

5) Problem solving

When you experience any problems while using your KOK Series filter, you can ask your dealer for advice. But here you can read about a few common problems and how to solve them.

Decrease in water flow

- The filter needs to be backwash. Dirty beads can lead to a decrease in water flow.
- When the water flow is still low after backwashing, check if the basket of the pump is dirty.
- The filter needs maintenance. First take the two steps above. If doesn't help, follow the maintenance procedure as described in chapter 4.
- If you have followed the above mentioned steps and the water flow is still low, please contact your dealer.

Decrease in water clarity

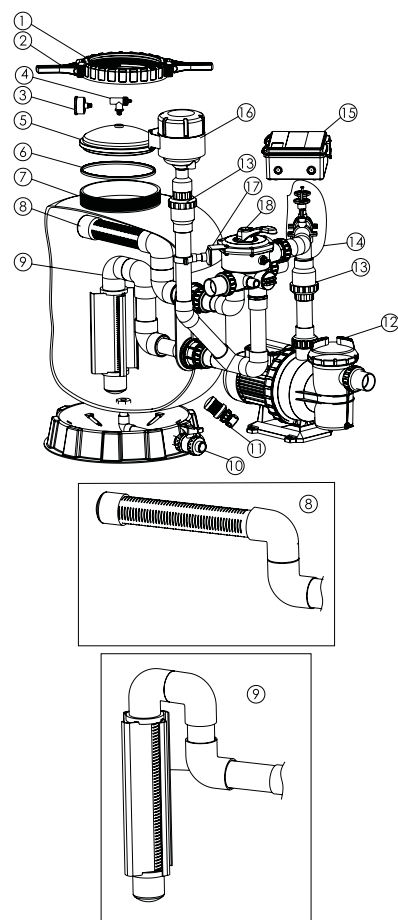
- Make sure that the filter has a mature bacterial colony (takes 4-6 weeks). When the quality is worse than in the beginning, backwash the filter. Let the blower run a little bit longer than normal.
- When the water quality does not improve the filter is dirty and needs maintenance. See chapter 4.
- When the water quality still does not improve, check the water flow out of the system. The entire pond water volume should flow through the filter 1x per two hours. When this is not the case, the filter does not filter out enough dirt. Also check if the power of the pump is enough for your pond water volume.

High Ammonia and Nitrite levels that was stable previously

When your pond has been up and running at warm temperatures (above 20°C) for six or more weeks and your ammonia and nitrite levels have been previously controlled, but you experience a spike in the ammonia level now, try the following:

- Perform an extra long blower treatment on the bead pack and an extra long backwash. If the bead pack becomes totally clogged with solids, the available surface area for bioconversion drops significantly. Backwashing will open up the active surface area and bioconversion will resume.
- If the Ammonia levels are still high after backwashing, perform the maintenance procedure as it is described in chapter 4.
- When the Ammonia levels are still too high, check the volume of feed that is given to the fish. One cubic foot of mature beads can handle around one pound of 35% protein food per day. Check to see how many cubic feet of beads are in your filter and compare that with how much food you're feeding.
- When the Ammonia levels are still too high, check the flow rate through the filter. The entire pond water volume should flow through the filter 1x per two hours. When this is not the case, the filter does not filter out enough dirt. Also check if the power of the pump is enough for your pond water volume.
- If you have followed the above mentioned steps and the water flow is still low, please contact your dealer.

Item	Part No.	Product Description	Qty
1	01271012	Ringlock Nut	1
2	01021004	Spanner for RingLock	2
3	06011029	Oil Pressure Gauge With O-ring (40 psi)	1
4	89011101	T-shape Exhaust Switch	1
5	01201021	Cover	1
6	02011036	O-Ring for Cover	1
7	89033201	KOK-65 Filter Tank With Base	1
	89033301	KOK-80 Filter Tank With Base	1
	89033401	KOK-90 Filter Tank With Base	1
8	89033202	KOK-65 Top part of the inner tank system	1
	89033302	KOK-80 Top part of the inner tank system	1
	89033402	KOK-90 Top part of the inner tank system	1
9	89033203	KOK-65 Bottom part of the inner tank system	1
	89033303	KOK-80 Bottom part of the inner tank system	1
	89033403	KOK-90 Bottom part of the inner tank system	1
10	01150014	Ball Valve (Metric)	1
11	89010107	Water Drain Set	1
12	08030004	SC150 Pump for KOK-65	1
	08030020	SB20 Pump for KOK-80	1
	08030021	SB30 Pump for KOK-90	1
13	01150032	1.5" Check Valve for KOK-65	2
	01150020	2.0" Check Valve for KOK-80 & KOK-90	2
14	89033204	1.5" connection pipe to control box (KOK-65)	1
	89033304	2" connection pipe to control box (KOK-80 & KOK-90)	1
15	08080002	Control Panel	1
16	88080203	AB550 Air Blower	1
17	89033205	1.5" Valve connector for KOK-65	1
	89033306	2" Valve connector for KOK-80 & KOK-90	1
18	88280805	1.5" Valve for KOK-65	1
	88280806	2.0" Valve for KOK-80 & KOK-90	1



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Features and the product line of the KOK Series

MODEL: KOK-65 / KOK-80 / KOK-90

1) What is a beadfilter?

Beadfilters are closed pressure vessels containing food grade polyethylene granules or beads. The form and size of the beads create a large surface on which bacteria and suspended solids can attach it.

Mechanical filtration:

The first function of the beadfilter is mechanical filtration. Water flows through the filter. Any particles placed in the water flow will cause large dirt particles to stick to them. If the particles are close to each other, smaller dirt particles will also stick to the obstacles and the water is being filtered. This is mechanical filtration, if the filtering material is very fine or as the filter medium becomes blocked with larger particles, smaller dirt particles are filtered out of the water.

The beads in the beadfilter are very close together so the water is filtered very thoroughly. But the resistance of the water will rise. Therefore it is necessary to use higher pressure pumps (high energy consumption) to make enough water flow through the filter.

Biological filtration:

Bacteria attach themselves to the surface of the beads, forming a thin biofilm. The bacteria in the bio film turn ammonia and nitrite into nitrate efficiently. When the surface area of the beads is larger, more bacteria can attach themselves to it. Bacteria stick best to the beads as the beads as they are not too smooth. To form a good bio film it is necessary to only clean the filter correctly. As well as the important Nitrobacter, the heterotrophic bacteria attach themselves to the beads. These heterotrophic bacteria take in a lot of space and use a lot of oxygen. By cleaning the filter in the right way and at the right time, the organically dirt will be washed away and less heterotrophic bacteria will attach to the beads. This has positive effect on the Nitrobacter. The beads that are used are chosen carefully with help of the results of scientific research. That is why particles up to 50 micron can be filtered out by mechanical filtration. The form and size of the beads has been optimized to create a lower resistance in the filter so low-energy pumps can be used.

Application:

Bead filters are mostly used in ponds with fish (Koi). However, beadfilter are also successfully used in aquaria and swimming ponds.

2) Features and the product line of the KOK Series

The KOK Series is a mechanical and biological filter.

We recommend to use the KOK Series filter together with the EMAUX Pump with prefilter.

Unique features of the KOK Series

- The filter has a high intake capacity and is equipped with a double fan with curved blades. This results in better distribution and circulation of the water.
- The filter is equipped with an automatic ventilation valve and a pressure gauge. This gives you better insight in the contamination of the system.
- Thanks to the larger beads, the system experiences less resistance during backwashing. This makes it possible to use a second pump with a lower capacity, substantially reducing the power consumption.
- The filter is available with an optional quiet pump.

KOK Series, the economical beadfilter for your pond!

Product line KOK Series

The KOK Series filter is available in two types, 650, 800 and 900. With these three types you can provide each pond with the right beadfilter.

Type	Diameter of valve	Diameter of tank	Height	Flow rate (m³/h)	Weight of Media (kg)
KOK-65	1 1/2"	26" (635mm)	850mm	24	25
KOK-80	2"	33" (820mm)	1050mm	35	40
KOK-90	2"	36" (920mm)	1180mm	40	50



Quality guaranteed:

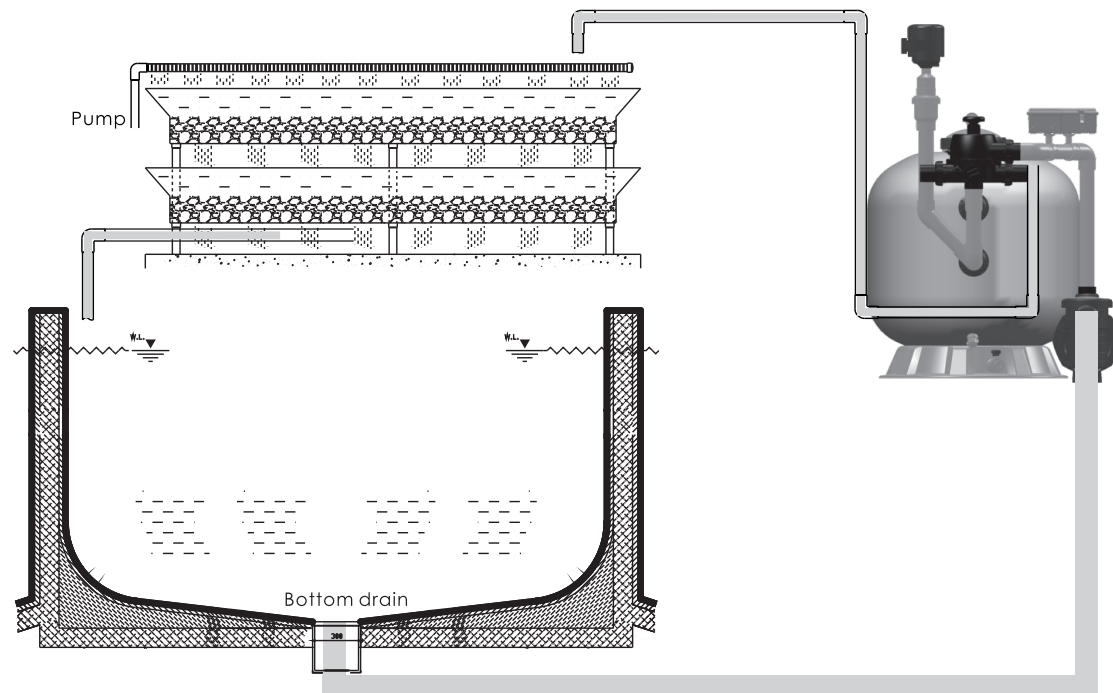
The beadfilters are produced out of high-quality polyester according to strict water standards. The filters have been tested thoroughly in a variety of applications especially ponds with koi fish.

3) Installation and functioning of the KOK Series

The water flows into the filter as a result of pressure from a pump. Thanks to the unique design of the inlet, the water starts to spin which causes large dirt particles to be sucked towards the centre of the filter and then drained off. The small dirt particles and bacteria are caught by the beads, and the purified water then flows back into the pond via the 6-way valve. The beadfilter is cleaned using a strong blower which blows air through the filter. This causes the dirt to be 'rinsed off' of the beads while retaining the biofilm layer.

General installation instructions:

In picture 1 you find a diagram of the application of the application of the KOK Series, the KOK Series prefilter and other pond specials. The level of the water in your pond should be about 5cm above the level of the inlet of the KOK Series.



Picture 1: Diagram of a pond with the KOK Series

Attention: Inlets may be positioned above or below water level. When inlets are below water level, care should be taken to ensure the pump is sized to maintain flow rate against the back pressure and that additional provision for oxygen in the system is included.

Picture 2: The KOK Series

Functioning of the KOK Series:

- As a result of a press pump, the water flows into the filter through the inlet (A).
- Because of the vortex, the heavy dirt particles are sucked towards the centre of the filter and then drained off (B).
- The pressure of a pump forces the water through the beads and is purified bacteriologically.
- The purified water then flows back into the pond through the slotted pipe (C).
- The KOK Series is cleaned using a strong blower which blows air through the filter (D). This causes the dirt to be 'rinsed off' of the beads while retaining the biofilm layer.
- You can control the beadfilter with the 6-way valve (E).
- To prevent water flowing into the blower, a transparent non-return valve is fitted (F).
- The KOK Series filter has a pressure gauge and an automatic ventilation valve (G).

Picture 3: 6-way valve type 800

Connecting the 6-way valve:

- 1) The press side of the pump is connected to connection (1).
- 2) Connection (2) is connected as a return pipe to the pond.
- 3) Connection (3) is connected to the sewer.
- 4) Connection (4) can be used as an extra pump connection (for a low-energy pump).
- When an extra pump is used, a ball valve should be assembled in connections (1) and (4).
- 5) The blower (5) should be assembled on the transparent non-return valve. (6)
- 6) Connection (7) can be used for the assembly of an extra pressure gauge.

Functions of the 6-way valve:

(See picture 2: the KOK Series).

FILTER - The water enters the beadfilter through the inlet pipe (A) and is being pressed through the beads by the pressure of the pump. The water leaves the filter through the slotted pipe (C) to flow back to the pond again.

CIRCULATION - The filter is being skipped and the water flows from the pump, directly through the 6-way valve back to the pond again. This option is especially useful when you want to treat the water with certain products that should not flow through the filter.

WASTE - The filter is being skipped, the water flows directly into the sewer. You can use the WASTE position to pump water out of the pond without using the filter.

RINSE - The cleaning of the filter. First, rinsing the sand filter with the blower turned on. Monitor the cleaning process through the transparent lid, which would take about a minute. Turn off blower and pump, then turn the valve position to Backwash. Turn on the pump and monitor the cleaning process through the lid. Once the water is clear, turn off the pump. Repeat the above process two to three times to make sure the filter is cleaned.

BACKWASH - In this function you have to let the pump run until the water in the sight glass is clear (normally this takes 1-2 minutes). The water enters the filter (C) and leaves the filter (A) to the sewer.

CLOSED - The filtration process is closed. No water flow.

Backwash procedure:

(See picture 2: the KOK Series)

Attention: only function the 6-way valve when the pumps are shut off !

- 1) Turn on the pump and turn the 6-way valve into the FILTER position. Open the bottom drain (B) 15 to 20 seconds. The heavier dirt particles that are on the bottom of the filter will be drained off immediately. Close the bottom drain. DO not open the drain when the pump is shut off, because in that case beads can go out.
- 2) Turn the pump off and turn the 6-way valve into the RINSE position by pushing the handle down and turning it into the right direction. When the valve is in the RINSE position, some air will escape to drainage and some water will escape during the use of the blower.
- 3) Turn the blower (D) on for 1 to 2 minutes. The beads are now rinsed and the dirt particles and the surplus biofilm layer are rinsed off before backwashing. The air and fine dirt particles are drained off via the 6-way valve to the sewer.
- 4) During the blowing some water escaped out of the filter. To fill up the filter with water again, open the ventilation valve in the cover of the filter and turn on the pump until water escapes out of the ventilation valve. Turn the pump off and close the ventilation valve.
- 3) Turn the 6-way valve into the BACKSWSH position and turn the pump on. The water is now being pumped through the filter in opposite direction (from C to A). The dirt that has been rinsed of the rinse procedure closely and easily. You will know that the BACKWASH procedure is finished when the water in the sight glass is clear (this takes about 1 to 2 minutes).
- 4) Stop the pump, turn the 6-way valve into the BACKWASH position and start the pump again. Now the dirt particles that were in the filter are being drained off via the normal route (from A to C) to the sewer. Here you can follow the rinse process with the sight glass too.
- 5) Stop the pump and turn the 6-way valve into the FILTER position and turn on the pump again. You are finished rinsing the filter and the filter is back to the daily routine.

This backwash procedure is also briefly written on the sticker that is delivered with the KOK Series. Place it on or near the KOK Series.

The number and the time of the backwashes depend on the temperature of the water, the number of fish in the pond and the volume and quality of the feed. The number of backwashes varies from 1 to 3 times a week.

4) Maintenance KOK Series

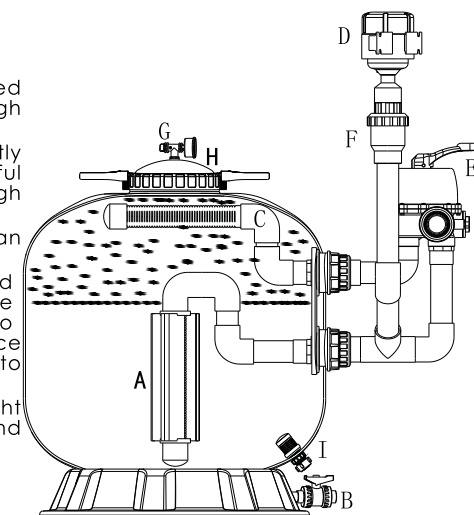
General maintenance:

(See picture 2).

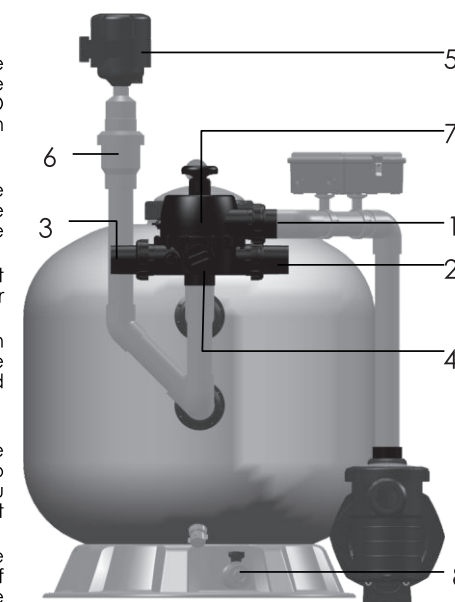
The filter has to be cleaned regularly in the way that is described in chapter 3.

Besides cleaning the filter, it is recommended you check the filter twice per season. You can do this in the following way:

- 1) Follow the backwash procedure in the way it is described in chapter 3. Turn off the filter with 6-way valve in the BACKWASH position. Open the drain plug (I) at the base of the filter.
- 2) Open the ventilation (G) in the cover the filter. Air is being sucked into the filter which indicates that water is leaking out of the filter.
- 3) When most of the water has flown out of the filter, no more air is sucked into the filter. Use the special key to unlock the cover and take off the cover.
- 4) See if the beads are nice and clean after the backwash procedure. There should not be any dirty or coagulated beads in the filter. It is better to let the blower run longer during the backwash procedure, make the whole backwash procedure last a little longer or backwash more often. Coagulated beads you can separate with your hands or with a stick.
- 5) Sweep the beads off the PVC slotted pipe (C) and check if the grooves are not blocked by dirt. When they are blocked, remove the slotted pipe from the filter and clean it with a brush. Put the pipe back in the filter when it is clean.
- 6) The next step is to look at the piping system of the filter. Unscrew the part at the screw coupler. Check if there is dirt in the pipes and clean it if necessary and screw the pipes back in the filter.
- 7) Check if there are no beads in the thread of the cover before you put the cover back. Make sure the ventilation valve is in the right position again.
- 8) When the cover is back on the filter and the ventilation valve is open, put the 6-way back in the FILTER position and turn the pump back on. When water flows out of the ventilation valve, close the valve and carry out the backwash procedure again before you start to filter.



Picture 2:



Picture 3: