

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,  
labaratoires et traitements d'eau



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## Instruction manual of Tricklingfilter TKF size 400 mm and more



modifications possible

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# 1. Safety Instructions

## 1.1. 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 operator 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.

## 1.2. 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.

## 1.3. 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.

## 1.4. 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.

## 1.5. 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.

## 1.6. 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.

## 1.7. 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.

## 1.8. 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.

## 1.9. 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.

## 1.10. Linked aggregates

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

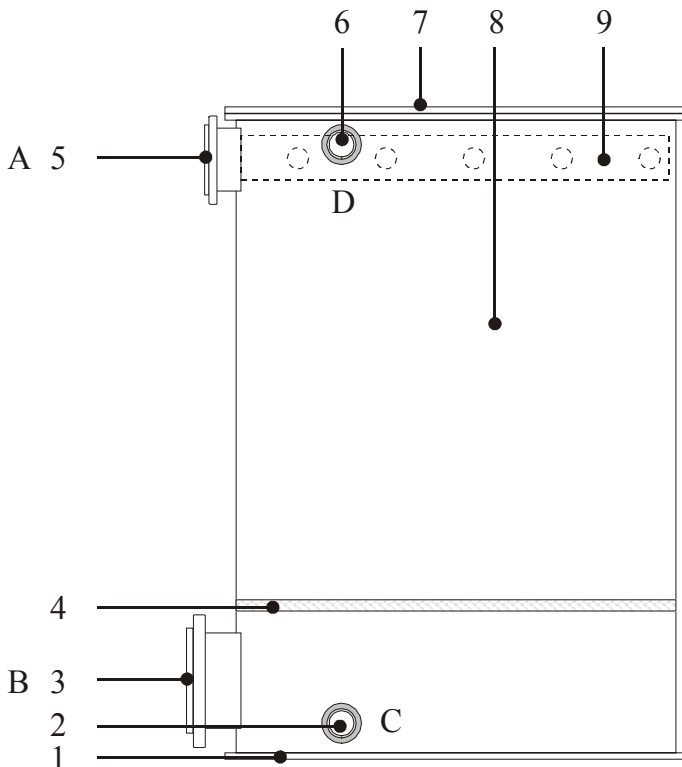
# 2. Transport

## 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”.

## 4.1. Basic equipment



The filter consists of following parts:  
1. basis plate

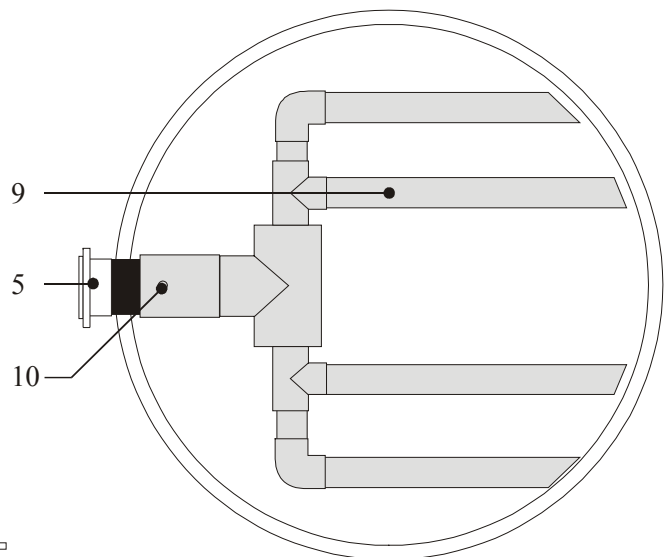
Before transporting the unit it must be totally empty (this does not apply to the filter bed granules).

# 3. Designated use

AquaCare filters are made only for filtering water of aquaria and aqua culture units. The treated water should be free of large particles or fibres. Other purposes are only allowed after consultation with AquaCare.

# 4. Configuration

The unit is completely delivered. The filter has to be erected and supplied with water. Please control the delivery if it is complete and not broken.  
– Trickling filter material is not scope of delivery, if not ordered.  
On request the types are equipped with an airinlet device to enlarge the oxygen enrichment.



2. drain (only for emp)  
3. water outlet connection

4. grid
5. water inlet connection
6. de-aerating connection
7. cap
8. useable volume of filter (to be filled with trickling filter material)
9. water distribution system
10. holder for distribution system.

A = water inlet;  
B = water outlet,  
C = drain,  
D = de-aeration

## 4.2. Options

As an option following parts may be installed: inlet and outlet for forced ventilation, trickling filter material, level sensor, level display.

## 5. Principle of function

The incoming water at connector (5.) is driven by a pump or comes downdraft. With the help of the distribution system (9.) the water is dispensed and runs down the trickling filter material. It comes out at connector (2.).

The ball valve (2.) is only for draining the system.

The de-aeration connector (6.) prohibits the total filling of the filter.

As a option: to establish a forced ventilation, the filter must have an additional connector for air inlet. In this configuration the water level inside the filter must be over the water outlet height. Otherwise a siphon has to be installed in the water outlet tube.

## 6. Installation

### 6.1. 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. geeigneten Unterlagen ausgeglichen werden.



Narrow and high models should be protected against fall over.

### 6.2. Filling the trickling filter material

Before starting the system you must fill in the trickling filter material.

Open the filter by unscrewing the cap screws, take off the cap (7.).

If the water distribution system disturbs the filling take it out. In large filters the distribution system is fixed by a holder (10.) – push it out.

Fill in suitable trickling filter material. It must be resistant against its own weight and the hydraulic weight of the down-falling water. The material should be measurably larger than the mesh of the grid.

The maximum filling is below the distribution system.

Put in the distribution system (9.) again and fix it with the plug (10.).

Put the cap (7.) onto the main tube and close it with the screws.



It is very important to screw the M10-plastic bolts with not more than **2 Nm** torque. If plexi-glas tubes are used do not exceed **1 Nm**. Higher forces may destroy screws, tapped holes and flanges. Stainless steel screws should be fixed with not more than **3 Nm**.

### 6.3. Water connections

For operation 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.

Connect the water inlet (A.) with a pump or at a downpipe. For the maximum water inlet flow please look at the technical data. The minimum

flow should be not lower than the half of the maximum flow.

The outlet (B.) has to be connected with the aquarium filter system.



**It is very important that the water is flowing free. Do not use ascending pipes.** Otherwise the filter is filling with water and the principle of the trickling filter is not realized.



At sea water system use only high-alloyed stainless steel screws.

## 7. 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.

Start the water inlet flow by starting the pump of opening the downdraft pipe.

Do not use more than the maximum water flow as seen in the technical data.

## 8. Shut down the unit

For shutting down the unit stop the inlet water flow: stop the water inlet pump of close the downdraft pipe.

If you shut down the unit for a longer time (more than about 6 hours) drain all water and keep the cap of the filter closed. Otherwise the bacteria at the surface of the trickling filter material will dry up.

## 9. Maintain the unit

The AquaCare TKF filter is maintenance-free.

Only the inlet pump should be maintained regularly.

Only with very hard water it is possible that the trickling filter material is covered with a lime crust. Check once a year if the water flow is assured. If the filter material is blocked you must clean or replace it.

## 10. Trouble shooting

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

### 10.1. Water is coming out of the de-aeration connector

Check the incoming water flow. If it is too high you must reduce it.

Check the filter material. It must be layed-up for the water flow. If the material is blocked you must clean or replace it.

Is the water flowing out without counter-pressure? Do not use ascending pipes.

### 10.2. The biological degradation performanc is not enough

Take enough time to start the filter. The cooler the water the longer the running-in time.

Avoid strongly oscillating organic loads. Biological filter react very slowly.

Check out if toxic substances are in the water. For example: rest ozone concentration is able to lower the biological degradation and induces degradation oscillations.

### 10.3. The water flow should be very far below the maximum water flow

If you want to reduce the water inlet flow below half of the maximum flow you must reduce the wholes in the distribution system (9.) with reduction bushes.

## 11. Garantie

The unit is covered by a warranty of 2 years from the date of purchase except spare parts like pump bearings and rotors. The warranty extends to manufacturing faults that are determined within the period of warranty.

The warranty claim extends to restoring the unit to readiness for use but not, however, to any further claim for damages. Improper handling or unauthorized opening of the unit invalidates any warranty claim.

To ascertain the warranty liability, return the unit and proof of purchase together with the date of purchase freight paid or prepaid

## 12. Technical Data



Size	<b>TKF 400</b>	<b>TKF 500</b>	<b>TKF 600</b>	<b>TKF 800</b>	<b>TKF 1500</b>	<b>TKF 2000</b>
Order number	362-040	362-050	362-060	362-080	362-150	362-200
max. aquarium size in m <sup>3</sup> ca. at a stock of:						
1 kg/m <sup>3</sup> (show aquarium)	60	95	140	250	900	1.650
10 kg/m <sup>3</sup>	12	19	28	50	180	330
100 kg/m <sup>3</sup> *	2,4	3,8	5,6	10	36	66
Max. flow in m <sup>3</sup> /h***	12	19	28	50	180	330
Max. pressure in bar	0,3					
Diameter in mm	400	500	630	800	1500	2000
Total height in cm**	185 (or spezial size)					
Necessary height in cm**	200 (about 15 cm more than spezial size)					
Footprint size: wide × depths in mm	500 × 500	600 × 600	700 × 700	900 × 900	1600×1600	2100×2100
Materials	PE-HD black, PA or stainless steel screws, NBR sealing					
Connectors: inlet /outlet	See order confirmation or drawing					
Operation weight in t, ca.	0.15	0.3	0.8	1.2	1.9	2.7
Substrate	Trickling filter material with a large free volumen					

\* We recommend a forced ventilation; the maximum aquarium size is only benchmark and depends on many factors.

\*\* special sizes are possible



# 13. Protocol

<b>Kundennr. / customer no.:</b>		 <p><b>AquaCare™</b></p> <p>www.aquacare.de </p> <p>AquaCare GmbH &amp; 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>
☎:		
☒:		
Email:		
Kom.		
Anlagentyp / Type of unit	<b>TKF</b>	
Anlagennr./unit no.	1-2009-00	
Abmessungen L× B × H / Dimensions L×W×H	× × m	
Leergewicht / empty weight	kg	
Transportgewicht / transport weight	kg	
Betriebsgewicht / operation weight	ca. kg anhängig von Füllkörper / depending on filter material	
max. Arbeitsdruck / max. working pressure	0,3 bar	
max. Zulauf / max. feed flow		
Arbeitstemperatur / operation temperature	4...40°C	
Umgebungstemperatur / ambient temperature	4...45°C	
Wasseranschlüsse / water connections	Zulaufwasser / feed water: DN15, d20 PVC Ablaufwasser / outlet water: DN20, d25 PVC Ablass / drain: DN15, d20 PVC Abluft / exhaust: DN ,	
<b>Materialien / materials:</b>		
Behälter / Container	PE schwarz / PE black	
Füllkörpersieb / grid of filter material	GFK / FRP	
Verteilsystem / water distribution system	PVC	
Flanschschrauben / flange screws	V2A / stainless steel	
Dichtung / seal	Moosgummi / sponge rubber	

Datum / date: ..... 16.01.2009

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  
Am Wiesenbusch 11  
D-459566 Gladbeck, Germany

declares, that the product

### TKF Trickling Filter

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

Gladbeck, 01.07.2011

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## **15. Appendix: pump**