



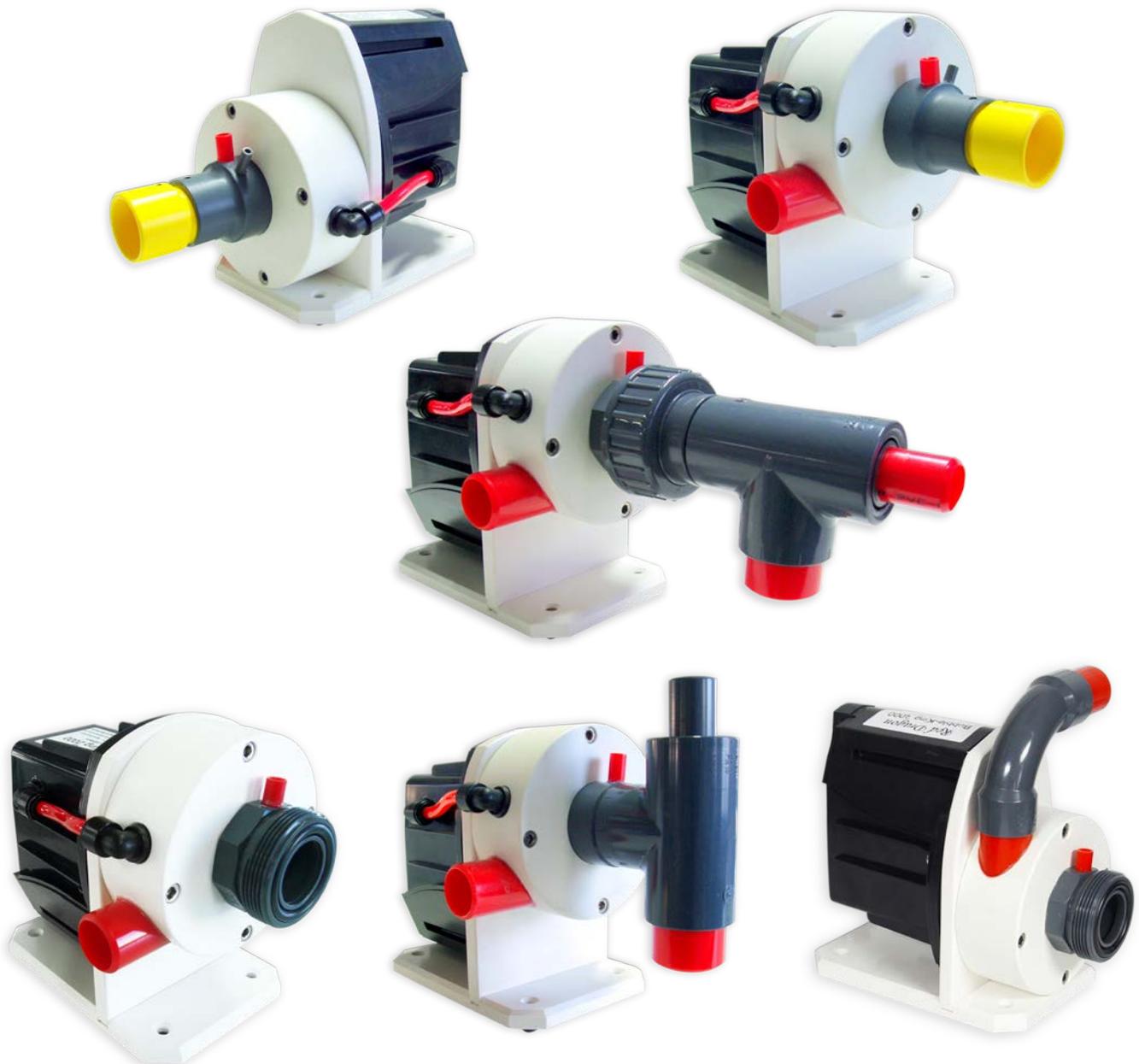
Since 1986



Operating and maintenance manual for Bubble King® pumps
For all Red Dragon® Bubble King® skimmer pumps with or without AKB (anti-lime-bypass)

v1.0

ENG





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Please keep up this user's manual carefully!
On change of ownership you pass the complete user guide.

! **Never use the device without water throughput!** !

1. Foreword

This manual is intended to inform you correctly and exhaustively, i.e. also over potential risks caused by the pump. The user, fitter and maintenance technician is responsible to check the compliance with the procedures and advises in this manual. The **Bubble King®** skimmer pump is built with state-of-the-art technology and to comply with existing safety regulations. Nevertheless this device may cause risks for individuals and for property, if it is used improperly or not regarding to its designated use, or if safety advises are ignored.

If the pump is used improperly, the liability of the manufacturer and the operating permit are void. For safety reasons children and juveniles younger than 16 years as well as people who do not recognize possible risks or who are not familiar with this manual may not use the device. Please preserve this manual carefully. In the case of a disposal please hand over the complete manual.

**Please keep up this user manual carefully!
On change of ownership pass the complete user guide!**

The combination of water and electricity can be a serious threat to life and limb, when not installed according to directions or when used improperly.

2. Use of the pump

Only use the device when no body parts have contact to the water! Before you reach into the water always disconnect the pump from the power supply. Compare the electrical specification on the type label of the device with the specification of the power supply. Make sure that the device is connected to an ELCB (earth leakage circuit breaker) with an assigned leakage rating of max. 30 mA (DIN VDE 0100T739). Only operate the device on a correctly installed power plug.

Keep the power plug and the wiring dry! Install the wiring protected in order to avoid damages.

IT IS NOT ALLOWED TO CUT THE WIRING OR THE POWER PLUG. DOING SO WILL IMMEDIATELY VOID ALL WARRANTY AND LIABILITY OF THE MANUFACTURER.

Only use wiring, installations, adapters, extension cables and connection cables with grounding-type plugs, which are approved for outdoor usage (DIN VDE 0620) with sufficient cable diameter. Do not pull on the wiring of the device and to not use the wiring to carry the device! If the wiring is damaged or broken the device may no longer be used! Reparation is not possible as the wiring is permanently grouted in the engine housing. Take care that the power plug never falls into water or gets wet. If the plug gets wet in any kind, it has to be opened by a professional and cleaned by purging with demineralised water. Protect the plug and the wiring against heat, oil, UV light and sharp corners. The manufacturer is not liable in any way for any damages, which are made by improper installation or by the carelessness of the user or installer.

In general, when put out of service, the pump has to be cleaned extremely thoroughly. Before it newly brought into service the ease-of-movement of the needle wheel has to be checked by hand. If the needle wheel cannot be moved round by hand, the pump needs to be disassembled and cleaned completely. It is forbidden to disconnect the plug from the pump while the device is in use. This can result in serious damages to the electronic components and to dangerous situations due to grounding problems.

The wiring may not be modified or replaced. Electrical installations always have to be compliant and according to national and international directives and requirements. Never open the case of the device or of the appending parts if this is not explicitly suggested in the user manual. Never apply technical modifications to the device. Only use original spare parts and accessories. Let only authorized customer service facilities conduct reparations. Never use the pump with other liquids than water.

If you have any questions or problems consult an electrician, your dealer or the manufacturer **Royal Exclusiv®**.

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

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3. Fields of application

The **Bubble King**® pump is suitable to skim for sea water, marinewater and saltwater. It can haul clean as well as – to a certain extent – polluted water. The pump is not suitable for water with larger particles. The **pollutants** may **not exceed 0.8mm** in size.

In general the pump is to be used for applications with clean water. **Clean water** in this case is defined as water not containing solid particles, which could damage the bearings. Examples for particles or pollutants not suitable are sand, lime precipitation or pyrolomite after a manganese peroxide treatment in a pond. Damages caused by such pollutants in the water do not fall under warranty or service.

The pump has to be filled with water before it is set into operation.

Temperature of the liquid:	+2 to +40°C.
Environment temperature:	0 °C to max. +50 °C
Max. working pressure:	2 bar (20m head of water)

4. Installation/Fitting

Caution:

Before you install the pump you have to read the manual thoroughly. Damages, which are caused because the manual was not read thoroughly, do not fall under warranty.

When unpacking the pump, check whether all parts were delivered completely and undamaged. Detected damages have to be reported within 24 hours after the purchase of the pump at your retail location. When unpacking the pump, it is possible that the inside of the pump is wet. The pump is tested before it leaves the factory.

Prior to its packaging the pump is treated with a biodegradable disinfectant in order to neutralize possibly present bacteria. The pump therefore has to be purged with water thoroughly before usage.

Please check the pump for damages before you set it into operation. Should the pump have damages it may not be set into operation. Please inform your retailer immediately if the pump is set into operation even though it is damaged, any warranty and liability is void.

Pull the plug electrical socket and make sure that the pump cannot be switched on. During the course of the installation the pump may not be connected to the power supply. To avoid injuries take care to reach not into the opening of the pump with your hands or fingers, when the pump is connected to the power supply.

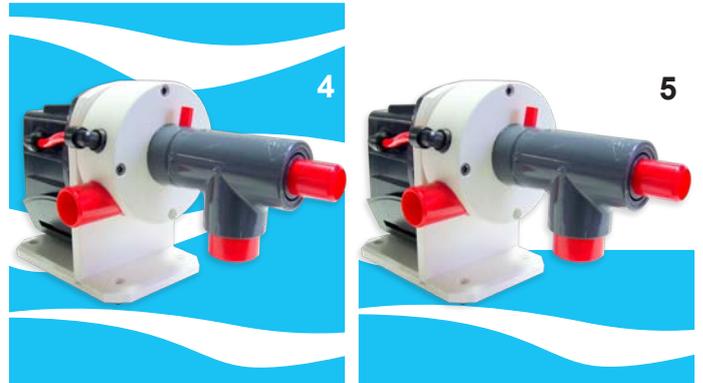
5. Putting into operation of the pump

Never use the device **without water throughput**. The pump will automatically start when the power connection is established.

The pump may be used in almost any position. However it has to stand stable on a solid base. The inlet pipe is connected to the suction side of the pump (see figure 1).



It has to be assured that the pump can be de-aerated through the outlet (2).



The pump can be placed submersed (4) or out of the water (dry) (5). In the case of a dry placement, adequate air ventilation has to be assured. Furthermore the pump may not be exposed to direct sunlight. Place the pump as close as possible to the actual water connection; hence the inlet piping has to be as short as possible.

If the pump is placed external (dry), in this case the inlet piping of the pump has to be filled with water before the pump is set to operation. In such a setup the risk of the pump to run dry is very high. Damages which are caused by the pump running dry are excluded from warranty.

5.1. Inlet Pipe (*intake side*)

If no sufficient amount of water reaches the pump because the drag of the inlet pipe is too strong, the pump will consume a lot of power and the electronics gets very warm in the long run. The electronic contains a self-protection mechanism for this case and turn off. If the pump delivers less and less water after hours or days of operation it is possible that the inlet piping is too large.

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.



Always use bows instead of elbows.



5.2. Pressure Pipe (*Pump outlet/ pressure side*)

The pressure pipe should have the same diameter as the intake of the pump in order to minimize pressure loss, high flow rates and noise.

5.3. Electrical connection – setting-up operation

Check whether voltage and frequency on the type label of the pump match the supply voltage. The person, that's responsible for the installation, has to check whether a standard conform grounding is available.

It is necessary to check if the electrical installation has a highly sensitive earth leakage circuit breaker (ELCB/GFCI) is available (30mA – DIN VDE 0100T739).

The fuse for the electrical net has to be one level higher than the fuse of the pump.

6. Setup instructions, adjustable nozzle

All **internal** Bubble King® skimmer pump 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 Red Dragon® Bubble King® 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 - 1 1/2 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 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.



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7. Maintenance of the pump

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

Unplug the pump 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® Bubble King® 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.



7.1. 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 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.

Please decalcify the wheel unit in an applicable decalcifying bath.



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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

Important notice:

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 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)



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.

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.

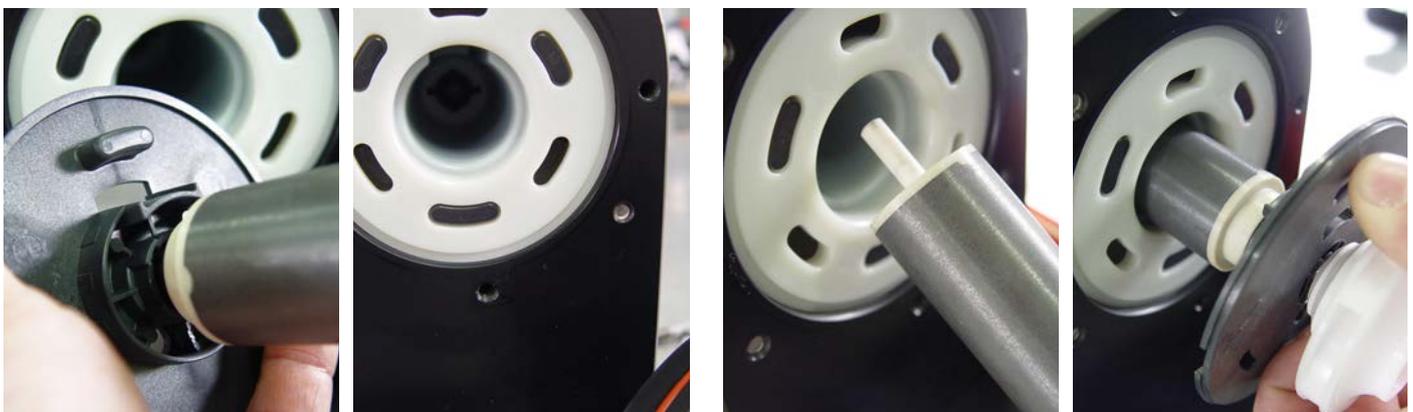


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At first, check if the bearing sleeve of the wheel unit on the back was seated properly. Now take the wheel unit and position in a way that the rectangular slide shows upward. This rectangular slide will fit into the motor only, when showing upwards.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

For assembly: fix the O-ring in position, then carefully let the magnetic impeller with the lip on top click into place.
Caution ! **Strong magnetic forces !!**



Bubble King® pumps are optimally on Bubble King® skimmer set and tested. You should use a skimmer from another company, it may be that the specified performance data will not be achieved. In the external/dry preparation/use of the pump, it may be also a different performance results. Please consider this.

And now please enjoy your new **Red Dragon® Bubble King®** pump.
A regular maintenance guarantees a long run.

Royal Exclusiv® in august 2012

