Operating Manual

A400 IPU

venotec GmbH

Am Nordkreuz 36
26180 Rastede
Deutschland

www.venotec.de

Any claims against *venotec* in relation to the products described in this manual shall be handled exclusively as per the guarantee conditions of the manufacturer. The product specifications may deviate from the information in this manual due to technical improvements and innovations.

Valid as of: 28.05.2020

Table of contents	**Page**

Preface

Thank you for buying an *Abyzz* pump! By buying this powerful product, you have acquired a highly efficient, fully variable pump that was developed and manufactured in Germany to meet the most stringent quality and performance requirements. This manual aims to help you to start using the product and to make the required settings.

In order to reap the benefits of this product for as long as possible, please read this manual carefully and observe our recommendations.

Should the quality of the product not meet your expectations, please contact the dealer who sold you the pump or contact us directly. We recommend that you use the provided form to register your product with us so that we can provide you with the best possible service. Please make sure that the **serial number** on your product remains legible and be ready to provide us with this number if asked.

Legend

This symbol indicates particularly important information.

Scope of delivery

1 *Abyzz A400* pump with 3m or 10m cable
1 *Abyzz A400* driver incl. mounted power cord (1.5m)
1 Registration form

Functional Description

The heart of the Abyzz pumps is a sinusoidal three-phase synchronous motor. The efficiency of the engine is over 90%, making it one of the most efficient engines. The integrated bearing rinse offers optimum protection against calcification and ensures low-maintenance operation.

The processed materials are designed for a long service life and meet the highest requirements and quality standards. The products were developed and manufactured in Germany. That's our understanding of:

„Made in Germany“

The electronic control offers optimal operating characteristics. These include in particular:

- Variable speed range (0.0 - 100.0%)
- Precise speed adjustment in steps of 0.1%
- Integrated programming to generate waves, bursts and random flow patterns, with additional *BOOST*MODE to override actual programming (MCFS - Menu Controlled Flow Sequencer)
- Comprehensive safety functions, such as dry run warning, temperature alert, overcurrent protection, speed zero alert)
- Soft startup
- Auxiliary port for peripheral devices (e.g. interfacing to external controllers)
- High quality lockable IP65 motor cable connector
- Low-noise operation
- Pump cable 3 or 10 meters (extension with Abyzz Range Extender possible)
- Display color changeable
- Splash water protected driver (IP65)
- Wide range input with active power factor correction
- Optimized heat sink design
- Child-proof lock of operations controls
- High durability
- Low thermal power loss (extra low heat transfer into the water)

Warnings

- Always disconnect the mains plug before working on the pump!
- Attention high voltage: An opening of the electronics (Abyzz driver) is prohibited and only to be carried out by the manufacturer!
- Never disconnect the motor supply line from the driver during operation!
- Only connect clearly associated parts with each other!
- Keep the leads, connectors and drivers dry and protect the components from damage.
- Do not work with wet hands on the wiring or on the driver.
- Operate the product only when there are no persons in the water or persons in contact with the water.
- Inspect the product for possible damage and never use a visibly damaged product.
- Only connect Abyzz devices to suitable, standard-compliant sockets with earthing contact, which are protected by a residual current device (RCCB).

Intended use and general instructions

The product is suitable for pumping liquids (sea water, fresh water, brackish water, chlorinated water and other non-aggressive liquids) at a temperature of + 2 ° C to + 40 ° C. A list of the parts in contact with the medium to be pumped can be found in the appendix, for non o.a. Media please ensure the compatibility with the specified components before use.

The product can deliver both clear and polluted water up to a particle size of 1mm. When used in dirty water, regular cleaning and the use of a pre-filter to protect the pump are required. Especially the internal flushing channel has to be cleaned. Abrasive ingredients increase wear - damage resulting from this is excluded from the warranty.

The pump is not self-priming and must therefore always be mounted below the water level.

Please always observe the generally applicable national and international regulations during installation.

The maximum working pressure must not exceed 2.5 bar.

Prior to storage, the product must be thoroughly cleaned with fresh water and suitable cleaning agents (such as Abyzz Pump Cleaner), otherwise residues may accumulate in the pump.

When using, please make sure that the intake duct is adequately protected, otherwise animals or objects will get into the pump to avoid damage.

When laying piping, make sure there is sufficient compensation for temperature fluctuations in the pipe sections.

Use sufficient pipe diameter, we recommend minimum diameter of 50mm at the suction and 40mm at the pressure side.

The product has a dry run warning. If the pump is dry running **over 50%** of speed the controller gives an alarm. The pump has to be switched off immediately to make sure no permanent damage is done. The user is responsible for the pump not running dry.

Installation of driver

Mounting:

The product must not be installed outside. The mounting wall must be dry and protected from splashes of water and damp. A suitable power outlet should be available at an appropriate distance. Please keep a distance from ceilings of at least 20cm.

Wiring:

When laying the wires, make sure that no drips of water can reach the electronics via the wires.

Please note that due to the driver switch-on current, you must not switch on multiple drivers on the same fuse at the same time. Do not use multi-socket strips and do not exceed the permitted connected load of your supply line under any circumstances.

Ambient temperature and cooling:

The product can be used at ambient temperatures of 2 ° C to + 40 ° C. Depending on the required performance, the temperature protection of the driver may give a warning, in which case better cooling is to be ensured. The driver automatically reduces power as the temperature continues to rise. Overheating will cause the driver to switch off.

To ensure sufficient cooling, the driver should be **at least 20 cm** away from any other objects (walls, ceilings, cable ducts, pipes etc.). The cooling element must not be covered. We recommend that you do not expose the driver to any additional heat source (heating system, lighting, sunlight) and ensure sufficient ventilation if using it in cupboards or on racks.

Electrical connection:

The Abyzz driver requires a voltage of 100 ... 240V / 50 ... 60Hz.

The connection must be made to a suitable, properly installed earthed socket, which is protected by a circuit breaker in accordance with DIN VDE 0100T739 (residual current circuit breaker). We recommend that you do not connect more than one controller to a supply line (16A fuse).

The driver has a fuse for fire protection inside. This is to be exchanged exclusively by the service. Inside the device are no user-servicable elements.

Installation of pump

The Abyzz pump can be operated submerged to a depth of 2 meters or in a dry position.

The mounting position has to be horizontally as a standard.
For all other possible mounting positions the user is responsible for the safe operation of the pump. It has to be made sure, that the pump is always filled with the medium completely. Abyzz cannot be held responsible for damages to the pump, which result from inappropriate mounting other than the recommended standard.

Make sure there is a free, unobstructed water supply at the connection line of the suction side and protect the inlet with a suitable sieve to keep coarse particles (sand, threads from filter wadding or similar) away from the impeller. When piping you should make sure to install at least 50cm of straight piping on the suction side, so that the water can flow in straight. These measures optimize the efficiency and ensure a clear noise reduction. For the highest possible efficiency, please use sufficient pipe diameters for larger pipe systems (Recommended: suction side 50mm (2"), pressure side 40mm (1 1/4“)).

When using adhesive fittings, be sure to use an adhesive suitable for the material (PVC).

Installation outside a sump:

Look for a suitable place where only a few power losses occur due to angles or bends and cable routing. If possible, always use bends instead of angles and connect the pump as far as possible without mechanical stress in order to avoid vibrations on connection lines, which could lead to leaks in the course of time due to screw connections or adhesions.
With these measures you have made optimal arrangements for a trouble-free and quiet operation.

Installation inside a sump:

Place the pump in the filter sump and connect it to your piping system as mechanically as possible without tension to avoid noise and vibration.

Commissioning

After proper installation, the Abyzz pump can be put into operation. To do this, connect the motor connection cable to the driver. The plug is coded and can only be connected in one position. The plug used meets the highest requirements for tightness and safety. Screw the plug to ensure these characteristics. Connect the Abyzz power cable to the grounded receptacle.

The LED is flashing. You can start and stop the pump in any mode (except external controls) by pressing the Start / Stop button.

If the pump suddenly runs dry with more than one-third of your power, a dry-running warning is activated. This switches off the pump and reports an error ("DRYRUN!" And acoustic signal). After a few seconds, the pump starts up again automatically and, once the dry run has been completed, resumes operation. Several start attempts are started. If the dry run persists, the pump stops for self-protection and must be restarted manually.

Run in phase

Despite very high precision, minimal manufacturing tolerances can not be avoided in the manufacture of the bearings. This condition may generate noise during the start-up phase of the pump. However, this is normal and does not pose a long-term problem. During post-fabrication testing, all pumps are tested for performance, concentricity and noise. The start-up phase can take a few days, depending on the operating mode. The following figure clearly shows the difference between a brand new bearing (left) and a bearing after the break-in phase (right). After the break-in phase, these operating noises will almost disappear.

Description of control elements

Display:

The display informs you about the operating status of the pump. The display goes into a sleep mode after 3 minutes for maximum life and lowest power consumption. Pressing a button turns the display on again. The overview changes every 2 seconds as follows and displays the operating data such as energy use, mode of operation, speed setting etc.

Die Anzeige der ersten Zeile ändert sich von „Stopped“ zu „Running“, wenn Sie die Drehzahl erhöhen und die Pumpe einschalten:

LED:

The LED indicates a correct function via a flashing signal.

Keyboard:

The keyboard allows direct operation and in the menu the programming of the pump.

In the operating mode "Permanent" (delivery state) you can start or stop the motor with the "Start / Stop" button and change the speed with the "up" and "down" buttons. If you want to store the new speed permanently, press the "M" key and the last value set will be retained. The "Start / Stop" setting is automatically saved, so that the pump automatically returns to its original operating mode after a loss of operating voltage. If you want to enter the menu to display operating data or to program the pump, press the "M" key.

You get to the menu and the current operating mode is displayed. Press the "up" and "down" keys to navigate in the menu. The current software status, operating hours and operating mode are displayed consecutively.

The contrast of the display can be adjusted in the corresponding overview by holding down the "Start / Stop" button and pressing the "up" or "down" buttons.

If you would like to change the operating mode, press the "Start / Stop" key when the operating mode is displayed. You can now set the operating mode with the "up" and "down" keys. The different operating modes are:

- Permanent: The pump runs permanently at a fixed speed.

- Wave: The pump changes in adjustable times between two fixed speeds.

- Random: The pump changes the speed within an adjustable time within a set minimum and maximum value

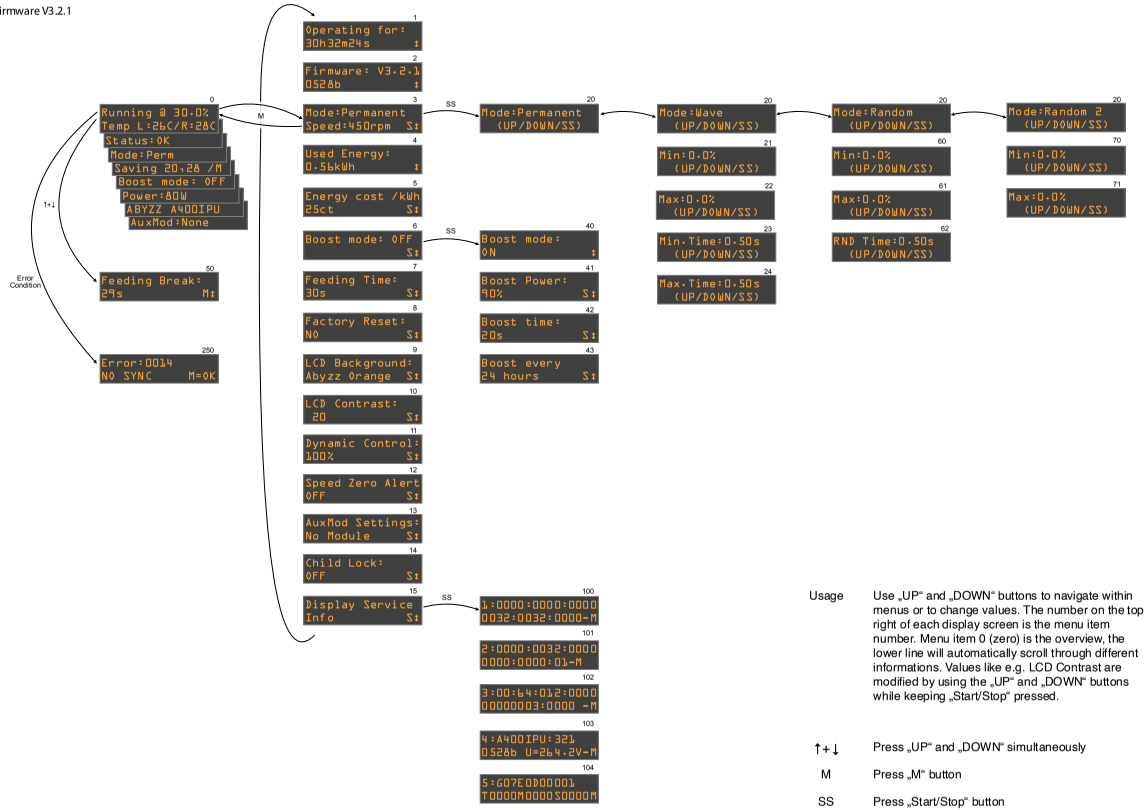
- Random 2: Same as Random mode, but also the time between changes is chosen randomly.

- BOOST MODE: When the BOOST MODE is activated, the pump generates a separate interval regardless of the programmed operating state, e.g. to stir up dirt.

If you have selected the operating mode, press "Start / Stop". You will then be asked to enter the corresponding data (minimum and maximum power, time interval). Finally confirm each setting with "Start / Stop". Finally, the settings are saved automatically and you get back to the overview.

Abyzz IPU Driver Programming Reference Guide

Firmware V3.2.1



Usage	Use „UP“ and „DOWN“ buttons to navigate within menus or to change values. The number on the top right of each display screen is the menu item number. Menu item 0 (zero) is the overview, the lower line will automatically scroll through different informations. Values like e.g. LCD Contrast are modified by using the „UP“ and „DOWN“ buttons while keeping „Start/Stop“ pressed.
↑+↓	Press „UP“ and „DOWN“ simultaneously
M	Press „M“ button
SS	Press „Start/Stop“ button

Maintenance

Danger - strong magnetic field !

- Danger to life for people with pacemakers!
- Do not bring rotors near pacemakers, credit cards, data carriers or similar items that are sensitive to magnetic fields!
- Danger of injury due to clamping!
- Do not place metal parts near the rotor!

Abyzz pumps are virtually maintenance-free when used properly.

If the flow rate decreases, dirt particles may have caught in the impeller and must be removed. Even slight vibrations can be an indication of contamination of the impeller.

For cleaning, disconnect the pump head from the motor (screws on the front, see illustration) and clean the impeller.

If disassembly of the impeller is necessary, loosen the retaining screw with a suitable Allen key and pull the impeller off the shaft. This screw is made of titanium and must not be replaced by another screw!

If further disassembly is necessary, please contact the service.

O-rings and rubber parts are subject to unavoidable aging and should be replaced if necessary. These parts can be obtained by mentioning the part number as spare parts.

Carefully place the rotor in the engine block and push the assembly into the bearing seat until the bearing shield is flush with the flange.

Screw the pump head back to the engine block, tightening the screws crosswise to apply even pressure to the O-ring seal and ensure tightness!

The pump should be decalcified at regular intervals in installations that are constantly and intensively limed (eg stone coral pools). We recommend this process at least once a year.

Fig. 1: ***Pump with pump head (A200)***

Fig. 2: ***Loosening of impeller components (rotor unit)***

Fig. 3: ***Disassemly of impeller components (rotor unit)***

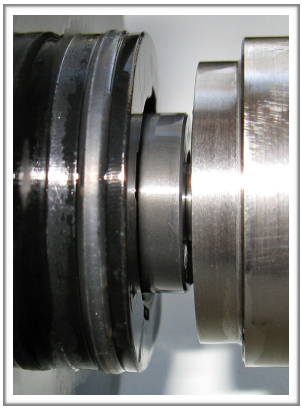


Fig. 4 a/b: ***Removed impeller component and close-up of bearing (left)***

If you need to disassemble the impeller wheel, use a suitable Allen wrench to undo the retaining screw (fig. 5) and pull the impeller wheel off the shaft. This screw is made of titanium and must not be replaced by another screw.

Fig. 5: ***Disassembly of impeller wheel***

When assembling the pump (fig. 6 and 7), please make sure that the guide lug (A) fits into the corresponding opening on the magnetic impeller plate and that the flushing opening (C) is in the right place. Make sure that the bearing (B) is in the correct position inside the motor. If necessary, push the bearing into position with a blunt object (e.g. the handle of a screwdriver). Make sure that the O-ring for the vibration isolation and sealing (fig. 10) is in the right position before reassembling the pump.

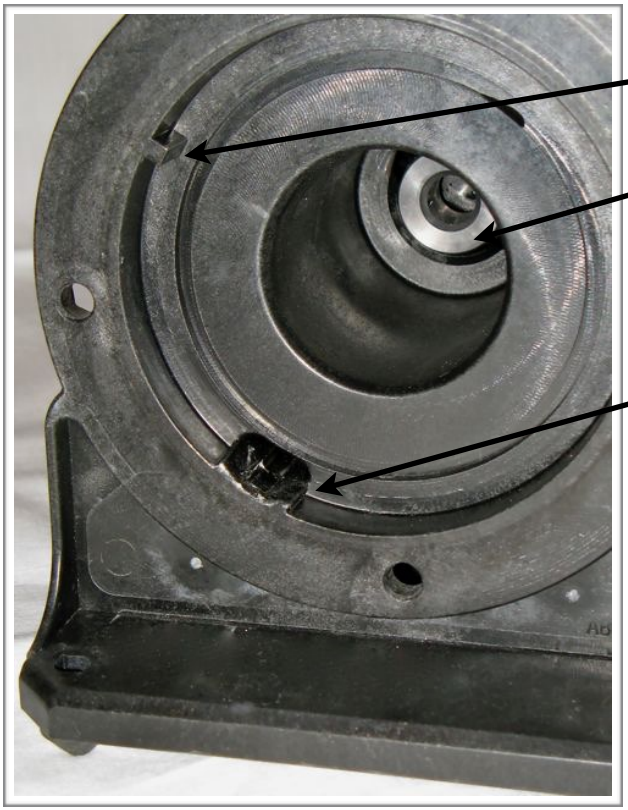


Fig. 6: ***Rear bearing seat, guide lug, and flushing opening***

O-rings and rubber parts suffer from unavoidable aging and should be replaced as required. These parts are listed in the spare parts list and can be ordered by stating the part number.

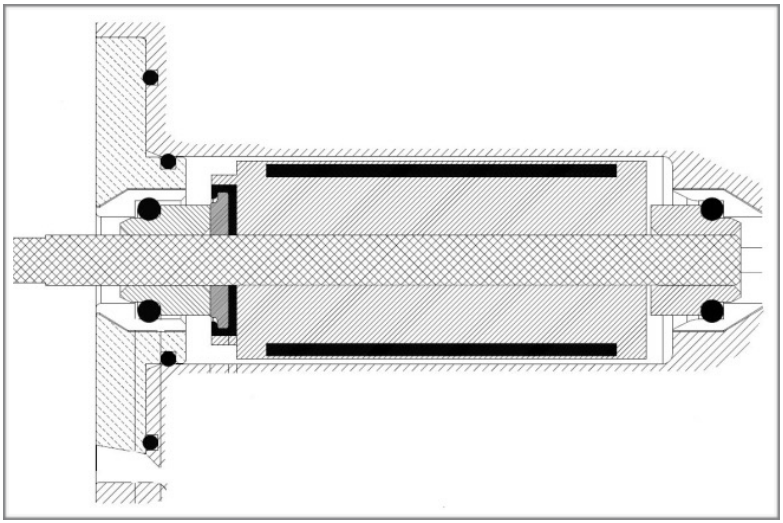


Fig. 7: ***O-ring position and assembly***

Carefully place the impeller into the motor block and press the assembly into the bearing seat until the bearing bracket is flush with the flange.

Screw the pump head back onto the motor block. The screws must be tightened **crosswise** to create even pressure on the O-ring seal and to ensure impermeability. Only hand tight please.

In systems that are constantly and intensively subjected to limescale (e.g. hard coral ponds), the pump must be regularly descaled.

Guarantee

In accordance with the implied warranty, we provide a 12-month guarantee.

You can also extend the product guarantee period from 12 months to 10 years free of charge within 4 weeks of purchasing the product (date of invoice) after registering your product successfully.

If you have a complaint, please contact us immediately via service@abyzz.de and we will help you out.

Please note that we cannot accept non-prepaid deliveries. Such deliveries will be sent back without being processed.

The guarantee covers material, functional, and production faults that can occur when using the product as intended. It does not cover damage of wearout or abrasive wear, transport damage, claims for compensation above and beyond compensation for the product itself, or damage resulting from improper use, negligence, incorrect installation, or interventions and changes carried out by unauthorized persons. We expressly exclude such scenarios from our scope of liability.

Any secondary damages such as the loss of coral, fish, or water damage caused by pump failure or a lack of intake protection are expressly excluded from guarantee and warranty claims.

Calcination inside the pump and any resulting damage to the product or motor, damage by use as not intended and any damage to cables (e.g. chafed cables) are expressly excluded from the warranty.

The warranty is invalidated in the following cases:

- Removed original plugs
- Serial number label is lost or illegible
- Use of non-original spare parts
- Impeller wheel damage resulting from parts sucked into the pump
- Motor damage caused by the tapering of the intake port or if the pump is operated with a closed or partially closed ball valve in the intake area
- Motor damage caused by persistent dry running
- Limescale damage resulting from the improper use of chemicals or the use of unsuitable chemicals
- Motor damage resulting from upstream external electronic components or damage resulting from damp in the driver
- Motor damage due to inappropriate disassembling and/or reassembling
- Motor damage due to operation in inappropriate mounting positions
- Motor damage due to water flowing back into the outlet
- Damages due to neglect and/or inappropriate cleaning
- Damages due to unauthorized opening of driver housing
- Damages due to moisture or animals inside the driver

Technical changes

Due to the constant further development of our products and to innovations that, in particular, serve to improve quality, safety, and technical progress, the manufacturer reserves the right to make technical changes.

Troubleshooting

If, despite the high standard of quality, faults should occur, please use the checklist below to rectify or restrict the problem. A number of faults are already detected and displayed by the electronics.

Malfunction	Cause	Remedy
The display does not light up and the LED flashes	a) Screensaver on	a) Press a button
The display does not light up and the LED does not flash	a) No mains voltage	a) Check the mains connection If the fault cannot be rectified, there is a driver fault. In this case, please contact the service team.
Status: COMM FU!	a) Control unit communications failed	a) Switch off the device and switch back on after 10 seconds
Status: Imax!	a) Overcurrent fault, motor overloaded	a) Check motor to make sure that it can move freely
Status: MOTOR?	a) Motor not detected	a) Check connection to motor, check plug
Status: TEMP!	a) Driver overheated	a) Let the driver cool down, lower the ambient temperature
Status: DRYRUN!	a) Motor has run dry or is drawing in air	a) Check the water level, check the pipes for leaks
Status: LOW VOLT!	a) Mains voltage too low b) Too many devices on one lead c) Mains lead too long	a) Check the mains voltage b) Reduce the number of devices c) Reduce the length of the lead, remove multi-socket strips *Device is working but cannot reach maximum power*

If you cannot rectify the fault by checking the lines (incorrect connections), mains voltage, and pump (smooth running, blockages), please contact your specialist dealer. In such cases, please be ready to state the serial number of the driver and of the motor. The serial numbers are on the blue serial number sticker or on the packaging.

Disposal

As per Directive 2002/96/EC, this product cannot be disposed of in normal household rubbish.

Within Germany, our customers can send old devices back to us free of charge for proper recycling or disposal. The WEEE number for reporting to the EAR (Germany registry of old electrical equipment) is:

DE 16546900

If you do not want to dispose of the product through us, you must bear the costs of disposing of the product in accordance with legal requirements. In doing so, you release us from our obligations as per Section 10 Paragraph 2 of the ElektroG (Electrical and Electronic Equipment Act) and absolve us from all upcoming claims from third parties.

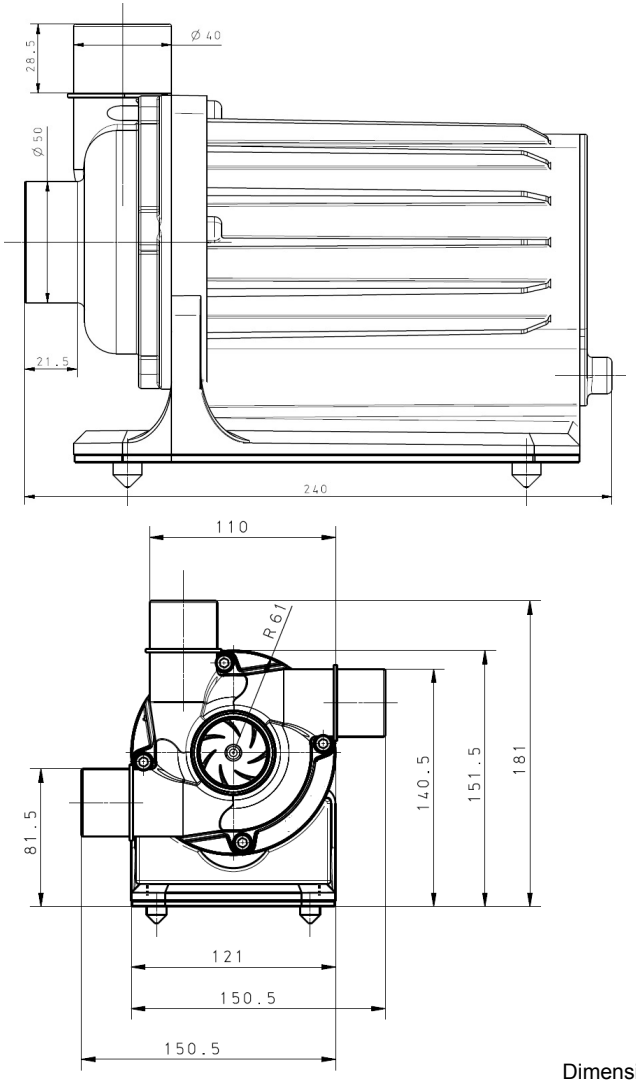
Technische Daten

Model		Abyzz A400
Maximum flow rate	:	23.500 l/h
Rated flow rate	:	18.600 l/h
Discharge flow speed		
maximum	:	7,5 m/s
rated	:	6,4 m/s
Delivery height maximum	:	12,5 m
Rated input	:	4...400 W
Operating voltage	:	230V~, 50…60Hz

For details, see the characteristic curves in the appendix (fig. 10 et seq.). The following calibrated devices were used for the measurement process:

Power test	:	Zimmer LMG 310
Quantity measurement	:	Krohne Optiflux 2100C
Discharge flow speed	:	Dorstmann P670
Pressure test	:	Kobold 220X1K9 Cl. 0,25

Dimensions and weight



Dimensions in millimeter!

Fig. 8: ***Dimensions pump A400***

Materials

The following components/substances come into contact with the medium being conveyed:

Housing Pump head Impeller wheel	: ABS GF 20, PA-6
Flushing line	: PVC, PU
Shaft	: WCNi
Impeller	: Titanium grade 2
Screws	: Titanium grade 2
Bearings	: SSIC
O-ring Bearing seat Device feet	: NBR, CR, EPDM
Motor cable	: PU
Jointing compound	: PU

Ersatzteilliste

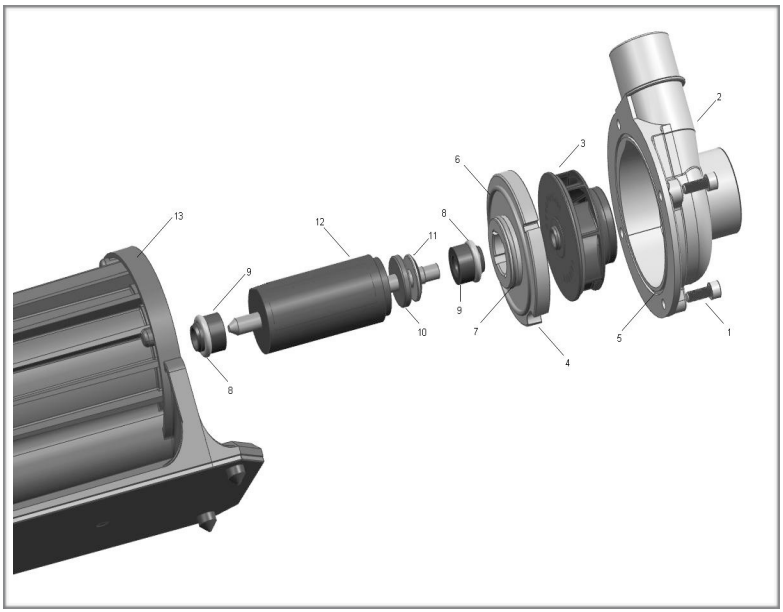


Fig. 9: ***Exploded drawing (top)***
Fig. 10: ***Screw and Nut (A200, right*****)**

1: Screw M6x16/Ti(4x)
2: Pump head
3: Impeller wheel
4: Bearing bracket
5: Pump head O-ring
6: Bearing bracket O-ring (large)
7: Bearing bracket O-ring (small)
8: Bearing seat O-ring (2x)
9: Bearing (2x)
10: Compression bearing rubber seal
11: Compression bearing
12: Rotor
13: Motor block (3m)
14: Impeller wheel screw, M4x12/Ti, (fig. 10)
15: Nut, M6/Ti (4x) (fig. 10) (only A200 models)

You can order spare parts using the part numbers specified above whenever you need them.

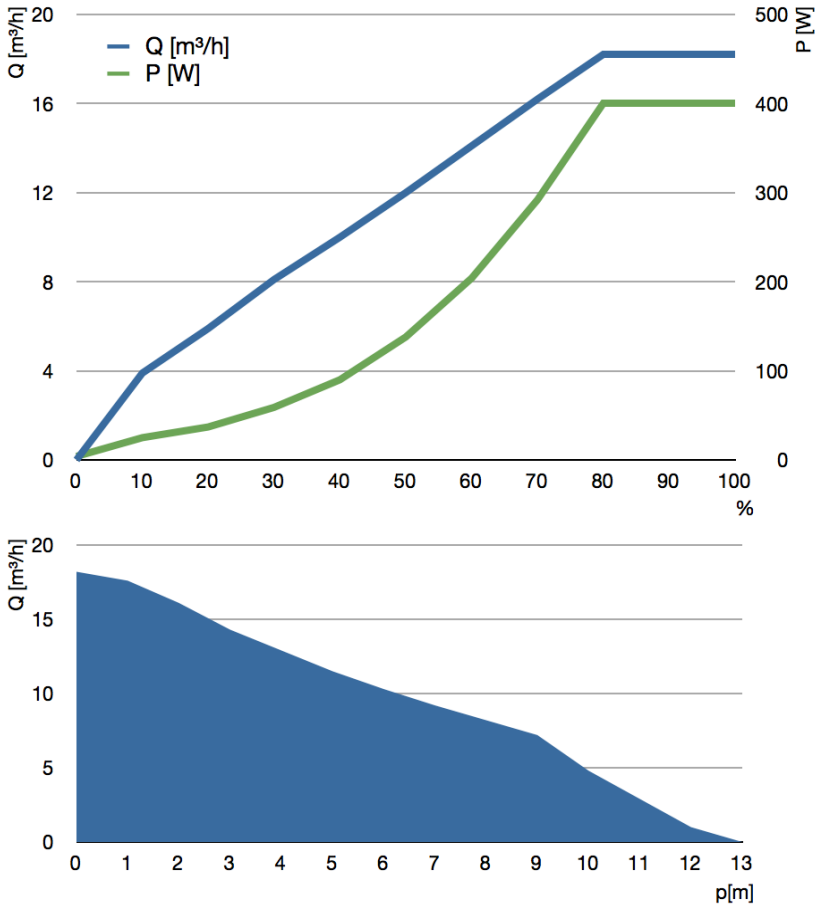


FIg. 11: ***Flow charts***

CE declaration of conformity

venotec GmbH
Am Nordkreuz 36
26180 Rastede

We hereby declare that the design of the pump system

Abyzz A400 IPU

The following relevant provisions:

EC Directive 2004/108/EU

Applied harmonized standards:

DIN EN 61000-6-1
DIN EN 61000-6-2
DIN EN 61000-6-4
DIN EN 61000-3-2

These devices are Class A devices. In residential environments, these devices may cause radio interference. In this case, the user is responsible for taking appropriate measures.

Alexander Grah
CEO

WWW.ABYZZ.DE