

Systeme für Aquakultur,
Aquaristik, Labore und
zur Wasseraufbereitung

Systems for aqua culture,
sea water aquaria, labs and
water desalination and purification

Systèmes pour aquacultur,
aquariums eau de mer,
laboratoires et traitements d'eau



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Instruction Manual for Filter System *Basic* size 400 and larger



Modifications possible:
here: *Basic 750*
plus external AquaCareFlotor 6000V with pump,
fluidized sand bed filter FBR 110-130



Modifications possible:
here: *Basic 400*
plus internal AquaCareFlotor 3000V-170,
circulation pump, skimmer pump, distributing system
and additional filter in multi-purpose chamber

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1. Safety Instructions

1.1. Allgemeines

Diese Montage- und Bedienungsanleitung enthält grundlegende Hinweise, die bei Aufstellung, Betrieb und Wartung zu beachten sind. Sie ist daher unbedingt vor Montage und Inbetriebnahme vom Monteur sowie dem zuständigen Fachpersonal / Betreiber zu lesen. Sie muss ständig am Einsatzort der Anlage verfügbar sein.

Es sind nicht nur die unter diesem Abschnitt aufgeführten, allgemeinen Sicherheitshinweise zu beachten, sondern auch die unter den anderen Abschnitten eingefügten, speziellen Sicherheitshinweise. Außerdem müssen sämtliche lokalen gesetzlichen Sicherheitsmaßnahmen beachtet werden.

1.2. Kennzeichnungen von Hinweisen



Die in dieser Anleitung enthaltenen Sicherheitshinweise, die bei Nichtbeachtung Gefährdung für Personen hervorrufen können, sind mit allgemeinem Gefahrensymbol „Sicherheitszeichen nach DIN 4844-W9“ besonders gekennzeichnet



Dieses Symbol finden Sie bei Sicherheitshinweisen, deren Nichtbeachtung Gefahren für die Maschine und deren Funktion hervorrufen kann.



Hier stehen Ratschläge oder Hinweise, die das Arbeiten erleichtern und für einen sicheren Betrieb sorgen.

Direkt an der Anlage angebrachte Hinweise z.B.: Drehrichtungspfeile, Fluidanschlüsse und Einstellungen müssen unbedingt beachtet und in vollständig lesbarem Zustand gehalten werden.

1.3. Personalqualifikation

Das Personal für Bedienung, Wartung, Inspektion und Montage muss die entsprechende Qualifikation für diese Arbeiten aufweisen. Verantwortungsbereich, Zuständigkeit und die Überwachung des Personals müssen durch den Betreiber genau geregelt sein.

1.4. Gefahren bei Nichtbeachtung der Sicherheitshinweise

Die Nichtbeachtung der Sicherheitshinweise kann sowohl eine Gefährdung für Personen als auch für die Umwelt und Anlage zur Folge haben. Die Nichtbeachtung der Sicherheitshinweise kann zum Verlust jeglicher Schadenersatzansprüche führen.

Im einzelnen kann Nichtbeachtung beispielsweise folgende Gefährdungen nach sich ziehen:

- Versagen wichtiger Funktionen der Anlage
- Versagen vorgeschriebener Methoden zur Wartung und Instandhaltung
- Gefährdung von Personen durch elektrische, chemische und mechanische Einwirkungen.

1.5. Sicherheitsbewusstes Arbeiten

Die in dieser Montage- und Betriebsanleitung aufgeführten Sicherheitshinweise, die bestehenden nationalen Vorschriften zur Unfallverhütung sowie eventuelle interne Arbeits-, Betriebs- und Sicherheitsvorschriften des Betreibers sind zu beachten.

1.6. Sicherheitshinweise für den Betreiber / Bediener

Ein vorhandener Berührungsschutz für sich bewegende Teile darf bei sich in Betrieb befindlicher Anlage nicht entfernt werden.

Gefährdungen durch elektrische Energie sind auszuschließen (Einzelheiten hierzu z.B. in der Vorschriften des VDE und der örtlichen Energieversorgungsunternehmen).

1.7. General information

This manual contains basic information that are important for assembly, operation, and maintenance. This should be read before mounting by the assembly operator and the responsible opera-

tor and/or qualified personnel. This instruction must be disposable the at unit at any time.

Pay attention to this safety instruction as well as to the special instructions within the other chapters. In addition local laws and safety instruction must be minded.

1.8. Indication of information



If safety information are important for life or health for persons they are marked with the relevant hazard symbol according DIN 4844-W9.



Safety information marked with this symbol can cause danger for the machine and its function if not respected.



This hints can ease the work with the machine and its maintenance.

At the machine directly marked information as rotation arrow, fluid connections and setting points should be noticed. These marks should be readable at any time.

1.9. Qualification of the personnel

The staff for operation, maintaining, inspection and assembly must be qualified for these work. Responsibility and controlling of the personnel should be directed by the operator.

1.10. Dangers if safety information are not minded

If safety information are not minded persons, environment, and the machine can be endangered. Failure of observe lead to loss of the warranty.

Failure of observe can coarse:

- Failure of important functions of the machine.
- Failure of stipulated methods for maintenance.
- Endanger of persons with electric, chemical or mechanical impacts.

1.11. Safe working

Working with the machine is only allowed if all safety information of this manual, national laws

and rules for preventing accidents and internal working, operating and safety rules of the operator must be minded.

1.12. Safety information for the operator

Contact protection for rotating or moving parts should not be removed while operation.

Risks of electrical energy must be averted. Please pay attention to the local laws and information, too.

1.13. Safety information for maintaining and assembling personnel

The operator must take care that all works for assembling, inspecting and maintaining are made by authorized and qualified personnel. These persons must be informed about the machine and the works by reading the manual or otherwise.

Working at the machine is only permitted if unit is out of operation. The described procedure of putting out of operation must be redeemed. Immediately after the work safety and protection facilities must be mounted and put into function.

Before starting again all issues treated in the chapter "putting into operation" must be minded.

1.14. Arbitrary reconstruction and spare parts production

Reconstruction or modifying the unit are only proper if the manufacture agrees. Original spare parts and authorized accessories by the manufacture are made for the safety. The use of other parts can destroy the warranty demands.

1.15. Illegal operation

Safety is only guaranteed if the unit is running within the field of application described in „designated use“ in this manual. The technical limits mentioned in manual (chapter "Technical data and unit protocol") must be redeemed.

1.16. Linked aggregates

The listed information dealing with safety and operation in manuals of linked aggregates must be redeemed, too.

2. Transport

2.1. Mechanical conditions



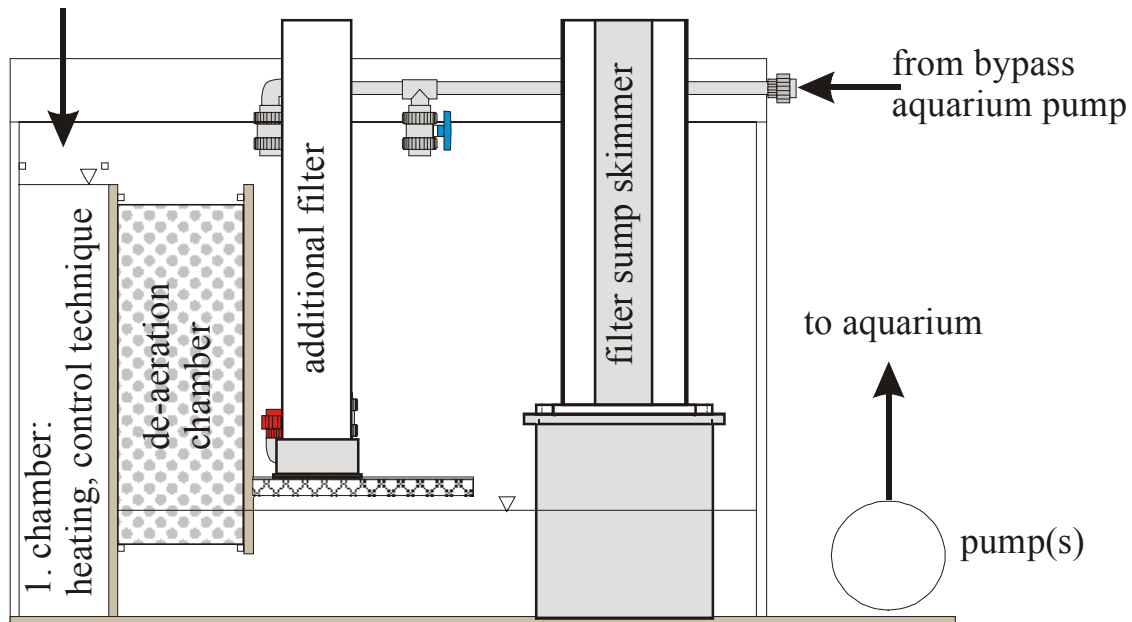
The unit may transported only with suitable lifting tools. Pay attention to the transport weight listed in chapter “Technical data and unit protocol”.

Do not tilt the unit more than 10% out of the horizontal position.

Before transporting the unit it must be totally empty. All additional filter in the multi-purpose chamber should be demounted or fixed.

4.1. Basic equipment

from aquarium



The unit is made from rigid PE plates and PE hollow chamber plates:

1. chamber / inlet chamber:

Water inlet coming from Aquarium; input grid for a fleece (for short time filtration of sediments); holder for measuring technique;

2. chamber / de-aeration chamber:

this chamber is filled with trickling filter material with high free volume; water coming from a skimmer will be de-aerated – small gas bubbles will not occur in the aquarium; a biological activity is present, too.

3. chamber / multi-purpose chamber

3. Designated use

AquaCare filter systems Basic are only made for filtering aquaria or aquaculture plant. Other purposes are only allowed after consultation with AquaCare.

4. Configuration

The AquaCare Basic filter system is completely installed (except external filters of skimmers). You have to erect the system and connected with water and electricity. Please control the delivery if it is complete and not broken.

this chamber is containing additional filters; the filters will stand on a rigid grid; a tube for fixing level switches or level valves is installed; sediments will settle down; large volume for back flowing water is circulation pump will fail.

4.2. Options

Following options may be installed:
skimmer for filter sump operation or connections for external skimmers;
biological filters: ADN = autotrophic denitrifying filter, FBR = fluidised bed reactor;
physical filters: AK = activated carbon filter, PMR = phosphate minus reactor;
mounting wall with electric cabinet, ozone unit; heaters; heat exchangers; chillers; water distribution system, flow meters (mechanical, electronic).
All components are mounted custom made.

5. Principle of function

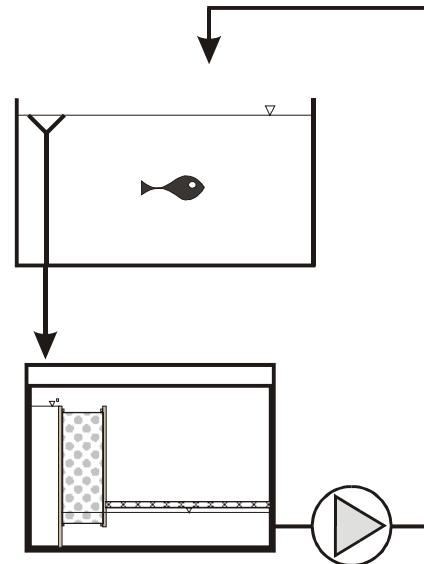
The back flowing water from the aquarium or aqua culture plant is arriving at the first chamber. You can put a fleece onto the input grid to filter out sediments (short time filtration). It is possible to install sensors for measuring water parameters in this chamber. Additional large heaters may be installed.

After it the water flow into the second chamber – the de-aeration chamber. This chamber is filled with trickling filter material with a very large free volume. Surplus gases will gas out. Especially the outgoing water of a skimmer should flow over this de-aerating chamber. Otherwise very fine gas bubbles may disturb the clear water in the aquarium.

The third chamber will settle down particles. At minimum water level a rigid grid is installed. Onto this grid you can stand additional filters. – One or some connectors are mounted to connect the circulation pump and a skimmer. An overflow prevents over spilling of water if several systems fail.

6. Embedding into the whole aquarium system

6.1. Aquarium is over the filter *Basic*



Normally the aquarium is over the filters system. The water flow from the aquarium overflow downwards into the filter system. At the outlet of the *Basic* a circulation pump pushes the water back to the aquarium.

The outlet of the aquarium should be throttled with a ball valve or regulating valve to prevent loud noises and water spray. But a emergency overflow at the aquarium must guarantee that at any time the aquarium will over flow.

Level sensors (e.g. switches or floating valves) and run dry protection for the pumps have to be installed in the last chamber of the *Basic*.

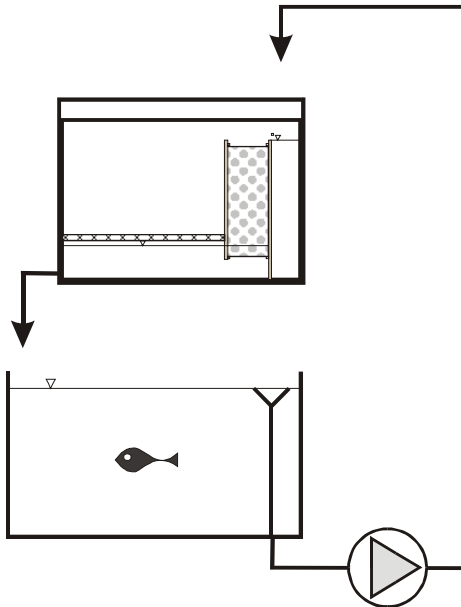
6.2. *Basic* is over the aquarium

If the aquarium is below the filter system the water has to be pumped from the aquarium into the first chamber of the filters system. From the filter system the water flow back to the aquarium by gravitation.

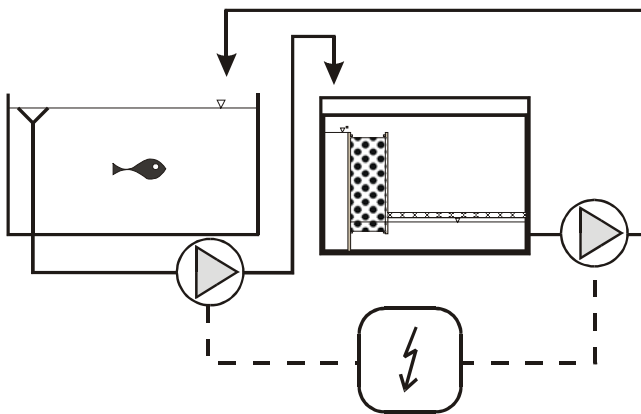
The outlet of the filter system should be throttled with a ball valve or regulating valve to prevent loud noises and water spray. But a emergency overflow at the filter system must guarantee that

at any time the filter system will over flow. The emergency overflow is not delivered in the standard version.

Level sensors (e.g. switches or floating valves) and run dry protection for the pumps have to be installed in the overflow chamber of the aquarium.



6.3. Aquarium and *Basic* are at the same level



This variant is only suitable with a costly electronic. Without an electronic level control it is not possible to synchronize two pumps permanently.

The proper control with analogue level control and frequency controlled pumps is available at AquaCare.

7. Montage

7.1. Setting up



To guarantee a faultlessly operation of the filter the unit should be erected on an even and stable ground. Uneven parts of the floor must be flattened with floor pavement or a suitable base.



If the operation location is over 1000 meter above the sea level the motor must be larger dimensioned to protect it against overheating.

7.2. Water connections

For operating the unit you must install the water connectors with the aquarium.



The connection with PVC-U must be glued only with approved adhesion. The processing regulation of the adhesion should be minded.

The water inlet tube (coming from overflow aquarium) should end about 2-3 cm over the grid in the first chamber. Please build in a ball valve or regulating valve to throttle the water flow. Only in the throttled position it is possible that only water reaches the filter system. If air bubbles arrive it gets noisy and water will spray. But an emergency overflow from the aquarium must be installed, too.

Please connect the overflow of the *Basic* system with a drain. This tube should go always downwards.

At the bottom one or more connectors for pumps are build in. If you connect the pump please build in one ball valve at the incoming connection and one at the outgoing connection of the pump – these ball valves are for maintaining. Only the ball valve at the pressure side of the pump may be throttled during operation. Choose the right diameters!

If the pumps are installed right now you only have to connect the pressure side of the circulation pump with the aquarium.

7.3. Electrical connection

The electrical connection must be done by authorized and qualified according with the local regulation only.



Before opening a terminal box and before every disassembling of electrical components the supply voltage must be disconnected at all phases (contact opening minimum 3 mm).

The electrical supply must be conform with the data at the rating plate. The filter and the pump must be protected with fuses.



It is useful to connect the motor of the pump with motor protection circuit-breaker to prevent damages.



If the power supply is not stable a voltage guard may be installed. If the phase are not stable a phases guard should be installed.



The rotation direction of the pump must be conform with the arrow at the pump body. If the pump runs in the wrong direction faults can occur. The change the direction

8. Start up the unit



Before start up the unit check out of all connections are done well. Make sure that all PVC-unions are tight and their o-ring seals are in the correct position.



Check out if the electrical connection is made correctly.

8.1. Filling up with water

Before starting the system it should be tested with fresh water. During this testing all connectors, seals and other connection may be checked. Additional you can test the installed pumps.



If the filters system is filled for minimum 20 cm it is possible to start the system. Before starting throttle the ball valves on the pressure sides of the pumps.

Start the pumps – see instruction manual of the electric cabinet, too. Make sure that always enough water is in the filter system or install a run dry protection for the pumps (see instruction manual of the electric cabinet, too).



Circulation pumps should never run dry. Otherwise the bearings will be destroyed.

8.2. Adjusting the water flows

Adjust the water flows to the additional filters as described in their manuals. The rest water flow may be pushed into the aquarium.

9. Shut down the unit

If you want to shut down the system turn off all pumps – even the internal pumps of the additional filters.

Close all ball valve at the incoming side of the pumps.

For longer stops (more than half a day) drain all additional filters to prevent rotting.

10. Maintain the unit

You have to maintain the AquaCare *Basic* filter system every year. The pumps should be maintained more often – see their instructions manuals.

10.1. De-aeration chamber

The de-aeration chamber is maintaining free if you filter out coarse material before entering the *Basic*.

Depending on the water quality (alkalinity, calcium) lime crust may occur. If the water flow through the de-aeration chamber gets lower you have to clean the filter material or have to change it.

10.2. Multi purpose chamber

In process of time sediments settle down in the multi purpose chamber. If the sediment layer is larger than 1 cm you must suck it away. Therefore stop the whole system by stopping the circulation pump(s). Take away the additional filters and the rigid grid. Now you may suck the sediment layer away. – After cleaning the system re-assemble the filter system and start it again.

10.3. Miscellaneous

Maintaining work for other filters and measuring technique see their instruction manuals, please.

11. Trouble shooting

If you cannot eliminate the disturbance ask your service partner or AquaCare.

11.1. The inlet water comes in with strong bubbles and noises

Reduce the incoming water by throttling the incoming ball valve carefully as far as all bubbles disappear. Make sure that an emergency overflow from the aquarium is installed.

11.2. The water flow uneven over the distribution plate of the de-aeration chamber

Justify the overflow edge of the distribution plate horizontally.

11.3. Connected pump is sucking air

Raise the water level in the multi purpose chamber to prevent sucking air. An automatically fill up system is very useful.

11.4. The system is spilling over



The water level at operation mode is too high. The optimum level is short below the grid in the multi purpose chamber. - An automatically fill up system is very useful.

If the system spills over although the water level is in operation mode short below the grid the overflow system of the aquarium is not build in the right way or the *Basic* system is too small.

12. Warranty

You have 24 months warranty on all AquaCare units excepts spare parts like pump bearings and rotors. You have no warranty if parts are broken by violent (for example totally closed water inlet). For consequential losses AquaCare is not liable.

13. Technical data and protocol

<p>Kundennr. / customer no.:</p> <p>Tel./phone: Fax: Email:</p> <p>Kom.</p>	 <p>www.aquacare.de </p> <p>AquaCare GmbH & Co. KG Am Wiesenbusch 11 · D-45966 Gladbeck · Germany Tel.: +49 / 2043 / 375758-0 · Fax: +49 / 2043 / 375758-90 www.aquacare.de · info@aquacare.de</p>
Anlagentyp / Type of unit	Basic
Anlagennr./unit no.	2-2011-00
Abmessungen L×H×B / Dimensions L×W×H	× × m
Leergewicht / empty weight	kg
Transportgewicht / transport weight	kg
Max. Betriebsgewicht / max. operation weight	kg
max. Arbeitsdruck / max. working pressure	drucklos / pressureless
max. Zulauf / max. feed flow	
Arbeitstemperatur / operation temperature	4...35°C
Umgebungstemperatur / ambient temperature	4...40°C
<p>Kreislaufpumpe / circulation pump</p> <p>Hersteller / manufacturer</p> <p>Typ / type</p> <p>Nr. / No.</p> <p>minimale Fördermenge / minimum flow</p>	<p>Magnetisch gekoppelte Kreiselpumpe / magnetic coupled circulation pump</p> <p>IWAKI</p> <p>m³/h</p>
<p>Motor:</p> <p>Hersteller / manufacturer, Nr. / No.</p> <p>Anschluss / electrical connection, No.</p>	
<p>Abschäumerpumpe / skimmer pump</p> <p>Hersteller / manufacturer</p> <p>Typ / type</p> <p>Nr. / No.</p> <p>minimale Fördermenge / minimum flow</p>	<p>Magnetisch gekoppelte Kreiselpumpe / magnetic coupled circulation pump</p> <p>IWAKI</p> <p>m³/h</p>
<p>Motor:</p> <p>Hersteller / manufacturer, Nr. / No.</p> <p>Anschluss / electrical connection, No.</p>	
<p>Steuerung / control:</p> <p>Hersteller / manufacture</p> <p>Einstellungen im Auslieferungszustand / parameter in delivery condition</p>	maj
<p>Wasseranschlüsse / water connections</p>	<p>Zulaufwasser / feed water: -</p> <p>Ablaufwasser / outlet water: DN32, d40 PVC</p>
<p>Dichtigkeitstest / leakage test</p>	<p>2 Stunden / hours</p>

Betriebstest / running test:	Testbedingungen / test conditions	Normleistung / normal conditions
Elektrische Daten / electrical data:		
Spannung / voltage L1-L2	V	400 V ± 10%
dito L1-L3	V	.
dito L2-L3	V	.
dito L1-N	V	230 V ± 10%
dito L2-N	V	.
dito L3-N	V	.
Strom / current L1	A	A
Strom / current L2	A	.
Strom / current L3	A	.
Strom / N	A	0,8 A

Datum / date:28.07.2011

AquaCare:..... Herr B. Ramsch

Kunde / customer:

Unterschrift / signature:

.....

14. Appendix: CE Declaration of conformity

Declaration of conformity in accordance with EMC directive

The company:
AquaCare GmbH & Co. KG
Josefstraße 35-37
D-45699 Herten, Germany

declares, that the product

Filter System *Basic*

comply with directive
98/37/EEC and
2001/95/EEC
of the European Community.

Gladbeck, 28.07.2011

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15. Appendix: Electric cabinet

16. Appendix: Pump

17. Appendix: Motor

18. Appendix: installed additional filters