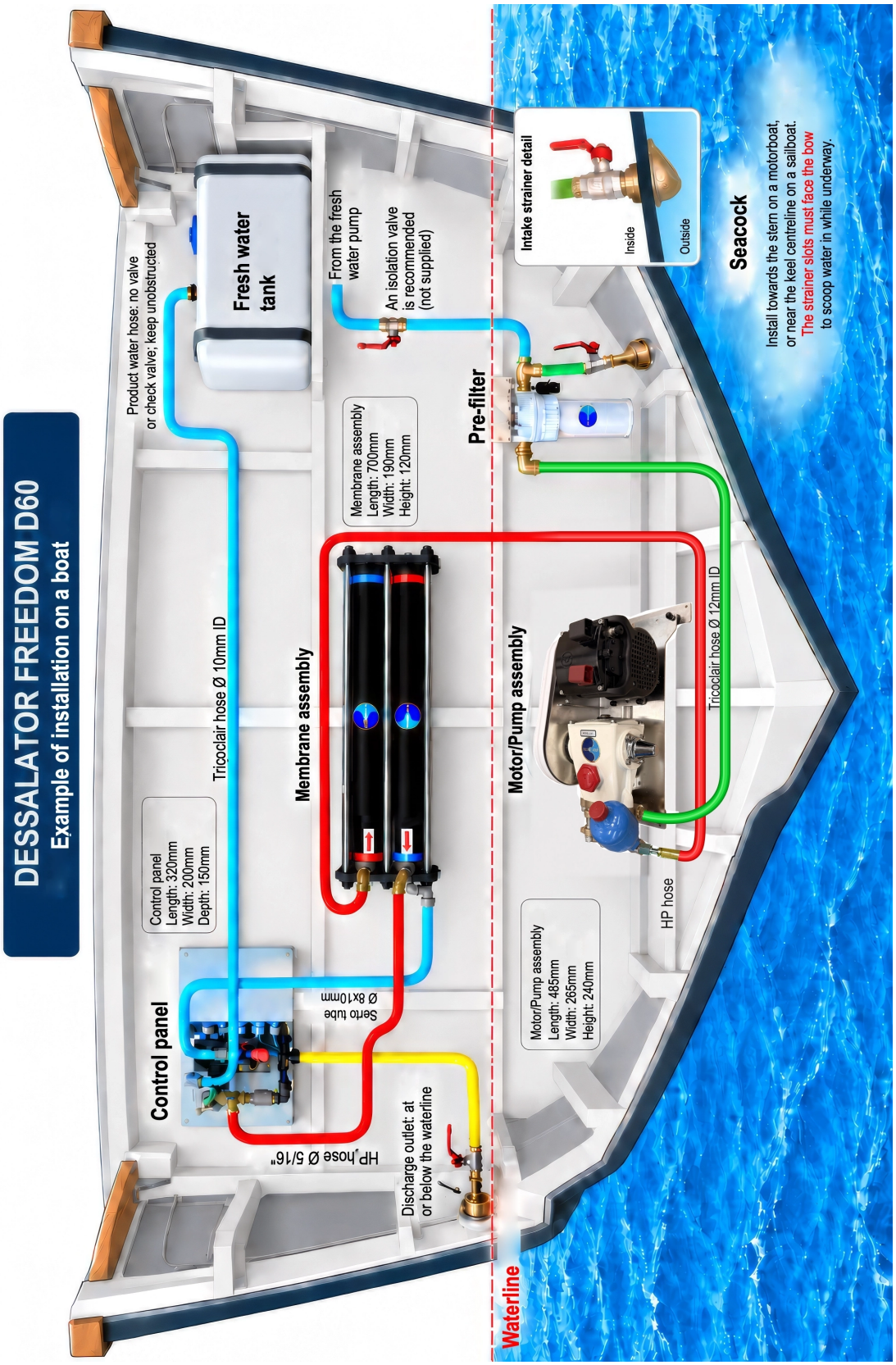
A2 APPENDIX A2
Circuit board wiring diagram



A3

APPENDIX A3

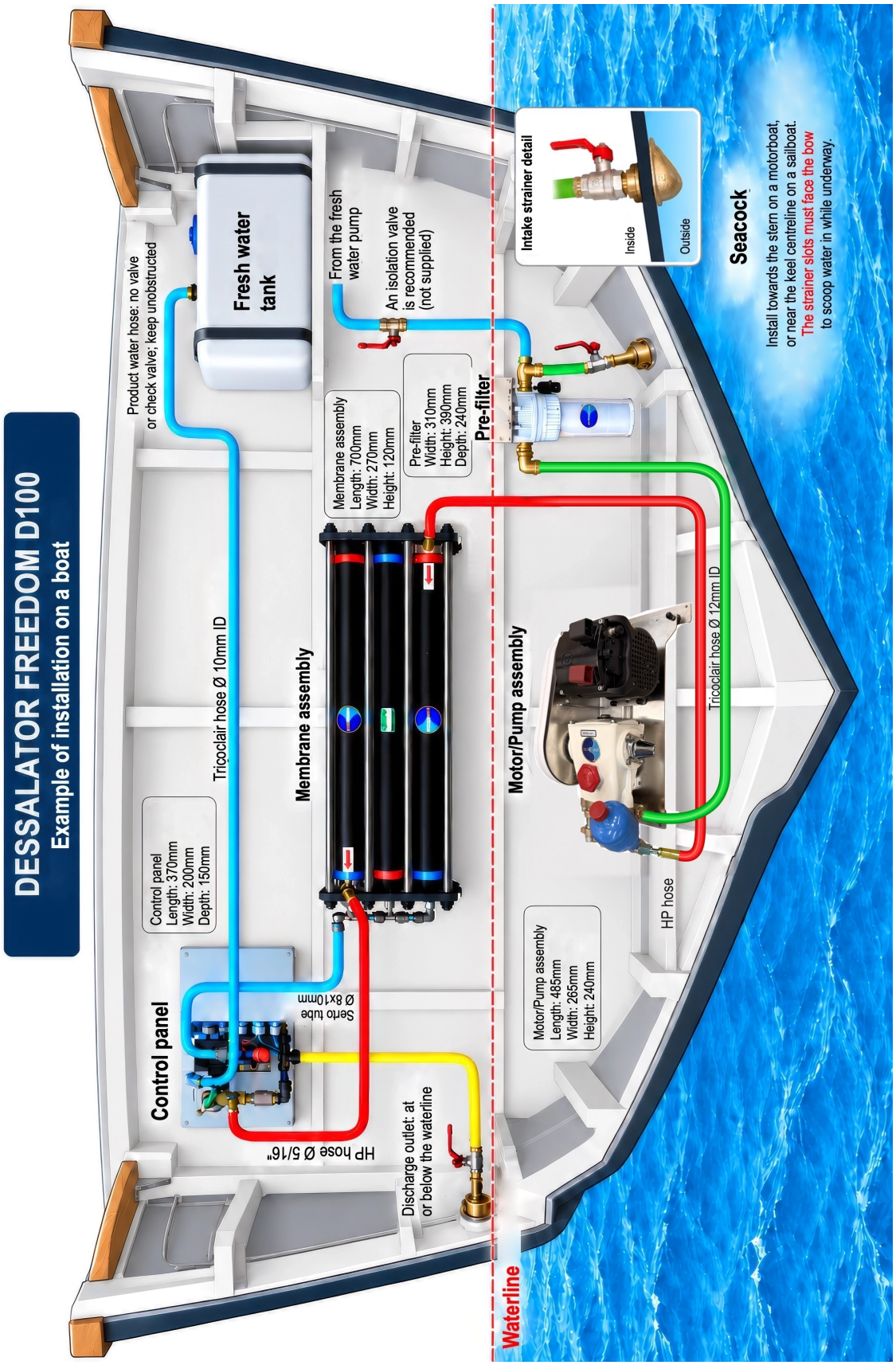
FREEDOM D60 installation diagram



A4

APPENDIX A4

FREEDOM D100 installation diagram



DESSALATOR®
WATERMAKERS - DESSALINISATEURS

DC

DESSALATOR

Support and contact details

FREEDOM DC D60 & D100

CLASSIC & AUTO / 12 AND 24 VDC

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