Royal Exclusiv pumps & skimmers

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Since 1986

Operating- and maintenance manual Red Dragon® 3 pumps

For all Red Dragon® 3 skimmer-, filter- and flow pumps with and without controller

v9.5

ENG

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The overview of the Red Dragon® 3 pump - family

Red Dragon® 3 Speedy
80/100W with controller / saltwater-resistant
delivery-pump

Red Dragon® 3 Freshwater
100W without controller
not saltwater-resistant
delivery-pump

Red Dragon® 3 MiniSpeedy
60W with controller / saltwater-resistant
delivery-pump

Red Dragon® 3 MiniSpeedy
60W with controller
saltwater-resistant
skimmer-pump

Red Dragon® 3 MiniSpeedy
60W with controller / saltwater-resistant
skimmer-pump

Red Dragon® 3 Speedy
100W with controller / saltwater-resistant
delivery-pump

Red Dragon® 3 Speedy
150/230W with controller / saltwater-resistant
delivery-pump

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.

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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 pump 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 pump.

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Since 1986

1. Defects and claims for compensation, disclaimer

1. Defects and claims for compensation

1.1. 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 are 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 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 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. We point out that the controller software is protected by security mechanism. Any attempt to read out the software will instantly result in the execution of a data-erasing program. The software of the pump then is deleted and has to be recovered by the manufacturer.
Every user is held responsible for the appropriate usage of his ***Red Dragon® 3*** pump. 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.

1.2. 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 pump, 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.

1.3. 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.

1.4. 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.

1.5. 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.

1.6. 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.

1.7. 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 pump. In general every examination of damages is bound to lumpsum compensation if it occurs that the customer has to be accounted for the damages.

2. 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.

3. 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.

4. 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 pump. No claims can be made if for instance design, functionality or performance of the pump changes elementary. The assured specification of the pump is always guaranteed.

2. CE Manufacturer's declaration

The manufacturer assures, that the products of the ***Red Dragon® 3*** Speedy series comply with the following EWG-directives, when installed and uses according to this manual:

Machinery Directive (98/37/EG)
Electromagnetic compatibility (89/336/EEC)/(73/23/EWG (95)

EN ISO 12100	Safety of machinery
EN 61000-6-2	Electromagnetic compatibility
EN 61000-6-3	Electromagnetic compatibility (EMC)
EN 60335-1:2002	Specification for safety of household and similar electrical appliances.
EN 60335-2-41:2003	Household and similar electrical appliances. Particular requirements for pumps.
EN 60335-2-55:2003	Specification for safety of household and similar electrical appliances. Particular requirements for appliances for use with aquariums and garden ponds.
EN 50366:2003	Household and similar electrical appliances. Electromagnetic fields. Methods for evaluation and measurement.
EN 55014-1:2006	Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission.
EN 55014-2:1997	Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity. Product family standard.

2.1. Manufacturer

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Made in Germany

Royal-Exclusiv® EAR-number: WEE.Reg.Nr. 83082352

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2.2. Formal obligation

All ***Red Dragon® 3*** pumps are made in Germany. The die-casting tools were made in Germany. The die-casted parts originate from German production. The assembly, the casting of the stator and the final inspection and testing of the ***Red Dragon® 3*** pumps is done in Germany. Essential parts of the pumps originate from non-German or near-European production.
Titanium parts are made out of saltwater resistant pure titanium, grade 2. All plastic parts are made from ozone and UV resistant material. The wiring is saltwater resistant (excluded ***Freshwater***). The stator casing, the raw mantle and the bearing rings are made from saltwater resistant titanium, grade 2 (excluded ***Freshwater***). The parabolic rubber feet are made from 30 shore soft, saltwater resistant natural rubber.

3. Quick installation Red Dragon® 3 MiniSpeedy + Speedy 50/60/80/100W with speed regulation

The pump (excluded ***Freshwater***) has a DC motor and therefore is equipped with a driver unit. The ***Red Dragon® 3*** Speedy pumps may only be operated with an ELCB (earth leakage circuit breaker)!!

!! Important !!
Electrical grounding of the wiring of the ***Red Dragon® 3*** pumps **is absolutely mandatory**! Bridge circuits or grounding over neutral conductor are not permitted and might cause inductive fault current up to 50 Volt!

Setting-up operation has to take place in the following order:

1. Thoroughly purge the pump, to remove the disinfectant.
2. Place the pump below the water level.
   (The pump is not regenerative).
3. Insert power plug. Caution: The electrical socket needs to be grounded.
4. Keep hole of the pump during the test run.
   Danger of blowback!
5. The pump starts immedialty (softstart).
6. Use the buttons (red triangles) to adjust the revolutions per minute.

Note: The pump 50W-100W will start with the display of the type of pump (P1-P9). Then the initialization (In) takes place. Afterwards the start message (SP) and the last selected set wattage will be shown. The pump VS1 starts direct. Through the „Up“ and „Down“ we fixed keys performance in differ Watt increments.

Power Consumption

Revolution adjustment

3.1. Quick installation guide *Red Dragon® 3 Freshwater* without speed regulation 50/100W

The model ***Red Dragon® 3 Freshwater*** without rev limiter can be operated submersed and externally (out of the water). Simply plug in the electric socket „ready“. We generally suggest the usage of decouple kits (silicone tubes) in order to fully take advantage of the warranted low noise level of the ***Red Dragon® 3*** pumps.

RD3 MiniSpeedy BK / RD3 MiniSpeedy / RD3 Speedy - pump **50/60/80/100Watt with speed regulation**

50/60 Watt RD3 Mini Speedy skimmer pump

50/60 Watt RD3 Mini Speedy flow- and filter pump

60 Watt RD3 Mini Speedy skimmer pump

80/100 Watt RD3 Speedy flow- and filter pump

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3.2. Installation *Red Dragon® 3 Speedy* with speed regulation 150/230W

The pump ***Speedy 150/230W*** has a DC motor and therefore is equipped with a driver unit. The ***Red Dragon® 3*** Speedy pumps may only be operated with an ELCB (earth leakage circuit breaker)!!

!! Caution !!!! Caution !!!! Caution !!

Never (dis-) connect the *Hirschmann*-connector of the pump and controller of the ***Red Dragon® 3 pump*** **under voltage *(deadbreak connector).*** The pump could be ***permanently damaged***, the warranty shall lapse immediately!

!! Important !!

Electrical grounding of the wiring of the ***Red Dragon® 3*** pumps **is absolutely mandatory**! Bridge circuits or grounding over neutral conductor are not permitted and might cause inductive fault current up to 50 Volt!

Setting-up operation has to take place in the following order:

1. Thoroughly purge the pump, to remove the disinfectant.
2. Place the pump below the water level. (The pump is not regenerative).
3. Insert power plug. Caution: The electrical socket needs to be grounded.
4. Keep hole of the pump during the test run. Danger of blowback!
5. The pump starts immedialty (softstart).
6. Use the buttons (red arrows) to adjust the revolutions per minute.

Note: The pump 150/230W will start with the display of the initialization *(Init)*. Afterwards the start message *(Start OK)* and the last selected set wattage will be shown. The pump will start direct the soft-start immediately. Through the „Up“ and „Down“ we fixed keys performance in differ Watt increments.

3.3. Error code at the display *Red Dragon® 3 Speedy* with speed regulation 150/230W

F1 / F2 : Internal error electronics assembly
F3 : safety switch-off of the pump with restart if possible.
Safety switch-off is performed if foreign objects hamper or block the operation of the pump.
The power supply is interrupted while the pump operates. (this can be done safely without any problems for the electronic components of the pump)
F4 : dry operation detected. Is activated when the pump operates at higher speeds without the required water throughput. Dry operation prevents the bearings from being damaged.
Restart is performed after a short interruption (approx. 10 seconds). In case of permanent dry operation, the pump stops after 5 attempts.

3.4. Description of functions *Red Dragon® 3 Speedy* with speed regulation 150/230W

Menu structure
Press the menu button to open the menu. Press the right arrow key to display the selected menu entry.
The menu is subdivided into two sections. The entries start with the operating functions for food timer, manual and interval operation, remote 10V, remote LAN followed by the change functions for the food timer, interval, clock and language.

Change functions
Press the up or down arrow key to set the requested values.
Press the right arrow key to complete the entry and switch to the next entry option within the menu entry selected. Once you have made all entries, press the right arrow key to complete the menu entry and save the new settings. If no entry is made for approx. 8 seconds during set-up, change management is cancelled. You will then return to the previous operation function and the settings are not saved.

Selecting operating functions / menu

1. Food timer
2. Manuel
3. Interval (Toggle-Mode)
4. Remote 10V
5. Remote LAN

Selecting change functions

6. Changing food timer
7. Changing interval
8. Change clock settings
9. Change language

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Boot sequence of the ***Red Dragon® 3 Speedy*** with 150/230W, at power supply the pump initializes „Init“, after successful testing of the system the display shows „OK Start“ and begins with the last performance *in this case 100W*.

!! Caution !!!! Caution !!!! Caution !!

Never (dis-) connect the *Hirschmann*-connector of the pump and controller of the ***Red Dragon® 3 pump*** **under voltage *(deadbreak connector).***
The pump could be ***permanently damaged***, the warranty shall lapse immediately!

All entries are saved in case of a power failure (outage) with the help of a condenser > 48 hours. I.e. If the pump for more than > 48 hours off the current, all the entries be deleted and the pump is jumping back in the State of delivery.

Openning of the controller = loss of guarantee

Menü/Enter key
Menü button open the menu

Arrow RIGHT key
Selection of the menu entry and confirmation of entry

Arrow UP key
Navigate through the menu and setting the wattage

Arrow DOWN key
Navigate through the menu and setting the wattage

Hirschmann-plug-connector
Never disconnect under voltage or connect.

10V connection
Communicate with an aquarium computer is possible via a connection cable

connection for power supply
firmly connected cable

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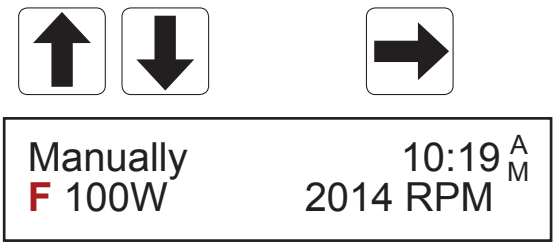
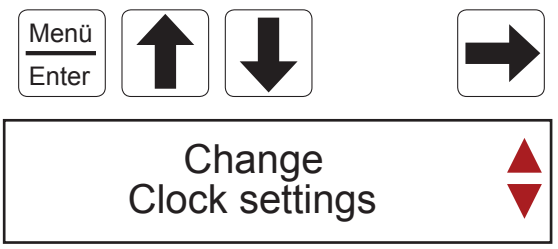
The performance/wattage can be adjusted with the arrow UP - and DOWN - keys in 10W steps. For fine adjustment please press the arrow RIGHT key and it appears a "**F**" in the display before the wattage, the pump can now be set in 2W increments. If no more input, after 8 seconds, the pump saves the current value.



By pushing the Menü / Enter - key you will reach the menu. With the arrow UP - and DOWN - keys is possible to the navigation menu. Please press the arrow RIGHT - key to select an entry of the menu. Pressing the arrow RIGHT - key is stored the selection or the pump returns automatically if no input is made after 8 seconds.



The navigation is done through the menu intuitive. Just go through the menu and look different points and options. So you will get a feeling for the control and the structure of the submenu items/menus. Following, we have listed all items and options and describes their function.

3.5. Selecting operating functions

1. Menu entry: Feeding timer
By selecting the menu entry, the pump is reduced to minimum output for a pre-defined period of 1-30 minutes or switched off completely. Subsequently, the last operating function selected is executed again.

2. Menu entry: Manually
This function enables manual selection of the pump output. The value can be set in increments of 10W. By holding the UP or DOWN key, the highest or lowest possible value is activated (150/230W - 20W). Press the RIGHT key to fine-tune the value in increments of 2W. This is signalised by an "**F**" on the display. By pressing the arrow RIGHT key again, the function is deactivated.

3. Menu entry: Interval
This function enables changing the pump output in time intervals. This can be implemented by means of two different starting controls. The first starting control switches between the *Power 1* interval and the *Power 2* interval. The time for the switching period is predefined by the interval time. To activate this function, the switching time must be set to 00:00. Interval times can be set from 1 minute to 12 hours. If the second time specification, called switching time, is entered (> 00:00), the mode changes as follows:

When the switching time has been reached, *Power 1* is activated for the duration of the interval time. Subsequently, *Power 2* is activated. For example, if the switching time is set to 10:00 pm and the interval time is set to 8 hours at *Power 1* at 60W and *Power 2* at 180W, then the pump is set to 60W at 10:00 pm and to 180W at 6:00 am (10:00 pm + 8 hours). The pump then operates at this output until 10:00 pm. Almost all possible combinations can be set in this way.

4. Menu entry Remote 10V
This function activates control via the 10V input. At a voltage of > 0.5V, control via the interface is activated. At a range between approx. 0.5 to 0.8V, the pump is switched off. From a voltage of > approx. 0.8V, the pump is started with 20W. The output is increased in increments of 2W until 150/230W have been reached at approx. 9V.
The applied voltage and the resulting output are shown on the display. Due to tolerances, the data may deviate by approx. 0.3V. No additional interface adapter is necessary, it can be directly connected to the Aqua-controller/computer.

5. Menu entry Remote LAN
This function activates the control via the future LAN adapter. To this end, a bi-directional interface is implemented.

3.6. Selecting change functions

6. Menu entry: Changing feeding timer
By selecting this change function, the time of the feeding timer can be pre-set at a range of one minute to 30 minutes (UP/DOWN arrow keys). By pressing the arrow RIGHT key, the function of the pump during the expiry of the feeding timer can be defined. Possible selection: Pump Off/Operation at 20Watt. Press the right arrow key again to save the settings and return to the standard function.

7. Menu entry: Changing interval
By selecting this change function, you can enter the interval time. Select the hours first and then press the right arrow key to enter the minutes. Press the right arrow key to select the interval output 1. Press the right arrow key again to select the interval output 2. By holding the UP or DOWN key, you can fine-tune the values and the input grid switches from 10W to 2W. By holding the UP or DOWN key again, fine-tuning is cancelled and the 10W grid is restored.
Fine-tuning is signalised by an "**F**" on the display. The interval outputs 1 / 2 can be freely chosen within the range of 20W to 150/230W. (minimum grid 2W). Following selection of output 2, the switching time can be defined. Select the hours first and then press the arrow RIGHT key again to enter the minutes. By pressing the arrow RIGHT key again, the settings can be saved and the standard function restored.

8. Menu entry: Change clock settings
By selecting this change function, you can set the clock. Select the hours first and then press the arrow RIGHT key to enter the minutes. By pressing the arrow RIGHT key again, the settings can be saved and the clock is started with the new time. Subsequently, the standard function is restored. The clock features an output reserve of > 48 hours. This is the minimum period during which the clock continues to operate without power supply.

9. Menu entry: Change language
By selecting this change function, you can set the menu language. You can choose between English and German. If you choose English, the time is displayed in US format. *(am/pm)*

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4. Improper usage

This manual is indented to inform you correctly und 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 ***RD3*** 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.**

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.

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 ALLOWD TO CUT THE WIRING OR THE POWER PLUG. DOING SO WILL IMMIDEIATLY 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 impellor has to be checked by hand. If the impellor cannot be moved round by hand, the pump needs to be disassembled and cleaned completely. It is forbidden to disconnect the plug from the controller / 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 controller may exclusively be connected and operated on an ELBC protected wiring (30 mA rating) and into a grounding receptacle.
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 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®***.

Always disconnect the pump from the power supply before working on it.

Never use the device without water throughput. The pump will automatically start when the power connection is established, unless you press the “Stop” button. Then you can only start the pump by pressing the “Start” button. The pump will then automatically accelerate to the last chosen power setting.

4.1. Applications

The ***RD 3 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 0.8cm** 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 or pyrolosite 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 ***RD 3 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 befor it is set into operation.

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

5. 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 8 days 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.

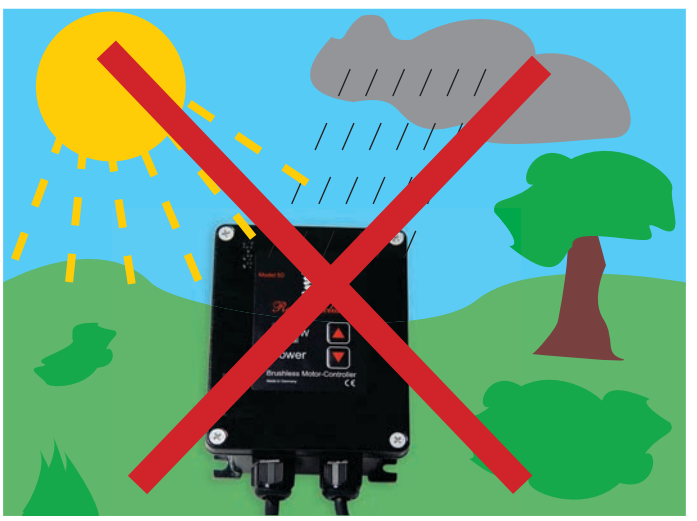
Prior to its packaging the pump is treated with a biodegradable disinfectant in order to neutralize possibly present bacteria. The pump therefore has to be purged with water thoroughly before usage.

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 not reach into opening of the pump with your hands or fingers, when the pump is connected to the power supply.

5.1. Controller

The controller may not be used outdoors. It is only approved for indoor usage. Furthermore the controller may not be opposed to direct sunlight or direct heat sources (powerful lamps, central heating etc.). Adequate air ventilation has to be assured. Therefore a minimal distance of 10cm to each side from the next cabinet/shelve has to be assured. An adequate air ventilation of the room has to be assured.



5.2. Pump general

The pump may be used in almost any position. However it hast so stand stable on a solid base. The inlet pipe is connected to the suction side of the pump **1**. It has to be assured that the pump can be de-aerated trough the outlet **2**.

The pump should ideally be placed beneath the water level **3**. 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.

For usage in polluted water the application of a prefilter is necessary. It is recommend to use a quick release (or 3 step release), so that the pump can be quickly disconnected in order to simplify cleaning and maintenance work on the pump.

The piping has to be installed in a way that possible mechanical tensions, which result from varying temperatures, do not affect the housing of the pump.

5.3. Inlet pipe

If no sufficient amount of water reaches the pump because the drag of the inlet pip 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 will lower the power. 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 Ø 3-5 x the diameter of the inlet pipes from the housing to the first bow). In this way the efficiency factor is maximized, because the water enters laminary at the impeller. *(see next page)*

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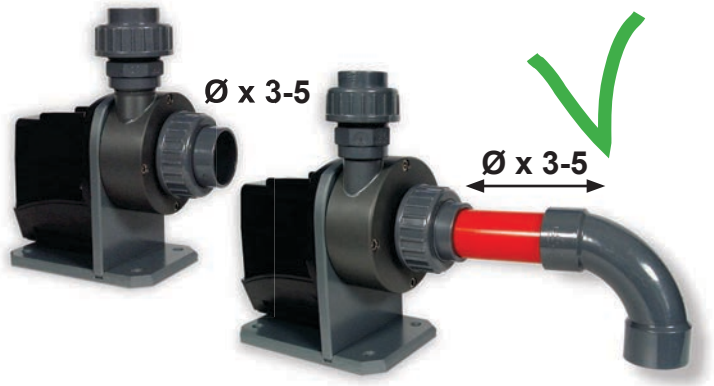
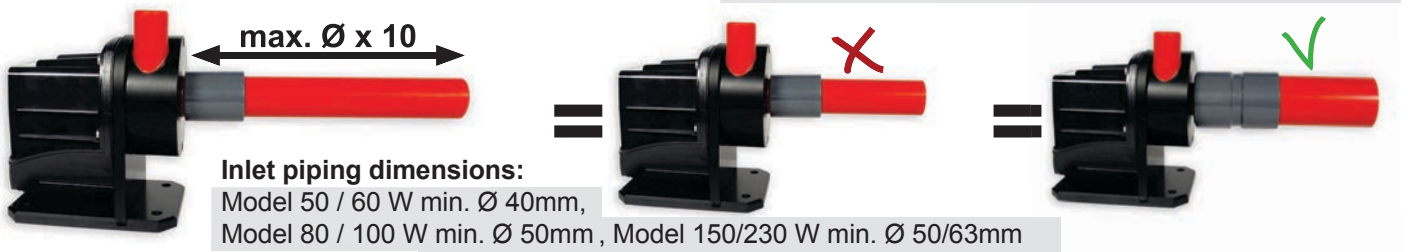


Always use bows instead of elbows

If the inlet piping is longer than >10 **Ø** or the suction head is higher than 1 m the inlet piping has to be 1 or 2 sizes larges than the intake of the pump.



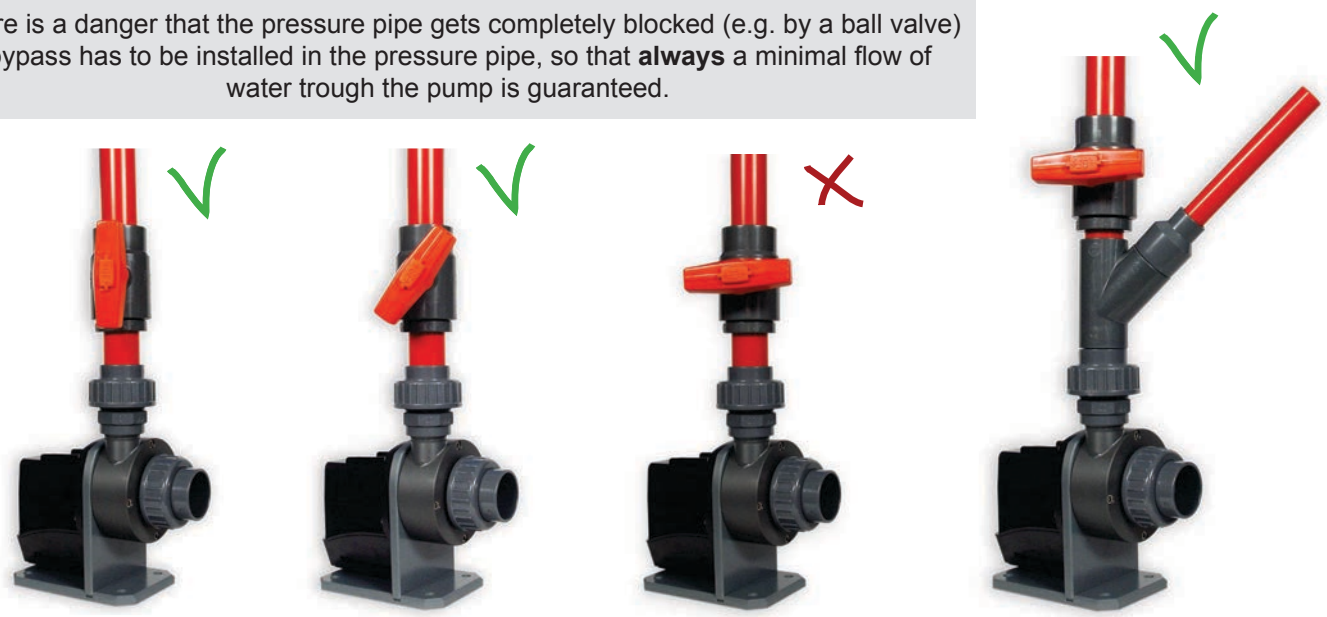
Inlet piping dimensions:
Model 50 / 60 W min. Ø 40mm,
Model 80 / 100 W min. Ø 50mm , Model 150/230 W min. Ø 50/63mm

5.4. Pressure pipe (pump outlet)

The pressure pipe 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 oulet, 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.

Outlet pipe dimensions:
Model 50/60 W, min. Ø 25 mm, Model 80/100 W min. Ø 32 mm, Model 150/230 W min. Ø 40/50 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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5.5. Electrical connection – setting-up operation

Check whether voltage and frequency on the type label of the pump match the supply voltage. The person 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 high then the fuse of the pump.

Fuse dimensions:	pump	lightning main
up to 100 Watt	min. 2 A	min. 4 A

5.6. Overload protection

The ***RD 3 Pumps*** have an electronic and electric overload protection. If the rotor gets blocked, the motor is switched off. Once the blockade is reversed, you can restart the pump. Additionally it will, should the situation arise, restart itself for up to 5 times. If the pump is still blocked after 5 attempts “Error” occurs in the display and the pump switches off permanently. Only disconnection and reconnection from and to the power supply can restart the pump. This assumes that the cause of the blockage was redeemed.

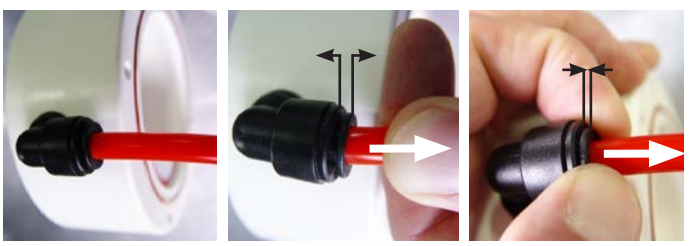
5.7. Turning the head of the RD3 MiniSpeedy, Speedy, Freshwater pumps with/without turnable bypass

The head of the ***RD3*** pump with or without bypass can be turned into three directions. The bypass is designed to be freely turn able and can be turned in any direction with the pump head. The bypass tube can be exchanged. Press the socket on the black elbow down a bit and the tube can be pulled out. *(like in the picture lower right shown)*

The ***RD3***, ***Freshwater*** and ***Speedy*** with ***80/100W*** have all four screws to the resolve of the pump head on the front. ***MiniSpeedy*** delivery pump and skimmer pump with ***50/60W***, as the ***Speedy*** with ***150/230W*** have three screws on the front and one on the back of the pump head.

There is an exception in the ***MiniSpeedy*** with ***60W***, here are only 3 screws that are screwed only from the back.

!! All pump heads are made of plastic, therefore the screws not too strong and only cross-tighten, please !!



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!! Titan is a very soft material, therefore please always use suitable tool work and on tilt pay attention, do not work with brute force. Coat the threads with some silicone oil !!

6. Operation of the RD3 pumps 50/60/80/100 Watt with controller

Important Notice:

The imprint on the buttons and LEDs may vary throughout the text, the functions however remain the same.

The display is in W (the actual measured effective power / energy meter consumption).

Note: when you press the button, the pump can be regulated.
After a loss of the electrical power supply the pump will restart in the last valid setting automatically.

Pressing the “UP-key” increases the revolution of the pump. Thus the flow rate and the energy consumption increase. Pressing the “DOWN-key” decreases the revolution of the pump.Thus the flow rate and the energy consumption decrease.
The revolution can be chosen in steps from 15-50 (60/80/100W). The pump runs always on the configured speed.

Notice: If could be, when you press the buttons on a skimmer-pump it is the % display active. After 2-3 seconds the display switches to the effective power mode.

All ***Red Dragon® 3*** pumps are similar in their construction, they consist always of a motor-block with an inner rotor and a pump head.

7. Maintenance and cleaning of the RD3 MiniSpeedy, Speedy, Freshwater pumps

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 impellor for obstruction. Remove obstacles from the impellor with a slim and spiky tool.

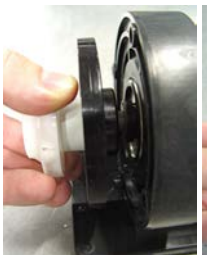
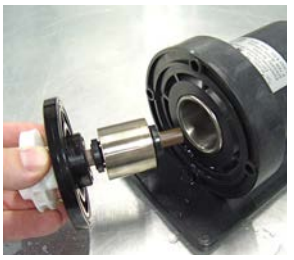
A decreasing supply rate is often the result of dirt. Possible calcinations (especially in saltwater applications) has to be removed with a very soft acid as for instance vinegar. Avoid applying pressure to the sides of the impellor or the rotor. The pump can be disassembled nearly completely for cleaning.

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.

To dismount the pumps head from the engine, unscrew the M5 hexagon socket titanium screws with a matching spanner. When this is done the whole pumps head can be removed. I necessary the impeller unit can be removed, by cautiously pulling on the rotor with. When you pull on the rotor, be very careful, as the impellor is held in its position by the magnet. If you release the rotor while trying to pull it out, the bearing can get a serious damage.

Use fitting hexagon key to loosen the 4 screws from the case.

Do not underestimate the power of the magnet.
If you slightly losse the grip and
the axis hits the rear bearing,
the risk to damage the bearing is very high.
A damage bearing causes high reparation costs.

Grab rotor and and cautiously pull out completely. Check parts for calcification.

After maintenance you can assemble the pump in reversed order. Please pay attention to first only loosely fix the in crossed over order and then fix them semi-solid (hand tight).
For the usage of a cordless screwdriver see the picture.
The O-seals of the pump are made from silicone or EPDM/ Viton, depending on the application.

Please use only fresh and original O-seals with the correct thickness and hardness as replacement. When O-seals are aging, the hardness slightly changes. When you re-assemble the pump, the O-seals should always be replaced by new ones. This will increase the lifespan of the pump. Silicone and EPDM / Viton O-seals are resistant against acids and bases.

7.1. Decalcification, cleaning and assembly of the RD3 MiniSpeedy, Speedy, Freshwater pumps

Decalcify the pump completely. Please do not use hydrochloric acid, not even in extenuated form. This may damage the pump beyond repair. Suitable substances are: formic acetic phosphoric acid or common deliming agents for water purification appliances like coffee makers. *(We recommend Royal Exclusiv Pumpenentkalker /// Calcium Cleaner)!* Insert several hours depending on the concentrate/dilution. The containment shell of the motor must also be delimed. After the decalcification purge the pump with clear water. Re-assemble the pump.

Very important: Tighten the screws loosely crossed over and the fix them semi-solidly (hand tight).



Attention:
The 80/100 Watt ***RD3*** has an additional axial floating bearing on the rear shaft. Remove this bearing in the case of calcification cautiously and decalcify seperatly. The bearing has to be installed on the axis before the pump is reassembled. The bearing needs to be fixated before assembly as seen on the third picture. The axial bearing is not compulsory and only serves to avoid radial run-outs while restarting the pump.

7.2. Power outages and emergency power supply

After a blackout the pump will start automatically and the controller will set up the last chosen speed.
The pump can used on a commercial emergency power supply or a commercial UPS, which is fitted with a rectifier package.

7.3. Meaning of the codes in the display

Er	=	Error has been occured
F1/F2	=	Init error start-communication
F3	=	Motor blockade
F4	=	Dry-Run-Error
F6	=	Over-Temperature motor-driver
F8	=	Air-Feeding error skimmer (only Skimmer pump P3)

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8. Error table

Error	Possible cause	Action
1) The pump does **not deliver water**, the **engine does not turn**. The **display is not lit**.	1) Insufficient voltage from the power supply 2) Plug not adjusted correctly 3) Connection pump/electronic faulty 4) ELCB has triggered 5) impeller blocked 6) pump electronic or engine defective 7) pump safety electronic switches the pump off	1-3) Check if the correct voltage is supplied and whether all plugs are adjusted correctly. 4) Switch on ELCB. I fit switches off again; something is possibly blocking the impeller. 5) Clean impeller from possible blockages. It is possible that you have to pull out the magnetic runner in order to perform the cleaning 6) Contact customer service 7) The engine reports an error. Check the inlet side and the pumpe housing for obstructions/blockages.
2) The pump does **not supply water**, the engine is turning.	1) The pump aspirates air 2) An air bubble is in the pump housing 3) The pump faces too much pressure on the outlet 4) The pump is not filled with water 5) The intake or the backpressure valve is blocked 6) The delivery height is too high	1-2) Retry for a couple of times or fill the pump intake with water. Remove the blockage or other 3) Resistance in the outlet (ball valves closed?) 4/5) Check 6) Contact customer service
3) The pump delivers irregularly a limited amount of water.	1) See error **2)** 2) Impeller worn out or damaged 3) electronics overheated 4) engine speed set to low	1) See error **2)** 2) Contact customer service 3) Insufficient air circulation at the housing, e.g. if it is fitted into a closet, it is exposed to direct sun light or the ambient temperature is too high. Inlet not OK. 4) Increase engine speed to max.
4) Irregular operation	1) solid parts/particles block the free turning of the rotor 2) voltage out of tolerance 3) damages on the magnetic rotor or on the engine 4) actual power exceeds 50/60/80/100/150/230 W.	1) Remove blocking particles 2) Supply voltage as indicated on the type label 3) Contact customer service 4) Reduce engine speed until the actual power reaches max. 50 / 60 / 80 / 100 / 230 W

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9. Technical data

Model	***RD3 Speedy* 80 Watt / 8.000 L/h**	***RD3 Speedy* 100 Watt / 9-12.000 L/h**
Voltage	110 / 230 Volt 50 / 60 Hz	110 / 230 Volt 50 / 60 Hz
Wattage (P1)	80 Watt	100 Watt
External controller	Yes	Yes
IP68	Yes	Yes
Length of wiring	3,0 m	3,0 m
Digital display	Yes	Yes
Pump fully submersible and dry	Yes / Yes	Yes / Yes
Inlet dimension	min. 50 mm (pipe)	min. 50 mm (pipe)
Outlet dimensions	min. 32 mm (pipe)	min. 32 / 40 mm (pipe)
Weight	4,5 kg	4,5 kg
Warranty	2 Years	2 Years
Revolution	Speed variable 300 – 3000 1/min	Speed variable 300 – 3000 1/min

Model	***RD3 Mini* 50/60 Watt / 5.000 L/h**	***RD3 Mini* 50/60 Watt BubbleKing®**
Voltage	110 / 230 Volt 50 / 60 Hz	110 / 230 Volt 50 / 60 Hz
Wattage (P1)	50 / 60 Watt	50 / 60 Watt
External controller	Yes	Yes
IP68	Yes	Yes
Length of wiring	3,0 m	3,0 m
Digital display	Yes	Yes
Pump fully submersible and dry	Yes / Yes	Yes / Yes
Inlet dimension	min. 40 mm (pipe)	reducing ring Ø 32 mm
Outlet dimensions	min. 25 mm (pipe)	Nozzle with ozone & air plug
Weight	4 kg	4 kg
Warranty	2 Years	2 Years
Revolution	Speed variable 300 – 3000 1/min	Speed variable 300 – 3000 1/min

Model	***RD3 Freshwater* 100 Watt / 9.000 L/h**	***RD3 Speedy* 150/230 Watt / 17-24.000 L/h**
Voltage	230 Volt 50 Hz	110 / 230 Volt 50 / 60 Hz
Wattage (P1)	100 Watt	150 / 230 Watt
External controller	No	Yes
IP68	Yes	Yes
Length of wiring	3,0 m	3,0 m or 10 m (optional)
Digital display	No	Yes
Pump fully submersible and dry	Yes / Yes	Yes / Yes
Inlet dimension	min. 50 mm (pipe)	min. 50/63 mm (pipe)
Outlet dimensions	min. 32 mm (pipe)	min. 40/50 mm (pipe)
Weight	4,1 kg	4,7 kg
Warranty	2 Years	2 Years
Revolution	Non adjustable 3000 1/min	Speed variable 300 – 3000 1/min

For further details see type label.
Noise level: The noise level is beneath the levels of the benchmark of the machine directive of the European Council, partly below 32dB (measured in an outdoor setting, 1 meter).

And now we wish you much pleasure with your ***Red Dragon® 3*** pump.
A regular maintenance guarantees a long running and thus life.

Royal Exclusiv®