Royal Exclusiv pumps & skimmers

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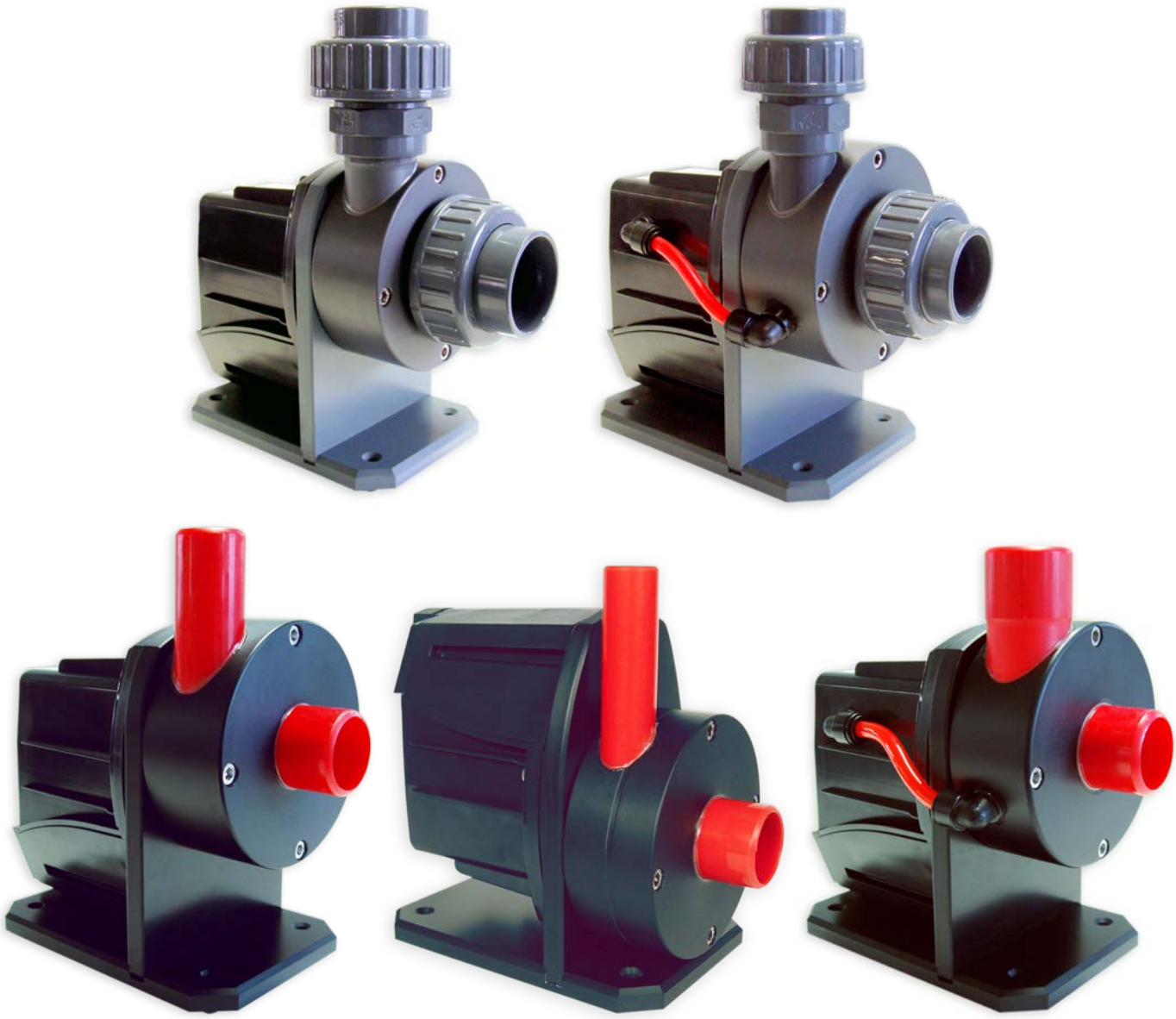
Since 1986

Operating and maintenance manual for Red Dragon® 1 pumps

For all Red Dragon® 1 pumps with or without AKB (anti-lime-bypass)

v1.1

ENG



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Operating and maintenance manual Red Dragon® 1 pump

For all Red Dragon® 1 pumps with or without AKB (anti-lime-bypass)

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 indented 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 ***Red Dragon® 1*** are 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-typ 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 impeller has to be checked by hand. If the impeller 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 on garden ponds 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 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.

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

3. Fields of application

The ***Red Dragon***® ***1*** pump is suitable for freshwater, brackwater, saltwater and to pump other non-aggressive, non-explosive liquids that do not contain oil. 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 pyrolusite after a manganese peroxide treatment in a pond. Damages caused by such pollutants in the water do not fall under warranty or service.

The most common use case for the ***Red Dragon***® ***1*** pumps are in the context of filtration systems (aquariums, ponds or swimming pools) and/or to supply a beck/creek or waterfall. The pump is not self-supplying and therefore can be used above the water surface and only in combination with a backpressure valve on the inlet pipe. In this case 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.

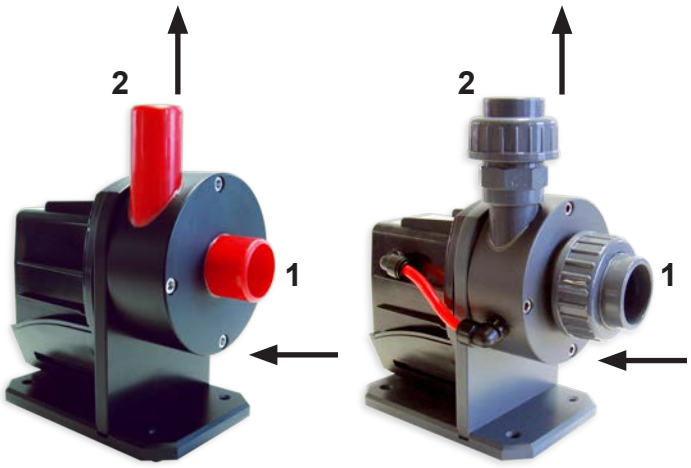
When unpacking the pump, check whether all parts were delivered completely and undamaged. Detected damages have to be reported within 24 hours after the purchase of the pump at your retail location. When unpacking the pump, it is possible that the inside of the pump is wet. The pump is tested before 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 switch 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 should ideally be placed beneath the water level (**3**).

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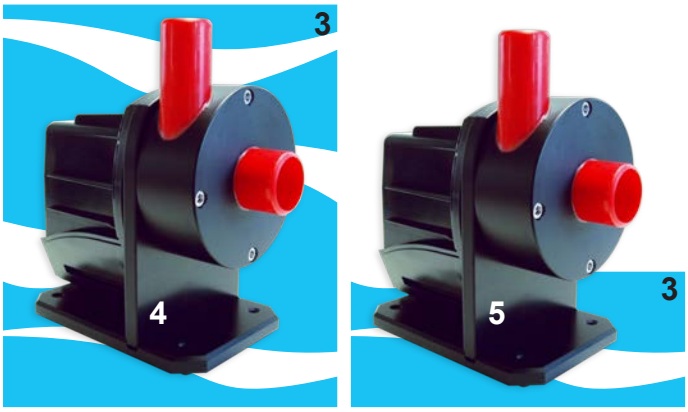
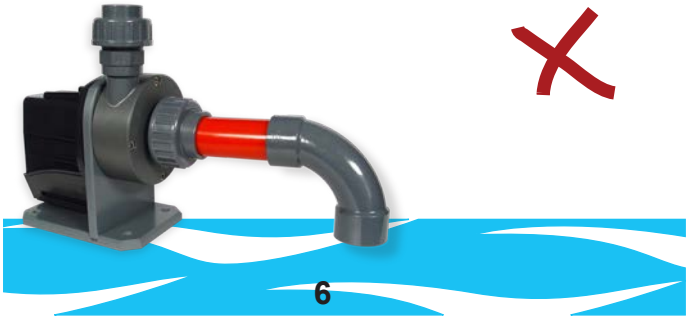
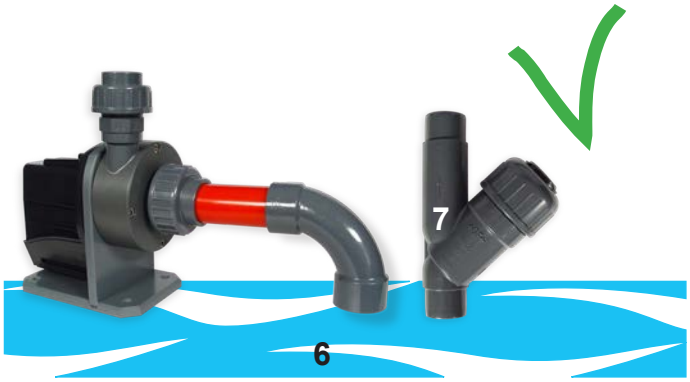
The pump can be placed submersed (**4**) or out of the water *(dry)* (**5**). In the case of a dry placement, adequate air ventilation has to be assured. Furthermore the pump may not be exposed to direct sunlight. Place the pump as close as possible to the actual water connection; hence the inlet piping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



If the pump is placed above the water level (**6**) the installation of a backpressure valve (**7**) is mandatory. 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, when the backpressure valve does not work properly. Damages which are caused by the pump running dry are excluded from warranty.





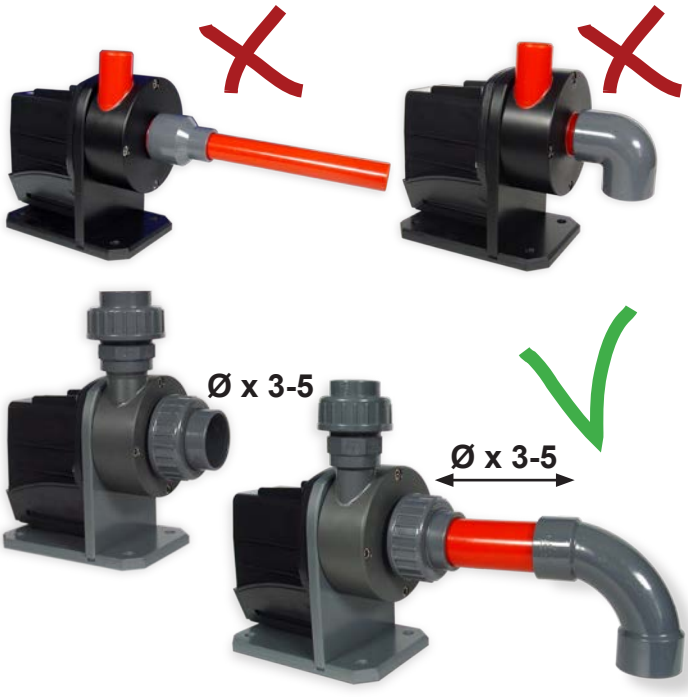
5.1. Inlet Pipe *(intake side)*

If no sufficient amount of water reaches the pump because the drag of the inlet pipe is to 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.

The best thing is to enlarge the diameter of the piping on the inlet side by 1 – 2 sizes directly in front of the pump, in order to maximize the delivery rate and to minimize energy consumption.

Any coupling has to be 100% air-proof. If a tube is used as inlet, this has to fulfil the requirements of a suction pipe.

It is **very important**, that the initial inlet at the pump is straight. (Minimum distance of 3-5x the diameter of the inlet pipe from the housing to the first bow). In this way the efficiency factor is maximized, because the water enters laminary at the impeller.



Always use bows instead of elbows.

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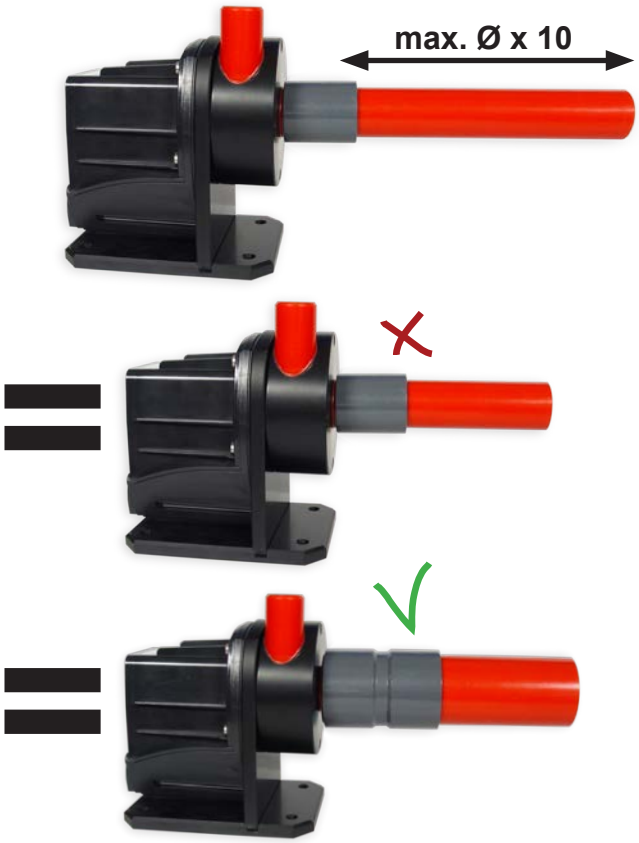
If the inlet piping is longer than **max. Ø x 10** the inlet piping has to be 1 or 2 sizes larges than the intake of the pump.

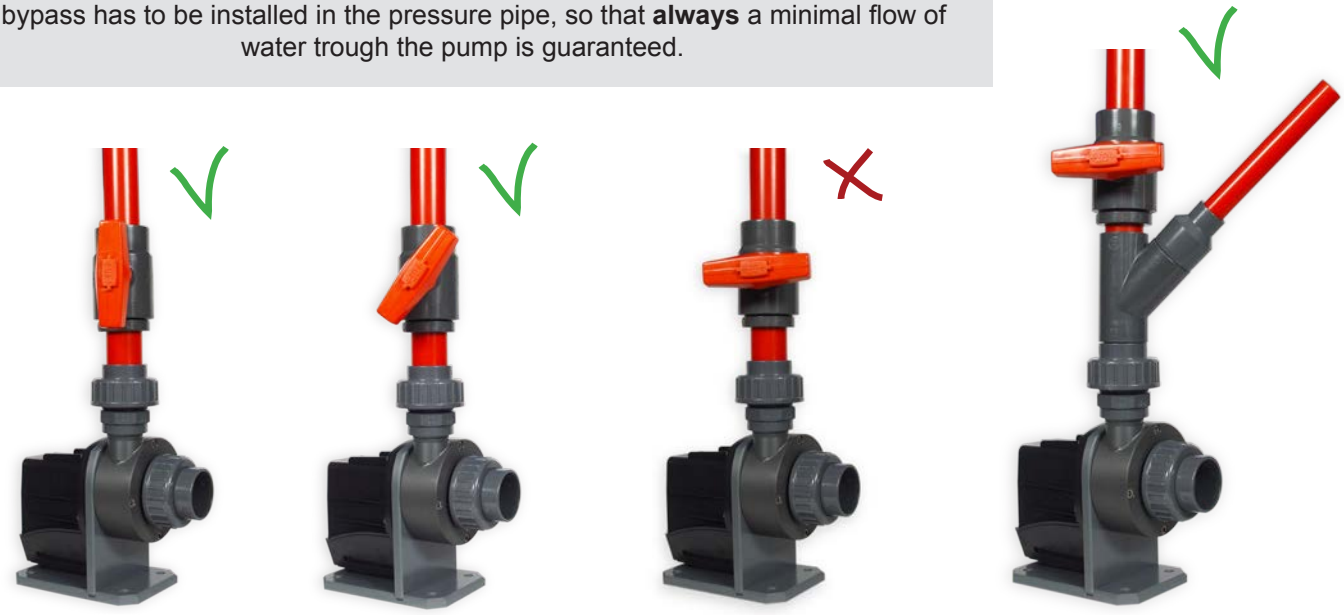


5.2. Pressure Pipe *(Pump outlet/ pressure side)*

The pressure pipe should has to have the same diameter as the intake of the pump in order to minimize pressure loss, high flow rates and noise. The best thing is if you enlarge the pressure pipe directly after the pump outlet, in order to maximize the pump capacity and to safe energy.

Reduce is feasible in small groups. Maximum 1 size smaller. For example, from 40 mm to 32 mm or 32 mm to 25 mm.

If there is a danger that the pressure pipe gets completely blocked (e.g. by a ball valve) a bypass has to be installed in the pressure pipe, so that **always** a minimal flow of water trough the pump is guaranteed.



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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.

5.4. Turning of the pump head

Just solve the four screws on the front side of the pump head and turn the head 90° to the left or right as you wanted.

6. Maintenance and cleaning

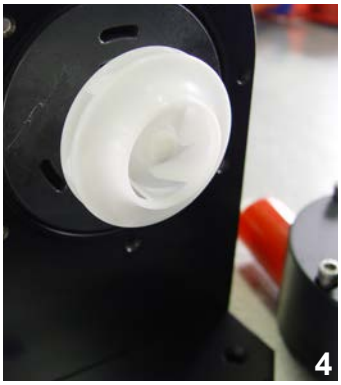
Disconnect the pump from the power supply prior to each maintenance work.

Red Dragon® supply- and flow pumps are essentially to be classified as low-maintenance. Usually the necessary maintenance work is limited to a check of the impeller for obstruction.

Remove obstacles from the impeller with a slim and spiky tool. A decreasing supply rate is often the result of dirt. Possible calcinations (especially in saltwater applications) has to be removed with a very soft acid as for instance vinegar. Avoid applying pressure to the sides of the impeller or the rotor. The pump can be disassembled nearly completely for cleaning.
In freshwater- and saltwater applications calcification only appears in very hard water and after a complete re-filling of the pond. After this the largest amount of carbonate will be omitted within 2-3 days.

All ***Red Dragon***® pumps feature an integrated automatic switch-off function. The energy input is continuously measured electronically. If power consumption increases for whatever reasons, e.g. in case of calcification resulting in sluggish bearings – the electronic system of the pump recognizes this as a failure and the pump is switched off automatically.
By plugging/unplugging the power plug the pump can be made ready for operation again. Please note that it is prohibited to circumvent the electronics to make the pump run again by constantly plugging/unplugging the power. If the ***Red Dragon***® pump switches off, there is always a problem which must be remedied. This is usually a cleaning interval that is to be implemented. Continuous circumventing of the pump electronics may result in motor damage which is not covered by guarantee or goodwill. Furthermore, major impurities may generate vibrations.
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.

Unplug or disconnect the power plug and remove the pump from the silicone hose with gently rotations. Or solve screw connection. Remove the four titanium pump head screws and check the impeller for snail shells, mussels, active carbon pellets, filter cotton or residual food. *(fig.* **1-3***)* In case of larger accumulations, please clean the impeller. Pull out the impeller, *(fig.* **4***)* clean and delime the entire pump.



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For assembly *(fig.* **1-8***)*: fix the O-ring in position, then carefully let the magnetic impeller with the lip on top click into place. Caution **! Strong magnetic forces !!**


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6.1 Deliming and cleaning the impeller

Now delime the impeller unit using a suitable deliming bath. **Never** use **hydrochloric acid** - **not even diluted**! This may damage the pump. Suitable substances are: formic acetic phosphoric acid or common deliming agents for water purification appliances like coffee makers.

The containment shell of the motor must also be delimed. Coarse, greasy plaques must be removed under ordinary tap water prior to deliming using a mediumcoarse brush.

Please observe the relevant safety regulation attached to every sales package prior to using deliming acids. Wear protective clothing and goggles.

Important:


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The rear bearing bush requires special attention as most errors are made here.

If the rear bearing brush *(fig.* **9***)* sits on the shaft when removing the impeller unit, it is vital to carefully remove the bearing from the shaft *(fig.* **10***)*.

If the bearing is mounted into the appropriate notch, the O-ring must be firmly pressed into the notch using a medium-size slotted screwdriver *(fig.* **11***)*.


11

Impeller units where the bearing is firmly bonded to the shaft must not be under circumstance reinserted into the pump. Blocked bearings may cause damage to the pump or prevent it starting up, due to the O-ring grinding against the bearing seat.

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

Royal Exclusiv® in July 2013