

Royal Exclusiv pumps & skimmers

Vorgebirgsstr. 28 // 50389 Wesseling // Germany

Fon +49(0)2236/88055-0 // Fax +49(0)2236/88055-20

info@royal-exclusiv.de // www.royal-exclusiv.de



Since 1986



Operating and maintenance manual for Bubble King® DeLuxe
For all Bubble King® DeLuxe protein skimmer 200, 250, 300, 400, 500 and 650 internal/external

v2.0

ENG





Operating and maintenance manual for Bubble King® DeLuxe

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Important Notice

Please read this manual carefully before you install the device. We recommend not to proceed the installation of the device until you read the manual. This prevents any questions and problems that might occur in installation process. As soon as you power-on the skimmer for the first time, you agree that you read and understood this manual. In doubt or if anything is unclear please contact your supplier/vendor or dealer before you start-up the skimmer.

1. Commissioning (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.

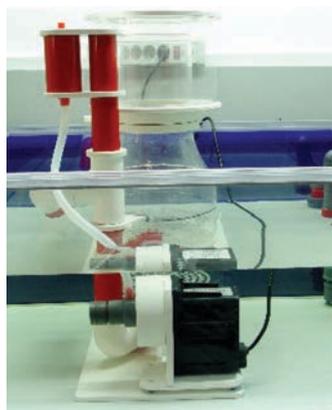
The Bubble King® is pre-installed and ready for operation and may be put into the filter sump for instant operation (**only internal**). Please install the skimmer head and put the skimmer into the filter sump or equivalent to get familiar to the device.

The lower water level of the 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 right figure above. Let the skimmer run for several hours without placing the pot on top.

In general, **new** skimmers require a **certain amount of time** to produce **firm 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. Shown in the figure below.

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

For more information, please visit www.royal-exclusiv.de. Simply enter the part number or name into the search box or email: info@royal-exclusiv.de.

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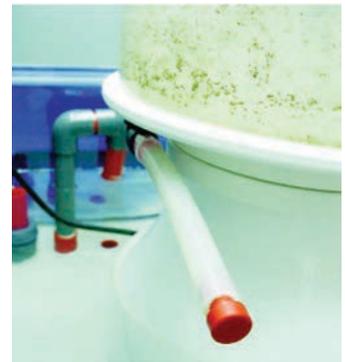


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If the foam was solid enough adjust the water level in the skimmer by lifting the telescope tube. There is a small screw on the side of the wedge shaped tube to secure the tube into its holder. Please never use a tool and do **not overtighten** the 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.



On the figure above (*Current water level*) you can see the water level stripline approx. 5 cm below the maximum level. This water level stripline can be lowered or risen by turning the tube. The water level stripline is different in every aquarium, depending on quality and surface tension of the salt water.

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.

The 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.

All Bubble King® DeLux models have an integrated drain on the skimmer head (*see right fig. above*). 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.

Notice:

Please do not wait too long until cleaning an over-filled pot.

By problems caused by low water level:

The pump inlet must not cause a swirl like shown on the fig. on the left below, 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.



1.1. Setting the adjustable nozzle, only internal 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® pumps

has a so called "ideal operation point". The ideal point is well defined and will be found as shown below:

Please turn to completely screw nozzle, as on the upper left picture shown. Then please turn to the nozzle to the left, counter clockwise.

Usually 1 - 1½ turn. This is the best operating point.

The black dots are used **only** for orientation.

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.

Notice:

Each spin increases water flow-through by approx. 500 liters. 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.

1.2. Regulating the water level stripline in the skimmer cup by the torque tube, internal and external skimmer

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.

**wedge shaped tube
=
torque tube**

The figure below shows how the water outflow can be regulated by turning the torque tube.



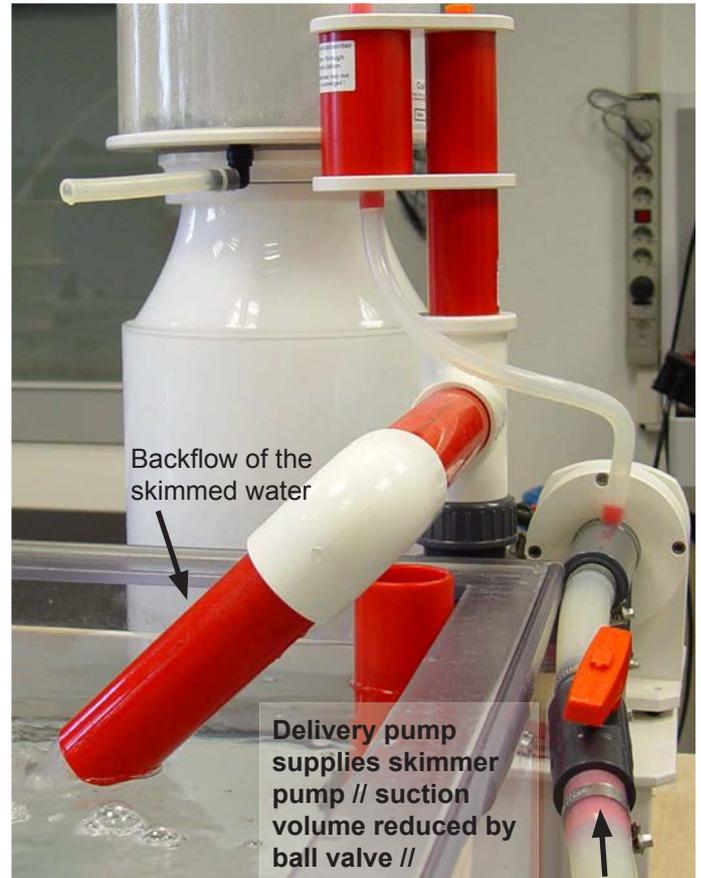
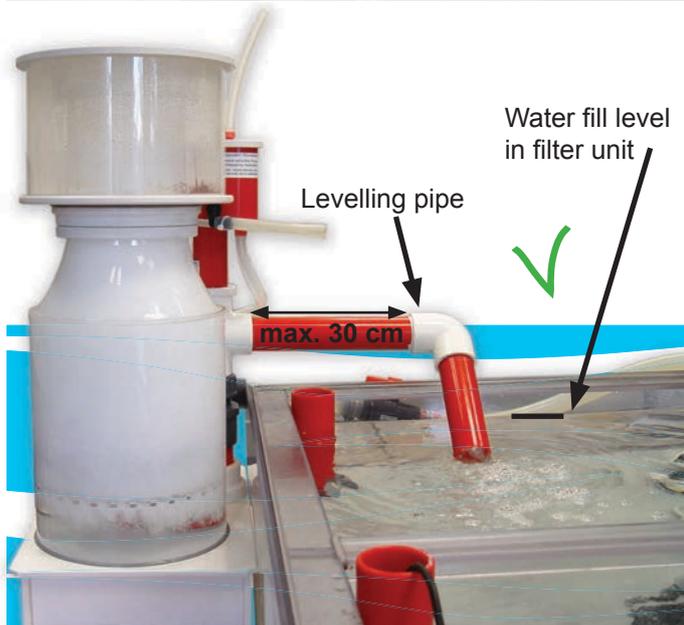
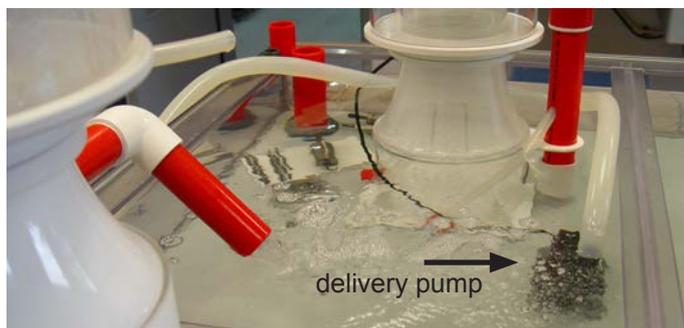
1.3. Installation and connection of the external skimmer

The **external** Bubble King® DeLuxe skimmer functions exactly like the **internal** one. Unless otherwise stated, all instructions listed in the handbook for **internal** skimmers also apply for **external** skimmers.

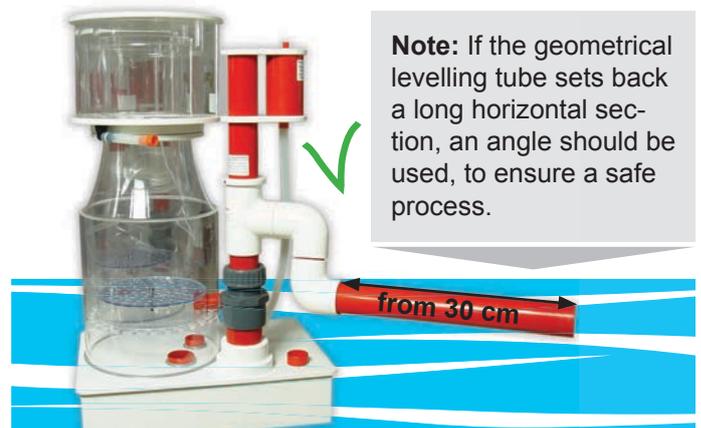
However, there is great difference in terms of the connection because the **external** Bubble King® DeLuxe skimmer requires a delivery pump which supplies the skimmer and the skimmer pump with the water to be filtered. Please refer to the data specification of your **external** skimmer for information regarding the power of the delivery pump.

It is also important to note that the **external** skimmer should be positioned no lower or higher than the filter unit or water level. (See left sketch below)

Note: If possible, the water sucked in by the delivery pump should be roughly filtered ahead to avoid unnecessarily polluting or contaminating the delivery and skimmer pumps with snail shells or pieces of coral for example, which could wear the pin wheel or impeller and/or lead to a defect.



Important: Do not position the levelling pipe (backflow of the skimmed water) of the **external** skimmer either above or below the water level of the filter unit! There is a high risk that the filter unit will idle.



For more information, please visit www.royal-exclusiv.de. Simply enter the part number or name into the search box or email: info@royal-exclusiv.de.

All information subject to change. We try our best, but printing errors reserved.

2. Maintenance

We recommend the cleaning of the Bubble King® DeLuxe at frequent intervals respectively to check the needle wheel for foreign objects. To check the needle wheel it is not necessary to remove the **internal** 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.

2.1. 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 an Allen wrench M5 required for a complete disassembling. Turn off the 4 housing screws and remove the head.

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 of the **internal** pumps (**external** V4A) 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 tip (for example with a Nail file).

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.

Attention:

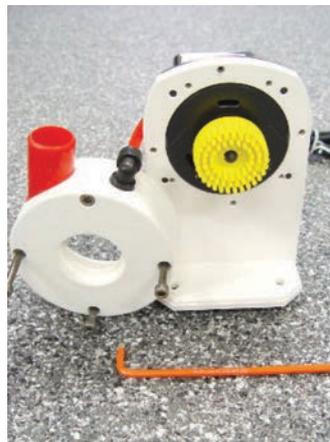
Please consider the safety regulations imprinted when using decalcifiers. Please wear protective clothing and safety glasses.

For more information, please visit www.royal-exclusiv.de. Simply enter the part number or name into the search box or email: info@royal-exclusiv.de.

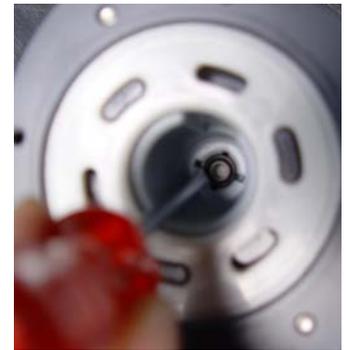
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Important notice:
The backside bearing of the wheel unit should have your special attention, because most failures result from there.



Under **no circumstances** put the bearing loosely onto the shaft and then insert the wheel unit into the motor block. The bearing won't fit in its slide, and thus, the pump will hum extremely after putting into operation. The bearing must be 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.

We recommend to check the **Red Dragon**® pump already after three months, to determine the possible maintenance intervals that can be depending on precipitation between 2-12 months.

If the impeller group extremely calcified, solve the plate between engine and rotor. Cover enter with a small slot screwdriver, **!carefully!**

2.2. Deliming and cleaning the impeller

If the bearing fits on the shaft, like shown on the picture on the left, when pulled out, then manually remove it from the shaft. And the bearing after removal from the shaft. (Shown on the picture on the right)



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 and the counter-part on the motor shown on the picture on the left.



3. Disassembling and cleaning the riser tube of the skimmer

All **internal** Bubble King® skimmers can be totally disassembled. Thanks to new production processes with a precision range of 100/1000, all CNC-machined parts have a so-called zero fit. This means that most of the parts are not bonded to each other, but feature precise fits.

All screws are made from pure titanium, grade 2, and are absolutely seawater resistant and rustfree.



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.

Do not use hot-water over 50°C !

3.1. Disassembling the Plexiglas® riser tube from the base plate (only internal skimmers)

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

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



4. Maintenance of the skimmer head PVC thread

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.



5. Maintenance of the resonator / silencer

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. Thoroughly clean the resonator and reassemble. The left figure below shows the opened resonator.



Thoroughly clean the resonator and reassemble. The cellular material is only helpful for noise reduction but must not be replaced if not desired.

Please do not overtighten the screws.

6. General

Important: correctly seated adjustable nozzle (**only internal**)

The nozzle 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.



6.1. Ozon plug

Please remove the hose from below the resonator and install a 12mm T-set auf. Install another hose on the lower end of the T-set. The 12mm T-opening must be reduced to 6mm 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.

6.2. Good to know!

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 info@royal-exclusiv.de. We are glad to help you.

Royal Exclusiv® guarantees a permanent supply of spare parts for at least 5 years.

7. Possible sources of error

To get an optimal skimming result, the following informations are important:

1. Water does not become water straight away! As a result of the different composition, the skimmer may need a few days before it starts to skim. (Particularly with new products)
2. Note water filling level
from ~ 150 mm up to ~ 300 mm (**ideally ~ 225 mm**)
this is the height of the water in the filter basin!
3. The water level in the skimmer is controlled using a tube. This sets the amount of foam to be produced. (The **level of water in the skimmer** is set by **turning it left or right**).
4. If the skimmer produces a water-air mixture in the tube when it is turned on, this means that the skimmer is operating correctly. The skimming default must lie elsewhere.
5. Do not let the pump run dry -
this would lead to **permanent damage!**
6. A **sufficient pre-filtering** of the water **before** it **enters the skimmer**, is recommended! So, the pump will be spared as before large parts, such as snail shells or shells, which can lead to a blockage of the needle wheel.

Depending on how high is the water fill level in the filter, the Bubble King® DeLuxe can be placed on the right height, to achieve an optimal result of skimming.

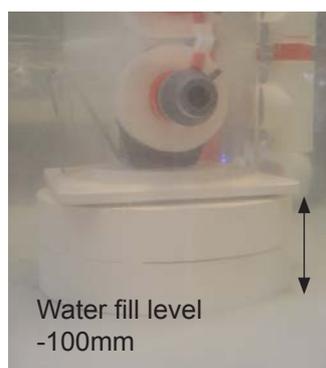
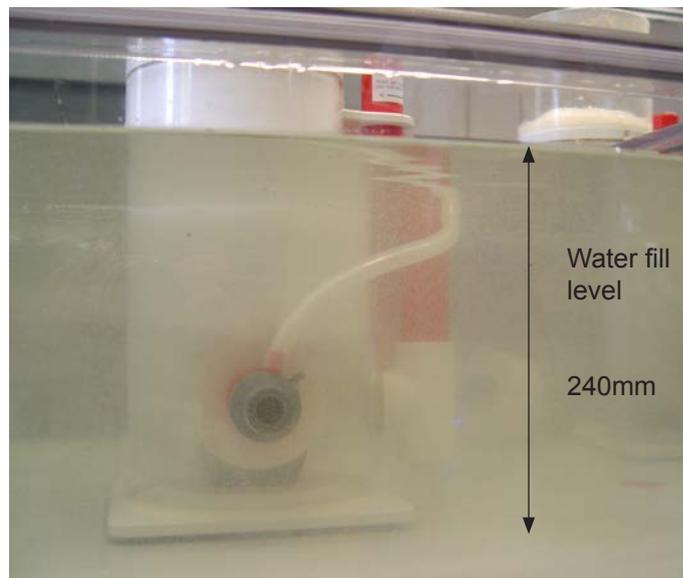


Nozzle
with air- and ozon- plug



Do not forget!

At least **20-30 mm** are required for take-off and cleaning of the complete skimmer pot!



8. Defects and claims for compensation, disclaimer

8. Defects and claims for compensation

8.1. Barring any further claims we are only liable that the supplied goods are free of defects until the initial transfer of perils. Insignificant variations of the contracted appearance and workmanship or marginal limitation of the usability or suitability of the product are unremarkable.

The warranted condition, endurance and usability the product is solely subject to the specification agreed in writing, in the product specification and / or in this manual. Further oral agreements, especially from preliminary talks, advertising and / or in related industrial standards will be only valid as integral part of a written contract. Only conditions and specifications assured specifically by us are valid. We do not accept conditions or specifications made by third parties. Specifically the specification assured in this manual are valid. If the customer wants to use the product for other than the intended purpose, he is obliged to thoroughly check the suitability of the product for the other purposes. We give no warranty and no liability accrues for any applications that are not agreed on by us explicitly and in written form.

Any manipulation of the pump, the (needle wheel) impeller or the electronic as well as any attempt to modify the software, to influence the software or to read out or re-engineer the software of the driver unit immediately causes a loss of warranty and all claims and rights expire.

Every user is held responsible for the appropriate usage of his **Bubble King® DeLuxe** skimmer. The user manual does not discharge you from your liability for a safe, appropriate and secure application, installation, operation and maintenance.

By using this manual you agree that in no circumstances the manufacturer can or will be held liable for any personal injuries or property damages which possibly occur due to the usage of the device. This applies specifically for any damages that are due to inappropriate piping or plumbing. Insufficient or missing cleaning- or maintenance intervals and damages that might result due to these are not covered by warranty. This applies especially for calcinations (salt water usage) and accumulated foreign particles (pond usage) such as sand or gravel, which lead to damages on rotors, bearings, rotor housing or motor housing, that are not covered by warranty.

8.2. Our warranty for defects is strictly limited to supplementary performance. This is upon our choice either removal of defects or replacement delivery free from defects. In the case of challenge, impossibility or failure of the supplementary performance the customer has the right for impairment or the right to withdraw from the contract.

Additional expenses which arise because the customer has brought the sales item to another place than his subsidiary. The manufacturer explicitly limits the warranty to the pump itself. We are not reliable for consequential damages, or damages that are caused by a malfunction or failure of the skimmer, such as a loss of animals. It is in the responsibility of the customer to provide back-up devices for the case of a potential malfunction or failure of the pump.

8.3. The customer has to check the goods immediately thoroughly, also for product safety. Apparent damages have to be reported in written form immediately. Hidden damages have to be reported immediately after their discovery. The customer is liable to report transport damages within 24 hours to the carrier and/or the delivery service. Disregarding the rules for checking and reporting results in a loss of warranty.

8.4. Furthermore we are not liable for the consequences of inappropriate application, usage, maintenance and handling of the product by the customer or his subsidiaries, neither for normal abrasion. This applies specifically to the consequences of thermal, chemical, electrochemical or electrical influences as well as for infringements against our uses- and maintenance manuals. The same applies to damages which are the result of changes or adjustments by the customer which have not been approved by us in beforehand.

8.5. Our liability for wanton negligence is limited to claims of injury of life, body and health, to claims based upon the law on product liability and to claims from culpable fundamental breach of the contract which peril contractual obligations. For the rest our liabilities for wantonly negligent breach of contractual obligations, which are foreseeable at the time of the conclusion of the contract, are barred.

Damages, which are unambiguously attributed to inappropriate usage of the product, are in general to be accounted for by the customer. In the case of returns of the product the customer has to use break-proof packaging for the product. The customer is liable for any damages that can be accounted to an inappropriate packaging.



8.6. Claims against us become time-barred within a year after the initial delivery of the goods to the customer. The same applies to claims for damages regardless of their juridical cause. The limitation period does not apply to claims based upon the malicious concealment of damages from the injury of life, health or body and for other damages that result out of intention or wanton negligence.

8.7. If it becomes apparent during our examination of damages reported by the customer or in the course of our removal of defects, that the reported damages or claims were made wantonly negligent or unwarranted, we may charge an adequate consideration for our examination and for the removal of defects. The customer has the right to neglect a necessary repairing and to demand the return of the skimmer. In general every examination of damages is bound to lump-sum compensation if it occurs that the customer has to be accounted for the damages.

8.8. Spare parts

Our liability to deliver and hold spare parts available is limited to the period of 5 years after initial shipment of the product. Our respective list prices apply for spare parts.

8.9. Disposal

We offer our customers to take back products that fall under the restriction of hazardous substances directive (ElektroG) within Germany free of charge, for products, which were brought into circulation after the 13th of August 2005. We will take care for the disposal. If a customer chooses not to let us take care for the disposal, he takes the responsibility of a disposal according to legal regulations and discharges us from our liabilities according to §10 sect. 2 ElektroG and any associated liabilities of others.

8.10. Subject to alterations

The manufacture has the right for changes in hardware and software of the product at any time without preliminary notice, as long as these changes advance reliability or quality of the skimmer. No claims can be made if for instance design, functionality or performance of the skimmer changes elementary. The assured specification of the skimmer is always guaranteed.

9. Manufacturer's declaration

Titles against **Royal Exclusiv®** concerning the products described in this manual address on the **Royal Exclusiv®** guarantee clauses. Specification may vary due technical improvements.

9.1. Manufacturer

Royal Exclusiv® pumps and skimmers

Vorgebirgsstr. 28 // 50389 Wesseling // Germany

Fon +49(0)2236/88055-0 // Fax +49(0)2236/88055-20

info@royal-exclusiv.de // www.royal-exclusiv.de

Made in Germany

Royal-Exclusiv® EAR-number: WEE.Reg.No. 83082352

9.2. Informations and support

Thank your for purchasing a **Royal Exclusiv®** Bubble King® protein skimmer. This protein skimmer is a high quality product made in Germany with the highest manufacturing demands on modern CNC machines. This manual is supposed to help you to setup the protein skimmer for use and to advice you with the necessarily maintenance procedures.

To ensure longlasting satisfaction with this product we please you to read this manual carefully and follow our guidelines.

Royal Exclusiv® guarantees 5 years of spare part availability for the Bubble King® DeLuxe protein skimmer.

Should the device in some way not meet the high demands you expect from **Royal Exclusiv®** please contact the dealer where you purchases your Bubble King® DeLuxe protein skimmer. This is usually the best way for product support. However you may feel free to contact our support on our website: <http://www.royal-exclusiv.de>