

D-D aquarium solutions ltd.

Operating Instructions for Deltec KM Series Calcium Hydroxide Mixers incorporating instructions for Deltec Aquastat Top Up Units.

87008 - Kalkwasser mixer KM500T - Suitable for systems up to 1575 lts (350 gallons).

87009 - Kalkwasser mixer KM500ST - Suitable for systems up to 6750 lts (1500 gallons).

87010 - Kalkwasser mixer KM800T - Suitable for systems above 1500 gallons (doses 300lts (67 gallons)/day).

Congratulations on your decision to purchase a **Deltec Calcium Hydroxide Mixer or Aquastat Top-Up Unit.**

Kalkwasser.

Kalkwasser, (saturated limewater), is one of the oldest and most widely established methods of adding calcium to the reef aquarium first introduced by Peter Wilkinson a Swiss aquarist.

Kalkwasser is made by dissolving calcium hydroxide powder in freshwater to produce a strongly alkaline saturated solution that contains free calcium and hydroxide ions. The solution however is highly reactive with CO₂ in the air and must be produced and stored in airtight conditions to prevent a reaction forming insoluble calcium carbonate. The reaction with CO₂ significantly reduces the free calcium ions from 900mg/l in the fresh solution at pH 12.4 to 5-6mg/l at pH 10.

In addition to adding calcium, Kalkwasser also has the benefit of adding hydroxide ions, which react to neutralise organic acids in the aquarium that otherwise would exhaust the buffering capacity of the system. It also helps precipitate phosphates from the water, which fuel nuisance algae growth and inhibits calcification of stony corals and counters the natural tendency within the aquarium towards falling pH. Kalkwasser contains no other ions that would otherwise cause an imbalance in the water chemistry.

All Deltec Kalkwasser mixers are supplied with 500g of RowaKalk calcium hydroxide powder. Deltec recommends this product as it dissolves easily within the mixer and has a high purity of 98.9%.

Additional Equipment.

In order for the Kalkwasser Mixer to operate correctly it is necessary in addition to provide; 1. - a method of monitoring and replacing the evaporative loss within the tank; 2. – a supply of freshwater under pressure from a pump, RO or gravity feed; '3' – a non return valve for some types of installation.

Controlling Evaporative Loss.

The loss of water from the aquarium system by evaporation is of fresh water only which increases the salinity within the aquarium. This is normally replenished using a float switch and controller such as the Deltec Aquastat Type A, (Item number 90100), shown in the diagram overleaf. As the float switch rises and falls it switches the controller on and off, which in turn controls a pump or solenoid to top up the lost water.

Operation and Installation of the Deltec Aquastat Unit.

The Aquastat unit is a simple system, which should be operated as follows.

Securely fasten the level sensor on the edge or bracing bars of the sump or tank using the adjustable bracket supplied so that the float is positioned just out of the water. (A freestanding Aquastat unit is also available, Type P - Item number 90100). Plug the controller/plug bar in to the mains supply and switch on using the rocker switch (Item 7).

The plug bar is fitted with two LED's (item 5). The green LED indicates that the power is on to the controller and the yellow LED comes on when the socket on the plug bar is live, i.e. when there is a demand for water. As the float switch is currently set out of the water the plug bar will have both of the LED's illuminated.

Slide the float section down the main support tube, immersing the float until the yellow LED just goes off. This is now positioned at the upper set point.

As water is lost in the tank or sump, the float in the level sensor drops until it reaches the lower set point. At this position the magnet inside the float operates a set of contacts, which energises the controller to provide a live supply at the plug socket. The controller remains live until the water level returns to its upper set point at which time the power supply is cut off.

Options for Fresh Water Supply.

Water can be supplied to the Kalkwasser Mixer in numerous ways however most will be a variation of pumped, gravity or solenoid control from a mains or RO unit.

1. Pumped Top Up: The diagram overleaf shows a conventional freshwater supply from a reservoir situated beside the sump or tank. The volume of the reservoir should be chosen such that it allows a reasonable number of days between refilling.

Install a suitable pump in the fresh water reservoir and connect the outlet, via reducers, to a length of small-bore tubing that will reach to the Kalkwasser Mixer.

As the flow rate that is required for the Kalkwasser Mixer is low, it is recommended that a bypass system is constructed after the outlet of the pump so that some of the water is returned to the reservoir thus lowering the pressure on any hose connections and reducing the likelihood of a large pump blowing off one of the pipes. The bypass can be simply constructed from a T connector, a length of hose and a small tap, (Item 12).

Important Note: If the reservoir water level is expected to fall below the fill level in the Kalkwasser Mixer it is recommended that a non-return valve should be fitted after the pump and bypass to prevent back siphoning.

2. Gravity Top Up: It is possible to feed the Kalkwasser Mixer by gravity from a reservoir fitted above the level of the mixer inlet. If this option is utilised it is important that a good quality solenoid valve, or two valves fitted in series, is used to prevent overdosing of the Kalkwasser mix due to failure. The hose from the solenoid valve can be connected directly to the inlet tap on the Kalkwasser Mixer.

