

## **INSTALLATION AND USER'S GUIDE**

### **FLOWFRIEND® - JUNIOR**

# **FLOW FRIEND JUNIOR**



**FLOWFRIEND IS A MANUFACTURED BY AND A REGISTERED  
TRADEMARK OF STILOH**

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**NEVER USE THE DEVICE  
! WITHOUT WATER THROUGHPUT !**

## **1. Foreword**

Thank you for purchasing a FlowFriend pump. This pump is a high quality product with the highest manufacturing demands.

This manual is intended to help you set up the pump for use and provide advice on the required maintenance procedures. This guide aims to provide you with correct and complete information.

To ensure long-lasting satisfaction with this product, please read this manual carefully and follow our guidelines.

**PLEASE KEEP THIS USER GUIDE IN A SAFE PLACE!  
WHEN CHANGING OWNERSHIP, PASS ON  
THE COMPLETE USER GUIDE!**

If you are uncertain about the contents of this guide or do not fully understand the assembly instructions and/or anything regarding this product, please contact the shop where the product was purchased.

This manual is intended to inform you correctly and comprehensively, i.e. also over potential risks caused by the pump. The user, fitter and maintenance technician is responsible for checking compliance with the procedures and advice in this manual. This pump is built using state-of-the art technology and to ensure compliance with existing safety regulations. Nevertheless this device may cause risks for individuals and for property if it is used improperly or not according to its designated use or if safety advice is ignored.

If the pump is used improperly, the liability of the manufacturer and the operating permit are void. For safety reasons, children and juveniles under the age of 16 and people who do not recognise the possible risks or who are not familiar with this manual may not use the device.

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

The General Terms and Conditions of Air-Aqua apply to all products.

## **2. Defects and claims for compensation, disclaimer**

### **2.1 Defects and claims for compensation**

Except in the case of a further claim, we are only liable for defects to the delivered goods until the

risk has been transferred to the purchaser. Minor deviations between the appearance and workmanship of the product delivered and the specifications in the contract or minor limitations of usability will be deemed insignificant.

The warranted condition, endurance and usability of the product are solely subject to the specifications agreed in writing, in the product specification and/or in this guide. Further verbal agreements, especially from preliminary talks, advertising and/or in related industrial standards, are only valid as an integral part of a written contract. Only conditions and specifications specifically laid down by us are valid. We do not accept conditions or specifications laid down by third parties. The specifications laid down in this guide are valid. If the customer wishes to use the product for a purpose other than the intended purpose, he or she is obliged to thoroughly explore the suitability of the product for this other purpose. We give no warranty and accept no liability for any use other than that explicitly approved by us in writing.

Any changes made to the product will result in the loss of warranty and all claims and rights will lapse.

The user is held responsible for the proper use of the pump. The user guide does not discharge you from your liability for the proper and safe application, installation, operation and maintenance of the pump.

On using this guide, you agree that in no circumstances can or will the manufacturer be held liable for any personal injuries or damage to property that might result from using the device. This applies specifically to any damage caused by improper piping or plumbing. Damage due to failure to regularly clean or maintain the pump is not covered by the warranty.

This applies especially to calcinations and accumulated foreign particles such as sand or gravel, which can damage rotors, bearings, rotor housing or motor housing that are not covered by warranty.

### **2.2**

Our warranty for defects is strictly limited to supplementary performance. We will eliminate any defects or deliver substitute goods at our discretion. Where supplementary performance fails or is disputed or impossible, the customer has the right to withdraw from the contract. Air-Aqua and the manufacturer explicitly limit the warranty to the pump itself. We are not liable for any consequential damage or damage caused by a malfunction or failure of the pump, such as loss of animals.

The customer is responsible for providing back-up devices in the case of a potential malfunction or failure of the pump.

### **2.3**

The customer is required to conduct a detailed inspection of the goods immediately after delivery.

Any defects should be reported immediately in writing. Hidden defects should be reported immediately after their discovery. The customer should report any damage caused during transport within 24 hours to the carrier and/or the delivery service. If the customer fails to meet the requirement to inspect the goods and report any defects or damage, this will result in the loss of warranty.

#### **2.4**

We accept no liability for the improper application, use, maintenance or handling of the product by the customer or its subsidiaries, or for normal wear and tear. This applies specifically to the consequences of thermal, chemical, electrochemical or electrical influences as well as for infringements of our use and maintenance guides. The same applies to damage resulting from changes or adjustments made by the customer, which have not been approved by us beforehand.

#### **2.5**

In principle, the customer is responsible for damage directly attributed to the improper use of the product. If the customer returns the product, break-proof packaging should be used. The customer is liable for any damage that can be attributed to inappropriate packaging.

#### **2.6**

Claims against us expire within a year after the initial delivery of the goods to the customer. The same applies to damage claims, regardless of their legal cause. The limitation period does not apply to claims based on the malicious concealment of damage, injury to life, body or health or any other damage resulting from intent or wanton negligence.

#### **2.7**

If it becomes apparent during our examination of damage reported by the customer or in the course of repairing defects that the reported damage or claims were made wantonly or were unwarranted, we may charge for inspecting and repairing defects. The customer has the right to reject a necessary repair and to demand the return of the pump. In general, every inspection of damage is bound to lump sum compensation if it appears that the customer is responsible for the damage.

#### **2.8 Spare parts**

Our liability to deliver and stock spare parts is limited to the period of 5 years after initial shipment of the product. Our respective list prices apply to spare parts ([www.air-aqua.com](http://www.air-aqua.com)).

#### **2.9 Subject to alterations**

The manufacturer is entitled to change the product at any time without prior notice being required, as long as these changes improve the reliability or quality of the product. No claims can be made if, for example, the design, functionality or performance of the pump fundamentally changes. The confirmed pump

specifications are always guaranteed.

### **3. General**

#### **3.1 Pump and drive description**

The synchronously driven, highly efficient, stainless steel pump FlowFriend® consists of a permanent magnet motor, a complete electronic drive with an integrated power module. All drives comply with the EN standards 61000-3-2 the EN 61000-2 and 61000-3 corresponding to the limit value class B according to EN 55011 for single and three phase devices. The FlowFriend® pump is especially designed and manufactured for high flow and medium head water systems.

#### **3.2 Warning Notes**

Only appropriately trained personnel may commission and maintain Synchronous Compact Drives. These personnel must be familiar with international accident prevention regulations. Connection and setup must be carried out in compliance with the electricity regulations.

#### **3.3 Symbols used**

See page 5

### **4. Use of the pump**

Only use the device when no body parts are in contact with 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 damage.

**THE WIRING OR THE POWER PLUG MUST NOT BE CUT. DOING SO WILL IMMEDIATELY INVALIDATE 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 or use the wiring to carry the device! If the wiring is damaged or broken, the device may no longer be used! Take care that the power plug never falls into water or gets wet. If the plug gets wet, it must be opened by a professional and cleaned by purging with demineralised water. Protect the plug and the wiring from heat, oil, UV light and sharp corners. The manufacturer is not liable in any way for any damage caused by improper installation or by the carelessness of the user or installer.

**WARNING – ELECTRICAL HAZARD!  
DANGER OF DEATH!**

Electrical shocks can cause death or serious physical injury to personnel as well as pose a risk to equipment. Ensure that no unauthorised persons are able to gain access to or come into contact with the drive. Disconnect the device from the power supply before opening the drive. Due to DC link capacitors, hazardous high voltage may remain for up to 3 minutes after disconnecting from the power supply. Never operate the device when the mains is not properly connected to earth.



**CAUTION! ROTATING PARTS!  
AUTOMATIC RESTART!**

Please take every precaution to ensure that all rotating parts, including the internal fan, are safe from contact while the motor is running. Operating the device with automatic restart can be a source of danger to operating personnel. After power failure, the motor will only start automatically if it was running when the power failure occurred.



**WARNING! HOT SURFACES! RISK  
OF INJURY! RISK OF FIRE!**

Heated surfaces can cause serious physical injury to personnel or ignite material in the near vicinity.



**CAUTION!**

Before connecting the device, make sure there is no damage. Check the power cable mains plug carefully before connecting.



After plugging in the power cable for the first time, the motor is waiting for input of the desired speed. Please note, the motor will set and store the start up speed automatically after 4 seconds of manually setting the speed.



In general, when put out of service, the pump must be cleaned extremely thoroughly. The pump must be stored in a dry, warm place to prevent condensation/ moisture getting into the electronics which could cause damage when used again. Before it is put into operation, the ease-of-movement of the impeller must be manually checked. If the impeller cannot be moved round by hand, the pump must be disassembled and cleaned completely. The plug may not be disconnected from the pump whilst the device is in use. This can result in serious damage to the electronic components and cause dangerous situations due to grounding problems. Before unplugging, turn the pump with the buttons on the drive down to 0 rpm.

The wiring may not be modified or replaced. Electrical installations on garden ponds must always comply with 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 of the device. Only use original spare parts and accessories. Only allow authorised customer service facilities to conduct repairs. Never use the pump with any other liquids than water.

## 5. Fields of application

The FlowFriend pump is suitable for freshwater, brackish water and for pumping other non-aggressive, non-explosive liquids that do not contain oil. It can pump 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 10 mm in size. In general the pump should be used for applications with clean water. Clean water in this case is defined as water not containing solid particles, which could damage the impeller/bearings and/carbon ring/pump housing. Examples of particles or pollutants which are not suitable are sand, lime precipitation or pyrolusite after a manganese peroxide treatment in a pond. Damage caused by such pollutants in the water does not fall under warranty or service.

FlowFriend pumps are most commonly used in filtration systems (aquariums, ponds or swimming pools), industrial circulating systems and/or to supply a beck/ creek or waterfall. The pump is not self-priming and may not therefore be used above the water surface.

Temperature of the liquid: +2 to +40 °C.  
Environment temperature: 0 °C to +50 °C  
Max. static pressure: 0.55 bar  
Protection class pump: IP67  
Protection class drive: IP66



## 6. Installation/Fitting

### CAUTION:

Before you install the pump, read the manual carefully. Damage caused because the manual was not read thoroughly does not fall under warranty.

When unpacking the pump, check whether all parts have been delivered completely and undamaged. Any damage detected must be reported to your retailer within 24 hours of purchasing the pump. Please check the pump for damage before you operate it. Do not use the pump if it is damaged. Please inform your retailer immediately if the pump is used despite being damaged. Any warranty and liability will then be invalid.

Remove the plug from the electric 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 injury, take care not to reach into the opening of the pump with your hands or fingers when the pump is connected to the power supply.

### 6.1 Montage/plaatsing besturingselectronica

- the drive must be mounted vertically, on a suitable flat surface;
- before mounting the drive, ensure that the chosen location meets the environmental condition requirements for IP66
- do not place any flammable material near the drive;
- the minimum mounting clearances of 50mm must be observed;
- the mounting site and chosen mountings should be sufficient to support the weight of the drive;
- make sure that the ambient temperature is between -10 and 40 °C;
- the ambient temperature and the temperature of the controller itself are crucial for the life of the drive; therefore always provide the best possible cooling.

## 7. Operating the pump

**NEVER USE THE DEVICE WITHOUT WATER THROUGHPUT.**



**THE PUMP CAN AUTOMATICALLY START WHEN THE POWER CONNECTION IS ESTABLISHED.**

### 7.1 Siting the pump

The pump may only be used in a horizontal position. It must stand on a stable, solid base. The inlet pipe is connected to the suction side of the pump.

It must be assured that the pump can be de-aerated through the outlet. The pump should ideally be placed below water level.

The pump can be only placed out of the water (dry). Adequate air ventilation must be assured. Furthermore the pump may not be exposed to direct sunlight. Place the pump as close as possible to the actual water connection. The inlet piping must therefore be as short as possible.

We strongly recommend placing the pump below water level. If the pump is placed above water level, the installation of a back pressure valve is mandatory. In this case, the inlet piping of the pump must be filled with water before the pump is operated. In such a setup, the risk of the pump running dry is very high, if the back pressure valve does not work properly. Damage caused by the pump running dry is excluded from warranty.

The FlowFriend has a protection class IP67. IP67 water protection means that the pump can be mounted outside unprotected from rain. The pump may be under water for a maximum of 2 hours at a depth of 1.5 meters.

The control box has a protection class IP66. Remember that electronics and water are enemies. Providing good protection from rain if mounted outside is still strongly recommended.

Siting is preferably at a minimum of 10 cm above ground level. This will prevent the pump being 'drowned' if a connection becomes loose and water spills on the floor.



Be careful: the surface of the pump can be very hot (up to 75 °C). Do not touch it directly before checking the surface temperature. For the pump itself, this temperature is normal and no problem. Always ensure good ventilation around the pump.

### 7.2 Inlet pipe (intake side)

If a sufficient amount of water does not reach the pump because the drag of the inlet pipe is too strong, the pump will use a lot of power and the electronics might become overheated in the long run.

Any coupling must be 100% air-proof. If a tube is used as inlet, this must 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). This maximises the efficiency factor because the water enters more laminary at the impeller.

If the inlet piping is longer than max. Ø x 10, the inlet piping must be 1 size larger than the intake of the pump.

### **7.3 Pressure pipe (Pump outlet/pressure side)**

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

The best thing is if you enlarge the pressure pipe directly after the pump outlet if the outlet piping exceeds 10 meter, in order to maximize the pump capacity and to safe energy.

Reducing of the diameter of the pump outlet is at the FlowFriend pump to avoid.

### **7.4 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 must check whether standard grounding is available.

It must be checked whether the electrical installation has a highly sensitive earth leakage circuit breaker (ELCB/GFCI) (30mA – DIN VDE 0100T739).

## **8. Maintenance and cleaning**

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

FlowFriend pumps are generally low maintenance. All in all, FlowFriend pumps only need to be inspected for calcification and deposits in the stator space and the impeller at regular intervals and cleaned or decalcified if required.

Remove obstacles from the impeller with a slender, pointed tool. A decreasing supply rate is often the result of dirt. Possible calcinations must be removed with a very soft acid like vinegar. Avoid applying pressure to the sides of the impeller or the rotor. The pump head can be disassembled completely for cleaning.

### **8.1 Disassembling/changing the pump housing**

We recommend checking the FlowFriend pump after three months to determine the possible maintenance intervals. Depending on precipitation, this may be between 2 and 24 months.

Make sure that the speed of the pump is '0' - Standby. Unplug or disconnect the power plug and gently remove the pump from the system. Remove the 8 bolts on the back of the pump housing. Then gently remove the pump housing itself. Check the impeller for snail shells, mussels, active carbon pellets, filter cotton or residual

food. In the case of larger accumulations, please clean the impeller. For complete step-by-step dismounting of the hydraulic parts, see the pictures in Section 12.

Calcification is generally a problem when the ponds are topped up with tap water at an initial water hardness of over 10 dh. When initially/refilling ponds with tap water with a high lime content, sudden lime precipitation may occur within 2-3 days.

The following maintenance instructions describe the disassembly of a FlowFriend pump step by step. Please observe the maintenance instructions precisely. Pump damage caused by blockages or forceful disassembly is not covered by warranty services.

### **8.2 Decalcification and cleaning of the impeller**

Please decalcify the impeller using appropriated calcification baths.

Never use hydrochloric acid, not even if diluted! This may damage the pump. Suitable media are: formic acetic phosphoric acid or common decalcifying agents for water purification appliances such as coffee makers. Coarse, greasy plaques must be removed under ordinary tap water prior to decalcifying using a medium-coarse brush.

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

Regular maintenance guarantees a long running time and service life.

## **9. Electronic Drive**

The FlowFriend is equipped with a separate drive with digital display and a keypad.



### 9.1 Run/Stop button

The start button (green) and the stop button (red) have no function. This means that, following a power failure, the pump will always revert to the set RPM.



When the drive is linked to the mains power, the drive will test the pump by setting this to 499 RPM and then back to 0.

If the pump is set to a certain RPM and the plug is removed from the power socket, the same RPM will be set when the plug is reinserted in the power socket.

### 9.2 Buttons with arrows (up and down)

These buttons should be used to change the RPM. As soon as one of the buttons is pressed, the RPM (amount of water) can be set. The value can be increased or reduced in single increments and from a minimum 500 to a maximum 3000 revs/minute. If a button is held down, the value changes more quickly. If the value is set below 500 RPM, the pump will be disabled (it will remain briefly on 499 RPM and will then switch to Standby). To take the pump out of Standby mode, press and hold the 'up' arrow when it reaches 499 RPM until the display indicates at least 500 RPM, otherwise the pump will return to Standby mode.



### 9.3 Displaying current consumption

In normal mode, the display shows the current RPM. When pressing the navigation button repeatedly, the following will be displayed successively:

Revs in RPM

A - not relevant

P - power in KW

U - not relevant

### 9.4 External control of the pump

The connection for external control of the pump may only be installed by an electrical engineer. Any damage to the control cabinet or pump as a result of incorrect connection is not covered by the warranty.

## 11. Technical Information

Power: 20-385 Watt

Voltage: 200-240 VAC

Max. current: 1.8 A

Frequency: 48-62 Hz

Isolation class: F

Protection class motor: IP67

Protection class drive: IP66

Max. rpm: 3000

Capacity: 2-40 m<sup>3</sup>/hr

Pump head: 0-5.5 m

Mechanical Seal: Eagle Burgmann AQ1VGG

Connection Suction: G 2½" x 20 mm - Outer thread

Connection Pressure: G 2½" x 20 mm - Outer thread

Noise: max 42 dB

Material motor: Aluminium

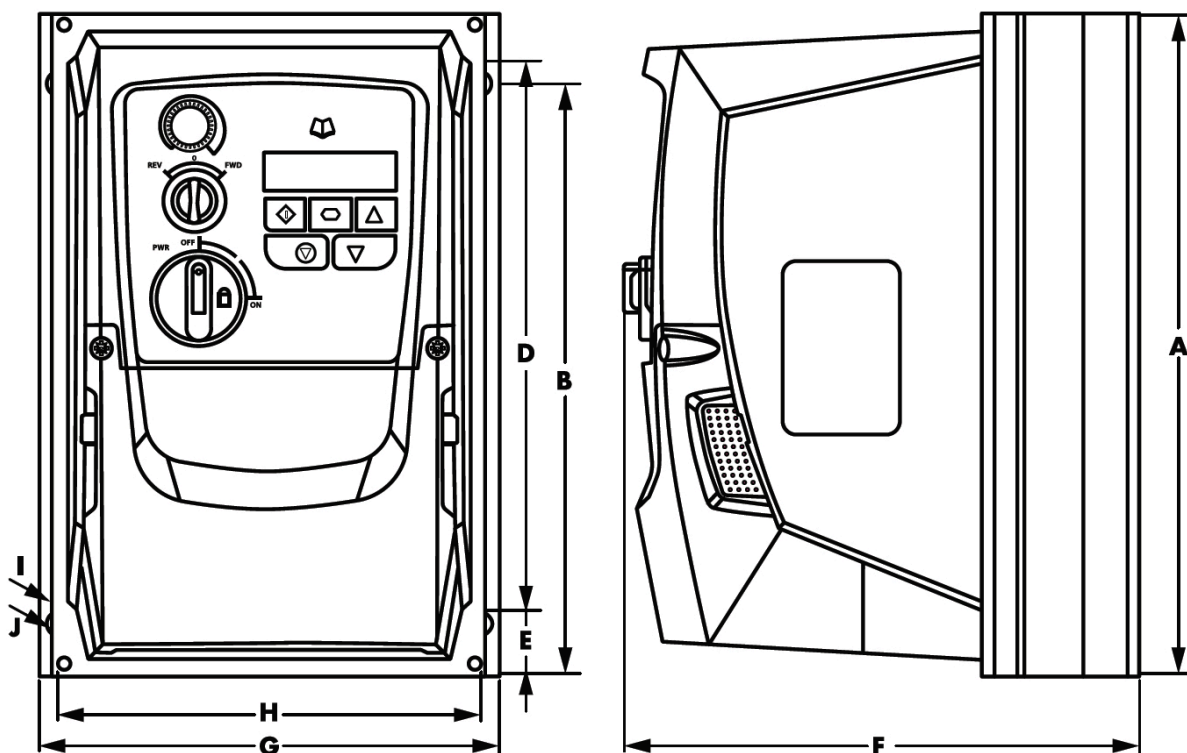
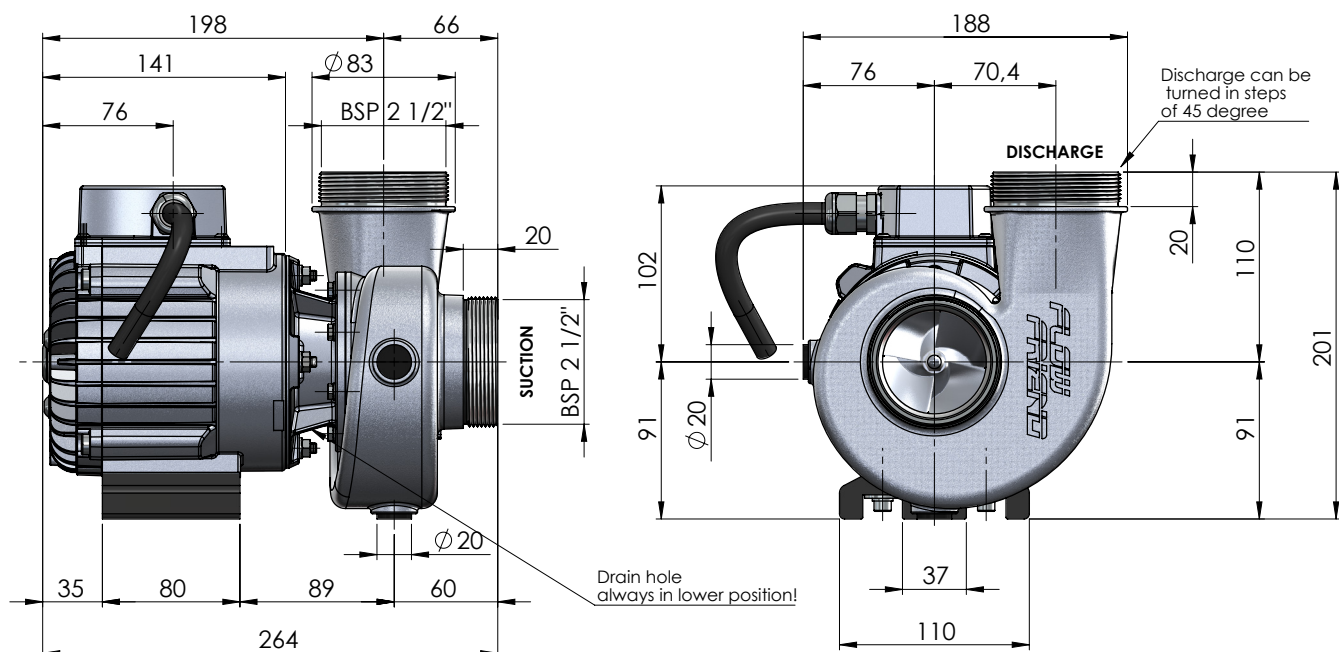
Material wet parts: SS AISI 316 - CF8M

IE Class motor: IE6

Eff. motor: >94% @ 100% load

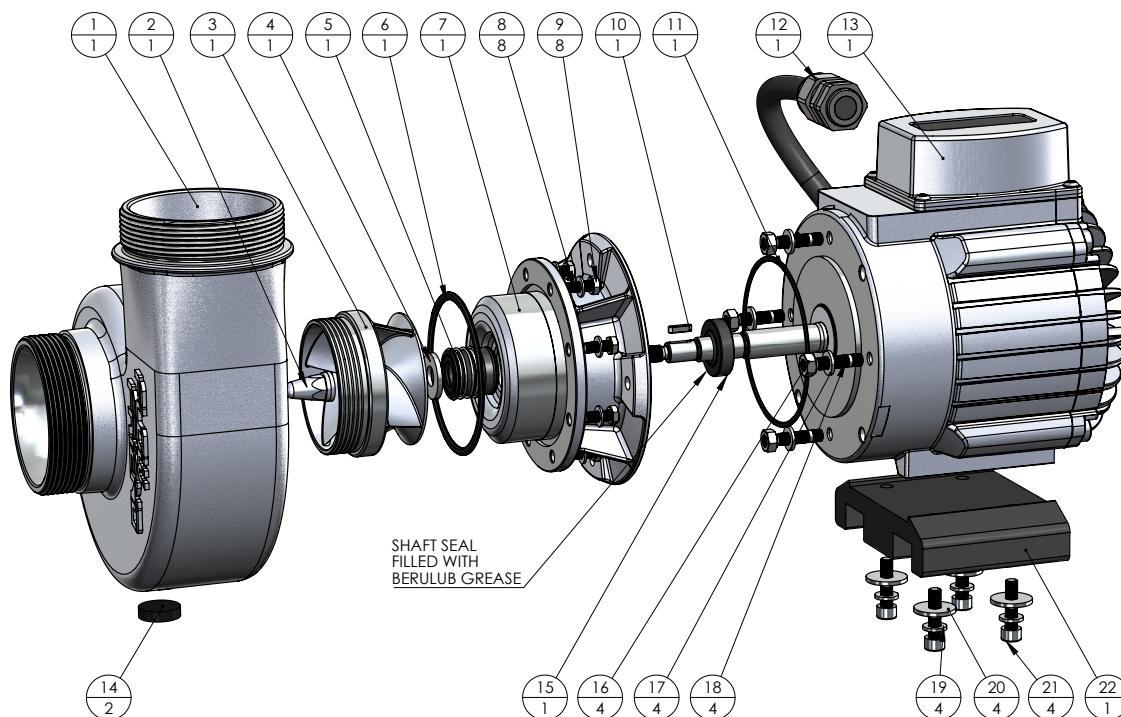


## 12. Dimensions

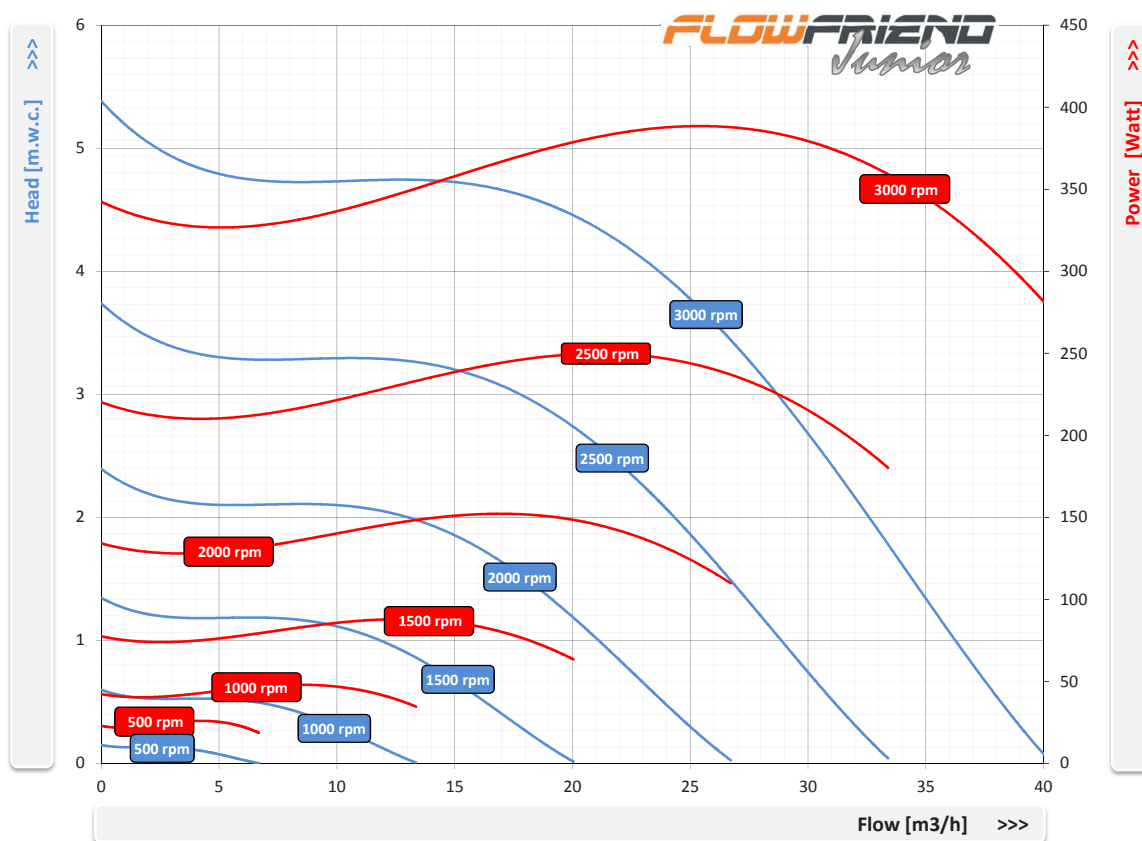


Drive Size	A		B		D		E		F		G		H		I		J		Weight	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	kg	lb
1	232.0	9.13	207.0	8.15	189.0	7.44	25.0	0.98	179.0	7.05	161.0	6.34	148.5	5.85	4.0	0.16	8.0	0.31	3.1	6.8

### 13. Exploded View/Parts List



### 14. Pump Performance Curves



## **15. Distributor's declaration**

Titles against Air-Aqua BV concerning the products described in this manual address the Air-Aqua BV guarantee clauses and general terms and conditions. Specifications may vary due technical improvements.

If the device fails to meet the high demands you expect from Air-Aqua BV, please contact the dealer from whom you purchased your FlowFriend pump. This is usually the best way for product support. However you may feel free to contact us.

If you have any questions or problems, consult an electrician, your dealer or Air-Aqua BV.

### **15.1 Distributor**

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