



OWNERS MANUAL

INTRODUCTION

PURPOSE

This manual is intended for Aqua Watermaker owners, system's technicians, technical support, and training personnel. This manual contains technical information and instructions for the installation, operation, maintenance, and troubleshooting of the Aqua Watermaker products.

SAFETY IN GENERAL

Anyone responsible for the installation, operation, and maintenance of the Aqua Watermaker system must read this manual thoroughly and comply with the instructions, guidelines, and safety requirements at all times.

SAFETY NOTES

Safety issues that require user's attention are highlighted throughout this manual as follows:

CAUTION: A Caution note provides important information users must know to prevent the possibility of damaging the device or equipment and to prevent the possibility of injuries and/or death.

NOTE: A Note provides additional information users should know to properly and safely operate the equipment.

GRAPHICS

Graphics used are for reference and illustration purposes only, and may not represent the actual part or arrangement of parts in a customized system.

Congratulations on purchasing an Aqua Watermaker. Your water maker will provide you with clean and safe drinking water for many years to come. To ensure trouble free performance please follow the simple instructions in this owners' guide. By understanding the function importance and normal operation of each part in the system, the operator can readily diagnose problems when they first develop. Such problems are easily corrected and require minor adjustments. If left unattended a small problem in one component may affect the rest of the system and can lead to your unit needing repair.

If you have any questions regarding the installation, operation or maintenance of your water maker please contact Aqua Plumb. We are always happy to assist.

SPECIFICATIONS

Rated Performance:

<u>MODEL</u>	<u>PRODUCTION/LPH</u>
AC 100	100
AC 200	200
AC 260	260

Reverse Osmosis performance varies with the feed water temperature & salinity. The rated performance is tested at 26C/80F water temperature & 33g NaCl/ltr.

RO Membrane Type: Standard size high rejection TFC Polyamide, thin film composite, spiral wound, single pass reverse osmosis element.

Product Water Quality: Minimum 500 ppm TDS

Feed Water Salinity Range: Up to 50,000 ppm TDS

Chlorine Tolerance: 1000 ppm hours @ 0.1 PPM

Feed Water Pressure: 3 psi to 60 psi

Operating Pressure: 800 to 900 psi

Feed Water Temperature Range: min. 33F / 0.5C, max 113F /45C

ELECTRICAL POWER REQUIREMENTS

<u>MODEL</u>	<u>RUNNING AMPS @230V/50HZ</u>
AC 100	12
AC 200	12
AC 260	12

STANDARD SYSTEM COMPONENTS

1. Bronze 0.6 Hp boost pump with a 316 SS shaft.
2. Large floor mounted commercial pre-filter or wall mounted twin jumbo filters.
3. SS 316 high pressure pump with a 2.5 Hp motor.
4. Control panel complete with 316 SS gauges and flow meter.
5. Circuit board and contactor box with local operating panel
6. Product water carbon filter.
7. Carbon fibre pressure vessels with SW30-2540 membranes.
8. Fresh water flush carbon filter.
9. 2 x high pressure hoses rated to 5000 psi.
10. Surface mount Remote control.
11. High and low pressure 316 SS pressure switches for system protection.

INSTALLATION INSTRUCTIONS

Main Unit

Mount the main unit on a flat surface or on brackets if needs be. Make sure there is no chafing from the hoses. Also make the pre filters readily accessible.

Though-Hull Fitting (Not Supplied)

The boat's designated intake thru hull should be located in an area that will always be in the water when the boat is used under normal running conditions. A trough hull fitting with strainer scoop could be helpful. Installed with the opening facing the bow, it typically generates a small amount of pressure while moving through the water. It is important not to place the thru-hull fitting directly forward of a speedometer pickup. It is also wise not to place the intake thru-hull slightly aft or outboard of a holding tank, head or galley sink overboard discharge.

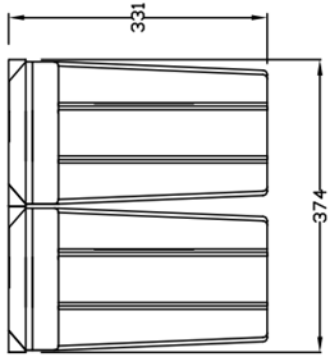
Electrical Installation

The electrical installation should only be done by a professional electrician according to the local regulations with regards to safety. Electrical installation materials are not supplied.

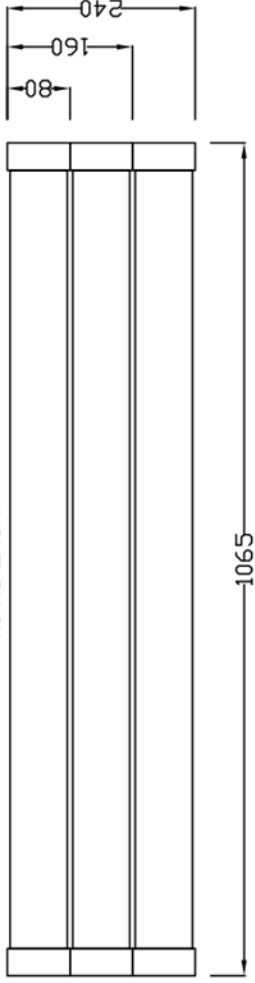
Boost Pump

Install the boost pump with the electric motor up or sideways in a dry location (submersible pumps are also available) below the water line, in between the sea strainer and the pre-filters. The intake is at the centre of the pump. The outlet should ideally point upwards to prevent air pockets. Avoid elbows/90 degree fittings in your plumbing if possible.

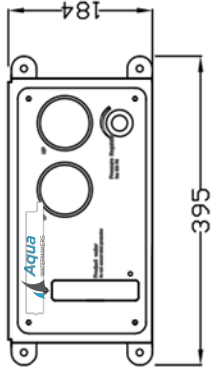
PRE-FILTERS



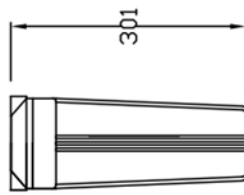
MEMBRANE HOUSINGS
4.5 KG EACH



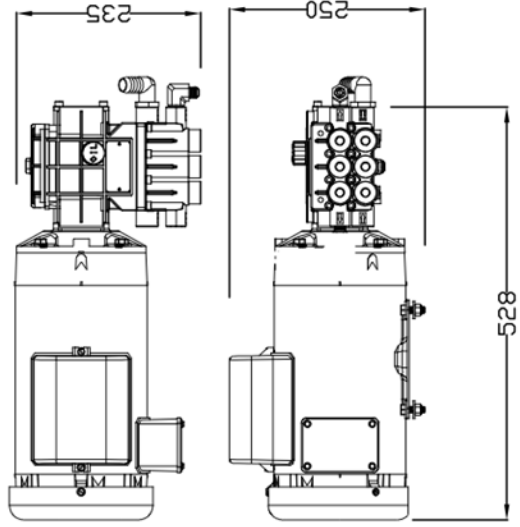
CONTROL PANEL 4 KG



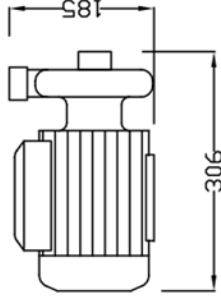
PRODUCT WATER FILTER



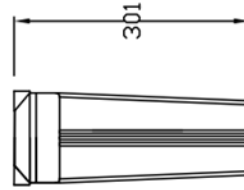
HP PUMP 30KG



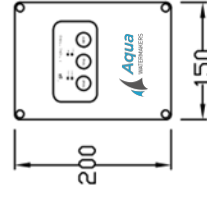
BOOST PUMP 11KG



FWF FILTER



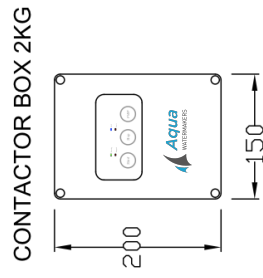
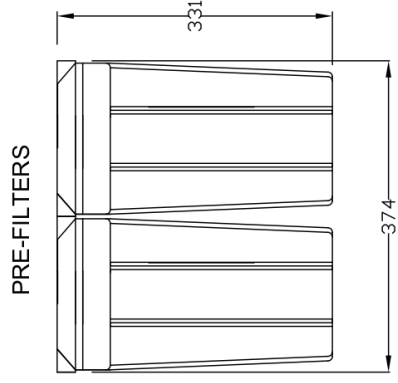
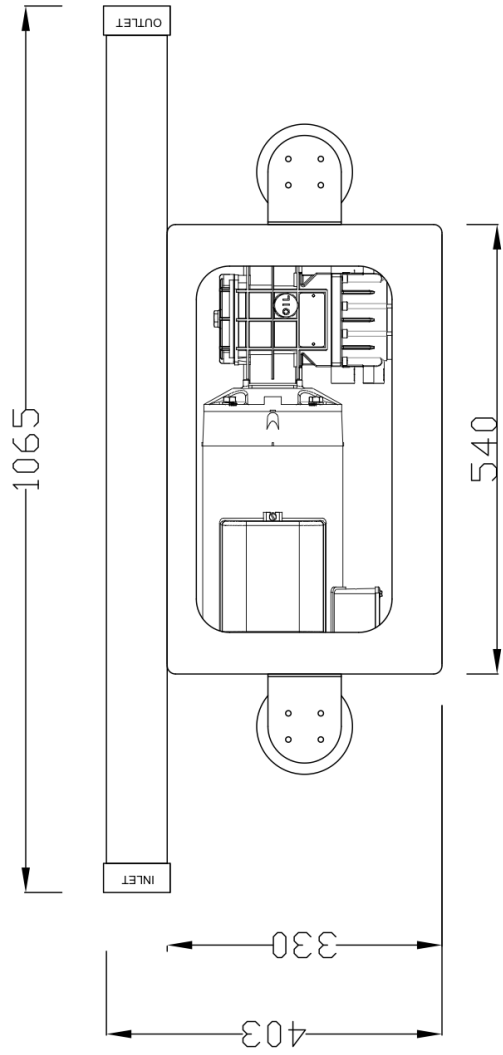
CONTACTOR BOX 2KG



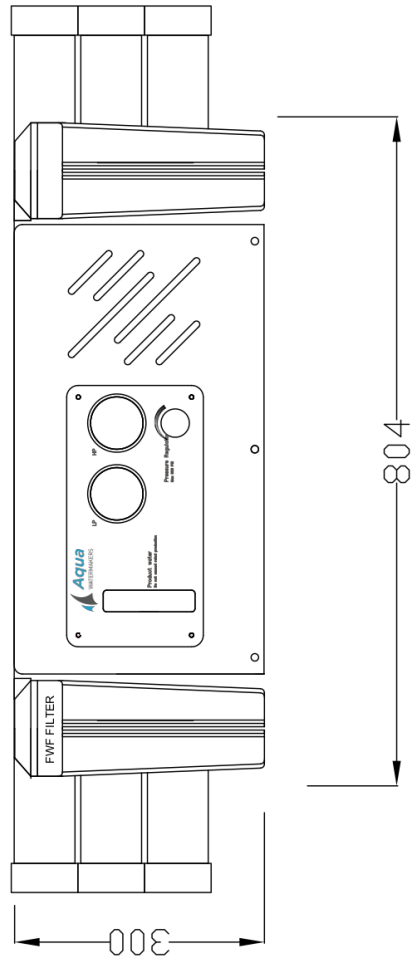
REMOTE CONTROL



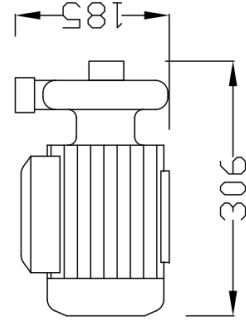
AC260 MODULAR
DIMENSIONS



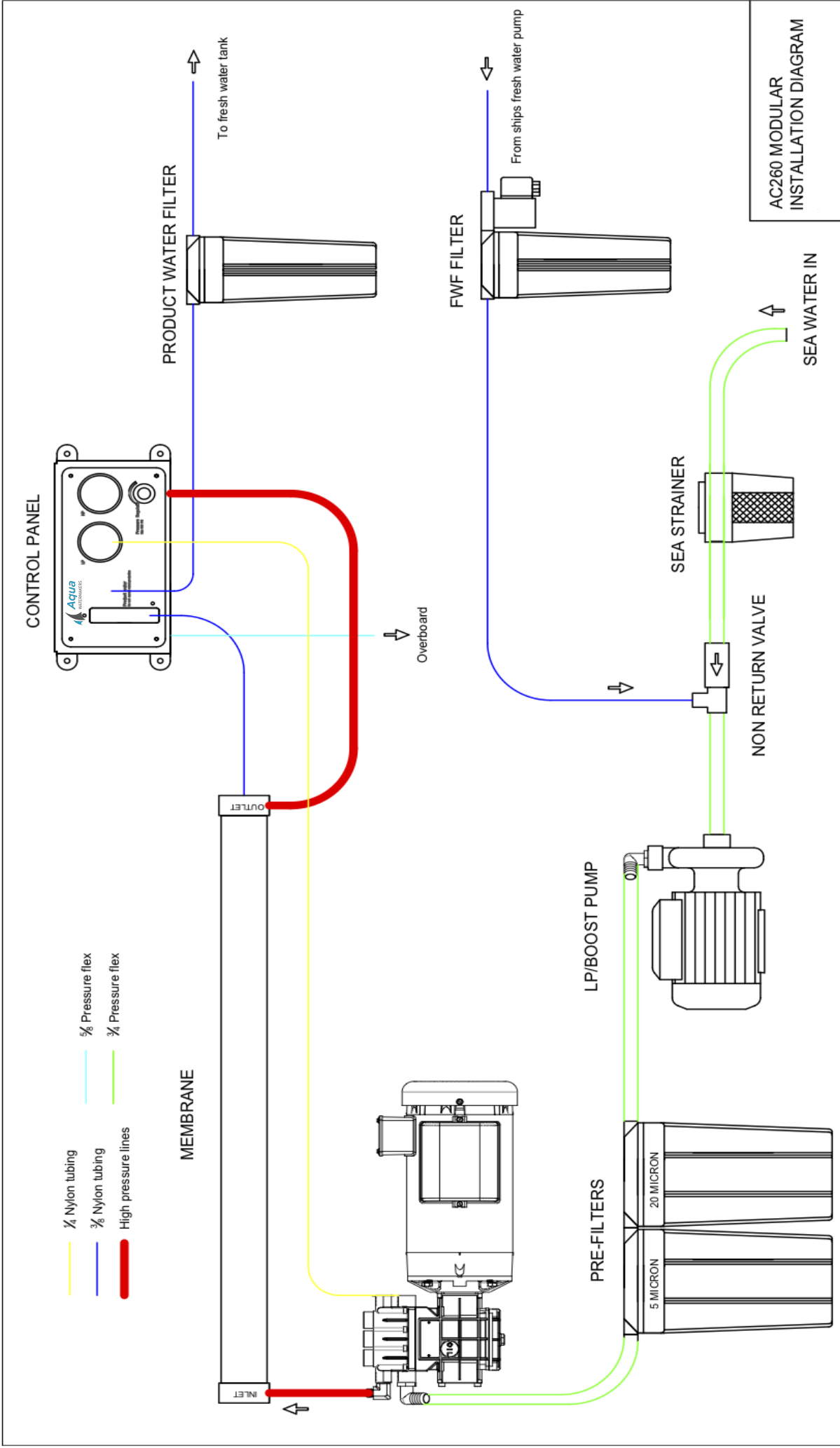
REMOTE CONTROL



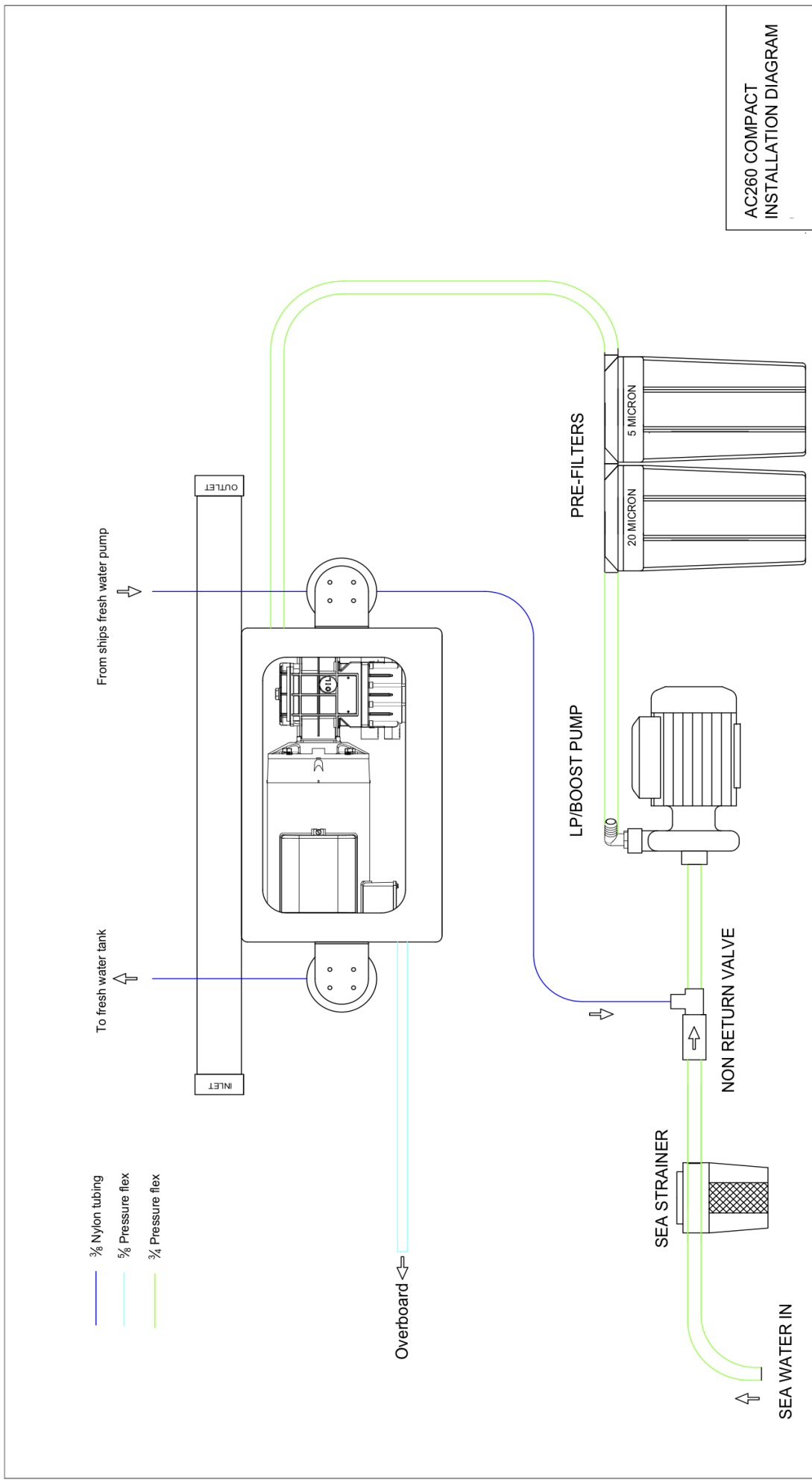
BOOST PUMP 11KG



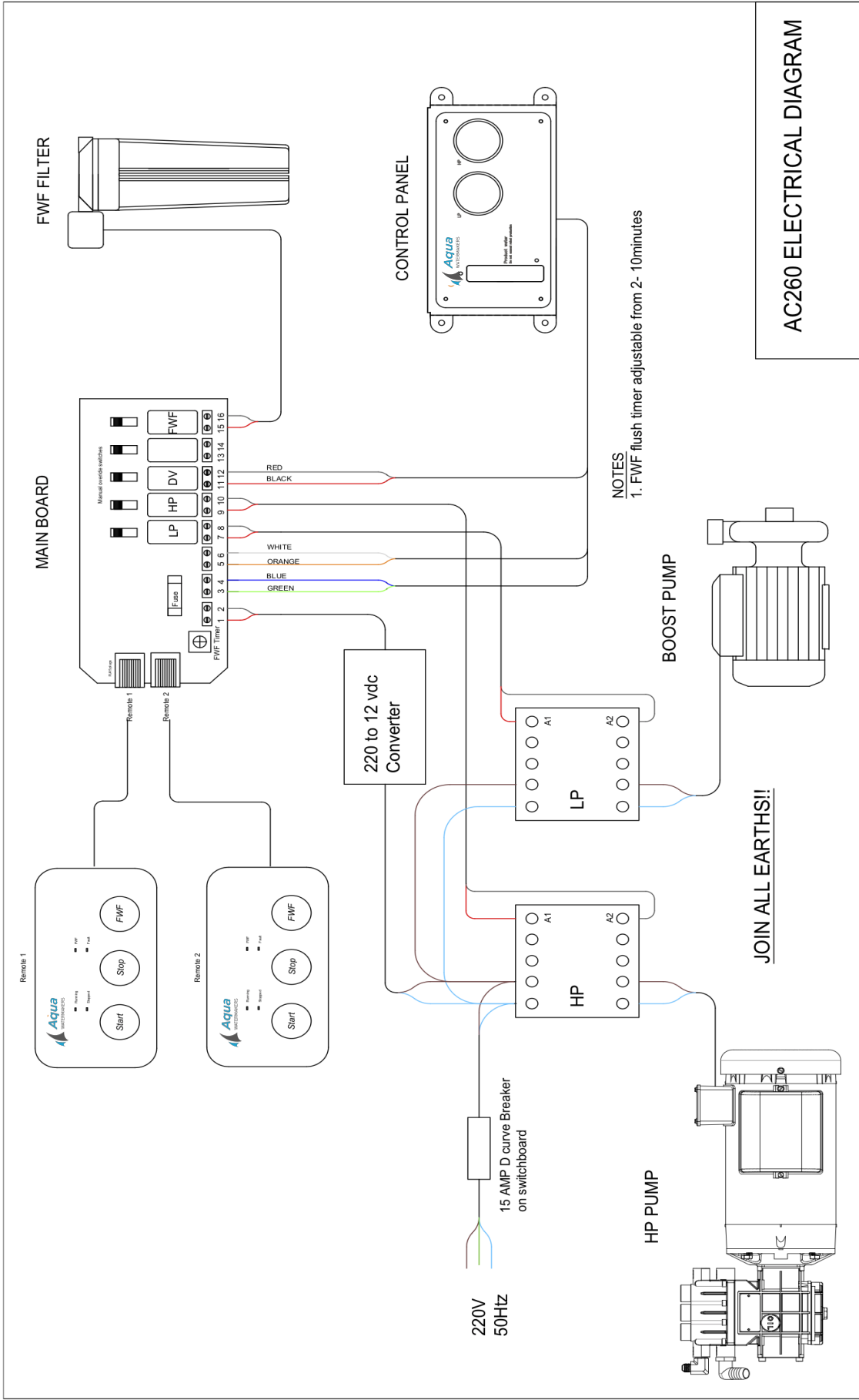
AC260 COMPACT DIMENSIONS



AC260 COMPACT
INSTALLATION DIAGRAM



- 3/8" Nylon tubing
- 5/8" Pressure flex
- 3/4" Pressure flex



AC260 ELECTRICAL DIAGRAM

JOIN ALL EARTHS!!

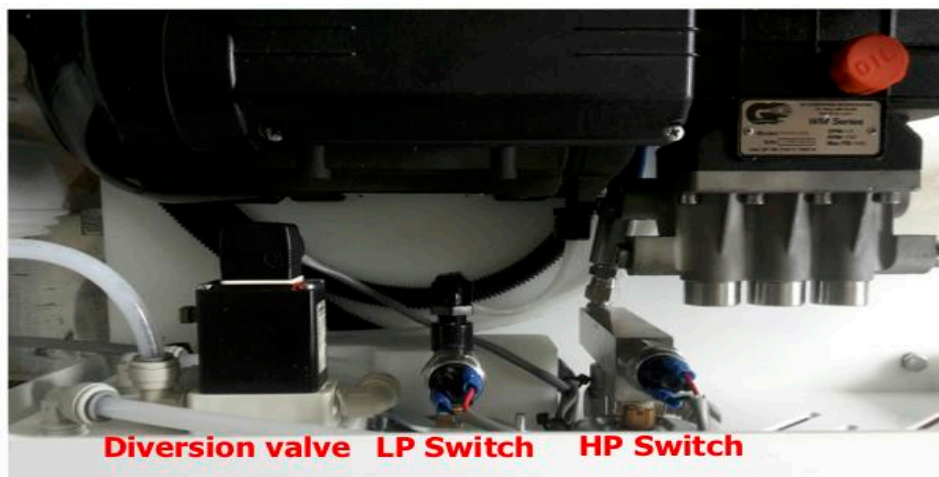
NOTES
1. FWF flush timer adjustable from 2- 10minutes

COMMISSIONING

Before use the storage chemical must be flushed from the system, this happens under low pressure. Operation under pressure with the storage chemical results in irreversible fouling of the membranes.

Start up

1. Insure sea intake valve and over board discharge is open.
2. The genset must be running or shore power should be connected and sufficient power available
3. To prime the system, press the fresh water flush (FWF) button.
4. Ensure that the pressure regulator is wound out anti clockwise.
5. Press the start button, the low pressure pump should start first, followed by the high pressure pump.
6. Check for leaks.
7. Wait for 10 minutes to ensure all storage chemical is flushed from the system.
8. On the diversion valve use the manual override button (push in and turn) to send all product water overboard.
9. Slowly increase pressure on the regulator to 800 psi. You will see water flowing in the flowmeter.
10. Wait 10 mins before releasing the manual override button. This will send water to the tank.
11. Press the stop button and taste the water in the carbon filter to tank.
12. Check for leaks.



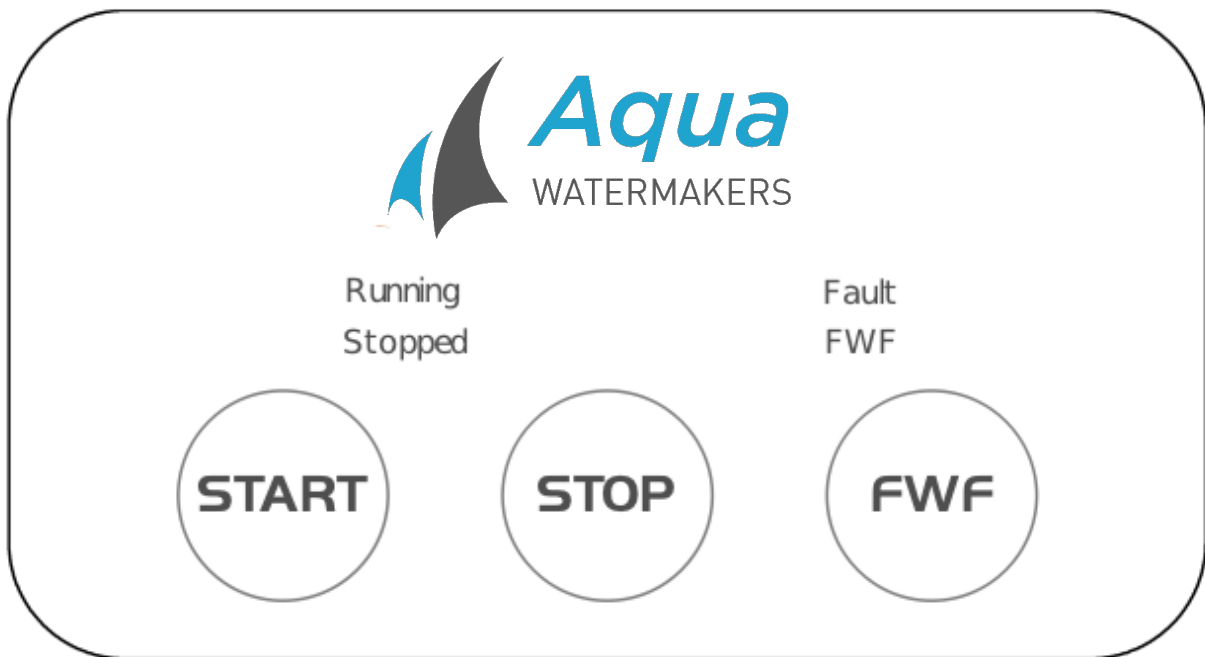
Pressure switches

The low pressure switch has a set point of 5 psi.

The high pressure switches have a set point of 950 psi.

The set point can be adjusted via small flat blade screw driver in the centre of the sensor between the terminals.

OPERATION



Start up

1. Ensure sea intake valve and over board discharge is open.
2. The genset must be running or shore power on and sufficient power available.
3. Press the start button on the controller.
4. Adjust the high pressure to max 900 (range 700-950psi) psi or maximum rated product water flow (whichever occurs first).

Stopping

1. Press the stop button

Once you have set the pressure you can start and stop it from the remote without having to adjust the regulator, however, it is wise to check the pressures every so often to make sure the pressures are correct.

Flushing

Press the flush button to start a flush cycle. The FWF light will emit a solid blue while flushing, this is adjustable from 2-10 minutes on the circuit board. Once the flush is complete the light will flash indicating that in 7 days' time it will flush again, this cycle will continue until stopped.

Note - The ships fresh water pump must be turned on for this to happen.

Remote Control

With the pressure pre-set the unit can now be operated from the remote control.

Faults

A low pressure fault will occur when the feed water pressure drops below 5 psi. The fault light will flash before shutting down the pumps followed by a solid red fault light. This occurs most often due to blocked pre filters

A high pressure fault will occur when the high pressure reaches 950 psi. This will result in an instant shut down and a solid red fault light. A manual adjustment of the pressure regulator is necessary.

NORMAL READINGS

LP Gauge - Reading above 5 psi

The low pressure gauge reads the pressure at the high pressure pump inlet and after the pre filters which as the filters block up the reading will reduce. The pre filters must be replaced when the pressure drops to below 5 psi.

HP Gauge - Max 950 psi

The high pressure gauge reads the membrane pressure; this affects how much water is produced from the membranes. Adjusted by the pressure regulator below the HP gauge, this is adjusted to a maximum of 900 psi or the maximum rated product flow. Typical for sea water use is 850 psiW

Product water meter

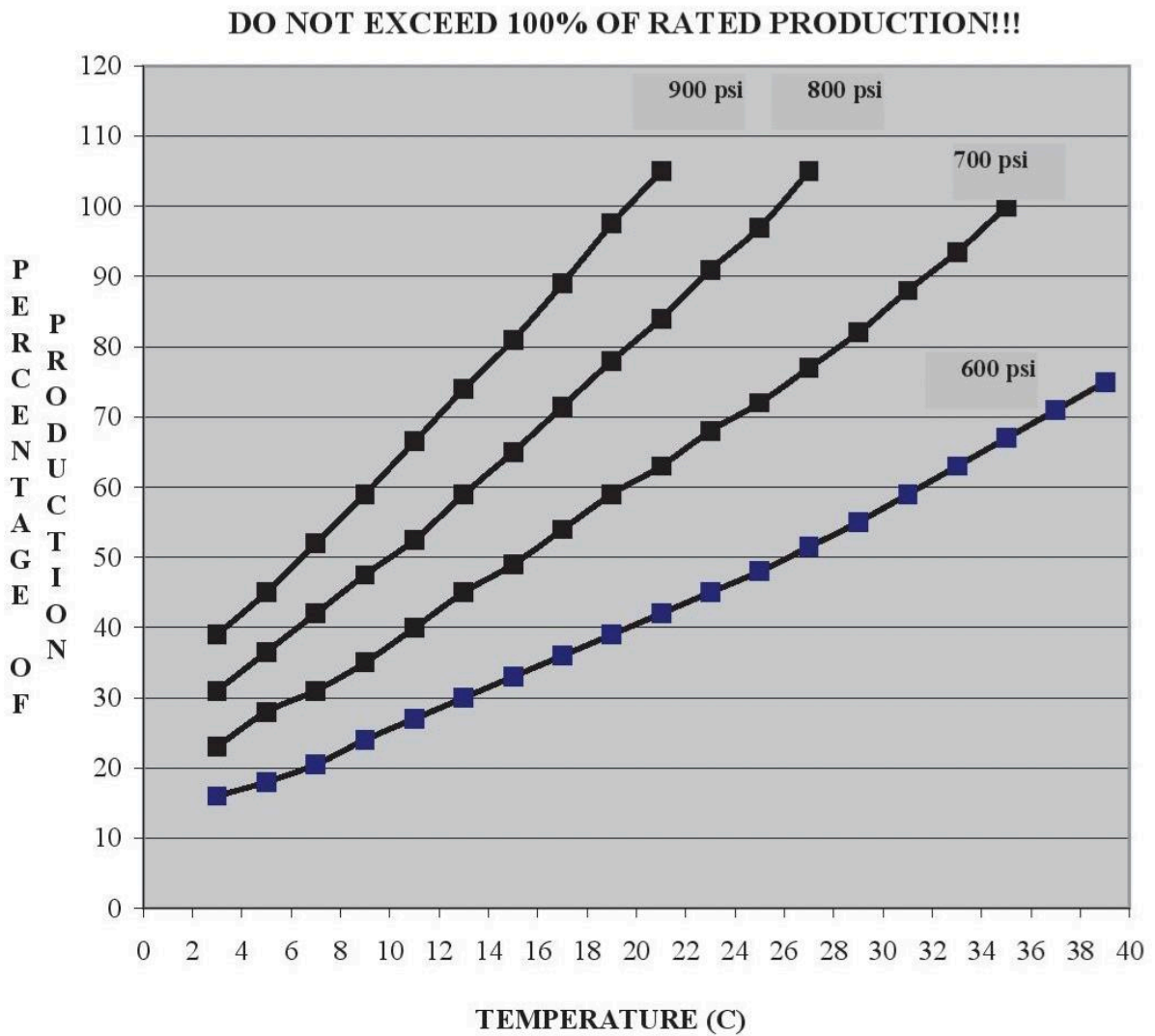
The product water meter reads the amount of fresh water produced by the membranes. The rated product water flow depends on the amount of membranes you have.

- 1 membrane up to 100 lph (25 gph)
- 2 membranes up to 200 lph (50 gph)
- 3 membranes up to 260 lph (65 gph)

The rated flow should never be exceeded. This can happen when in areas of high fresh water such as the fiords, rivers and even small harbors after heavy rainfall. The pressure regulator must be adjusted so as not to exceed the rated production.

TEMPERARURE vs. FLOW CHART

Below is a graph detailing how temperature affects the product water. As the water temperature increases, the membrane expands allowing more product water through. If the water temperature drops the membrane shrinks which reduces its output. The adjustment of the pressure can compensate up to the maximum operating pressure.



MAINTENANCE TIMETABLE

The following maintenance timetable is an estimate of the time intervals at which maintenance may be required only. This schedule must be adjusted to the regularity of usage, the condition of the intake water, the length of time the system is exposed to seawater and the total running time following each system cleaning.

COMPONENT	MAINTENANCE REQUIRED	TIME INTERVAL (INTERMITTENT DUTY)
Sea Strainer	Inspect and clean screen and housing.	Every 100 hrs or when clogged
Pre filters	Replace or clean elements	When the low pressure drops below 3 psi
High pressure pump	Change the crank case oil	After the first 50 hrs then every 500 hrs.
High pressure pump	Change seals and o-rings	Every 1500 Hrs
Membrane	Flush with non-chlorinated water.	Every 2 weeks.
Flow meter	Remove float and clean	When discoloured.

TROUBLE SHOOTING GUIDE

Problem	Cause	Solution
Inability to build up pressure	-Air in system -Blocked pre-filters -Seals in HP pump failed. -Hp Relief valve set incorrectly	Allow more time to prime. Replace or clean filters Get pump head serviced. Readjust.
-with high pressure fluttering	-High pressure pump valve stuck	Open one by one all six hexagonal valve covers and inspect valve for movement
-with loud noise from HP pump	-Seacock closed	Open seacock
-During Navigation	-Through hull fitting in wrong Location	Use hull scoop
Product output below specification	-Membrane fowled -High sea water PPM -Very cold sea water	Clean or replace membrane This is normal This is normal
High product salinity	-Membrane has reached it service life. -High seawater temperature	Replace membrane This is normal
Boost pump leaking	-Seal has failed	Replace seal

AQUA WATERMAKER WARRANTY

Aqua Plumb Ak Wide Ltd warrants for a period of 1 year from the date of supply that the Aqua Watermaker will perform according to specifications. The triplex plunger high - pressure pump and the high pressure vessel/s are warranted for 1 year to the original purchaser. Aqua Plumb Ak Wide Ltd's liability under this warranty shall be limited to repair or replacement of the Aqua Watermaker at Aqua Plumb's option. Under no circumstances shall Aqua Plumb Ak Wide Ltd be liable for consequential damages arising out of or in any way connected with the failure of the system to perform as set forth herein. This limited warranty is in lieu of all other expressed or implied warranties, including those of merchantability and fitness for a particular purpose. In the event of a defect, malfunction, or failure during the warranty period, Aqua Plumb will repair or replace, at its option, the product or component therein which, upon examination by Aqua Plumb, shall appear to be defective, or not up to factory specifications. To obtain warranty service, the defective product or part must be returned to Aqua Plumb. The purchaser must pay any transportation or labour expenses incurred in removing and returning the product. A return authorization must be obtained before any part or component is shipped. The limited warranty does not extend to any system component that has been subjected to misuse, neglect, accident, improper installation, or used in violation of instructions furnished by Aqua Plumb Ak Wide Ltd. The warranty does not extend to components on which the serial number has been removed, defaced or changed. Aqua Plumb Ak Wide Ltd reserve the right to make changes or improvements in its product during subsequent production without incurring the obligation to install such changes or improvements on previously manufactured equipment. The implied warranties, which the law imposes on the sale of this product, are expressly LIMITED, in duration to the time period above. Aqua Plumb Ak Wide Ltd shall not be liable for damages, consequential or otherwise, resulting from the use and operation of this product or from the breach of this limited warranty. This limited warranty service does not apply to normal recurring user maintenance as described below:

Sea Strainer Element
Seals and Packing's
Gauge/Instrument Calibration

Pump Crankcase Oil
Pre-filter Cartridges

Pump Valve Assemblies Pump
Pump Bushings and Bearing