USER AND SERVICE MANUAL

Bubble King DeLuxe internal, all models 200 to 650

Many thanks for purchasing our products. To ensure best satisfaction, we recommend to carefully read the manual and to observe our recommendations.

We guarantee the product has been developed according the state-of-the-art skimmer technology and was manufactured on modern CNC milling machines.

Royal-Exclusiv provides a 10-years spare part guarantee for Bubble King Skimmers.

Putting into operation:

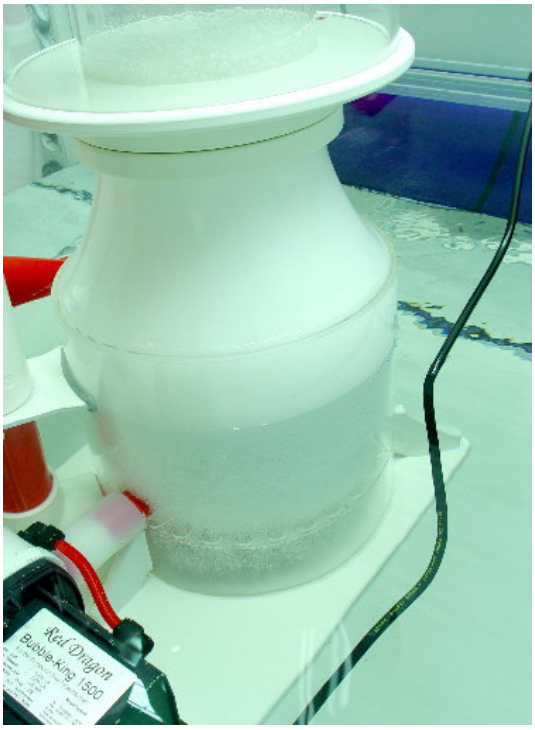
Please take the Bubble King out of the package and check the skimmer for shipping damage, which must be filed to your local dealer within 24 hours.

The Bubble King is preinstalled and ready for operation and may be put into the filter sump for instant operation.
Please install the skimmer head and put the skimmer into the filter sump or equivalent to get familiar to the device.

The lower water level of the Mini Bubble King should not be below 15 cm and shouldn't exceed 30 cm. The best matching water level is between **20 and 25 cm**. Under some circumstances the water level may be above 30 cm but this will prevent adjusting of the foam level.

Now, please plug the power cable into the desired wall outlet.

Please note, that sub water level pumps must be only connected to a ground fault circuit interrupter (FI safety switch).



Furthermore we recommend a frame connector with voltage surge protection, which, in the case of a short circuit in the mains, prevents a high voltage boost to the Red Dragon pump which will burn the internal fuse.
In the case the RD fuse (melting fuse) was blown, the motor can't be repaired and therefore must be replaced.

Please note that it is absolutely prohibited to cut the plug from the power cable to prolong or short the power line. Sub water pumps with cut power cables do not meet the safety regulations and any warranty on the device will be void.
Furthermore, we are not allowed to repair sub water pumps, if the power cable was manipulated.

After running the pump, within a short time, a foam cushion should be formed like shown on the figure to the left.

Please run the skimmer this way for a couple of hours without installing the skimmer head. Generally new skimmers require some time to form solid foam. New skimmers may contain several substances like grease, glue residue and similar substances which prevent foam forming. Depending on the contamination of your aquarium water it may take from 2 minutes to 1 week until solid foam was formed. A proper prediction when your skimmer was run in can't be made.

If the skimmer doesn't produce solid bubbles this is due to a normal degreasing process which can't be shortened.
During this process, move the telescope tube to the lowest level, which is the stop of the tube holder. This will prevent instant overflow while the skimmer performs its initial operation.

Telescope tube lowered

Telescope tube lifted

If the foam was solid enough adjust the water level in the skimmer by lifting the telescope tube. There is a small screw on the side of the wedge shaped tube to secure the tube into its holder. Please never use a tool and do not overtighten the screw. Please note that the telescope tube can't be 100 % waterproof.

Before installing the skimmer head, make sure the internal, red o-ring was perfectly seated without ripples or similar irregularities. These may lead into leakage.

Please note the water to air stripline.
The water to air stripline is the level where wet foam merges into dry foam. The water level must not exceed the water stripline marked with a silver sticker imprinted with a solid line. The water level should be within the cone and the lower end of the skimmer head. This line ensures a dry foaming. Our recommendation is a guideline not a must, and thus, the line may be exceeded in some cases. It behoves to the user to decide whether he prefers wet or dry foam.

Bubble King water drain:

Originally the drain tubing of the Bubble King is not fixed by gluing. We do not recommend any gluing of the tubes. The tubes can be set into any direction, but we do not recommend putting the water drain into the environment of the pump inlet, because this will provide treated water to the pump, which will drastically decrease the performance. Basically the filter should be designed to provide high water flow through to the skimmer.

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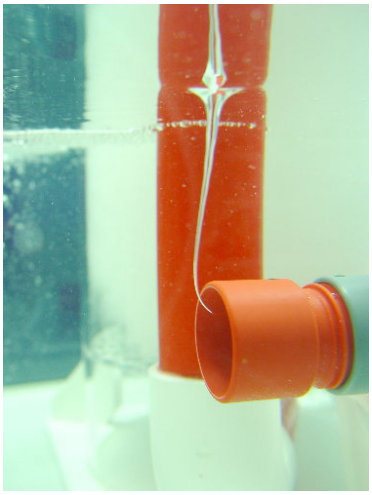
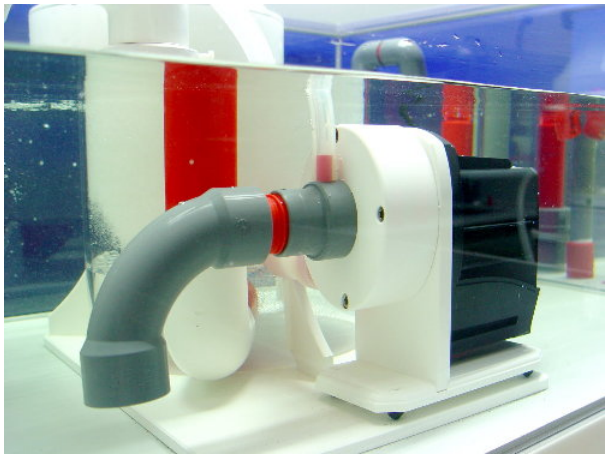
Adsorbate drain:
Up from size 250 all models have an integrated drain on the skimmer head (see right fig.). The drain allows you to remove and clean the skimmer head and drain the foam residue (adsorbate). The drain tubing had been sealed factory side by a cone shaped silicone plug. On the client side the drain may be prolonged by a hose or tubes to feed the adsorbate into a tank, into a bucket or directly into the sewer. We recommend keeping the adsorbate drain permanently closed.



Problems caused by low water level:



The pump inlet must not cause a swirl like shown on the fig. on the left, to prevent permanent damage to the pump. Please do not use a 90 degrees angular tube, but a 90 degrees arch. Due to the deflection angles are reducing the performance more than 50 % compared to an arch. The nozzle has been trimmed to 40.0 mm to allow easy installation of an arch.

Adjusting the water flow of Bubble King skimmers

All internal Bubble King skimmers are fit with an adjustable water inlet nozzle. Using the nozzle mainly adjusts the water flow rarely affecting the air performance.

Please note:
A skimmer performs best, when a perfectly well defined amount of water and air enters the skimmer on the lowest point of the device. The Bubble King Red Dragon has a so called **ideal operation point**. Each Bubble King-Pump was factory side optimized in a salt water test basin to exactly this point and accordingly marked. The ideal point is well defined and will be found as shown below:
Please completely close the screw nozzle, like shown on the left figure. Now spin the nozzle counter-clockwise to the left until the two black dots meet the first time. You got the perfect operation point.

The user may exceed or under-run this point as desired. Under-running the point may be advisable to reduce the skimmer performance in coral tanks with only a few fish.
Increasing the flow-through may be advisable on tanks with many fish or in the case of disaster. A dying big Tridacna, algae emitting spores or poisoning triggered by dying animals or similar reasons require a fast and wet foaming.

Note:
Each spin increases water flow-through by approx. 500 litres. Operation without nozzle screw is prohibited. The air flow would be reduced by half and water flow would be increased by 300%. In this state the pump will be overloaded and within a short time automatically switched off. The noise level also would exceed dramatically.

Adjusting the water stripline by the wedge shaped tube

It is also possible to adjust the water level in the skimmer by help of the wedge shaped tube. Basically we recommend to set the water level with the telescope tube. The wedge shaped tube should be only used for fine tuning or flooding of the skimmer head. In this case flooding means the cleaning of the Bubble King head without removing the head.
The wedge shaped tube must be almost closed forcing the water level immediately into the skimmer head.

Now use a brush to clean the riser tube to flush the residue into the skimmer head without draining back into the filter tank.

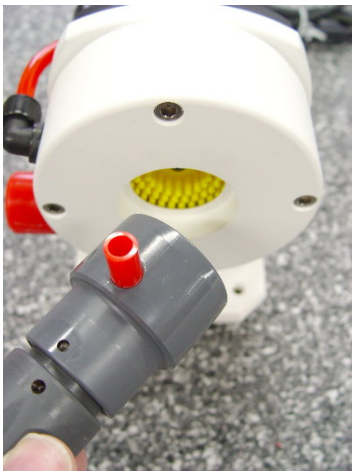
The O-ring shown on the left upper figure should be lubricated by silicone oil from time to time to keep spinning of the wedge shaped tube easy. The O-ring also prevents salt and water drain from the T-set, which would complicate spinning the tube.

The position of the wedge shaped tube is shown by two black dots. If both dots are aligned, like shown on the right figure, the wedge shaped tube is opened 100 %.

Spinning the tube to the left or to the right like shown on the figure will fine tune the foam level.

Maintenance

We recommend the cleaning of the Bubble King at frequent intervals respectively to check the needle wheel for foreign objects. To check the needle wheel it is not necessary to remove the skimmer from the filter tank.



Unplug the skimmer from the mains. Remove the jet tube from its seating. Turn the skimmer into your direction and optically check the first row of needles for foreign objects like snails, mussels, activated carbon pellets, filter cotton or food debris. In case of an accumulation of debris in the pump, the pump must be disassembled.

Red Dragon Bubble King pumps have a built-in automatic shutoff. The internal circuit is permanently measuring the pumps power consumption. In the case of serious calcifying, and thus, stiff bearings, the internal circuit will classify the rising power consumption as a failure and switch off the pump, due to safety reasons.

Because of this behaviour a Bubble King pump never can be damaged by smouldering fire or other damage due to a short circuit. Just plug off and on to bring the pump back into operation.
Please note, that it is not advisable to trick the internal circuit into normal operation by a repeated switching of the device. If a Red Dragon pump was switched off, a failure occurred apparently, which must be solved. If happened, usually only a cleaning session is required.

Important:
Permanently tricking the circuit may result in severe motor damage, which will not be covered by warranty.

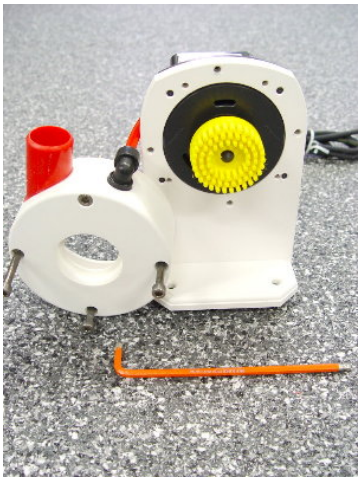
Disassembling the pump

After removing the pump from the silicone hose please remove the inlet nozzle from the designated opening. Put the skimmer onto a flat, soft surface or a towel and start to disassemble the pump as shown below.

You just need a standard mid size screw driver and a Philips-tip screw driver required for a complete disassembling.

Caution: The pump holders are made from plastic. Just tighten the screws until the gap between pump head and holder was closed. Overtighten the screws may damage the threads.

The housing screws were made from titan and, thus, are 100 % salt water proof.



Use your fingers to grab behind the needle wheel and softly pull the wheel from its guidance. Clean the wheel by the help of a sharp and Please decalcify the wheel unit in an applicable decalcifying bath. DO NEVER use hydrochloric acid even when thoroughly diluted!!! The pump may be seriously damaged.

Applicable are formic acid, acetic acid and phosphoric acid or even household decalcifiers for water conditioners and coffee machines. Basically the wheel bearing of the motor should be also decalcified.

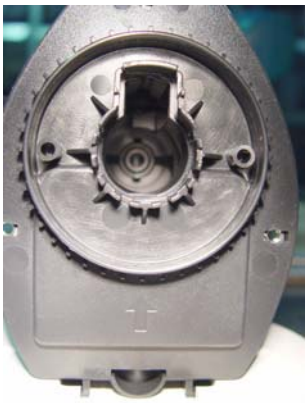
Thick, greasy residues should be removed under running water by the help of a semi hard brush.

Please consider the safety regulations imprinted when using decalcifiers. Please wear protective clothing and safety glasses.

Important note:

The backside bearing of the wheel unit should have your special attention, because most failures result from there. If the bearing fits on the shaft, like shown on the picture, when pulled out, then manually remove it from the shaft..

The bearing after removal from the shaft.

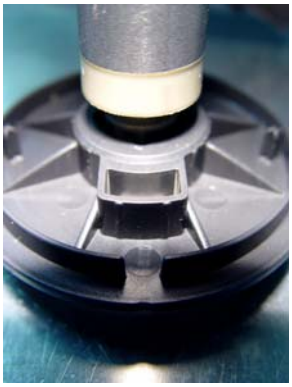


Under no circumstances put the bearing loosely onto the shaft and then insert the wheel unit into the motor block. The bearing wont fit in its slide, and thus, the pump will hum extremely after putting into operation

The bearing must securely installed into its slide before assembling the wheel unit.

After the bearing was installed into its slide, the o-ring seal must be seated by the help of a mid-size screw driver.

After thoroughly rinsing of all decalcified parts with water, we now begin to reassemble the device.



At first, check if the bearing sleeve of the wheel unit on the back was seated properly. Now take the wheel unit and position in a way that the rectangular slide shows upward. This rectangular slide will fit into the motor only, when showing upwards.

Wheel unit with slide

The counterpart on the motor

Before installing the wheel unit please assemble the O-ring.

Properly seated O-ring

Insert the wheel unit and press its cover until you hear a click.

Now mount the pump head to ist holder. Slightly tighten the four screws over cross.

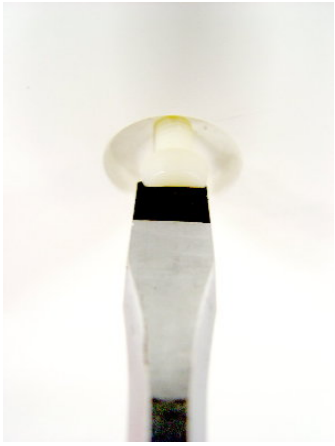
The pump is now again usable for a long time.

Disassembling and cleaning the riser tube of the skimmer

Please detach the skimmer in the filter tank as far as possible. Remove the pump, pull out the telescope tube and unscrew the skimmer head. Please prevent the head from falling off sideways. Clean the parts as far as possible by a soft material and decalcify if necessary. Please do not use sharp, abrasive or acid cleansers, because the plexiglass is sensitive to scratches.

Demontage der Plexiglassäule von der Bodenplatte

From the date of manufacturing as 2007, 05th, Bubble King skimmers are not glued to the base plate anymore, but firmly fixed by screws. This allows lifting the riser tube from the base plate to make the innards accessible to thorough cleaning. Please proceed as follows:



First untighten the 3 screws with an adequate screw driver

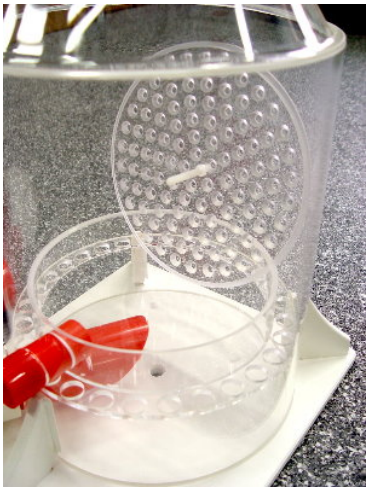
Lift the tube from the base plate.

Caution: The PVC-linkers are very sensitive. DO NOT DROP!

After cleaning, reseat the tube into the bearing (fig. left) and tighten softly.

Attention: Do not overtighten the screws in the base plate.

Untighten the screw from the jet pan with an Philips-tip screw driver.



The jet pan opened (fig. left).

The bubble distribution plate cannot be removed from the riser tube. Access for cleaning is available through the upper opening (fig. right).

Hint for an optimal cleaning:
The skimmer tube should be rinsed under flowing water with some chlorine. Chlorine doesn't damage the skimmer parts.

Pflege des Topfgewindes .

All Bubble King skimmers have a CNC-milled PVC-thread, providing 100% tightness of the head installed to the skimmer tube.

After every thorough cleansing the thread should be lubricated by some silicone grease or oil, which makes the head much easier to spin.
The surface of the seal should be also treated by some oil, which allows a smoother seating of the head and adds more tightness.

The seal itself was made from silicone and, thus, is permanently salt water proof.

Maintenance of the resonator

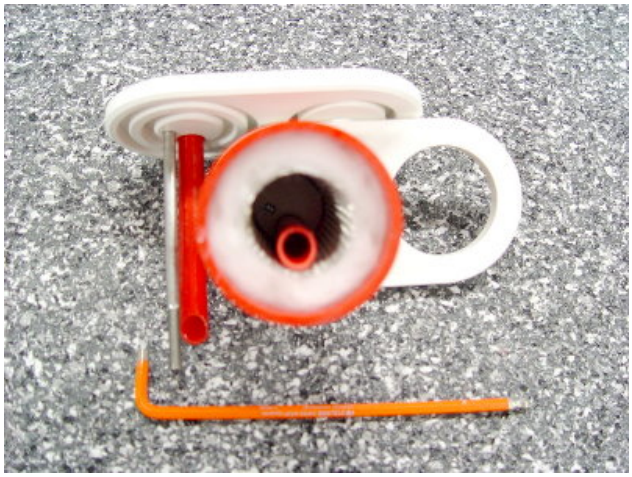
Bubble King skimmers are extremely low-noise. The noise of the air jet is perfectly dimmed by a valuable resonator. The so called Helmholtz-Resonator reduces noise by frequency phase shifting. The Royal-Exclusiv resonators are mostly maintenance-free, because the air is not forced through filters like in other devices, but smoothly pass through the resonator.

Dusty air or accidentally dipping the resonator into salt water may require an internal cleaning to prevent plugging from accumulated salt crystals.

Please check the resonator for obstructions by manually blowing through it. If you experience some resistance please proceed as follows:

Open the resonator by the use of a matching M5 tool. The figure to the right shows the opened resonator.

Thoroughly clean the resonator and reassemble. The cotton wool is only helpful for noise reduction but must not be replaced if not desired. Please do not overtighten the screws.

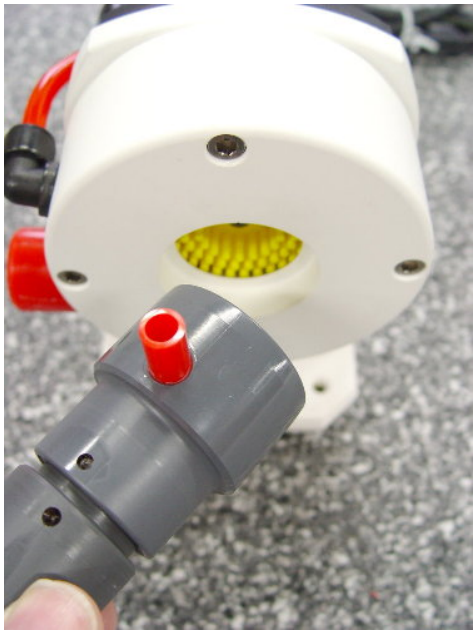


Important: correctly seated adjustable nozzle

The noozle fits tightly into a notch and is removable. After cleaning the nozzle please check that it was completely pressed into the notch, like shown in the left figure.
The nozzle must be firmly seated.

If the nozzle was not firmly seated the consequences are equal to a wide open nozzle screw causing huge water flow and turbulences in the skimmer.

The skimmer is now operable again.



Ozon attachement:

Please remove the hose from below the resonator and install a 12 mm T-set auf. Install another hose on the lower end of the T-set. The 12 mm T-opening must be reduced to 6 mm and fitted with a nozzle. Plug the ozoniser to the small nozzle. Usually the depression of the Bubble King pump is sufficient to provide enough suction to the ozone. If the hose is too long you may use a small air pump to feed the air-ozone mix into the skimmer. Under no circumstances try to connect the 10mm silicone hose from the Bubble King pump directly to the ozoniser**. It is definitely not functional!** The high resistance of ozonisers make it impossible to be directly driven through the pump. The skimmer performance would be instantly reduced by 90 %.The pump would be overloaded and the safety circuit will emergency shut off the pump to prevent damage to the pump.

General information:

We state explicitly that the pump must not dry run. Furthermore it is not allowed, even for testing purposes, to switch on the pump in a dry state. Resulting damage to bearings and/or axles are not subject to warranty.

Royal-Exclusiv products are manufactured on state-of-the-art CNC milling machines. Our staff is all well trained carefully working master craftsmen. In the case of complaints or improvements, please contact our service at royal-exclusiv@t-online.de.

We are glad to help you.

Royal-Exclusiv guarantees a permant supply of spare parts for at least 10 years.