

Biofiltration

System 2500 / 5000 Marine

Suitable for Saltwater Applications

USER GUIDE



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System 2500/5000 Marine

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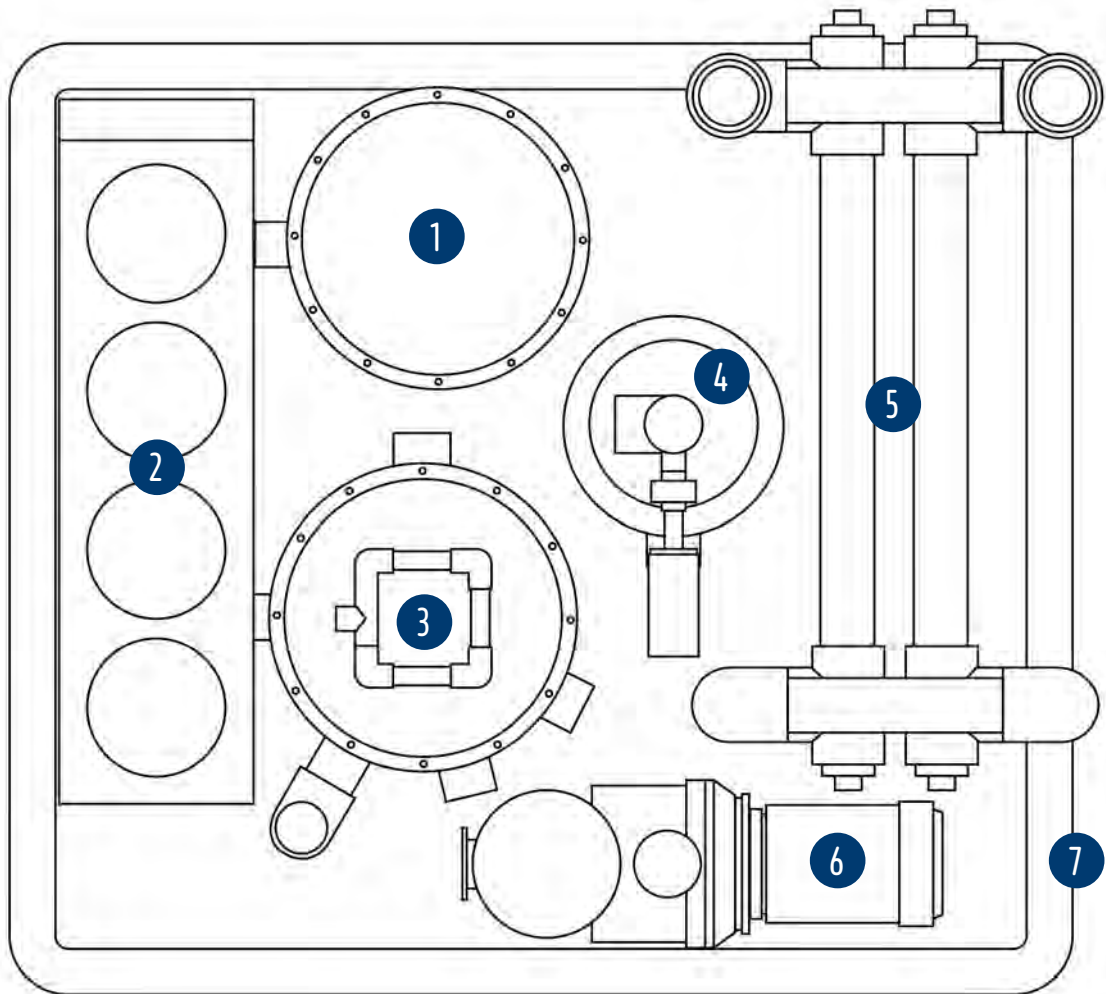
Commercial Ultraviolet Water Steriliser

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System 2500 / 5000 Marine

Components Schematic

Plan view of the approximate positions of components supplied with the SYSTEM 5000 and SYSTEM 2500 MARINE. Please pay close attention to the orientation and direction of the inlet and outlet bosses.



INCLUDED

- 1 Trickle Bio-Tower [TBT]
- 2 Filter Bag Housing
- 3 Protein Skimmer [PSW]
- 4 Fluid Sand Tower [FST]
- 5 UV Steriliser [P8 or P6]
- 6 System Pump
- 7 Reservoir

Technical specification

Power Consumption	
AV150 Pump	1.0kW, 4.2A, 230V, 50Hz
System 2500 P6 UV	0.33kW 1.32A, 100-227V 50/60Hz
System 5000 P8 UV	0.44kW, 1.76A, 100-227V 50/60Hz
Overall Dimensions (L x W x H)	1.2m x 1.0m x 2.5m

2 Filter Bag Housing

Gap

Support
stanchion

Image 01



Small cut-out
section

Large cut-out
section

Image 02

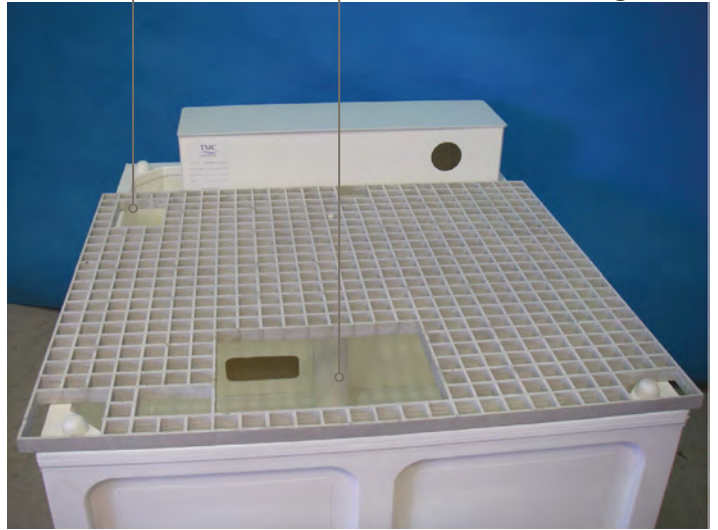


Image 03



Image 04



Installing your System 2500/5000 Marine

No specialist tools are required to assemble the filtration unit. Unpack the contents carefully, taking particular caution when handling any of the clear acrylic components, which are more easily broken.

1. Locate the reservoir in its desired final location [the system can be moved retrospectively with the aid of a pallet truck]. The shorter sides of the reservoir are the front and back of the system.
2. Place the filter bag housing at one of the shorter ends as shown in image 01. The housing should be located at the front left hand side of the reservoir, leaving a gap to the right of the housing [see Image 01]. The rectangular outlet at the bottom of the housing should face outward into the reservoir.
3. Insert the black rubber flange into the circular hole at the top of the narrow end of the filter bag housing.
4. Place the support stanchion [see image 01] inside the tank with the spigot facing upwards.
5. Place the support grid on top of the reservoir so that the large cut-out section is on the opposite side from the bag filter unit and the smaller cut-out section is as shown in image 02.
6. Adjust the position of the support stanchion so that it is approximately under the final position of the fluidised sand tower [FST]. Plastic washers are provided to compensate of any eventual sag in the support grid.
7. Place the remaining components on the platform, positioning them according to the Components Schematic [page 4]. Pay close attention to the orientation and direction of the inlet and outlet bosses.

IMPORTANT: DO NOT ADD ANY MEDIA TO THE FLUIDISED SAND TOWER [FST] AT THIS STAGE.

8. Ensure that the plastic media in the trickle bio tower is level.
9. The units are now ready to be connected together with the pre-assembled plumbing provided. Begin assembly with the connection of the intake strainer assembly to the filtration system pump inlet [see image 05]. Proceed with other connections following the alphabetical labelling; i.e. A to A, B to B and so on [see image 06]. Ensure all o-rings are in place before making each connection, removing and retaining tape first. Once all the plumbing is fully assembled, **hand-tighten** all the unions [threaded couplings].

Image 05



Image 06



IMPORTANT: DO NOT GREASE OR WET ANY OF THE O-RINGS IN THE CONNECTION BOSSES OF THE COMPONENTS.

10. Ensure that the flow meter [if included] is correctly assembled with the float and stabilising vane in the right direction. Ensure that all outer packaging has been removed.
11. Avoid putting any of the joins under stress when connecting components. All filtration units are assembled and then disassembled prior to dispatch ensuring correct fitting. If you encounter any difficulty or resistance fitting components together attempt to realign them

The following fittings, connection and components are not included as standard, but can be ordered separately:

- Protein Skimmer Wash Kit: automatically supply freshwater to wash out the top section of the protein skimmer at timed intervals. This should be connected via a valve or tap to a freshwater supply with sufficient pressure [i.e. mains water pressure] TMC code 7938.
- Automatic timer valve for internal salt-water washer - TMC code 7938.
- Flexible piping from protein skimmer foam cup to drain to waste or a collection vessel.
- Return plumbing and fittings from livestock tanks to bag filter unit.
- Water intake plumbing, fittings to and from the UV and additional piping to distribute water to livestock tanks.

Suitable electrical cable should be used to wire the pumps, UV steriliser and any additional electrical equipment supplied with the unit. All electrical equipment is provided for connection to single-phase supply, unless specified otherwise. If in doubt, consult a qualified electrician.

CAUTION: Installation must comply with the relevant local wiring guidelines and legislation. Please consult a qualified electrician.

CAUTION: Always disconnect the UV steriliser from the mains electricity supply before servicing the unit.

CAUTION: Power must be supplied through a Residual Current Device (RCD) with a rated residual operating current no exceeding 30 mA.

A switch with a minimum 3 mm contact separation must be provided in the fixed wiring to isolate any electrical devices from the mains electricity supply.

INTERNAL FUSE REPLACEMENT: Always isolate from mains supply before undertaking any maintenance. Only use a suitably rated fuse.

IMPORTANT: Do not add any sand to the fluidised sand tower (FST) until you are satisfied that the unit is operating without any visible leaks from the components or joints.

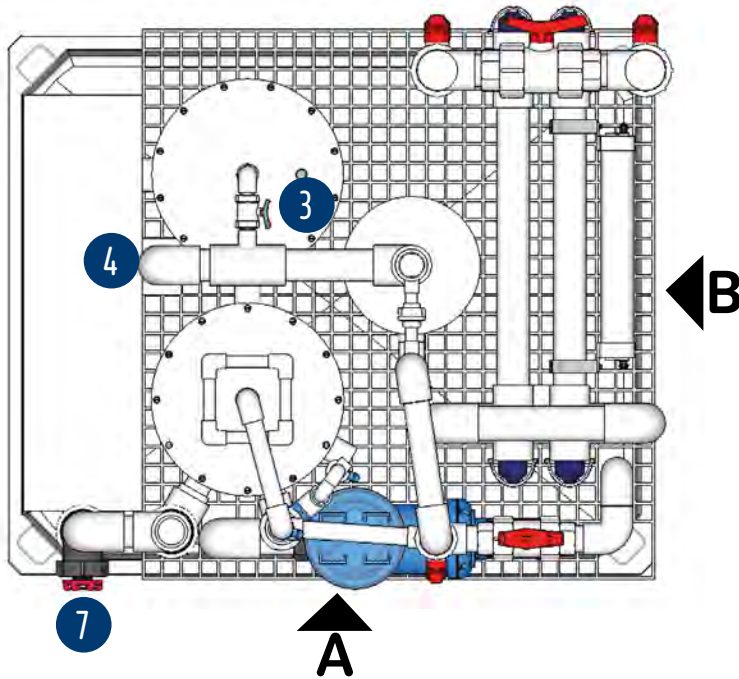
The filtration unit, once assembled according to the instructions, is ready to be filled with water.

To **test the filtration pump and system**, no further connections are necessary. The unit does not need any other connection to be made to enable it to operate.

IMPORTANT: WE RECOMMEND THAT THE UNIT IS FILLED AND INITIALLY TESTED USING FRESHWATER ONLY AND TO FOLLOW THE OPERATING INSTRUCTIONS CAREFULLY

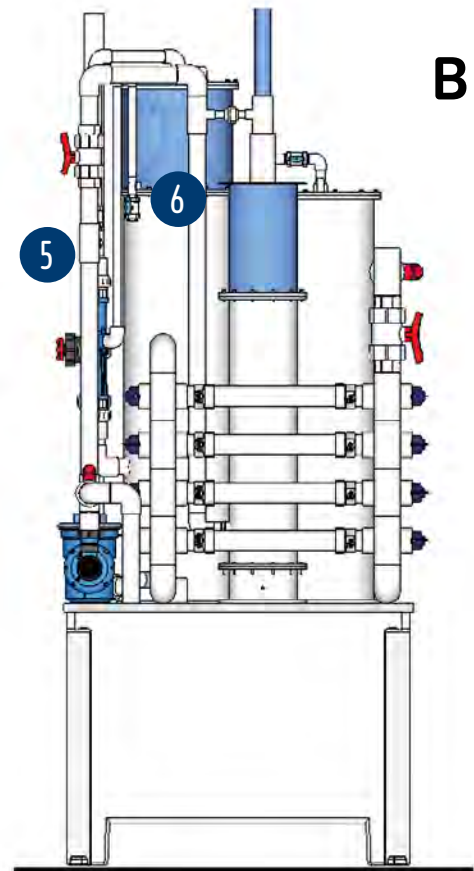
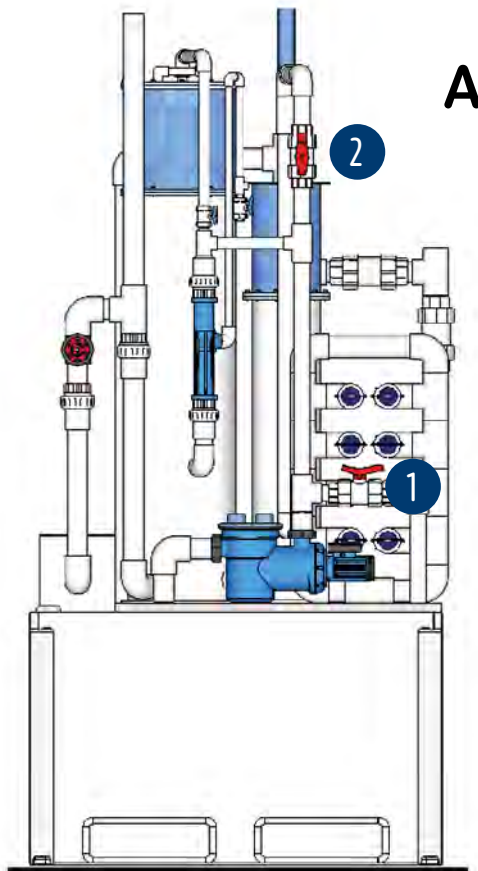
System 2500 / 5000 Marine

VALVES POSITION



System Valves

- 1 Pump Bypass
- 2 FST supply
- 3 TBT supply
- 4 Protein skimmer bypass
- 5 Protein skimmer internal wash supply
- 6 Protein skimmer air inlet valve
- 7 Protein skimmer outlet / water level valve



Note: Diagrams are of the System 5000 showing a P8 UV Steriliser. The System 2500 has the same element layout, but will be supplied with a PSW5200, TBT5200 and a P6 UV Steriliser.

Operating Instructions

- 1. Before commissioning the system**, we recommend running without livestock, using a salt-water mix containing at least 100 kg of PVD salt for 24 hours. This will help to 'cure' all plastic surfaces and remove any traces of oils used in the manufacture of the plastic components, filter media and plumbing. It is also beneficial to **increase the temperature of the water to approximately 25°C** to aid the dissolving and efficiency of the salt.
If you are curing any of the adjoining plumbing and system in the same manner please ensure that the UV unit is bypassed to prevent salt deposition on the quartz sleeves.
- 2. Before starting any pumps**, fill pump strainer basket chamber and make certain that the reservoir is full of water and that all connections are watertight.

IMPORTANT: Read the following operating instructions carefully before switching on any pumps. DO NOT SWITCH ON THE UV STERILISER.

Close all valves with the exception of the following which should be fully open:

- Ball Valve **1** Valve on system bypass to the reservoir
- Ball Valve **2** Valve to fluidised sand tower
- Ball Valve **4** Valve on protein skimmer bypass
- Gate Valve **7** Valve on protein skimmer outlet to bag filter box

Please Note: If you've had a heater fitted to the system which will be fed from valve 1 then you'll need to close **valve 2** slightly as the heater will restrict the flow.

3. Start the filtration system pump, allowing it to prime and clear air from line. All water should pass through the fully opened bypass (ball **valve 1**), returning directly to the reservoir.
4. Slowly adjust ball **valve 1** to allow the rest of the system to fill. Avoid filling the system too quickly and overflowing any of the filtration components.
5. Check all joints and unions for leaks, and remove any plastic swarf floating in the reservoir. Place the four filter bags supplied in the location rings in the bag filter box.
6. Drain the water from the system and system elements, flushing again with freshwater and run the system until all components are fully rinsed to remove any residual salt. Empty again, and refill with clean, freshwater, adding Tropic Marin Salt to the correct density. [Allow approximately 25 kg of Tropic Marin for the volume of water in the reservoir].
7. Thoroughly rinse/wash the sand for the fluid sand tower [FST] before use.

9. With the system turned off, siphon out 50% of the water in the fluid sand tower [FST] prior to adding the sand media. Remove the clear, vent pipe on top of the fluidised sand filter. Use a funnel [not supplied] to carefully add the sand. When all the sand media is added, replace the vent pipe, ensuring it is completely clear of sand and grit. The fluid sand tower [FST] can be detached at the acrylic section as an alternative method of adding the sand. Please handle the acrylic with care, as it is fragile.

IMPORTANT: Repeat steps 2 – 4 and then proceed as follows:

10. Very slowly, adjust ball **valve 1** until the sand media in the fluid sand tower [FST] is fluidised so that the sand level reaches mid-way up the acrylic section. By closing **valve 2**, gradually reduce the sand level to the base of the acrylic section. This backpressures the venturi enabling the protein skimmer [PSW] to function.

IMPORTANT: Do not adjust any valves completely or too quickly or the sand media may be fluidised to the point of overflowing through the clear vent pipe or overflowing into the other filtration elements. Large amounts of rising trapped air may also cause the sand to overflow if this start up procedure is not carried out carefully.

11. Once the water flow through the fluidised sand bed filter is stabilised and the protein skimmer has filled to the point of overflowing into the bag filter box, open ball **valve 3** fully to the inlet of the bio-tower. Allow the rota to gain momentum before further adjustment. If there is insufficient pressure to divert flow to the rota, slowly close ball **valve 4** on the protein skimmer [PSW] bypass to obtain the desired flow or rotation rate.
12. One rotation per second is sufficient but may be further reduced to give a suitable dry/wet exposure of the random fill media, depending on application and filtration requirements.
13. If the venturi is to be used with an ozone generator this connection should now be made via an air-line to the small hose-tail spigot located above ball **valve 6**. Ball **valve 6** should be used to adjust the mixture of air and ozone. If the venturi is not to be used with an ozone generator **valve 6** should be fully open. Typically, the airflow requirement of the venturi is 200 – 500 litres per hour. This line should not be pressurised or connected to a compressed air supply, as this will disrupt the performance of the venturi. The venturi, when operating correctly, should infuse the whole body of the protein skimmer [PSW] with a dense, even cloud of fine bubbles. It may take several hours before the whole system is cleared of air trapped during start up and this will initially disrupt the correct operation of the venturi. This is normal.
14. If the internal saltwater foam column washer is connected via an automatic timer valve [an optional extra], then ball **valve 5** should be left open. However, if this is not the case then ball **valve 5** should be closed and used to manually wash the foam column as required.

15. It is necessary to set the correct operating water level in the protein skimmer. This is achieved by slowly and gradually closing outlet gate **valve 7** until the water level in the protein skimmer [not the foam level] is within a few centimetres of the top flange of the main body, where the main body meets the tapering cone. The water level should not rise significantly within the tapering foam cone or the final vertical column.
16. The level may be adjusted more precisely by using protein skimmer bypass ball **valve 4**, to achieve the desired consistency of foam emanating from the foam cup and draining to waste. If the foam is too dry, it may settle at the top of the foam tower and risk refluxing its contents back into the main body of water. If the foam is too wet, there could be unacceptable losses of water from the system that is costly if artificial seawater is being used.
17. Further adjustments may be necessary to fine-tune the flow of water to the main filter elements and this should be done using **valves 1 2 3 4 7**. Once satisfied with the operation and running of the filtration system, the distribution pump may now be switched on for supply to the aquaria via the UV unit. **The UV unit should only be switched on when there is water flowing through it.**
18. It is recommended that any alterations and modifications made to the system in the due course of normally day-to-day running, be made in the morning. This is because back pressures and flow rates can take up to several hours to equalise and these need to be monitored periodically throughout the day.

IMPORTANT: The SYSTEM 2500 and SYSTEM 5000, like any other biological filtration units, require a maturation period [to allow colonisation of the appropriate levels of nitrifying bacteria] before it can be used on a fully stocked system.

19. The length of the maturation period will vary from 4 – 12 weeks depending on the initial stocking levels, water temperatures, feed rates and other criteria. Throughout this period, ammonia and nitrite should be monitored daily to assess the progress of the maturation process. Further stocking should only be considered once the system is fully matured.
20. When reservoir levels are low due to maintenance or high sales, ensure the pumps are not allowed to draw air. It is strongly recommended that systems be fitted with water level switches to ensure that water pumps cannot draw air. Do not allow bubbles from return water to be drawn into the pump inlet.

CAUTION: All of these will cause embolism that may kill livestock.

All items supplied with this system are covered by warranties under Tropical Marine Centre's standard terms and conditions.

However, Tropical Marine Centre Limited cannot be held responsible for any subsequent damage or the loss of livestock caused by the failure of any system component.

Maintenance Instructions

Recommended regular maintenance tasks for the SYSTEM 2500 and SYSTEM 5000

DAILY MAINTENANCE

- Check overall system and livestock health for early signs of problems.
- Check bag filters for blockages and wash as necessary.
- Check protein skimmer cup and operate internal and external wash kits as necessary.
- Check the rota in the bio-tower is rotating.
- Check sand bed fluidisation level and adjust accordingly.
- Check REDOX if applicable.

WEEKLY MAINTENANCE

- Carry out regular water tests with particular reference to pH, ammonia and nitrite when the system is maturing.
- Perform partial water change [generally around 10 %].
- Check water salinity/density.
- Change bag filters. If new bags are used, rinse in freshwater before installation.
- Check and manually clean protein skimmer cup as necessary.
- Carry out a visual check on pump strainer baskets and intake strainers.

MONTHLY MAINTENANCE

- Inspect pump, UV steriliser and filter seals to ensure there is no build up of salt due to minor seepage, especially on pumps – the motor and fan should be kept free of salt and debris to ensure effective cooling.
- Check consistency of protein skimmer foam and adjust as per set up instructions.
- Due to the abrasive nature of the fluidised sand bed filter media, the bowl may need to be replaced periodically and should be inspected for any signs of wear. Replacement bowls are available from TMC [product code FSB/VFCA498].

BIANNUAL MAINTENANCE

- Change ultra violet lamps using TMC 55 Watt UV lamps [product code 6056].
- Clean quartz sleeves [product code 5277] on UV steriliser and replace o-rings [product code 5281].
- Inspect bio media for mulm build up and clean/replace as necessary.
- Check and clean clear pump lids.

The system has been designed with as much flexibility as possible. Modifications and expansions are usually very easy to achieve. Please consult Tropical Marine Centre directly with any queries.

Commercial Ultraviolet Water Steriliser

Instructions for installation and use

All Tropical Marine Centre Commercial Ultraviolet Water Sterilisers are supplied with two-inch solvent weld unions for easy connection to existing imperial and US plumbing fittings. To connect to metric plumbing, adapters can be supplied on request [2"x63mm socket adapter, part number 7545]. We advise that a two inch bypass system is incorporated to the installation of the UV unit to simplify future servicing and maintenance.

IMPORTANT SAFETY INFORMATION

Please Read Carefully

- All units must be mounted with the lamps in a horizontal position.
- **Never mount the unit with the lamps in a vertical position.** Incorrect mounting and positioning can result in malfunction and permanent damage to the unit.
- **Never look directly at an illuminated UV lamp.**
- Do not operate the unit when disconnected from the water supply.
- Do not allow the unit to run dry.
- Always isolate the unit from mains electricity and turn off the water supply prior to carrying out maintenance.
- Always disconnect from mains supply before putting your hands into the water.
- Electricity should be supplied through a Residual Current Device (RCD) with a rated residual operating current not exceeding 30mA.
- The unit must be earthed. Do not use a fuse larger than 3 amps.
- Rating: UK and European models 220–240V 50/60Hz. Class I IP64.
- Rating: USA models 100–277V 50/60Hz. Class I IP64.
- The unit must not be submerged in water.
- The unit must be fully frost protected or taken inside during the winter months.
- Do not install it above or immediately alongside exposed water, to prevent the unit falling into it.

Connection to electrical supply

If in doubt, consult a qualified electrician.

CAUTION:

- Installation must comply with the relevant local wiring guidelines and legislation.
- Please consult a qualified electrician. Do not install on the same electrical circuit as inductive loads (e.g. magnetic lighting ballasts, pumps and other motors), as these can cause surges which can damage the steriliser's control gear.
- Suitable mains cable should be used to wire the pumps, UV steriliser and any additional electrical equipment supplied with the unit. All electrical equipment is provided for connection to single-phase supply, unless specified otherwise.
- If in doubt, consult a qualified electrician.
- A switch with a minimum 3mm contact separation must be installed to allow safe and easy disconnection from the electrical supply during maintenance.

Internal fuse replacement

Always isolate from mains supply before undertaking any maintenance.

Only use a suitably rated fuse.

Maintenance Procedures

IMPORTANT SAFETY INFORMATION - Please Read Carefully

- Never look directly at an illuminated UV lamp.
- Always isolate the unit from mains electricity and turn off the water supply prior to carrying out maintenance.
- If the quartz sleeve is accidentally cracked it must be replaced prior to reconnection to either the electrical or water supplies. If you do not have a replacement quartz sleeve, remove the broken sleeve and use the blanking caps provided with the unit to close off the ends of the affected tube.

HALF-YEARLY MAINTENANCE

- All maintenance should only be undertaken by trained and competent staff.
- The UV lamps should be changed at 4000-hour [approximately six months] intervals to achieve a high UV efficiency. Should the lamps only be changed at 8000 hours intervals [approximately annually] there is a 15% depreciation in UV efficiency over one year.

UV Lamp and Quartz Sleeve Replacement Procedure

1. Isolate the ultraviolet steriliser from the electrical supply.
2. Isolate the ultraviolet steriliser from the water supply by closing any supply valves and/or opening any installed bypass.
3. Drain the water from the unit by opening the drainage tap [orange bib tap] located on the bottom support bar of the unit. Wall mounted units are not fitted with a drainage tap.
4. Unscrew the dipmould guard and carefully remove the numbered lamp end cap from the lamp. Repeat this procedure at the opposite end of the same lamp assembly.
5. Carefully slide out each used UV lamp ensuring that no pressure is applied to the quartz sleeve.
6. Unscrew the compression fitting [Quartz Sleeve Lock Nut] at either end of the lamp assembly.
7. Remove the o-ring at either end of the quartz sleeve assembly.

NOTE: If water pours out of the unit at this stage then the unit has either not been isolated from the system or not drained prior to commencing the maintenance procedure.

8. Remove the o-rings and discard them. O-rings should be replaced at each service interval [part number: 5281].
9. After removing the o-ring, carefully slide out the quartz sleeve. Clean the quartz sleeve by washing in warm soapy water. Rinse it thoroughly in fresh water, then dry, and polish it using a paper towel.

NOTE: If the quartz sleeve has calcified with lime scale deposits from the water it should be cleaned with a proprietary plastic kettle descaling solution, following the manufacturer's recommendations. Plastic gloves and eye protection should be worn for this process. The quartz sleeve should be rinsed in fresh water, dried and polished with a paper towel.

10. To reassemble the unit reverse the above procedure by carefully sliding the quartz sleeves back into the plastic housing and locating it correctly. Slide new o-rings over either end of the quartz sleeve and locate them into the o-ring recess on the main casing.
11. Ensure the female threads on the compression fitting and the male threads on the main plastic body are clean. Wipe a little silicon grease [NOT silicon sealant] onto these threads. As these threads are only serviced twice a year, this lubrication will help prevent them binding. Replace and firmly hand tighten the compression fittings.

NOTE: The compression fitting must be adequately **hand-tighten only** onto the o-ring and quartz sleeve or the unit will leak water when reconnected to the main system.

12. Once all the quartz sleeves, o-rings and compression fittings have been reassembled, the drainage tap at the base of the unit must be closed and any utility valves be reopened. Check each assembly to ensure there are no water leaks. If water is leaking from any of the assemblies then the unit must be drained down again following the procedure above. At the points where water is leaking, check the quartz sleeves for damage and check that the o-rings are correctly positioned.
13. Make certain that the compression fittings are fully tightened.
14. Assuming there are no water leaks, slide the new UV lamp into the quartz sleeve and replace the lamp ends. Each end cap has a unique number that refers to each lamp. It is critical that the correct lamp end cap is fitted to the appropriate lamp.
16. Always ensure that water is circulating through the UV steriliser before the lamps are turned back on.
17. Once all the lamps have been connected, the UV steriliser unit should be turned back on. Check each lamp to verify that it is working. Only view the lamp through the plastic locknut compression fitting. Never look directly at an exposed UV lamp.

IMPORTANT:

- The plastic body of this unit has been manufactured from polymers specifically stabilised to protect them from the effects of germicidal UVc light emitted from the lamp.
- Despite the UV protection, the unit will be eroded over time by a combination of the UVc and water flow.
- As a matter of course, inspect the unit whenever lamp changes are carried out.
- Make sure that the unit does not show signs of excessive deterioration.
- Replacement parts are available from Tropical Marine Centre.

UV Lamp and Quartz Sleeve SPARE PARTS

Code	Product	Additional Description
6056	Replacement UV Lamp 55 watts	
5277	Replacement Quartz Sleeve [871 x 30mm]	
5281	O-Ring for Quartz Sleeve [29 x 4mm]	
PP110WL/NUT	Quartz Sleeve Lock Nut	
COMUVPODAUK	Replacement Control Pod A [Power in, Link out]	Click connector [Post Feb 2015]
COMUVPODBUK	Replacement Control Pod B [Link in, Link out]	Click connector [Post Feb 2015]
COMUVPODCUK	Replacement Control Pod C [Link in only]	Click connector [Post Feb 2015]
COMTUBECGAUK	Replacement Control Pod A [Power in, Link out]	Screw connector [Pre FEB 2015]
COMTUBECGBUK	Replacement Control Pod B [Link in, Link out]	Screw connector [Pre FEB 2015]
COMTUBECGCUK	Replacement Control Pod C [Link in only]	Screw connector [Pre FEB 2015]



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