

Installation Manual for
AQUATO[®]KOM
AQUATO[®]KOM-PAKT

Effluent classes <small>(please tick)</small>	C	D	P	H
Serial number				
Date of commissioning				
Tank <small>(please tick)</small>	Concrete	PE	GRP	
Primary volume				
SBR volume				

Fully Biological wastewater treatment plant for domestic wastewater according to DIN 4261 / EN 12566



CE marking of AQUATO[®] small wastewater treatment plants

Dear AQUATO[®] customer,

When you put your AQUATO[®] wastewater treatment plant together with a tank of your choice, you have to prepare the following documents:

- compliance of the tank according to DIN EN 12566-3 (test for water tightness, durability and stability)
- compliance of the technical equipment
(Included in document!)

Subsequently, the treatment plant has to be installed according to the installation manual. If all criteria of EN 12566-3 and the general approval are met, you can declare the CE compliance according to EN 12566-3. For this you can use the printed form on the next page.

Please enter your company name and address in the free space of the accompanying document and cross out the type of plant / tank material, you do not use.

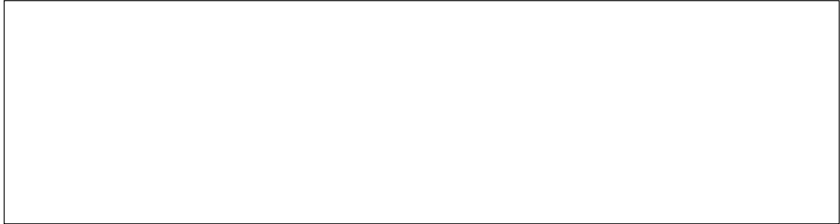
Additionally, the enclosed CE sticker must be attached clearly visible and durable to the plant, for example, on the control panel.

Thank you for your confidence!

Your AQUATO[®] -Team



Marketing Authorisation Holder (MAH)



12

EN 12566-3

Prefabricated sewage treatment plants for to the treatment of domestic
wastewater

AQUATO®KOM / KOM-PAKT®

Concrete / Plastic

Efficiency of treatment:

Efficiency of the cleaning performance
(with a certified daily organic pollution load
 $BOD_5 = 0.06 \text{ kg / d}$)

COB:	87,2%
BOD_5 :	92,3%
SS:	91,0%

Purification capacity (Design):

Nominal daily inflow (Q_N)
Nominal daily organic pollution load (BOD_5)

0,60 - 7,5 m ³ /d
0,24 - 3,0 kg/d

Watertightness:
Compressive Strength:
Durability:

passed
passed
passed

Your CE sticker



Please attach it clearly visible and durable to the plant, for example, on the control panel.

Manufacturer: **AQUATO**[®] Umwelttechnologien GmbH
Borriesstraße 10
D-32051 Herford | Germany
fon + 49 (0) 5221-10 21 9 - 0
fax + 49 (0) 5221-10 21 9-20
info@aquato.de
www.aquato.de

We hereby declare that the product

AQUATO[®]**KOM / AQUATO**[®]**KOM-PAKT** for small wastewater treatment plants from 4 to 50 PE is according to the following directives:

89/106/EC Building Products Guideline
2006/42/EC Machinery Directive
2004/108/EWG EMV - Directive
2006/95/EWG Low Voltage Directive

The following harmonized standards were applied::

EN 12566 - 3 (2009)
EN 61000 - 6 - 1 (2001)
EN 50081 - 1 (1992)
EN 61000 - 3 - 2 (1995)
EN 50082 - 1 (1997)
EN 61000 - 6 - 3 (2001)
EN 60204 - 1 (1997)

This letter certifies compliance with the listed directives but does not include any confirmation of characteristics.

The declaration of conformity becomes invalid if the product is changed without approval.

Herford, in April 2010



Eckhard G. Bischoff
Managing Director

Overview Approvals

Overview approvals

Tank	Effluent classes	Technical approvals Z - 55.3-	User approvals Z - 55.31-
Concrete	C	192	275
	D	191	274
	D + P	-	356
	D + H	-	357
PE horizontal	C	277	338
	D	276	337
	D + P	-	358
	D + H	-	359
PE vertical	C	241	-
	D	240	-
GRP	C	265	-
	D	264	-

On the following pages you will find all necessary information for the installation of your **AQUATO**® waster treatment plant.

We would like to thank at this point for the trust you have placed in us by purchasing our product.

Please note that the accurate installation of the wastewater treatment plant and the subsequent maintenance are very important for the ideal cleaning performance.

By signing a maintenance contract, the plant and its biological effluent values are monitored continuously.

For more information, contact your installation partner or your service company.

This installation manual is available in A4 format as a PDF file to download on our website www.aquato.de under "Downloads".

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Safety Information

By using the Aquato wastewater treatment plant for other purposes without explicit permission of Aquato GmbH and / or ignoring following safety instructions, danger or injury to persons can occur and cause malfunctions or defects of the system.

In this case, any liability is excluded.

Changes to the system or unauthorized modifications are not allowed.

The AQUATO® small wastewater treatment plant has to be installed properly and in accordance with the installation instructions before using.

Installation instructions and the operation manual of the control are to be read carefully before installation and commissioning, and to be followed strictly! During assembly and installation, commissioning and operation, and, if necessary, during decommissioning, all national standards and regulations are to be observed.

All work may be carried out only by trained professionals with appropriate technical qualification.

The plant operator has to be instructed by the technician regarding the operation.

When connecting the control, the national regulations, as well as information on the type plate have to be observed. The device should operate only on mains, which include a safety switch. The connection to the mains must be carried out by means of special protection fuses and a RCD.

Prior to commissioning, the proper function of the electrical safety has to be checked!

The installation work has to be carried out by qualified electricians only. Do not operate any device which shows malfunctions, was dropped or damaged in any other way or shows obviously damaged connector plugs or cables.

With all maintenance and repair work the plant is to be disconnected from the mains.

The equipment can be easily removed from the tank.

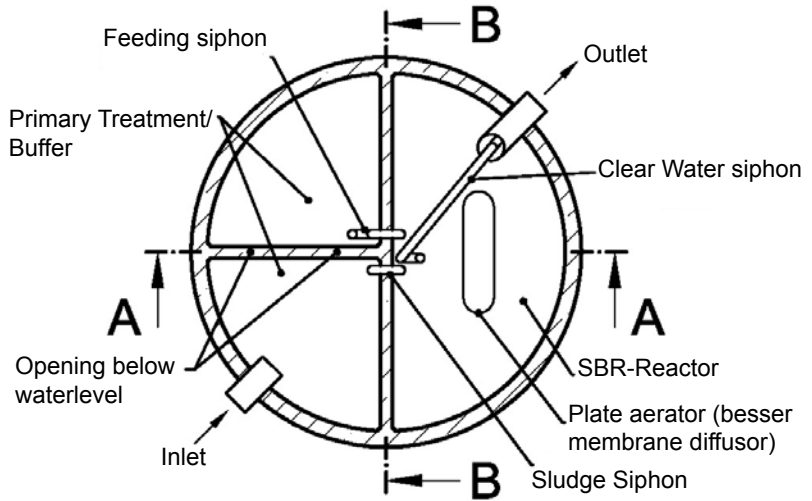
In case the plant needs to be entered, this may only be in presence of a second person!

Particular caution is advised!

The applicable accident prevention regulations and codes of practice have to be observed!

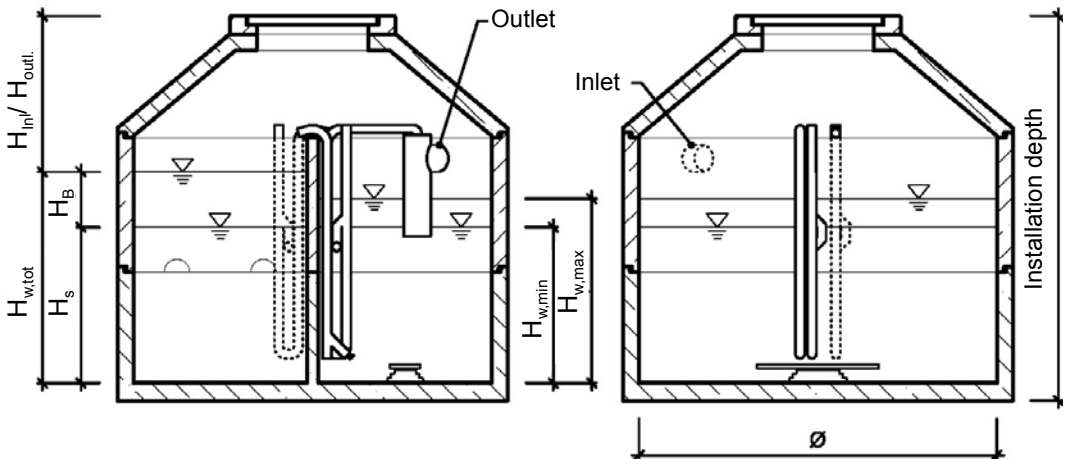
KOM Drawing in Concrete Tank

3 chamber concrete tank
Installation in 1/2 chamber



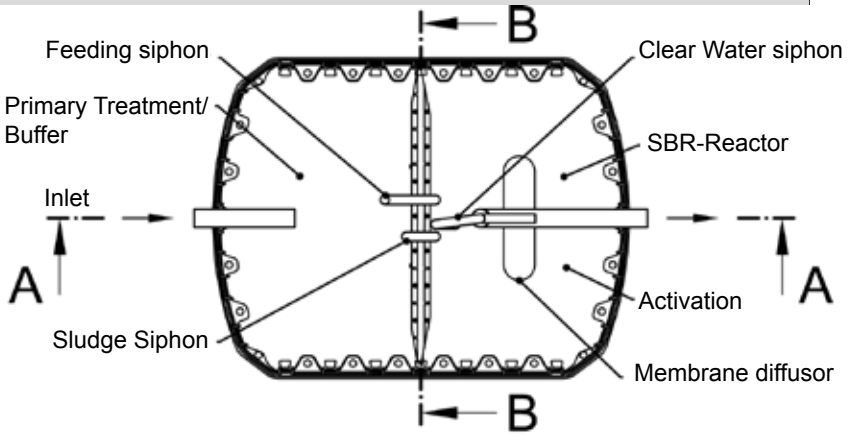
A - A

B - B



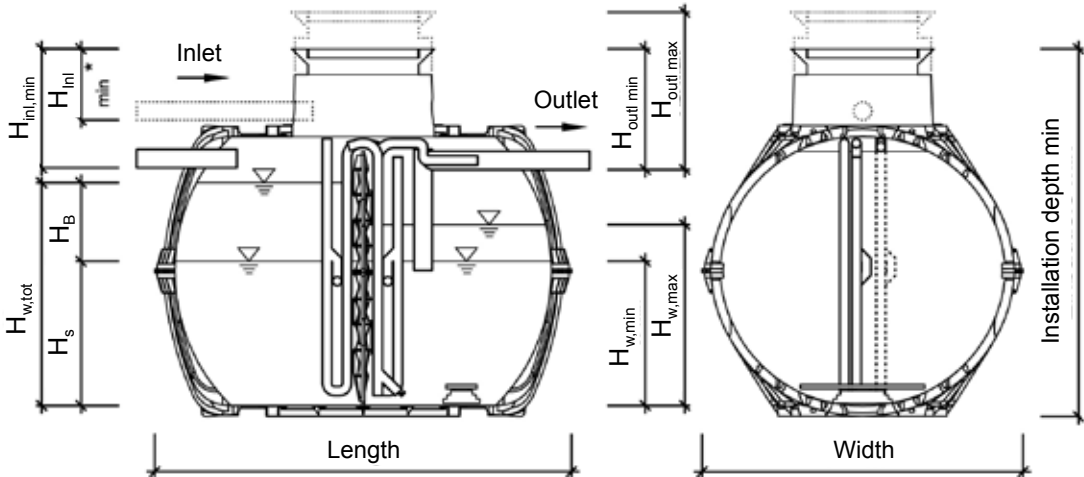
KOM Drawing in PE-Tank

2 chamber plastic tank
Installation in 1/2 chamber



A - A

B - B



Scope of Delivery KOM

Feeding siphon made of pre-assembled HT (High Temperature) pipe DN 50 mm for the feeding of the aeration tank

Sludge and clearwater siphon made of pre-assembled HT (High Temperature) pipe DN 50 mm for the return-sludge and clear water discharge



Hose 16 mm / 50 m



Wall bracket for control and compressor



Membrane diffuser



Fixing material



The following accessories on extra order:

- Additional clearwater pump / feeding pump
- Float switch

Scope of Delivery KOM Chain System

Feeding siphon made of pre-assembled HT (High Temperature) pipe DN 50 mm for the feeding of the aeration tank

Sludge and clearwater siphon made of pre-assembled HT (High Temperature) pipe DN 50 mm for the return-sludge and clear water discharge

Carrying handle with shackles and stainless steel chains, concrete weight below



Wall bracket for control and compressor



Membrane diffuser



Fixing material



Hose 16 mm / 50 m



The following accessories on extra order:

- Additional clearwater pump / feeding pump
- Float switch

Scope of Delivery KOM - PAKT

Feeding siphon made of pre-assembled HT (High Temperature) pipe DN 50 mm for the feeding of the aeration tank

Sludge and clearwater siphon made of pre-assembled HT (High Temperature) pipe DN 50 mm for the return-sludge and clear water discharge

3 pieces pre-assembled connecting hoses with 16 mm hose couplings

Carrying handle made of PE with siphon, completely pre-assembled



Wall bracket for control and compressor



Membrane diffuser



Fixing material



Hose 16 mm / 50 m



The following accessories on extra order:

- Additional clearwater pump / feeding pump
- Float switch

Assembly Preparation in a Concrete Tank (Example)

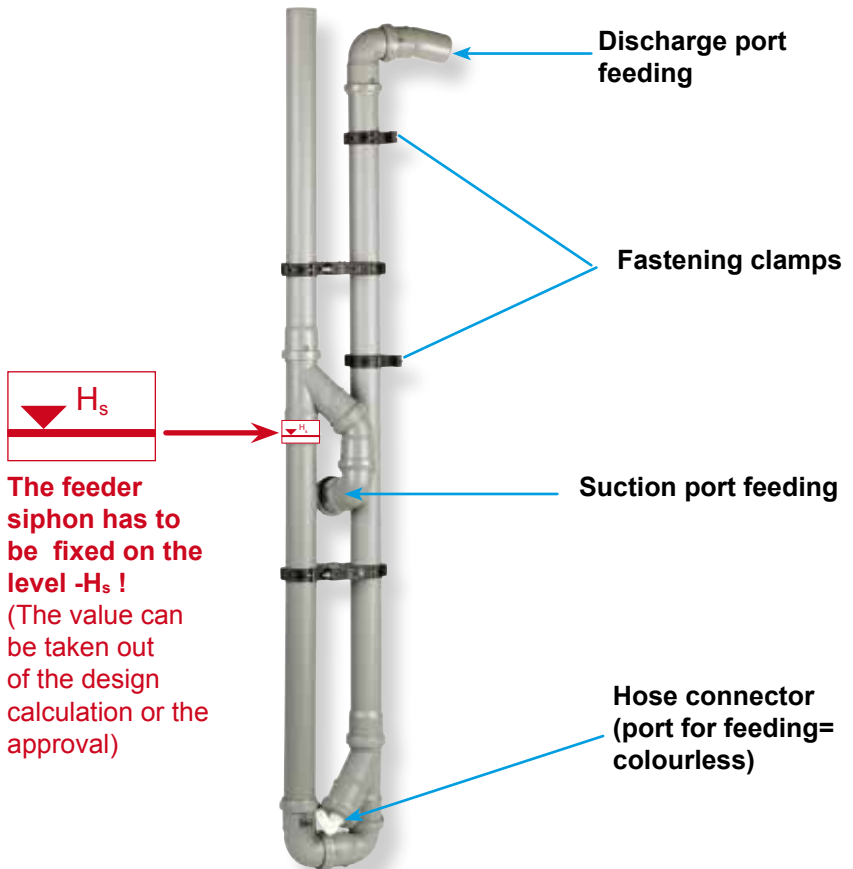
Tank preparation by the example of a 3-chamber pit with two quarter chambers as primary treatment (sludge storage and buffer) and a half chamber as treatment chamber (biology)

- All dimensions should be checked on site.
- The accident prevention regulations must be observed.
- The tank must be fitted in level and watertight. A water leak test according to DIN 4261 must be carried out and completed successfully.
- The tank is free of sewage and clean.
- All chambers of the plant must be accessible to persons (opening at least 60 cm)
- The tank must be sufficiently ventilated continuously. The lid of the tank must have ventilation openings or a separate vent pipe must be installed.
- The inlet must be lead into the first quarter chamber.
- Both quarter chambers are connected below the water level.
- The dividing wall between the half chamber and two quarter chambers has to be watertight.
- An emergency overflow has to be created into the dividing wall between the second quarter chamber and the half-chamber (eg by a notch)
- With a two-chamber pit, the emergency overflow of the primary treatment has to be covered with a submerged wall (eg, made of PE). This prevents the passage of floating sludge (scum) to the treatment chamber.
- The outlet pipe is connected to the pit and extends about 15 cm into the pit (do not cut it on the chamber wall).
- Between the location of the control and the tank an empty pipe of at least DN 150 is laid with a slope to the tank. Any bends > 15 ° should be avoided. The empty pipe should contain a pull wire. This cable duct has to be sealed in later against odour. (If such a cable duct leads into an optional external cabinet / outdoor column, vapors may not enter there)
- To the location of the control device, a 230 V power supply cable is layed and protected separately as follows: B 16A earth-leakage circuit breaker 25 A / 30 mA.
- The maximum length of hoses between the control and wastewater treatment plant may not exceed 15 m.

Dividing wall between the sludge storage and aeration tank

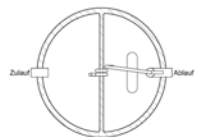


Feeding Siphon KOM



Installation: In 1 tank: ½ chamber primary, ½ chamber aeration.

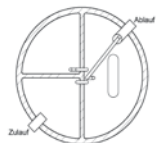
- The feeder siphon is fixed in the half chamber of the primary face to face with the inlet.
- The discharge port of the feeding siphon has to be extended into the half-chamber of the aeration tank.



Installation: In 1 tank: 2x ¼ chamber primary, ½ chamber aeration.

As above, but:

- The feeder siphon is fixed in the 2. quarter chamber of the primary on the dividing wall.



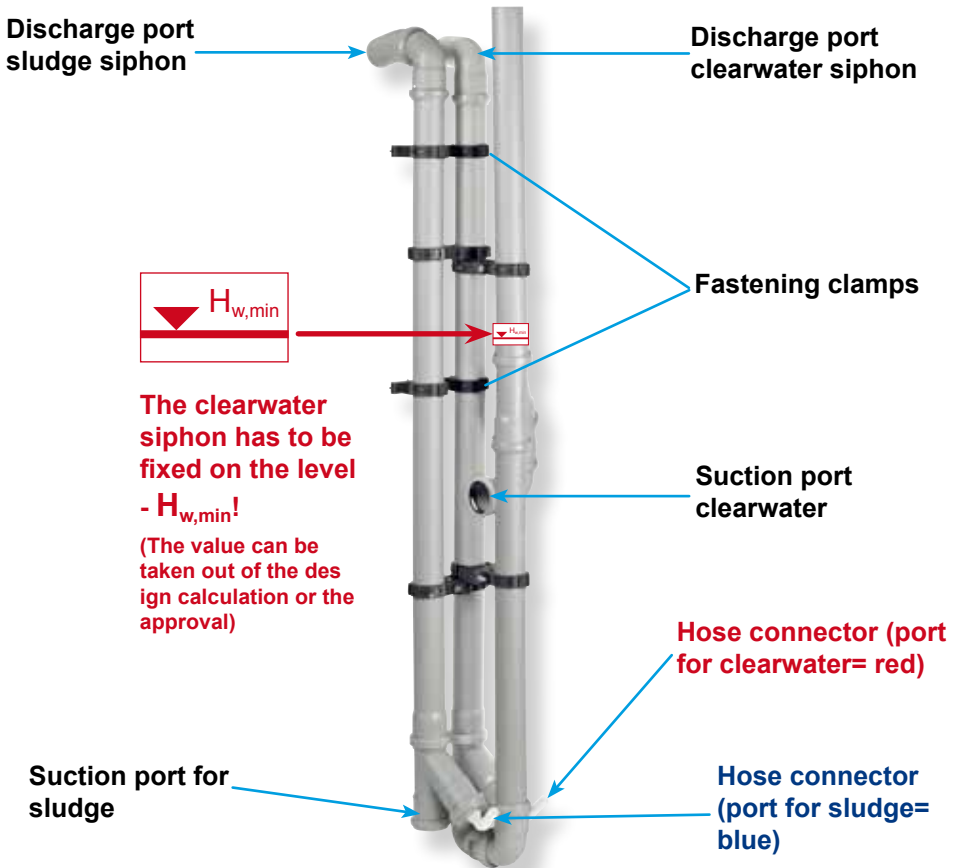
Installation: In 1 tank: ½ + ¼ chamber primary, ¼ chamber aeration.

As on top, but:

- The feeder siphon is fixed in the 2. chamber = quarter chamber of the primary on the dividing wall.
- The discharge port of the feeding siphon has to be extended into the quarter-chamber of the aeration tank.

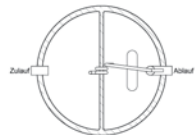


Sludge and Clearwater Siphon KOM



Installation: In 1 tank: ½ chamber primary, ½ chamber aeration.

- The sludge and clearwater siphon is fixed on the dividing wall in the half chamber aeration tank.
- The discharge port of the sludge siphon has to extend into the primary chamber.
- The discharge port of the clearwater is connected with a slope to the outlet.



Installation: In 1 tank: 2x ¼ chamber primary, ½ chamber aeration.

As above, but:

- The discharge port of the sludge siphon has to be extended into the first quarter chamber of the primary.



Installation: In 1 tank: ½ + ¼ chamber primary, ¼ chamber aeration.

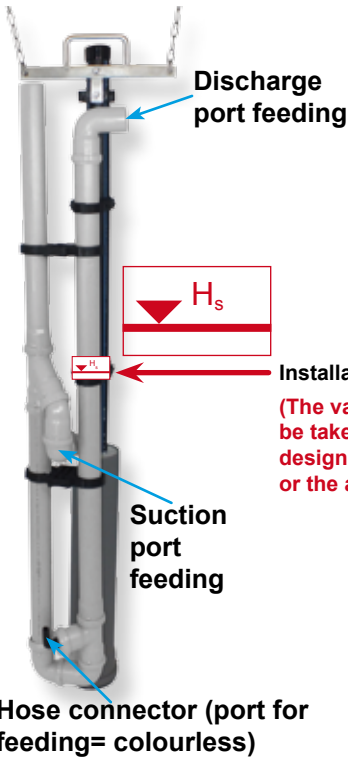
As on top, but:

- The sludge and clearwater siphon is fixed in the last quarter chamber on the dividing wall.
- The discharge port of the sludge siphon has to be extended into the first half-chamber of the primary treatment.

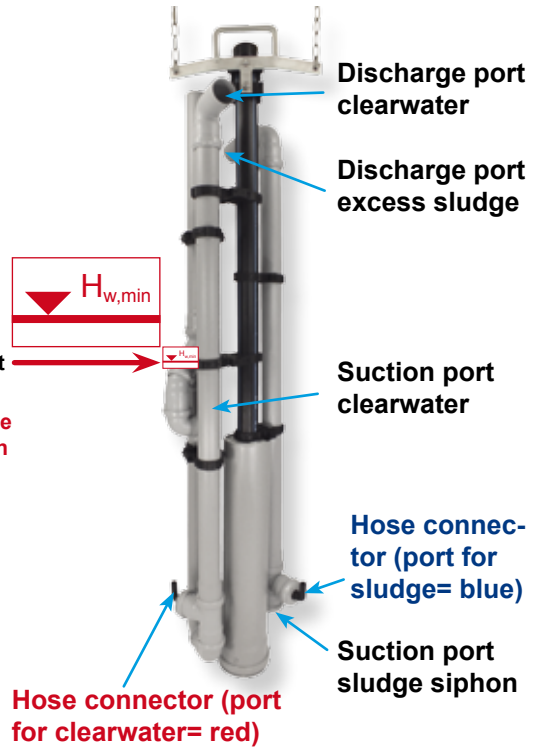


Siphon KOM Chain Unit

Feeding siphon



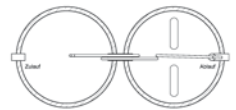
Sludge- & Clearwater siphon



Installation height
(The values can be taken out of the design calculation or the approval)

Installation: In 2 tanks: 1.tank primary, 2. tank aeration.

- The feeding siphon is suspended into the 1. tank = primary treatment.
- The discharge port of the feeding siphon has to be layed into the 2. tank = aeration.
- The sludge- and clearwater siphon is suspended into the aeration tank.
- The discharge port of the sludge siphon has to be layed into the primary tank.
- The discharge port of the clearwater siphon is connected to the outlet with a gravity slope.



Installation: In 2 tanks: 1.tank divided = primary chambers, 2. tank aeration.

As above, but:

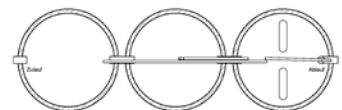
- Feeding siphon into the 2.primary chamber of the 1. tank
- Discharge port of the sludge siphon has to be layed into the 1. primary chamber



Installation: In 3 tanks: 1.&2. tank primary, 3. tank aeration.

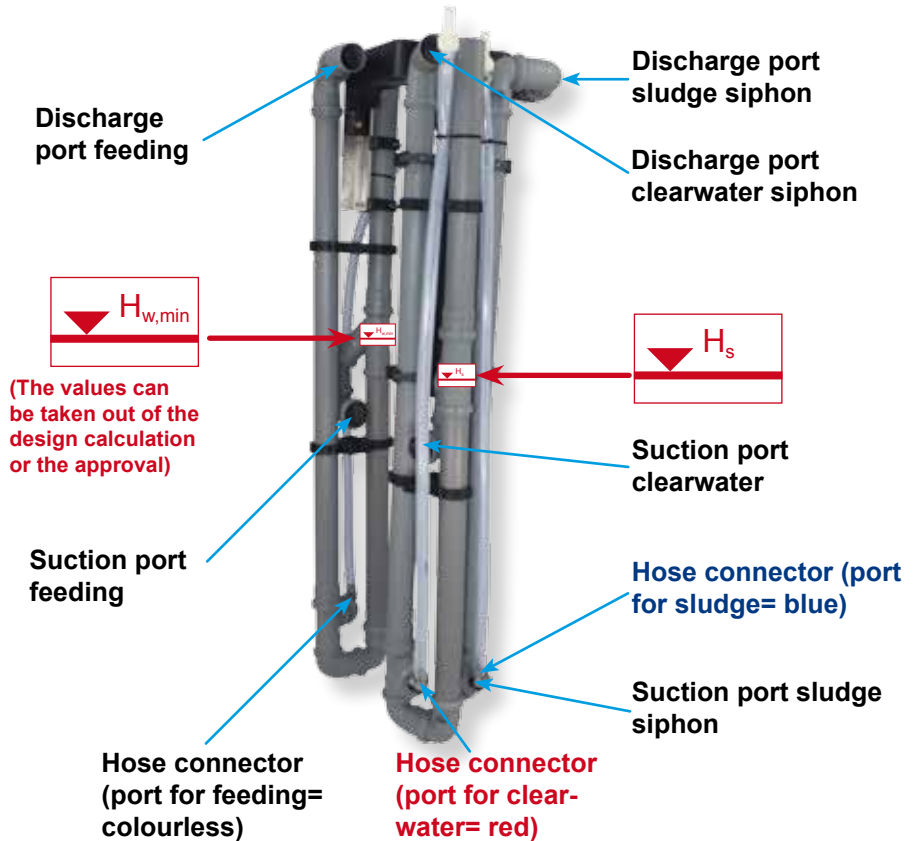
As on top, but:

- Feeding siphon into the 2. Tank = 2. primary chamber
- Discharge port of the sludge siphon has to be layed into the 1.tank = 1. primary chamber



Siphon KOM-PAKT

Feeding-, Sludge and Clearwater siphon as one unit



Installation: In 1 tank: 1/2 chamber primary, 1/2 chamber aeration.

- Position the sludge- and clearwater siphon in the aeration chamber.
- Position the feeding siphon in the primary chamber.
- The discharge port of the feeding has to be extended into the aeration chamber
- The discharge port of the sludge siphon has to be extended to the primary
- The discharge port of the clearwater siphon is connected to the outlet by gravity slope

Installation: In 1 tank: 2x 1/4 chamber primary, 1/2 chamber aeration.

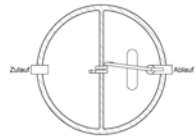
As above, but:

- Position the feeding siphon into the 2. quarter chamber of the primary.
- The discharge port of the sludge siphon has to be extended into the 1. quarter chamber of the primary

Installation: In 1 tank: 1/2 + 1/4 chamber primary, 1/4 chamber aeration.

As on top, but:

- Position the feeding siphon into the 2. chamber (quarter chamber) of the primary
- The discharge port of the feeding siphon has to be extended into the quarter chamber of the aeration.



General Installation Instructions & Special Solutions

General instructions

Before installing the Aquato system into the tank, please take out the required minimum water height $H_{w,min}$ in the SBR tank and the minimum height of sludge storage H_s in the primary treatment according to the planned number of inhabitants from the "general technical approval" or a separate design calculation.

Aquato KOM

The feeding-, sludge- and clearwater siphons are being fixed to the dividing wall each with 2 fixing-clamps and stainless steel anchor bolts. The fixing-clamps should be above the future water level, in order to allow removal from the filled tank if necessary. The discharge port of the clearwater siphon is connected to the outlet with a gravity slope. With any single chamber primary treatment, a baffle wall has to be installed around the suction port of the feeding siphon (floating sludge/ scum retention).

Please note: Special installation accessories are required for dividing walls in PE tanks and GRP tanks, which are not automatically included and have to be ordered separately.

Aquato KOM-chain unit

The feeding-, sludge- and clearwater siphons are each attached to a PE carrying tube with clamps.

The PE-carrying tube has a stainless steel bracket on top, on which the siphons are suspended with 2 shackles and 2 chains each 1.5 m long, the height is adjusted via the chain length.

At the bottom there is a concrete weight to keep the unit upright.

The discharge port of the clearwater siphon is connected to the outlet with a gravity slope. With any single chamber primary treatment, a baffle wall has to be installed around the suction port of the feeding siphon (floating sludge/ scum retention).

Aquato KOM-PAKT

The feeding-, sludge- and clearwater siphons form a unit with the carrying tube and are placed on the dividing wall as a whole. The carrying tube has 2 bearing surfaces up to 75 mm and up to 125 mm. All siphons are assembled to one holder. By releasing the clamp, any height can be adapted. The feeding siphon has to be adjusted corresponding to H_s , the clearwater siphon has to be adjusted corresponding to $H_{w,min}$. The discharge port of the clearwater siphon is connected to the outlet with a gravity slope. With any single chamber primary treatment, a baffle wall has to be installed around the suction port of the feeding siphon (floating sludge/ scum retention).

Please note: Special installation accessories are required for dividing walls in PE tanks and GRP tanks, which are not automatically included and have to be ordered separately.

Special case of divergent head at all KOM systems

The Standard lift height (head) of our KOM system for the clearwater discharge is max. 50 cm, which corresponds approximately to the distance $H_{w,min}$ up to the outlet. In case the head, for example, needs to be increased by 35 cm, all HT-pipes have to be extended by 35 cm below and also extended by 35 cm above the $H_{w,min}$ and level H_s . A larger head causes a deeper air injection level (= hose connection) by the same proportion.

In the primary treatment the feeding siphon can be used without any change, it then results in a larger pre-treatment volume.

Installation of Control and Compressor

Control with wall bracket

The control panel is completely assembled to the wall bracket.

- When selecting the installation location, the weight of the finished unit is to be considered (here, for example, 10 kg). Furthermore, a building structure which transmits sound or vibration is unsuitable. The location has to be dry, clean and well ventilated - high dust accumulation has to be avoided as otherwise the air filter of the compressor may clog.
- Mount the control panel with wall bracket [vertical and horizontal](#) to the wall.
- Place the compressor on the console and connect it to the control with the included 90° manifold and 2 clamps.
- **The operation manual of the control has to be read before commissioning.**
- Plug the power supply of the compressor sideways into the 230 V socket of the control.



Installation of Control and Compressor

Control in open air column



Control in closet display may be operated externally



hose connectors



For the installation, follow the same principles as described in of previous page.

In addition, special installation notes applie for the open air column described in special installati-on instructions, which is included in delivery.

! Direct solar radiation has to be avoided for all versions !

Laying and Installation of the Hoses

Installation steps:

- Cut 4 hoses (50 m result in max. 4 x 12.5 m hose length).
- Mark at both ends according to its use with the supplied color strips.
- Close hose ends temporarily (keep the inside clean) and pull all 4 hoses at once through the empty pipe from of the control to the tank.
- Note: If the empty pipe ends in an open air column, it has to be ensured that during operation no vapor / gases pass through the empty pipe into the column.
- Connect the hose ends according to their color markings on the control.
- Connect the other endings accordingly to the siphons and the membrane diffusers.
- Put down the membrane diffusers **carefully** in the center of biology / SBR reactor. (When using 2 membrane diffusers, they are connected to a Y-hose connector and 2 short pieces of hose)

- Sludge disposal = blue**
- Clearwater discharge = red**
- Aeration = green**
- Feeding = colourless**



Membrane diffusers for aeration



Hose connector (Connection to aeration = green)

Attachment and laying of hoses



Installation of Float Switch

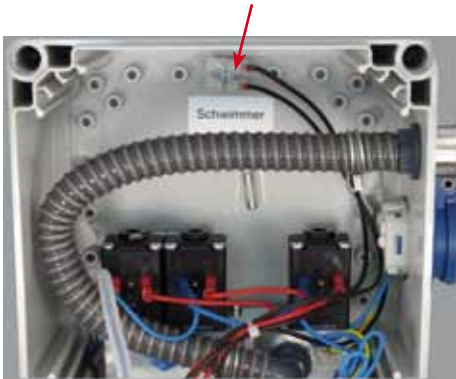
A float switch for retrofitting is available optionally

-With cable and installation clamp for the clearwater siphon

- Cable lengths of 5m / 10m / 15m / 20m available
- Bracket is clicked to the pipe
- Height adjustable by moving on the pipe
- Adjustment of the switching point to HW-min
- Laying of the float switch cable together with hoses through the empty pipe to control



**Connection to the control
to terminal „float switch“**



Max Waterlevels with Backpressure

The possible theoretical water levels are resulting from the water pressure on the membrane diffusers, the air drag in the hoses, the capacity of the compressor and some other factors. Thus, for the installation of our equipment the maximum water depth below apply. The specified pressure value can be read of the control during operation.

Plant capacity	compressor size	max waterlevel	max. pressure value
04-06 PE	80	1600 mm	250 mbar
07-11 PE	120	1600 mm	250 mbar
12-16 PE	150	2100 mm	300 mbar
17-20 PE	200	2100 mm	300 mbar

Installation View KOM in 3-Chamber Tank - Concrete

- The clearwater siphon has to be extended to the outlet by the customer
- A sampling device has to be provided or a separate sampling chamber has to be set in the outlet by the customer.

Primary:
1. quarter
chamber

Primary:
2. quarter
chamber

Biology :
half-chamber

Place "Caution:
Biology" tag



Discharge
port sludge
siphon

Discharge
port feeding
siphon

Discharge
port clear-
water siphon

Sampling
device

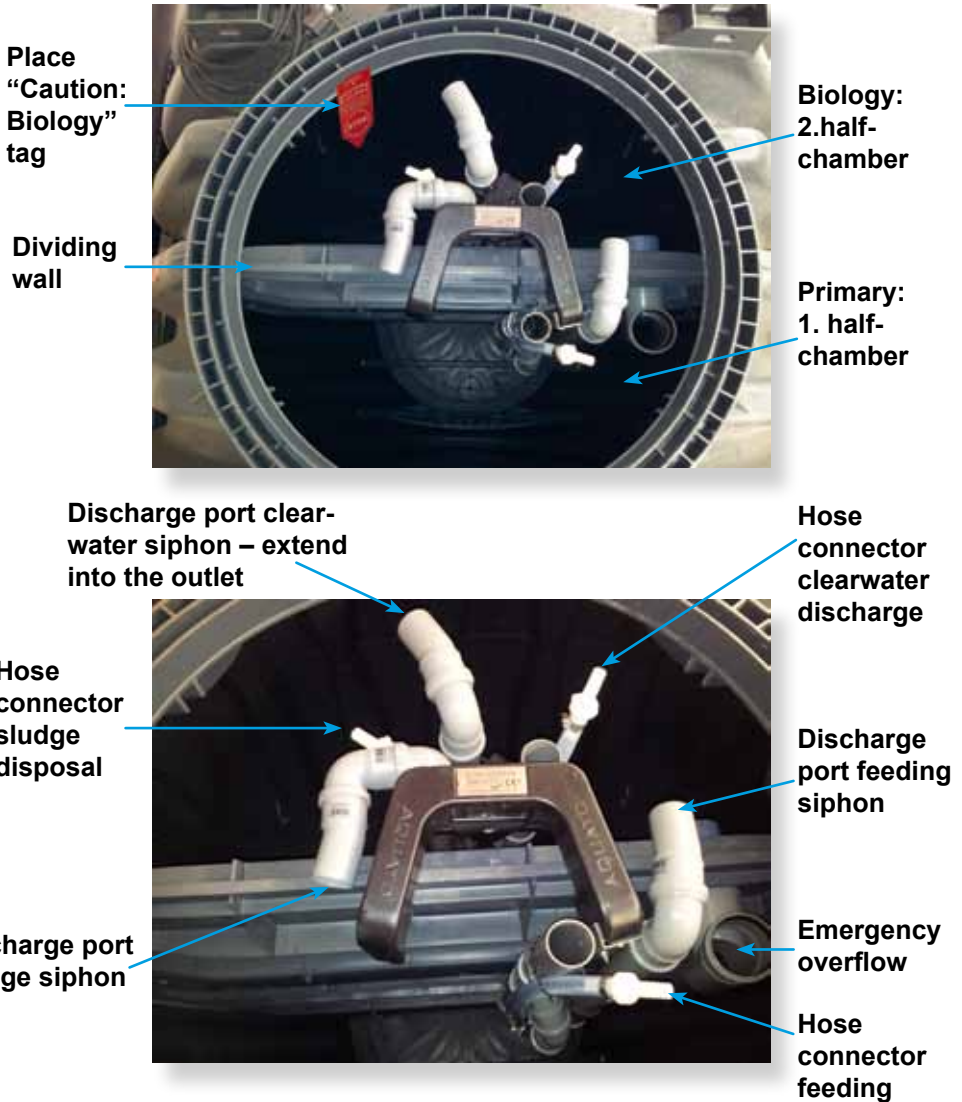
Outlet



! Fill the primary treatment and biology with water up to 5 cm above  before commissioning the system

Installation View KOM-PAKT in 2-Chamber Tank - PE

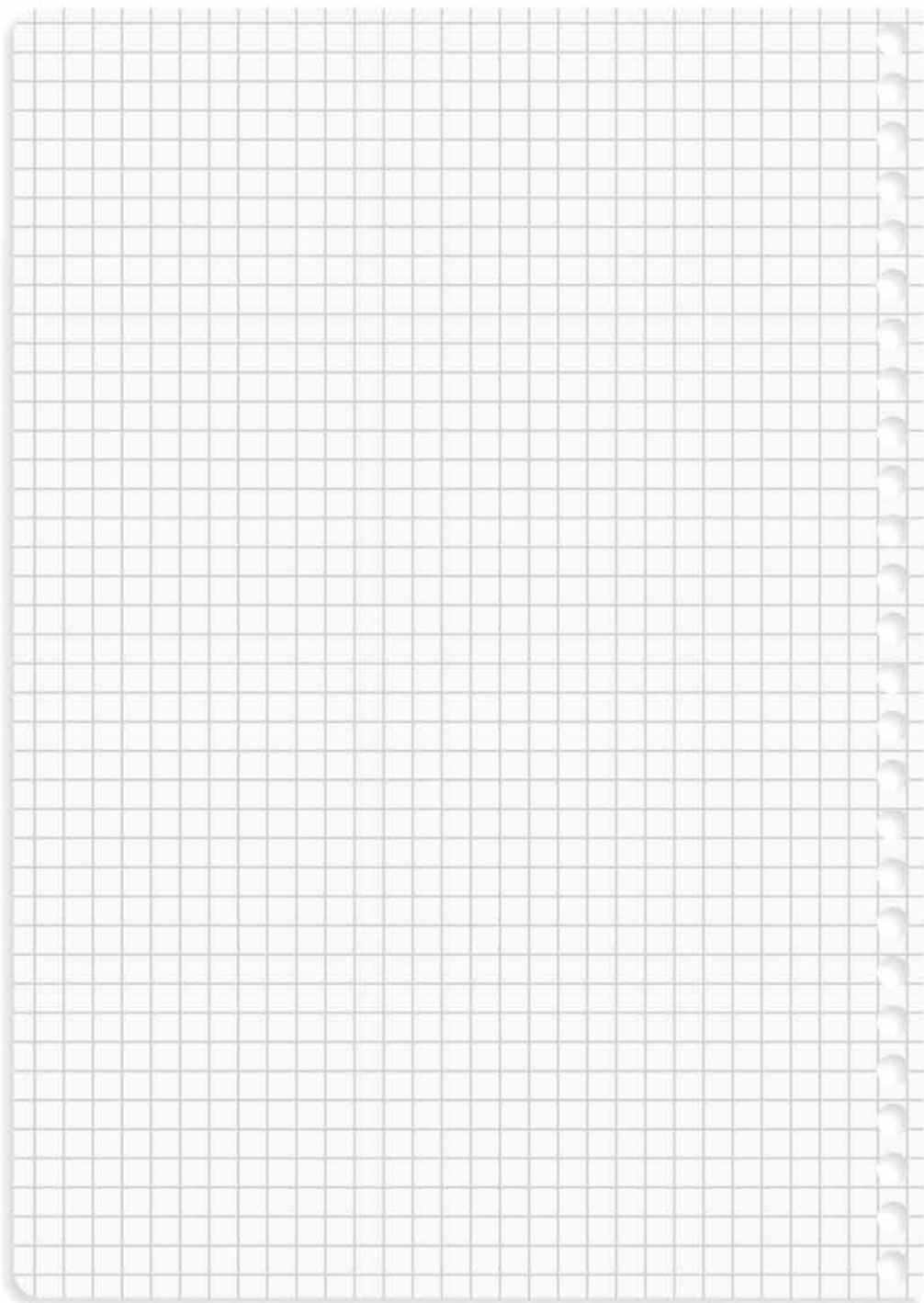
- The clearwater siphon has to be extended to the outlet by the customer
- A sampling device has to be provided or a separate sampling chamber has to be set in the outlet by the customer.



! Fill the primary treatment and biology with water up to 5 cm above



before commissioning the system



Declaration of Conformity

EC Declaration of Conformity

Manufacturer: AQUATO® Umwelttechnologien GmbH
Borriesstrasse 10
D-32051 Herford / Germany
fon: +49 (0) 5221 / 10219 - 0
fax: +49 (0) 5221 / 10219 - 20
mail: info@aquato.de
www.aquato.de

We hereby declare that the product

AQUATO®KOM / AQUATO®KOM-PAKT
for small wastewater treatment plants from 4 to 50 PE
is according to the following directives:

89 / 106 / EC	Building Products Guideline
2006 / 42 / EC	Machinery Directive
2004 / 108 / EWG	EMV - Directive
2006 / 95 / EWG	Low Voltage Directive

The following harmonized standards were applied:

EN 12566 - 3 (2009)
EN 50081 - 1 (1992)
EN 50082 - 1 (1997)
EN 61000 - 6 - 3 (2001)
EN 61000 - 6 - 1 (2001)
EN 61000 - 3 - 2 (1995)
EN 60204 - 1 (1997)

This letter certifies compliance with the listed directives but does not include any confirmation of characteristics.

The declaration of conformity becomes invalid if the product is changed without approval.

Herford, in January 2010



Eckhard G. Bischoff
Managing Director



Umwelttechnologien GmbH

Borriesstraße 10 | D - 32051 Herford | Germany

fon + 49 (0) 52 21.10 21 90 | fax + 49 (0) 52 21.10 21 920

www.aquato.de | info@aquato.de

Installation Company: