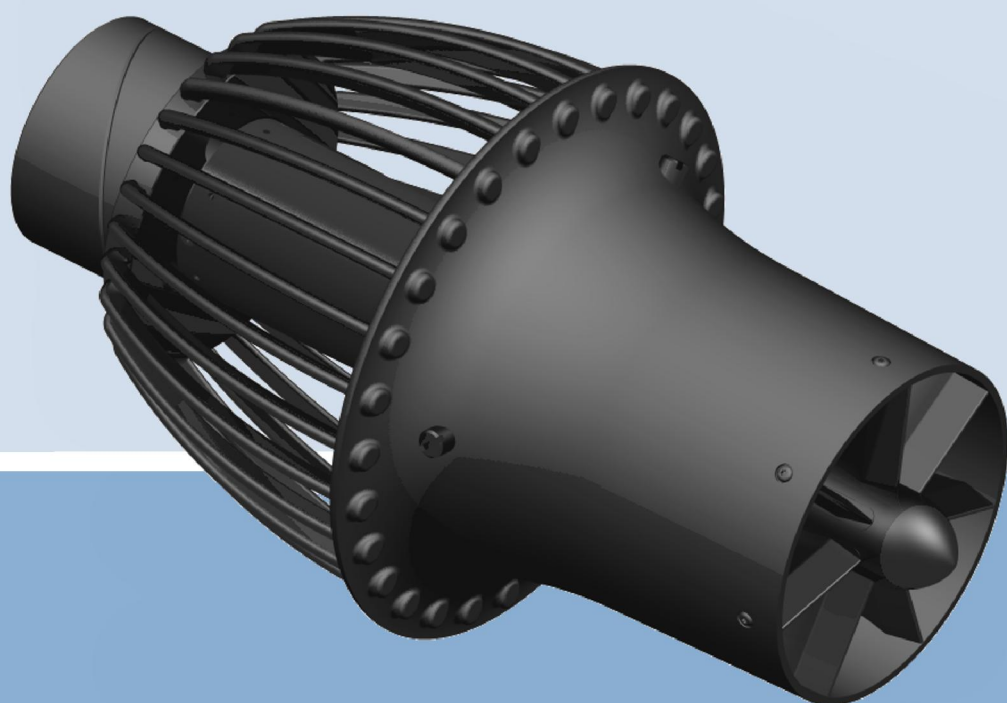
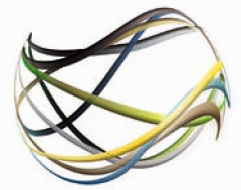


hydro wizard[®] ECM75



User Manual



PANTARHEI
Aquaristik im Rhythmus der Natur

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Version 430221b
Stand 12.11.13



Operating Instructions

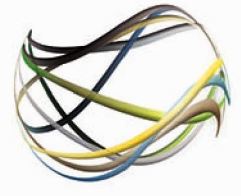
hydro wizard® ECM75

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For your safety, please read this document before using this product for the first time. Keep these operation instructions so you can have access to this information at all times.



Safety

General Safety

Read before using this product!



When used in any aquariums and ponds this device should be plugged into a GFI socket with no more than 30mA power. If persons are in the aquarium or pond the pump must be turned off.

- The pump should be plugged into a GFI socket with 100-240V ~ 50/60Hz; fuse of 10A.
-  Use pump in closed rooms for aquarium applications!
-  The controller must not be submerged in water.
-  If the cables are visibly damaged the pump must not be used. Do not attempt to repair the cables yourself.
- The pump must not be lifted, carried or attached by the cable.
- The motor must only be used when submerged. Running the pump dry will damage the bearings. Guarantee and liability are void if damage is due to the pump running dry.
-  This device is not meant to be used by persons (including children) with limited physical, sensory, or mental capacities or insufficient experience and/or insufficient knowledge. Unless they are supervised by a person responsible for their safety and are instructed how this device is to be used.
- The user is responsible for complying with local safety laws.
- The user is liable for damage to third persons caused by this product.
- This pump has been designed exclusively to move salt and freshwater. Usage in corrosive, flammable or explosive liquids is not permitted. The temperature of the water should not be above 35C (95F).
- The operating temperature of this pump is between 5C and 35 C (41-95F).
- Do not operate damaged, incomplete, or modified (without consent of the manufacturer) pumps. Ask an electrician to verify that all electric safety measures have been followed.
- Please read the section on care and maintenance in this manual. All other measures, including the opening of the pump, power supply or controller are not permitted. Always contact the manufacturer if repairs are required.



Prevention of electric shock:



The plug should be freely accessible after the pump is operating



Before starting a new pump please have an expert check that:

- **grounding, fuses and interrupters are operational according to the requirements of local energy provider**
- **all electric connections are protected from water**
- Do not remove the plug by pulling on the cable. Protect the cable from heat, oil and sharp corners. Do not kink the cable.
- Protect the cable and all electric sockets from humidity. Ensure that the cable and electrical connections are safe from flooding and water spills.
- When servicing the pump always unplug it from the socket.
- The maximum depth is 10m (32,8ft).

Safety hints for handling magnets:

(only for HW variants with magnet mount)



- The magnets included in this box are many times more powerful than conventional household magnets.
- Do not bring these magnets close to devices that are sensitive to magnetic fields, as they may permanently damage them (i.e. credit cards, bank cards, computers...). A safety margin of 75cm (30") should be allowed at all times.



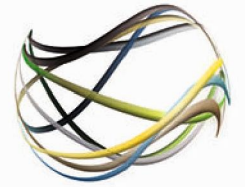
- These Nd-magnets, at this time the strongest available magnets, are strong enough to damage your fingers or other extremities. Never get your hands between the magnets or the magnets and other iron surfaces.
- Keep the magnets away from heart pacemakers!
- Other magnetic objects in the vicinity (i.e. knives) can be moved uncontrollably.
- **Never** bring the mounting magnets into direct contact with the magnets at the base of the pump. Their attraction is so powerful that it is impossible to prevent them coming together. Always store the hydro wizard pump and the magnet mount separately.





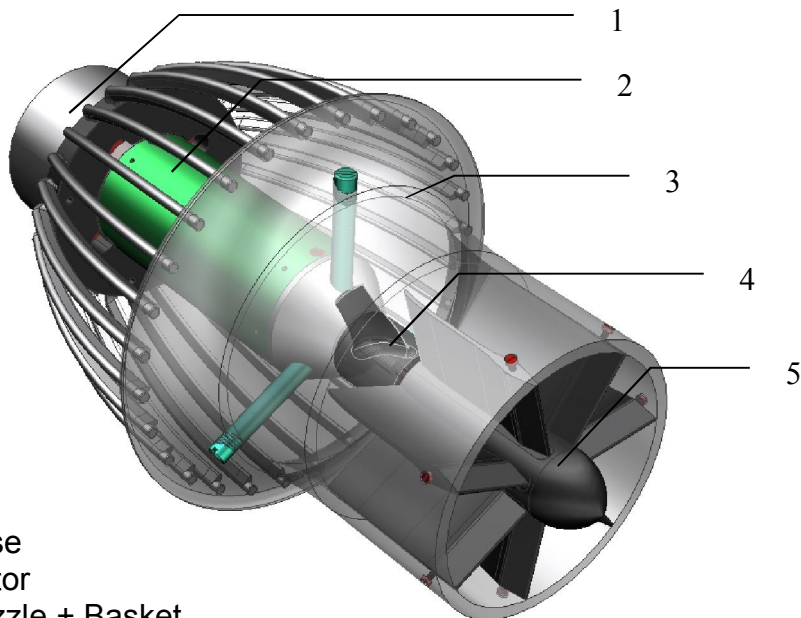
Application

The hydro wizard is used to generate laminar flows in aquariums, ponds or other bodies of water. The energy efficient movement of water is a basic function. This eliminates dead zones in the water. With the controller it is possible to generate wave simulations, in which both wave height and length can be adjusted. The pump can simulate rivers, tides, surge and waves. Adding oxygen or CO₂ can be controlled efficiently. The hydro wizard[®] is designed for use in fresh- and saltwater.



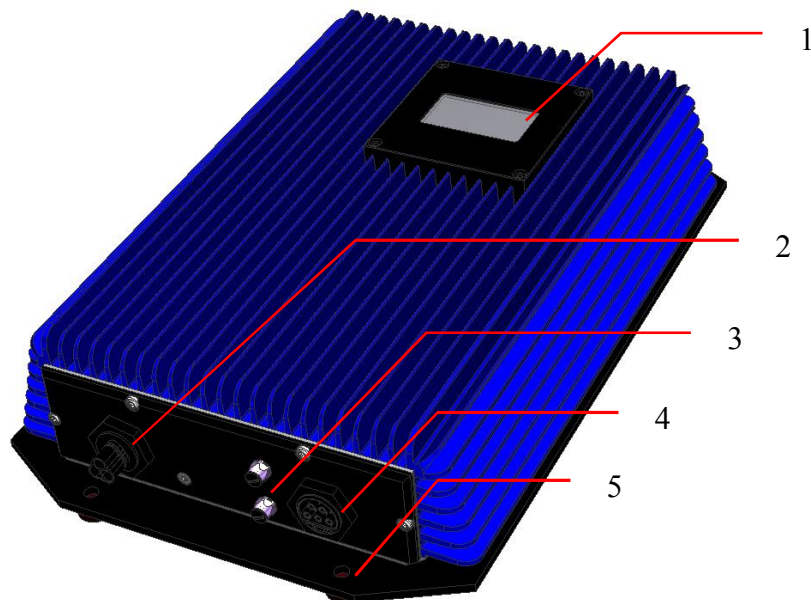
General Description

hydro wizard©



1. Base
2. Motor
3. Nozzle + Basket
4. Impeller
5. Stator

Powerbox

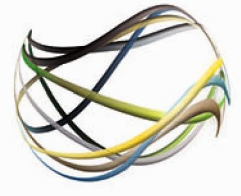


1. Touchpad Display
2. Power connector
3. Connector for the Panta Rhei BUS
4. Connector hydro wizard®
5. Attachment points



Function

The movement of the impeller generates an area of low pressure, which pulls the water from the back through the basket and pushes it out the front over the fins of the stator.



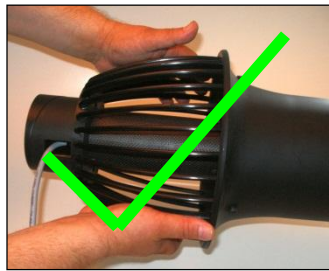
Start Up

Checklist before Start Up

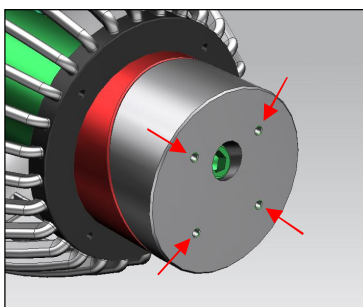
- Is the pump plugged into a GFI socket?
- Are all cables intact, not kinked?
- Is the stator installed? (The stator also protects hands from getting injured by the impeller. Never use the pump without the stator)
- Are there any objects inside the pump that can block the impeller?
- Are there any people inside the aquarium?

Positioning the pump

- Pay attention to the safety instructions on page 5 and 6.
- Do not use single bars as grip. Always hold the motor with both hands when carrying.



- Make sure that the pump is unplugged before placing it in the aquarium.
- Please attach the pump only by the attachment points designed for this purpose.

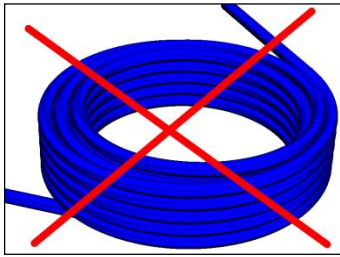


Use only the four M5 threaded holes for mounting.

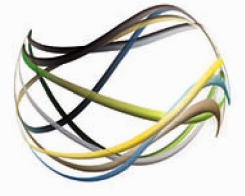
Please see page 36 for the required measurements for installation.



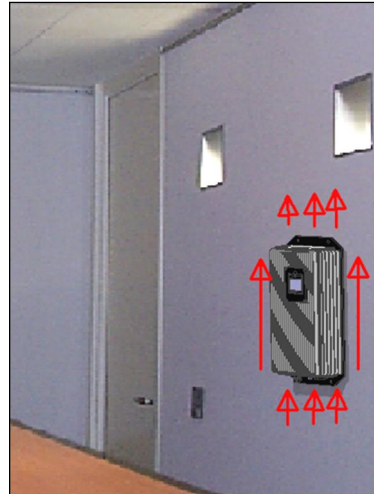
- The cable may not be wound in operating mode



- The hydro wizard generates very high axial forces. In addition to this, the inertia of the moving water will generate further forces acting on the mount. If you decide to build your own mount make sure that the attachment of the pump can handle forces of 150N.
- The pump must be fully submerged in water. It must be installed deep enough to ensure it will not draw air from the surface. Remember that in Wave mode the water level will change.
- The pump can be installed directly above the bottom. With a fine substrate the pump can draw in sand. To avoid this, increase the distance from the pump to the bottom. ⚠️ Particles sucked in and pushed out the front can cause damage.
- Make sure plants or other objects do not cover the intake basket when they get sucked onto it.
- Protect the cable from animals that could damage it.



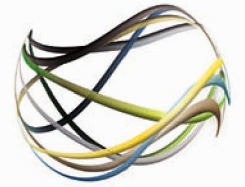
- Unrelated to the ambient temperature or the performance of the hydro wizard® pump, the power supply will get very warm. To allow the heat exchangers on the outside of the power supply to be most effective, the power supply should be mounted upright. This will allow rising warm air to better carry heat away from the device.



- Connect the plug of the motor (right) and the power cable (left) to the power supply.



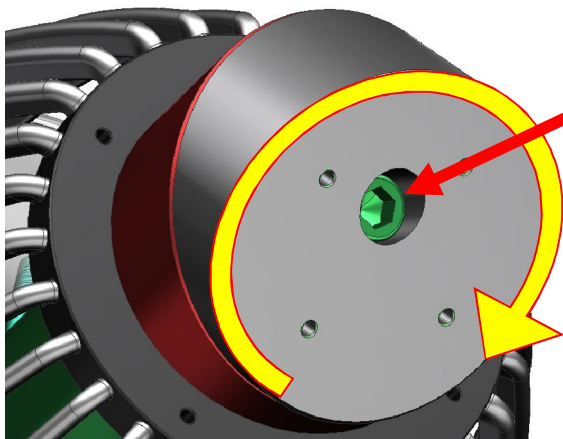
- Begin with a very low flow, and carefully watch the effects of the laminar flow in your aquarium (are plants sucked in, decoration knocked over?). If needed reposition the pump or reduce the output power
- ⚠ Choosing the wrong wavelength (resonance) in any aquarium can cause severe damage and even break the tank.



Usage Instructions

Hardware

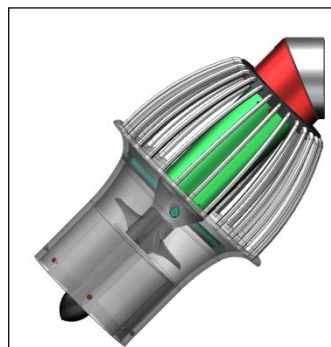
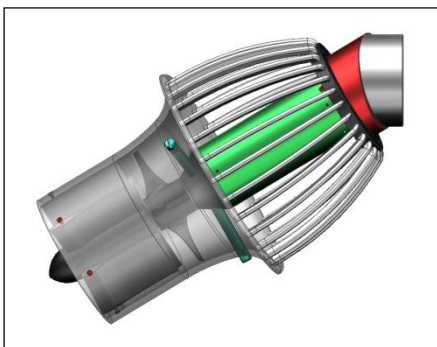
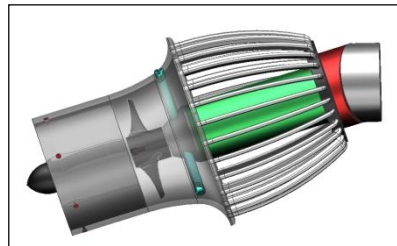
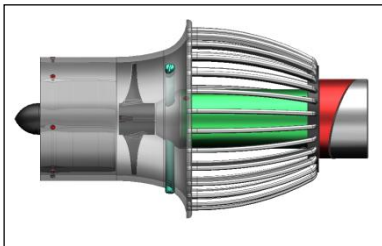
The foot of the pump can be rotated through 360°

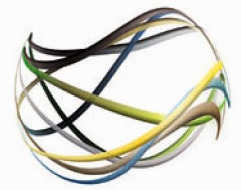


To rotate the pump into any position loosen the hex screw inside the foot with a 10mm Allan key

After the foot has been rotated to the desired position gently tighten the hex screw

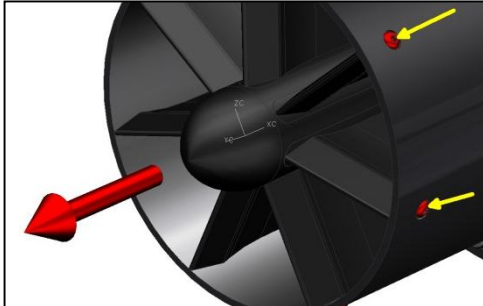
Do not tighten the screw, in order to avoid damaging it.



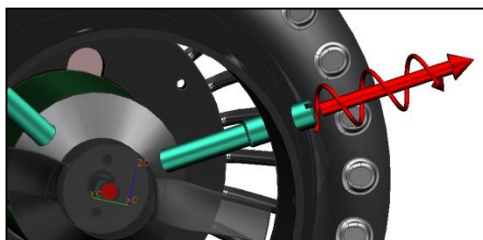


Installation and removal

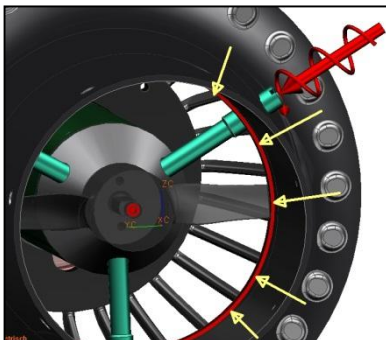
 *During installation and removal always pull the plug*



- Loosen the screws on the tube (7 pcs) (*Torx10 screwdriver*)
- *Locked torque max. 80Ncm*
- Pull the stator forward



- Remove centre bolts (3 pcs)

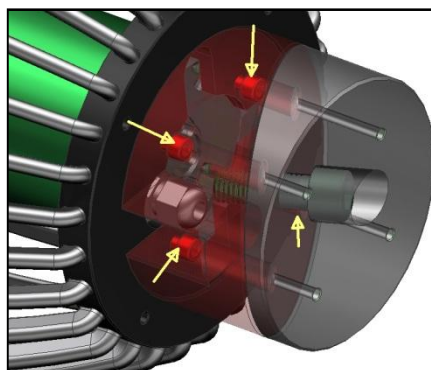


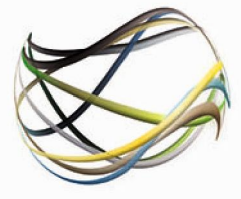
- Make sure that the impeller sits in the centre of the casing by screwing the large bolts. The fins of the impeller must not touch the casing. Try to keep an equal distance between the tip of the impeller and the wall of the casing. Turn the impeller by hand to check the distance in all points.



Do not overtighten the bolts, in order to prevent the tube from being deformed. If necessary, you may have to loosen an opposing bolt slightly so that you can screw the other side in a little more.

If you loosen the M5x20 bolts (4 pcs) below the adjustable foot, the motor separates from the basket. You can then withdraw the motor forwards out of the basket.





Controller Instructions (Firmware 3.0.x)

Controlling the hydro wizard®

The controller can be programmed with your finger, or a non abrasive touch screen pen. All touch surfaces can be easily reached with your finger. When activating a field it will be displayed with a black background. When the finger is removed it will be confirmed.

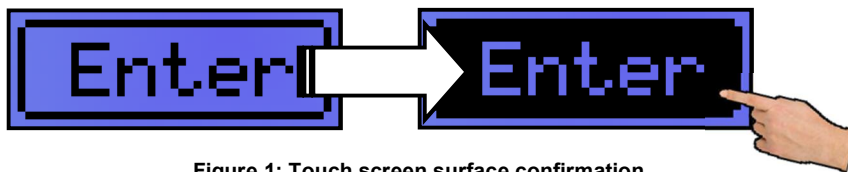


Figure 1: Touch screen surface confirmation

The following will explain the most important fields of the touch screen.



*Warning: for maintenance **ALWAYS** disconnect the hydro wizard from the power grid. Do not use any of the following stop functions to perform maintenance on the hydro wizard!*

The Information Screen

The information screen displays information about the flow status of the pump. The upper part of the screen displays the flow mode. The center part of the screen will display the most important data about the flow mode.

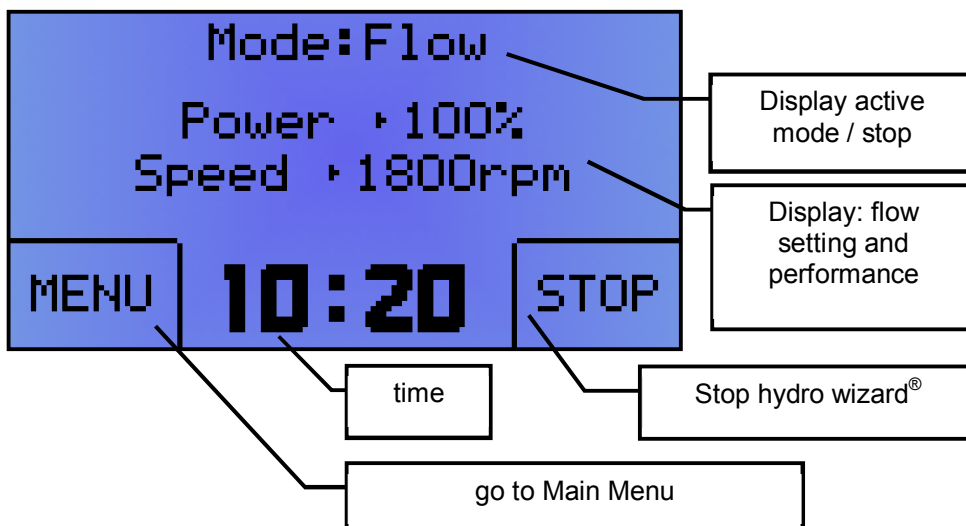


Figure 2: Information screen



The Stop field on the screen will stop the Hydro Wizard. The display will blink when stopped. Pushing this field again will restart the hydro wizard®.



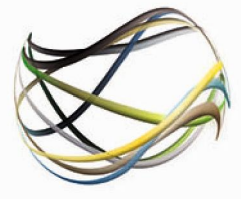
When shipped the hydro wizard will arrive in Stop mode after it has been plugged in.

The MENU field will call up the main Menu.

The center of the screen will allow you to quickly access the settings in the mode that has been selected.



Figure 3: quick access to the settings



The Menu Screen

The menu screen is used to change and display the settings of the hydro wizard.

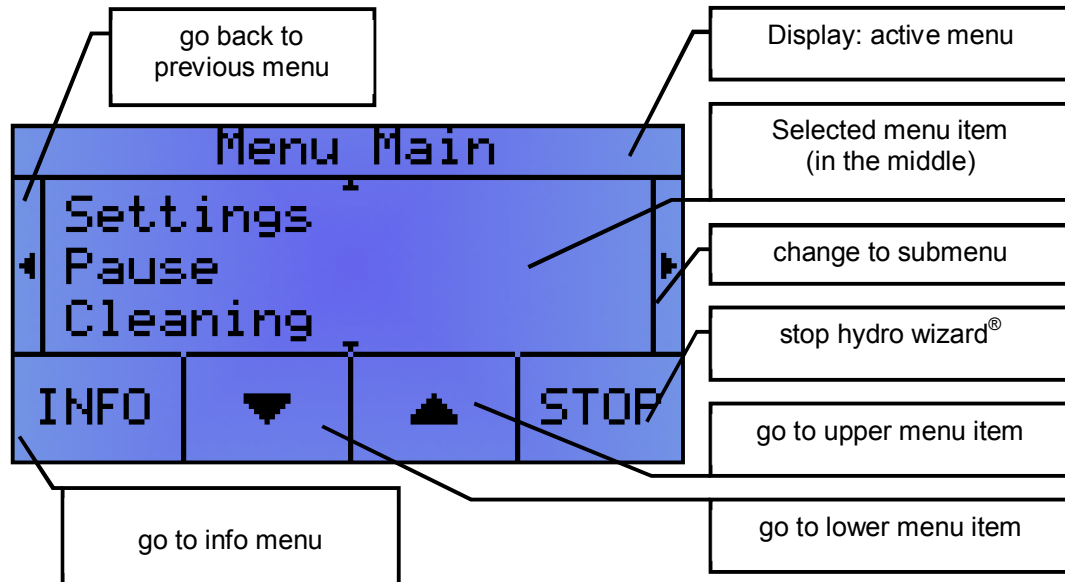


Figure 4: menu screen

The upper portion of the screen displays the flow menu. The center portion shows the available submenus. The middle one of the submenus has been selected. To select a different submenu use the arrows at the bottom of the screen. The arrow at the right enters that submenu, the arrow button on the left returns to the menu above. To confirm this selection this item will get bigger to make them more visible.

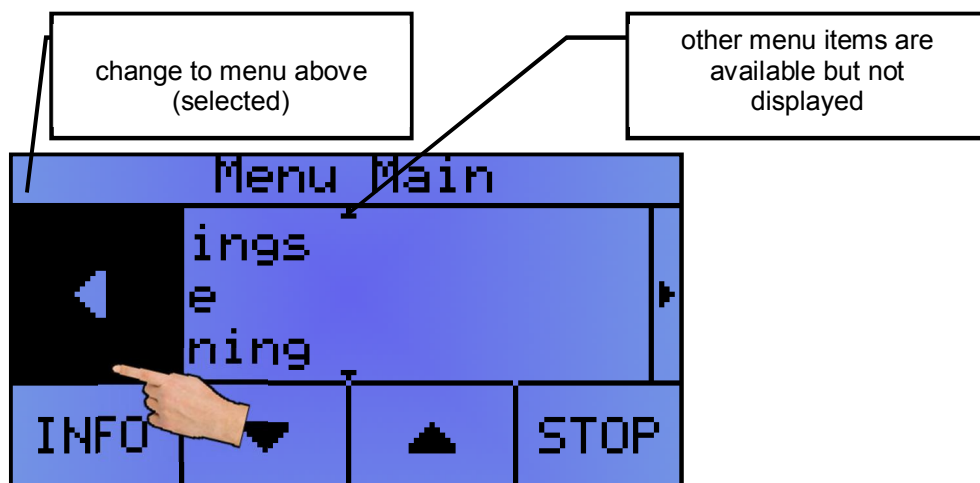
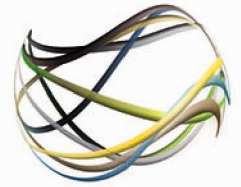


Figure 5: confirmed return button

The INFO button returns back to the info screen. The STOP button will stop the hydro wizard.



The „make changes“ screen

This screen is used to make changes to most of the settings.

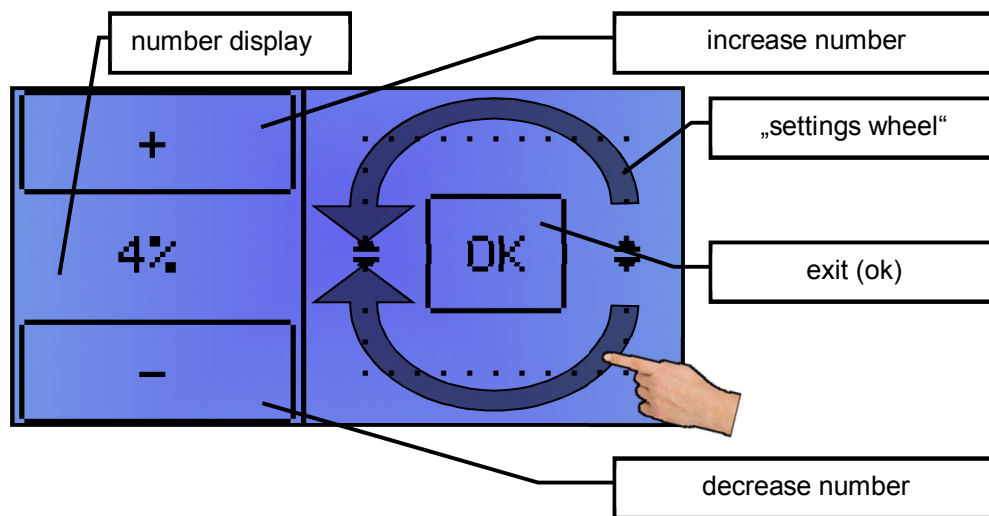


Figure 6: make changes screen

The left center field displays the flow value. Above and below are buttons to increase or decrease the number by the smallest step possible.

On the right side is a field that can be used like wheel, it is used to increase or decrease the value smoothly with no steps. The ok field in the center of the wheel is used to exit the make changes to settings screen.



Menu structure

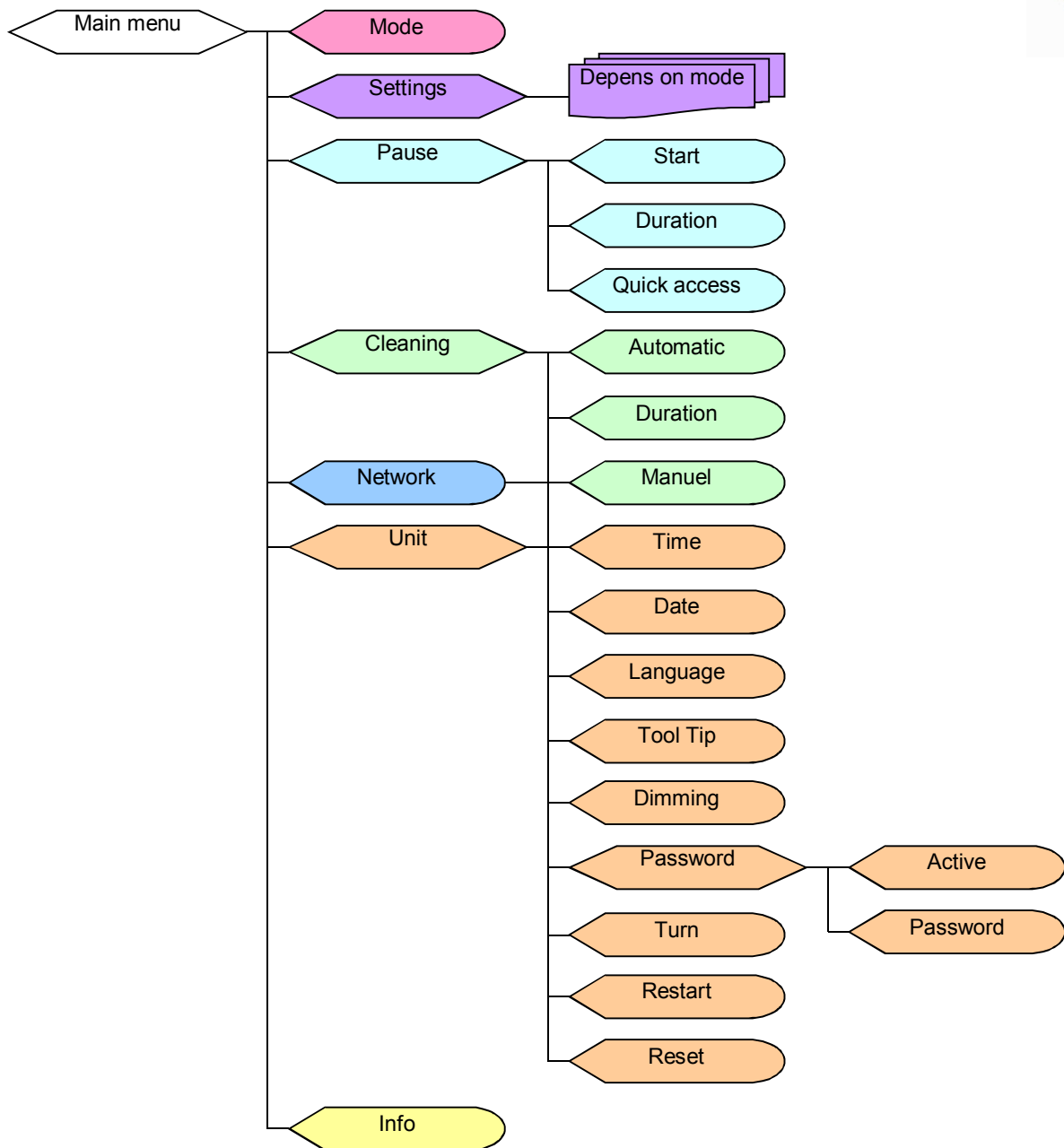


Figure 7: menu structur

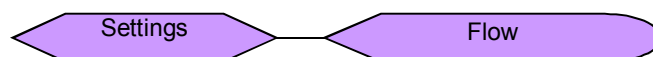
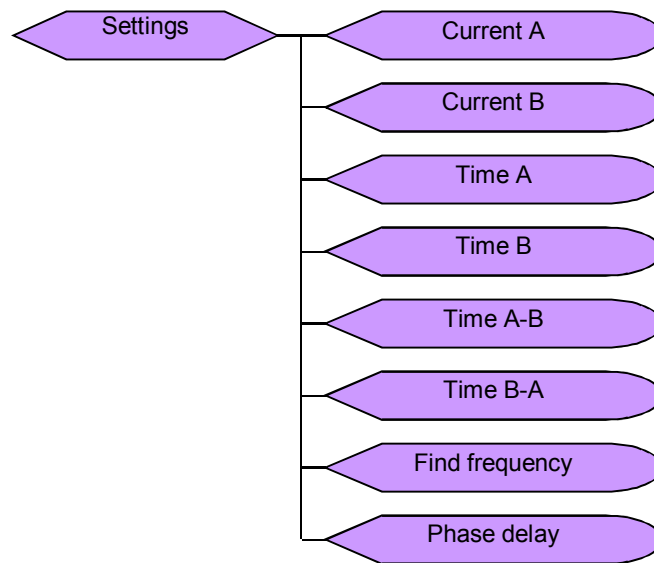


Figure 8: settings in flow mode



Picture 9: settings in wave mode, enter time

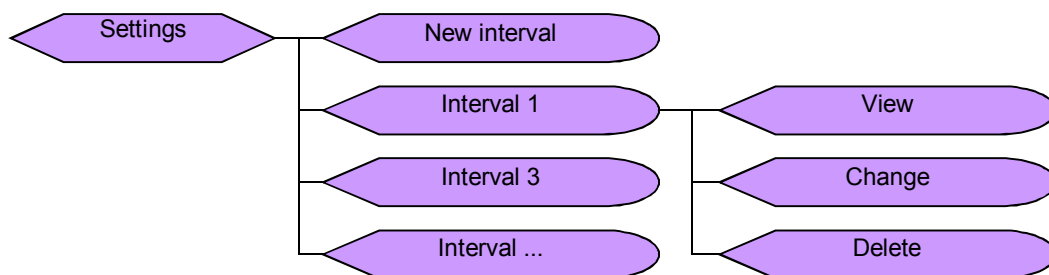
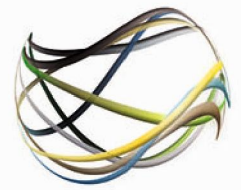


Figure 10: settings in profil mode



Operation

Initial start up

After the hydro wizard is plugged in for the first time you must set the language, time and date.



These settings can be changed later in the info menu

Selecting the mode

Select the desired mode in the main menu, in the change mode screen.



Changing the mode on the screen will change it without confirmation. The mode will operate with the currently active settings



In case of a power failure the pump will not restart on its own. The settings are saved and will be available after a power failure. When power is re-established the hydro wizard will be stopped.

Flow mode

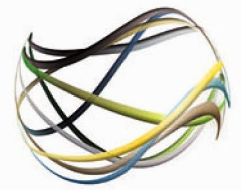
The flow mode is used to make a steady flow in the tank. After selecting the flow mode select the strength of the flow (in %) in the settings menu, or the quick change field in the info menu. If the pump is stopped (blinking "STOP" field in the info menu) the settings will take effect after the Stop button is pressed again. If not they will take effect RIGHT AWAY. It is best to change the flow while the pump is running, and it is easier to observe the changes in the aquarium. You can stop the pump by selecting a flow of 0% or pushing the STOP field in the menu or info screen.



Always increase the flow slowly and carefully observe the changes for some time



The flow mode is selected as a default for the first time you are using the pump, or in case of a reset. At 1% the motor is already running at 500 revolutions a minute, a lower value is not possible.



Wave mode

The wave mode is used to generate waves in the aquarium. After changing into the wave mode you can change the parameters in the settings menu or the quick change menu from the info screen. If the pump is stopped (STOP button in the info or menu screen is blinking) your settings will take effect when the pump is restarted after you push the STOP button again. Otherwise they will take effect immediately.

The hydro wizard® will generate waves by changing between two or three different flows. These flows can be varied from 1% to 100% with the parameters "flow A" and "flow B".

The Parameters "time A" and "time B" are used to select the duration of each action.

The parameter "time A-B" defines the duration of the interval when the current changes from "flow A" to "flow B".

The parameter "phase delay" is used when several power supplies and pumps are working in sync. It defines the delay in which the units wave is started later than the MASTER unit.



More information on connection several units can be found under the chapter: network

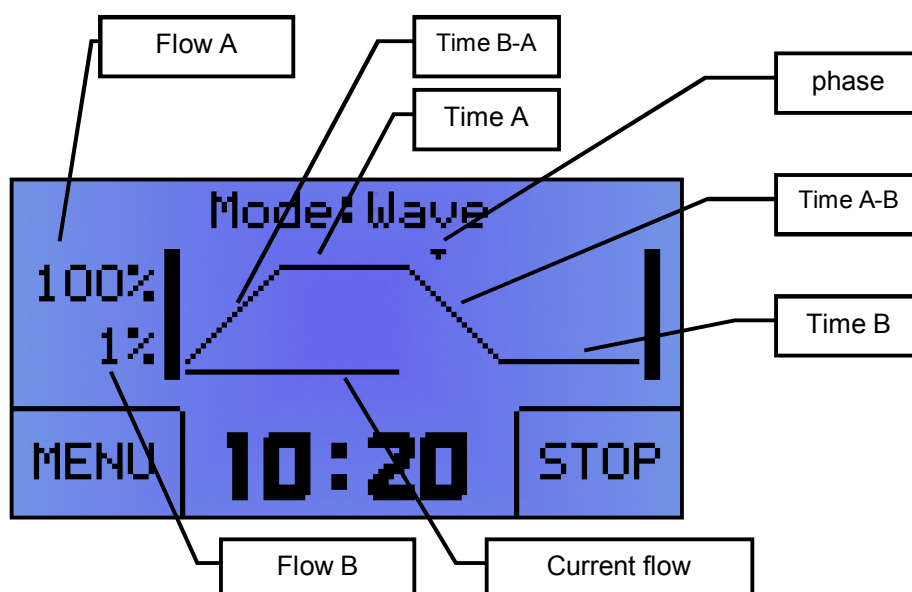
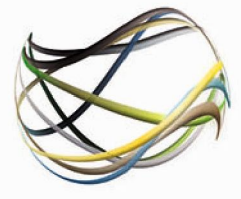


figure 11: information screen in wave mode



To find the ideal frequency in your aquarium select “find frequency” in the settings menu. Now select the maximum flow strength. The wave frequency will then be lowered slowly. When the waves have reached an optimal frequency it can be accepted by pushing “select” on the display.



Caution: depending on the layout of your aquarium waves can damage the contents, or spill water over the sides.



To generate a wave in the aquarium the frequency must be set perfectly. Each tank has a different frequency. The intensity of the wave can be best controlled by the strength of the flow!

Profile mode

The profile mode is used to start or stop the wave or flow mode automatically. This allows waves or flow to be controlled individually for different time intervals.



To best understand the function of the wave and flow modes please read the wave mode and flow mode sections of this manual.

After selecting the profile mode you can add, change or delete intervals in the settings menu (or the quick access menu from the info screen).

When adding a new interval the start and end time must be entered first. After this select the mode during this time period and the parameters.



Remember that the hydro wizard will change from one mode to another when it changes the interval. Make sure large waves do not splash water over the sides or destroy the aquarium.



ALWAYS test each of the settings for each mode you will use before adding it as an interval in profile mode.

Connecting to the Panta Rhei BUS



Proceed as follows to connect several power supplies together:

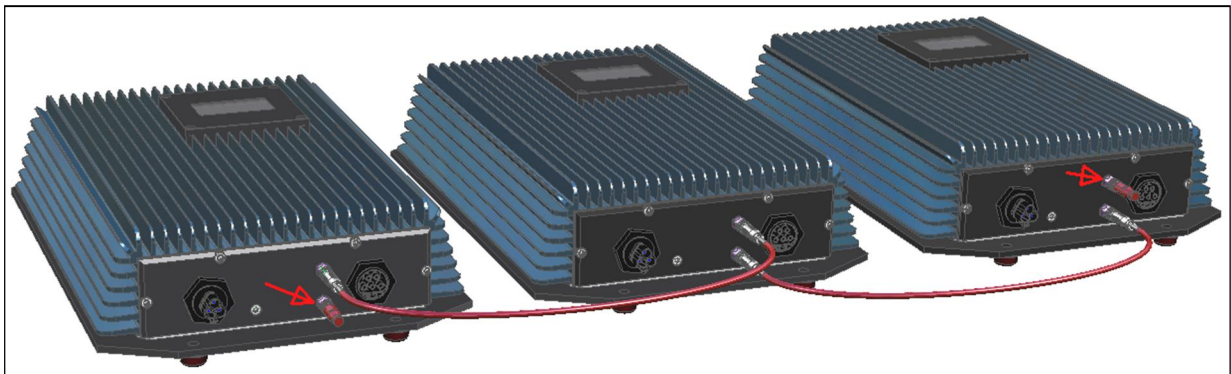
1. Remove the protective caps from the CAN sockets



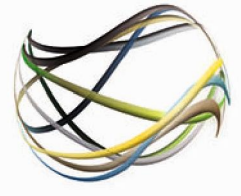
2. Connect one power supply to the next as shown in the figure below.



Each socket can be used for "in" or "out" so the order in which they are connected is not important



3. Connect a End-Resistor to the open socket of the first and last power supply (red arrows)



There are four options for the BUS connection:

„Aus“, „Sync“, „Slave“ und „Master“

When connecting several power supplies, one must act as the **Master**. gewählt werden. The controller of this unit will control the others (depending on their option setting).

If a controller/power supply is configured as **Master**, a small crown will be in the time display.



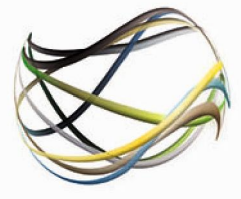
Figure 12: Master symbol in the time display

If a unit is set to **Slave**, it will take the settings of the Master automatically. The information screen will display "Slave" and the settings transmitted by the Master. If the connection is interrupted the unit will continue to operate in this mode.

If a unit is set to **Sync**, it will copy the exact time and start/stop wave settings of the Master, but will otherwise function independently. Complex settings of the wave or Profile mode can be reproduced with this setting (i.e. wave phases, of time dependent currents). If a unit is set to Sync and connected to a Master the time display will show an "S".



Figure 13: Sync symbol in time display

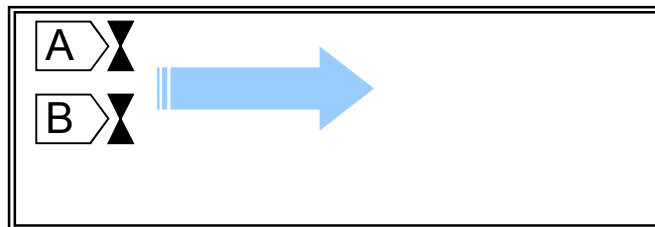


Application example:

The following examples are shown with just two pumps to simplify the diagrams, but the same programming applies for any number of connected pumps. The Panta Rhei BUS system makes adding additional units very easy.

Current and wave mode with several hydro wizard®.

In this example the parallel usage of two hydro wizard® are used to generate a stronger current or wave. The Slave setting is used to achieve this pattern:

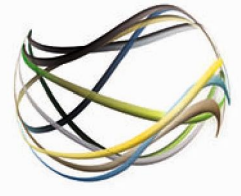


Required settings:

hydro wizard® A: Connection → Master
 Mode → Current
 Settings → Current → 55%

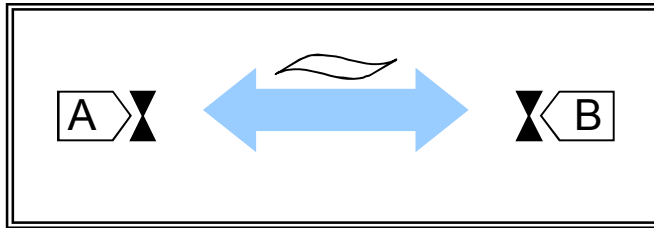
hydro wizard® B: Connection → Slave

In this configuration the current of hydro wizard® A can be changed and hydro wizard®B will reproduce the same settings, wave or current. The master unit can be set to current, wave or profile mode.



Back and forth wave action:

In this example two opposing hydro wizard® are used to generate a wave. hydro wizard® **A** should run in the first half of the time segment with 100% power, and hydro wizard® **B** in the second segment with the same power. To achieve this use the phase synchronization in SYNC mode.

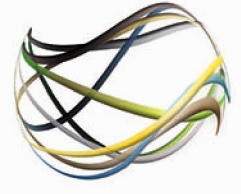


Required Settings:

hydro wizard® A: Connection → Master
 Mode → Welle
 Settings → Current A → 100%
 Settings → Current B → 1%
 Settings → Time A → 2s
 Settings → Time B → 2s

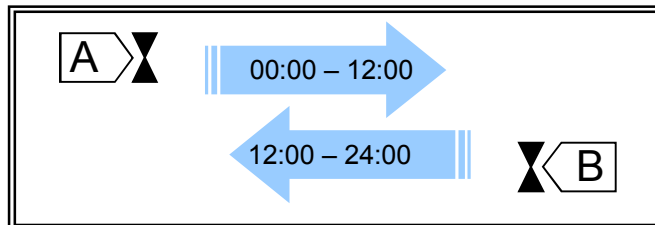
hydro wizard® B: Vernetzung → Sync
 Modus → Wave
 Settings → Current A → 100%
 Settings → Current B → 1%
 Settings → Time A → 2s
 Settings → Time B → 2s
 Settings → Phase delay → 2s

If several hydro wizard® are connected in wave mode with a phase delay it is important that the sum of time A, time B, time A-B, and time B-A are equal. The individual values can be changed as long as this rule is followed.



Tide Simulation:

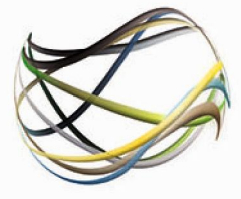
In this example hydro wizard® are used to simulate the natural flow of tides. hydro wizard® A will run with one set of parameters from midnight to noon, while hydro wizard® B will run from noon until midnight. To achieve this, the time must be synchronized in the SYNC mode.



Required Settings:

hydro wizard® A: Connection → Master
 Mode → Profile
 Settings → New interval
 Start → 00:00
 End → 12:00
 Current → 100%

hydro wizard® B: Connection → Sync
 Mode → Profile
 Settings → New interval
 Start → 12:00
 End → 00:00
 Current → 100%



Cleaning function

The cleaning function will help to clean off debris (like plants) that has stuck to the intake of the pump. To achieve this, the pump will spin in the opposite direction for a short time. The cleaning function is reached from the main menu.

The frequency of the automatic cleaning function can be set in the menu. It is also possible to change from short time to long time cleaning

The manual cleaning function allows you to select forward and reverse flow strength.



Caution: Using the cleaning mode for other purposes can damage the hydro wizard.



Caution: The cleaning mode does not replace the regular cleaning.

The Pause / Feed timer

The pause/feed timer stops the hydro wizard and automatically resumes the programmed settings after an elapsed time (i.e. during feeding).

The feed timer function can be reached from the main menu. Select the beginning of the pause, stop the pause, and duration of the pause. The quick access menu can activate a quick access button that will be displayed during a "Stop" in the info screen.



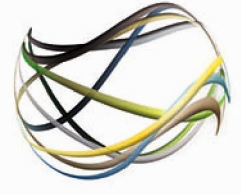
Never use the pause / feed timer to perform maintenance or cleaning the hydro wizard.

Unit Settings

Selecting "**unit**" in the main menu controls the settings for the display.

The menu selection "**Tooltip**" is used to active the display of other information from a selected menu. The tooltips are displayed at the bottom of the screen.

The menu item "**dimming**" is used to lower the brightness of the display when the touchscreen is activated.



The menu selection "**password**" is used to protect the settings from unauthorized persons. By activating this mode a password must be entered to change from the info screen to the menu screen. The quick change menu to change the settings of the flow mode can no longer be accessed. The factory default password is "1111".

The menu item "**orientation**" is used to turn the orientation of the display by 180 degrees.

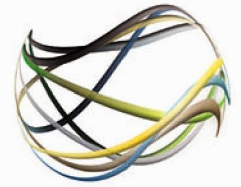
The menu selection "**reset**" returns all settings to the factory default.

The menu item "**restart**" is used to determine the action after power is restored. If set to "on" the hydro wizard will start with the last entered settings. Set to "off" the motor will not restart by itself when power is established (factory setting).



Caution: Pump will automatically restart when connected to power supply if "restart" is set to "on"

The menu selection "**reset**" returns all settings to the factory default.



Cleaning and Maintenance

The hydro wizard operates largely maintenance-free. Should its energy consumption increase, this is usually caused by calcium deposits on the bearings. This effect can vary greatly, depending on the water chemistry.

To clean the bearings they must be submerged in a vinegar solution.

- Mix 500ml of white vinegar with 10 l of water in a bucket.
- Set the pump in Stream mode at 2% power.
- Fully submerge the pump in the solution.
- Leave the pump running for one hour.
- Now discard the solution and run the pump for one more hour in clean fresh water.

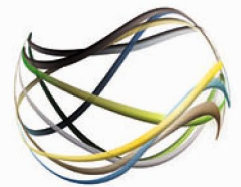
This protocol should be performed once a year as a precaution. Check the condition of the cable frequently to make sure that movement or animals have not damaged it.

General Cleaning

At least once a week (or more often, if necessary), remove plants or other objects that have been sucked onto the intake. Sediment that has settled on the housing can be removed with a soft brush.



Do not clean the pump, or parts in the dish washer. The plastics are not dish washer safe.



Troubleshooting

<u>Problem</u>	<u>Possible Cause</u>	<u>Solution</u>
pump will not start	no power	plug the pump in check house/GFI fuse
	speed display says „zero“	read the manual section for the controller
	the impeller is blocked	unplug the pump, remove the blockage
	motor is not plugged	plug the motor into the controller
	after a power failure all settings are set back to zero	value must be reentered in the controller
pump suddenly stops	the impeller is blocked	unplug the pump, remove blockage
	power failure	check GFI/ house fuse
	the controller is in a change settings mode	read the manual for the controller
the pump is no longer generating a flow	the intake basket is clogged	clean the intake basket
display Impeller failure	- hydro wizard® don't turn - Impeller defect	- put hydro wizard® under water - change impeller
loud noise	a wing of the impeller has broken off	unplug the pump an replace the impeller
	reason not apparent	contact the manufacturer



For any other problems please get in contact with Panta Rhei Service. Repairs can be made only by Panta Rhei or authorized dealers.

Disposal and Enviroment

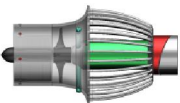


The pump should not be discarded with the regular trash, it should be disposed of according to local regulations, please check with your local authority.
[RICHTLINIE 2002/96/EG]





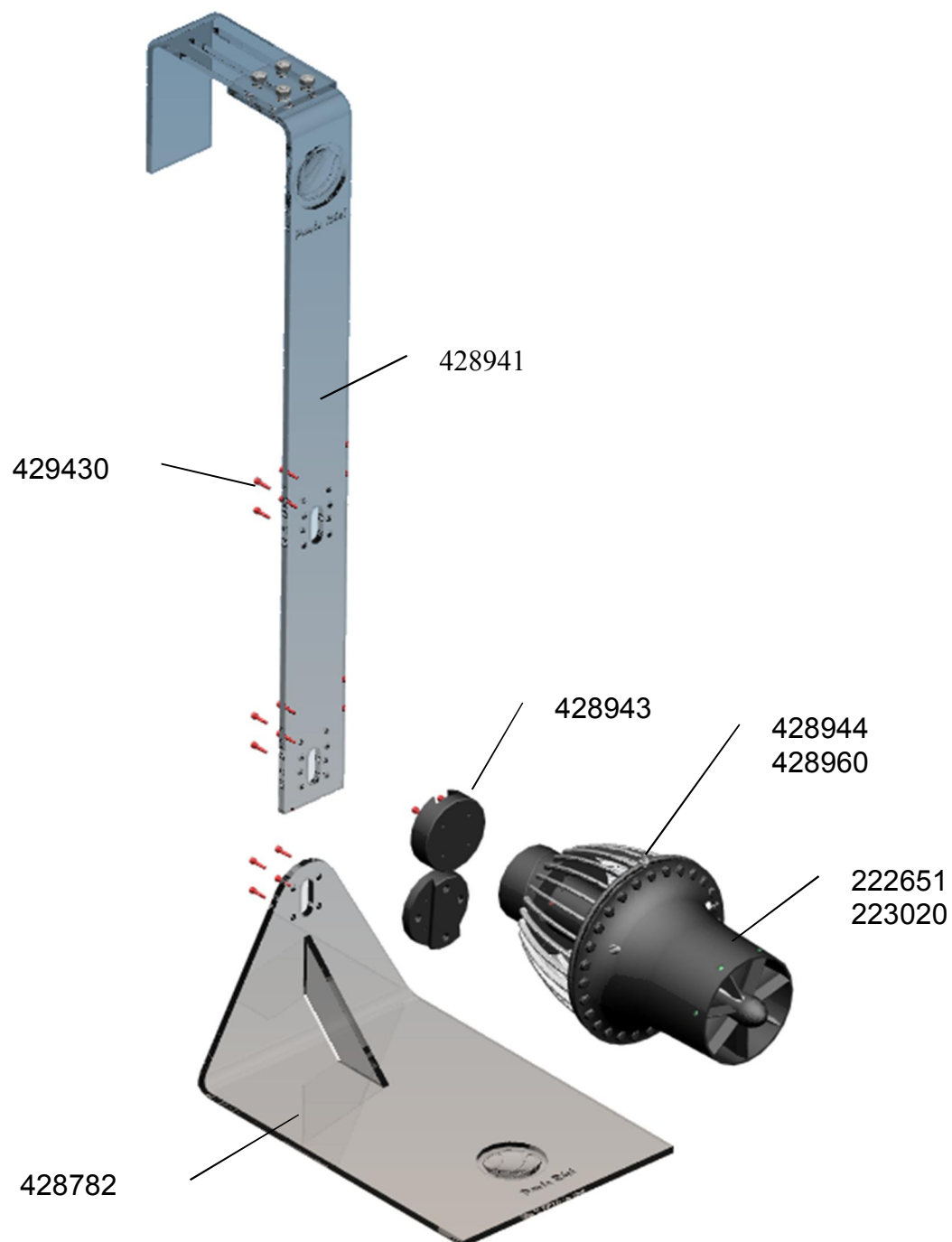
Spare parts and accessories

Symbol	Description	Catalogue number
	Complete unit (motor+housing) 10m cable 20m cable	222651 223020
	Powerbox Language German/English 110/220V	428687
ohne Foto	Power cord AUS/ARG	430165
ohne Foto	Power cord JAP	430164
ohne Foto	Power cord USA	430163
ohne Foto	Power cord GER	429915
	Patch cord Panta Rhei Bus 1m	11052277
	terminating resistor Panta Rhei Bus	11052278
	Titanium screw M12x35	423431
	Titanium screw set M5x20 (4 Stück)	429430
	Titanium screw M4x16	421610
	Titanium screw M3x12	428068
	Impeller	422423
	Quick-change mount	428943
	Clamping plate	429716
	Gas injector 2-3 L/min Gas injector 6-8 L/min	428944 428960
	Pedestal	428782
	Wall bracket (428780, 428781, 428894, 428895)	428941
no picture	Instruction booklet ENG	430221a



Installation examples

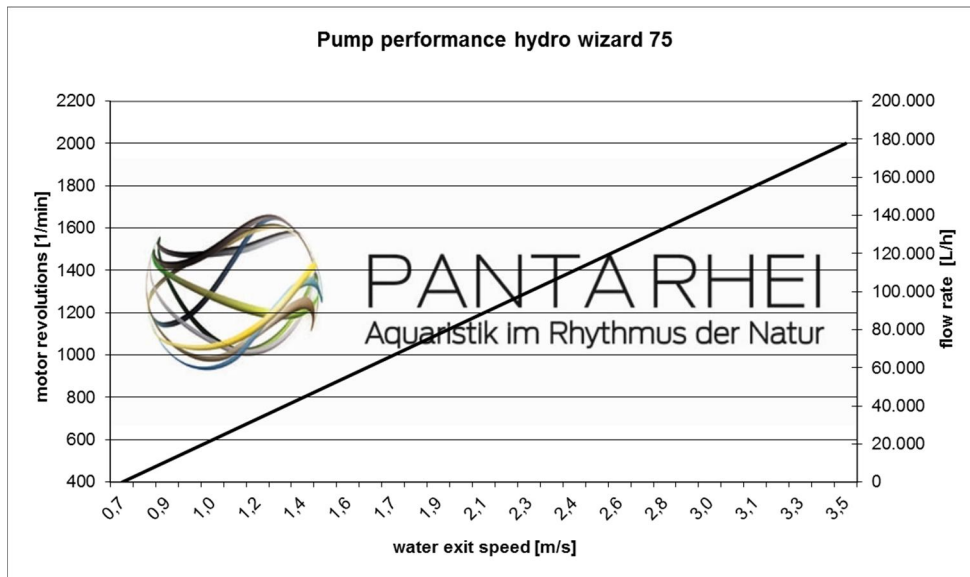
(Figure shows accessories)





Technical Data

Performance Graph



Motor technical data:

type

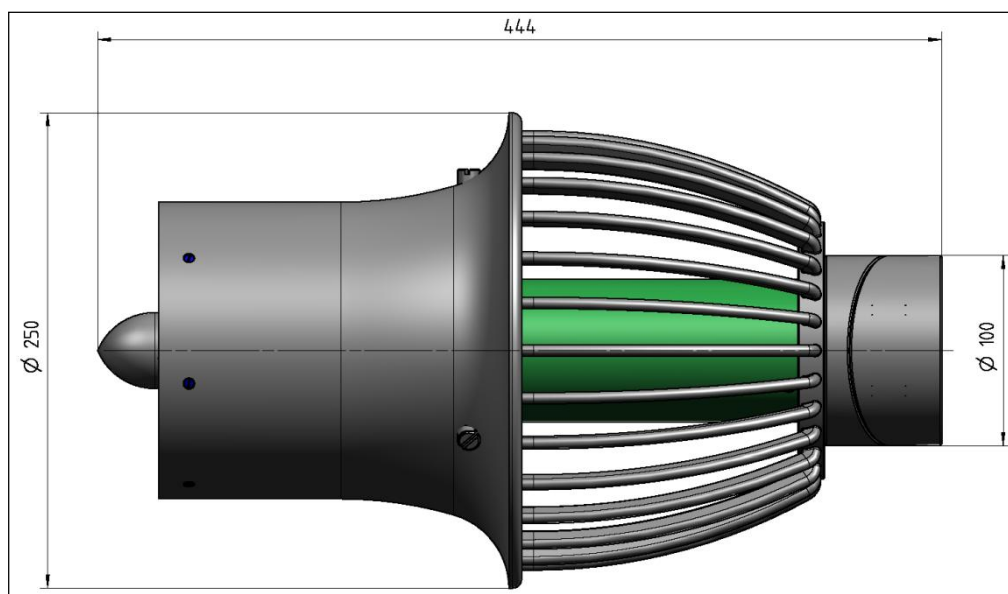
hydro wizard® ECM63

Operating voltage	100-240	V~, 50/60Hz
Max. energy consumption	658	Watt
Min. speed	500	R / min
Max. speed	1.800	R / min
Max. output	160.000	L / h
Max. liquid velocity	3,3	m / s
Axial force	~120	N
Max. depth	10	m (limited by cable)
Weight (motor / housing)	2,35	kg
Total weight	15,15	kg
Max. temperature of media	35	°C (F)
Max. outside temperature	40	°C (F)

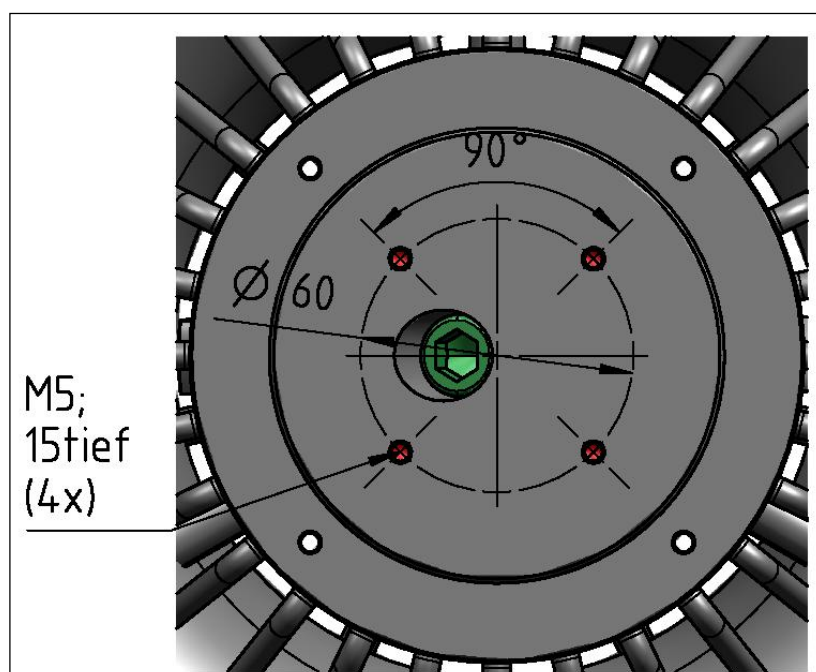


Dimensions

(All dimensions in mm)

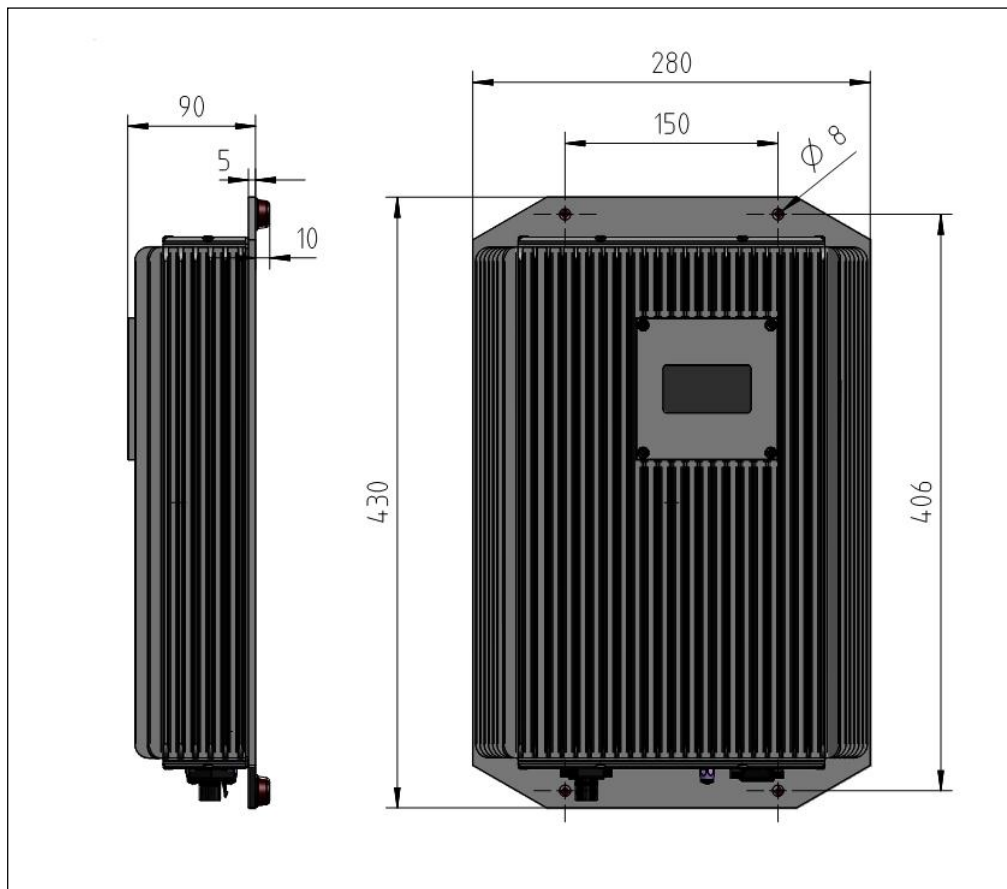


Mount dimensions





Dimensions Powerbox:

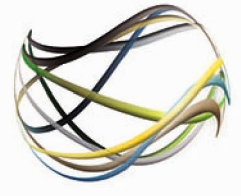


Service



We offer the following services:

- Advice on flow design, performance and positioning
- Advice on aquaculture, show aquariums, ponds and zoo applications
- Bespoke programming for special applications
- Integration in third-party control systems
- Integration in PLC systems



Warranty for hydro wizard© products

Extent of warranty

This limited warranty is applicable from the date of purchase for all new products from Panta Rhei GmbH purchased for your own normal use and not for reselling. Panta Rhei GmbH guarantees that a product covered by this warranty, apart from the exceptions listed below, is free from material and manufacturing defects.

Warranty period

The warranty period is limited to 1 year for the hydro wizard© and 2 years for the power supply and Wave Controller, starting from the date of purchase. The exact warranty period depends on when and where the product was purchased. A valid purchase receipt is required to prove a warranty entitlement.

Warranty exclusions

The following are not covered by this warranty: use for other than the intended purpose, accidents or changes to the hardware or software, unauthorized modifications, an unsuitable physical or operational environment which does not meet the product specifications, inexpert maintenance or defects caused by a product for which Panta Rhei GmbH is not responsible. There is no warranty entitlement for products whose nameplate has been removed or modified. Panta Rhei GmbH offers no other guarantees whatsoever, including, but not limited to, implied agreements of conditions relating to the merchantability or suitability for a particular purpose. In some jurisdictions a restriction of implied agreements is not admissible so this restriction may not be applicable to you. Panta Rhei GmbH is not obliged to replace products which are not covered by this limited warranty.

Enjoy your new
hydro wizard[®]



PANTARHEI
Aquaristik im Rhythmus der Natur