D-D aquarium solutions ltd.

Operating Instructions for Deltec PF Series Fluidised Calcium Reactor.

Congratulations on your decision to purchase a **Deltec PF Series Fluidised Calcium Reactor.**

PF500 is suitable up to **900 lts**, (200 gal) - high stocking and illumination or **1100 lts**, (245 gal) - normal stocking and illumination.
PF600 is suitable up to **1350 lts**, (300 gal) - high stocking and illumination or **2000 lts**, (444 gal) - normal stocking and illumination.
PF600S is suitable up to **1900 lts**, (425 gal) - high stocking and illumination or **2500 lts**, (555 gal) - normal stocking and illumination.
PF1000 is suitable **5000 lts**, (1111 gal) and above.

If you have bought this calcium reactor in conjunction with a D&D Complete CO2 Set then you will only require a plug timer or pH controller to operate the unit successfully. Should you have an alternative CO2 set then refer to the manufacturers instructions for installation and ensure that you have the following items; solenoid and two stage regulator with gauges. **Ensure that all connections are completely leak free.**

Installation

Step 1: Open the bag of Rowalith C+ and wash the media thoroughly with fresh water to remove any fine dust. The water will then run clear when placed in the reactor. **Note:** As this calcium reactor operates on a fluidising principle it is important that only the recommended media, **Rowalith C+**, is used which is phosphate free.

Step 2: Unscrew the lid and degassing chamber (2) anticlockwise, remove and fill the vessel up to the fill line. **Do not over fill.** Re screw the top, rotating clockwise, having first checked that the rubber O-ring is in position on the end of the reactor vessel.

Step 3: Connect the additional CO2 equipment as shown on the diagram overleaf and position calcium reactor on a level surface. To fill the bubble counter, first remove the rubber hose from the top and unscrew the cap nut, which will allow the vessel to be removed for filling with fresh water. Refit the bubble counter ensuring rubber hoses are properly fitted. Note that at this point we are operating the system without the use of a pH probe.

The calcium reactor must be supplied with water from the system, which can be set up in one of 2 ways:

Pressure feed: Take water directly from the aquarium or sump via a suitable powerhead and return water directly back to the aquarium / sump. This allows remote positioning of the unit at any height above the tank or sump. Ensure that connections and hoses from the powerhead to the unit are suitable for the pressure developed by the feed pump and if necessary fit a bypass to reduce the pressure.

Gravity feed: The unit can be operated on a siphon from the tank and into a sump thus negating the requirement for a separate supply pump.

Important Note: If the unit is operated on a siphon (gravity feed) it is **imperative** that allowances are made in the positioning of the water inlet pipe from the tank, (i.e. only ¼ " below the water surface), so that in the case of a power or pump failure the volume of water that will continue to siphon will not overflow the free space in the sump before the siphon is broken.

Step 4: Having successfully positioned, added media and supplied water to the calcium reactor we can now open the inlet tap, which is found above the Micro-filter (4) and also the venting tap (6). Open these fully to begin with and wait for the reactor to fill. Check again for leaks to ensure that the lid had been fully tightened. Once the reactor is full and water if flowing back to the system then close the venting tap fully, close the CO2 recirculation tap (3) and also close the main recirculation valve (5) to prevent a sudden surge when the recirculation pump is switched on.

Step 5: Switch on the recirculation pump and open valve (5) slowly to start fluidising the media. Any sudden large surges at this stage can pick up material and carry it to the pump, which may block and then require cleaning down. For best results and reliable operation, without contamination of the pump, the media should not be over fluidised with the flow rate adjusted to give a slow steady movement or shimmering of the media. The water within the reactor will go cloudy for a couple of day but will clear. If it does not clear then this also suggests that the material is being over fluidised.
The fluid inlet valve (4) should now be closed down until an outlet flow of 2 -4 drops per second is achieved, (higher for the larger units).

Step 6: The CO2 can now be switched on. Refer to the instructions supplied with the D&D complete CO2 Set or to the manufacturers instructions from any alternative set used for directions on operation. Set the CO2 rate to one bubble per second as observed in the bubble tube and leave the system to run for 6 to 7 hours. After this period the dKH of the water coming out of the calcium reactor should be measured with a suitable test kit. A reading of 35 to 40 dKH should be measured which will equate to a calcium level of approximately 600 mg/lt.
If the reading is lower, then the CO2 flow rate should be increased or the water flow rate through the reactor decreased until the desired measurement is achieved. Conversely if the reading is too high then the volume of CO2 should be reduced and the water flow rate increased.
Avoid excessive use of CO2 however if this happens, of if under special circumstances the reactor is required to run at a very low pH, then there is a system to recirculate excess CO2 avoiding escape to the aquarium. This consists simply of a degassing chamber (2), connecting pipe and return tap (3). This tap should be opened slightly to draw the CO2 back into the recirculation system.

Important note: Do not restrict or block the outlet from the reactor to the sump / tank.

Operation with a pH Probe. The calcium reactor can be operated automatically by fitting a pH probe instead of the red plug at the top of the reactor and use of a pH controller to open and close the CO2 solenoid. Alternatively the probe can be used purely as a safety device to prevent excessive CO2 entering the system in the case of a valve failure.

General Operation

A. After initial calcium level is achieved the reactor unit should **not** be run 24-7. For best results run the unit for 8 -10 hours per day.

B. The reactor should start to run 4 hours after the lights have come on. This will enable the highest pH to be maintained within the aquarium.

C. The natural dKH of seawater is 7-8. A dKH of higher than 11 is not recommended in the tank and indicates that the running period for the calcium reactor is too long.
Note: At higher levels of dKH in the aquarium calcium can become chemically locked in the system and therefore unavailable for coral growth.

D. The correct level of calcium in a reef aquarium should be between 420 and 440 mg/lt with a specific gravity of 1.25. To achieve this reading then the running time, the drip rate and the CO2 bubble count should be adjusted accordingly as described above.

Note: It is very important that phosphates are minimised when using a calcium reactor as CO2 can encourage the growth of nuisance algae. We would recommend the use of Rowaphos for the removal of phosphates used in a Deltec fluidised reactor.

Maintenance

A. The reactor should be cleaned out every 3-4 months.

B. The inlet water control valve is fitted with a micro-filter, (part number 64056) to prevent dirt from the aquarium from entering the reactor causing blockages. Please remove and flush through with fresh water or clean with kettle descaler as required.

C. Due to the aggressive environment of and fine abrasive media particles in which the recirculation pump operates, it is possible that wear may occur on the impellor bearing over time which should be considered a low cost consumable item.

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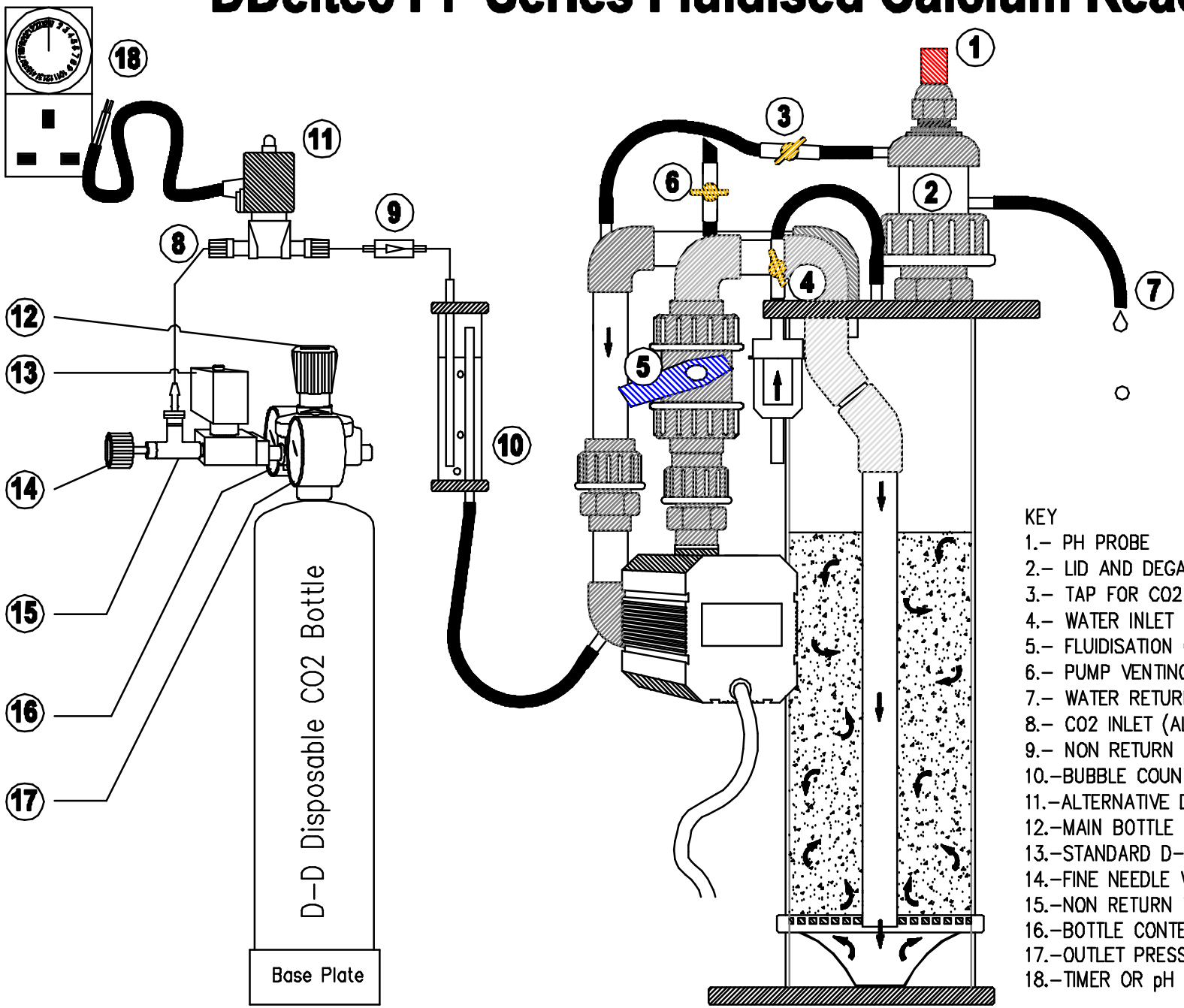
DDeltec PF Series Fluidised Calcium Reactors.



DESIGNED FOR USE WITH ROWALITH C+ MEDIA

KEY

1.– PH PROBE
2.– LID AND DEGASSING CHAMBER
3.– TAP FOR CO2 RECIRCULATION
4.– WATER INLET CONTROL TAP AND MICRO–FILTER
5.– FLUIDISATION CONTROL TAP
6.– PUMP VENTING TAP
7.– WATER RETURN TO SUMP/TANK
8.– CO2 INLET (ALTERNATIVE SOLENOID)
9.– NON RETURN VALVE
10.–BUBBLE COUNTER (SHOWN REMOVED)
11.–ALTERNATIVE DELTEC SOLENOID (SHOWN REMOVED)
12.–MAIN BOTTLE PRESSURE ADJUSTMENT VALVE
13.–STANDARD D–D SOLENOID WITH CO2 SET
14.–FINE NEEDLE VALVE ADJUSTMENT WHEEL
15.–NON RETURN VALVE
16.–BOTTLE CONTENTS GAUGE (HIGH PRESSURE)
17.–OUTLET PRESSURE (LOW PRESSURE)
18.–TIMER OR pH CONTROLLER

Stuart Bertram 23/04/03