microtech aligator

Swimming Pool Water Purification Systems

Bacteriological Control Unit Manual

Instruction Manual

Microtech-Aligator is a UK based company and have been producing water purification systems for over twenty years. The company is a member of the swimming pool equipment manufacturer's trade organisation in the UK known as SPATA (Swimming Pool Allied Trade Association).

The Microtech-Aligator Bacteriological Control Units (BCU's) are designed for use in Hotels, Water Features, Grey Water Systems, Roof-Top Tanks, Commercial Swimming Pools, Sewage Systems and Aquamarine Environments.

Please take a moment to read these instructions and learn how to use you Bacteriological Control Unit (BCU) effectively.

Please visit our website www.microtechaligator.com for the latest information and if you do need further assistance please do not hesitate to contact us.

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Introduction

The Microtech- Aligator System is fully automated and works by harmlessly generating copper, silver and zinc ions in minute quantities into the swimming pool water. This process of ionisation creates a residual and stable sanitiser throughout the pool.

Copper and silver have been used for hundreds of years to purify water and continue to be used today for controlling algae and bacteria.

The Microtech – Aligator System reduces the need for chlorine by up to 60 - 75% and creates crystal clear allergy free pool water of drinking standard. The need for flocculents, water clarifiers and algaecides is reduced and the backwash water can be recycled or used for irrigation.

It is therefore a very sustainable method for swimming pool water purification and is replacing salt cell generators and chlorine - only systems not only through cost savings, but also by being much kinder to the environment.

The Microtech-Aligator System comprises a control unit and chamber fitted with a pair of electrodes. The electrodes are made from copper, silver and zinc. The number of chambers required depends upon the pool water volume and bathing load. The chamber(s) is fitted between the swimming pool pump and the filter(s) and orientated according to the water flow direction.

Whilst water is flowing through the chamber, a low voltage DC current is passed through the electrodes and metallic ions are generated into the water. The positively charged ions are attracted to and subsequently kill the algae and bacteria. The particles (from the algae and bacteria), remain positively charged and floc together and are subsequently removed from the pool water by the filter.

The presence of the low level copper, silver and zinc ions in the pool water maintains a continuous background level of sanitation to prevent the formation of e-coli, bacteria etc. without adding any toxicity to the water.

Unlike free chlorine, the ions are not affected by heat and sunlight; therefore they are capable of providing a very stable residual sanitiser. The ionisation technology substantially reduces the demand for free chlorine, so that fewer chemicals are consumed. This drastically reduces the undesirable side effects often found in other swimming pool environments, such as red burning eyes, breathing difficulties (i.e. asthma and other related illnesses) bleached dry skin and hair and strong odours. This makes our environment a much safer and user – friendly place to swim in.

Although the Microtech – Aligator will dramatically reduce the free chlorine required for a safe swimming environment it is still important to maintain a low level of free chlorine to take care of water clarity and to deal with sweat, urine, suntan oil, body oil, make up and organic matter such as leaf debris. The water balance levels are set out on page 6 of this instruction booklet.

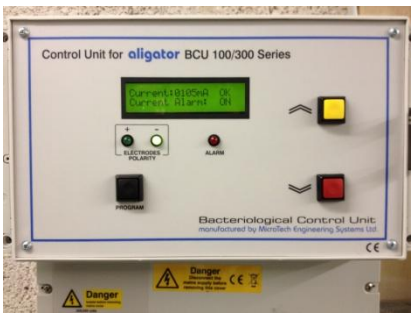
Installation

The Microtech - Aligator Bacteriological Control Unit (BCU) has been designed to be fully adjustable and able to generate energised copper, silver and zinc ions into a free flow water system, or closed recirculation system. Each chamber contains a pair of electrodes with a maximum size of 90mm x 19mm. The Bacteriological Control Unit (BCU) is pre-set from the factory for maximum output, but if necessary can be adjusted to suit individual requirements by following the instructions set out below.

Mounting the Chamber

The chamber can be mounted vertically or horizontally. Before attaching the chamber to the filtration system, ensure the pipe has been cleaned with abrasive pipe cleaner and eco cleaner. ABS One Step Solvent Cement should be used to glue the system to the pipework.

Mounting the Bacteriological Control Unit (BCU)



Mount the BCU on the wall as close to the electrode chambers as is practical. The outside case of the unit is IP65 (IEC 60529:1989) rated, so is therefore splash proof. The display on the controller is sensitive to viewing direction. It is designed to be read from a 45^{o} above the horizontal and 10^{o} below the horizontal. Therefore mounting the controller to high or low will result in the data on the display being un-readable.

Wiring

All terminals enter and leave the BCU (Bacteriological Control Unit) from the bottom panel. These are clearly marked on the connectors inside the bottom panel. **Please note, power supply is 220/240 volt single phase.**

Cables supplying the electrode chamber should not be more than 5 metres in length and can be made up from standard 1.5mm double cable (ie normal cable used to wire household applances).

Settings

The Bacteriological Control Unit (BCU) is fully automated and programmed specifically for your application.

Current:	**300mA**	**OK**
Current Alarm:		**ON**

Once power has been established the home screen will be displayed:

Using the program button ‘MILLIAMP’ and “TIME ON” you are able to adjust the settings

Current in mA:	**100mA**
ADJUST	

MILLIAMP SETTINGS

To adjust the milliamp settings press the PROGRAM button until the unit displays:

By using the UP/DOWN buttons you are able to adjust the milliamp output to your required level. Please note: the milliamps increase and decrease by increments of 3mA.

ON TIME HOURS:	**24**
ADJUST	

TIME ON Settings

To adjust the timings of the BCU, please press the PROGRAM button until the unit displays:

Using the same procedure as above, you are able to adjust the timing of the unit. The ON TIME is adjusted by minutes per hour (or hours per day depending on your software settings), i.e. for a reading of 50 the unit will be on for 50 minutes then off for 10, repeating this sequence each hour.

Alarm System

The unit constantly monitors the output current, should this fall outside the pre-set parameters the alarm system will operate an audio sound and a flashing red light. When either or both alarms have activated and

water is flowing through the electrode chamber(s), the electrodes should be inspected to determine whether they require cleaning or replacing.

If neither cleaning or replacement of the electrodes stops the alarm, then you must contact your nearest dealer for advice.

Electrode Care and Replacement

The electrodes are sacrificial and are designed to wear down over a period of time. The correct wear pattern should be a progressive reduction in the diameter until the electrode is ¼" or slightly more than the width of a pencil. At this stage they should be replaced.

Firstly switch off your system ensuring all valves are turned to stop the flow of water to the chambers. Access to the chamber is by unscrewing the top flange and gradually easing out the top transparent lid with a screw driver. A rubber 'O' ring situated round the base of the lid creates a seal. Once the lid has been removed the electrodes can be removed easily if necessary.

Using a pair of pliers, carefully unscrew the electrodes from the lid. Always ensure when replacing the electrodes, the rubber seal is placed against the lid followed by the plastic washer then the electrode nut. Please contact your supplier if any of these parts need replacing. When replacing the lid, make sure the lugs are in line before pushing the lid onto the chamber.

Replace the electrodes only with genuine Aligator **Electrodes.** If other types are used the result will be a reduction in sanitation and possible staining of the pool walls.

The electrodes should be inspected and cleaned periodically, particularly during the first month. It is quite normal for a build up of debris to form on the surface of the electrodes, this may be removed by wiping with an absorbent cloth.

High Conductivity

Total Dissolved Solids (TDS) is the measure of all solids dissolved in the water. This affects the electrical conductivity of the pool water, but can be managed by fitting an External Resistor (available from Aligator).

Should the conductivity of the water be higher than normal, the Microtech-Aligator will automatically detect this problem, reduce the output current by 50% and go into alarm mode.

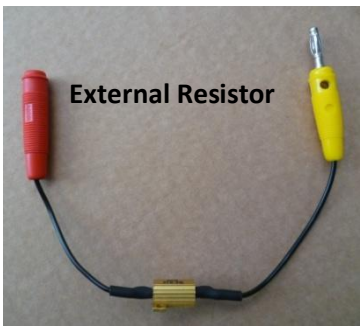
The red LED light will be on and the display will have four dashes after the mA reading as shown as below:

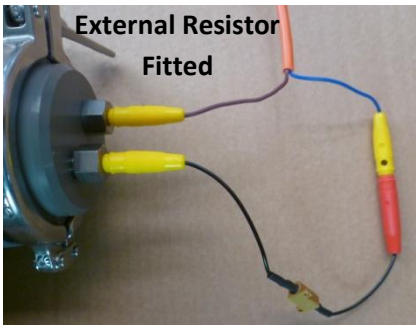
Pure Distilled Water	TDS 0 ppm

Tap Water	TDS 140-500 ppm
Swimming Pool Water	TDS 1,000 – 1,500 ppm

Fitting External Resistor

To enable the Microtech-Aligator to continue operating whilst the water problem is being rectified, an external resistor can be fitted in series with the electrodes. Using the external resistor, interrupt the connection from the electrodes and chamber and fit the resister as shown in the diagram below.





Once water conductivity has been brought back to the correct level the resistor can be removed. Leaving the resistor in place will not however, damage or affect the efficiency of the Aligator.

If the pool water has become saturated with contaminants and the TDS levels confirm this, ideally the pool should be drained and re-filled with fresh water.

There is no effective method to reduce TDS without replacing some or all of the water.

Water Preparation and Operation

It is very important to bring the pool water balance to the correct levels and maintain as below:

pH	7.0	to	7.4
Alkalinity	90	to	150
Free chlorine	2.0	to	3.0ppm (Start Up)
Free chlorine	0.8	to	1.0ppm (Normal Operation)
Cyanuric	40	to	60ppm (No Higher than 80ppm)
Copper	0.2	to	0.6ppm (No Higher than 0.6ppm)

To establish the size of the pool:

Multiply the Length x Width x Average Depth = m3 (Cubic Metres)

i.e. 20m x 10m x 1.5m = 300m3 1 Cubic Metres – 1,000 Litres

Start-Up

The start-up period is usually between 3 to 4 weeks depending on specific application. During the start-up period, free chlorine levels must be maintained either at the higher level of 2.0-3.0ppm or at the original level in the water before the Microtech – Aligator was installed. Copper levels will gradually build up during the start-up period to reach between 0.2 to 0.6ppm. When this level has been reached the free chlorine dosage may be reduced to achieve the Normal Operation level as shown in the table above. Copper levels should then be maintained between 0.2-0.6ppm. A water test sheet has been provided at the end of this manual for you to record test levels on a weekly basis.

Vacuuming and Backwashing

During the first two weeks, frequent vacuuming and backwashing must be done to clear away the residue of solids being solidified by the action of the Aligator. This action makes the water crystal clear. After a period,(depending on how contaminated the water was before the Aligator was fitted), the vacuuming and backwashing may be resumed at the normal frequency. Visual inspection of the bottom of the pool

showing no solids present indicates this situation. A frequent vacuuming and backwashing policy however is absolutely essential for the good management of your pool.

Chlorine Dosing

A point to remember is both Aligator and chlorine work together to sanitise your pool and protect you from bacteria. Neither will work effectively if the balance of the water is incorrect. Make sure you have a regular testing programme.

Cyanuric Acid

Cyanuric Acid is a stabilising compound used to stabilise free chlorine against dissipation by sunlight. If the level is above 80ppm it must be reduced by replacing with fresh water until you have acquired the correct level. It is advisable not to use stabilised free chlorine in an indoor pool.

Shock Treatment

The only time a swimming pool needs shock treatment is when it has been neglected and the water has turned green. In any other circumstances such as the water being cloudy, we recommend testing the water and readjusting the balance will normally bring the clarity back to a swimming pool.

In the case where a pool has been neglected, vacuum thoroughly and backwash the system ensuring there is no debris left in the pool. Test the water balance is correct; it is advisable to lower the pH to 7.0. Apply a granular or liquid chlorine pool shock treatment strictly in accordance with the manufacturer's instructions. After 24 hours test the water as it may be necessary to re-balance. Vacuum and backwash for the next 2 days, periodically checking and correcting the water balance as required.

Where a high content of cyanuric acid is present the same procedure can be carried out and the water may clear. This would only be a temporary solution as the water would almost certainly cloud up again. Simply replace 20% of the pool water with fresh water until the cyanuric level has been reduced to the correct level. Repeat as necessary.

Stabilised chlorine / Cyanuric / Cyanurate

All stabilised chlorine forms cyanuric acid in the water, this substance is the stabiliser. The level at which it is at its most efficient is between 40-60ppm. Anything over this level reduces the power of the chlorine and the effect of the Aligator. If you find you are approaching the danger level, simply revert to using non-stabilised chlorine for a period and allow normal backwashing to lower the level. If the level exceeds 80ppm you must take immediate action by removing water and adding fresh. If the level is 100ppm at least 50% of the water should be replaced, anything over this and all the water in the pool should be replaced.

Copper Levels

We recommend you obtain a copper test kit and check the level on a monthly basis. The correct level of free copper should be between 0.2 – 0.6ppm. If the levels are above or below this, please consult your dealer or contact us directly.

Silver Levels

The Microtech – Aligator System is designed to maintain silver levels at 0.05ppm. Testing for silver will need to be carried out under laboratory conditions and pool water samples taken should therefore be supplied to the local laboratory should verification be required.

Test kits

There are a number of different test kits available. For the successful operation of the Microtech - Aligator System it is important that your kits test for pH, Alkalinity, Free chlorine, Cyanuric, Calcium and Copper. **Test kits are essential for good water management of your swimming pool.**

Test kits should be kept in a cool, dry place away from direct sunlight. Most test kits have a use by date and these should be observed as they deteriorate with age. If you have a defective test kit you will never achieve good management of your swimming pool.

Successful management of your pool depends on understanding and implementing the information in this instruction manual.

We wish you many happy hours of healthy swimming.

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